

Space Details

Key:	CANON
Name:	CANON Pilot
Description:	
Creator (Creation Date):	kgomes (Oct 20, 2008)
Last Modifier (Mod. Date):	kgomes (Jul 05, 2012)

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 - Print Copy Available
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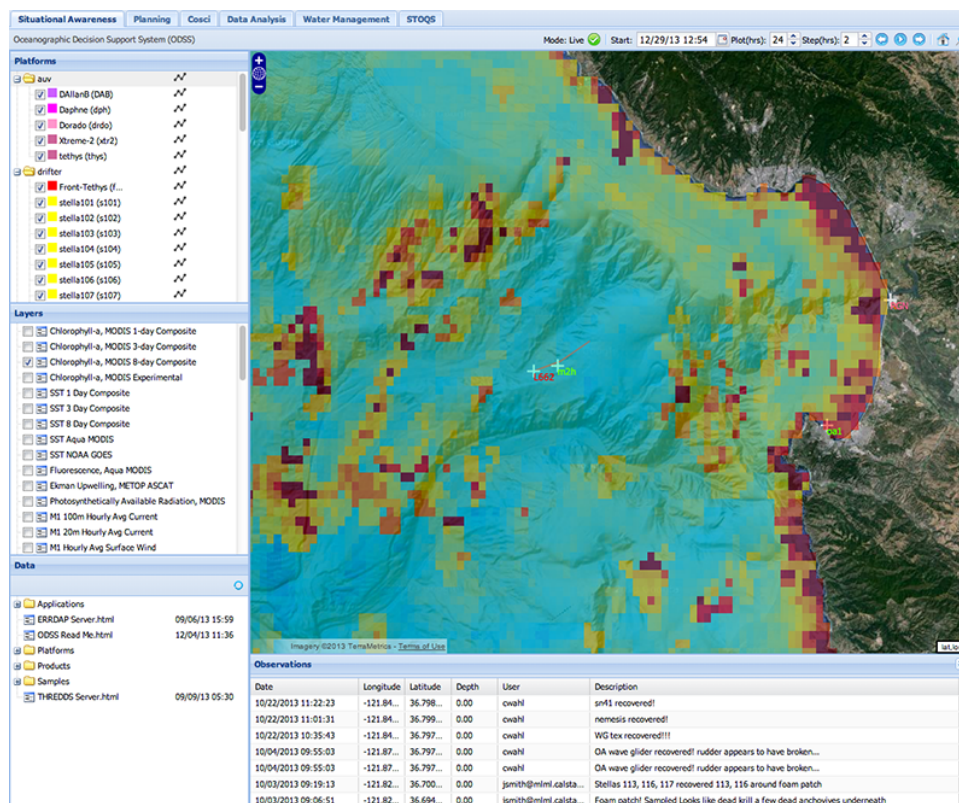
- asia
 - bc
 - florida
 - gulf of maine
 - PNW
- tracer_transport
- value of forecast
- mm_02_17_2009
- mm_03_04_2009
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CANON Initiative

This page last changed on Jan 22, 2014 by [kgomes](#).

Welcome to the CANON Initiative Site. This is the main location of all documentation related to the development of the Oceanographic Decision Support System (ODSS). To facilitate the massive amount of information accumulated here, it has been organized into sections.

Project Manage	Information Inputs	Requirements	Architecture and Design	Development	Documentation	Testing	Deployment Information
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Architecture and Design

This page last changed on Mar 10, 2015 by [duane](#).

This page documents the evolving architecture and design of the ODSS during its development.

Link to [Engineering Meeting Notes](#)

Link to [CANON Logistics Meeting Notes](#)

1. [ODSS Web Application release 0.4.0 discussion](#)
2. [2011 Engineering Hotwash Whiteboard](#)

Code Repository

1. Source code is stored on a Google Code project located at <http://code.google.com/p/mbari-dss/>
2. Issues are tracked in same project at <http://code.google.com/p/mbari-dss/issues/list>

Decision Support System

- [Distributed Autonomy Meeting Notes](#)
- [Directions to Fierstein for Sketches \(Word\)](#)
- ["Napkin" Sketches for DSS \(PPT\)](#)
- [User Comments on Sketches \(Word\)](#)

Communication Backplane

Platforms Tracks

- [ODSS deployed asset communications](#)
- [Platform Tracking Design](#)
- [Wave Glider Integration](#)

Data Management

- STOQS
 - [Configuring Eclipse for Team development of STOQS](#)
 - [Setting up STOQS on the VM](#)
- [External Data Files](#)

Web Application

- **Map Server**
 - [Mapserver requests data flow](#)
- **OpenLayers**
 - Many examples: <http://openlayers.org/dev/examples/>
 - Nice introduction: <http://workshops.opengeo.org/stack-intro/openlayers.html>
- [Glider Planning Service](#)

Observation Log

- Storage
 - [Apache Cassandra project](#)
 - [CouchDB](#)

Fielded Deployments

- [Distributed Deployment - September 2012 Experiment](#)
- [Communication Backplane Report - Fall 2012](#)
- [ECOHAB - March 2013](#)
- [CANON Fall 2013 Experiment Planning](#)
 - [Hotwash Notes](#)

Machine Learning Interface

- [Initial Discussion](#)

[Deprecated Documents](#)

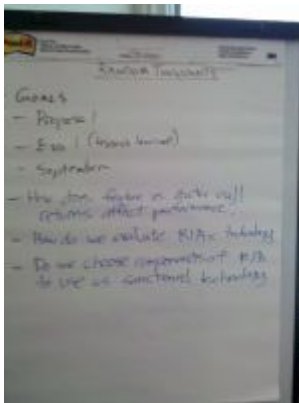
2011 Engineering Hotwash Whiteboard

This page last changed on Dec 30, 2013 by [kgomes](#).

Here are the images from the engineering wrap up meeting after 2011 Experiment:



And of the easel:



CANON Fall 2013 Hotwash Notes

This page last changed on Dec 30, 2013 by [kgomes](#).

On December 3-5, a "Hotwash" was held to go through experimental results and the supporting technologies to plan for the next experiment. Here are the notes from the Hotwash that are pertinent to the ODSS development.

Extracted Requirements

1. Hypothesis/experiment summary page

Notes

December 3rd:

1200 Lunch, CANON 2013 overview, plans for 2014 -Chavez

1300 ECOHAB 2013 and beyond - Ryan

1330 Autonomous platforms in CANON - Bellingham lab, Maughan, Messie, ESP rep

1430 Information systems in CANON - Gomes, McCann, Michisaki

1. ODSS
 - a. Platform Tracking
 - i. Features
 - i. Not much new
 - ii. HTML Positions
 - ii. Bugs
 - i. 'Viewboxing' needs work
 - iii. Future Work
 - i. Add capability to tag 'deployed' times and only display those tracks
 - ii. Balloon with last position, heading and speed (if available)
 - b. Layers
 - i. New layers added included:
 - i. ROMS nowcast/forecast
 - ii. ROMS biology nowcast
 - iii. Underway data for Martin and Rachel Carson
 - iv. Mooring wind
 - v. Radar
 - ii. Much thanks to Monique for her patience and attention to detail to get these right and offer useful suggestions !!
 - iii. Color bars were standardized so e.g. temperature is the same across all platforms
 - iv. Workflows
 - i. end-to-end workflow established to add new layer types (kml, wind/current vector,ROMS)
 - ii. still fragile and needs more work in 2014
 - v. Future work
 - i. We need a better notification system to know when layers go down
 - ii. We need a way for users to add their own layers and change the range and scale as needed
 - iii. We continue to have problems with ROMS nowcast layers which looks like a bug in THREDDS.
 - iv. A tool like ArcGIS would allow a user to grab data from our ERDDAP/THREDDS servers and display the data and scale it on a map equally well to ODSS. I wonder if the science folks have considered using it as a tool ?
 - v. For playback, we might consider Google-earth for its time-animation capabilities, instead of trying to handle playback on the web client.
 - c. Data Repository
 - i. Features
 - i. Data Repository (reflection of FTP site)

- ii. 'Content sensitive'
 - iii. Hotpot work - published SBDs (all captured in repo)
 - ii. Future Work
 - iii. Planning
 - d. Logs/Observation Logs
 - e. Samples
 - f. Ships and Comms
 - g. Other development work
 - i. User Logins and customizatoin
 - ii. Planner (Carlos)
 - iii. Mobile App
 - i. Get tracking positions
 - ii. Tag assets as deployed/recovered
 - iii. Collaboration/logs
2. STOQS/Data Analysis
1. When we talk about 2014 Planning
- a. TODOs
 - i. Experiment summary (hypothesis driven)
 - ii. Better synchronization with ships (use driven with cost)
 - b. Proposal
 - i. Command and Control
 - i. Start with Waveglider (look at what LRAUV team has done)
 - ii. Data workflow and STOQS Coordination with ODSS
 - iii. Maintenance, improvements, bug fixes
 - iv. Field experiment support
 - c. STOQS Loading
 - i. Accomplishments
 - i. Approximately 3,442,950 data points loaded
 - i. 22/26 possible platforms were loaded
 - ii. Proved that STOQS could work with multiple assets
 - iii. Tested the ability to use STOQS with a continuous data stream in an ongoing campaign
 - iv. Concatenated Stella drifter deployments into one load file
 - ii. Features
 - i. Created the ability to load 'on the fly'.
 - i. Automated loading using cron jobs
 - ii. Single platform load scripts
 - iii. 'Hot swapping' Stella drifter loads
 - ii. Grouped platform load definitions
 - iii. Improved platform naming conventions.
 - iv. Increased the number of PCTD parameters to load.
 - iii. Bugs
 - i. STOQS interface became sluggish due to the 'on the fly' loading
 - ii. Many data were not in load format. An inordinate amount of time was spent writing code to convert data. This included researching the data/platform/sensors for metadata, CF conventions, and conversion or calibrations made to the data.
 - iii. Some data were not available
 - iv. More data screening. Data was not quality controlled before loading, as such erroneous sensor data would prevent data from loading.
 - iv. Future Work
 - i. Data to NetCDF format. Work out a methodology to get new data into the right loading format or create load paths that will accommodate more formats. This will always be a consideration when new platforms are to be added.
 - d. Data Status/Inventory Report can be found online at [CANON 2013 Data Inventory](#)
 - e.

1530 Shipboard experiments/ samples - Pennington, Smith, Worden

1630 General discussion

December 4th:

0830 Breakfast & coffee

0845-1200

0845 CANON update - Francisco Chavez

0930 Small scale physics in Monterey Bay - Erika McPhee-Shaw

1000 ECOHAB update - John Ryan

1030 Modeling physics - Yi Chao

1100 Modeling biology - Fei Chai

1130 Next generation global models - Sergey Frolov

These presentations seed a discussion on state of ecosystem models, what are their goals, what is needed to quantify performance, how to move to next level

1200-1400 small group lunch offsite

1400 Biological sensing & floats - Jules Jaffe

1430 Ecogenomics - Chris Scholin, Worden, Zehr

1500 Platforms & sampling - Jim Bellingham

These lead to discussion on Lagrangian experiments, ability to sense marine communities (who is there, fluxes, rates, transformations...), ability to sense aspects of the environment important to marine organisms, etc.

December 5th:

0800-1200

How to move forward

- What are the BIG issues that are not being addressed?
- What are the scientific/technological/operational gaps?
- How do we address big issues (field activity, development, etc.)?
- Can we organize a follow-on workshop & invite possible sponsors?

1400-1600

Organize for 2014, experiments, developments, papers, etc.

Communication Backplane Report - Fall 2012

This page last changed on Dec 30, 2013 by [kgomes](#).

From: Mike McCann <mccann@mbari.org>

Subject: [dss-dev] Communications Backplane report from the Western Flyer

Date: September 17, 2012 12:58:44 PM PDT

To: dss-dev@mbari.org

Cc: Todd Ruston <truston@mbari.org>, Francisco Chavez <chfr@mbari.org>, Brent Roman <brent@mbari.org>, Erich Rienecker <erich@mbari.org>, Dan Chamberlain <chda@mbari.org>, M Jordan Stanway <mjstanway@mbari.org>

All,

Here's a communications backplane report from the Western Flyer to be communicated at the ODSS update meeting today.

There's a lot of details here, but I want to get them written down before I forget. I'm noting locations of scripts and log files with the intention of helping us know where to look the next time we do something like this.

Sending messages to Winfrog:

As user **trackadm** on malibu:

The consumer.py script in /home/trackadm/dev/MBARITracking/amqp (checked into mbaritracking SVN on kahuna) has new code that sends \$GPGLL NMEA messages to a specified winfrogHost. To configure edit consumer.py and add names (known to the mbaritracking database) and port numbers (configured in Winfrog) to the portLookup dictionary:

Around line 137:

```
# If running on malibu (on the Western Flyer) send positions to the Winfrog computer by platform
name
# Platform names are case sensitive to what they are known by in the MBARI Tracking database
##winfrogHost = 'dogfish.shore.mbari.org'
winfrogHost = '134.89.20.18'
portLookup = {
'tethys':      31401,
'daphne':      31402,
'dorado':      31403,
'ESP':         31404,
'ZEPHYR':      31405,
'waveglider':  31406,
'stella101':    31101,
'stella103':    31103,
'stella104':    31104,
'stella108':    31108,
'stella110':    31110,
'stella111':    31111,
}
```

The consumer for the platform type will need to be restarted if you make a change. Just kill it and let the /home/trackadm/dev/MBARITracking/amqp/runPersistMonitor.sh watchdog restart it. On malibu this watchdog runs every 5 minutes from trackadm's crontab.

Monitoring:

```
[trackadm@malibu logs]$ tail -f /home/trackadm/logs/nonAISPersistConsumers.out
consumer.persist_message():
drifter,ESP,1347904556.00,35.662982,-122.406161,grabESPpositions.py,,,2012-09-17T17:55:56Z
consumer.sendGLLTtoTCP(): Sent to 134.89.20.18:31404: $GPGLL,3539.77892,N,12224.36966,W,175550,A*3f
consumer.persist_message():
drifter,ESP,1347904556.00,35.662982,-122.406161,grabESPpositions.py,,,2012-09-17T17:55:56Z
consumer.sendGLLTtoTCP(): Sent to 134.89.20.18:31404: $GPGLL,3539.77892,N,12224.36966,W,175552,A*3d
consumer.persist_message():
ship,W_FLYER,1347904555.00,35.663140,-122.406308,grabWFpositions.py,,,2012-09-17T17:55:55Z
```

```

consumer.persist_message():
ship,R_CARSON,1347904565.72,36.802167,-121.787208,grabShipPositions.py,,,2012-09-17T17:56:05Z
consumer.persist_message():
ship,ZEPHYR,1347904575.31,36.802033,-121.787215,grabShipPositions.py,,,2012-09-17T17:56:15Z
consumer.sendGLLtoTCP(): Sent to 134.89.20.18:31405: $GPGLL,3648.12198,N,12147.2329,W,175615,A*8
consumer.persist_message():
drifter,stella101,1347904152.00,35.662770,-122.406460,drifter.py,,,2012-09-17T17:49:12Z
consumer.sendGLLtoTCP(): Sent to 134.89.20.18:31101: $GPGLL,3539.7662,N,12224.3876,W,175629,A*32
consumer.persist_message():
ship,W_FLYER,1347904586.00,35.663127,-122.406252,grabWFpositions.py,,,2012-09-17T17:56:26Z
consumer.persist_message():
ship,R_CARSON,1347904595.31,36.802172,-121.787215,grabShipPositions.py,,,2012-09-17T17:56:35Z
consumer.persist_message():
drifter,stella103,1347904169.00,35.929670,-122.292400,drifter.py,,,2012-09-17T17:49:29Z
consumer.sendGLLtoTCP(): Sent to 134.89.20.18:31103: $GPGLL,3555.7802,N,12217.544,W,175645,A*5

```

I leave this running in a window that I can switch to at any time and see what is being processed.

ESP communications:

As user **trackadm** on malibu:

The grabESPpositions.py script in /home/trackadm/dev/MBARITracking/scripts (to be checked into mbaritracking SVN on kahuna) is a new script that telnets to port 2010 on the ESP's ship computer, parses a \$GPGLL NMEA string and publishes ESP position reports to the drifters RabbitMQ fanout exchange.

The espWatchdog.py script in the same directory checks that positions are being updated and restarts grabESPpositions.py if needed. It is executed by trackadm's crontab every minute (per Brent's suggestion).

Monitoring:

```

[trackadm@malibu ~]$ tail -f /home/trackadm/logs/espWatchdog.out
fileAge = 42.2587380409
fileAge = 102.784883022
fileAge = 162.288415909
fileAge = 222.815152884
fileAge = 282.854593039
fileAge = 462.875690937
Killing grabESPpositions.py with procId = 19238
19239
2012-09-17 07:05:01Z: Restarting grabESPpositions.py...
fileAge = 41.6014370918
fileAge = 41.6443030834

```

and

```

[trackadm@malibu scripts]$ tail -f /home/trackadm/logs/grabESPpositions.out
2012-09-17 18:07:09Z: published ESP position 35.6625253, -122.4047792 to AMQP
2012-09-17 18:07:50Z: published ESP position 35.6624157, -122.4046188 to AMQP
2012-09-17 18:07:50Z: published ESP position 35.6624157, -122.4046188 to AMQP
2012-09-17 18:08:50Z: published ESP position 35.6623875, -122.4044205 to AMQP
2012-09-17 18:08:50Z: published ESP position 35.6623875, -122.4044205 to AMQP

```

I leave these running in windows that I can switch to for quick monitoring of what is going on.

As user **stoqsadm** on malibu:

The new script /home/stoqsadm/scripts/espsync uses rsync to copy files from the ESP ship computer to the canon/2012_Sep rcynced-to-shore directory. It is run by stoqsadm's crontab every 5 minutes - a minute before the canonsync script runs.

Monitoring:

Occasionally execute:


```
[stoqsadm@malibu ~]$ ls -lrt /ODSS/data/canon/2012_Sep/misc/ESP/moe/esp | tail
-rwxrwxrwx 1 stoqsadm stoqsadm 1308 Sep 16 18:04 NARBB12sep1616h725ml.pcr*
-rwxrwxrwx 1 stoqsadm stoqsadm 724334 Sep 16 19:04 pcrBAC12sep1614h725ml40s.tif*
-rwxrwxrwx 1 stoqsadm stoqsadm 2475 Sep 16 19:47 A0Aa12sep1618h725ml.pcr*
-rwxrwxrwx 1 stoqsadm stoqsadm 15212491 Sep 16 19:47 hydrorad.out*
-rwxrwxrwx 1 stoqsadm stoqsadm 7532648 Sep 16 19:47 real.log*
-rwxrwxrwx 1 stoqsadm stoqsadm 1337 Sep 16 22:04 A0Ab12sep1620h725ml.pcr*
-rwxrwxrwx 1 stoqsadm stoqsadm 1337 Sep 16 23:34 CbbL12sep1621h725ml.pcr*
-rwxrwxrwx 1 stoqsadm stoqsadm 1338 Sep 17 04:14 G1Ar12sep1623h725ml.pcr*
-rwxrwxrwx 1 stoqsadm stoqsadm 73516 Sep 17 04:14 CTD-tts-8.hex*
-rwxrwxrwx 1 stoqsadm stoqsadm 3773794 Sep 17 04:14 real.out*
```

and check that the files are updating when we have communication as indicated by the above ESP position monitoring.

canonsync:

As user **stoqsadm** on malibu:

I modified the script (removed --az options, added wf, waveglider rsyncs, and additional text reporting, etc.) and changed the crontab to:

```
*/10 * * * * /usr/bin/time /home/stoqsadm/scripts/canonsync >> logs/canonsync.log 2>&1
```

Monitoring:

Occasionally execute:

```
[stoqsadm@malibu ~/logs]$ grep "elapsed\|PDT" canonsync.log | tail
Mon Sep 17 11:00:01 PDT 2012
Mon Sep 17 11:05:28 PDT 2012
0.30user 0.12system 5:27.24elapsed 0%CPU (0avgtext+0avgdata 11968maxresident)k
Mon Sep 17 11:10:01 PDT 2012
Mon Sep 17 11:15:12 PDT 2012
0.40user 0.14system 5:11.25elapsed 0%CPU (0avgtext+0avgdata 14032maxresident)k
Mon Sep 17 11:20:01 PDT 2012
Mon Sep 17 11:27:30 PDT 2012
0.40user 0.13system 7:29.46elapsed 0%CPU (0avgtext+0avgdata 16976maxresident)k
Mon Sep 17 11:30:01 PDT 2012
```

or examine more details in the /home/stoqsadm/logs/canonsync.log file.

Also, from the ship's VSAT network you can ssh into beach and do directory listings to compare with what is on malibu.

Over the last 2 days the longest canonsync elapsed time was less than 8 minutes.

ctdsync:

As user **root** on malibu:

Entry in root's crontab:

```
# Sync ctd files for CANON
59,4,9,14,19,24,29,34,39,44,49,54 * * * * /home/stoqsadm/scripts/ctdsync
```

The files that /home/stoqsadm/scripts/ctdsync copies to /ODSS/data/canon/2012_Sep/wf/ get synced to shore by canonsync.

Monitoring:

Occasionally execute:

```
ls -lRt /ODSS/data/canon/2012_Sep/wf/
```

and see that files are updating. Note that we added a realtime.asc file in uctd that contains data since the last processed file was created. Those processed files get created twice a day by the CTD tech.

W_FLYER positions:

As user **trackadm** on malibu:

Note: With Todd's help scratchy:/coredata is now mounted on malibu. This make available all of the logr data files which include ship and ROV data items that are logged from datamanager.

The grabWFpositions.py script in /home/trackadm/dev/MBARITracking/scripts (checked into mbaritracking SVN on kahuna) is a new script that tails the current /coredata/data/*shipnavlogr.dat file and sends a W_FLYER position report every 30 seconds to the ships RabbitMQ fanout exchange.

The wfWatchdog.py script in the same directory checks that positions are being updated and restarts grabWFpositions.py if needed. It is executed by trackadm's crontab every two minutes.

Monitoring:

```
[trackadm@malibu amqp]$ tail -f ~/logs/wfWatchdog.out
2012-09-17 17:14:01 Z: Restarting grabWFpositions.py...
2012-09-17 17:20:02 Z: No recent W_FLYER positions in the mbaritracking database on malibu
2012-09-17 17:20:02 Z Killing grabWFpositions.py with procId = 5088
2012-09-17 17:20:02 Z: Restarting grabWFpositions.py...
2012-09-17 17:54:01 Z: No recent W_FLYER positions in the mbaritracking database on malibu
2012-09-17 17:54:01 Z Killing grabWFpositions.py with procId = 5470
2012-09-17 17:54:01 Z: Restarting grabWFpositions.py...
2012-09-17 18:24:01 Z: No recent W_FLYER positions in the mbaritracking database on malibu
2012-09-17 18:24:01 Z Killing grabWFpositions.py with procId = 7591
2012-09-17 18:24:01 Z: Restarting grabWFpositions.py...
```

and

```
[trackadm@malibu logs]$ tail -f grabWFpositions.out
2012-09-17 19:18:18Z: published W_FLYER position 35.813105, -122.350282 to AMQP
2012-09-17 19:18:48Z: published W_FLYER position 35.814263, -122.349903 to AMQP
2012-09-17 19:19:18Z: published W_FLYER position 35.815432, -122.349527 to AMQP
2012-09-17 19:19:51Z: published W_FLYER position 35.816585, -122.34916 to AMQP
2012-09-17 19:20:22Z: published W_FLYER position 35.817743, -122.34878 to AMQP
2012-09-17 19:20:51Z: published W_FLYER position 35.818915, -122.348408 to AMQP
2012-09-17 19:21:23Z: published W_FLYER position 35.820087, -122.34802 to AMQP
2012-09-17 19:21:54Z: published W_FLYER position 35.821247, -122.34764 to AMQP
2012-09-17 19:22:25Z: published W_FLYER position 35.822452, -122.347235 to AMQP
2012-09-17 19:22:58Z: published W_FLYER position 35.82365, -122.346833 to AMQP
```

Odds and ends, questions, planning ahead:

1. I enabled sending mail from malibu, again with Todd's help. This will prove useful for setting up remote monitoring and reporting.
2. The new and modified scripts in MBARITracking will be in version control on kahuna. I will check those additions and changes in when we get back and have a shore network connection.
3. Do we have a versioned controlled home for the scripts in stoqsadm@malibu:scripts? Any suggestions?
4. We need to save the crontabs for the stoqsadm and trackadm accounts on malibu somewhere.
5. Some cron jobs on malibu will need to be commented out upon completion of this cruise, right?
6. For the next time we do something like this we'll need to edit the canonsync script to point to another directory other than canon/2012_Sep. Is there a more general way that we should set this up?

-Mike

Configuring Eclipse for Team development of STOQS

This page last changed on Dec 30, 2013 by [kgomes](#).

I'm following the the directions provided in the book "Foundations of Agile Python Development" to create a team-oriented build environment on my local Linux VM...

I thought this would be easy, but ran into some problems installing the Subversive plugins and am having to start over 🙄

This time I will document my steps:

1. Download Eclipse (Helios version for Linux32: I chose "Eclipse IDE for Java Developers" as I intend to do both Python and Java development) from <http://www.eclipse.org/downloads/>
2. Unpack into /opt/eclipse
3. Launch Eclipse: /opt/eclipse/eclipse and select your default workspace (I selected the default)
4. Install PyDev:
 - a. Select Help -> Install New Software.
 - b. Type "http://pydev.org/updates" in the Work with field
 - c. Select PyDev and PyDev Mylyn Integration (optional)
 - d. Click Next and Next again
 - e. Click on the Licenses, accept them, and click Finish
 - f. Click through warnings on unsigned content and restart Eclipse
5. Install Subversive:
 - a. Here are the instructions copied from <http://www.polarion.com/products/svn/subversive/download.php>
 - * On main menu, choose Help > Install New Software. The available Software dialog appears.
 - * In the Work with list, select Helios - <http://download.eclipse.org/releases/helios>. A list of software packages appears.
 - * Expand the Collaboration node.
 - * Scroll the list and check box for Subversive Team Provider (incubation)
 - * Check other options in the dialog as desired and click the Next button. The Install Details screen appears in the dialog.
 - * Click the Next button, accept the license and click Finish. Subversive will download and install.
 - * It is recommended to accept the option to restart Eclipse.
 - b. I get an error after I select the SVN Connector (either JavaHL 1.6.x or SvnKit 1.3.2)
 - c. I tried manual install by doing an update from the update site: <http://community.polarion.com/projects/subversive/download/eclipse/2.0/update-site/> and get the error:

```
Cannot complete the install because one or more required items could not be found.
Software being installed: Subversive SVN Connectors 2.2.2.I20101203-1700
(org.polarion.eclipse.team.svn.connector.feature.group 2.2.2.I20101203-1700)
Missing requirement: Subversive SVN Connectors 2.2.2.I20101203-1700
(org.polarion.eclipse.team.svn.connector.feature.group 2.2.2.I20101203-1700) requires
'org.eclipse.team.svn.feature.group [0.7.9.I20101001-1700,1.0.0]' but it could not be
found
```
 - d. I'm searching the forums and seeing that others are having the same issue...
 - e. ... O.K. Not giving up. Even though it say's "Recommended" I'm installing the update from: <http://download.eclipse.org/technology/subversive/0.7/update-site/> hoping that this is where the missing package 'org.eclipse.team.svn.feature.group' resides.
 - f. Ta Da! That was it! (I checked only the Required component in the <http://download.eclipse.org/technology/subversive/0.7/update-site/> package.)
 - g. Now I'm able to install SvnKit and JavaHL.
 - h. After Eclipse restart I have "SVN" listed in File -> Import. Phew!

Comments

As an alternative for SVN stuff, you can also use Subclipse:

<http://subclipse.tigris.org/>

Which installs well and works great ...

Posted by [kgomes](#) at Jan 24, 2011.

Deprecated Documents

This page last changed on Dec 30, 2013 by [kgomes](#).

1. Version 1 (2009)
 - a. [Building and running tag jd-2010-12-02 in eclipse](#)
2. Version 2 (2010)
 - a. [December DSS prototype](#)
 - b. [DSS Front-end development log](#)
 - c. [Running from command line and deploying](#)
 - d. [Caveats and TODOs](#)
 - e. [Importing the project in Eclipse](#)
 - f. [CentOS and Dependent Package Installation](#)
 - g. [Setting up the VM](#)
 - h. **GWT**
 - i. [Good article on MVP architecture for large scale application development for GWT](#)
 - ii. [Power Point on best practices with GWT](#)
 - iii. [YouTube video on best practices with GWT](#)
 - iv. Help for speeding up the compiler <http://stackoverflow.com/questions/1011863/how-do-i-speed-up-the-gwt-compiler>
 - v. GWT testing with Maven <http://mojo.codehaus.org/gwt-maven-plugin/user-guide/testing.html>
 - i. **SmartGWT**
 - i. Web site: <http://code.google.com/p/smartgwt/>
 - ii. Showcase: <http://www.smartclient.com/smartgwt/showcase/>
 - j. **GWT-OpenLayers**
 - i. GWT-OL website: <http://gwt-openlayers.sourceforge.net/>
 - k. [Printing with Mapfish](#) (see [these notes](#))
 - l. [ODSS Web Application Testing](#)
3. Version 3 (2011)
 - a. [ODSS Web Application Development Quick Start](#)
 - b. Brian's Maven Presentation ([PPT](#))([PDF](#))
 - c. [Build Automation Overview \(PNG\)](#)
 - d. [ODSS Web Application Design](#)
 - e. ODSS Data Flow Diagram ([PNG](#)) ([OmniGraffle](#))
 - f. [Water Management Design](#)

Building and running tag jd-2010-12-02 in eclipse

This page last changed on Dec 30, 2013 by [kgomes](#).

Tag jd-2010-12-02 in the repository is a copy of JD's latest version in trunk as of 2010-12-02. This version uses the GWT plugin for Eclipse. The following instructions show how to build and run this version.

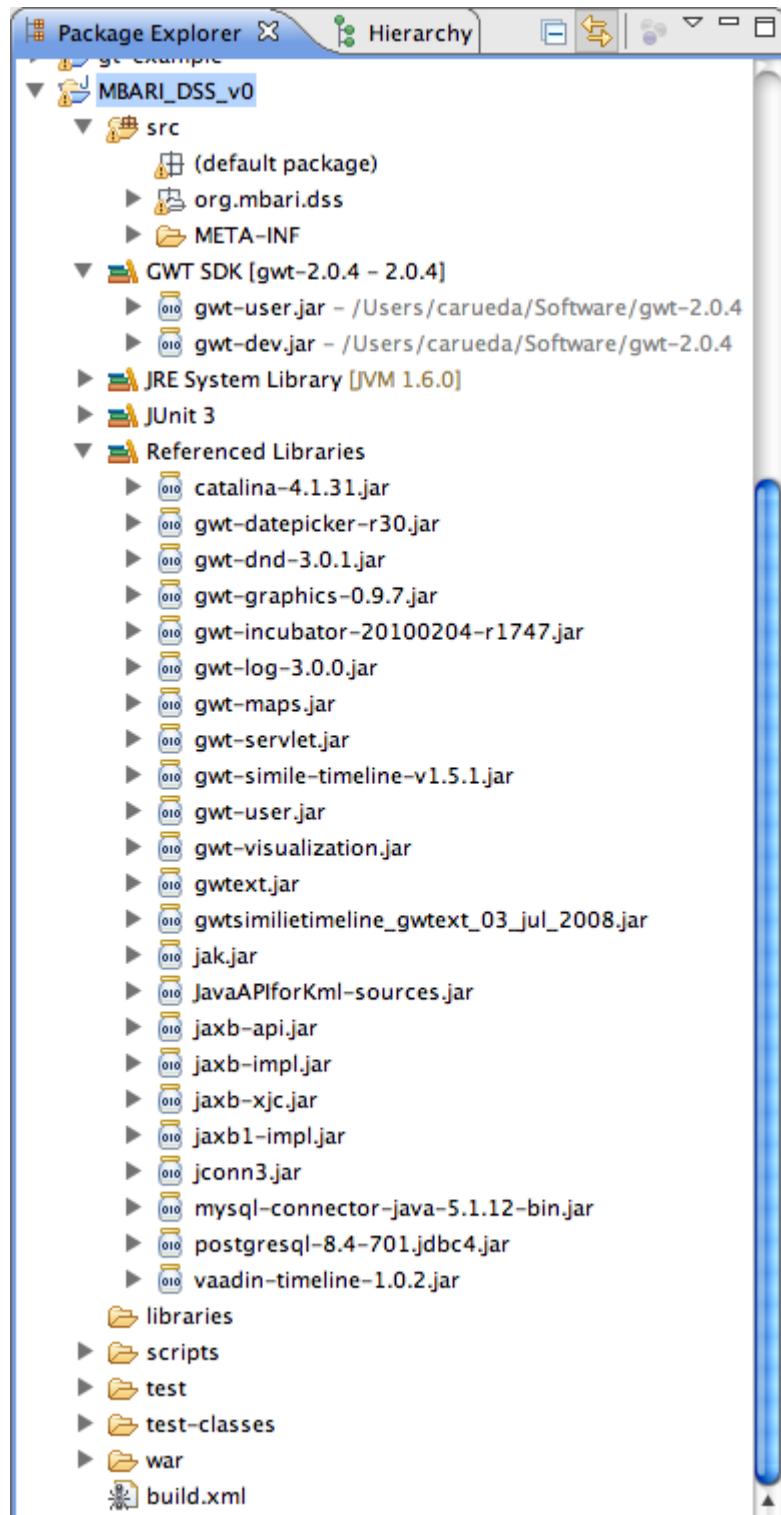
Prerequisites

- Eclipse Ganymede (3.4) or above
- GWT plugin for Eclipse. The project uses GWT 2.0.4. A newer version may work but this was tested with 2.0.4.

Check out and build

- Set the Java compiler compliance level to 1.6 (otherwise, Eclipse will report: "The project cannot be built until build path errors are resolved", which happened in my case because my Eclipse's default level is 1.5).
- Check out <http://code.google.com/p/mbari-dss/source/browse/tags/jd-2010-12-02/> (you could fix any compiler compliance level problem after this step). I did the check out within Eclipse using the SVN plugin.

The following screenshot shows how the project looks in Eclipse.

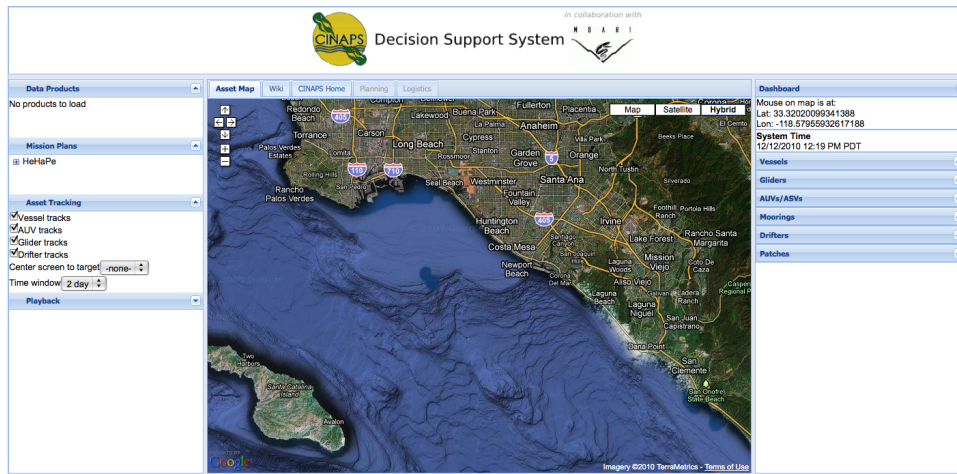


Run the application from Eclipse

Launch the project as a GWT Web application:

- Right-click the project
- Select Run as -> (g) Web Application
- Open http://localhost:8888/org.mbari.dss.MBARI_DSS_v0/index.html in your browser

This is a screenshot of the page right after loading the above URL:



Caveats and TODOs

This page last changed on Dec 30, 2013 by [kgomes](#).

DSS

Although both GWT-OL and SmartGWT are pretty robust base libraries, these are some issues to keep in mind. (I decided to document these issues here, but the [google tracker](#) can of course be used at a later stage.)

- As the openlayers.org site goes down occasionally (see [this thread](#)), the Dss.html page (which is the entry point for the application) links to a copy of the OL javascript sources (instead of using `<script src="http://openlayers.org/api/OpenLayers.js" ></script>`). Thus, for newer OL releases there would be the need to update the copy and then rebuild/redeploy the application. Of course, a better approach is to have the copy outside of the DSS application in a way that only the external copy would need to be updated.
- The map widget may not get properly updated upon changes in size of its container in the browser. This problem proved to be very tricky and I had to resort to some not-so-clean mechanisms to lessen the refresh misbehavior (see Workarounds.java). (A similar problem seems to happen in JD's Google Maps-based version.)
- For proper deployment, the Google Maps API key needs to be adjusted in Dss.html according to the host server. You will see the typical warning window if the key is not appropriate. Also, an interesting behavior is that the Google map will take over the whole area making the OpenLayers elements inaccessible.
- In general, full control of the user interaction is not in place in this prototype.
- The initial map display varies across browsers:
 - Firefox: behaves acceptably well
 - Safari/Chrome: the map gets partially hidden on the right so the mouse location and the layer switcher don't show up entirely
 - IE: ?
- The OL "editing tool bar" does not show up in Safari/Chrome when using a Google map background. (OK in firefox). A possible workaround is to adjust the z-order of the OL controls .
- The edit modes (in the "planning" perspective) are just partially controlled/handled. In general, the handling of user-defined layers is TBD.

STOQS

- The requests to the various layers seem to return the same data, which looks like a bug in the mapserver/database side. The requests seem to be properly done from DSS as the returned layers are only different in color.

CentOS and Dependent Package Installation

This page last changed on Dec 30, 2013 by [kgomes](#).



Way work in progress!

This is very much a work in progress and is not something you can really execute on yet ... stay tuned

Here are some instructions on how to build a VM for development from scratch. Hopefully this would not have to be done very often, but you just never know. During this setup process, various snapshots of the OS were taken and stored so they could be grabbed at any location in the process.

VM Configuration

When all is said and done, the VM should be configured with the following specs

VM Appliance for ODSS Development

1. 40GB disk with CentOS 5.5 32 bit x86 installed (and patched to latest set)
2. Has a populated 'test' STOQs database
3. Has OGC Web Services interface (Mapserver, et al)
4. Has room on the root partition after OS and package installation to install development tools such as Netbeans and other add-ons (min 5GB free available on root after packages installed)
5. Full GWT development environment
 - a. Eclipse (Helios),
 - b. GWT Eclipse plugin,
 - c. GWT 2.1.1 SDK,
 - d. smartGWT widgets,
 - e. GWTdesigner
 - f. GWT-OpenLayers
6. Packages installed in the filesystem consistent with the RHEL 5 staging and deployment server.
7. Packages installed independent of the OS so that OS updates and security patches do not cause compatibility problems with our database, webservices and web app or conversely so that packages installed for ODSS do not prevent security patch install.
 - a. The database team has indicated postgres should be installed in the OS and since this component should get security updates - I'm a bit leary of this but will defer to the judgement of the database owner. Preferences are install all in /opt or /usr/local

Tool Used for image creation:

- VMWare Player
 - split file
 - Network property of VM: Bridged, not the NAT default (this is an IS recommendation)

Web Application Development VM Build (kgomes)

1. I downloaded the .iso images from the CentOS location above <http://isoredirect.centos.org/centos/5/isos/i386/>. I stored all 7 of them on a local WebDAV share (username and password are both 'dssguest').
 - a. [ISO 1](#), [ISO 2](#), [ISO 3](#), [ISO 4](#), [ISO 5](#), [ISO 6](#), [ISO 7](#)
2. I logged in as root and let the package manager update all 74 packages.
3. I changed the root password to 'oompaloompassdiddledeedee'
4. I created an account called 'developer' with password 'nameisthewayin'
 - a. Full name is 'DSS Developer'
 - b. Login shell is /bin/bash
 - c. Home directory is /home/developer
5. I took a snapshot of this VM and compressed it. It is available [here](#) (1.2 GB)
6. The next thing was to install Java 1.6 (Update 23) from the Oracle web site (pick the plain linux download (that is 32 bit)). I saved the [RPM-bin](#) to the WebDAV server.
 - a. Download the -rpm.bin file.
 - b. Open a terminal window, navigate to the .bin location and run 'chmod a+x jdk-6u23-linux-i586-rpm.bin'
 - c. Then run './jdk-6u23-linux-i586-rpm.bin' (this extracts and install all the rpms for Java 6)

Install CentOS 5.5 i386 32bit Desktop
using netinstall from a mirror site (<http://isoredirect.centos.org/centos/5/isos/i386/>)

- Website Name: mirror.centos.org
CentOS Directory: [centos/5.5/os/i386](http://mirror.centos.org/centos/5.5/os/i386/)
- Firewall: Enable ports for all trusted services (WWW, WWWs, etc)
 - TODO: add ports that are opened by ODSS
- SELinux default (Enforcing)
- Users: root, developer (oompaloompassdiddledee, nameisthewayin)
- Run the update (77 packages) <---- possible risky business when trying to reproduce the linux base later
- Note: nominal power consumption is 70w, when installing CentOS in VM, power jumps to 95w (bouncing between high 70's and peak of 95)

Verify root and user (developer) Access: rootpass, developer

1. Make a copy of the base VM Ware Centos image
1. Compress and zip the base CentOS image.
Size on disk of "CentOS 5.5 32bit rootpass userpass.zip": 1.56 GB (1,679,245,312 bytes)

Install Packages

1. GWT 2.1
 - a. SmartGWT ver?
 - b. GWTdesigner ver?
 - c. MapFish ver?
 - d. GWT-Open Layers ver?
2. Maven ver?
3. Java 1.6
4. Javascript (ECMA 262) compatible with GWT 2.1
5. Python 2.6
6. bash scripts - CentOS 5.5 / RHEL 5
7. Django 1.2.3 (GeoDjango is part of Django)
8. Open Layers (is this covered by GWT-OpenLayers?)
9. MapServer 5.6.5
10. GDAL 1.7.3
11. PostgreSQL 9.0.1
12. PostGIS 1.5.2
13. Pydap 3.0.rc.13
14. numpy 1.5.0
15. proj 4.7.1
16. geos 3.2.

Package Installation Procedure now that CentOS base is established

1. Install Fedora Extra Packages for Enterprise Linux (EPEL) Package:

```
sudo rpm -Uvh http://
download.fedora.redhat.com/pub/epel/5/i386/
epel-release-5-3.noarch.rpm
```

2. Install required packages:

```
sudo yum -y install freetds proj proj-epsg
proj-devel
```

3. Install PostgreSQL v 9.0:

```
sudo rpm -Uvh http://yum.pgrms.org/
reporms/9.0/pgdg-centos-9.0-2.noarch.rpm
sudo yum install postgresql90 postgresql90-
devel postgresql90-contrib postgresql90-libs
postgresql90-server libpng libpng-devel gd gd-
devel
```

4. Download and install the following packages by compiling from source (using the provided configure command arguments):

- gdal-1.8.0 : Download from <ftp://ftp.remotesensing.org/gdal> (note: this was *just* released, your current VM has v1.7.2 on it)

```
./configure --with-python=/usr/bin/python26
--with-geos --with-pg=/usr/pgsql-9.0/bin/
pg_config
```

- mapserver-5.6.5: Download from <http://download.osgeo.org/mapserver/mapserver-5.6.5.tar.gz>

```
./configure --with-wfs --with-wms --with-gdal
--with-proj --with-postgis=/usr/pgsql-9.0/bin/
pg_config --with-wfsclient --with-wmsclient --
with-ogr --with-tiff --with-wcs --with-jpeg --
with-png --enable-debug --with-debug
```

5. Copy the mapserver binary to the appropriate location on the file system:

- Change to the directory where mapserver is compiled:

```
sudo cp mapserv /var/www/cgi-bin
```

6. Install Python 2.6 and related components:

```
sudo rpm -Uvh http://yum.chrislea.com/centos/5/
i386/chl-release-5-3.noarch.rpm
sudo rpm --import /etc/pki/rpm-gpg/RPM-GPG-KEY-
CHL
sudo yum install python26 python26-devel
python26-distribute
sudo easy_install-2.6 pycopg2
sudo easy_install-2.6 numpy
sudo easy_install-2.6 beautifulsoup
sudo easy_install-2.6 pydap
sudo easy_install-2.6 httplib2
sudo easy_install-2.6 pymssql
sudo easy_
install-2.6 django
```

7. Modify your PostgreSQL configuration so that the server is not on the root partition:

1. Create a new partition to store your PostgreSQL database and mount it on /srv/ (or wherever, just replace /srv/ everywhere with wherever you mount it)
 2. `vi /etc/init.d/postgresql-9.0`
 3. Locate the line that says "PGDATA=/var/lib/postgresql/9.0/data" and change it to "PGDATA=/srv/pgdata"
 4. Save the file and exit the editor.
 5. Run the command (without the quotes):
`"sudo /etc/init.d/postgresql-9.0 initdb"`
 6. Run the command (without the quotes):
`"sudo chkconfig postgresql-9.0 on"`
 7. Start the PostgreSQL server (without the quotes): `"sudo postgresql-9.0 start"`
8. At this point, everything is installed, you'll need to do the following:
- Create the database user, PostGIS database, and populate the database with the data model.
 - Load data using the tools provided previously.

December DSS prototype

This page last changed on Dec 30, 2013 by [kgomes](#).

This page summarizes Carlos' December 2010 work about the DSS front-end using GWT-OpenLayers and SmartGWT.

In a nutshell

The new prototype:

- Enables WMS and WFS layers on the map as the main data access interfaces. This is accomplished by using OpenLayers (via [GWT-OpenLayers](#)), which supports these and several other data access protocols.
- Uses SmartGWT as the main library to create the user interface (SmartGWT is very actively developed and broadly used, and has in fact superseded Gwt-Ext).
- Provides a "perspective" approach to handle the various modes of user interaction (eg., "situational awareness", "planning"), such that the interface can be adjusted depending on the mode.
- Allows to create new vector features (preliminary functionality). This is enabled in the "planning" perspective.
- Is based on Maven, which facilitates dependency, unit testing, and build management.
- And it's worth noting that this new prototype does not (and was not intended to) replicate all the functionality in JD's version during this phase. Rather it demonstrates the feasibility of using OGC standard protocols for data access, while allowing the incremental incorporation of previous and new functionality.

Building and running

See [Running from command line and deploying](#) and [Importing the project in Eclipse](#).

Code structure

Package structure

org.mbari.dss				Main DSS package
	client			Client side code
		data		Data operations requiring the server
		dev		Developer options (enabled in development mode or with the "_dev=y" parameter)
		edit		Layer edit functionality
		events		Main application events (including the selection of a perspective)

		model		Objects specifying layers (currently only WMS explicitly)
		jd		Elements copied or adapted from JD's version (note that there are also some in other places)
			views	
			model	
		openlayers		OpenLayers related handling (including wrappers for functions not available through GWT-OL) and workarounds
		util		General DSS utilities
		views		GUI views
			layout1	The main overall layout
			util	View utilities
	server			Server side code
	shared			Types shared by both client and server

Main types

Dss	The DSS entry point for GWT
ClientFactory / ClientFactoryImpl	Main factory for the EventBus and the IDssLayout. The implementation is instantiated by GWT
IDssLayout	An interface to facilitate the testing of possible DSS application layout. Main containers are identified by their key (ComponentKey enum).
DssLayout1	A IDssLayout implementation where: - Each perspective is contained in a tab - the main containers are shared across the various perspectives. - A PerspectiveSelectedEvent is triggered when a user selects a perspective, so corresponding

	interested event handlers can customize the components in the containers
ViewMan	View manager. Initializes the components of the graphical interface and some of the associated event handlers.
MapView	Handles a GWT-OL MapWidget object
Perspective	An enumeration with the main overall views (perspectives) on the application. Each perspective is intended to provide a specific set of features.
FeatureInfoView	To show information about a selected feature. Includes a date range widget for the user to indicate a date range. Fires <code>DateRangeChangeEvent</code> events whenever the data range changes
WmsLayers	Retrieves the WMS layers and fires a corresponding <code>WmsLayersRetrievedEvent</code>
WmsLayerSpec	Specification of a WMS layer. These objects are hard-coded on the server side according to the STOQS mapfiles
WfsLayers	Retrieves the WFS layers and fires a corresponding <code>WfsLayersRetrievedEvent</code>
WfsLayerSpec	Specification of a WFS layer. These objects are hard-coded on the server side
UserLayers	Retrieves the user-defined layers and fires corresponding <code>UserLayerRetrievedEvent</code> 's
MissionPlans	Mission plan data sets. This is basically to replicate some of the functionality in original JD's code
WmsLayersHandler	Handlers for WmsLayer related events
WfsLayersHandler	Handlers for WfsLayer related events
UserLayerHandler	Handlers for a user layer
DssService	The main RPC interface
DssServiceImpl	Implementation of DssService on the server side
WmsCatalog	Simple catalog of WMS layers
WfsCatalog	Simple catalog of WFS layers
UserLayerCatalog	Simple catalog of user defined vector layers (serialized in KML)
MBARI_DSS_WebService	From JD's code to retrieve the Mission plan datasets
DssConstants	Some "constants" for the prototype
OLayers	Base OL operations. In particular <code>OLayers.init()</code> should be called before any other OL operation

--	--

Events

PerspectiveSelectedEvent	A persepective has been selected
MapViewCreatedEvent	The MapView has been created
MapResizedEvent	The map has been resized
WmsLayersRetrievedEvent	The WMS layers have been retrieved from the server
WfsLayersRetrievedEvent	The WFS layers have been retrieved from the server
MissionPlansRetrievedEvent	The mission plans have been retrieved from the server
UserLayerRetrievedEvent	A user layer has been retrieved from the server
UserLayerSavedEvent	A user layer has just been saved
DateRangeChangedEvent	The date range for querying layers has changed
EventFirer	Helper class to fire events

Handling a particular layer type

The main elements involved for handling a particular kind of layers, using the WMS case as an example, are as follows:

client.model.WmsLayerSpec	Specification of a WMS layer
client.DssService/Async	Operations related with retrieval of the WMS names
server.DssServiceImpl	Server-side implementation of corresponding operation(s)
server.WmsCatalog	Catalog of the WMS layers
client.events.WmsLayersRetrievedEvent	The event indicating that the WMS layers have been retrieved from the server
client.data.WmsLayers	Handles the retrieval of WMS layers and notification of corresponding events so other parts of the code can be updated (eg, WmsLayersView)
client.data.DataMan	Data manager; calls WmsLayers.init()
client.views.WmsLayersView	A view for WMS layer definitions. Checkboxes allow the user to include the corresponding layer in the map
client.views.IDssLayout	Add WMS to ComponentKey enumeration

client.views.ViewMan	Maintains a reference to the WmsLayersView; calls WmsLayersHandler.init()
client.views.WmsLayersHandler	Handlers for WmsLayer related events
client.views.layout1.LeftSection	The WmsLayersView is inserted in a subsection here. This class manages the containers in this section and reacts to changes in perspective to do some adjustments (mainly for demonstration purposes -- general functionality per perspective TBD)

Misc

Map printing

See [this page](#).

Unit tests

See class [org.mbari.dss.client.DssTest](#) (under src/test/java/).

Caveats and TODOs

See [this page](#).

Mapfish print

This page last changed on Jan 05, 2011 by [carueda](#).

I tried the [Mapfish Print](#) servlet to explore it as a mechanism to print contents from the DSS interface.

In summary, a promising approach but needs more investigation.

The following are my notes from one of my exercises (12/28/10).

Installed Mapfish print under ~/Desktop/mapfish/trunk

I tried the mapfish servlet to explore it as a mechanism to print contents from the DSS interface.

Installed under ~/Desktop/mapfish/trunk

```
./gradlew build
# it took ~ 7 minutes
cp build/libs/print-servlet-1.2-SNAPSHOT.war ~/Software/apache-tomcat-6.0.29/webapps/print-servlet.war
```

then open: <http://localhost:8080/print-servlet/>

The basic test runs OK, it generates the [attached PDF](#).

But I haven't been able to print the Gulper layer:

Trying with something like:

```
{
  layout: 'A4 portrait',
  title: 'A simple example',
  srs: 'EPSG:900913',
  units: 'dd',
  outputFilename: 'mapfish-print',
  outputFormat: 'pdf',
  map: '/home/student/Desktop/mbari/mapfiles/stoqs.map',
  time: '2010-08-29/2010-09-29',

  layers: [
    {
      type: 'WMS',
      format: 'image/png',
      layers: ['Gulper'],
      baseURL: 'http://stoqs.mbari.org/cgi-bin/mapserv?map=/home/student/Desktop/mbari/mapfiles/stoqs.map'
    }
  ],
  pages: [
    {
      center: [6, 45.5],
      scale: 4000000,
      dpi: 190,
      mapTitle: "First map",
      comment: "bla comment",
      data: [
        {id:1, name: 'blah', icon: 'icon_pan'},
        {id:2, name: 'blip', icon: 'icon_zoomin'}
      ]
    }
  ]
}
```

I note that the request is done in the STOS server:

```
134.89.8.177 - - [28/Dec/2010:16:35:26 -0800] "GET /cgi-bin
/mapserv?BBOX=3.2088938%2C42.436127%2C8.791106%2C48.563873&HEIGHT=1275&WIDTH=1161&VERSION=1.1.1&
SRS=EPSG%3A900913&format_options=dpi%3A190&LAYERS=Gulper&REQUEST=GetMap&STYLES=&
```

```
map=%2Fhome%2Fstudent%2FDesktop%2Fmbari%2Fmapfiles%2Fstoqs.map&FORMAT=image%2Fpng&SERVICE=WMS
HTTP/1.1" 200
462 "http://localhost:8080/print-servlet/" "Jakarta Commons-HttpClient/3.1"
```

but the generated PDF does not show any map (just the map title and the comment).

Note that I'm including the "map" parameter in the baseURL; don't know yet how to properly pass parameters to the request. Surely, the extend and probably the tiling (single tile, I guess), would be necessary....

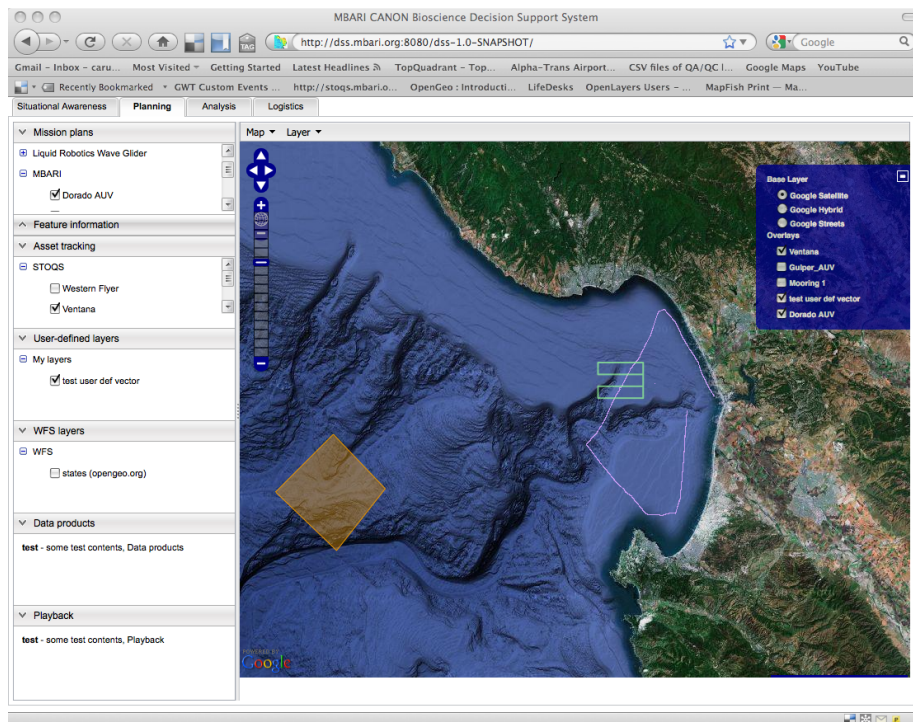
DSS Front-end development log

This page last changed on Dec 30, 2013 by [kgomes](#).

This page summarizes noteworthy updates mainly in terms of the interface. A ChangeLog with more technical details is maintained along with the code at <http://code.google.com/p/mbari-dss/source/browse/trunk/ChangeLog.txt>

2011-01-06

- Deployment test on sand.mbari.org (== dss.mbari.org) : <http://dss.mbari.org:8080/dss-1.0-SNAPSHOT/>

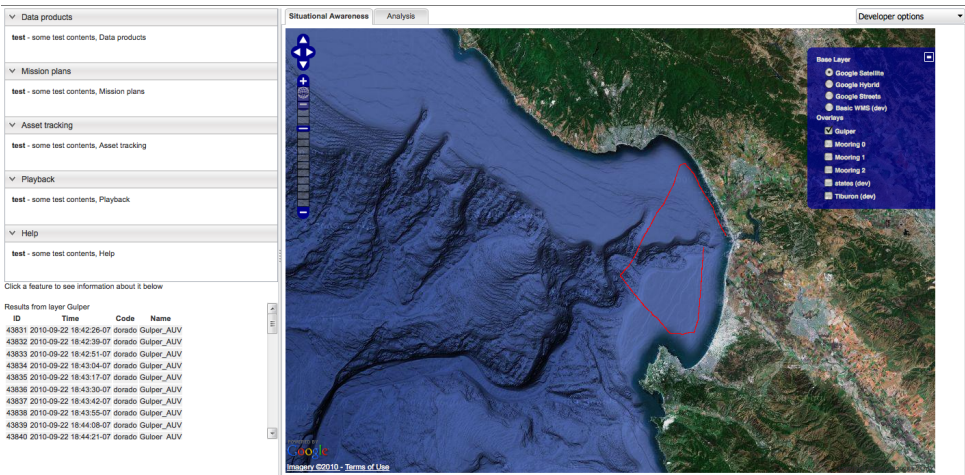


- Note:
 - The STOQS server used in the above test is the one on the VM I had installed on a linux box. I associated the corresponding IP address to stoqs.mbari.org in sand's /etc/hosts file (btw: feel free to remove this entry at any time or let me know if this causes any inconvenience while an official stoqs web server is in place). This linux box is for general experimentation and may go down at any time.
 - Note that URL requests initiated from the server side (Eg., WMS GetCapabilities, GetFeatureInfo) via the OpenLayers proxy are failing in this deployment. It is a timeout error. I guess this is because of the /etc/hosts "trick" (in other words, the stoqs.mbari.org name does not get properly resolved to the code running in the tomcat container. This problem has in fact happened in my own environment which I've solved by re-starting tomcat. In any case, this IP mapping trick is just temporary.
- WmsCatalog: now using a WMS GetCapabilities request to populate the list of STOQS layers. If this fails (which is the case in the above test), resorts to hard-coded list. GeoTools included in the project to support this operation.
- GeoTools is certainly one more key library to consider using for further development in this project.

2011-01-03

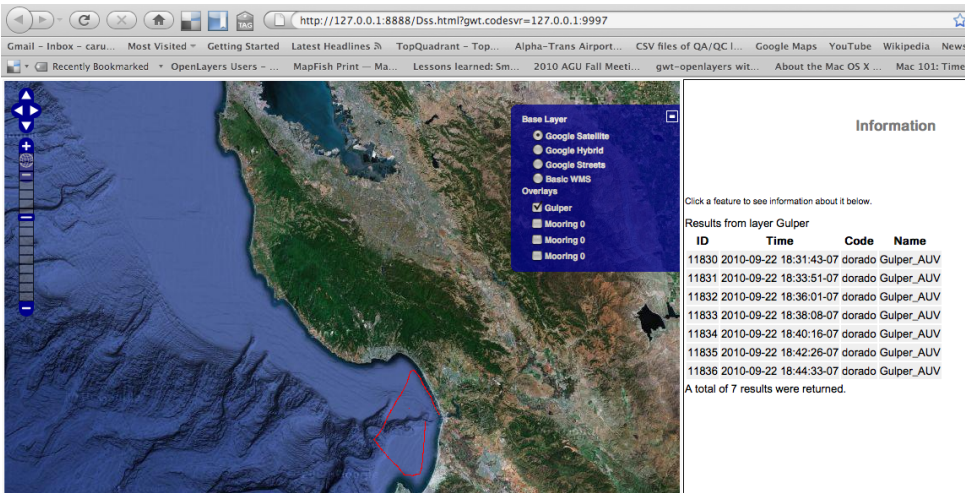
Create new vector layer:

2010-12-28



2010-12-14

General Maven/GWT/GWT-OL set-up and test with a program that emulates the JS prototype provided by Chander. In this case, the program runs from a different machine (my laptop) and assumes that the STOQS server is at stoqs.mbari.org, which I have mapped to the IP address of the STOQS VM in my /etc/hosts. (Note that Chander's program is to be run on the same machine where STOQS is located.)



2010-12-12

Tags created at the SVN repos with base code provided by JD.

Importing the project in Eclipse

This page last changed on Dec 30, 2013 by [kgomes](#).

The project is already enabled for Eclipse so you will only need to import it.

NOTE: It is assumed that your Eclipse have the SVN and Maven plugins. The GWT plugin for Eclipse is NOT required (in fact, I don't have it the Eclipse version I'm using for DSS development). But you will be able to run the application from within Eclipse (including the debug mode) by using the included *.launch configuration files.

To import the project directly from the SVN repository:

- Open the "SVN Perspective" in Eclipse (you will need the SVN plugin enabled of course)
- If not already, add the SVN repository: <https://mbari-dss.googlecode.com/svn>
- Expand <https://mbari-dss.googlecode.com/svn>, and select "trunk" (or other tag/branch as desired)
- Right-click the element and select Check out ...
- Click Finish
- Done.

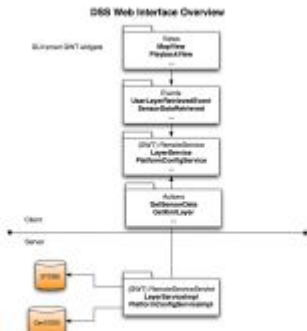
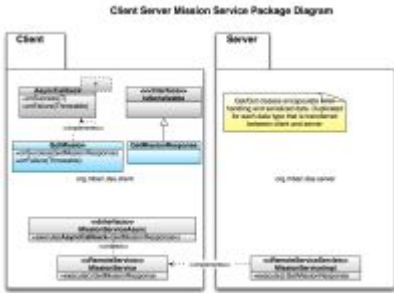
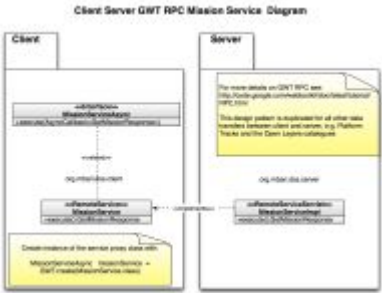
If you already have the code in your computer (see [this page](#)):

- Select File -> Import ...
- Select "Existing project into workspace" and click Next
- Select the root directory where the code is located
- Click Finish
- Done.

NOTE: The *.launch files assume the name "mbari-dss" for the project. So, if you imported the project with a different name, then adjust these files accordingly.

UML Design Drawings for ODSS Web Application Design

These drawings are very much a work-in-progress, and do not represent all of the classes or designs in the current code. Notes are added in yellow, concrete classes in blue, template and abstract classes in gray, and databases in orange. Click on the thumbnails to enlarge.

ODSS Top-Level Data Flow	ODSS Web App Top Level Package Overview
	
Client/Server Mission Class RPC Diagram (example of GWT RPC design pattern used in ODSS Web App)	Client/Server Mission Class Diagram (example of Get/Got classes encapsulate error handling and serialized data used in ODSS Web App)
	
Client Model Class Diagram	Client(entry point) Class Diagram

ODSS Web Application Development Quick Start

This page last changed on Dec 30, 2013 by [kgomes](#).

ODSS Web Application Training Material

This page is oriented towards step by step instructions installing the development environment for GWT based web applications for use in the ODSS project.



Work in Progress

If you follow the instructions and find information missing or incorrect, please edit or embellish - this is meant for newbies and the original draft is by an individual who is new to Java, Eclipse, GWT, GWT-OpenLayers, smartGWT, GWTdesigner, web 2/4 applications. Also note that this assumes the STOQS/mapserver combination is already available for use by the GWT app either on your local machine or in a remote location. If you are need to install that, please see the instructions [here](#)

Resources

1. [GWT Main Site](#)
2. [GWT Designer](#)

Steps to setup your environment

1. **Install Java:** At the time of this writing the version of Java being used was 1.6.0_22. Download the full SDK from [here](#) and follow the instructions to install on your platform.
 - If you are on a Mac, OSX 10.5.8 already has 1.6.0_22 installed. Set that version to be active with the utility /Applications/Utilities/Java Preferences.app
2. **Install Apache Ant:** Follow the instructions at <http://ant.apache.org/> to install ant and make sure the 'ant' executable is on the command line path.
 - If you are on a Mac, OSX 10.5.8 already has ant 1.8.1 installed.
3. **Install Maven:** Consult the directions at <http://maven.apache.org/>.
 - If you are on a Mac, OSX 10.5.8 already has maven 2.2.1 installed.
4. **Install GWT SDK:**
 - a. Download the SDK from <http://code.google.com/webtoolkit/download.html>
 - b. Follow the instructions at <http://code.google.com/webtoolkit/gettingstarted.html> to get yourself familiar with working with just the SDK. Note that during this process, I was prompted to install the Google Web Developer Toolkit Developer Plugin for Safari (on a Mac). I went ahead as it is a nice help.



Multiple SDKs?

Yes, when you follow these instructions you will end up with a couple of locations of the GWT SDK. This step installs it in its most basic form. With this install you don't need an IDE, just a text editor. It is common to use this install with things like continuous integration and command line builds. When you install GWT plugin for Eclipse, it will install it's own SDK. That is fine, sometimes it is handy to have both as long as they are the same version.

5. **Install an IDE:** I've selected Eclipse since it looks like GWT has more documentation about using Eclipse than other options such as NetBeans, etc. (If you are using NetBeans, take a look at the [gwt4nb project](#). I have not used it, but the NetBeans community seems to speak highly of it). These instructions assume you are using Eclipse.
 - a. Open a web browser and go to <http://www.eclipse.org/downloads>
 - b. Install the *Eclipse IDE for Java EE Developers* (200+MB) on your system (follow the instructions provided by the eclipse team for installation). I have done the install on Windows XP 32bit and Windows 7 64bit and it amounted to unzipping into a location, creating a workspace to prevent collision with other eclipse workspaces, and then double click the eclipse.exe at the top of the eclipse pile.
6. **Install GWT SDK and Eclipse Plugin:**
 - a. Start Eclipse (double click the eclipse.exe in windows explorer)
 - b. After Eclipse starts, **Help > Install New Software...**

- c. In the dialog that appears, you will want to create an update location for the GWT Plugin for Eclipse by clicking on **Add...**
 - d. Name the update location something like **GWT Plugin for Eclipse** and enter the update site URL into the location field:
<http://dl.google.com/eclipse/plugin/3.6>
 - e. Click on OK and then wait for the list to show two entries (Plugin and SDKs).
 - f. Click the **Select All** button to make sure you get everything and then click through (*Next->) the next couple of panels, accepting the license agreement and all defaults. The download and install should then happen and then Eclipse will most likely prompt you for a restart. Go ahead and do that.
7. **Install GWT Designer:** GWT Designer is a powerful and easy-to-use bi-directional Java GUI designer that lets you create user interfaces in minutes with tools for intelligent layout assist, drag-and-drop, and automatic code generation.
- a. In Eclipse, go to **Help -> Install New Software**
 - b. In the dialog, click on **Add..** to add a new update location.
 - c. In the name box, enter something useful like *GWT Designer* and in the location enter they URL <http://dl.google.com/eclipse/inst/d2gwt/latest/3.6> and then click OK.
 - d. A list of three things (GWT Designer, GWT Designer Editor, Infrastructure) should appear and then click on **Select All** to make sure you get everything.
 - e. Click through (**Next->**) the dialogs, accept license and defaults.
 - f. The plugins should be downloaded and installed and it will likely ask you to restart eclipse. Go right ahead.
8. **Install SVN client:** If you don't have one already, you will need a SVN client on your machine (command line client). The best place to go to install is <http://subversion.tigris.org/>. **NOTE** For Mac, it is probably best to install the [CollabNet](#) version. Since you have to register to get it, I have attached the Snow Leopard version to this page and you can download it [here](#). If you install the Subclipse plugin, it will complain if you use the standard subversion install. If you don't want to use a plugin for managing the interactions with SVN, you can use a separate client application like [SmartSVN](#).
9. (Optional) **Install Subversion Plugin:** You can install a couple of different ones. Mike detailed out installation instructions for Subverive and you can find those [here](#). Here are the instructions for Subclipse:
- a. Go to **Help->Install New Software**
 - b. Click on **Add...** button to add a new update location
 - c. In the name field enter something useful like *Subclipse*
 - d. In the location field enter http://subclipse.tigris.org/update_1.6.x and click on OK
 - e. Once the list of packages to install shows up, click on **Select All** button.
 - f. Click through (**Next->**) and accept the license agreement and defaults.
 - g. Once the plugin is done installing it may ask you to restart eclipse, go ahead and do so.
10. (Optional) **Install EclEmma:** EclEmma is a Java code coverage tool
- a. Go to **Help->Install New Software.**
 - b. Click on the **Add...** button.
 - c. In the name box, put in something useful like *EclEmma* and in the Location box, enter <http://update.eclEmma.org/>
 - d. Click on OK, and the list of things to install will show up (EclEmma).
 - e. Select that box, and then click through and accept licenses and defaults.
 - f. After the plugin is installed, it will ask you to restart, go ahead and do that.
11. **Install the Maven Plugin:**
- a. Go to **Help->Install New Software.**
 - b. Click on the **Add...** button.
 - c. In the name box, put in something useful like *M2Eclipse* and in the Location box, enter <http://m2eclipse.sonatype.org/sites/m2e>
 - d. Click on OK, and the list of things to install will show up.
 - e. Select that box, and then click through and accept licenses and defaults.
 - f. After the plugin is installed, it will ask you to restart, go ahead and do that.

To add SmartGWT to your project



SmartGWT in the list of Maven dependencies

Note that you don't need to do this in the ODSS project as it is included in the Maven list of dependencies.

1. After creating a GWT project, you can add the SmartGWT components to it.

2. Download the 2.4 zip file [here](#)
3. Unpack the zip somewhere convenient.
4. Right click on your project and select 'Build Path > Configure Build Path...'
5. Click on the 'Libraries' tab
6. Click on 'Add external jars...'
7. Navigate to the location where you unpacked the zip file and select the smartgwt.jar and the smartgwt-skins.jar and then click on 'Open'.
8. Then click on OK.

Setup server environment (for local deployment and testing)

1. Download Apache Tomcat from [here](#) (this is version 6.0).
2. For these instructions (on a Mac) I downloaded the tar.gz file and then simply unzipped/untarred it.
3. You can start the Tomcat server by opening a command line window, navigating to the apache-tomcat-6.0.XX/bin folder that was created when you unpacked the download and run **startup.(bat|sh)**. This will start the tomcat server running.
4. If the server is running OK, you should be able to go to <http://localhost:8080/> and see the default Tomcat page.
5. To shut the server down, simply run **shutdown.(bat|sh)** in the same location you started it.

Browser configuration for Development

1. **Install Firefox:** Firefox has some really nice plugins
 - a. Install Firebug (more to come here)
 - b. Install Firecookie. (more to come here)
 - c. Install Selenium. (more to come here)
2. **Install Chrome:** To get the dev version of Google Chrome, go to the Dev channel: <http://www.google.com/chrome/eula.html?extra=devchannel>
 - a. **Install Speed Tracer in Chrome:** Follow the instructions at <http://code.google.com/webtoolkit/speedtracer/get-started.html> to install and get familiar with it.

Get your feet wet

1. An easy 'getting started' step, is to create a GUI using **GWT Designer**.
 - a. GWT Designer installs a tutorial in the help section. Go to **Help -> Help Contents**, open the plus next to **Window Builder Pro User Guide** then open **Tutorials** and choose the GWT Login Manager. Just follow the steps detailed here.



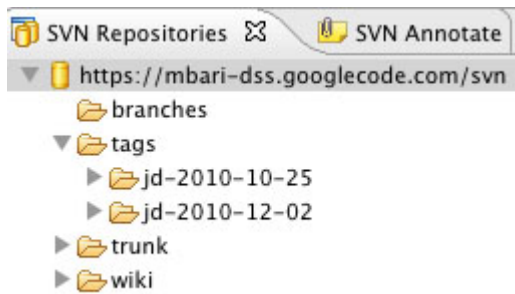
Had problems

There are some subtle differences in the tutorial that probably came in when Google bought Instantiations, but it does work.

- b. As an added step, in the **Build And Deploy** step of the tutorial, you can choose the **webapps** directory under your Tomcat installation in the *Server path to copy WAR:* box and it will deploy the .war file to your Tomcat installation. If you then startup Tomcat and browse to <http://localhost:8080/LoginManager> you should see the same thing that you did in the tutorial.

Check out JD's original tagged code and run (these instructions are using Subclipse in Eclipse)

1. In Eclipse, go to **Window->Open Perspective->Other...**
2. Choose **SVN Repository Exploring**
3. In the left pane, select the **SVN Repositories** tab.
4. Click on the yellow cylinder labeled SVN that has a small plus to create a new SVN server location
5. In the URL box, type in <https://mbari-dss.googlecode.com/svn> and click OK.
6. You should see a listing something like:



7. Right-click on the *jd-2010-12-02* folder and select **Checkout...**. You can accept the defaults for the most part (unless you want to change the location where the project was checked out on your local disk). All the files will then be copied down to your local machine (this can take a while!).
8. Open the Java perspective and you should now see the MBARI_DSS_v0 project in the Package Explorer.



Broken JRE dependency

At least on the Mac, the project had errors because the expected JRE was not located. This makes sense because it is pretty unlikely the JRE will be in the same spot for developer to developer. No big deal, right click on the project and choose **Build Path...->Configure Build Path**. Click on the **Libraries** tab and you will probably see a red X next to the JRE. Select the JRE and click on **Remove**. Then click on **Add Library**, select **JRE System Library**, and then click Next->. More than likely you can choose the default, but make sure it is 1.6, then click Finish. Click OK and the project should be right as rain.

9. Right-click on the MBARI_DSS_v0 project and select **Run As->Web Application**. This will start up the application in an embedded server environment.
10. Open http://localhost:8888/org.mbari.dss.MBARI_DSS_v0/index.html in your browser and you should see the application running.
11. To stop the application, go back to Eclipse and click on the red stop box in the Console window.

Check out the trunk and run

1. Go back to **SVN Repository Exploring** perspective.
2. In the **SVN Repositories** tab, right click on the **trunk** folder and select **Checkout...**. Again, the defaults are fine unless you want to change the local location.
3. When done, you can switch to the **Java** perspective and see the project under the previous project. Several things need to be done before the project will right itself.
 - a. If the Maven plugin in Eclipse does not resolve dependencies for you, you can:
 - i. Go to a command line and cd to the location of the project that you checked out (should have the pom.xml file in it).
 - ii. Run **mvn clean compile**. That should download all the dependent jars that are needed for the project.
4. You should then be able to go to a command line and type **mvn clean compile package** and it will churn for a bit and generate a dss-1.0-SNAPSHOT.war file in the target directory which then can be deployed in your tomcat webapps directory.
5. Browse to <http://localhost:8080/dss-1.0-SNAPSHOT/> and you should see the application.

Build and Setup Instructions

(Setup all of these items prior to beginning tests of the DSS Web Application)

Maven

1. Install the maven plugin for Eclipse (<http://m2eclipse.sonatype.org/installing-m2eclipse.html>)
 2. Select Help > Install New Software. This should display the "Install" dialog.
 3. Paste <http://m2eclipse.sonatype.org/sites/m2e into> the URL, check the boxes and install
-

Google Chrome

1. Go to the following site and install Google Chrome Browser: (<http://www.google.com/chrome>)
-

Firefox and Selenium Plugin

1. Download and install the Firefox browser at: (<http://www.mozilla.com/en-US/firefox/>)
2. Next, from the Firefox browser, download the most recent version of Selenium IDE and install it: (<http://seleniumhq.org/download/>)

The request to install Selenium should open the "Add-ons" page for Firefox. Accept Selenium as an add-on.

Restart Firefox to implement the Selenium Plugin.

3. You should now be able to access the Selenium Test Application on Firefox from the main menu:

Tools > Selenium IDE

Subversion (SVN)

1. Download and install the most recent version of SmartSVN for your system: <http://www.syntevo.com/smartsvn/download.html>
 2. [Set up the MBARI DSS repository using SmartSVN](#)
 3. [Checkout the repository trunk to a local directory on your computer](#)
 4. From a terminal window on your computer, navigate to the location of the checked out DSS code (e.g., **cd /username/dss**).
- Perform an update with the line command: **svn update**
-

Launch the GWT Development Mode

1. Navigate to the location of the checked out DSS code on your local computer.
 2. Enter the following command to build the GWT development: **mvn gwt:run**
 3. Allow time for this to build. The first build can take a while.
 4. Upon completion of the build, a new window should pop up entitled **GWT Development Mode**
 5. Click on "Launch Default Browser" and install any plugins that may be required by the system. The result should be a web page of the MBARI DSS Web Application.
-

DSS SmartSVN setup

This page last changed on Feb 14, 2011 by [salamy](#).

Setup Repository Settings

From the Main Menu: *Repository > Manage Profiles... > Add*

Location Page:

Protocol: **HTTPS**

Server Name: **mbari-dss.googlecode.com**

Repository Path: **/svn**

Server Port: **Default**

Click "Continue"

Details Page:

Choose **User Name and Password**

Enter your **Gmail** username and password

Choose "Save password"

Leave "Use client authorization" **blank**

Choose "Verify connection when pressing 'Next'"

Click "Next".

Supply a profile name for the Repository (e.g., DSS-Repo)

Click "Finish"

Checkout DSS Repository using SmartSVN Client

(This will install the project code onto your local computer.)

From the Main Menu: *Project > Checkout...*

Choose the DSS-Repo (that you just setup above) and click "Continue"

Location Page:

Choose "trunk" and click "Continue"

Local Directory Page:

Provide a Local Directory (e.g., username/dss)

Click "Into Subdirectory:" **root**

Click "Check out Recursively" and then Click "Continue"

Project Page:

"Check out a working copy"

> "Add a new project:" **dss**

Click "Continue"

Verify settings are correct and click "Finish"

ODSS Web Application Network Connectivity Testing

This page last changed on Jun 06, 2011 by [salamy](#).

This page is for developers to assess the functionality of the Network Connectivity and Page Loading timing for the ODSS Web Application.

FireBug is a popular Web Development Tool that integrates with the Mozilla FireFox Browser to allow you to edit, debug, and monitor Network Activity, CSS, HTML and JavaScript live in any Web page. Currently, it is an Add-on to the FireFox Browser and includes Net Connectivity and Activity monitoring. A FireBug "Lite" Version is also offered with the Google Chrome Browser but it currently does NOT allow for Network Monitoring.

1). FireBug Add-on to FireFox Browser

To integrate FireBug with your FireFox Browser, first install the Mozilla FireFox browser (Version 3.6 to 5.0). Once FireFox is installed, on the Main Menu click "Tools" --> "Add-ons" and search for the most recent version of the FireBug extension (currently 1.7.2) and Add it to FireFox and restart the browser.

Other options are to go to: <https://addons.mozilla.org/en-US/firefox/addon/firebug/> OR <http://getfirebug.com/> where you may also add it to FireFox.

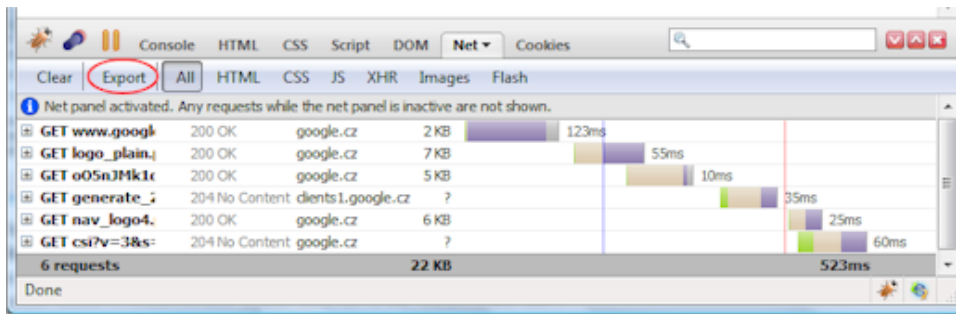


The Network Monitoring capabilities of FireBug are very useful when trying to figure out why your web pages are taking a long time to load. Under FireBug's Network Monitoring Tab (Net), a user can watch the web page timeline unfold which shows when the file started and stopped loading relative to all of the other files on the page. The Net tab also allows a user to break down the list of files by type is a particular type of file is concerning. It also allows one to examine HTTP headers and XMLHttpRequest Monitoring of a web page. To learn more about the Net Tab on FireBug, go to: <http://getfirebug.com/network>

2). NetExport Add-on to FireBug

NetExport is a FireBug extension that allows exporting all collected and computed data from the FireBug Net panel. The structure of the created file uses HTTP Archive (HAR) format (based on JSON). The NetExport extension appends a new **Export button** into Firebug's Net panel toolbar (see image below).

NOTE: NetExport currently only works with FireBug Versions 1.5 and higher.

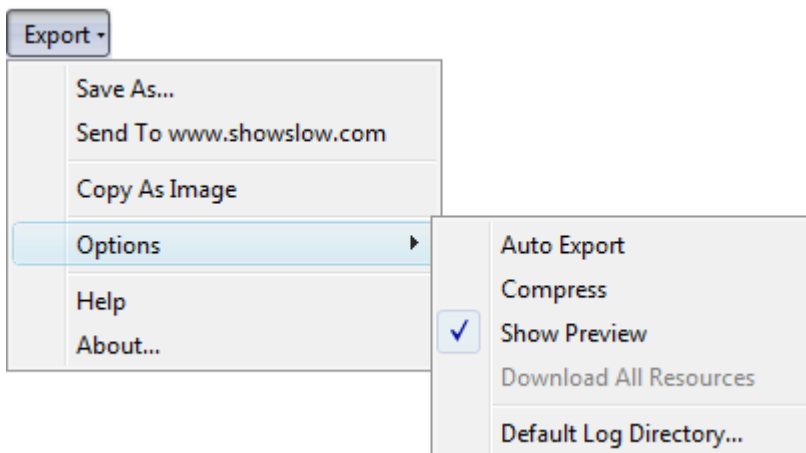


To download the most current NetExport Extension, go to the following web site using the Mozilla FireFox Browser: <http://getfirebug.com/releases/netexport/> (current version is netExport-0.8b12.xpi). Allow installation of NetExport to FireFox and then restart the browser.

A more detailed description of NetExport can be found at the following website: <http://www.softwareishard.com/blog/netexport/>

3). Exporting collected Networking data from the FireBug Net Panel.

The NetExport Export Button enables a user several options/actions.



- **Save As** - Export current data from the Net panel. "Save As" is used commonly and its usage will be discussed in the next section.
- **Send To** - Send exported HAR beacon to an online server (showslow.com is used by default). See [extensions.firebug.netexport.beaconServerURL](#)
- **Copy As Image** - Handy if you need a screen-shot of your waterfall graph.
- **Auto Export** - Automatically export HAR when a page is loaded. Useful for integration with automated systems.
- **Compress** - Compress (zip) exported HAR files.
- **Show Preview** - Show a preview of exported data. [HAR Viewer](#) is used by default. See [extensions.firebug.netexport.viewerURL](#) preference.
- **Download All Resources** - Automatically download all resources on the page as individual files. You need [DownThemAll](#) installed.
- **Default Log Directory** - Allows to pick target directory for automatically exported HAR files. See [extensions.firebug.netexport.defaultLogDir](#) preference.

4). Using "Save As" Option on Net Panel to Print-Out Web Page Network Connectivity Statistics

Once your web page has loaded in FireFox (Eg., ODSS Staging Site: <http://odss-staging.shore.mbari.org:8080/dss-0.4.0-SNAPSHOT/>), the FireBug Net Panel should be fully populated with network loading and monitoring activity for the page. Click on "Export" --> "Save As" and save the .HAR file to a known, easily accessed location on your local system.

Next, open up the [HAR Viewer online](#) with the FireFox Browser. Drag and drop the file into the HAR Viewer textBox and the page should translate the file into a version that is printable. Make sure to click and expand the "Page Timeline" and "Statistics" information tables at the top of the Report before printing.

An example of a translated .HAR file with Statistics for the ODSS web page looks like this: [ODSS Net Connectivity Statistics Page](#) (.PDF File)

Each Net Item can expand for further detailed information of the connectivity process.

Running from command line and deploying

This page last changed on Dec 30, 2013 by [kgomes](#).

Pre-requisites

(In parenthesis what Carlos' using.)

- SVN (version 1.6.1)
- Java 1.5+ (1.5.0_16)
- Maven (3.0.1)

Running from command line

- Get the code if you don't have it yet. For this exercise, let's use read-only access to the repository, but you can as well get the code as a developer provided you have the privilege (see <http://code.google.com/p/mbari-dss/source/checkout>):

```
$ svn checkout http://mbari-dss.googlecode.com/svn/trunk/ mbari-dss-read-only
$ cd mbari-dss-read-only/
$ ls -p
ChangeLog.txt          DssTest-dev.launch    README.txt            doc/
src/
Dss.launch             DssTest-prod.launch   build.xml             pom.xml
```

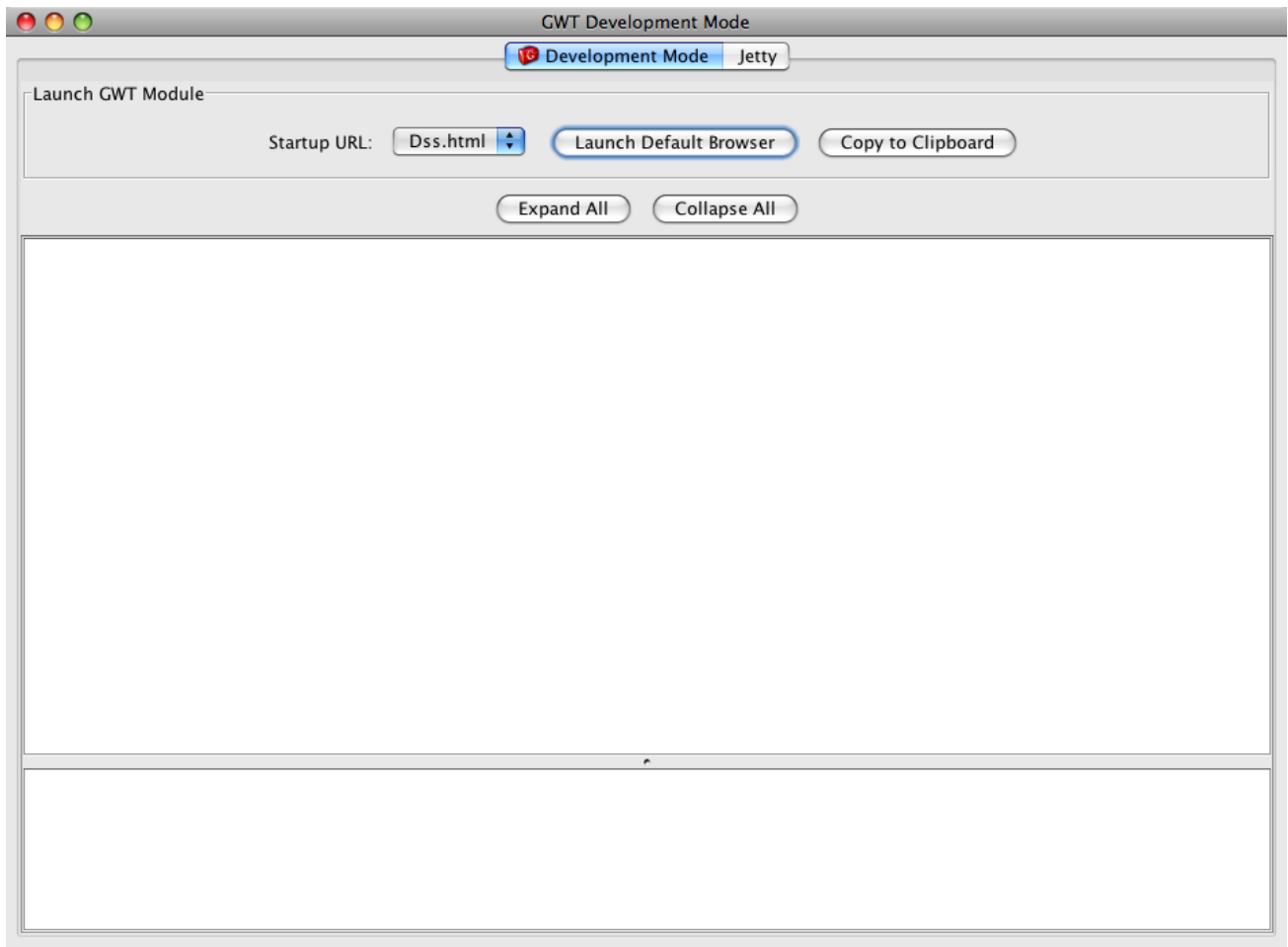
- Update the code. If you already have an image of the code:

```
$ cd mbari-dss-read-only/
$ svn update
```

- Run the application in development mode:

```
$ mvn gwt:run
```

The following window will appear:



Click "Launch default browser" to launch the DSS application in your browser. The URL will be something like: <http://127.0.0.1:8888/Dss.html?gwt.codesvr=127.0.0.1:9997>

Deploying

- Build the application WAR:

```
$ cd mbari-dss-read-only/
$ mvn clean compile package
[INFO] Scanning for projects...
...
-----
T E S T S
-----
Running org.mbari.dss.client.DssTest
...
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 97.959 sec
Results :
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
...
[INFO] Compiling module org.mbari.dss.Dss
...
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 3:27.234s
...
```

The generated WAR is target/dss-1.0-SNAPSHOT.war

- Deploy the generated WAR under Tomcat's webapps/ directory. For example, in my environment:

```
$ cp target/dss-1.0-SNAPSHOT.war ~/Software/apache-tomcat-6.0.29/webapps/
```

Then, I can open <http://localhost:8080/dss-1.0-SNAPSHOT/>

Setting up the VM

This page last changed on Dec 30, 2013 by [kgomes](#).

What follows are instructions applied on an Ubuntu machine to play the VM contained in \\tempbox\thom\mbari_vm_2010Nov29.zip

VMware software

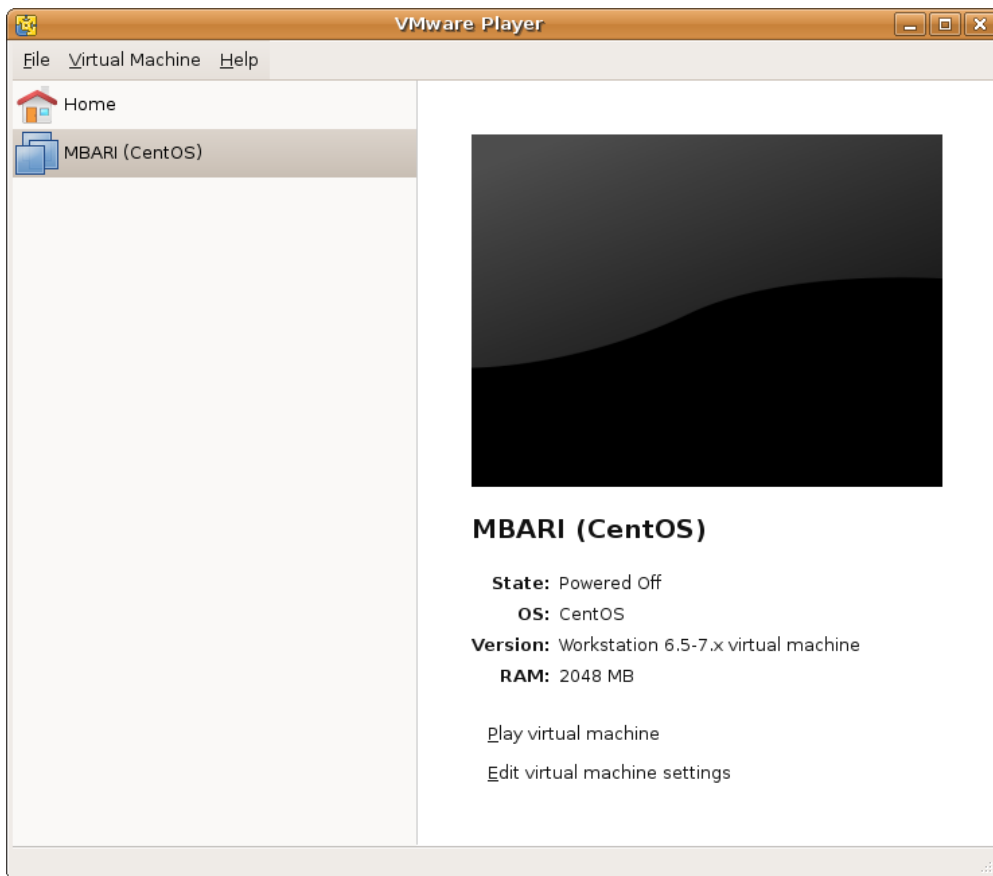
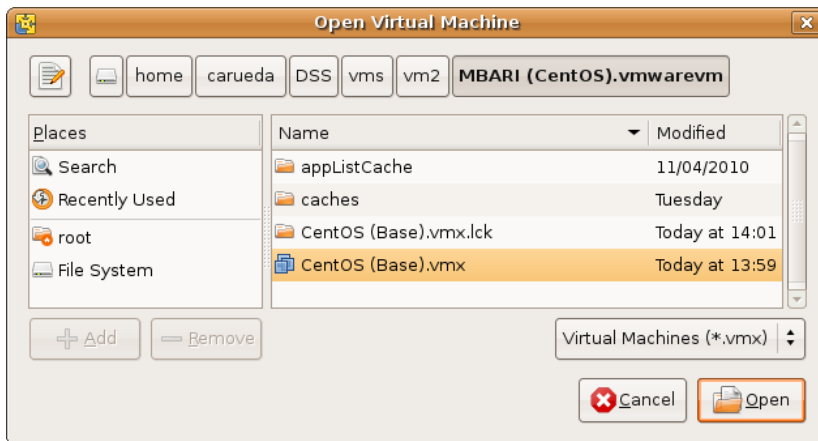
You will need VMplayer (Linux, Windows) or VMware Fusion (Mac) to run the virtual machine. I downloaded VMware Player from http://downloads.vmware.com/d/info/desktop_downloads/vmware_player/3_0

Starting the VM

Expand the zip in a location of your choice and run:

```
$ sudo vmplayer
```

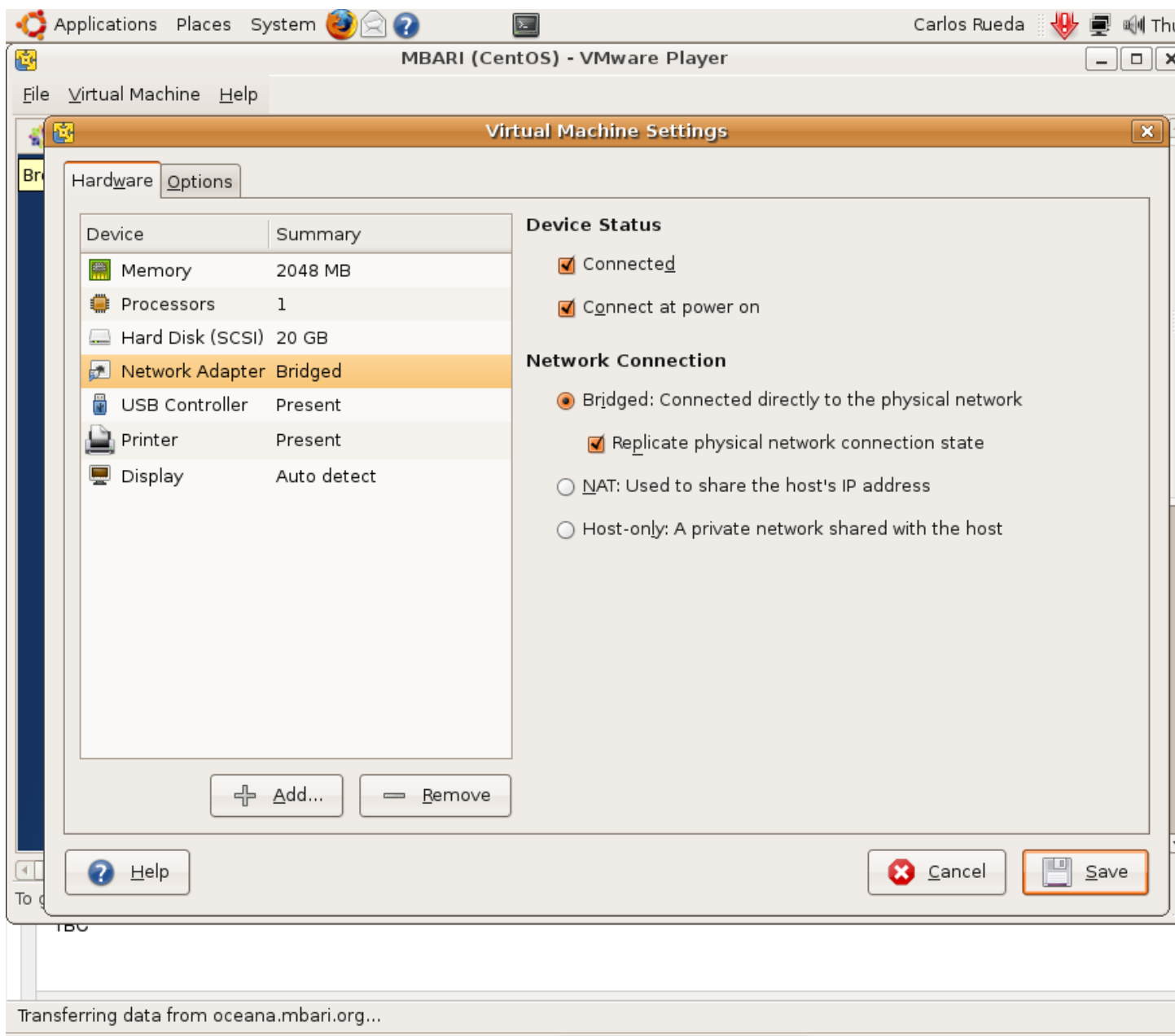
Open and play the virtual machine:



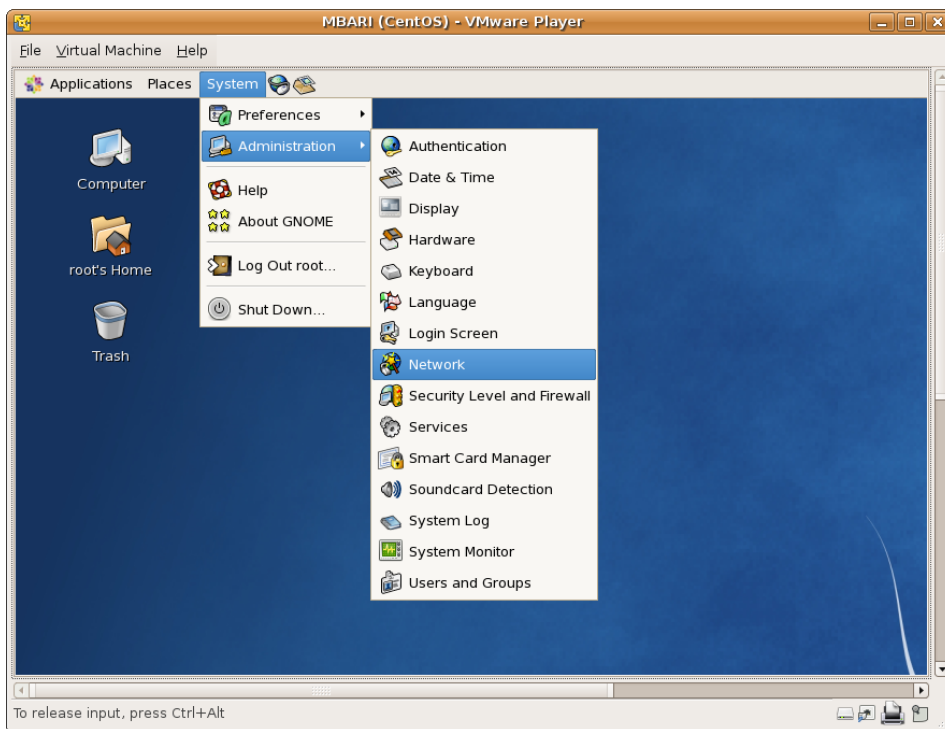
Log in as root (password: root).

Making your VM externally visible

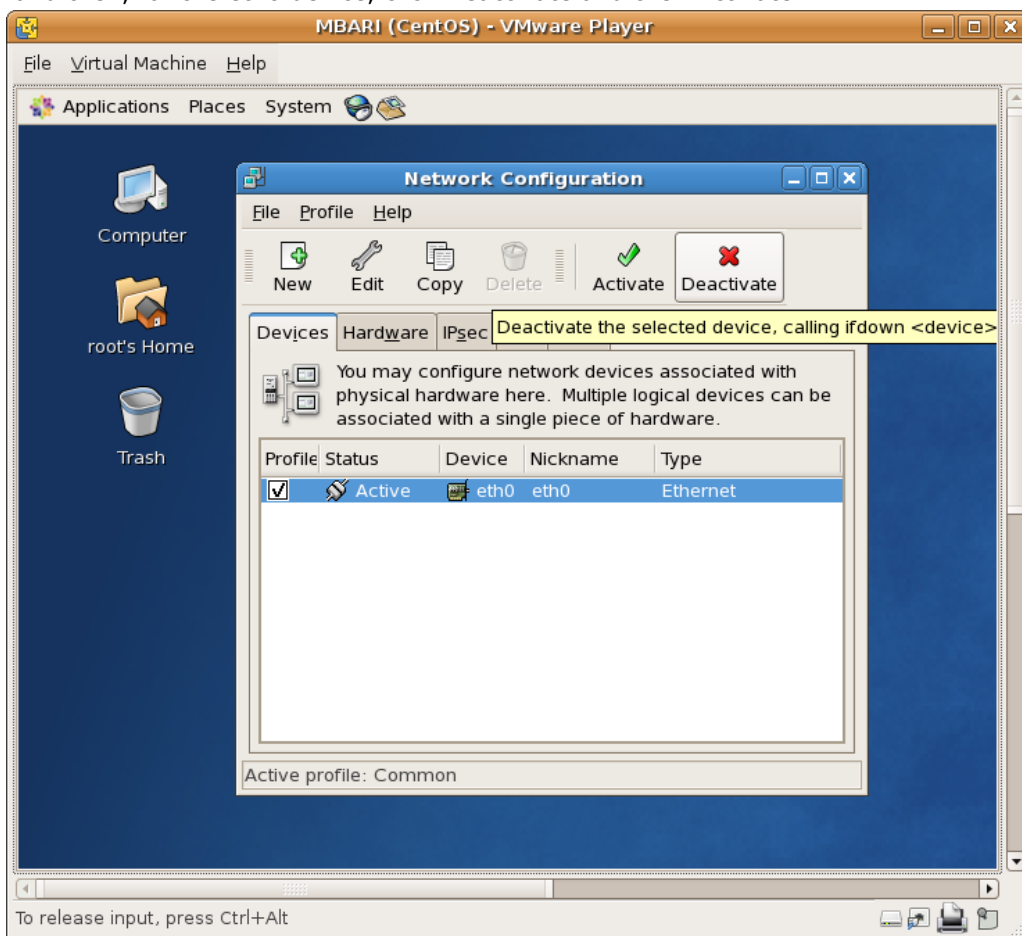
To make the machine externally visible, open the Virtual Machine menu, select the Network Adapter section and check the Bridged option for the Network connection:



For this change to take effect, open the Network option in the System admin:



and then, for the eth0 device, click Deactivate and then Activate.



Now, we need the assigned IP address. In a command shell you can run ifconfig:

```
# /sbin/ifconfig
eth0    Link encap:Ethernet  HWaddr 00:0C:29:B8:F7:2A
        inet addr:134.89.12.249  Bcast:134.89.13.255  Mask:255.255.254.0
        inet6 addr: fe80::20c:29ff:feb8:f72a/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:5237 errors:0 dropped:0 overruns:0 frame:0
        TX packets:271 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:600138 (586.0 KiB)  TX bytes:23464 (22.9 KiB)
        Interrupt:67 Base address:0x2000
```

You should now be able to access this machine externally, for example for ssh access:

ssh student@134.89.12.249

or open <http://134.89.12.249/> in a browser.

Water Management Design

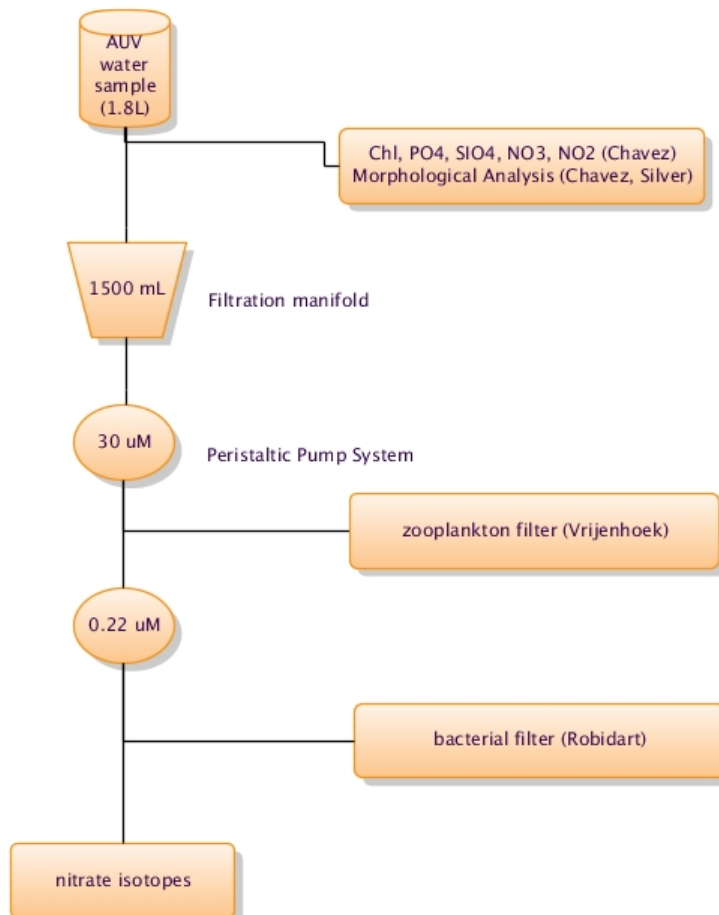
This page last changed on Dec 30, 2013 by [kgomes](#).

Here are a couple of the water management diagrams that were used during the initial design phase of a water management workflow

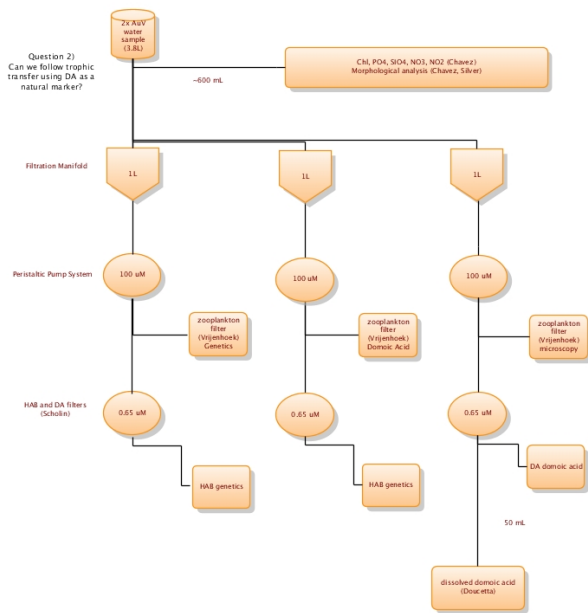
2011 Spring CANON AUV Dorado water sampling plan

Question 1)

How does diversity vary with environment over space and time?



2011 Fall CANON AUV Dorado water sampling plan



Distributed Autonomy and Decision Support System

This page last changed on Dec 30, 2013 by [kgomes](#).

Distributed Autonomy and Decision Support System

Jan, Feb, Mar - problem definition

Apr - napkin sketch of DSS, engaged Dave Fierstein to illustrate napkin sketch

19 Apr 2010 (week) - one on one reviews with Bob V, Julio, Francisco, Chris. Wanted to review with Jim, but juggling too many priorities

27 Apr 2010 - Reviewed napkin sketches in broader CANON meeting (see [attached slides](#))

28 Apr 2010 - List of collated comments from science and CANON community (see [document](#)). Note this is a live document and will likely be an important source of DSS requirements.

Next steps

- one on one review with Jim Bellingham
- enhance napkin sketch to fill in missing pieces ('live control' via distributed autonomy, science case study (HAB) illustration to set the context of DSS (phase 2 with Dave Fierstein) (phase 2 by April 30, phase 3 by May 15)
- weekly (Wed 2:00pm 28 Apr - 19 May) virtual pilot experiments rehearsing Oct. 2010 BioSpace as a means to get DSS science user requirements for BioSpace and to help plan
- CANON Review 26 May or 9 Jun (26 May has conflict with sea days)
-
- PDR last week of June - conflict with DOEST, need to look at pulling this in a week.

Distributed Deployment - September 2012 Experiment

This page last changed on Dec 30, 2013 by [kgomes](#).

This page describes the way that the ODSS was deployed in a distributed fashion for the September 2012 experiment.

Platforms

1. Western Flyer
2. Zephyr
3. Fulmar
4. Dorado
5. LR AUVs (tethys and daphne)
6. Stella Drifters
7. Gliders (Spray/Webb)
8. ESP Drifter

Data

1. Western Flyer underway data
2. Western Flyer positions
3. Western Flyer CTD profile data
4. Stella Positions
5. Water samples from the Flyer
6. AIS Data
7. ESP core data
8. ESP drifter data
9. Model output
10. John's SST data
11. HF Radar
12. Observation logs

Tasks

- Talk to Dan C. about Flyer capabilities:
 - Ask if connectivity is continuous
 - Can we rsync files over the link?
 - Can we run a test with just the VSat link at some point?
- Design observation log synching and remote clients being able to choose which server
- Set up data sync
 - Do we preload tile caches?
 - If so we need to define the bounding box and the zoom levels for the caching
 - Do we preload tile caches on shore, then rsync to boat?
 - Setup to run tile cache/rsync in background in off hours on boat
 - Another option is to rsync the data behind THREDDS and have mapserver create the tile cache dynamically and read the data locally
 - We could install ERDAP?
 - We need list of platforms:
 - For Dorado:
 - the data will be processed at sea
 - It will then have to be moved/copied to the THREDDS server on the boat.
 - Then STOQS loads would have to be run on the THREDDS server.
 - For LRAUV:
 - Currently data is read from shore-based AOSN server

ECOHAB - March 2013

This page last changed on Dec 30, 2013 by [kgomes](#).

This page documents the logistics for the ECOHAB experiment as it pertains to the use of the ODSS during the campaign.

Timeline

March-April

Pl	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5
ESPX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LRAUVs				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
RC/ Dorado							X	X	X				X	X	X														
Waveglider	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Platforms

1. USC Gliders
2. 2x ESPs
3. Rachel Carson with Dorado
4. Waveglider
5. Vessel Yellowfin (slow)
6. Drifters (Stella?)
7. LRAUVs

Standard Data Products

1. [ROMS SIO Glider](#) - This looks to be a product that will not overlay on a map so it is probably something destined for the Data Catalog that will open with a click of a link.
2. JPL's ROMS model
3. Gulper data and water analysis
4. CODAR
5. Phytoplankton chlorophyll concentration proxies from ocean color
 - a. MODIS Aqua Chlorophyll-a <http://oceanwatch.pfeg.noaa.gov/thredds/Satellite/aggregsatMW/chla/catalog.html?dataset=satellite/MW/chla/1day>
 - b. MODIS Aqua Chlorophyll fluorescence line height (FLH) <http://oceanwatch.pfeg.noaa.gov/thredds/Satellite/aggregsatMW/cflh/catalog.html?dataset=satellite/MW/cflh/1day>
6. SST
 - a. MODIS Aqua daytime SST <http://oceanwatch.pfeg.noaa.gov/thredds/Satellite/aggregsatMW/sstd/catalog.html?dataset=satellite/MW/sstd/1day>
 - b. AVHRR daily composite <http://oceanwatch.pfeg.noaa.gov/thredds/Satellite/aggregsatAT/ssta/catalog.html?dataset=satellite/AT/ssta/1day>
 - c. GOES daily composite <http://oceanwatch.pfeg.noaa.gov/thredds/Satellite/aggregsatGA/ssta/catalog.html?dataset=satellite/GA/ssta/1day>

High Priority ODSS Features

1. Sensor data from vehicles overlayed on tracks
2. A path for operator to notify ESP team when ESP should trigger (ESP may be configured to trigger on data from it's ancillary sensors).
3. Get USC Glider data into ODSS (more on what that means to come: Arvind is POC)
4. Get LRAUV data into ODSS (more on what that means to come)
5. Get Yi's ROMS model data into ODSS
6. AIS ship tracks need to be working
7. Shared planning for vehicle operations

8. Some mechanism must be in place to send RC locations as well as Dorado waypoints to the crew on the Carson
9. Integrate Ryan's glider planning service into ODSS.
10. Make sure there are three pathways for AUV data:
 - a. Acoustic model from Dorado->RC->Shore over VSAT/3G (Frederic will write the software for the acoustic link)
 - b. Directly from Dorado->Shore over Iridium
 - c. High Resolution AUV data and processed products (? - maybe over 3G)

Task List

I moved the task list online to Asana (<http://asana.com>) and sent invites to those on the list.

Logical Diagram

Under construction.

External Data Files

This page last changed on Dec 30, 2013 by [kgomes](#).

This page documents some design thoughts on the cataloging and serving of data files that the users want to get into the ODSS.

This is a whiteboard sketch during a discussion on file management



An a little more formal rendition:



Glider Planning Service

This page last changed on Dec 30, 2013 by [kgomes](#).

Requirements from phone conference with Ryan

1. little input to plan path, survey, region
2. repeated traversing
3. inputs:
 - a. region of interest (large polygon)
 - b. input is KML file
 - c. highlight areas of interest in the polygon (as many as they want)
 - d. small polygons in large polygon
 - e. 0-1 weighting on the small polygons
 - f. feed in of ocean currents analysis ()
 - g. path plan
4. outputs:
 - a. waypoints and segments
5. Chris Wahl (Francisco Chavez) is customer

Meeting Notes from 10/23/2012 with Ryan

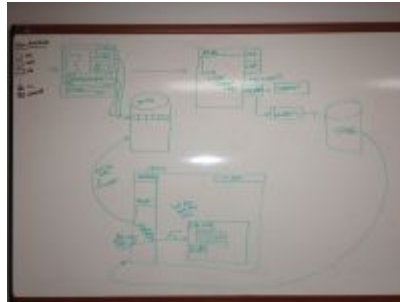
1. Region of interest
2. Subsets of region might be of more interest
3. Science gives regions weights of interests
4. Inputs
 - a. Region of interest
 - b. Number of waypoints
 - c. Areas of Interest
 - d. Weights ($0 < w < 1$)
 - e. "L" - Defines the perpendicular to segments
 - f. Time Constraint

Initial Discussion

This page last changed on Dec 30, 2013 by [kgomes](#).

Here are some pictures of the whiteboard that Danelle and Kevin discussed in the early planning stages for Machine Learning:

ML requirements derived and HAB use cases motivating this are here: [Autonomy ODSS Integration](#)



<https://oceana.mbari.org/confluence/display/AUV/Autonomy+ODSS+Integration>

Mapserver requests data flow

This page last changed on Dec 30, 2013 by [kgomes](#).

I thought it'd be helpful to document the data flow that happens when Mapserver serves up data in response to a request...

The basic WMS access is:

http://stoqspg-dev.shore.mbari.org/stoqs/BloomEx2010_example.html (Note: this address will become http://odss-staging.shore.mbari.org/stoqs/BloomEx2010_example.html when we migrate to the staging server.)

This page uses the map file: /home/stoqsadm/deployed/mapfiles/stoqs.map.

This web page (which you can "view source" on is build with hand-crafted JavaScript and OpenLayers. It makes a request which you can observe by tailing the apache access log file (members of the group web - and the local account stoqsadm is a member - have permission to read this file):

```
tail -f /var/log/httpd/access_log
```

The stoqs.map file may be modified to write debug log information to a file. For example these lines have been added in the MAP section of the home/stoqsadm/deployed/mapfiles/stoqs.map file:

```
CONFIG "MS_ERRORFILE" "/tmp/mapserver_stoqs.log"
DEBUG 5
```

Doing a 'tail -f /tmp/mapserver_stoqs.log' will tell you what mapserver (essentially, the mapserv CGI program) is doing. (I needed to go to DEBUG level 5 before I got any interesting output.)

On the PostgreSQL side the /var/lib/pgsql/9.0/data/postgresql.conf file must be modified to enable additional message logging. I did this for the server running on stoqspg-dev, modifying these lines (The original had these set to off and the lines were commented):

```
# - What to Log -
```

```
debug_print_parse = on
debug_print_rewritten = on
debug_print_plan = on
debug_pretty_print = on
#log_checkpoints = off
log_connections = on
log_disconnections = on
log_duration = on
#log_error_verbosity = default          # terse, default, or verbose messages
#log_hostname = off
```

The log files (visible to user postgres) in /var/lib/pgsql/9.0/data/pg_log and named by the day of the week will now show entries such as these when mapserver performs its queries:

```
STATEMENT:  select "time",encode(AsBinary(force_collection(force_2d("geom"))),'NDR'),'hex') as
geom,"gid" from (select m.id as gid,
m.geom as geom, ip.timevalue as time, p.code as code, p.name as name
from measurement m inner join instant_point ip on (m.instantpoint_id = ip.id)
inner join activity a on (ip.activity_id=a.id)
inner join platform p on (a.platform_id=p.id)
order by ip.timevalue)
as subquery where geom && GeomFromText('POLYGON((-124.451751693878
34.3082782141455,-124.451751693878 34.8848044215572,
-123.751373276035 34.8848044215572,-123.751373276035 34.3082782141455,-124.451751693878
34.3082782141455))',4326) and
((date_trunc('day', time) >= '2010-10-01' AND date_trunc('day', time) <= '2010-10-31'))
LOG:  duration: 16.757 ms
LOG:  disconnection: session time: 0:00:00.037 user=everyone database=stoqs host=134.89.12.92
port=42202
LOG:  duration: 12731.843 ms
LOG:  disconnection: session time: 0:00:13.325 user=everyone database=stoqs host=134.89.12.92
port=42140
```

This kind of output looks very helpful for debugging and performance tuning purposes. In particular, the queries can be analyzed using the 'EXPLAIN' command in psql to evaluate where it might be improved with an index or some other treatment.

I know you might be thinking that having all this log information turned on will add an overhead to the mapserver's response time. It does. I did some crude measurements with these approximate results:

Logging configuration	Time to complete (secs)
All logging turned on	50
Postgres logging turned off	34
Postgres and Mapserver logging turned off	33
Postgres and Mapserver logging turned off, not tailing httpd/access_log	33

Clearly, the PostgreSQL logging has the greatest impact. (The query I was testing went from 33 seconds to 21 seconds after I put an index on the time column.)

Sooo...

Leaving the PostgreSQL verbose logging turned on is not real practical - especially since it can cause our valued IT Support team to receive pages in the middle of the night when the log files balloon to 2+ GB in size!

There is a better way to capture the SELECT statements that Mapserver issues to PostgreSQL. Here's how:

Add the "DUMP True" and "DEBUG 1" lines to the layer files, e.g. for ship.layer.map it would look like:

```
LAYER
INCLUDE "data.map"

TYPE point
STATUS on
FILTER " and ([pt.name]='ship')"
DUMP true
DEBUG 1
METADATA
"wfs_title"      "Ships" # Short description
...
```

The SQL statements that Mapserver generates will now go to the MS_ERRORFILE file that you specified in the master Mapserver configuration file.

-Mike

ODSS deployed asset communications

This page last changed on Dec 30, 2013 by [kgomes](#).

ODSS deployed asset communications include infrastructure to communicate with deployed platforms (vehicles, buoys, drifters...) and sensors.

- 802.11
- 900 MHz (Freewave)
- Iridium SBD
- Globalstar SPOT messaging
- Cell (future)
- Acoustic (future)

High-level applications such as planning GUIs will be insulated from these diverse protocols by a standard *planning service*. The planning service will provide a standard interface for deployed asset control, hiding the complexity of individual protocols from the high-level applications. This approach will simplify the addition of new kinds of assets into CANON as well as development of new applications.

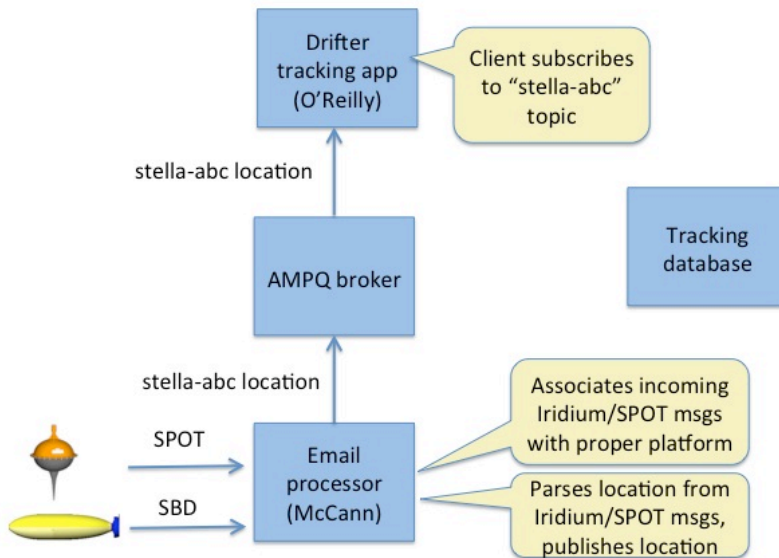
Meeting notes

[Meeting with Maughan and Rajan 1/13/2011](#)

Incoming messages via email

This page last changed on Feb 01, 2011 by oreilly.

Incoming message processing



ODSS Meetings

This page last changed on May 12, 2015 by [duane](#).

Notes from ODSS engineering status meetings are here:

<https://oceana.mbari.org/confluence/display/CANON/ODSS+Meetings>

Notes from CANON logistics meeting are here:

<https://oceana.mbari.org/confluence/display/CANON/CANON+Logistics+Meeting>

Meetings:

ODSS Engineering Meeting May 11, 2015

1. Kevin
 - a. Slack being used heavily by the ESP team. Deployments, data exchange.
 - i. Chris Wahl using for CANON deployments.
 - i. gliders TWR Nemesis, USC 294
 - ii. Looking for ways, via tags and channels, to engage LRAUV team and others.
 - i. LRAUV team has Dash.
 - b. Mack deployed, Bruce weathered out
 - c. Carson out doing CTD casts
 - d. Daphne is out
 - e. Next activity: authentication/authorization
2. Danelle
 - a. LRAUV
 - i. Putting everything into one database, per feedback from users
 - ii. Needs to be in Trajectory format for STOQS load
 - i. Interpolated onto Chlorophyll data (highest frequency data)
 - ii. Now working
3. Carlos
 - a. Fixed a couple of problems.
4. Duane
 - a. ramping on STOQS for spring CANON.
 - i. work with Danelle to build production STOQS database to serve out of ODSS

ODSS Engineering Meeting March 9, 2015

1. Kevin
 - a. ESP deployments, mid May to mid June
 - b. Spring CANON 2015 looks like Business as usual
 - c. Pre-experiment deployments?
 - d. CANON 2014 in annual report
2. Mike
 - a. working on django upgrade. Except for directory structure of code, should be transparent.
 - b. not targeted for May campaign timeframe
 - i. may have some impacts on where things are and how a STOQS project is run (locations for settings)
3. Carlos
 - a. working on timeline editor. internals only – integration. does not affect UI.
 - i. json web tokens...
 - ii. have issue using google login due to change of domain (normandy)
4. Danelle
 - a. Action item on LRAUV data load. checking netCDF files to make sure they load into STOQS
5. Duane
 - a. out Mar 12-15...
6. General
 - a. Meeting regarding CANON 2015 planning is this Thursday, March 12 at 9:30AM PDT in Harbor View Conf room.
 - i. see Francisco [email](#)

ODSS Engineering Meeting February 23, 2015

1. Kevin
 - a. continue working on Axiom diagram and will try to wrap up by end of week to circulate to the group to start dialogue with them.
 - i. Mike sent me a diagram to include in the Axiom discussion that I will roll in as well.
 - b. Working through different browser <-> server authentication mechanisms (mostly dealing with sessions) so that it will work both in mobile and desktop clients.
 - i. Looking like JWT is the way to go and will start to integrate into the ODSS code base.
2. Carlos
3. Danelle
4. Mike
5. Duane

ODSS Engineering Meeting February 9, 2015

1. Kevin
 - a. working on planning, collaboration, calendar, authentication (with Carlos)
 - i. task list cleaned up (ongoing)
 - b. working on AXIOM interaction interface possibilities.
 - i. Action item is to share diagrams.
 - ii. Offer to give them a VM with all our stuff up and running?
 - c. Sample log work continues
 - i. Hope to get it out before May CANON
 - ii. Use this to replace existing mobile apps for observation logging
2. Carlos
 - a. integrate calendar tool fully into ODSS
 - b. add "who is doing what"
 - c. discussion on how to do authentication for calendar tool
 - i. iFrame
3. Danelle
 - a. workflow for the LRAUV data flow needs to be validated; should be working...
 - b. how frequently will they be updating? etc.
 - c. model data ?
 - i. Clarissa forecasting (HAB forecast)
 - ii. Yi Chao COSINE
 - i. AI: see Fred and John
4. Mike
 - a. gone May 11 for a couple of weeks, maybe more. (during Spring CANON/ECOHAB)
 - b. focus this year on sample capture
 - c. outlining STOQS tasks for the year
 - i. 80 hours on CANON this year
 - ii. interaction with gridded data (for data exploration)
5. Duane
 - a. Met with John Ryan 1/29/15. discussed Spring 2015 CANON ECOHAB
 - i. see attached ECOHAB 2015 [notes](#)
 - ii. Ecohab 2015 in Monterey Bay, May - June 2015
 - iii. gliders, ESPs, Carson (no WF), John Martin, Waveglider,
 - iv. Need from ODSS/STOQS: same as previous CANONS/ECOHABs
 - v. Real time data from LRAUV higher priority
 - vi. location: off Año Nuevo, off shore
 - i. will look at lot like Fall 2013, day cruises

ODSS Engineering Meeting October 14, 2014

1. Kevin
2. Danelle
3. Mike
4. Duane

ODSS Engineering Meeting September 29, 2014

1. Kevin

- a. worked through some syncing problems over the weekend (Flyer and Normandy). Syncing through beach for the time being.
 - i. need to make the change to Normandy when Flyer back at shore
- b. see Friday email note for other updates
- c. need to get WF pctx and uctx flowing
- d. Monique on the Flyer; generating plots that she would like to push back to shore
- e. rsynch is running slowly, even when at shore
 - i. checksum was taking a very long time (removing that check sped up transfer by factor of 20)
- f. See some use of the Samples form capture.
- g. out random days next week (Monday Oct 2, Thursday Oct 6, Friday Oct 7 maybe)
- 2. Danelle
 - a. working through some rhodamine data loading issues from the Irauv
 - b. working on a back end and front end client for the layers
- 3. Mike
 - a. monitoring the automated Irauv loads
 - i. over the weekend; error in the data file (incomplete data file). Continuous improvement needed in the programs. This particular file error now recognized by the ingest program.
 - b. drift_data program written to bring together drifter track (or other platform in the tracking database) and M1 adcp data that outputs a map. could make a layer file or a kml for google earth...
 - c. Mike gone Monday Oct 6 through Friday Oct 10 next week
- 4. Duane
 - a. loading pctx and uctx data from RC into STOQS
 - i. generating netCDF files from the triplet of datafiles that Erich posts from the ship
 - ii. three pctx casts have datasets that are not working in the conversion programming, related to location (lat long) fields in the .hdr file. The conversion programs are not robust to these file problems.
 - b. gone Thursday Oct 2 through Tuesday Oct 7. No email or phone access.

ODSS Engineering Meeting September 15, 2014

- 1. Kevin
 - a. I am working on the mobile app and updates/bugs for the updated ODSS.
 - b. I have all the ships and shore ODSS configured and running with data syncing to the ships. The data syncing stats web pages are here:
 - i. Carson
 - ii. <http://odss.mbari.org/data/logs/rsync/analysis/zuma/analysis/index.html>
 - iii. Flyer
 - iv. <http://odss.mbari.org/data/logs/rsync/analysis/malibu/analysis/index.html>
 - i. You can zoom in on section with click and drag and can turn on/off data sets by clicking on them in the legend ...
 - v. I will have to tailor the Flyer sync's as it is the full monty right now and they are leaving port and will be on VSat. Carson is on microwave, so I am just leaving the full sync turned on. We had a very successful test of the comms cascade on the Carson last week (copper->microwave->4G->3G->VSat and back the other way) which we hopefully won't be exercising during CANON 😊. Should just be microwave the entire time ...
 - c. I currently have all the deployed ODSS's pointing to Carlos' planning application on odds-test (which is open to the outside) and the STOQS panel is pointing to <http://beach.mbari.org/canon>, which will still have broken links. Danelle is getting the STOQS application running on normandy which will bring back the URL <http://odss.mbari.org/canon> which should fix the STOQS links and then I will point the STOQS panel to the <http://odss.mbari.org/canon> again ...
 - d. The one outstanding issue that I know of for the boats is the positions getting plumbed into the Winfrog (+ other on Flyer?) ...
 - e. BTW, the ESP was deployed at 9:00 AM today. It is not officially part of CANON, but I am sure having the ancillary data available to CANON will be helpful. I will work on getting that pulled over into the ODSS.
- 2. Danelle
 - a. Still on the ready to load AUV data into STOQS
 - i. Since I won't have any data to load until the experiment, I'm guessing on how to properly load that data.
 - ii. John Ryan will have some input on that after taking a look at rhodamine plot e.g. on what makes sense for interpolation.

- b. I'm working on installing STOQS and migrating remote sensing back-end scripts to normandy. Things are moving along well on that.
- 3. Mike
 - a. incremental loading of data from streaming sensors (such as Moorings and Gliders) has been updated into STOQS on the production server Kraken
 - b. gone week of Sept 15, but available via email if questions arise
- 4. Carlos
 - a. working on changing the interlinkage between timeline editor "tokens" and corresponding platforms to use platform *names" (and not the mongo IDs).
 - b. later on:
 - i. migrate (copy) the timeline editor mongo collections from odss-test to the appropriate production server
 - ii. deployment of platform timeline editor webapp also to appropriate production server.
- 5. Duane
 - a. collecting info on CANON 2014 Fall sensors for the campaign
 - i. snapshot of the spreadsheet where I am capturing the info:
 - ii. <https://oceana.mbari.org/confluence/download/attachments/24052327/Asset+list+STOQS+Fall+CANON+2014.xlsx.pdf?version=1>

ODSS Engineering Meeting September 8, 2014

- 1. Kevin
 - a. Follow up on positions getting to ship nav systems, Flyer and Carson. Francisco is POC.
 - b. Need to upgrade ODSS on Flyer, Carson, this week.
 - c. Danelle: need to wipe ERDDAP data after upgrade, then resync it, to avoid time stamp issue.
 - d. ODSS is on Normandy, waiting for queues to be set up correctly, before cutting over from Beach.
 - e. Mike: STOQS need to be installed on Normandy
 - f. Brian K using Normandy for CPF tracking display. normandy.mbari.org/odss
 - g. Samples App working on iOS and Android. Targeting ready for Sept campaign...
 - i. pushing through apple process could be a bottleneck.
- 2. Mike
 - a. working on stoqs issue 28, to enable data updates to not slow down the application
 - i. for Mooring data, etc.
 - b. looking at products from STOQS data
 - i. potentially, the product could be a layer for ODSS
 - i. example, adcp data from Mooring, surface currents from HF radar
 - ii. Kevin: looking at doing a client-side KML rendering (to avoid the steps of making a layer)
- 3. Duane
 - a. talked about putting together asset list and sensors for STOQS loads
 - i. Mike and Duane to prepare STOQS database on Kraken
 - ii. Team review asset list and sensor list
- 4. Danelle
 - a. Performance issues with ERDDAP. Working on understanding that. Add RAM to the VM?
 - b. Lots of map workflow-related changes due to mapserver and ERDDAP upgrades
 - c. On deck with low-res data from LRAUV for STOQS

ODSS Engineering Meeting July 7, 2014

- Kevin, Duane, Mike McCann, Francisco

- 1. Kevin
 - a. Nothing new
 - b. Working on the production machine (replacement for Beach)...
- 2. Mike
 - a. Working on STOQS issue 49
 - i. classification tagging meeting Tuesday at 11AM in Harbor...
 - i. Mike to demo data tagging in STOQS
- 3. Danelle
 - a. Nothing new to report
 - i. New data streams?
 - i. ADCP – currents
 - ii. Where is the patch and where is it moving?
 - iii. Laterally and vertically

- i. ROMS - sigma T, to get at variability in density parameters

ODSS Engineering Meeting June 9, 2014

1. Kevin
 - a. I am working on the configuration management set of tasks from the updated task list from the Thursday meeting here:
 - i. <https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
2. Mike
 - a. Discussed Thursday CANON Logistics meeting
 - i. talked about ODSS tasks, including Samples
 - i. need someone in addition to kgomes working on the tasks...
 - b. Working on STOQS issue 49. Major Focus
 - c. Status of ODSS-test, Beach, 64 bit development and operational machines
 - i. why does Odss-test keep filling up?
 - ii. why do we still have odss-test?
3. Danelle
4. Duane

ODSS Engineering Meeting June 2, 2014

1. Kevin:
 - a. Working on a detailed task list
 - b. Goal is to make ODSS an institutional asset, useful for projects beyond CANON
2. Mike:
 - a. STOQS now working on Internet Explorer 11
3. Danelle:
 - a. Have a bunch of small things that need to be done
 - i. Review the architecture to make ODSS more useful/easy to maintain for other projects
 - i. ease of adding a layer (geoserver)
 - ii. ease of automating (mapserver)
 - iii. partner with Axiom?
4. Duane:
5. Francisco:
 - a. Axiom: on Francisco's list to follow up with them
 - b. Institutional data store / format(s)
 - i. Catalog will help with that

ODSS Engineering Meeting April 14, 2014

1. Kevin:
 - a. 3G/4G not working particularly well. 2 mile range. Verizon phones work much further offshore than the Verizon modem that we are using. Need to debug.
 - b. Have outstanding issue with daphne directory on beach. Put in IS help ticket to rectify permissions issue.
 - c. Gave John a list of questions to address when they are in shore over the next couple of days.
 - d. Winfrog seems to be working fine.
2. ODSS development:
 - a. Get Normandy set up with ODSS (this is the Beach replacement machine)
3. Mike:
 - a. John is successfully using Mercurial (for code check-in) and STOQS
 - i. A problem with bottle CTD
 - ii. Some merge issues with Mercurial (multiple heads)
4. Danelle:
 - a. See a lot of Irauv data files from hotspot with no data. Mike says this is normal.
 - b. Need AIS source for Southern Cal. Craig to follow up.
 - c. Mike and Danelle are working on the LRAUV hotspot data flow. Beginnings of a page documenting this are here:
<https://oceana.mbari.org/confluence/display/CDATA/ODSS+Data+Flows>
 - d. A NC4 file converter and loader have been written and are being modified as needed for production on shore/ship. These can be found here:
<https://code.google.com/p/stoqs/source/browse/loaders/CANON/realtime/monitorLrauvHotSpot.py>

<https://code.google.com/p/stoqs/source/browse/loaders/CANON/toNetCDF/lrauvNc4ToNetcdf.py>

5. Duane:
 - a. Axiom meeting 2:00PM - 4:30PM Tuesday, Harbor View Conf room
 - i. Kevin: will present *à la manière de* USGS
 - ii. Mike: will present STOQS
 - iii. Danelle: will add a slide to ODSS slide set about Mapping

ODSS Engineering Meeting March 31, 2014

1. Kevin:
 - a. The modems for the Carson are here.
 - b. Pete is installing one of them. Carson port day on Friday.
 - c. Kevin out the rest of this week, save Friday.
 - d. Working on the Samples log and build and deployment and Beach replacement (to be called Normandy).
 - i. If not done in time for the Spring campaign, we might do the transition in steps.
 - e. Look at list of platforms and the data
 - i. waveglider fetch
 - ii. Danelle working on LRAUV data

ODSS Engineering Meeting March 17, 2014

1. Kevin
 - a. continuing refactor on sample log following R & T meeting
 - b. Beach update to 64bit
 - i. discussed migration approach – clone vs clean install
 - i. STOQS/MBARI tracking have the same prerequisites.
 - ii. ODSS easy to build
 - iii. Mike: suggest making one CANON thredds server xml, and have campaigns simply be sub-directories off that top level
 - i. Danelle: ROMS catalog needs to be separate (because of the kind of data that is served) forecast and nowcast handled separately
 - c. Engineering to purchase and install our own 4G modem/router with a static IP on the Carson
 - i. to coordinate with DMO and IS (pete)
2. Danelle
 - a. will talk to John about generating kml from underway data while in Southern Cal
 - i. generate in Moss Landing, synch back to Carson?
3. Mike
 - a. Out with John R. last week SIMZ cruise
 - i. John has his STOQS loader merit badge
 - ii. using Zuma as the development system while on the Carson
 - iii. Spray glider, RC profiling and underway ctd data, Dorado data
 - iv. setting up the thredds server catalog (.xml and restarting server) was an extra step
 - b. Mike out next week at OGC meeting

ODSS Engineering Meeting March 10, 2014

1. Kevin
 - a. Kevin met with Reiko and Timprofiling and underway ctd regarding Sample log
 - i. Plan another turn based on their feedback
 - ii. ESP, BOG, others data feed in directly
 - iii. Others, use sample capture tool
 - i. Moving Mike out next week at OGC meetingplanning tool into an iFrame
 - b. Monique sent info on layers to include for April cruise
 - c. Need to meet with Todd regarding 3G stuff
 - i. Plan update March 21 to Carson
 - d. Android, iOS Sample apps are working
 - i. Plan to update logging apps as well.
2. Danelle
 - a. working on repairing coast watch hf radar and mooring layers
3. Mike
 - a. updated Carson with STOQS on zuma. should be good to go for April cruise
 - b. received updated waveglider data to get enable input to Sept 2013 STOQS database

ODSS Engineering Meeting March 3, 2014

1. Kevin: prep on Carson
 - a. Plan to talk with Aaron. Status of comms? Use 3G in Southern California
 - b. Mike will be out Tuesday on the Carson
2. Kevin: working on core ODSS stuff
3. Danelle: potential trip to Porto in May
4. Mike: BEDS team detected an event
 - a. Tuesday cruise to pick up the data. Will be busy analyzing the data following the cruise.
 - b. Hope to present at a conference at the end of March. Web3D.
5. April tasks:
 - a. STOQS on the Carson (update) and data loads
 - b. Danelle: working on Tethys loader
 - i. netCDF4 – there are differences depending upon level; needs to be tested against thredds server and stoqs loader
 - c. use of sample log

ODSS Engineering Meeting Feb 10, 2014

Duane Edgington
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Carlos Rueda
Thom Maughan

1. Discussed summary task list, for presentation to Engineering and Logistics status meeting
2. Discussed Waveglider data storage in repository and in STOQS
3. Discussed STOQS database names (naming convention) and descriptive name

ODSS Engineering Meeting Feb 3, 2014

Virtual Meeting

1. Danelle:
 - a. I worked on reorganizing and cleaning-up the mapping related requirements, prioritizing them, did some comparisons on ERDDAP and THREDDS in terms of meeting mapping requirements.
 - b. I also spoke with Monique about what kinds of features she would like to see. She saw value in 1) being able to add your own e.g. KML layer and 2) being able to see model data comparisons with actual data.
2. Kevin:
 - a. I am pretty much done with the refactoring of the repository. It is quite a bit different so if you check it out or update it, you will see a bunch of things move around.
 - b. I have started on the Sample functionality and am going ahead with the overhaul of the mobile app because that will be a main conduit for sample information.
3. Mike:
 - a. Here's an overdue update on new STOQS features: https://code.google.com/p/stoqs/wiki/Update_3_February_2014
 - b. I'm continuing to work on the "trajectory_biplots.py" script that will make the multi-platform chl/bb plots that Francisco has asked for. The current challenge is find a good mapping module to use; I'm trying Cartopy, but it needs Python 2.7 and STOQS is all built upon Python 2.6.

ODSS Engineering Meeting Jan 21, 2014

Duane Edgington
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Carlos Rueda
Thom Maughan

1. Danelle:

- a. STOQS - "vector" data only (positional) vs. gridded ("raster") data
- b. Discussed dropping ERDDAP
 - i. Use GeoServer instead?
- c. use scenarios? – needed in addition to the Requirements document to give context and intent
- 2. Mike:
 - a. Working on issues logged by Monique
 - b. looking at EcoPuck data truncation (3 significant digits) on slocum glider
 - c. loaded full data set from gliders, now that they are back on shore. (delayed mode = final).
- 3. Kevin:
 - a. Planned work discussion:
 - i. View creation:
 - i. choose platform
 - ii. choose layer
 - iii. create new repository
 - iv. automatic pipeline
 - ii. Add Data Set -> catalog -> ERDDAP and/or -> Thredds and thus -> STOQS
 - i. thredds -> STOQS
 - iii. winfrog config
 - iv. vsynch config
 - v. authentication / authorization
 - i. OpenID
 - ii. data policy display and accept

ODSS Engineering Meeting Jan 6, 2014

Duane Edgington
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Tom O'Reilly
 Carlos Rueda
 Thom Maughan

CANON ODSS Kickoff 2014

- 1. Campaign Spring April 9 - 21
- 2. MongoDB training Mountain View Jan 13 - 15
- 3. Work on requirements list and task plan for 2014
 - a. requirements: <https://oceana.mbari.org/confluence/display/CANON/Requirements>
- 4. Idea – export STOQS data to display as a layer in ODSS

ODSS Engineering Meeting Nov 4, 2013

Carlos Rueda

- 1. Carlos
 - a. Update: Platform timeline editor implementation now based on angularjs.org.
 - b. Working on reimplementing backend service in Node.js.
 - c. Documentation updated: <https://oceana.mbari.org/confluence/display/CANON/ODSS+Platform+Timeline+Editor>

ODSS Engineering Meeting Oct 28, 2013

Carlos Rueda

- 1. Carlos
 - a. Update: Kevin and Carlos had a meeting last Friday to discuss status of platform timeline editor and T-REX front-end. Next steps are:
 - i. complete implementation of some features while finalizing migration of timeline editor as an Angular (angularjs.org)
 - ii. reimplement timeline editor back-end service in javascript as a Node module (currently, it is a JVM service written in Scala)
 - iii. integrate timeline editor in ODSS (both front-end component and corresp. back-end service).

ODSS Engineering Meeting Oct 21, 2013

Duane Edgington
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Carlos Rueda
~~Thom Maughan~~

1. Kevin
 - a. Carson microwave failed. Craig is working on fixing that.
 - b. VSAT integrated mode on WF - trying to figure out why they are seeing Lock-up.
2. Danelle
 - a. PICES meeting
 - i. Danelle posted workshop notes - [link](#):
3. Duane
 - a. Need to schedule some post-experiment sessions with users to capture their feedback
4. Carlos
 - a. what next for planning code?
 - b. Discussion of meeting with Porto (Jose) regarding Neptus planner and potential collaboration with ODSS team
 - i. Neptus and related tools are [here](#):
 - c. Brief discussion of trex interface
5. Mike
 - a. IMDIS (International Marine Data & Info Systems) Lucca Italy meeting
 - b. FOSS4G meeting
6. Tom
 - a. Hotspot: Dorado/TREX experiments. Need to be within ~400m of each other to communicate.
 - b. One mission: able to ~near realtime move data from Dorado through processing to J. Ryan.
 - c. Recent work: with Porto guys, to enable EXTREME vehicle to communicate via Hotspot
 - i. Vehicle to shore, vehicle to vehicle
 - ii. Plan for 2014 Spring Ecohab - science use case with LRAUV

ODSS Engineering Meeting Sept 16, 2013

Duane Edgington
Kevin Gomes
Danelle Cline
~~Mike McCann~~
~~Tom O'Reilly~~
Carlos Rueda
~~Thom Maughan~~

1. Kevin:
 - a. Getting Flyer and Carson straightened out. Too much work to push out a new VM. Going to use existing ODSS machines.
 - b. LST positions
 - c. Working on hot spots
 - d. Keeping in synch with layers and boat info.
 - e. Lots of logistics
 - f. Going to try to get drawing plans and managing samples up before end of September 2013
2. Carlos:
 - a. Integrating planning into ODSS with Kevin
3. Danelle:
 - a. working on animations
 - b. vectors all work: wind, current. Ledgers added.
 - c. fixed ROMs layer bugs. used ncml in Thredds to fix time dimension problem in netCDF files
 - i. see ncml cookbook...
4. Duane:
 - a. Loader people are tripping over generating netCDF for underway data in unexpected formats
 - b. Western Flyer goes out Thursday Sept 19 for 8 days
 - c. [STOQS Load List](#) plus loading Stella Drifters that have sensors

ODSS Engineering Meeting Aug 26, 2013

Duane Edgington
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Carlos Rueda
Thom Maughan

1. Kevin:
 - a. Working on backend to support odss in mongoDB
 - b. started confluence page for data management outline plan
 - c. work on data management plan with team Tuesday afternoon in Building G
2. Danelle:
 - a. kevin is going to update erddap to 1.44
 - b. working on wind vectors and currents with arrows for model and m1, including an animation over time
 - c. added underway data display via kml upon request from Monique (see Martin SST Layers)
 - d. adding grib data - Mike says look for grib handler for thredds
3. Mike:
 - a. fixed adcp processing on M1
 - b. share this view feature complete. running on kraken and odss-test
 - i. please use and test the "share this view" feature
 - c. plan: point odss (beach in dmz) to stoqs on kraken (inside the firewall) via a hole in the firewall
4. Duane:
 - a. when Mike says go, rerun new stoqs loaders on kraken
 - b. Duane and Reiko continue adding data sets to 2011 and 2012 in prep for 2013 Fall Campaign
5. Carlos:
 - a. cleaning up the code to integrate widgets into codebase
 - b. todo integrate REST servers for platform calendar (including username)
 - i. Kevin says the login will be handled by the session, nothing for the rest calls to do
6. Other:
 - a. Presentation from August 22, 2013 regarding September campaign plan, as presented to overall CANON team: [2013 September campaign plan as of August 22, 2013 ppt](#)

ODSS Engineering Meeting Aug 19, 2013

Duane Edgington
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Carlos Rueda
Thom Maughan

1. Kevin:
 - a. login set up on odss-test (using google login). OpenID still a problem.
 - b. node server and tomcat both running
 - c. need to upgrade beach (odss main server) to 64 bit.
2. Danelle:
 - a. working on adding HF radar data. Realtime hourly.
 - b. lots of requests to handle
3. Mike:
 - a. Working on Vrijenhoek lab project
 - b. SIMZ cruises. Mike reported to odss list issues on data handling synch
 - c. kraken database server up and running. Internal to MBARI firewall.
 - i. share-this-view feature on kraken version (and other up-to-date installations)
 - ii. decided to run the server-side software and the database on the same machine
4. Duane:
 - a. returned to STOQS loader work. to add data provided by Reiko out of BOG
 - b. reasonably successful in creating a loader for Sept 2011 data (Dorado, spray glider L66, others)
 - c. need migration mechanism to duplicate databases from "odss-test" to "odss"

5. Carlos:
 - a. to do: integrate planning calendar view.
 - b. sent Kevin info on the prototype
 - c. to do: enable harmonizing two views - calendar and autonomy
 - d. to do: drawing tool

ODSS Engineering Meeting Aug 12, 2013

Duane Edgington
 Kevin Gomes
 Danelle Cline
~~Mike McCann~~
~~Tom O'Reilly~~
 Carlos Rueda

1. Kevin:
 - a. Working on MongoDB setup, login
2. Danelle:
 - a. working on ROMS forecast/nowcast
 - i. 24/48/72 hours. Kevin talked about organizing these by folders using MongoDB
 - b. to do: KML animations for playback
 - i. issues to work through with KML support in MapServer
3. Duane:
 - a. returning to STOQS loader work. to add data provided by Reiko out of BOG
4. Carlos:
 - a. integrate planning calendar view.
 - b. need to send Kevin info on the prototype to enable harmonizing MongoDB

ODSS Engineering Meeting Aug 5, 2013

Duane Edgington
 Kevin Gomes
 Danelle Cline
 Mike McCann
~~Tom O'Reilly~~
 Carlos Rueda

1. Kevin:
 - a. Need to start up Tuesday and Thursday afternoon coordinated development sessions in Building G
2. Danelle:
 - a. out of CANON time. Will investigate autonomy tasks for ODSS
3. Duane:
 - a. Next week: return to STOQS loader work. to add data provided by Reiko out of BOG
 - b. [CANON engineering labor allocation, and hours spent/remaining as of July 26, 2013](#)
4. Carlos:
 - a. integrate planning calendar view.

ODSS Engineering Meeting June 17, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
~~Mike McCann~~ at web3d
~~Tom O'Reilly~~
 Carlos Rueda

1. Danelle:
 - a. For the upcoming REP-13 experiment (July 8 - 21) (this is the name of the Porto experiment), we are aiming to bring up a version of ODSS on the shore-side in Portugal. I'm responsible for setup and debugging ODSS on the shore-side, so I'll be asking for your guidance in the coming weeks.
 - b. This is basically a proof-of-concept and to get them engaged in tech transfer. The idea is to bring up situational awareness view and STOQS view. This means vehicle and AIS tracks,

- mapping products and other data ingested into STOQS. Still more details to work out on that - this is just a heads-up.
- c. I've submitted an IS help ticket to clone odss-test as I think this will be the quickest way to get something up and running. They can run this on VM player on a server on their end.
- d. Discussed adding a waveglider loader using FETCH (liquid robotics web access methodology) for the REP-13 expt.
- e. Kevin to write scraper per Hugh's REST API for tracks
- 2. Danelle:
 - a. received map requests for Sept 2013.
 - b. new: HF Radar
- 3. Kevin:
 - a. Presented current plan for development and tasks
 - i. Product perspective
 - i. UI
 - ii. Catalog UI development
 - i. Form to add/edit metadata for folders in catalog

ODSS Engineering Meeting June 10, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Tom O'Reilly
 Carlos Rueda

1. Duane presented current labor expended vs allocation report
2. Kevin presented view of GUI implementation
 - a. adding planning sketch as a layer
 - b. adding chat view of email list
 - c. adding Carlos platform GUI view
 - d. adding View (replaces campaign) that defines platforms and timeframe. Allows personalized View of platforms and times of interest (e.g. Waveglider operator; view every Spring; ...)
3. Carlos presented plan and "demo" of planning interface to TRex.
4. Tools and look-and-feel of planning interface will also be used for the platforms list - ODSS planning
5. Thom: discussed Iridium RUDICS streaming data mechanism ingest into something that informs ODSS and other things.
 - a. Gliders and Waveglider. Tom O'Reilly to do?
6. Thom, Francisco: Tom, Brian K. to implement Acoustic modem to LST communication. Waveglider and/or LRAUV to implement.
 - a. LST location, status info

ODSS Engineering Meeting June 3, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Tom O'Reilly vacation
 Carlos Rueda out sick

1. Discussed outcomes of meeting Thursday May 30 (Francisco, John Ryan, Jim Bellingham, Yanwu, Thom, Duane E.) regarding Fall 2013 Campaign. See [slide set](#) that Francisco set out

From: "Francisco Chavez" <chfr@mbari.org>
 To: "Kevin Gomes" <kgomes@mbari.org>, "Thom Maughan" <tm@mbari.org>, "Duane Edgington" <duane@mbari.org>
 Cc: "Jim Bellingham" <jgb@mbari.org>, "John Ryan" <ryjo@mbari.org>, "Chris Scholin" <scholin@mbari.org>
 Sent: Wednesday, May 22, 2013 4:07:39 PM
 Subject: CANON meeting tomorrow 10 am Harbor
 Reminder that we are scheduled to meet May 23 10 am in Harbor. Will schedule weekly meetings from now until end of August with the expectation that some fraction of the group will be able

to attend every week. Meeting next week will include a much wider group probably in the Pacific Forum. Agenda:

- 1) Discuss/define scientific objectives for Fall experiment
 - 2) Discuss/define technical objectives for Fall experiment
 - 3) Discuss/define operational plan for Fall experiment
 - 3) Begin discussion of 2014 proposal
2. Discussed working groups and upcoming Fall Campaign science planning meeting per Francisco: On June 6, 10 am we will meet in the Pacific Forum to discuss the upcoming 2013 Fall experiment and its current state of planning. The attached [Powerpoint](#) has preliminary information. See slide 10 for the current state of planning 😊 See slide 11 for assignments (just in case reproduced below). The proposal is to have smaller working groups develop plans over the next months for work before, during and after the experiment. The current working groups, proposed leads, members and charter are:
- Science planning - Ryan (Bellingham, Chavez, Scholin, etc.)
 - Technical planning - Maughan (Edgington, Rajan, Chavez, etc.)
 - Autonomous mobile platforms - Bellingham (Wahl, Ryan, Zhang etc.)
 - Autonomous drifting platforms - Smith (Sherman, Chavez, Wahl, etc.)
 - Data analysis - Messie (Ryan, McCann, Bellingham, Chavez, etc.)
 - Samples - Pennington (Blum, Smith3, Kudela, Preston, Zhang, etc.)
 - Data management - Gomes/Michisaki
 - Responsibility of lead to develop a list (questions, platforms, products, data, samples), a means to answer/produce/distribute, analyze, organize team, etc.
- Everything is negotiable! Including the list. Interaction between groups obviously needed.
3. Kevin and Duane worked on the ODSS Planning confluence page, entering the platforms from the operation plan for Fall 2013. The platform list needs to be expanded to include all the science data streams for each platform, and a checklist of the STOQS loader for each data stream into STOQS.

ODSS Engineering Meeting May 13, 2013

Duane Edgington
Thom Maughan
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Carlos Rueda
John Ryan

1. The group discussed the [message](#) and powerpoint [slide](#) from Francisco ([powerpoint](#) here)

ODSS Engineering Meeting April 29, 2013

Duane Edgington
Thom Maughan
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Rich Schramm
Carlos Rueda
Francisco Chavez

1. Duane presented labor status.
 - a. McCann nearly out of CANON time - are the STOQS tasks remaining common with Bob V. project tasks?
 - b. Schramm out of time - need to request more from PCO/MT?
 - c. All other engineers have a lot of time remaining: [Canon allocation](#)
2. Presentation from Thom Maughan on requirements - add presentation here
3. Presentation from Kevin Gomes on tasks to be done for next field campaign - [ODSS Task Slides \(PDF\)](#)
 - a. Discussion of tasks:
 - i. Francisco: ODSS team to propose structure for data - gridded? SQL database?
 - ii. Francisco: need a front page that lets a user select which campaign they are working on
 - i. Kevin: do that setup as part of the odss situational awareness front page

- iii. Thom: Planning service. Need to make a way to add a platform, that primes the data management system. Do that in the Planning service, where the timeline is located? Do in 2013 or 2014?
- iv. Data service: folders will be setup automatically by the platforms selected and the map services selected
- v. Francisco: Do we save all the remote sensing/satellite/model data? Do we save only the part relevant to the campaign area or save the larger view that was downloaded?
- vi. Kevin: move the ODSS data analysis to the Data services view
- vii. Kevin: move STOQS view to Data Analysis
 - i. Francisco: STOQS is data management. Need to manage model data and remote sensing data as well. Need to manage sample data too. (water samples)
 - i. Thom: chat dialogs are also data
 - ii. Danelle: STOQS also provides visualization
 - iii. Mike: and STOQS provides a user interface to the data (sort of like MoQua)
 - ii. Data Analysis is something else... Users suck the data out of the Data Management component (STOQS etc) and take it elsewhere for analysis (Matlab, , other analysis tools and procedures)
 - iii. Francisco: need to supply a map (powerpoint slide) of the pieces of data that is managed
 - iv. Francisco: need to supply a map (powerpoint slide) of the data analysis products
- viii. Mike: STOQS work to do: Add the capability to save a STOQS query and settings, and share it with a colleague. I need help to do this (outside services)
- ix. Thom, Mike: showed stoqstoolbox matlab access - way to get matlab sql queries generated by STOQS
- x. Francisco: STOQS is data management, STOQS UI is data analysis. UI needs some discussion and documentation (so people know what can be done and how to do it) - discussion is on whether UI can access other things as well, and if not, how you do that
- xi. Thom: what is a catalog?
 - i. a list
 - ii. a searchable list
 - iii. a way to find the thing you are looking for
- xii. Collaboration - alternative to email
 - i. Chat - conversations
 - i. Whole team vs. two person conversation
 - ii. attachments, annotations (drawings on the map)
 - i. get deposited into the data catalog
 - iii. establish groups, not open to everyone
- xiii. Francisco: suggest one person from the engineering team sit down with a scientist and see what the scientist really does and how they do it (how the planning is done)
 - i. Francisco, John Ryan working now on plan - John in-shore, Francisco off-shore (with Ken Smith)
 - i. Thursday May 2: CANON Planning meeting, want to see plan for the features of ODSS for Sept. On one or two slides.
- xiv. Fall Campaign: Sept 16 - Oct 3 (Carson plus Flyer)

ODSS Engineering Meeting March 20, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann on the RC
 Tom O'Reilly
 Rich Schramm
 Carlos Rueda
 John Ryan on the RC

1. ECOHAB status
 - a. Kevin: so far so good.
 - b. Talk about flow of charts into ODSS (instead of email) once the ECOHAB campaign is over.
 - c. USC glider data. Tom: glider data staged for ingest into STOQS.
 - i. USC data is running about 3 days behind. Don't know why...
 - d. rsync: Tom: rsync is copying things repeatedly. Needs to have flag set.
 - e. Danelle: having issue with rsync, need for test data deleted on shore also deleted on ship.

- i. for next deployment, look into having this fixed, so we have complete synchronization.
- 2. Thom: requirements
 - a. figure out how to pull ecohab email stuff into ODSS
 - b. figure out how to pull old cosci stuff into ODSS
 - c. map the way forward for chat, email, figures, observations
- 3. Keep Beach!! need the cosci data (conversations) and database on Beach!!
- 4. OA waveglider is now out in Monterey Bay. Need to see it in ODSS

ODSS Engineering Meeting March 13, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Tom O'Reilly
 Rich Schramm
 Carlos Rueda
 John Ryan
 Francisco Chavez

- 1. John Ryan:
 - a. will prioritize layers to be rsynch'd
 - b. discussed mechanism to communicate data upload mechanism to the ECOHAB team
 - c. send out a screen-shot that demonstrates the asset location plus layers of interest (Kevin to generate)
- 2. Kevin: Plan for March: status and action items for spring CANON campaign
 - a. biggest outstanding issue is rsync to the Carson
 - i. highest priority items? layers that are highest priority?
 - ii. turn tracking back on. (messages are ~100 bytes each)
 - iii. no feedback from Hans regarding networking diagnostic results...
 - b. shoreside: layers, legends - all layers working except one of the ROMS data types (winds) which will need to wait until later
 - c. ready to add more layers as needed
 - d. Kevin to spend time on ESP data
 - e. Tom: usc glider data needs some work at USC end before it will be ready to display
 - f. Mike: work to do on the Dorado data processing. Try to make the Dorado data files smaller to increase the draw rate
 - g. no OA waveglider for this campaign
 - h. On the boat:
 - i. Mike McCann, John Ryan, and ? Leaving on the Peace Train Thursday morning
 - ii. Mike to turn on rsync only for the layers that John really wants
 - iii. need to check that the thredds version on the Carson is ok for the layers. If not, will need to make an update (move version back). Potential problem - can't do playback.
- 3. Planning: Carlos
 - a. coordinated with Fred regarding infrastructure
- 4. other business:
- 5. task list for 2013
 - a. John: Fall campaign will have a bay component and a transition zone component. Check with Francisco to see if need internet access on the Carson for the fall expt.

ODSS Engineering Meeting February 25, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Tom O'Reilly
 Rich Schramm
 Carlos Rueda
 John Ryan
 Francisco Chavez

1. John Ryan: In this CANON experiment, are we aiming to introduce ODSS to (more) collaborators? If so, perhaps we can discuss what / how this coming week?
 - a. let collaborators get the benefits that we get from ODSS
 - i. 1) connectivity: will we have ODSS at sea in southern California?
 - i. probably. we are working on it.
 - ii. 2) connectivity: will we have ODSS while at dock?
 - i. check with Aaron. Can use 3G connection via ethernet jack or via wifi hotspot?
 - ii. 3G looks good in all regions during campaign
 - iii. 3) where to go for updates and for file sharing?
 - i. use ODSS synching mechanism *a/a* Sept 2012
 - ii. we will be keeping shore and ship ODSS in synch
2. Kevin: Plan for March: status and action items for spring CANON campaign
 - a. On the boat:
 - i. Mike McCann, John Ryan, and ?
3. Planning: Carlos
4. other business:
5. task list for 2013

ODSS Engineering Meeting February 11, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
~~Danelle Cline~~ out of the office
 Mike McCann
 Tom O'Reilly
 Rich Schramm
 Carlos Rueda

1. Kevin: Plan for March:
 - a. Looking to have odss-test VM pushed to Carson Thursday. Test over microwave link
 - i. Rich to install the clients for the platforms into STOQS. No backlog, things in the water 1st week of March
 - ii. Kevin to do the display clients, rsynch
 - iii. Priority is rsynch, then cloud-in-a-box (megaware)
 - b. Meeting with DMO and IS regarding comms
 - i. Plan to is use the vsat, there will be 3G, but not plumbed into the ship network. Look into having a connection to the 3G via a second NIC on the VM machine.
 - i. Thom: we should follow up with J. Ryan regarding decision plan on the boat
 - ii.
 - ii. Mike requests that we bring up Malibu when we can so he can get files that are on Malibu, not on shore.
 - iii. Duane got info from Arvind Pereira USC regarding glider data. Follow up later this week.
 - c. Outside Software Services money? \$10,000 in the budget? Duane to talk with Francisco...
 - d. Computer and software budget? \$13,000.
2. Planning: Carlos
 - a. Software license details are a barrier for Bryntum package.
 - b. looking at another package that is licensed GPL2
 - c. Planning ahead for authentication/authorization, but not working on that yet.
 - d. Kevin: LDAP
 - e. Rich: working on ship's position
 - f. Thom: less and less likely that waveglider will be part of ecohab
 - i. eventually have waveglider data in a central place
 - g. On the boat:
 - i. Mike McCann, John Ryan, and ?

ODSS Engineering Meeting February 4, 2013

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann

Tom O'Reilly
Rich Schramm
Carlos Rueda

1. Kevin: Plan for March ECOHAB:
 - a. <https://oceana.mbari.org/confluence/display/CANON/ECOHAB+-+March+2013>
 - b. Rich: very good to have 2 NICs on the zuma machine/VM
2. Thom: put information on planning for March ECOHAB on planning tab of ODSS:
 - a. <https://odss.mbari.org/odss/> aka <https://oceana.mbari.org/confluence/display/CDATA/ODSS+Planning>
 - b. Split out Carson and Dorado, since they will not always be together
3. Carlos: working on planning pane
4. Mike: meet on STOQS right after this status meeting

ODSS Engineering Meeting January 28, 2013

Duane Edgington
~~Thom Maughan~~ out being trained
Kevin Gomes
Danelle Cline
Mike McCann
Tom O'Reilly
Rich Schramm
~~Carlos Rueda~~

1. Plans for the spring campaign
 - a. for DMO, estimate data use based on Sept 2012 cruise
 - b. will respond to Chris G. regarding VSAT on Carson
 - c. for IS, creating documents on how machine on Carson should be set up
 - i. please review by end of day 1-29-2013: <https://oceana.mbari.org/confluence/display/CANON/ODSS+Requirements+and+Installation>
 - d. Need info from Todd R. on how VSAT configured on the Flyer
 - e. to do: diagram of over-all network, to set up Zuma on Carson as well as Malibu on Flyer
 - f. to do: implementation plan/task list for overall 2013 ODSS development, for Francisco
2. DSS conference:
 - a. Kevin to go and present

start 2013

ODSS Engineering Meeting October 8, 2012

Duane Edgington
~~Thom Maughan~~ on vacation
~~Kevin Gomes~~ on vacation
Danelle Cline
Mike McCann
~~Tom O'Reilly~~

ODSS paper session Oct 1, 2012

[Thom's presentation, useful for introduction](#)

- Duane Edgington
- Kevin Gomes
- Thom Maughan
- Danelle Cline

Outline for ODSS paper

Target: 12 pages or less, 29th IEEE International Conference on Data Engineering Workshop on Data-Driven Decision Guidance and Support Systems (DGSS)
April 2013, Brisbane, Australia
Paper due Oct 19, 2012. Latex in IEEE format.
(camera ready paper due December 17, 2012)

We are building the paper here, in Google Doc:

<https://docs.google.com/document/d/1HVZWHrgIRGuH120bCzmZmEbcu9S3RFL0r57eVeECtgA/edit>

Kanna has set up a LaTeX directory tree in SVN to enable building the paper for submission, here:
svn checkout <svn+ssh://kahuna.shore.mbari.org/svn/repos/autonomy/trunk/papers/dgss13>

1. Introduction
 - a. Domain (Thom)
 - b. History (Thom)
 - i. Field deployments (Thom)
 - ii. Aosn (ref)
 - iii. Robotics (ref)
 - i. autonomy
 - iv. Canon (ref)
 - v. Workflow analysis
 - vi. STOQS (ref)
2. Workflow breakdown (Thom)
 - a. (each perspective)
3. Overall architecture of the tool (Kevin and Danelle)
 - a. Requirements
 - b. Functional view / User perspective
 - i. Standards, and why (openLayers, Mapserver)
 - ii. Shore-side autonomy (refs) Thom
 - c. Implementation view
 - i. Communications Kevin
 - ii. Catalog(s) data store Kevin
 - i. Data Store
 - i. File
 - iii. Remote Sensing plus map overlays (Overlays) Danelle
 - iv. Web services Kevin
 - i. Winfrog
 - ii. Hans Thomas
 - iii. Observation clients
 - v. Data standards and non-standards Danelle, McCann
 - i. Netcdf
 - ii. Non-netcdf data
 - iii. Stoqs
 - iv. Matlab interface
 - v. Thredds
 - vi. Erdapp
 - vi. Data Products Kevin
 - i. Monique, ryan, Irauv godin, ctd, auv
4. Field validation of distributed deployment Kevin, McCann
 - a. o
5. Next steps Kevin
 - a. ecohab
 - b. Content Management System (CMS)?
 - c. Authentication
6. Conclusion

ODSS "lessons learned" session September 20, 2012

Duane Edgington

Thom Maughan

Kevin Gomes

Danelle Cline

Mike McCann

Tom O'Reilly

Francisco Chavez

Kanna Rajan (over Skype)

1. Started Requirements and Ideas list for ODSS fixes, enhancements, at:
<https://oceana.mbari.org/confluence/display/CANON/Additional+Requirements+from+Sep+2012>
2. Links to Data repositories updated for CANON Sept 2012 Campaign here:
<https://oceana.mbari.org/confluence/display/CDATA/CANON+2012+Sept+MB+Data+Archive+Description>

3. STOQS is updated with campaign data
4. Action item, Edgington: have I.S. back up Malibu
5. Need home for all scripts, etc:
 - a. McCann: Google Code repository works cleanly for archiving scripts and other files
 - b. Cline: Investigating Dropbox as mechanism to archive scripts, distribute to multiple computers (cross Operation Systems)
6. Chavez: useful to have odss info on winfrog. Seemed to be a hit with operations. webservice client for odss info worked well.
7. Chavez: Western Flyer captain could not use ODSS on the bridge since he is on an old PC (Windows XP?) using Internet Explorer (version 8?)
8. Francisco: Having access to data products produced at shore and relayed to the ship was very useful.
 - a. issue: products not organized well in the data frame of ODSS. People just put stuff wherever...
 - b. How can we organize ODSS to enable a process to see full data products run the same way as the partial data products produced during the cruise?
 - c. Discussion needs to continue on what the how products are organized, persisted, communicated.
9. McCann: rsync ran very well - longest transfer was 20 minutes
 - a. vpn was solid for over 50 hours with no interruption
 - b. RabbitMQ messaging ran great
 - c. O'Reilly: discovered in previous cruise that static IP number for VSAT system can change, due to antenna picking up a different satellite, or due to VSAT provider changing the IP address because they want to... Need to be able to deal with such a change during a campaign
10. Chavez, Rajan: look ahead to ecohab spring 2013 campaign.
 - a. interested in the data and the data products, perhaps more than in resource location
 - b. will be in busy shipping traffic area, so will need situational awareness of location for navigation and avoidance
 - c. will have extensive freewave radio network coverage, if that is useful
11. Chavez walked us through several data products in the data pane of situational awareness perspective, to show us what was produced and a bit of why it was useful
 - a. We displayed ODSS and these products on a Windows 7 laptop in the meeting using Internet Explorer 9. No problem.
12. Data products: missing "rosetta stone" that defines the products that were produced, and how those were made. How do we capture and store that information moving forward?
13. CANON PI meeting next Thursday September 27 to discuss next steps in processing CANON Sept 2012 data

ODSS Engineering Meeting September 17, 2012

Duane Edgington

Thom Maughan

Kevin Gomes

Danelle Cline

~~Mike McCann~~ on the Western Flyer

Tom O'Reilly

1. Thom: Autonomy coordination
2. Kevin: GUI
 - a. AIS tracking resulted in a problem
 - i. will need some more investigation to figure out how to proceed
 - b. positive feedback from the Flyer participants
 - c. bandwidth usage seems fine
3. Comms infrastructure
 - a. seems to be working, very useful to ESP team
 - b. more test time would have been useful
4. Mike McCann: Data and other status
5. Danelle: status
 - a. working on the vector layers, working with mapserver dudes to understand root of problems
 - b. need revision control on configuration files and scripts (tricky since different on different machines)
6. Thom: Requirements updates
 - a. be able to produce provenance of information (layers, etc)
 - b. test plan for scaling (e.g. ecohab scale)
 - c. action item to schedule a post-cruise ODSS review
 - d. action item to meet with the LRAUV team for better interface with ODSS

7. Any other business
 - a. place to add notes: <https://oceana.mbari.org/confluence/display/CANON/Additional+Requirements+from+Sep+2012>

ODSS Engineering Meeting August 27, 2012

Duane Edgington on vacation

Thom Maughan

Kevin Gomes

Danelle Cline

Mike McCann

Tom O'Reilly

1. Thom: Autonomy coordination
 - a. Danelle attended. Kanna's team is looking to get calibrated
 - b. Note: Mike M on vacation, need to look at alternate for running auv processing scripts.
2. Kevin: GUI
 - a. Platforms reading from the database directly for the catalog view
 - b. Data source pane is working for viewing data
 - c. Web app senses shore vs ship location of ODSS to either show google map or a local map (gawd awful ugly green noaa gebco map)
3. Comms infrastructure
 - a. Working with ESP to insure iridium messages are forwarded
 - b. Not sure what plans for sync'ing ESP data to shore
 - c. Waveglider is in progress (need to get the ID from LR). LR is deploying on the 31st.
 - d. rsync status? Mike does not know what is happening. Plan B is Mike is out on the boat and will do file transfer manually. Tom is back next week.
4. Mike McCann: Data and other status
 - a. Mike and Jordan were supposed to meet, need to do this for getting LRAUV into WinFrog
5. Danelle: status
 - a. adding ROMS model data to THREDDS and ERDAP
 - b. Winds data, have the dev version of MAPSERVER installed except on Zuma. Tests are passing. Fred is working to gen data.
 - c. Johns list of data is done. 20 new layers.
6. Thom: Requirements updates
 - a. NTR
7. Any other business
 - a. Duane has talked with Eric R about CTD underway data
8. Tom O'Reilly: Spray glider command infrastructure. Shore app to redirect. Control depth between waypoints.
 - a. Worked on rsync, ran into difficulties. On vacation this week

ODSS Engineering Meeting August 20, 2012

Duane Edgington

Thom Maughan

Kevin Gomes

Danelle Cline

Mike McCann

Tom O'Reilly

1. Thom: Autonomy coordination
2. Kevin: GUI and comms infrastructure on boat
 - a. Telecon with Dan C. Monday.
 - i. limited to 256KB due to shared use with other users out at sea etc
 - ii. concerned about latency
 - iii. use Zephyr network for testing (to test latency and 256KB pipe)
 - iv. need ship to do testing; due back Sept 4
 - v. fall-back is using VNC to connect to shore system
 - vi. alternative fall-back is send emails with kml's to Mike McCann on the ship, who sticks them into the the "rsync" directory (assuming rsync not working)
 - b. Jordan is looking into ship captain having awareness of assets so ship does not run over assets
 - i. Winfrog
 - c. GUI: implementing catalog view of the file system
3. Mike McCann: Data and other status
 - a. STOQStoolbox - sent an update Friday with all requests handled
 - i. give me all the data from one vehicle

- ii. deal with unspecified platform (if not specified, default to "all")
- 4. Danelle: status
 - a. working on satellite data cache
 - b. responding to John Ryan's request for 9 new images
 - c. need to work on winds - Fred B. found new mapserver feature that could help
- 5. Thom: Requirements updates
- 6. Any other business
 - a. Talk to Eric R. regarding location of CTD etc data on the flyer
 - b. ESP location details to be ironed out for tracking. Roman
- 7. Tom O'Reilly: Spray glider command infrastructure. Shore app to redirect. Control depth between waypoints.
 - a. Discussed Tom assisting with comms issues and testing.

ODSS Engineering Meeting August 13, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Francisco Lopez

1. Thom: Autonomy coordination
 - a. Planning sept## Planning sept 24-26 autonomy cruise. JD attending, drifter following using ODSS
 - b. will fly UAS (unmanned aerial system) off the bow. TRI company will be doing the flying...
 - c. would like to update the "no-fly" layer on ODSS 24-26 autonomy cruise. JD attending, drifter following using ODSS
 - d. will fly UAS (unmanned aerial system) off the bow. TRI company will be doing the flying...
 - e. would like to update the "no-fly" layer on ODSS
2. Kevin: GUI status
 - a. get rsync infrastructure in place for Sept campaign
 - b. spinning back up on development - "push" technologies to push stuff to the browsers
3. Mike: Database, data access status
 - a. getting feedback from users of STOQS toolbox
 - i. Kevin: GUI status
 - b. get rsync infrastructure in place for Sept campaign
 - c. spinning back up on development - "push" technologies to push stuff to the browsers
4. added "specify platform" function to query interface. Easy to extend the toolbox.
 - a. working on a document on STOQS and how it fits into ODSS
5. Danelle: status
 - a. system for ODSS server on the Flyer, "malibu", has been ordered by IS and will be configured by IS ala zuma when it arrives
 - b. need to install ERDAP on Beach. version ## getting feedback from users of STOQS toolbox
 - i. added "specify platform" function to query interface. Easy to extend the toolbox.
 - c. working on a document on STOQS and how it fits into ODSS compatibility between mapserver and THREDDS
6. Tom: Comms status
7. Thom: Requirements status
 - a. CANON starting Aug 27, remote sensing (layers) are the first thing they need
 - b. CANON users will start looking at ODSS Aug 20
 - c. Don't like HF radar. Follow up with Fred Bahr about this... And follow up with John on the requirements and connections to Dave Foley
8. Any other business?

ODSS Engineering Meeting August 6, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann
 Francisco Chavez

1. Thom: Autonomy coordination

- a. James Gosling here Aug## need to install ERDAP on Beach. version compatibility between mapserver and THREDDS
- 7.
- 2. Kevin: GUI status
 - a. investigating AIS - NPS as source? Francisco: nice to have, but not essential to have it in ODSS on the boat. On shore, Mt. Toro range is probably adequate.## CANON starting Aug 27, remote sensing (layers) are the first thing they need
 - b. CANON users will start looking at ODSS Aug 20
 - c. Don't like HF radar. Follow up with Fred Bahr about this... And follow up with John on the requirements and connections to Dave Foley
- 1.
 - a. effect of flyer on CANON Sept. 100km - 300km off-shore is the plan.
 - b. Francisco: show Radar, other remote sampling mid-late Aug. HF Radar (for meso-scale eddies and currents)
 - i. show model output
 - ii. slower vehicles: in water earlier, to get section out to cruise site.
 - iii. wave glider takes 10 days to get 100 km off-shore.
 - iv. wave glider: do 20 km on a side square. tethys too?
 - v. most of other assets: ship deployed
 - vi. daphne,
 - vii. put data in the usual places on the ships. Work with tech team to learn where those places are.
 - viii. learn what underway data is logged (not all of it is logged)
 - ix. go out on Fumar on 6th or 7th, look for Ammonium maximum. Mark with a drifter that is left there.
 - x. Flyer: go straight offshore, deploy ESP drifter at Ammonium maximum, continue on to 2x drop site.
 - xi. Flyer return to ESP site the next day.
 - xii. Zephyr to leave the same day, stay with the ESP, do sections there. Stays for 5 days.
 - xiii. need to get the ESP mooring data.
 - xiv. no LST
 - xv. need to transfer Dorado data from the Zephyr to the Flyer. Freewave modem would work, or via memory stick.
 - xvi. will be deploying stella drifters, sending positions only
 - xvii. have LRAuvs follow the drifters
 - xviii. plus web or spray gliders, wired through Fred
 - xix. need underway, and Dorado, data to flow from ship to shore for Monique to process, and then return products to ship
- 2. Mike: Database, data access status
 - a. will be on the Flyer during the fall campaign
- 3. Danelle: status
- 4. ~~Tom~~: Comms status
- 5. Thom: Requirements status
- 6. Any other business?

ODSS Engineering Meeting July 30, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Danelle Cline
 Mike McCann

- 1. Thom: Autonomy coordination
 - a. Waveglider part of 2013 proposal (Waveglider in other proposals too)
 - b. Glider management part of 2012 proposal
 - c. March 2013, fall 2013 SoCal ecohab experiment. CANON too...
 - d. James Gosling here Aug 7.
- 2. Kevin: GUI status
 - a. Worked on some proposal text and tasks for 2013 CANON proposal. Plan to circulate soon...
 - b. Idea of adding a timeline view of campaigns
- 3. Mike: Database, data access status
 - a. Added some documentation for STOQS (from conference presentation)
 - b. Francisco made good progress on Matlab access
 - i. "Demos" directory has fragments to demonstrate the functionality.

- c. Working on list of STOQS enhancements
- 4. Danelle: status
 - a. Working on API for machine learning work
- 5. ~~Tom: Comms status~~
- 6. Thom: Requirements status
 - a. Bug report: layers not displaying - are the links ok? Show if no new data??
- 7. Any other business?
 - a. 2013 Proposal status?
 - b. updates on Sept 2012 Field Trial plans?
 - i. West Flyer plus Zephyr, no Carson...
 - ii. WF, Sept 10-15; ASTEP Sept 16-18.
 - iii. Zephyr Sept 10-14
 - i. Observation Log "good to have" for Sept 2012.

ODSS Engineering Meeting July 16, 2012

Duane Edgington vacation

Thom Maughan

Kevin Gomes

Danelle Cline

Mike McCann travel

- 1. Thom: Autonomy coordination
- 2. Kevin: GUI status
 - a. Wave glider data coming queries directly from the WGMS now.
 - b. More progress on the tracking data diagram <https://oceana.mbari.org/confluence/display/CANON/Platform+Tracking+Design>
- 3. ~~Mike: Database status~~
- 4. Danelle: Animation status
 - a. Finished up the wiki page for adding your own map to the ODSS
 - b. Next steps are to set up tile cache on zuma (Rachel Carson) and rsync
- 5. ~~Tom: Comms status~~
- 6. Thom: Requirements status
 - a. Will likely be some LIST HOLO requirements in the proposal for next year
 - i. Will entail a pipeline for image processing
 - ii. Need to decide on end user products for interfacing to the data
 - iii. Users can select a subset of images to process
 - iv. Likely link to AVED
 - v. Images will also need to be linked to AUV data
 - vi. How would these be integrated in the ODSS (could just be observations)
- 7. Any other business?

ODSS Engineering Meeting July 9, 2012

virtual meeting, held via email

Duane Edgington abstract meeting

Thom Maughan vacation

Kevin Gomes abstract meeting

Danelle Cline

Mike McCann vacation

- 1. ~~Thom: Autonomy coordination~~
- 2. Kevin: GUI status
 - a. finished overhaul of the CANON confluence space. The new page is here:
 - i. <https://oceana.mbari.org/confluence/display/CANON/CANON+Initiative>
 - b. working on a diagram to detail out the data flow for platform tracks. This is to support the Porto guys as they want to plug in to the tracking messaging.
 - c. working on getting the Waveglider data from the Wave Glider Management System and plumbing that into the RabbitMQ data flow.
 - i. <https://oceana.mbari.org/confluence/display/CANON/Platform+Tracks+Data+Flow+Design>
- 3. Mike: Database status
 - a. poster to be presented at ESIP meeting available; provides some information on STOQS
 - i. [.ppt](#) [.pdf](#)
- 4. Danelle: Animation status

- a. working on a wiki page to document steps to add a custom map to ODSS
- 5. ~~Tom: Comms status~~
- 6. Thom: Requirements status
 - a. working session on requirements: requirements posted on confluence page:
 - i. <https://oceana.mbari.org/confluence/display/CANON/Requirements>
- 7. Any other business?

ODSS Engineering Meeting July 2, 2012

virtual meeting, held via email

Duane Edgington

~~Thom Maughan~~ vacation

Kevin Gomes AMP meeting

Danelle Cline

~~Mike McCann~~ vacation

- 1. ~~Thom: Autonomy coordination~~
- 2. Kevin: GUI status
 - a. working on an overhaul of the CANON confluence space. The new page is here:
 - i. <https://oceana.mbari.org/confluence/display/CANON/CANON+Initiative>
 - ii. not done; going through and cleaning up and after I do, I will make this page the main page. Any feedback on it is welcome.
 - b. working on a diagram to detail out the data flow for platform tracks. This is to support the Porto guys as they want to plug in to the tracking messaging.
 - c. working on getting the Waveglider data from the Wave Glider Management System and plumbing that into the RabbitMQ data flow.
 - i. <https://oceana.mbari.org/confluence/display/CANON/Platform+Tracks+Data+Flow+Design>
- 3. ~~Mike: Database status~~
 - a. met with Brian Schlining and Franciso Lopez to Discuss access to STOQS database - STOQS query interface, Python libraries, MOQUA, Matlab
 - i. Franciso is working on a test interface from Matlab
- 4. Danelle: Animation status
 - a. working on a wiki page to document steps to add a custom map to ODSS
- 5. ~~Tom: Comms status~~
- 6. Thom: Requirements status
 - a. working session on requirements: requirements posted on confluence page:
 - i. <https://oceana.mbari.org/confluence/display/CANON/Requirements>
- 7. Any other business?

ODSS Engineering Meeting June 25, 2012

Duane Edgington

Thom Maughan

Kevin Gomes

Tom O'Reilly

Danelle Cline

Mike McCann

Francisco Lopez

- 1. Thom: Autonomy coordination
 - a. Brain storming session Tuesday regarding 2013 proposal(s)
- 2. Kevin: GUI status
 - a. nothing to report
- 3. Mike: Database status
 - a. Discussed access to STOQS database - STOQS query interface, Python libraries, MOQUA, Matlab
- 4. Danelle: Animation status
 - a. Next task, documenting workflow
 - i. start wiki on ideas
- 5. ~~Tom: Comms status~~
- 6. Thom: Requirements status
 - a. working session Tuesday 1:15PM on requirements
 - i. for Sept campaign - platforms, off-shore ops, data access, workflow to import data

- i. Rich Henthorn to interface LST?
 - ii. longer term (affects 2013 proposal)
- b. Quick (1 minute) demo of ODSS for Packard Foundation group - 15 min discussion led by Chavez, Scholin, Bellingham...
- c. need feedback from MBARI participants on next steps for us
- d. 2013 CANON proposal to be worked on in late July
- 7. Any other business?
 - a. Conference call with Mike Godin last Thursday:
 - i. Mike G. has been working with Monique on CoSci
 - ii. Bug fixes to CoSci
 - iii. looked at STOQS query interface, likes the time depth plot

ODSS Engineering Meeting June 18, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
~~Tom O'Reilly~~
 Danelle Cline
 Mike McCann
 Francisco Chavez

- 1. Thom: Autonomy coordination
 - a. Autonomy team preparing for campaign (~July 7) at Porto, with planned use of ODSS (tracks)
- 2. Kevin: GUI status
 - a. Working on getting STOQS data and John's SST layers via WMS-T into ODSS for Friday demo.
- 3. Mike: Database status
 - a. All data from May/June Campaign in STOQS...
 - i. except Fulmar, to come
 - ii. except anything in BOG
 - b. posted issues on STOQS google code site
 - c. Intern F. Lopez working on comparing Model data with in-situ data (STOQS, matlab, etc. ROMS, Yi Chao model)
- 4. Danelle: Animation status
 - a. workflow in place to add Matlab-produced output into ODSS
 - b. LCS data should be up soon (working through a time-related problem)
- 5. ~~Tom: Comms status~~
- 6. Thom: Requirements status
 - a. Microsoft Layerscape. Put May data on external thredds server to support their trial, with embargoed catalog
 - b. Add ROMS output as a set of layers for Sept. via Monique
 - c. write up workflow procedure to add stuff (matlab output, images) into ODSS
- 7. Any other business?
 - a. Demo, presentation on ODSS to Packard Foundation group Friday June 22. F. Chavez, C. Scholin.
 - i. California current, large marine ecosystem
 - b. Requirements review week of June 25.
 - i. Ken Smith's LST? (Lagrangian sediment trap) - Alana Sherman
 - i. a water sample that is divided into multiple pieces
 - ii. ROMS model output integration
 - iii. ESP drifter plus additional instruments on drifter
 - iv. John Ryan to nail down platforms and instruments for Sept field campaign
 - v. ship based decision center on Flyer. Processing shore-side (LRAUV, waveglider, drifters)
 - vi. Carson ready for Sept?
 - vii. currently, no plan for Dorado in Sept field expt
 - c. Kevin on vacation Weds June 20 - Friday June 22
 - d. Mike McCann out of the office (vacation then meeting) first 3 weeks July (July 2 - 20)
 - e. Thom M. on vacation first 2 weeks July
 - f. Duane on vacation July 16 - 23

ODSS Engineering Meeting June 11, 2012

Duane Edgington
 Thom Maughan

Kevin Gomes
Tom O'Reilly
Danelle Cline
Mike McCann

1. Thom: Autonomy coordination
2. Kevin: GUI status
 - a. openID working in prototyping mode
3. Mike: Database status
 - a. finishing up loading campaign data into stoqs may2012
 - b. still to go, fulmar underway data, and then will be done
 - c. will reload with final data once LRAUVs back at shore
4. Danelle: Animation status
 - a. now we can catalog time series wms-T
 - b. working on Monique's data
5. Tom: Comms status
 - a. DTN - wrapping up the feasibility study
 - i. At sea test, tcpip only, with shorelink over vsat
 - ii. lots of learning experiences
 - iii. a lot of work to get it set-up, documentation sparse, implementation seemed unreliable
 - iv. next step would be to try DTN with other comms (acoustic, etc)
6. Thom: Requirements status
7. Any other business?

ODSS Engineering Meeting June 4, 2012

Duane Edgington
~~Thom Maughan~~ out sick
Kevin Gomes
~~Tom O'Reilly~~ out testing DTN
Danelle Cline
Mike McCann

1. Thom: Autonomy coordination
2. Kevin: GUI status
 - a. some feedback from users, with some requests
 - b. fluent conference very useful and informative
 - i. web testing tool aiding performance
 - c. tomcat hang over weekend not understood
3. Mike: Database status
 - a. helping diagnose thredds server problems
 - i. Cencoos server in DMV data sources for gliders
 - b. STOQS database on staging up to date with Dorado
 - i. working on LRAUV's
 - ii. working on wave gliders
4. Danelle: Animation status
 - a. XML arcane
 - b. thredds, can catalog by time, and can convert geotiffs to netcdf to grid
 - c. searching for method to combine the bands
 - d. searching for method to query by time. can't do it directly in wms (this is a bug).
 - i. do the time query via outside database?
5. ~~Tom~~: Comms status
6. Thom: Requirements status
 - a. email from Francisco reminding us of priorities
7. Any other business?
 - a. Danelle, Duane - status on server on ship testing for remote deployments
 - b. Monique data access

ODSS Engineering Meeting May 21, 2012

- Platform list and status summarized here:
 - <https://docs.google.com/spreadsheet/ccc?key=0AuEbhrXQcwz7dEIVOXZCX0tuTIBqb0syNTEzWG05LUE#gid=0>

Duane Edgington

Thom Maughan out deploying the wave glider
Kevin Gomes
Tom O'Reilly out testing DTN
Danelle Cline
Mike McCann

1. Thom: Autonomy coordination
2. Kevin: GUI status
 - a. Working on viewing John Ryan layers
 - b. working on gulper sample display
 - c. observations showing at red tag on map
 - d. work to do on observations
3. Mike: Database status
 - a. some work to do regarding tethys and daphne SDB processing
 - b. setting up new STOQS db for this expt: stoqs_may2012_r (realtime)
 - c. writing STOQS loader for wave glider data triggered on each data record received; will go to tracking db
 - d. writing STOQS loader for new T-Rex google protocol bufs messages (gulper events)
 - e. writing a tool to insert planned activities into STOQS metadata
4. Danelle: Animation status
 - a. added no fly zone areas
 - b. animation code checked in
5. Tom: Comms status
6. Thom: Requirements status
7. Any other business?
 - a. Duane to talk with John Ryan about remote sensing data

ODSS Engineering Meeting May 14, 2012

Duane Edgington
Thom Maughan
Kevin Gomes
Tom O'Reilly
Danelle Cline
Mike McCann

1. Thom: Autonomy coordination
 - a. Mike: Need test status to catch gulper protocol bufs?
 - b. Mike: Need to know who to coordinate with during CANON weeks (since Fredrick will be out of the office)?
 - i. Thom to follow up today...
2. Kevin: GUI status
 - a. Swapped out base layer, so can switch over to that base layer if Google layer not available
 - b. Fixed some bugs in Android observation app.
 - i. Outstanding bug in Android 4.0 on tablet
 - c. Working on forms for entering observations from the GUI itself
 - d. Working through other stuff
 - e. Discussed message flow for platform tracking at Tuesday working group meeting. [see diagram](#)
3. Mike: Database status
 - a. Working on STOQS. Fixed "time-zone" issue.
 - b. Improved performance via handling of summarized data. Work continues...
 - c. Working on Matlab interface. stuck at NetCDFJava
 - d. ERDDAP as a complementary access to the database?
 - i. <http://coastwatch.pfeg.noaa.gov/erddap/index.html>
 - e. AI: enumerate what data sources can be accessed via STOQS into Matlab
 - i. BOG?
4. Danelle: Animation status
 - a. outstanding bug in permissions
5. Tom: Comms status
6. Thom: Requirements status
 - a. Need some focus on Matlab interface
 - b. ncToolbox, loadDAP, loadDODS, ?
7. Any other business?

- a. Mike Godin would like to show his progress on openID and roles at our Tuesday working session.
- b. Need a common place to start to find all the ODSS code. Put the apps in Google code?
- c. Duane: See if Brian S. can work with Mike McCann for a couple of days on ncToolbox

ODSS Engineering Meeting May 7, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
~~Danelle Cline~~ At autonomy workshop
 Mike McCann

1. Thom: Autonomy meeting
 - a. Gliders - could we monitor using the communication infrastructure?
2. Kevin: GUI status
 - a. noted that Staging tracking database is different from Beach... why?
 - b. context switching to Planning perspective. Tuesday?
 - c. email idea for observation perspective. longer term, do data handling...
 - d. GUI things to do. John's layers, etc.
3. Mike: database status
 - a. working on understanding and optimizing db query performance
 - b. number of points for some of the datasets may be the issue (eg. 9.4 Million points for tethys and dorado for one month)
 - c. fixed mapserver reported bug
 - d. obscure problem with loads using one big python script; fixed with shell script running one python script per load
4. Danelle: Animation status
5. Tom: Comms status
6. Thom: Requirements status
 - a. Precise date of May field trial updated: <http://www.mbari.org/dmo/schedules/2012.pdf>
 - i. Autonomy week: Week of 21th (May 21, 22, 23, 24)
 - ii. DTN 21st and 24th.
 - iii. Gliders? meeting today at 2PM...
 - iv. 2 CANON weeks: Week of 28th (May 29, 30, 31, June 1) and Week of June 4th (June 5, 6, 7)
 - v. Note that Memorial Day weekend spans May 25-28.
 - vi. Note that all days on the Zephyr; no Flyer days during Autonomy/CANON weeks
7. Any other business?
 - a. Danelle, Duane to work on Flyer tile cache server during week of May 2
 - i. Duane to discuss with Pete and Pat. Zephyr 3G comms experiment
 - ii. Doug C. and Hans T. and Fredrick are resources on idiosyncrasies...
 - b. start demos in the lobby to get feedback this week
 - c. May 8 - Thom to do project update
 - d. Discuss Planning requirements at one of our Tuesday/Thursday meetings.
 - i. Iterative plan?
 - ii. Duane look at hours spent to date.

ODSS Engineering Meeting April 23, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Tom O'Reilly
~~Danelle Cline~~ vacation
 Mike McCann

1. Thom: Autonomy meeting
 - a. No actions for us
2. Kevin: GUI status
 - a. Wiring up tile cache stuff and layers from John Ryan (dynamic). Plan for 4/24/12
 - b. Fixed Chrome bug
 - c. remaining issue on IE on intranet
 - d. need to work with Mike Godin regarding CoSci integration (tabs)

- e. Titanium class: good potential
- 3. Mike: database status
 - a. wrote loader for all gulper locations
 - b. revamped CANON loads so they are all together
 - c. issues outstanding:
 - i. postgres issue after loading several campaigns; stops before completion
 - ii. mapserver use for drawing locations; drawing tracks, then sample locations and tracks. Want just sample locations...
 - iii. got some feedback on STOQS data model, looking for more feedback.
- 4. Danelle: Animation status
 - a. on vacation this week
- 5. Tom: Comms status
 - a. Looking at trying to reduce DTN connection latency (currently ~20sec).
 - i. talk with Ricardo via telecon this week
 - b. have a work-around for the dynamic routing dns problem for the test
- 6. Thom: Requirements status
 - a. Pacific Forum scheduled for project update. Two tentative dates, one before May field campaign, the other after. Tentative plan, Tuesday May 8 at 2PM.
- 7. Any other business?
 - a. Danelle, Duane to work on Flyer tile cache server during week of May 2
 - b. Tom: evaluation of controlling the glider when close to shore (affect yoyo using bathymetry on shore)
 - i. outcome: do a demo of what the messages would look like **if** the program were in the loop.
 - c. Mike McCann out next Monday and Tuesday April 30 - May 1.
 - d. Duane on vacation Tuesday April 24 through Monday April 30. Back in the office Tuesday May 1.

ODSS Engineering Meeting April 16, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Tom O'Reilly
 Danelle Cline
 Mike Godin
 Mike McCann

- 1. Thom: Autonomy meeting status
 - a. Duane supplied ODSS development status and plans to Autonomy team. They integrated selected portions of the plan into their May cruise plan.
 - b. Very interested in ODSS status. Interesting in displaying Gulper fires in ODSS situational awareness.
- 2. Kevin: GUI status
 - a. Working with Danelle on getting more layers enabled
 - b. Adding time selection constraints on layers (for tile cache)
- 3. Mike: database status
 - a. Have plan for implementing protocol buffs
 - b. exploring extending STOQS data model to handle samples (point data). Would like to discuss the data model at one of our Tues/Thurs sessions.
 - i. [new STOQS data model](#)
 - c. Plan to work with Julio on sample analysis data load (not excel)
- 4. Danelle: Animation status
 - a. Tile cache set up on Beach and Staging, ready to go...
 - b. Trying to keep up with STOQS changes.
 - c. John Ryan - Sea Surface Temp processing. Danelle will be working on integrating. Will explore making multiple scales available. (wms supports that).
 - d. Bathymetry base map: exploring options. ESRI maps have up to 19 meter resolution.
- 5. Tom: Comms status
 - a. Fine tuning DTN config in building G. Configuration process seems delicate.
- 6. Thom: Requirements
 - a. John Ryan signed up to review remote sensing plan. 1d/3d/8d/... ?

- b. Heard potentially useful feature for ODSS: what would it take to monitor drifters and update depth of yoyo as the drifters are targeted to more shallow water? Tom O. and Mike McCann to look at this...
- 7. Any other business
 - a. Mike Godin in Moss Landing this week. To meet with Kevin Monday at 5PM; participate in Tues/Thurs afternoon sessions in Building G.
 - b. Precise date of May field trial: <http://www.mbari.org/dmo/schedules/2012.pdf>
 - i. Autonomy week: Week of 21th (May 21, 22, 23, 24)
 - ii. CANON week: Week of 28th (May 29, 30, 31, June 1)
 - iii. Note that Memorial Day weekend spans May 25-28.
 - c. [ODSS development plan 4/12/12](#)
 - d. [Presentation slides for CANON PI meeting 4/12/12 \(first two slides only\)](#)
 - e. [Autonomy and ODSS team plans for May/June 2012 CANON field experiment](#)

ODSS Engineering Meeting April 9, 2012

Duane Edgington
 Kevin Gomes
 Tom O'Reilly
 Danelle Cline

1. Kevin: GUI status
 - a. Observation services are working
 - b. William at CSUMB putting up observation app on Apple app store
 - i. see writeup and click here for demo: <http://services.mbari.org/observations/>
 - c. Putting things together to make GUI available ~end of this week.
 - d. Looking into sign-on strategy (OpenID)
2. Mike: database status
 - a. added use instructions in STOQS (DEBUG_OPTIMIZE)
 - b. Mike G. added instructions to make it easier to install mapserver
3. Danelle: Visualization status
 - a. working on some test scripts as part of the code package
4. Tom: Comms status
 - a. this week moving DTN to the deployment hardware for May trial
5. Thom: Requirements/DAC status
 - a. Thom gone this week (April 9 - 13)
 - b. Questions from team regarding slide to be presented to CANON PI's Thursday - Duane to discuss with Thom
6. All: any other business?
 - a. Duane: minutes from Thursday meeting March 30, 2012 (CoSci, COOP) are here: <https://oceana.mbari.org/confluence/display/CANON/Discussion+on+CoSci%2C+COOP%2C+MOQUA+integration+with+ODSS>
 - b. Duane to present one slide at CANON PI meeting Thursday.
 - c. Discussed requirement to display gulper sample location in situational awareness view

ODSS Engineering Meeting April 2, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Tom O'Reilly
 Danelle Cline
 Mark Chaffey

Agenda:

1. Kevin: GUI status
 - a. Short list of things to do before Mid-April milestone
 - i. layers, wms, etc.
 - b. William, at CSUMB, using service to get observations into observations log mobile app
 - c. implementing openID for login stuff
 - d. OATH under investigation (for permissions). Challenging.
2. Mike: database status
 - a. Looking over Chander changes to STOQS stuff.
 - b. need to work on populations of forms

- i. demo and do code-walkthrough Tuesday April 3.
 - c. work continues on adding campaigns to THREDDS server (data for each experiment)
- 3. Danelle: Visualization status
 - a. enabled STOQS to use wms-t on point queries
 - i. discovered bug in wms-t in the process...
 - b. testing of tiling continues
- 4. Tom: Comms status
 - a. running more tests on DTN in building G
 - b. vehicle to shore, and shore to vehicle working
 - c. need way to get dynamic DNS names
 - i. would be it be useful to transfer files from shore using DTN?
 - d. DTN test week is week of May 21. Tentatively 21 - 22 (one day with conting. day)
 - i. cruise plan pending
- 5. Thom: Requirements/DAC status
 - a. autonomy team working on their May test plan
 - b. gulper display on ODSS
 - c. met with Monique. Will post notes on CANON Data Confluence page
 - i. (put link here)
 - d. working with John Ryan on lisst-Holo
 - e. plan for May coming together
 - f. September planning also being discussed
 - g. Thom gone next week (April 9 - 13)
- 6. All: any other business?
 - a. Duane: minutes from Thursday meeting March 30, 2012 (CoSci, COOP) are here: <https://oceana.mbari.org/confluence/display/CANON/Discussion+on+CoSci%2C+COOP%2C+MOQUA+integration+with+ODSS>
 - b. conference call with Mike Godin Tuesday 1:30PM PDT
 - c. Thom: we should do another Comm planning session, targeting May deployment
 - i. schedule for Thurs session April 5.

ODSS Engineering Meeting March 26, 2012

Duane Edgington
 Thom Maughan
 Kevin Gomes
 Tom O'Reilly
 Danelle Cline

1. Danelle / Thom: Highlights from Autonomy weekly status meeting
2. Kevin: GUI status
 - a. Observation service deployed
 - b. <http://services.mbari.org/observations>
 - i. eg. <http://services.mbari.org/observations/designer.html>
 - c. CSUMB demo ~April
3. Mike: database status
4. Danelle: Visualization status
 - a. Tile cache running on beach and staging
 - b. over-weekend test successful, required reasonable amount of storage (~0.5 GB).
 - c. discussed strategy for caching the base map, and stress-test (large map of pacific)
5. Tom: Comms status
6. Thom: Requirements/DAC status
 - a. CANON planning [CANON May Planning](#)
 - b. CANON Dec 2011 summary [CANON Summary](#)
 - c. AUV Dorado zooplankton sampling goals, May-June 2012 [CANON Sampling Goals](#)
 - d. NetCDF is important, per J. Ryan
 - e. Data access should be fairly simple minded, and the data should be as consistent as you can reasonably make it...
 - f. Waiting for feedback
 - g. Wirewalker data?
7. All: any other business?
 - a. Plan on having working system mid-April to show to science users
 - b. Plan to discuss work plan with Mike Godin Thursday March 29 1:30PM PDT

ODSS Engineering Meeting March 19, 2012

Duane Edgington
Thom Maughan
Kevin Gomes
Tom O'Reilly
Danelle Cline
Mike McCann

1. Danelle: Highlights from Autonomy weekly status meeting
2. Kevin: GUI status
 - a. Observation service deployed
 - b. CSUMB enabled to do their work
 - c. next step: pull in layers...
3. Mike: database status
 - a. looking to add more information, and generated resources, into STOQS
 - b. Chander working on implementing STOQS query manager (toward test UI)
4. Danelle: Visualization status
 - a. working with IS to install tile cache (ala map server) (on staging and on beach)
5. Tom: Comms status
6. Thom: Requirements/DAC status
 - a. When asset surfaces, send not only where it is but also where it has been
 - i. longer-term: display where the asset has been in situational awareness view; short term: users may display using matlab
 - b. Tool should capture the Data Archive Description (see <https://oceana.mbari.org/confluence/display/CDATA/CANON+Data+Archive+Descriptions>)
 - c. Bellingham: start up virtual pilot experiment
 - i. needs to have some definition....
7. All: any other business?
 - a. Plan on having working system mid-April to show to science users
 - b. Plan to discuss work plan with Mike Godin Thursday March 29

ODSS Engineering Meeting March 12, 2012

Duane Edgington
Thom Maughan
Kevin Gomes
Tom O'Reilly
Danelle Cline
Kanna Rajan

1. Danelle: Highlights from Autonomy weekly status meeting
2. Kevin: GUI status
 - a. Version available on beach
 - b. Spinning up server with IS for observation service and iOS / android mobile app service
 - c. Next step: look at security
 - d. All code in subversion repository (google code)
 - e. rest-style interface
3. Mike: database status
 - a. status of making data from previous field experiments available (in any format)?
 - i. Dorado, LRAUV, Martin data
 - ii. <http://odss.mbari.org/thredds/catalog.html>
 - b. Thom: concerned that we make the existing available. Not necessarily in NetCDF format (STOQS) at this time (catalog of where the data is located). Evaluate with the users whether or not NetCDF is the answer.
 - c. Thom to talk with Kevin...
 - d. Thom preparing for Thursday CANON PI meeting
4. Danelle: Visualization status
 - a. Working on back end to make animations
 - i. Tracks, satellite images (via scripts that make .gifs)
 - ii. set up a tile cache / tile cache server. Plan to finish this week.
 - iii. working on test plan (simulation with limited bandwidth comms). Plan to test next week.
5. Tom: Comms status
 - a. Manta-TREX test bed set up in lab [Tom's slide](#)
 - b. simulating "at-boat" network
 - c. no TREX code changes needed for evaluation (monitoring log file via bash script)

6. Thom: Requirements/DAC status
 - a. Thom is writing a "tools options" white paper for the DAC
7. All: any other business?
 - a. CoSci Disk quota crawler etc. (Thom)
 - i. Duane: arrange working session with Mike Godin in March
 - ii. Duane: talk with Mike McCann about his conversation with Mike Godin
 - iii. Mike and Mike evaluating making "get data button" work for at least some data
 - b. Some funds allocated for Chander time to work on STOQS test gui
 - i. to begin end of next week

ODSS Engineering Meeting February 27, 2012

Duane Edgington
 Mike McCann
 Kevin Gomes
 Thom Maughan
 Danelle Cline

1. Duane Edgington: Highlights from Autonomy weekly status meeting
 - a. During May DTN test cruise - no need to wire data into ODSS
 - i. May DTN test is to prove concept and get data for follow-on proposal, not for operational use
 - b. Kanna back in the office Wednesday
 - c. CANON May field campaign: may need to delete a week from schedule due to ship/AUV scheduling
2. Kevin Gomes: GUI status
 - a. Discussed separating out tracking as a separate web service
 - b. Discussed ways to make tracking faster
 - i. Plan to have an extended discussion at Tuesday ODSS session
 - i. Straight database access?
 - ii. enhance current approach?
3. Mike McCann: Database status
 - a. Map Server update in place
 - i. tracks of activity, parameters, properties
 - b. explore JavaScript OpenLayers connectivity
 - c. explore Jango/JQuery
 - d. have exhausted consultant budget
 - e. explore admin interface for multiple databases
 - i. this would be useful to support embargos, other functions
4. Tom O'Reilly: Communications
 - a. DTN test bed on TRex test system
 - b. May DTN test: Porto box on boat, send data to shore
 - c. Tom published a CANON 2012 Network Data Flow diagram
5. Thom: Requirements
 - a. Plan is for users to perform a Virtual Pilot Experiment, and for us to watch what they do
6. Danelle: Visualization
 - a. Plan to talk with group on Tuesday at ODSS working session on her progress and ideas

Note: No meeting next Monday, March 5. Next status meeting planned for Monday March 12, 2012.

ODSS Engineering Meeting February 13, 2012

Duane Edgington
 Mike McCann
 Kevin Gomes
 Thom Maughan
 Danelle Cline

1. Kevin Gomes: GUI status
 - a. getting tracks performant
 - b. working on REST URL for Log interface
 - c. adding outlier (obviously off the globe)
 - d. plan to stage readiness release of new stuff this week
2. Mike McCann: Status on making previous campaigns available from STOQS
 - a. continued work on STOQS

- b. worked on debugging infrastructure for Django
 - i. enable/disable logging of db access
- c. worked on MapServer implementation to make Map Files dynamically generated. Improves performance.
 - i. line-string mapping
- d. exploring: different objects in STOQS - activity based for MOQUA-like features
 - i. JSON responses on objects
- e. Chander - 3 hrs. consulting left on contract
 - i. Tile caching would be expensive...
- 3. Tom O'Reilly: Communications infrastructure status and discussion of architecture
 - a. Tom sent in an electronic status update:
 - i. Network Diagram updated.
 - ii. Discussion delayed until Tuesday Feb 14.
- 4. Thom Maughan: Update on requirements
- 5. All: Any other business?
 - a. CoSci Disk quota crawler etc. (Thom)
 - i. Duane: arrange working session with Mike Godin in March
 - b. Tuesday: plan Sept cruise logistics (out of the bay)
 - i. communication infrastructure
 - ii. data flow from assets to ships to shore
 - iii. data flow from shore to ships
 - iv. what gets replicated where and when

ODSS Engineering Meeting February 6, 2012

Mark Chaffey
 Tom O'Reilly
 Kevin Gomes
 Mike McCann
 Danelle Cline
 Frederic Py
 Thom Maughan
 Duane Edgington

- 1. Kevin Gomes: GUI status
 - a. Front end performance looking good
 - b. Looking at links to back-end (STOQS)
 - c. Next steps
 - i. situational awareness tracks,
 - ii. time slider on tracks,
 - iii. keep openlayers for maps
 - d. Evaluating Sencha Designer Tool
- 2. Mike McCann: Status on making previous campaigns available from STOQS
 - a. Showed us django interface to campaign data that is now in STOQS
- 3. Tom O'Reilly: Communications infrastructure status and discussion of architecture
 - a. Working on network architecture diagram
 - i. Where DTN might fit into this
 - ii. Thom: what is the amount of data we are taking about? (to estimate load and potential cost)
 - b. E.g. When do you get AMQP vs when get from tracking database, STOQS?
 - i. Replicate STOQS or tracking database onto ships during campaigns?
 - i. Thom: not this year, but could be needed in the future
 - c. How does SSDS fit into CANON?
 - i. Mike: SSDS is upstream of STOQS (metadata catalog) feeding netcdf file generation
- 4. Thom Maughan: Update on requirements
 - a. For display of tracks, show where the vehicle "actually went", not linear interpolation between waypoints...
 - b. Put up a few slides at the PI meeting Feb 16 (who is doing what, high level plans)
 - c. Users off-shore, intermittent connection to shore via satellite network interface.
 - i. Is the Internet access on the ships available for science data?
 - ii. How much bandwidth?
 - iii. Does it matter where the ship is operating (GoC vs Monterey Bay, e.g.).
 - iv. Work through the Sept use case (off-shore flyer and Carson ops) (sea surface temp, chlorophyll maps, etc) (discuss this Thursday Feb 9)
 - i. Plans, bandwidth, ...

- d. Add new platform
 - i. Metadata capture
 - ii. Data capture
 - iii. Unstructured data (why something was done, etc), provenance, ...
 - iv. COOP-like capture of discussions, cruise plan, etc
- e. Thom had a meeting with Steve Haddock to go over requirements from his perspective.
 - i. May want to add datasets from earlier campaigns (eg AOSN)
- f. Thom had a meeting with Jim Bellingham about DAC
 - i. Populating STOQS is valuable
 - ii. Mike Godin - limited availability
 - iii. Sergey Frolov - Thom to talk with him more about automating some Matlab stuff.

ODSS Engineering Meeting January 30, 2012

Kevin Gomes
 Mike McCann
 Thom Maughan
 Danelle Cline
 Tom O'Reilly
 Duane Edgington

Kevin: report on JavaScript training class

1. Sencha ExtJS week-long class in developing web apps. Looks very promising. Framework is pure JavaScript plus a bunch of open source libraries.
 - a. <http://www.sencha.com/>
2. Sencha is the supplier - no cost to use tools, they provide support and training (which is how they make money)
3. Sencha Touch - mobile web application tools

Thom: requirements

1. Jim Bellingham is driving this.

Tom O'Reilly

1. Communication architecture
2. Complete documentation of AMPQ architecture
 - a. Plan to discuss this next week in our weekly engineering meeting

ODSS Engineering Meeting January 23, 2012

Mike McCann
 Danelle Cline
 Thom Maughan
 Duane Edgington

Thom: Short term ODSS plan

I: GUI: Situational awareness (using database) (Kevin Gomes)

List of features and performance target has been set.

Draw maps, put up simulations, sensor tracks (STOQS-RT)

Mike: Ship position turned off until Western Flyer returns
 (AIS still works)

Work on performance. Build a test case.

Mike: refactoring STOQS, building ability to be agile.

Deploy on ODSS-staging

Playback: Mike and Danelle.

Thom to clarify requirements and use cases with science users. Eg. for the oceanography report that John Ryan generates?

Note: this is not "dj the data" (which is see the real sensor data from STOQS)

II: Planning perspective (Kevin Gomes)

Drawing things on maps

Target:

~March - integration test

May 14 - Experiment

Mike/Thom: DAC status?

Bellingham/Rajan/Chavez meeting with Thom.

1. John Ryan is the point of contact
 2. Bellingham has a notion of what the DAC wants. Has started developing use cases.
 3. Eg. How Julio compiles water sample data analysis and presentation.
 4. Eg. Moqua geospatialtemporal query -> files -> images -> visualizations (via execution of scripts that generate visualization).
- Mike McCann and Mike Godin to talk about database/catalog/etc for MOQUA and data access. TBD.

ODSS Kickoff January 5, 2012

Roles:

Thom - Requirements, interface to PIs

- HIPPP ~ 400 hours

Duane - Engineering Project Management day to day

Kevin Gomes - GUI

Danelle - Backend Vis

Mike - database / access, tracking

Tom O'Reilly - Comms / AMQP

Kanna:

Priorities (in no particular order):

1. Situational Awareness - useful
 - a. Make ODSS the only portal that our users use
2. Design a scalable comms architecture
3. Integrate CoSci - make it useful
 - a. Logs
 - b. Mail
 - c. Chat
 - d. Video ?
 - e. Social media ?
4. Machine Learning for Event Detection
5. Data fusion
 - a. How to feed is Engr. Challenge
6. Plan visualization (TREX)
7. NEPTUS Integration ?
 - a. Eval

Scenarios

1. "where is the data?"
2. "what is the plan?"
 - a. map of where survey is to be done
 - b. capture intent
 - c. capture what actually happened
 - i. actual vs. plan
3. "can I do X (survey)?"
 - a. resources, transit time
 - b. safety constraints

1 Feb 2011

Web app development kickoff with Kevin Gomes, Mike McCann, Thom Maughan, Danelle Cline, Duane Edgington

Kevin ran thru the web app getting started process, demonstrated the development flow in eclipse.

Mike McCann helped Kevin point the code in Carlos's prototype to the stoqspg-dev development machine which has mapserver running

Thom gave an overview of first tasks

1. Modify Carlos's prototype and add a version v 0.31.b (where b is the build number and 0 is the major and 3 is the minor and 1 is the feature. minor rev will be incremented at milestones, feature number will be incremented when we have a group of features ready to test. Build will be used as a unique identifier if we have to spin fixes during test cycle prior to publishing on production server.
2. v 0.40.b - functional equivalent to JD's prototype used in October 2010, but with features move to the correct perspective.

Danelle and Duane asking questions

31 Jan 2011*

Mike demonstrated the RabbitMQ publisher.py and consumer.py scripts that are available in the MBARITracking project in Subversion:

<http://kahuna.shore.mbari.org/viewvc/MBARITracking/trunk/amqp/>

First you start a consumer (or two):

```
[trackadm@stoqspg-dev amqp]$ ./consumer.py
```

Usage:

Synopsis: consumer.py --en <exchange_name> --et <exchange_type> --qn<queue_name> --rk <routing_key>

Starts a consumer for an AMQP exchange. This is for mainly testing different configurations of exchange_names, exchange_types, queue_names, and routing_keys. You may start multiple instances of this script to test how the messages behave within the RabbitMQ system.

Example:

To simulate both ODSS and Persistence subscribers consuming messages

In one shell window:

```
% consumer.py --en exchange_direct1 --et direct --qn queue1 --rk odss_test
```

In another shell window:

```
% consumer.py --en exchange_direct1 --et direct --qn queue2 --rk persist_test
```

consumer.py: error: Must include all 4 options.

Then a publisher (or two):

```
[trackadm@stoqspg-dev amqp]$ ./publisher.py
```

Usage:

Synopsis: publisher.py --platformType <type> --en <exchange_name> --rk <routing_key>

Publishes test messages to queue(s) bound to the specified routing_key in the specified exchange. This is for mainly testing different configurations of exchange_names, exchange_types, queue_names, and routing_keys. Use in concert with consumer.py.

Examples:

Publishing to a Direct exchange (that is set up by consumer.py):

To send mooring position reports (i.e. to queue(s) bound to two different keys)

```
% publisher.py --platformType mooring --en exchange_direct1 --rk odss_test
```

```
% publisher.py --platformType mooring --en exchange_direct1 --rk persist_test
```

To send drifter position reports (i.e. to queue(s) bound to two different keys)

```
% publisher.py --platformType drifter --en exchange_direct1 --rk odss_test
```

```
% publisher.py --platformType drifter --en exchange_direct1 --rk persist_test
```

publisher.py: error: Must include all options.

(Tom O slides)*

24 Jan 2011 (Thomz [slides](#), Tom slides)

Thom to educate/train on high level picture to answer the 'why' from web app

Web App Team: come up to speed on GWT and Openlayers environment, take up where Carlos left off on situational awareness perspective.

Infrastructure servers sand, beach, vm appliance, open source development hosted at <http://code.google.com/p/mbari-dss/>

Web appliance (CentOS needs fixing, Carlos has scripts to work around limitations, but VM needs a rebuild. Mike working on a STOQs database.

Google code SVN for source code control and tagging scheme

Tom O'Reilly presented on the Communications Backplane Service, newly named Deployed Asset Management service. Good discussion on AMQP as an option.

18 Jan 2011 (Tues) [slides](#)

Status:

Tom O: met with Kana / Thom on requirements, next week some slides with a prelim plan

Danelle: still clearing plate on other projects, should be started by next week.

Duane: ntr

Mike: working on stoqs server setup with IS, Mike to tech transfer with Kevin on mapserver / database log debug, etc.

Kevin: to start a 'one pager' based on conversation with Mike. Kevin has commits next week for management and OOI.

10 Jan 2011 - Attendees Thom Maughan, Tom O'Reilly, Danelle Cline, Duane Edgington, Mike Godin?

Discussed timeline, experiment dates, VM issues with dev environment, need for web app team to follow Carlos's documentation and able to make a simple edit and test, ([slides](#))

Follow up meeting 1:1 in the software lab with Duane Edgington, who indicated that he had a change in priorities from what we had discussed in December and he would not be available Jan/Feb or Apr.

The day after we met in his office, to discuss the risk to the program and the need for him to help prioritize Danelle to be on the web app fully dedicated in the first quarter.

6 Jan 2011 Kick off meeting held . Attendees Kanna Rajan, Thom Maughan, Duane Edgington, Doug Au, Tom O'Reilly, Mike Godin, Kevin Gomes, Danelle Cline (came for the very end of the kick off)

([Kanna's slides](#), [Thom's slides](#))

CANON network diagrams

This page last changed on Feb 16, 2012 by [oreilly](#).

I've sketched out schematic CANON network data flows - these hopefully give a high-level view of the major connections and flows between ODSS and deployed assets.

The [first diagram](#) identifies "generic" ship and autonomous platforms, and includes hypothetical DTN paths and routers. Note that DTN is currently in feasibility study phase, with no commitment to use within CANON.

The [second diagram](#) shows deployed assets specifically planned for CANON 2012.

This page last changed on Apr 05, 2012 by [duane](#).

Discussion on CoSci, COOP, MOQUA integration with ODSS

April 30, 2012

Jim Bellingham
Mike Godin
Thom Maughan
Kevin Gomes
Mike McCann
Danelle Cline
Duane Edgington

1. CoSci integration in ODSS
 - a. crawler on/off capability
 - i. later - need to have a way to get to the data if the crawler is off.
 - b. machine-to-machine (or query based) access to CoSci 'data' - discussions, shared images, crawled data products
 - i. looking for simple way to get to the stuff that is in CoSci
 - ii. eg. Matt at USC, collaborator with Autonomy project, looking for programmatic access to CoSci
 - iii. Thredds interface?
 - iv. eg. Easy to import from Mobile App:
 - i. geolocation
 - ii. photo
 - iii. note of what happened there
 - iv. capture at the point
 - c. log in and authentication and authorization - if we sign the user in at the ODSS level, we would like to possibly pass that in to CoSci programmatically (OpenID used in Tethys)
 - i. make approved users visible to all users of the distribution list(s)
 - ii. need to share the list of authorized logins between the ODSS GUI and CoSci
 - iii. side topic: who has access? Display who is on the distribution lists
 - d. long term plans for CoSci (2013 and beyond) - who can / would make changes for future enhancements, bug fixes?
 - i. who at MBARI picks this up in 2012?
 - ii. integrating with THREDDDS
 - iii. on the fly adapter (like an IOSP, THREDDDS gives a framework for writing IOSP), NCML - one of the fields is the service provider
 - i. Jim: 0 level, make all the data available (in whatever quality) in a common format
 - ii. make it easy to get the data into Matlab
 - i. Make a web page with info on getting data into matlab
 - iii. keep access to the data within mbari
 - i. template: AOSN data policy
 - iv. put ONR and other credits on CoSci
 - v. potential follow-on funding from ONR
 - vi. training and code-walkthrough on CoSci
2. COOP Cooperative Ocean Observatory Portal
<https://aosn.mbari.org/coop/>
 - a. we are missing the voting and chat features in ODSS and would like to draw on lessons learned or functionality of COOP
 - i. why not just use Skype? Because tools like skype make all the discussions 'black' (not accessible) to the group
 - i. on-line discussions need to be captured
 - ii. make the discussions open
 - b. long term plans for COOP - look at integrating chat and voting into CoSci
 - c. xmpp
Resolved to have a planned teleconf every Tuesday and Thursday, 1:30PM - 2:30PM PDT.
 - d. AI: Duane. Who is on the ODSS list?

i. As of 4/2/2012:
15 members:

- bkieft@mbari.org Brian Kieft
- carueda@mbari.org Carlos Rueda
- chma@mbari.org Mark Chaffey
- dcline@mbari.org Cline, Danelle
- duane@mbari.org Duane Edgington
- fpy@mbari.org Frederic Py
- godin@mbari.org Mike Godin
- jnaneshwar.das@gmail.com
- kanna.rajana@mbari.org Kanna
- kgomes@mbari.org Kevin Gomes
- mccann@mbari.org Mike McCann
- oreilly@mbari.org Tom O'Reilly
- salamy@mbari.org Karen Salamy
- thoover@mbari.org Thomas Hoover
- tm@mbari.org Thom Maughan

started discussion on MOQUA integration on 4/5/12:

1. MOQUA
 - a. estimate/discussion on integration of MOQUA with STOQS
 - i. We have a "green light" to work on integration of MOQUA with STOQS
 - ii. Mike G. to look at capabilities needed in STOQS to integrate MOQUA with STOQS
 - iii. Mike Mc. asks that needed capabilities be logged as issues – discussion group in google code project
 - b. long term plans for MOQUA
2. Other
 - a. VPE - how to organize an effective VPE for CANON without model data and virtual instruments. Looking at previous CANON data is the starting place, but then what...

Kickoff ODSS Engineering January 2012

This page last changed on Jan 24, 2012 by [duane](#).

```
<!-- /* Font Definitions */ @font-face
```

```
Unknown macro: {font-family}
```

```
@font-face
```

```
Unknown macro: {font-family}
```

```
@font-face
```

```
Unknown macro: {font-family}
```

```
/* Style Definitions */ p.MsoNormal, li.MsoNormal, div.MsoNormal
```

```
Unknown macro: {mso-style-unhide}
```

```
p.MsoListParagraph, li.MsoListParagraph, div.MsoListParagraph
```

```
Unknown macro: {mso-style-priority}
```

```
p.MsoListParagraphCxSpFirst, li.MsoListParagraphCxSpFirst, div.MsoListParagraphCxSpFirst
```

```
Unknown macro: {mso-style-priority}
```

```
p.MsoListParagraphCxSpMiddle, li.MsoListParagraphCxSpMiddle, div.MsoListParagraphCxSpMiddle
```

```
Unknown macro: {mso-style-priority}
```

```
p.MsoListParagraphCxSpLast, li.MsoListParagraphCxSpLast, div.MsoListParagraphCxSpLast
```

```
Unknown macro: {mso-style-priority}
```

```
.MsoChpDefault
```

```
Unknown macro: {mso-style-type}
```

```
@page WordSection1
```

```
Unknown macro: {size}
```

```
div.WordSection1
```

```
Unknown macro: {page}
```

```
/* List Definitions */ @list l0
```

```
Unknown macro: {mso-list-id}
```

```
@list l0:level1
```

```
Unknown macro: {mso-level-tab-stop}
```

```
@list l0:level2
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l0:level3
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l0:level4
```

```
Unknown macro: {mso-level-tab-stop}
```

```
@list l0:level5
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l0:level6
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l0:level7
```

```
Unknown macro: {mso-level-tab-stop}
```

```
@list l0:level8
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l0:level9
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l1
```

```
Unknown macro: {mso-list-id}
```

```
@list l1:level1
```

```
Unknown macro: {mso-level-tab-stop}
```

```
@list l1:level2
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l1:level3
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l1:level4
```

```
Unknown macro: {mso-level-tab-stop}
```

```
@list l1:level5
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l1:level6
```

```
Unknown macro: {mso-level-number-format}
```

```
@list l1:level7
```

```
Unknown macro: {mso-level-tab-stop}
```

```
@list l1:level8
```

```
Unknown macro: {mso-level-number-format}
```

@list l1:level9

Unknown macro: {mso-level-number-format}

ol

Unknown macro: {margin-bottom}

ul

Unknown macro: {margin-bottom}

-->ODSS Kickoff 1/5/12

Roles:

Thom - Requirements, interface to PIs

-- HIPP ~ 400 hours

Duane - Engineering Project Management day to day

Kevin Gomes - GUI

Danelle - Backend Vis

Mike - database / access, tracking

Tom O'Reilly - Comms / AMQP

Kanna:

Priorities:

1. Situational Awareness - useful
 - a. Make ODSS the only portal that our users use
2. Design a scalable comms architecture
3. Integrate CoSci - make it useful
 - a. Logs
 - b. Mail
 - c. Chat
 - d. Video 
 - e. Social media ?
4. Machine Learning for Event Detection
5. Data fusion
 - a. How to feed is Engr. Challenge
6. Plan visualization (TREX)
7. NEPTUS Integration 
 - a. Eval

Scenarios

1. "where is the data?"
2. "what is the plan?"
 - a. map of where survey is to be done
 - b. capture intent
 - c. capture what actually happened

- i. actual vs. plan

- 3. "can I do X (survey)?"

- a. resources, transit time

- b. safety constraints

ODSS Platform Timeline Editor

This page last changed on Apr 05, 2016 by [carueda](#).



Current version: **0.8.2** 2016-04-05 (version shown in the upper right corner of the planning section)

Note: Not all of the latest changes may be accurately reflected below. Please get in touch if you have any questions.

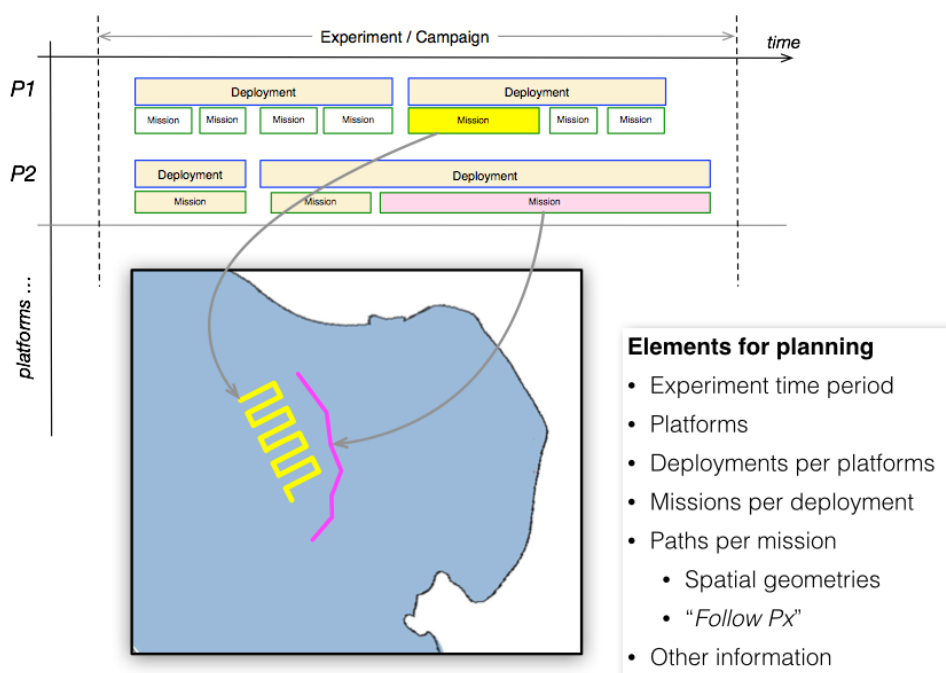
Contents

- [ODSS Planning: What is it about?](#)
 - [Conceptual model](#)
- [Using the editor](#)
- [Noteworthy recent changes](#)
- [FAQ](#)
- [Status and possible new features](#)

ODSS Planning: What is it about?

- A central goal of the Planning component in ODSS is to support the overall planning of science experiments/campaigns through an intuitive graphical interface where platforms can be assigned deployments and missions within a spatiotemporal frame.
- Once a plan is defined (and iteratively refined during execution), it can be combined with other displayed elements within the Situational Awareness tab.
- Conversely, for better context during planning, elements from Situation Awareness can be included in the Planning tab.
- In general, the tool is intended to provide export/import capabilities to facilitate the exchange of plan specifications with external tools. In particular, the export options can be a basis for refinement and execution by platform teams. Additionally, refined plans can be imported so they are combined with other data elements in the ODSS.

Conceptual model



Tokens

The central element to compose the timeline in the editor is the "token." A token represents a particular state, activity, or task to be associated with a particular platform on a particular time period.

...

Using the editor

Cannot resolve external resource into attachment.

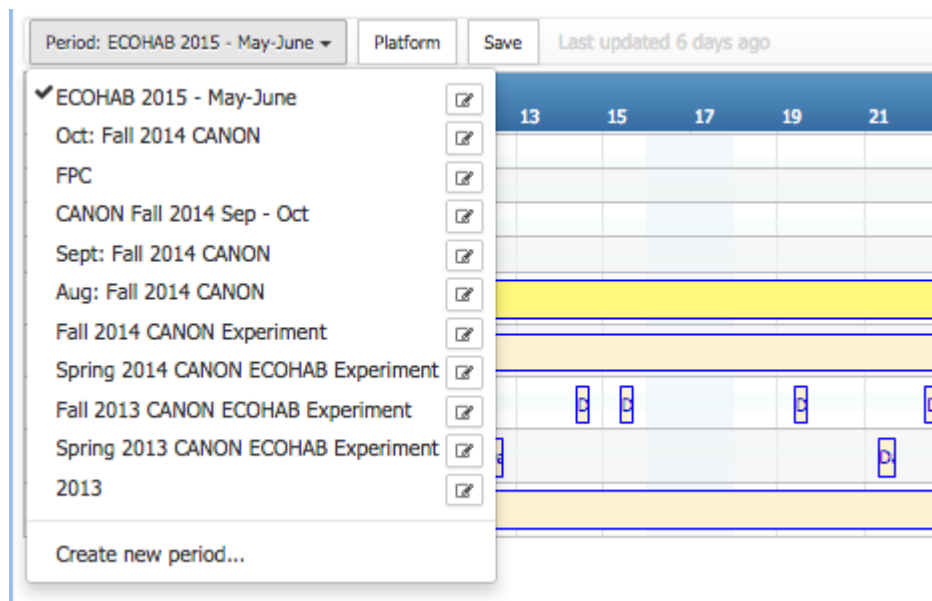
General interaction

- Timeline:
 - use your mouse or trackpad to navigate and zoom in and out;
 - hovering your mouse over a token highlights the token and also the associated geometries on the map;
 - double click on an empty space in the timeline to create a new token;
 - click on a token to select it; this also selects the associated geometry on the map;
 - drag a selected token to change its time range, or its associated platform;
 - double click on an token to edit its associated details.
- Map:
 - use your mouse or trackpad to navigate and zoom in and out;
 - hovering your mouse over a geometry highlights the geometry and also the associated token on the timeline;
 - click on a geometry to select it along with its associated token;
 - click one of the view or edit modes to enable corresponding functionality;

Buttons

Period dropdown button

A "period" is some time span of interest. This button shows the currently selected period and allows to do various operations on the periods.



From the dropdown one can change the period to be visualized, edit any of the existing periods, and create a new period.

When editing an existing period, or adding a new one, the following are possible actions on the corresponding dialog:

- Create: Saves the newly defined period.
- Update: Saves the changes to an existing period.
- Delete: Delete the selected period from the database.
- Cancel: Cancels the dialog.

Creating period:

Name:

Start: 2015-04-07 End: 2015-05-07

April 2015						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	01	02
03	04	05	06	07	08	09

May 2015						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	01	02
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	01	02	03	04	05	06

Editing period: ECOHAB 2015 - May-June

Name:

Start: 2015-05-01 End: 2015-06-30

May 2015						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	01	02
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	01	02	03	04	05	06

June 2015						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	01	02	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	01	02	03	04
05	06	07	08	09	10	11

Platform button

This button allows to change the current selection of platforms:

Select the platforms to include in the timeline

Q

Name filter

• auv:

◊ ☐ ● DAllanB

◊ ☐ ● Daphne

◊ ☐ ● Guanayll

◊ ☐ ● HEXY

◊ ☐ ● Makai

◊ ☐ ● QUADSHOT1

◊ ☐ ● UCBPUSH

◊ ☐ ● alfa05

◊ ☐ ● alfa06

◊ ☐ ● cularis05

◊ ☐ ● cularis06

◊ ☒ ● daphne

Apply

Reset

Cancel

The Apply button saves the modified selection.

Save button

This button saves all new and modified tokens. Before being saved, the name and style of these tokens are highlighted in a way similar to the following:

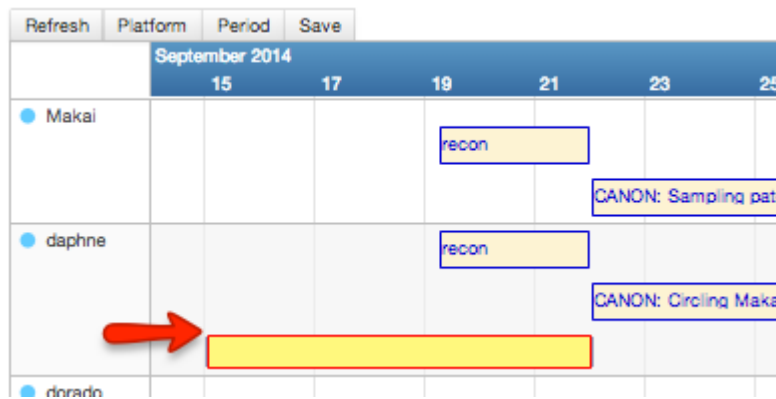
Refresh	Platform	Period	Save
		September 2014	
		15	17 19
● Makai		recon	
● daphne		NEW	

Refresh button

This button reloads the timeline from the database. If there are any unsaved changes, a confirmation dialog will appear.

Entering a new token

To enter a new token double-click on the timeline area corresponding to the desired associated platform and approximate starting date. This will introduce a new token in the widget:



- You can then drag the token position or change the starting or ending dates by dragging the icon that appears at the corresponding end of the token.
- But you can also double click the token to edit this and other details:
 - Name: this a short name for the activity, task, or state associated with the token.
 - Description: some more extended text describing the token.
 - The start and end dates and times can be specified here with more precision if needed.

Token on timeline for platform 'Bruce'

Name:

Description:

Start: May 6, 2015 7:00:00 AM End: Jun 10, 2015 5:00:00 PM

May 2015

26	27	28	29	30	01	02
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	01	02	03	04	05	06

June 2015

31	01	02	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	01	02	03	04
05	06	07	08	09	10	11

07 : 00

17 : 00

Apply Reset Delete Cancel

The buttons in this dialog are:

- Apply: This button applies the changes so they get reflected in the timeline, but this is **not** persisted immediately in the database. To actually save the changes of the token in the database (or add the token if new), use the Save button in the main timeline interface.
- Reset: This button reverts any changes in the form.
- Delete: This button allows to delete the token if already existing in the database.
- Cancel: Cancels the dialog.

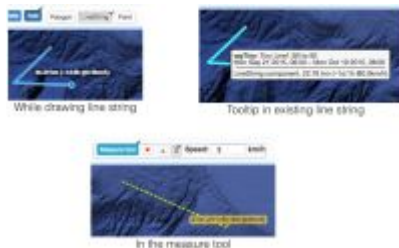
"Copy-n-add" feature

This feature facilitates the addition of tokens that share similar information (e.g., same duration and start time) and associated geometry:

- Select the token you want to be used as basis for new tokens. This selection is via the usual click on the token;
- Press 'C' or 'c' on your keyboard — the selected token gets copied in an internal clipboard. With uppercase 'C' the associated geometry will also included in the copy. Lowercase 'c' does not include the geometry.
- Add a new token anywhere on the timeline with the usual double-click under the desired date;
- The new token will start at the clicked year-month-day date on the timeline, but will get the time (hour:min:sec), duration, and name from the token that was last copied with the 'C' or 'c' keystroke. If 'C' was used, a copy of the geometry will be associated to the new token.

Noteworthy recent changes

- 0.8.2: (2015-04-05)
 - For the copy-and-add functionality, 'C' (uppercase) now also copies the geometry associated with the selected token, while 'c' (lowercase) does not.
 - Many internal adjustments (library updates; simplified build process, ...)
- 0.8.1: (2015-09-16)
 - initial implementation of time calculations for distances:
 - time is shown along with the distance for both existing line-strings (on mouse-over) and while drawing new ones for a token. The speed is taken from an interim hard-coded platform-speed association
 - time is also shown by the measureTool while using the distance option. A new 'speed' field in the UI allows the user to indicate the associated speed prior to start drawing the line-string. The field can be left empty or with 0 value to disable.



- 0.8.0: (2015-06-03)
 - initial version of measure tool
 - zoom in/out and panning with key strokes on the map
 - include polygon-area/linestring-length in geometry coordinate table dialog
 - include lineString length / polygon area / point location information in tooltip over geometry component
- 0.7.4: (2015-05-20)
 - ability to view and directly edit the coordinates of the geometries (in "view", "move" or "modify" mode, double-click the geometry component to be viewed or edited)
 - filter input added to the platform selection dialog so it's easier to find entries in the long list
- 0.7.3:
 - several usability improvements: better token tooltips; added tooltips on geometries; token/geometry selection can now be done on the map itself; bidirectional visual sync between timeline and map.
 - escape key clears token selection
 - map resized according to window size, with a minimum height (500px)
 - reduce timeline item padding, mainly to save vertical estate
- 0.7.1:
 - geometry can now be defined for brand new item in the timeline
 - removal of token in timeline also removes associated geometry
 - geometry modification now also triggers a change of the "modified" status of token for purposes of saving
- 0.7.0: initial geometry editing prototype
- 0.5.0:

- improved UI for periods; buttons reorganized in general interface; mechanisms to mark a token as of type "deployment" or "mission" (not yet documented here).
- "copy-and-add" token"

FAQ

How can I add new platforms so they are available for selection in the timeline?

It is planned that the ODSS will include an option for adding platforms. For the moment, please let Carlos or Kevin know.

What happens when 2 users try to modify the same token, as in changing a date range or description?

Short answer: Last save of the same pre-existing token "wins." New tokens, however, are all retained (basically because each new token gets a unique internal ID.)

Please note: the tool does not in general make any explicit control for concurrent modifications. So, please coordinate the use of the tool for editing purposes, in particular for modification of existing tokens.

Do all period views point to the same timeline database?

- Yes. There is a single backend database supporting the information displayed in the editor.
- Worth noting that the period selected as you zoom in/out or drag your mouse, only has a visual effect (that is, no changes at all in the database).

Why am I not seeing a certain feature or behavior in the tool as described in this document?

As we deploy new versions of the application, your browser may still be using a cached copy of a previous version, even upon a reload of the page. You may need to force a complete reload by clearing your browser's cache.

Status and possible new features

✅=implemented/fixed ❌=not implemented

Feature / limitation / bug	Status	Comments
for each token allow to enter a description	✅	
allow to select desired platforms according to category (AUV, drifter, ship, etc.)	✅	
bug: selection to see all platforms only works when tried the first time in the session	✅	
shade/highlight weekends and holidays	✅	Re-enabled in version 0.3.1 (9/17/14)
allow to select a period of interest (and define new ones)	✅	adjustments needed to align with ODSS "view" concept
expose the platforms defined in the underlying ODSS database	✅	

native integration of the editor in the ODSS (previously via iframe)	✓	
copy-n-paste token to facilitate editing	✓	See "copy-n-add".
specify which platforms to be displayed	✓	
token tooltip to show description	✓	name and description are included in the tooltip
alternate shading for the timeline grid	✓	
order platforms	✓	No explicit user-given ordering, but selected platforms are now grouped by type and sorted alphabetically.
color platforms	✓	coloring done on bullets next to the texts. Uses the colors assigned to the platforms in the ODSS database.
show confirmation alert before refresh action if there are unsaved changes	✓	
include link to this help page from the tool	✓	
show data/time of last modification	✓	A text like "last updated 4 days ago" is now shown (new in v.0.2.1)
versioning and authoring according to logged in user	✗	
control upon concurrent editing by multiple users	✗	
make hyperrefs clickable in a token description	✗	may also be desired/needed for other entities (timeline as a whole; individual platforms, etc.)
allow to include info from external calendars (eg., expedition db, Google calendars)	✗	
somehow link with other databases (eg., expedition)	✗	

Platform Timeline Editor development

This page last changed on Aug 20, 2014 by carueda.

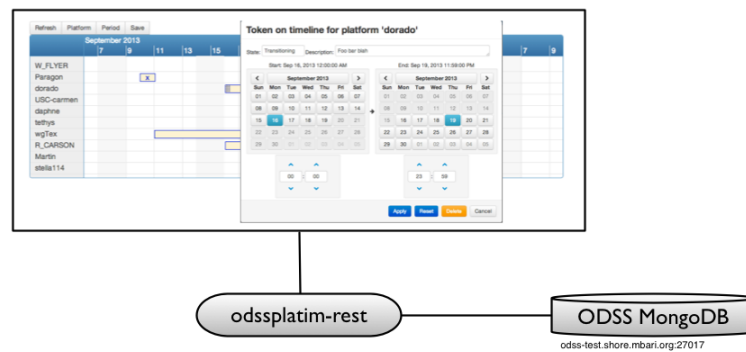
Contents

- [Overview](#)
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 - [Module structure](#)
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Overview

The platform timeline editor implementation is comprised of two modules, **odssplatim-rest** and **odssplatim-ui**, with persistency for the various managed entities provided by the ODSS MongoDB database.

The following figure shows a high-level view of how these components interplay. This is illustrated in the case of the odss-test deployment.



odssplatim-rest: The back-end service

This module mediates between the UI and the underlying ODSS database by providing a REST interface to support the editor UI.

Module structure

Under webapp/server/:

```
platim
+-- README.md
+-- app.js                (local development)
+-- template.config.json  (local development)
+-- package.json          (local development)
+-- index.js
+-- periods
|   +-- index.js
|   +-- models.js
+-- prefs
|   +-- index.js
|   +-- models.js
+-- tokens
+-- index.js
+-- models.js
```

The main ODSS application server, `AppServer.js`, makes the following call to set up the platform timeline editor service:

```
require('./platim').setup(this.app, '/odss/platim/');
```

where `'/odss/platim/'` indicates the prefix for the routes to be used.

odssplatim-ui: The UI front-end

This module provides the editor user interface. It is based on:

- [AngularJS](#) for the overall application structure.
- [AngularUI](#), "The companion suite(s) to the AngularJS framework."
- [Vis.js Timeline widget](#) to provide the graphical representation of the timelines.
- [Moment.js](#) for general manipulation and formatting of dates.
- [Lodash.js](#) as a very handy and performant functional-oriented utility library.

The code of this module is under `webapp/server/web/odss/odssplatim-ui`. Please see `README.md` file there.

Project structure

```
+-- LICENSE
+-- README.md
+-- bower.json
+-- gulpfile.js
+-- package.json
+-- scripts
|   +-- proxy.js
+-- src
+-- app
|   +-- app.js
|   +-- config.js
|   +-- constants.js
|   +-- constants_links.js
|   +-- index.html
|   +-- index.min.html
|   +-- index_links.html
|   +-- local.config.js
|   +-- local.index.html
|   +-- main
|       +-- main.js
|       +-- odss-platim.tpl.html
|       +-- odssPlatim.directive.js
+-- model.js
+-- period
|   +-- period.js
|   +-- period.tpl.html
+-- platform
|   +-- platform.js
|   +-- platform.tpl.html
+-- services.js
+-- templates.js
+-- timeline
|   +-- timelineWidget.js
+-- token
|   +-- timelineWidget.js
|   +-- token.js
|   +-- token.tpl.html
+-- util
|   +-- confirm.tpl.html
|   +-- util.js
+-- common
```

```
|   +-- utils
|       +-- miscutils.js
+-- css
|   +-- platim.css
|   +-- platim_vis.css
+-- img
+-- resize_dots.png
```

Initial development

The two modules were initially developed in separate repositories:

- odssplatim-ui: <https://github.com/carueda/odssplatim-ui-original>
- odssplatim-rest: Implementation in [javascript](#) and initial implementation in [Scala](#); see also [this page](#).



Documentation about the initial implementation of the back-end service in Scala. Note that this service has already been reimplemented in Javascript and incorporated in the [main ODSS code](#).

odssplatim-rest: The back-end service

This module mediates between the UI and the underlying ODSS database by providing a REST interface to the UI. It is written in Scala and based on [Scalatra](#).

odssplatim-rest is deployed at odss-test.shore.mbari.org:8080/odssplatim-rest. As an example, <http://odss-test.shore.mbari.org:8080/odssplatim-rest/tokens> retrieves all the platform timeline tokens that are currently saved in the ODSS database. By default, the configuration of the service is retrieved from `/etc/odssplatim.conf`, but this location can be changed by adjusting the appropriate entry in the application's `web.xml` file. See note below about the use of a separate location for the configuration.

Note that this service is [CORS](#)-enabled to allow cross-origin resource requests, so a client application, like `odssplatim-ui`, can be located on a different server.

The code of this module is hosted at <https://github.com/carueda/odssplatim-rest>.

Build and deploy

```
$ cp odssplatim.conf.template odssplatim.conf
$ vi odssplatim.conf # to fill in the application configuration (MongoDB connection parameters)
$ sudo ln -s `pwd`/odssplatim.conf /etc/ # or edit web.xml to indicate a different config file location
$ ./sbt compile package # to create war file
```

Then deploy generated WAR file on target container.

A note about the use of `/etc/*.conf` for the configuration

Placing the configuration of a server-side application under a separate directory (with `/etc/` being a typical choice) may in general provide greater flexibility than placing it in a file deployed along with the application, especially when those parameters are parameterized according to variables in build files. In the `odssplatim-rest` case, only the location of such configuration file is indicated in its `web.xml` file. Also, only a template for the configuration file, `odssplatim.conf.template`, is kept under version control, but not the specific configuration file itself. This mechanism is flexible in that it facilitates the deployment of new versions of the application without having to touch the configuration file (unless of course there are changes in the configuration itself). The approach also makes much easier to introduce or remove configuration parameters without having to change the application's base configuration (eg., `web.xml` in the case of servlet-based applications) and all the associated logic that would be needed to transfer those parameters from build files (eg., `build.properties`, `build.xml`), and template files, to the final configuration file.

Project structure

```
.
+-- LICENSE
+-- README.md
+-- odssplatim.conf.template
+-- project
|   +-- build.properties
|   +-- build.scala
|   +-- plugins.sbt
+-- sbt
+-- src
```



```

+-- main
|
|   +-- resources
|   |   +-- log4j.xml
|   |   +-- logback.xml
|   +-- scala
|   |   +-- ScalatraBootstrap.scala
|   |   +-- org
|   |   |   +-- mbari
|   |   |   |   +-- odss
|   |   |   |   |   +-- services
|   |   |   |   |   |   +-- timeline
|   |   |   |   |   |   |   +-- ApiDocsFix.scala
|   |   |   |   |   |   |   +-- JettyLauncher.scala
|   |   |   |   |   |   |   +-- OdssPlatformTimelineStack.scala
|   |   |   |   |   |   |   +-- OdssPlatformTimelineSwagger.scala
|   |   |   |   |   |   |   +-- PeriodsController.scala
|   |   |   |   |   |   |   +-- PlatformsController.scala
|   |   |   |   |   |   |   +-- Setup.scala
|   |   |   |   |   |   |   +-- TimelinesController.scala
|   |   |   |   |   |   |   +-- TokensController.scala
|   |   |   |   |   |   |   +-- defs.scala
|   |   |   |   |   |   |   +-- package.scala
|   +-- webapp
|   |   +-- WEB-INF
|   |   |   +-- web.xml
+-- test
|
|   +-- scala
|   |   +-- org
|   |   |   +-- mbari
|   |   |   |   +-- odss
|   |   |   |   |   +-- services
|   |   |   |   |   |   +-- timeline
|   |   |   |   |   |   |   +-- TokensControllerSpec.scala

```

ODSS Web Application release 0.4.0 discussion

This page last changed on Dec 30, 2013 by [kgomes](#).

This describes capabilities in the 0.3.0 release and what needs to be done in the 0.4.0 release of the ODSS web interface. This is very much a work-in-progress wiki as the software development team moves forward with understanding the GWT toolkit and various technologies that might be applied.

v. 0.3.0 Existing capability (Carlos prototype)

- Enables WMS and WFS layers on the map as the main data access interfaces. This is accomplished by using OpenLayers (via GWT-OpenLayers), which supports these and several other data access protocols. WMS and WFS generally support static data.
- Uses SmartGWT as the main library to create the user interface (SmartGWT is very actively developed and broadly used, and has in fact superseded Gwt-Ext). (*Note - this is different than gwt-ext used in the Google Web Toolkit 2 Application Development Cookbook*)
- Provides a "perspective" approach to handle the various modes of user interaction (eg., "situational awareness", "planning"), such that the interface can be adjusted depending on the mode.
- Allows to create new vector features (preliminary functionality). This is enabled in the "planning" perspective and can be used to store user defined "features", which is an OGC concept, e.g. a 2D point can be a feature.
- Is based on Maven, which facilitates dependency, unit testing, and build management.
- And it's worth noting that this new prototype does not (and was not intended to) replicate all the functionality in JD's version during this phase. Rather it demonstrates the feasibility of using OGC standard protocols for data access, while allowing the incremental incorporation of previous and new functionality.

v. 0.4.0 Needed capability

- Populate the data products view
 - Server side: get AUV plots, measured data, TREX data, and data products defined in KML files. Draw colored sensor tracks. Will this change ? Still trying to understand this...
 - Client side: display available products in selectable tree and display in own view
- Add playback capability to "Situational Awareness" tab to playback vehicle locations and if available, vehicles (colored) sensor tracks .
- * Display (Mavin/SVN tag) version and (SVN) build number somewhere
- CSS (cascading style sheets) formatting to something clean and MBARI labeled, maybe similar to MBARI external web
- Remove wiki tab

v. 0.4.0 Outstanding team design decisions

- In the JD version, the client.model package has 33 different classes. Most of these classes are data/instrument/platform models that were hardcoded for Glider, Drifter, AUV, etc., probably in the interest of time.
 - SmartGWT has something called a "DataSource" which simply describes a data model in a manner conceptually very similar to the way SQL is used to represent a database schema. Data can be read from, for example local array data, XML or JSON, or data from a server.
- SmartGWT or GWTDesigner, or do they work together ? Not sure here, but a decision needs to be made about what tool to use for layout. Changes will be needed to the user interface layout per each perspective (Situational Awareness, Planning, etc.). We should do some testing on this.
- Where/how to leverage WMS/WFS/SOS services in this design ?
- Model-view-presenter (MVP) architecture. Need to bridge the gap between presenter design pattern and idea of perspectives. Refactor presenter designs in JDs code into this release.

For future releases

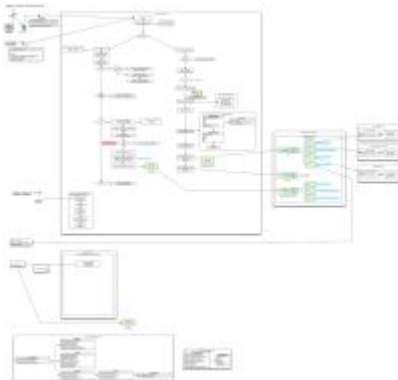
- Default display should
 - Not require login
 - Display where platforms are
- Display "hotspots"
- Configuration/deployment related

- For proper deployment, the Google Maps API key needs to be adjusted in Dss.html according to the host server. *Rational: Accessing Google MAPS requires a "key" that is keyed to the host server name. For deployment on the staging versus the production server, for example, we'll need a way to modify this key outside the WAR deployment, or generate a key that will work on either and hardcode it.*
- Move OpenLayer javascript sources outside the DSS WAR file and reference them through e.g. a configured property.
- *Rational: The OpenLayers web site is referenced in the application, but it can go down. One solution is to keep a copy of the OpenLayer javascript sources in the WAR that gets deployed local on the web server and referenced when the site is down. However, OpenLayers is ever evolving and we will want to take advantage of new releases without have to replot the WAR, thus a new method is required to handle this.*
- Investigate Mapfish printing further
- Manage user-defined layers products
- Add user login
- Add display of newly discovered assets through TBD planning service API. Tom O'Reilly will inform of needed API.
- Add Planning tab
- Each science user can have their own plan
 - Plan is shared with everyone else
 - Move drag and drop drifter and other Dorado survey planners to this perspective
- Experiment Log
 - Initial log entry derived from Chavez labs ships logs
 - There is more than one kind of log: ship log and individual notes
 - Need to still have persistent storage when no internet is present and sync later
 - Automate data entry wherever possible, e.g. ship leaves harbor
 - Ideas: log entries tag to enable search, using Cassandra node on the ship.

Platform Tracking Design

This page last changed on Dec 30, 2013 by [kgomes](#).

This page documents the current design of the platform tracking portion of the ODSS. Here is a diagram of the data flow for platform tracking information:



Notes:

1. The processing of platform tracks are done by platform types. They are:
 - a. AIS
 - b. AUV
 - c. Drifter
 - d. Glider
 - e. Mooring
 - f. Ships
2. The processing of each type is done on a separate account on the machine pismo (all accounts have the same password)
 - a. AIS -> aistrack
 - b. AUV -> auvtrack
 - c. Drifter -> driftertrack
 - d. Glider -> glidertrack
 - e. Mooring -> mooringtrack
 - f. Ships -> shiptrack
3. All platforms, except for AIS, all get position information via email
 - a. AUV -> auvtrack@mbari.org
 - b. Drifter -> driftertrack@mbari.org
 - c. Glider -> glidertrack@mbari.org
 - d. Mooring -> mooringtrack@mbari.org
 - e. Ships -> shiptrack@mbari.org
4. In each of the accounts home directory, there is a .forward file that the mail server uses to forward each incoming message to the proper processing script as simple text input
5. For AUVs:
 - a. Email message is sent to 'auvtrack@mbari.org'
 - b. Subject of the message should be a csv list of:
 - i. **platform_name**: The short name (< 9 characters) of the platform whose position is being reported
 - ii. **epoch_seconds**: The epoch seconds (decimal) of the date and time of the timestamp
 - iii. **longitude**: longitude
 - iv. **latitude**: latitude

```
dorado,1317939958.5556331, -0.724, 37.74
```
 - c. The .forward file send the message to a 'dispatchMessage.py' script
 - d. The script takes the text of the email and uses a library to reconstruct the text into an email
 - e. If the email has an attachment, it writes the attachment to the 'sbdmessages' subdirectory
 - i. The attachment should be a Base64 Encoded file that has a serialized protocol buffer message.
 - ii. For the TREX process, it sends SBDs with an attachment that is a protocol buffer of the form defined in trex_sensor.proto:

```
package org.mbari.trex;
```

```

message SensorMessage {

/* One data sample
*
* Location (northing,easting) is not corrected as it is sampled
* in real-time.
* Do also note that we used UTM instead of lat,lon here. This is
* mostly due to the fact that TREX uses this reference for navigation
* and his lat,lon information is pretty bad (2 decimal places of accuracy
* which can result on an error of 100s of m)
* Note : based on Mike McCann suggestion northing and easting have been made
* optional as they may be replaced in the future by lat/lon
*/
message Sample {
required uint64 utime =1; // unix time for the sample
required float northing =2; // UTM northing (m)
required float easting =3; // UTM easting (m)
required float depth =4; // Vehicle depth (m)
optional float temperature =5; // temperature (C)
optional float salinity =6; // salinity
optional float nitrate =7; // Nitrate
optional int32 gulper_id =8; // indicate which gulper was fired (if any)
}
// All the samples are stored in this series attribute
repeated Sample sample =2;

/* Information on position error deduced from a GPS fix
*
* This data will be produced when TREX identifies an important "jump"
* during a gps fix (in the order of tens to hundreds of meters):
*
* As this information will come after the samples are propagated the receiver
* of the message may need to apply this error to previously received samples.
* The way to apply it is the following
*
* for all sample such as gps_fix.from_time <= sample.utime < gps_fix.to_time
* sample.northing = sample.northing + (sample.utime-
gps_fix.from_time)*gps_fix.northing_rate
* sample.easting = sample.easting + (sample.utime-
gps_fix.from_time)*gps_fix.easting_rate
* end for
*/
message GpsError {
required uint64 from_time =1; // Date where the error started to apply
required uint64 to_time =2; // Date where the error was identified
optional float northing = 3; // northing at to_time (m)
optional float easting = 4; // easting at to_time (m)
// May add lat,lon info in the future
// optional float longitude = 5;
// optional float latitude = 6;
optional float northing_error_rate =7; // northing navigation error (m/s)
optional float easting_error_rate =8; // easting navigation error (m/s)
}
optional GpsError gps_fix =1;
}

```

f. If the message did not have an attachment:

- i. Using a local dictionary, look up the IMEI number from the short name
- ii. Extract the position information from the subject line
- iii. Write the position information into the MBARITracking database on equinox
- iv. Publish the message to the 'auv_pb' exchange on messaging.shore.mbari.org. The form of the message is the platformMessage.proto protocol buffers definition which at the time of this writing is:

```

package MBARITracking;

message PlatformReport {

```

```

enum PlatformType {
    MBARI_SHIP = 0;
    AIS = 1;
    AUV = 2;
    DRIFTER = 3;
    MOORING = 4;
    GLIDER = 5;
}
optional PlatformType type = 1;
optional string name = 2;
optional double epoch_seconds = 3;
optional double latitude = 4;
optional double longitude = 5;
optional string source = 6;
optional uint64 mmsi = 7;
optional uint64 imei = 8;
optional string iso_datetime = 9;
}

```

Message traffic is consolidated thru AMQP for binding into applications and database ingest

ODSS has web services (WMS, WFS, WxS, etc) that can

REST - representational state server transfer, REST - form a URL request

SVN /MBARITracking/trunk/README

ssh auvtrack@pismo

(Nitrate pH h2O four you bang no no nonsense)

/home/auvtrack

if you want to bang on the software, go into (cd dev), then cd MBARITracking. which is a reflection

svn status

svn diff README

more diff (15 years of perl scripts (started by Jerry Hatcher)...)

watchdog scripts restart scripts that have issues

tethys

svn commit README

Now, go to log directory

cd ..

cd log

scripts

dispatch

IMEI is associated with a name, and in the dispatch script a process script (in python) is called

(.forward takes input and forwards to std in of the python script)

trex.py

look for processsMessage method

the LRAUV tracking app

An important python idiom: `if __name__ == main` publishes the usage

`trex.py processMessage`

for protocol buf testing....

`parseMsg` would need to be reworked to receive a protocol buf

`*.proto` in the scripts buffer

When SBD are sent by TREX, monitor the log file on Pismo.

Login as `auvtrack`, password is (hint above).

`cd /auvtrack/logs`

`tail -f dotForward.log`

`tail -f /home/auvtrack/logs/trex.log`

To test:

make a copy of the `sbd` with the IMEI as the filename (see `dev/MBARITracking/scripts/dispatch.py`)

`mutt -a /mbari/`

Setting up STOQS on the VM

This page last changed on Dec 30, 2013 by [kgomes](#).

The following instructions were successfully applied to a fresh installation of the VM \\tempest\tempbox\thom\mbari_vm_2010Nov29.zip as of 2010-12-20 on a MacBook host and also on a Linux host.

NOTE: The VM comes with an initial set-up of the 'stoqs' database. The following steps adjust/complement this set-up, populate the database, and test with a simple javascript interface that can be run on VM's browser and on a browser on the host. These instructions should be applied on a fresh copy of the VM.

1. Quick set-up

Expand the attached [stoqs-setup3.zip](#) in some directory in the VM. And then:

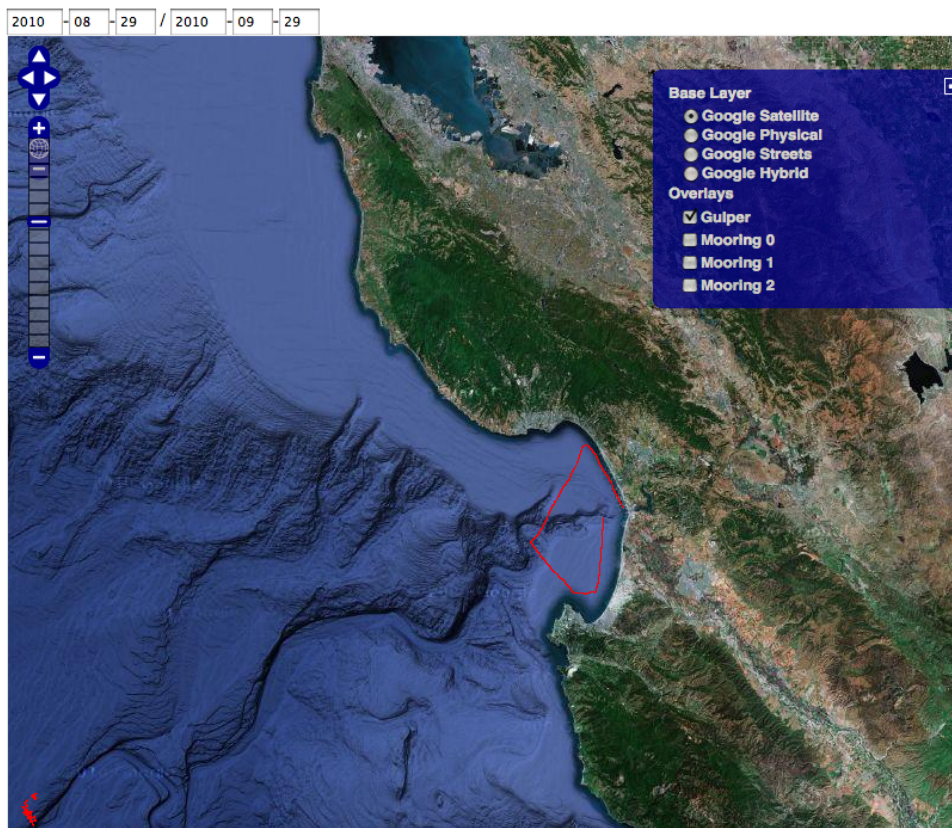
- As user 'root'

```
cd /path/to/stoqs-setup/  
./as_root.sh
```

- As user 'student'

```
cd /path/to/stoqs-setup/  
source setenv.sh  
./as_student.sh
```

Then, you can open <http://stoqs.mbari.org/> in your VM's browser. The following screenshot shows the result after selecting Gulper as overlay. Of course, your output may be different depending of the data that was imported.



To make the VM visible so you can open this address in your host, see section 2.

For details about these scripts, see [this page](#).

2. Miscellaneous

Accessing <http://stoqs.mbari.org/> from your host

Set "Bridged" for the network adapter in the VM. Get the new assigned IP address and associate the IP to stoqs.mbari.org in the /etc/hosts file in your host machine. Then, load: <http://stoqs.mbari.org/> in your host.

NOTE: This setting facilitates testing but is of course temporary. An actual STOQS server will eventually be in place.

STOQS set-up in detail

This page last changed on Dec 21, 2010 by [carueda](#).

This page explains in more detail the instructions performed by the scripts in the [quick set-up](#).

Preparations

Postgresql re-location

The postgresql database is in the root partition in the provided VM. This partition is relatively small, so, to avoid errors related with insufficient space when importing data, move postgresql to a different partition. For this, run the attached `move_pg.sh` as root.

Postgresql logging

Optional. Set the following in `/var/lib/pgsql/9.0/data/postgresql.conf`. Adjust as you like.

```
...
log_duration = on
...
log_line_prefix = '%t '
...
log_statement_stats = on
```

If you did any changes:

```
[root@localhost ~]# service postgresql-9.0 restart
```

You may want to monitor the appropriate log file under `/var/lib/pgsql/9.0/data/pg_log/`.

stoqs.mbari.org

Add the following line to `/etc/hosts` in the VM so we can refer to the VM server in a convenient way (for example, to open the GUI interface below using the URL <http://stoqs.mbari.org>):

```
127.0.0.1 stoqs.mbari.org
```

NOTE: This setting facilitates testing but is of course temporary. An actual STOQS server will eventually be in place.

Styling

In `~student/Desktop/mbari/mapfiles/gulper.layer.map`, I adjusted the STYLE section as follows for better display in the test at the end of this page:

```
STYLE
COLOR 255 0 0
SIZE 4
WIDTH 10
END # STYLE
```

STOQS database set up

As 'student', give the following relations ownership to 'mbari' (note that these are the only relations in the 'stoqs' database at this point--a later operation will create more):

```
$ psql -U postgres stoqs
stoqs=# \d
```

List of relations

Schema	Name	Type	Owner
-----+-----+-----+-----			

```
public | geography_columns | view | postgres
public | geometry_columns | table | postgres
public | spatial_ref_sys | table | postgres
(3 rows)
```

```
stoqs=# alter table spatial_ref_sys OWNER TO mbari;
ALTER TABLE
stoqs=# alter table geography_columns OWNER TO mbari;
ALTER TABLE
stoqs=# alter table geometry_columns OWNER TO mbari;
ALTER TABLE
```

```
stoqs=# \d
List of relations
Schema | Name | Type | Owner
-----+-----+-----+-----
public | geography_columns | view | mbari
public | geometry_columns | table | mbari
public | spatial_ref_sys | table | mbari
(3 rows)
```

The idea is that all relations in the 'stoqs' database will have the 'mbari' user as the owner. In particular, note that no explicit permissions will need to be granted.

The following according to `~/student/Desktop/mbari/README` and some additional adjustments.

NOTE: The provided README is a bit confusing regarding the referenced 'stoqs' resource. Looks like it should be `~/Desktop/mbari` but there is also a `~/Desktop/stoqs` directory. According to the timestamp of most recent contents, the following uses `~/Desktop/mbari` (`~/Desktop/stoqs` is ignored entirely).

As 'student':

```
[student@localhost mbari]$ cd ~/Desktop/mbari/
[student@localhost mbari]$ export PYTHONPATH=/home/student/Desktop/mbari
[student@localhost mbari]$ export DJANGO_SETTINGS_MODULE=settings
[student@localhost mbari]$ django-admin.py syncdb
Creating table expedition
Creating table activity_type
Creating table platform_type
Creating table platform
Creating table activity
Creating table instant_point
Creating table parameter
Creating table measurement
Creating table measured_parameter
Installing index for stoqs.Expedition model
Installing index for stoqs.Platform model
Installing index for stoqs.Activity model
Installing index for stoqs.InstantPoint model
Installing index for stoqs.Measurement model
Installing index for stoqs.MeasuredParameter model
No fixtures found.
```

Database connection setting

data.map

- Edit `~/Desktop/mbari/mapfiles/data.map` so the host is set to **stoqs.mbari.org** (instead of localhost).

stoqs.map

Adjust `~/Desktop/mbari/mapfiles/stoqs.map`:

- replace occurrences of "http://172.16.169.145" to "http://**stoqs.mbari.org**"
- set some convenient logging parameters, CONFIG and DEBUG.
The resulting file is as follows:

```
MAP
IMAGETYPE PNG24
EXTENT -125.817514 28.649011 -88.417199 36.901181
SIZE 1024 1024
IMAGECOLOR 255 255 255
NAME 'MBARI/USC Decision Support System'
UNITS dd
CONFIG "MS_ERRORFILE" "/tmp/mapserver_stoqs.log"
DEBUG 5
WEB
IMAGEPATH "/tmp"
METADATA
"wfs_title" "MBARI_USC_DSS"
"wfs_onlineresource" "http://stoqs.mbari.org/cgi-bin/mapserv?map=/home/student/Desktop/
mbari/mapfiles/stoqs.map#" # This line is wrapped.
"wfs_srs" "EPSG:4326 EPSG:900913 "
"wfs_abstract" "MBARI/USC Decision Support System data acquisition platform position and
result management service." # This line is wrapped.
"wms_title" "MBARI_USC_DSS"
"wms_onlineresource" "http://stoqs.mbari.org/cgi-bin/mapserv?map=/home/student/Desktop/
mbari/mapfiles/stoqs.map#" # This line is wrapped.
"wms_srs" "EPSG:4326 EPSG:900913 "
"wms_abstract" "MBARI/USC Decision Support System data acquisition platform position and
result management service." # This line is wrapped.
"wms_feature_info_mime_type" "text/html"
END # METADATA
END # WEB
PROJECTION
"init=epsg:4326"
END # PROJECTION
# INCLUDE "vmap0.layer.map"
INCLUDE "platforms/tibr.layer.map"
INCLUDE "platforms/vnta.layer.map"
INCLUDE "platforms/docr.layer.map"
INCLUDE "platforms/tethys.layer.map"
INCLUDE "platforms/gulper.layer.map"
INCLUDE "platforms/alanb.layer.map"
INCLUDE "platforms/wfly.layer.map"
INCLUDE "platforms/zphr.layer.map"
INCLUDE "platforms/ptlo.layer.map"
INCLUDE "platforms/m0.layer.map"
INCLUDE "platforms/m1.layer.map"
INCLUDE "platforms/m2.layer.map"
INCLUDE "platforms/dorado.layer.map"
INCLUDE "platforms/spray.layer.map"
INCLUDE "platforms/lrauv.layer.map"
END # MAP
```

Accessing the database

Access to the database using the host mode can be tested from the command line:

```
[student@localhost mbari]$ psql -U mbari -h 127.0.0.1 stoqs
```

Since this does not work with the given configuration in the VM, a quick "solution" is to assign the 'trust' method to this type of access. Edit **/var/lib/pgsql/9.0/data/pg_hba.conf** and adjust the first line below and add the second line, in both cases with method 'trust':

host	all	all	127.0.0.1/32	trust
host	all	all	samehost	trust

Then, restart postgresql:

```
# service postgresql-9.0 restart
```

The -h access method above should now work. Here is a test (btw, note the 'mbari' owner for all the relations):

```
[student@localhost mbari]$ psql -U mbari -h 127.0.0.1 stoqs
psql (9.0.1)
Type "help" for help.
```

```
stoqs=> \d
List of relations
Schema |          Name          |  Type  | Owner
-----+-----+-----+-----
public | activity               | table  | mbari
public | activity_id_seq        | sequence | mbari
public | activity_type          | table  | mbari
public | activity_type_id_seq   | sequence | mbari
public | expedition             | table  | mbari
public | expedition_id_seq      | sequence | mbari
public | geography_columns      | view   | mbari
public | geometry_columns       | table  | mbari
public | instant_point          | table  | mbari
public | instant_point_id_seq   | sequence | mbari
public | measured_parameter     | table  | mbari
public | measured_parameter_id_seq | sequence | mbari
public | measurement            | table  | mbari
public | measurement_id_seq     | sequence | mbari
public | parameter              | table  | mbari
public | parameter_id_seq       | sequence | mbari
public | platform               | table  | mbari
public | platform_id_seq        | sequence | mbari
public | platform_type          | table  | mbari
public | platform_type_id_seq   | sequence | mbari
public | spatial_ref_sys        | table  | mbari
(21 rows)
```

In particular, the following URL should open without errors in the VM browser:

```
http://127.0.0.1/cgi-bin/mapserv?map=/home/student/Desktop/mbari/mapfiles/
stoqs.map&layers=all&mode=map
```

Note that an empty 1024x1024 PNG image will be returned as we haven't imported any data yet.

Initialize database

As 'student':

```
$ cd ~/Desktop/mbari/
[student@localhost mbari]$ python26 initialize_database.py
(ignoring) Key sal2 is duplicated in file initial_parameters/PCTD_table.csv
(ignoring) Key tmp is duplicated in file initial_parameters/Underway_DATA_table.csv
(ignoring) Key conduct is duplicated in file initial_parameters/Underway_DATA_table.csv
(ignoring) Key chla is duplicated in file initial_parameters/Underway_DATA_table.csv
(ignoring) Key tmp is duplicated in file initial_parameters/BCTD_table.csv
(ignoring) Key sal is duplicated in file initial_parameters/BCTD_table.csv
(ignoring) Key conduct is duplicated in file initial_parameters/BCTD_table.csv
(ignoring) Key transmiss is duplicated in file initial_parameters/BCTD_table.csv
(ignoring) Key chla is duplicated in file initial_parameters/BCTD_table.csv
(ignoring) Key oxy_ml is duplicated in file initial_parameters/BCTD_table.csv
```

Populate database

As 'student':

```
[student@localhost mbari]$ cd ~/Desktop/mbari
```

```
[student@localhost mbari]$ vi importdata.py # if you want to adjust the stride, say stride=10
[student@localhost mbari]$ python26 importdata.py
Importing survey Dorado389_2010_081_02_081
Added parameter for temperature from data set
Added parameter for oxygen from data set
Added parameter for nitrate from data set
Added parameter for bbp420 from data set
Added parameter for bbp700 from data set
Added parameter for fl700_uncorr from data set
Added parameter for biolume from data set
...
```

Note that the above will take a while to complete. You can type Ctrl+C to kill some of the intermediate steps if you want to advance the loading for testing purposes.

Javascript interface

index.html

Overwrite /var/www/html/index.html with the one [attached to this page](#). The new index.html is similar to the one sent by Chander on 12/1/10 with a fix for the correct name of the Gulper layer.

Now, you can open <http://stoqs.mbari.org/> in your VM's browser.

Wave Glider Integration

This page last changed on Dec 30, 2013 by [kgomes](#).

This document details out some steps that were taken to integrate the Wave glider tracking data into the ODSS.

WGMS (Wave Glider Management System)

The WGMS is the data management and control system used by Liquid Robotics to interface to their deployed gliders. The examples given here are for the integration effort to pull the wave glider from the REP-12 experiment, named "Hermes" into the ODSS. The first part was to figure out how best to integrate with the WGMS. Per directions of Liquid Robotics, there is a web services interface to the WGMS that should be used.

WGMS Web Application

There is a web facing front end that they created an account for us to use. The web front end is located here:

<https://demo.liquidr.com>

The user name for the web front end is kgomes.

WGMS Web Services

There is also a web services API that can be used programmatically. This is the best way to access the data for the wave gliders.

Email instructions

- [WGMS description](#)
- [How to get telemetry](#)
- [How to get CTD data](#)

There is a WSDL document that describes all the services that are available and is located here:

<https://demo.liquidr.com/webservices/entityAPI.asmx?WSDL>

This provided the hooks to the API that I could then work from.

The API docs for the web services interface is located [here](#)

I found the [Apache CXF](#) project to be one of the most current frameworks to deal with Web Services from the Java platform. The biggest difficulty was to figure out how to manipulate cookies in the HTTPS request so that I could handle the user authentication. Any web service client needs to call the "CreateLoginSession" service first sending in the username, password and orgName for the waveglider. For Hermes, it was:

- username: kgomes@mbari.org (note it is NOT just 'kgomes' like the web application, it is the complete email address).
- password: (check with Kevin)
- orgName: demo

The first thing to do was import the SSL certificate into a keystore so I could use the SSL services on their server. Here are the steps I took to do this:

1. I opened up my Firefox browser, pointed it to the URL listed above
2. Clicked on the icon to the left of the URL and then on "More information ..." to see the information on the security certificate
3. Then clicked on the "Security" tab
4. Then clicked on "View Certificate"
5. Then clicked on "Details" tab
6. Then clicked on "Export ..." button
7. I saved the certificate to a file called "wgms.cer"
8. I then went to the command line and ran the following to import the certificate to a local keystore

```
keytool -import -file wgms.cer -alias wgms -trustcacerts -keystore wgms.keystore
```

9. This generates a wgms.keystore file that you will now have to use then you run both the wsdl2java command and the actual application.
10. I then went the installation of the ApacheCXF and then to the bin directory
11. I copied the wsdl2java script to a new script called wsdl2javawgms
12. I edited the wsdl2javawgms script and added the following to the last line (which is the Java execution):

```
-Djavax.net.ssl.trustStore=/Users/kgomes/Documents/Projects/MBARI/CANON/builds/WaveGlider/  
resources/security/wgms.keystore -Djavax.net.ssl.keyStorePassword=wgmsclient
```

so the final line looked like:

```
$JAVA_HOME/bin/java -Xmx128M -Djava.endorsed.dirs="{cxf_home}/lib/endorsed" -cp  
"{cxf_classpath}" -Djavax.net.ssl.trustStore=/Users/kgomes/Documents/Projects/MBARI/CANON/  
builds/WaveGlider/resources/security/wgms.keystore -Djavax.net.ssl.keyStorePassword=wgmsclient  
-Djava.util.logging.config.file=$log_config org.apache.cxf.tools.wsdlto.WSDLToJava "$@"
```

Now I could use CXF to generate all the client classes from the WSDL. I used the wsdl2javawgms command that I edited:

```
./wsdl2java -p org.mbari.odss.waveglider.ws.demo -d /Users/kgomes/Documents/Projects/MBARI/CANON/  
builds/WaveGlider/src -client https://demo.wgms.com/webservices/entityapi.asmx?WSDL
```

This generated a bunch of classes that do all the marshalling and unmarshalling for the SOAP/WS calls to the WGMS. It was very helpful.

Now, remember that these need to be added to the command line when you run the Java application to interact with the WGMS:

```
-Djavax.net.ssl.trustStore=/Users/kgomes/Documents/Projects/MBARI/CANON/builds/WaveGlider/  
resources/security/wgms.keystore -Djavax.net.ssl.keyStorePassword=wgmsclient
```

The first method to call is the CreateLoginSession method using a call that looks like:

```
String loginResult = port.createLoginSession(username, password, orgName);
```

If the "loginResult" is some number other than -1, the login was successful. At this point, you need to grab the "Set-Cookie" header from the response and set those cookies on all outgoing requests. One of the cookies is a name/value pair that identifies the caller who logged in (you). The code for this looks like:

```
// Grab the response context  
Map<String, Object> responseContext = cxfClient.getResponseContext();  
  
// Grab the map of protocol headers in the response  
TreeMap<String, Object> protocolHeaders = (TreeMap<String, Object>)  
responseContext.get("org.apache.cxf.message.Message.PROTOCOL_HEADERS");  
  
// Grab the Collection associated with the key "Set-Cookie" to look for cookies the server wants us  
// to set  
Collection<String> cookieCollection = (Collection<String>) protocolHeaders.get("Set-Cookie");  
  
// Take those cookies, add them to a TreeMap with a name of "Cookie"  
TreeMap<String, Object> cookieTreeMap = new TreeMap<String, Object>();  
cookieTreeMap.put("Cookie", cookieCollection);  
  
// Now add those as the PROTOCOL_HEADERS on the requests to be made in the future  
cxfClient.getRequestContext().put("org.apache.cxf.message.Message.PROTOCOL_HEADERS",  
cookieTreeMap);
```

You can now make other service calls and the session will be linked by the cookies in your requests to the server.

How to get CTD data

This page last changed on Jul 09, 2012 by [kgomes](#).

And here's an example of a macro that retrieves Hermes Seabird CTD data using a single web service API call:

```
var seabirdCTDColumnXml = "<columns><column type='id'>PayloadPacketRecordId</column><column type='bound'>TimeStamp</column><column type='bound'>Latitude</column><column type='bound'>Longitude</column><column type='calculated' method='bytefield|int|0|4|0.01|-10' name='Pressure'>RecordData</column><column type='calculated' method='bytefield|int|4|4|0.0001|-5' name='Temperature'>RecordData</column><column type='calculated' method='bytefield|int|8|4|0.00001|-0.05' name='Conductivity'>RecordData</column><column type='calculated' method='bytefield|int|12|4|0.1|0' name='Oxygen'>RecordData</column><column type='bound' name='Payload Data'>RecordData</column></columns>";

var criteriaXml = "<CriteriaXml><Criteria><Column id='35261'>VehicleId</Column><conditionVehicleId>0</conditionVehicleId><value1VehicleId type='48'>352</value1VehicleId></Criteria><Criteria><Column id='35262'>TimeStamp</Column><conditionTimeStamp>13</conditionTimeStamp><value1TimeStamp>2012-06-13T00:00:00</value1TimeStamp><value2TimeStamp>2012-06-13T23:59:59</value2TimeStamp></Criteria><Criteria><Column id='45997'>PayloadType</Column><conditionPayloadType>0</conditionPayloadType><value1PayloadType>112</value1PayloadType><value2PayloadType></value2PayloadType></Criteria><Criteria><Column id='undefined'></Column></Criteria></CriteriaXml>";

var oService;

oService = new WebService(CURRENT_SERVER_URL, "EntityAPI", "GetEntitySetWithCriteria");
oService.SetParameter("entityType", 94);
oService.SetParameter("columnXml", seabirdCTDColumnXml );
oService.SetParameter("pageNumber", 1);
oService.SetParameter("pageSize", 10);
oService.SetParameter("sortColumn", 'TimeStamp');
oService.SetParameter("sortDirection", ' DESC');
oService.SetParameter("criteriaXml", criteriaXml );
var result = oService.Connect();
if (result.Status)
{
    if (NodeText(result.ReturnValue.firstChild) != '-1')
    {
        var returnXml = NodeText(result.ReturnValue.firstChild);
        alert (returnXml);
    }
}
```

How to get telemetry

This page last changed on Jul 09, 2012 by [kgomes](#).

Here's a short macro I created to demonstrate of how to retrieve the latest telemetry from WGMS using web services:

```
var telemetryColumnXml = "<columns><column type='id'>VehicleParsedOutputId</column><column type='bound'>TimeStamp</column><column type='bound'>Current_Latitude</column><column type='bound'>Current_Longitude</column><column type='bound'>Heading_Sub</column><column type='bound'>Desired_Bearing</column><column type='bound'>Glider_Heading</column><column type='bound'>Glider_Speed</column></columns>";

oService = new WebService(CURRENT_SERVER_URL, "EntityAPI", "GetRelatedEntitySet");
oService.SetParameter("entityType", 48);
oService.SetParameter("entityId", vehicle[0].id.toString());
oService.SetParameter("relatedEntityType", 42);
oService.SetParameter("columnXml", telemetryColumnXml);
oService.SetParameter("pageNumber", 1);
oService.SetParameter("pageSize", 1);
oService.SetParameter("sortColumn", 'TimeStamp');
oService.SetParameter("sortDirection", ' DESC');
oService.SetParameter("dataFilter", '');

var result = oService.Connect();
if (result.Status)
{
    if (NodeText(result.ReturnValue.firstChild) != '-1')
    {
        var returnXml = NodeText(result.ReturnValue.firstChild);
        var timeStamp= GetNodeValue(returnXml, 'TimeStamp', false);
        var latitude = GetNodeValue(returnXml, 'Current_Latitude', false);
        var logitude= GetNodeValue(returnXml, 'Current_Longitude', false);
        alert('Time Stamp: ' + timeStamp + ', Lat: ' + latitude + ', long: ' + logitude);
    }
}
```

Before executing the "GetRelatedEntitySet" API, your code would have to call the "CreateLoginSession" with 3 parameters:

User email, password and internal org name (normally the lower case version of the org name - in the DEMO org it would be "demo"). The cookies returned by the response need to be carried to the following APIs to establish the credentials of the caller.

WGMS description

This page last changed on Jul 09, 2012 by [kgomes](#).

WGMS (Wave Glider Management System) is used to manage all Liquid Robotics wave gliders. Normally customers are allocated their own Organization within WGMS, to manage their gliders.

The generic URL to access the system is <http://gliders.liquidr.com>, however each organization is also allocated their own sub domain (for example <http://jrf.liquidr.com> ...)

I believe that the glider that you will be interfacing with will be in the demo org: <http://demo.liquidr.com>, and you will probably need user credentials to sign in and use WGMS.

If you need additional help using WGMS, or establishing user credentials, you can contact our customer support (John Appelgren copied on this email)

Additional information regarding web services API available for programmable access to WGMS, can be found here:

<http://gliders.liquidr.com/webservices/entityAPI.asmx>

The most common APIs used are:

CreateEntity

ReadEntity

UpdateEntity

DeleteEntity

GetEntitySet

GetRelatedEntitySet

GetRelatedEntitySetWithCriteria

all web services are run under credentialed user context.

Deployment Information

This page last changed on Dec 30, 2013 by [kgomes](#).

Here is some documentation for the various deployments of the ODSS in real experiments.

Development

This page last changed on Jan 12, 2012 by [kgomes](#).

Documentation

This page last changed on Jul 28, 2014 by [kgomes](#).

Here is the documentation that should be up to date for the ODSS development and operation. There is some deprecated documentation located [here](#)

Documentation

User Docs

1. [Accessing these Confluence pages via WebDAV](#)
2. [Adding your data as a map overlay in ODSS](#)
3. [Installing and using the mobile observation log applications \(iOS and Android\)](#)
4. [Web Services for MBARITracking database](#)

Developer Docs

1. [Installing MBARI Tracking Infrastructure](#)
2. [ODSS WMS Mapping Administration](#)
3. [ERDDAP Administration Notes](#)
4. [How to Convert CSV File to Shape File](#)
5. [ODSS Requirements and Installation](#)

[CANON Data Wiki](#)



Data Sensitivity

Please treat all unpublished data accordingly and do not share unless you contact PI responsible for the data

1. [Water Management](#)
 - a. AUV Biological Data
 - i. [2009 Dorado Water Samples Spreadsheet \(XLS\)](#)
 - ii. [2010 BloomEx Dorado Water Samples Spreadsheet \(XLS\)](#)
 - iii. [2011 CANON Dorado Water Sample Spreadsheet \(XLS\)](#)
 - iv. [2012 Dorado Fulmar Synopsis](#)
 - v. [2012 AUV Dorado Samples](#)
 - vi. [2012 RV Fulmar Samples](#)
2. [Biological Ocean Group](#)
 - a. [Accessing Bog Database from Matlab](#) (MBARI Internal)

Access using webDAV

This page last changed on Dec 30, 2013 by [kgomes](#).

You can access documents on this Confluence space using your local file browser through the WebDAV interface.

For instructions on connecting your computer using WebDAV interface, search internet for (webDAV XP, webDAV vista, or webDAV MAC). For a quick link [see](#). The address for the CANON WebDAV interface is:

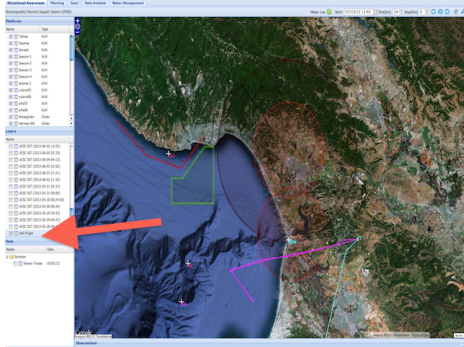
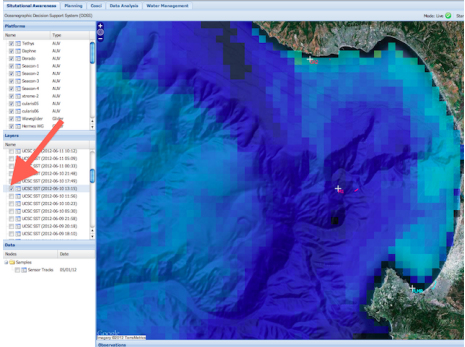
<https://oceana.mbari.org/confluence/plugins/servlet/webdav/Global/CANON/CANON%20Pilot%20Home%20Page>

Adding your data as a map overlay in ODSS

This page last changed on Dec 30, 2013 by [kgomes](#).

About the map overlay in ODSS

Maps that are overlaid in ODSS are generally of two types: freely available maps like those available from [Coastwatch](#), and those we (MBARI) create. If you want your custom map to be displayed as a layer in ODSS similar to John Ryan's UCSC SST maps, you'll need to first convert your data to either netCDF, HDF or a geoTIFF. Once your data is converted, transfer it to the [beach.mbari.org](#) ftp server for the ODSS software team to display it in the ODSS web interface.

When to use geoTIFF ?	When to use netCDF or HDF ?
Use geoTIFF if you have a single image with no associated time dimension, i.e. a static image.	Use netCDF or HDF if you have a series of images that you want to display as an overlay in ODSS. NetCDF is the preferred format time series and will be described here.
	

Important to note - once you have converted your data to netCDF, it is cataloged using the THREDDS server, and this catalog is then used in ODSS, but it will also give you the capability to easily share you data with other people, display it in Google Earth, create animations, etc.

Requirements

These instructions should work on most operating systems without any special memory or disk requirements. For netCDF formats, the assumption is that you will be using Matlab.

Adding your geoTIFF

Convert your image to a geoTIFF using the GDAL tools. GDAL tools can be downloaded here: <http://www.gdal.org/> and should work on most operating systems. If your image is not in a format the gdal tools understand, [imagemagick](#) is a popular tool that may work for converting your image to a format that gdal will understand.

Your image must be **only the geoplots** with no decorations like axis titles, axis labels, etc., and you will need accurate upper-left and lower-right coordinates in EPSG:4326 projection, also known as WGS 84 projection, for it to display correctly as an overlaid layer. If you aren't familiar with EPSG codes, The European Petroleum Survey Group numeric identifiers are used for many common projections and associate projection or coordinate metadata (such as measurement units or central meridian) for each identifier. See [European Petroleum Survey Group](#) for more information.

The syntax is pretty straightforward, something like the following will convert your image to the correct format:


```
gdal_translate <image.png> <image.tiff> -a_ullr -122.25 37.1 -121.57365 36.67558
```

Once your image has been converted, ftp the image to beach.mbari.org using [these](#) instructions.

Contact [Danelle](#) with the ftp location of your image and she will coordinate with the ODSS team to add your layer.

Adding your netCDF

Save your files with a meaningful file name that includes the date, e.g. to include year and year day: SST_2012156.nc, SST_2012156.nc, etc.

Download the freely available Matlab snc toolbox from here: <http://mexcdf.sourceforge.net/>. Install into your Matlab path.

Download and modify this example on how to format data in Matlab in the correct netCDF format for ODSS: [CV_WMS_SST_example.m](#)

Some guidelines on what to modify in the Matlab code for your data:

- Replace the data in OPT.val with your matrix data e.g. a simple example 4x3 array of SST data:

```
OPT.val          = [24.6 30.1 32.1; 24.6 30.1 32.1; 24.6 30.1 32.1; 24.6 30.1 32.1; 24.6 30.1 32.1; 24.6 30.1 32.1];
```

- Change the variable name to be something meaningful:

```
OPT.varname      = sst
```

- Replace lat/lon values with your projected lat/lon values:

```
lon              = [22.5 22.64 22.7];
lat              = [50 51 52 53 54];
[lat1, lon1]     = ndgrid(lat, lon);
OPT.lat          = lat1;
OPT.lon          = lon1;
```

- The time description is very flexible. You can define your own description of the time as long as it conforms to this convention <http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html>. Here is a simple example that uses the Matlab [datetime](#) command.

```
OPT.time = datetime('19-May-2001', 'dd-mmm-yyyy') + 1; %when using with "days since 00-01-00 00:00:00" time, adding one corrects difference in Matlab datetime from THREDDS udunit calculation.
```

Once your netCDFs are created, ftp them to beach.mbari.org using [these](#) instructions.

Contact [Danelle](#) with the ftp location of your image and she will coordinate with the ODSS team to add your layer.

CV_WMS_SST_example.m

This page last changed on Sep 11, 2012 by [dcline](#).

%% Example on how to create netCDF-CF of lat-lon grid that is compatible with the THREDDS/ERDDAP servers

%

% example of how to make a netCDF file with CF conventions of a

% variable that is defined on a grid that is in a lat-lon coordinate system.

%% Define meta-info: global

```
OPT.title                = 'Example of very simple Sea Surface Temperature data  conforming to CF
conventions.';
OPT.institution           = 'Monterey Bay Aquarium Research Institute';
OPT.source                = 'example data';
OPT.history               = ['CV_WMS_Tutorial_generic.m $'];
OPT.references            = 'http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-
conventions.html';
OPT.email                 = 'youreemail@mbari.org';
OPT.comment               = 'Adapted from example provided by Gerben de Boer.';
OPT.version               = '1.0';
OPT.acknowledge           = ['These data can be used freely for research purposes provided that the
following source is acknowledged: ',OPT.institution];
OPT.disclaimer            = 'This data is made available in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A
PARTICULAR PURPOSE.';
```

%% Define dimensions/coordinates: lat,lon matrices

```
lon1                      = [2 4 6];
lat1                      = [50 51 52 53 54];
[lat2,lon2]               = ndgrid(lat1,lon1);
ang                       = [-15 -15 -15; 0 0 0; 15 15 15; 30 30 30; 45 45 45];
OPT.lat                   = lat2 + sind(ang).*lat2./2;
OPT.lon                   = lon2 + cosd(ang).*lon2./2; clear lon1 lon2 lat1 lat2
```

```
OPT.time                  = datenum('19-May-2001', 'dd-mmm-yyyy') + 1;
```

```
OPT.ncols                 = size(OPT.lon,2);
OPT.nrows                 = size(OPT.lat,1);
```

```
OPT.lat_type              = 'single'; % 'single', 'double' for high-resolution data (eps 1m)
OPT.lon_type              = 'single'; % 'single', 'double' for high-resolution data (eps 1m)
```

```
OPT.wgs84.code            = 4326;      % epsg code of global grid: http://www.epsg-registry.org/
OPT.wgs84.name             = 'WGS 84';
OPT.wgs84.semi_major_axis = 6378137.0;
OPT.wgs84.semi_minor_axis = 6356752.314247833;
OPT.wgs84.inv_flattening  = 298.2572236;
```

%% Define variable (define some data)

```
OPT.val                   = [24.6 30.1 32.1; 24.6 30.1 32.1; 24.6 30.1 32.1; 24.6 30.1 32.1;
24.6 30.1 32.1; ]; % use ncols as 1st array dimension to get correct plot in ncBrowse (snctools
swaps for us)
OPT.varname                = 'sst';      % free to choose: will appear in netCDF tree
OPT.units                  = 'unknown';  % from UDunits package: http://
www.unidata.ucar.edu/software/udunits/
OPT.long_name              = 'Custom Sea Surface Temperature';% free to choose: will appear in
plots
OPT.standard_name          = 'sst';
OPT.val_type               = 'double';   % 'single' or 'double'
OPT.fillvalue              = double(0.);
```

%% 1.a Create netCDF file

```
ncfile = fullfile(fileparts(mfilename('fullpath')),[mfilename,'.nc']);
```

```

nc_create_empty(ncfile)

%% 1.b Add overall meta info
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#description-of-file-contents

nc_attput(ncfile, nc_global, 'title' , OPT.title);
nc_attput(ncfile, nc_global, 'institution' , OPT.institution);
nc_attput(ncfile, nc_global, 'source' , OPT.source);
nc_attput(ncfile, nc_global, 'history' , OPT.history);
nc_attput(ncfile, nc_global, 'references' , OPT.references);
nc_attput(ncfile, nc_global, 'email' , OPT.email);

nc_attput(ncfile, nc_global, 'comment' , OPT.comment);
nc_attput(ncfile, nc_global, 'version' , OPT.version);

nc_attput(ncfile, nc_global, 'Conventions' , 'CF-1.4');
nc_attput(ncfile, nc_global, 'CF:featureType', 'Grid'); % https://cf-pcmdi.llnl.gov/trac/wiki/PointObservationConventions

nc_attput(ncfile, nc_global, 'terms_for_use' , OPT.acknowledge);
nc_attput(ncfile, nc_global, 'disclaimer' , OPT.disclaimer);

%% 2 Create matrix span dimensions
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#dimensions

nc_adddim(ncfile, 'lat', OPT.nrows); % !!! use this as 1st array dimension to get correct plot in
ncBrowse (snctools swaps for us)
nc_adddim(ncfile, 'lon', OPT.ncols); % !!! use this as 2nd array dimension to get correct plot in
ncBrowse (snctools swaps for us)

% You might insert a vector 'col' that runs [OPT.ncols:-1:1] to have
% the arcGIS ASCII file approach of having upper-left corner of
% the data matrix at index (1,1) rather than the default of having the
% lower-left corner of the data matrix at index (1,1).

nc_add_dimension(ncfile, 'time', 0); % if you would like to include more instances of the same
grid,
% you can optionally use 'time' as a 3rd dimension.
% T,(Z),Y,X is the recommended dimension CF order.

%% 3.a Create coordinate variables: longitude
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#longitude-coordinate

clear nc;ifld = 1;
nc(ifld).Name = 'lon';
nc(ifld).Datatype = OPT.lon_type;
nc(ifld).Dimension = {'lon'};
nc(ifld).Attribute( 1) = struct('Name', 'long_name' , 'Value', 'longitude');
nc(ifld).Attribute(end+1) = struct('Name', 'units' , 'Value', 'degrees_east');
nc(ifld).Attribute(end+1) = struct('Name', 'standard_name' , 'Value', 'longitude');
nc(ifld).Attribute(end+1) = struct('Name', 'coordinates' , 'Value', 'lon');
nc(ifld).Attribute(end+1) = struct('Name', 'grid_mapping' , 'Value', 'wgs84');

%% 3.b Create coordinate variables: latitude
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#latitude-coordinate

ifld = ifld + 1;
nc(ifld).Name = 'lat';
nc(ifld).Datatype = OPT.lat_type;
nc(ifld).Dimension = {'lat'};
nc(ifld).Attribute( 1) = struct('Name', 'long_name' , 'Value', 'latitude');
nc(ifld).Attribute(end+1) = struct('Name', 'units' , 'Value', 'degrees_north');
nc(ifld).Attribute(end+1) = struct('Name', 'standard_name' , 'Value', 'latitude');

```

```

nc(ifld).Attribute(end+1) = struct('Name', 'coordinates' , 'Value', 'lat');
nc(ifld).Attribute(end+1) = struct('Name', 'grid_mapping' , 'Value', 'wgs84');

%% 3.c Create coordinate variables: time
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#time-coordinate
ifld = ifld + 1;
nc(ifld).Name = 'time';
nc(ifld).Datatype = nc_float;
nc(ifld).Dimension = {'time'};
nc(ifld).Attribute( 1) = struct('Name', 'long_name' , 'Value', 'time');
nc(ifld).Attribute(end+1) = struct('Name', 'units' , 'Value', 'days since 00-01-00
00:00:00');

%% 3.d Create coordinate variables: coordinate system: WGS84 default
% global ellipses: WGS 84, ED 50, INT 1924, ETRS 89 and the upcoming ETRS update etc.
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#grid-mappings-and-projections
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#appendix-grid-mappings

ifld = ifld + 1;
nc(ifld).Name = 'wgs84'; % preferred
nc(ifld).Datatype = nc_int;
nc(ifld).Dimension = {};
nc(ifld).Attribute = struct('Name', ...
{'name', ...
'epsg', ...
'grid_mapping_name', ...
'semi_major_axis', ...
'semi_minor_axis', ...
'inverse_flattening', ...
'comment'}, ...
'Value', ...
{OPT.wgs84.name, ...
OPT.wgs84.code, ...
'latitude_longitude', ...
OPT.wgs84.semi_major_axis, ...
OPT.wgs84.semi_minor_axis, ...
OPT.wgs84.inv_flattening, ...
'value is equal to EPSG code'});

%% 4 Create dependent variable
% http://cf-pcmdi.llnl.gov/documents/cf-conventions/1.4/cf-conventions.html#variables
% Parameters with standard names:
% http://cf-pcmdi.llnl.gov/documents/cf-standard-names/standard-name-table/current/

ifld = ifld + 1;
nc(ifld).Name = OPT.varname;
nc(ifld).Datatype = OPT.val_type;
nc(ifld).Dimension = {'time', 'lat', 'lon'};
nc(ifld).Attribute( 1) = struct('Name', 'long_name' , 'Value', OPT.long_name );
nc(ifld).Attribute(end+1) = struct('Name', 'units' , 'Value', OPT.units );
nc(ifld).Attribute(end+1) = struct('Name', '_FillValue' , 'Value', OPT.fillvalue );
nc(ifld).Attribute(end+1) = struct('Name', 'actual_range' , 'Value', [min(OPT.val(:))
max(OPT.val(:))]);
nc(ifld).Attribute(end+1) = struct('Name', 'coordinates' , 'Value', 'time lat lon');
nc(ifld).Attribute(end+1) = struct('Name', 'grid_mapping' , 'Value', 'wgs84');
if ~isempty(OPT.standard_name)
nc(ifld).Attribute(end+1) = struct('Name', 'standard_name' , 'Value', OPT.standard_name);
end

%% 5.a Create all variables with attributes

for ifld=1:length(nc)
nc_addvar(ncfile, nc(ifld));

```

```

end

%% 5.b Fill all variables and add a new record

nc_varput(ncfile, 'lon'           , OPT.lon(1,:) );
nc_varput(ncfile, 'lat'           , OPT.lat(:,1) );
nc_varput(ncfile, 'wgs84'         , OPT.wgs84.code);

new_record = struct('time', OPT.time, 'varname', OPT.val );
nc_addnewrecs(ncfile, new_record);

%% 6   Check file summary

nc_dump(ncfile);
fid = fopen(fullfile(fileparts(mfilename('fullpath')),[mfilename,'.cdl']), 'w');
nc_dump(ncfile,fid);
fclose(fid)

%% 7   Load the data: using the variable names from nc_dump

%%Da.dep  = nc_varget(ncfile,'depth');
Da.lat    = nc_varget(ncfile,'lon');
Da.lon    = nc_varget(ncfile,'lat');

```

Converting from CSV to shapefile

To convert a CSV file to a shapefile, download the OGR tools included with FWTools <http://fwtools.maptools.org>, the tool needed is ogr2ogr.

All of the files are in, or are generated in the directory you have your CSV file in. In this example, /data/mapserver/mapfiles/line67. Run all commands in this directory.

1. Create file line67.csv with values

```
dec_lat,dec_lon,Station
36.78,-122.05,67-50
36.62,-122.41,67-55
36.45,-122.77,67-60
36.28,-123.12,67-65
36.12,-123.48,67-70
35.95,-123.84,67-75
35.78,-124.19,67-80
```

2. Create .dbf file line67.dbf from the source line67.csv file

```
cd /data/mapserver/mapfiles/line67
ogr2ogr -f "ESRI Shapefile" `pwd` line67.csv
```

3. Create line67.vrt file with contents

```
<OGRVRTDataSource>
<OGRVRTLayer name="line67">
<SrcDataSource relativeToVRT="1">/data/mapserver/mapfiles/line67</SrcDataSource>
<SrcLayer>line67</SrcLayer>
<GeometryType>wkbPoint</GeometryType>
<LayerSRS>WGS84</LayerSRS>
<GeometryField encoding="PointFromColumns" x="dec_lon" y="dec_lat"/>
</OGRVRTLayer>
</OGRVRTDataSource>
```

4. Create shape file using line67.vrt file

```
ogr2ogr -f "ESRI Shapefile" `pwd` line67.vrt
```

5. Or, if overwriting the shape file using line67.vrt file

```
ogr2ogr -overwrite -f "ESRI Shapefile" `pwd` line67.vrt
```

6. Once shape file is created, can put in a mapserver layer definition, e.g. (note, the LABELITEM is station as it must link back to the same field station used in the .csv/.shp files)

```
LAYER
NAME 'line67'
TYPE POINT
DUMP true
```

```
CONNECTION '/data/mapserver/mapfiles/line67/line67.shp'
CONNECTIONTYPE OGR
LABELITEM 'station'
```

```
STATUS ON
TRANSPARENCY 100
DEBUG 5
```

```
PROJECTION
'proj=longlat'
'datum=WGS84'
'no_defs'
END
```

```

METADATA
'wms_title'          'line67'
'wms_name'           'line67'
'wms_onlineresource' 'http://localhost/cgi-bin/mapserv?map=/home/stoqsadm/deployed/mapfiles/
proxy.map'
'wms_server_version' '1.1.0'
'wms_srs'            'EPSG:4326'
'wms_format'         'image/png'
'wms_transparent'    'true'
END

CLASS
NAME 'Line67'
STYLE
SYMBOL "circle"
SIZE 8
OUTLINECOLOR 0 0 0
COLOR 255 0 0
END
LABEL
FONT "sans"
TYPE truetype
POSITION AUTO
SIZE 8
COLOR 255 0 0
OUTLINECOLOR 0 0 0
PARTIALS TRUE
END
END

END

```

ERDDAP Administration Notes

This page last changed on Dec 30, 2013 by [kgomes](#).

Adding a new dataset of netCDF files

ERDDAP comes with a utility to generate the xml required to describe a dataset. Best to use this first, then modify the xml if needed before inserting in datasets.xml.

```
cd /opt/apache-tomcat7/webapps/erddap/WEB-INF
./GenerateDatasetsXml
```

Which EDDType (default="EDDGridFromDap") ?

EDDGridFromNcFiles

Parent directory (default="")

/ODSS/data/canon/2012_Sep/

File name regex (e.g., ".*\.nc") (default="")

.*\.nc

Full file name of one file (default="")

/ODSS/data/canon/2012_Sep/roms/netcdf/nh4/nh4_20120801.nc

ReloadEveryNMinutes (e.g., 10080) (default="30")

30

Dataset XML is dumped to the the ERDDAP log file. Depending on the content of the .nc files, this is generally the last 100 - 200 lines of the log

```
tail -n 100 /opt/apache-tomcat7/content//erddaplogs/log.txt | less
```

Cut and paste the dataset to /opt/apache-tomcat7/content/erddap/datasets.xml and /ODSS/data/erddap/content/erddap/datasets.xml

Once this dataset has been added, restart tomcat2

```
sudo /sbin/service tomcat2 stop
sudo /sbin/service tomcat2 start
```

If not showing up as a new dataset, look in /ODSS/data/erddap/logs/log.txt for causes.

Installing MBARI Tracking Infrastructure

This page last changed on Jul 28, 2014 by [kgomes](#).

Here are the steps taken to install MBARITracking on the server normandy.mbari.org:

1. Help ticket to set password for postgres account on normandy
2. Help tickets to open firewall for port 5432 for postgres on normandy and to install virtualenv
3. Moved directory /var/lib/pgsql/9.1/data to /pgdata/data and made a symlink to the new location so that the databases are on their own partition; likewise for the pg_xlog and pg_tblspc partitions.
4. Installed postgres with psql commands and created roles (adm passwords not shown):

```
createdb postgres
psql -d postgres -f /usr/pgsql-9.1/share/contrib/postgis-1.5/postgis.sql
psql -d postgres -f /usr/pgsql-9.1/share/contrib/postgis-1.5/spatial_ref_sys.sql
create database template_postgis with template postgres;
```

```
CREATE ROLE odssadm login password 'xxx';
CREATE ROLE stoqsadm login password 'xxx';
CREATE ROLE everyone login password 'guest';
```

5. Edited /var/lib/pgsql/9.1/data/pg_hba.conf to give local accounts access over network connections
6. Checkout MBARITracking project from subversion into /home/odssadm/dev:

```
svn co svn+ssh://mccann@kahuna.shore.mbari.org/svn/repos/MBARITracking/trunk MBARITracking
```

7. Pip installed amqp, django, httplib2, protobuf, pycopg2 prerequisites in a virtualenv at /home/odssadm/dev/MBARITracking/venv-tracking:

```
$ pip freeze
Django==1.6.5
amqp==1.0.2
httplib2==0.9
protobuf==2.5.0
pycopg2==2.5.3
```

8. Help ticket to request ports opened for AMQP traffic between messaging.shore.mbari.org and normandy
9. Edited /home/odssadm/dev/MBARITracking/amqp/settings.py and other source code to get things working on normandy (see svn commit below for all changes)
10. Created /home/odssadm/.netrc file for credentials to the messaging server
11. Executed on normandy as user odssadm to create consumer jobs and AMQP queues:

```
/home/odssadm/dev/MBARITracking/amqp/runPersistMonitor.sh
```

12. Killed consumer jobs on normandy so that messages will be in the queues for appending to the mbaritracking database once it's copied over from beach
13. Create database on normandy as user postgres:

```
/usr/pgsql-9.1/bin/createdb mbaritracking
```

14. Copied mbaritracking database from beach, executed on normandy as user odssadm (this takes a few hours for the 16 GB database):

```
/usr/pgsql-9.1/bin/pg_dump -C -h beach.mbari.org -U stoqsadm mbaritracking > /pgdata/dumps/
mbaritracking.beach.dump
/usr/pgsql-9.1/bin/psql < /pgdata/dumps/mbaritracking.beach.dump
```

15. Change ownerships from stoqsadm to odssadm and give role everyone select rights (as user postgres at psql prompt):

```
\c mbaritracking
REASSIGN OWNED BY stoqsadm TO odssadm;
grant all on all tables in schema public to odssadm;
grant select on all tables in schema public to everyone;
```

16. Added to odssadm's crontab on normandy:

```
* /10 * * * * /home/odssadm/dev/MBARITracking/amqp/runPersistMonitor.sh >> /data/logs/tracking/
persistWatchdog.log 2>&1
```

17. Monitor log files to make sure everything is working:

```
tail -f /data/logs/tracking/persistWatchdog.log
tail -f /data/logs/tracking/nonAISPersistConsumers.out
```

18. Help ticket to create file /etc/httpd/conf.d/trackingdb.conf for the trackingdb web service

19. Test web trackingdb web services:

```
http://normandy.mbari.org/trackingdb/positionOfType/ais/last/1m/data.html
http://normandy.mbari.org/trackingdb/position/stella103/
between/20110601T000000/20110630T000000/data.html
```

20. Committed MBARITracking code changes:

```
$ svn commit -m "Made to work on normandy: now uses Django 1.6.5 and virtual-env instead of
hard-coded /opt/python"
mccann@kahuna.shore.mbari.org's password:
Adding          amqp/COPYING
Sending         amqp/README
Sending         amqp/persistWatchdog.py
Sending         amqp/runPersistMonitor.sh
Sending         amqp/settings.py
Sending         amqp/tracking.wsgi
Sending         amqp/urls.py
Sending         amqp/views.py
Transmitting file data .....
Committed revision 13407.
```

ODSS Observation Log Mobile Apps

This page last changed on Dec 30, 2013 by [kgomes](#).

link to this page: <https://oceana.mbari.org/confluence/display/CDATA/ODSS+Observation+Log+Mobile+Apps>

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ODSS Observation Log Mobile Apps

Installation

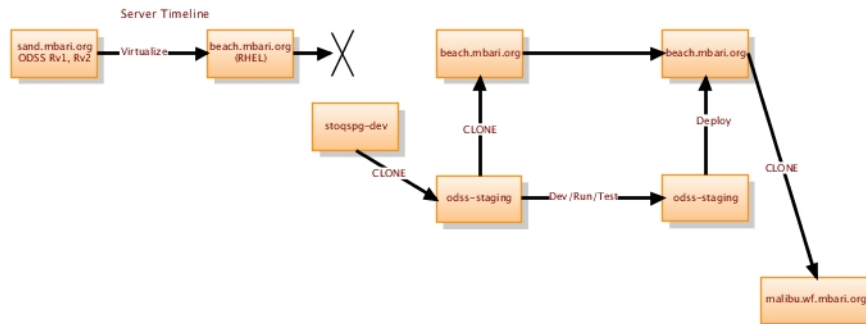
- Android
 - Attach the [CDATA:Android APK File](#) to an email, email this to an account available on your Android device such as the gmail account associated with the Android device.
 - Open Settings --> Applications and check the box to allow 'Unknown sources' (Allow installation of non-Market applications)
 - on Android 4.1 this setting can be reached at Settings --> Security
 - Open the email with the attachment and then open the attachment. This will install the application.
- iOS (iPhone/iPad)
 - on your iPhone/iPad, open the App Store and search for **iSciLog**.

How to Use

- iLog (Android)
 - Launch Application
 - Select Picture icon in lower center of screen if you wish to snap a picture (with your mobile device) of your observation for the log
 - Longitude and Latitude as reported by your mobile device will be logged automatically as shown in lower center of screen
 - Enter your Username in the first line, using keyboard. We suggest using your email username
 - Enter the Depth that you want associated with the observation (0 for surface). Must be a numerical value
 - In "Add Description Here" enter text you want associated with the observation (description of event)
 - Select Send button once. The observation will be sent to ODSS, logged with the local date and time as reported by your mobile device
 - Close the app by selecting the Home button
- ISciLog (iOS device (i.e. iPad or iPhone))
 - Launch Application
 - Select "i" button in lower right corner to see page of instructions for iSciLog
 - select "Done" button in upper right corner to return to the app main page
 - Select "Add Photo" button in lower center of screen if you wish to snap a picture (with your mobile device) of your observation for the log
 - Longitude and Latitude as reported by your mobile device will be logged automatically as shown in lower center of screen
 - Enter your Username in the first line, using keyboard. We suggest using your email username
 - Enter the Depth that you want associated with the observation (0 for surface). Must be a numerical value
 - In "Add Description Here" enter text you want associated with the observation (description of event)
 - Select Send button once. The observation will be sent to ODSS, logged with the local date and time as reported by your mobile device
 - Close the app by selecting the Home button

ODSS Requirements and Installation

This page last changed on Dec 30, 2013 by [kgomes](#).



To compile the proper requirements and installation for the ODSS, I first reconstructed what we did to get to the original installations of odss-staging, beach, and malibu. Some historical notes:

1. The first machine to be built up was beach.mbari.org. It was the very first server used in the three iterations of the development of the ODSS system. While we tended to move to cloning virtual machines after beach was created, we had to try and keep beach in sync manually. It was moved from hardware to VM and then most recently, it was replaced with a clone of odss-staging. We are hoping to square all things up with the move to CentOS 64.
2. The second machine, odss-staging, was a clone of stoqspg-dev that Mike had built for STOQS.
3. Malibu was a clone of odss-staging with a whole bunch of configuration changes to deploy on the ship and to sync with shore.

New ODSS Installation at MBARI (January 2013)

1. Install CentOS 6.3 64bit (odss-test.shore.mbari.org)
2. Create users:
 - a. odssadm
 - b. odssguest
 - c. tomcat
 - d. kgomes
 - e. dcline
 - f. duane
 - g. mccann
 - h. tm
 - i. carueda
3. Create group ODSS_ADMIN
4. Add following users to group:
 - a. odssadm
 - b. tomcat
 - c. kgomes
 - d. dcline
 - e. duane
 - f. mccann
 - g. tm
 - h. carueda
5. For group ODSS_ADMIN, grant sudo privs for:
 - a. /sbin/service
 - b. /sbin/shutdown
 - c. /usr/bin/kill
 - d. /bin/mkdir
 - e. /bin/chown
 - f. /bin/chgrp
 - g. /bin/chmod
 - h. /bin/rm
 - i. /usr/bin/rsync

6. Create a directory /data and give group ODSS_ADMIN ownership as well as read and write privs to it. NOTE: This directory will contain lots of data.
7. Enable FTP and make sure the /data directory is linked so FTP user odssguest can put files in the /data directory.
8. Enable/install Apache HTTP server
9. For Apache log rotation: Change /etc/logrotate.d/httpd from:

```
/var/log/httpd/*log {
missingok
notifempty
sharedscripts
postrotate
/sbin/service httpd reload > /dev/null 2>/dev/null || true
endscript
}
```

to

```
/var/log/httpd/*log {
compress
delaycompress
rotate 7
daily
missingok
notifempty
sharedscripts
postrotate
/sbin/service httpd reload > /dev/null 2>/dev/null || true
endscript
}
```

10. Create a directory under the apache configuration for custom configuration files (/etc/httpd/custom) and grant the group ODSS_ADMIN read and write privs on it.
11. Edit the apache configuration file and include any configuration files in the directory you just created

```
Include /etc/httpd/conf/custom/*.conf
```

12. Create a symbolic link in the Apache html /var/www/html/data and point to /data.
13. Edit the Apache httpd.conf file and make sure directory browsing is enabled for the directory /data
14. Grant the ODSS_ADMIN group read and write privs to the /var/www/html directory
15. Grant the ODSS_ADMIN group read privs on the http log at /var/log/httpd
16. Install Java 7 (64 bit) and make default Java
17. Install ant
18. Install latest version of Python 2 (NOTE: Not Python 3)
19. Install 3 copies of Apache Tomcat 7.0.35 and name them:
 - a. /opt/apache-tomcat-odss-7.0.35
 - b. /opt/apache-tomcat-erddap-7.0.35
 - c. /opt/apache-tomcat-thredds-7.0.35
20. Create start up script for all three instances and put in /etc/init.d, but do not set them up to start yet.
21. In the start up scripts make sure that the processes will start under the tomcat account.
22. Give the group ODSS_ADMIN read and write privs to all three tomcat directories (recursively).
23. Install SSL certificate that can be used for Tomcat 7
24. Install/enable MySQL database server, start it and then configure to run on startup
25. For COSCI, the following needs to be added to the /etc/my.cnf under the mysqld entry:

```
max_allowed_packet=16M
```

26. Install latest version of PostgreSQL Server (9.1 is required as it supports PostGIS 1.5 which we need) <http://www.postgresql.org>
27. Install PostGIS 1.5 extension <http://postgis.net>. NOTE: Make sure you use PostGIS 1.5 as Django has a bug with 2.0.
28. Install django framework
29. Download, build, install the mapserver requirements (<http://mapserver.org/installation/unix.html>):
 - a. libpng
 - b. freetype
 - c. GD
 - d. zlib
 - e. libproj

- f. libcurl
 - g. OGR
 - h. GDAL
 - i. libpg (requires install of Postgres)
30. Download, build and install (copy `.lib/mapserver` to `/var/www/cgi-bin`) mapserver using the following options in the `./configure` step:
- ```
--with-proj=xxxxxx # (xxxxxx is usually /usr/local)
--with-ogr=xxxxxx/gdal-config # (xxxxxx is usually /usr/local/bin)
--with-gdal=xxxxxx/gdal-config # (xxxxxx is usually /usr/local/bin)
--with-wfs
--with-wfscient
--with-wmsclient
--with-postgis=xxxxxx/pg_config # (xxxxxx depends on postgres install location)
--with-kml
```
31. Edit the `epsg` file (should be in `/usr/local/Proj4/share/proj/epsg`) that was installed with `libproj` and add the following at the bottom:
- ```
# Google Earth / Virtual Globe Mercator
<900913> +proj=merc +a=6378137 +b=6378137 +lat_ts=0.0 +lon_0=0.0 +x_0=0.0 +y_0=0 +k=1.0
+units=m +no_defs
```
32. Install tilecache:
- a. Download the tilecache tar.gz file from <http://tilecache.org>
 - b. `cd /var/www`
 - c. `tar -zxvf tilecache-2.11-patched.tar.gz`
 - d. `ln -s tilecache-2.11 tilecache`
 - e. Create and add following tilecache http configuration file to `/etc/httpd/conf.d/tilecache.conf`
- ```
alias /tilecache/ "/var/www/tilecache/"
<Directory /var/www/tilecache>
AddHandler cgi-script .cgi
Options +ExecCGI
</Directory>
```

## Notes for ODSS Developers:

1. Configure ProxyPass entries in `httpd.conf`
  - a. <http://odss-master.mbari.org/cosci> redirects to <https://odss-master.mbari.org/cosci/> (same as your observation)
  - b. <http://odss-master.mbari.org/cosci/> redirects to <https://odss-master.mbari.org/cosci/> (same)
  - c. <https://odss-master.mbari.org/cosci> redirects to <https://odss-master.mbari.org/cosci/> (same)
  - d. <http://odss-master.mbari.org/cosci/> redirects to <https://odss-master.mbari.org/cosci/>
  - e. <http://odss-master.mbari.org/cosci/data> redirects to <https://odss-master.mbari.org/cosci/data/>
  - f. <http://odss-master.mbari.org/cosci/data/> redirects to <https://odss-master.mbari.org/cosci/data/>
  - g. <https://odss-master.mbari.org/cosci/data> redirects to <https://odss-master.mbari.org/cosci/data/>
  - h. `index.html` redirect page to handle taking `odss-master.mbari.org` (`http` or `https`) to <https://odss-master.mbari.org/odss/>
2. For automated `rsync`, we need to avoid the need to enter a password each time the sync occurs. I believe that IS configured password-less `ssh` login between some of the machines, as described at <http://www.debian-administration.org/articles/152>
3. Create firewall holes
  - a. `odss-master` to `atlas ODSS share`
  - b. `odss-master` to `atlas LRAUV`
  - c. `odss-master` to `secmail.shore.mbari.org:587`
  - d. `odss-master` to `snow.shore.mbari.org:993` and `995`
  - e. `odss-master` to `dods.mbari.org:80`
  - f. `odss-master` to `cencalcurrents.org:80`
  - g. `odss-master` to `messaging.shore.mbari.org:5672` and `55672`
4. Edit `/etc/fstab` and add:
 

```
atlasnfs.shore.mbari.org:/ifs/mbari/ODSS /ODSS nfs rw,suid 0 0
/ODSS/data/canon /home/canon none defaults,bind 0 0
```

```
/ODSS/data/biospace /home/biospace none defaults,bind 0 0
atlasnfs.shore.mbari.org:/ifs/mbiarchive/LRAUV /LRAUV nfs ro,suid 0 0
```

## Comments

---

Mike has excellent instructions for most of the packages required by STOQS - many of which are in common with ODSS. See PREREQUISITES in the STOQS installation:

<http://code.google.com/p/stoqs/source/browse/PREREQUISITES>

Also those notes have several references to Postgres 9.1 however Postgres is currently 9.2 so adjust accordingly.

Cheers -R

Posted by [rich](#) at Jan 28, 2013.

---

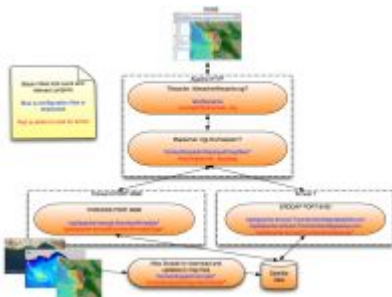
## ODSS WMS Mapping Administration

This page last changed on Dec 30, 2013 by [kgomes](#).

### Introduction

ODSS uses four different open-source software packages for cataloging, distributing, and projecting raw satellite, vector, or point data into the ODSS web interface. Tracking data is handled in a different manner and is not discussed here.

- [THREDDS](#) is used for vector data (wind, surface current) and previous experiment data.
- [ERDDAP](#) is used for just about everything else.
- [Mapserver](#) is used for publishing and reprojecting the data in the correct EPSG:900913 projection, and serving the data in the WMS standard used in the ODSS web application.
- [Tilecache](#) creates a disk cache of the Mapserver requests for faster access to images



[click to enlarge](#)

### Restarting

To restart erddap

```
sudo /sbin/service tomcat2 stop
sudo /sbin/service tomcat2 start
```

After a restart, changes can be seen, depending on the ODSS machine in the /erddap URL, e.g. <http://beach.mbari.org/erddap> . ERDDAP is not visible outside the MBARI firewall and it takes a few seconds for ERDDAP to refresh the catalogues.

To restart thredds (note that this will take down the ODSS web app as well because it's using the same tomcat instance). Alert team members if you do this.

```
sudo /sbin/service tomcat stop
sudo /sbin/service tomcat start
```

After a restart, changes can be seen, depending on the ODSS machine in the /thredds/realtime.html URL, e.g.

<http://beach.mbari.org:8080/thredds/realtime.html>

### Installing new layers using ERDDAP

As user stoqsadm

1. Using the instructions [here](#), modify the datasets.xml file
2. Copy attached datasets.xml file with new dataset added to /opt/apache-tomcat7/content/erddap/
3. Restart ERDDAP by restarting tomcat2
4. Create a new layer and install to /home/stoqsadm/deployed/mapfiles/
5. Add this new layer to /home/stoqsadm/deployed/mapfiles/proxy.map
6. Add this new layer to /etc/tilecache.cfg
7. Add to the ODSS json file (contact Kevin Gomes about where this file is)
8. Refresh ODSS to see new layer



## Web Services for MBARITracking database

This page last changed on Mar 28, 2022 by [kgomes](#).



### Warning

This page was migrated to the following in Markdown on the Docs.mbari.org site:

[Repository](#)

[Docs.mbari.org Page](#)

## Background

Here is a diagram of the surface position report data flow.



## The problem

All of the situational awareness data flow via email processing and the Advanced Message Queuing Protocol into the PostGIS MBARITracking database. Access to this database is provided through the Open Geospatial Consortium standard WMS and WFS protocols. These are fine for delivering rendered maps and GML formatted responses to clients. Server-side editing of Mapserver configuration files is required to customize WMS output. For example, simply changing a symbol size or color in a WMS response requires a change to a mapserver file on the web server. Though we haven't fully explored the WFS capabilities of the Mapserver we expect that similar configurations are required to customize the WFS response. These standards-based protocols are certainly useful, but many clients have a need to simply retrieve data directly from the database and format the data as they see fit. Because the database schema is managed in a GeoDjango project the programming environment to efficiently interact with this database is Python. To expose the information from the database in a more "raw" fashion to other environments another web service besides WMS and WFS is needed.

## The solution

The solution is to provide a REST-style web service that has a simple request syntax and simple responses provided in a requested format. Django provides a web service framework to deliver this solution. It has been implemented as part of the ODSS project and it provides full visibility into the 3 tables of the Tracking database. All of the timestamped position data from the Position table can be requested with various constrains including:

- by platform name
- by platform type
- the last number of reports
- the last reports from the last number of seconds, minutes, hours, days, or weeks
- since a specified time
- between specified times

In addition a 'stride' option can be specified for any of these position data reports to decimate the response, reducing the number of reports that a client must handle. A 'count' option can also be applied to any of these queries so that a client can adjust the stride option in order to maintain responsiveness. The service does not page output. If the client requests a year's worth of data from a platform that reports once a minute then over half a million records will be returned. It is expected that the client will first perform a count operation and then adjust further requests with stride or finer 'between' requests rather than overwhelm the server (and client) with too much data to process.

In order to expose the data to other environments some rudimentary web services have been set up to directly access the data in the database.

## The code (and documentation)

For complete documentation please see the `urls.py` and `views.py` source code in SVN. <http://kahuna.shore.mbari.org/viewvc/svn/MBARITracking/trunk/amqp/>  
The `urls.py` file contains the regular expressions for matching the URL request string: <http://kahuna.shore.mbari.org/viewvc/svn/MBARITracking/trunk/amqp/urls.py>

## Example requests

(Note: these services are provided in addition to the existing WMS and WFS services provided by the Minnesota Map Server.)

Here are some example calls of this service (they should be somewhat self explanatory):

<http://odss.mbari.org/trackingdb/platformTypes>

<http://odss.mbari.org/trackingdb/platformNames>

<http://odss.mbari.org/trackingdb/platformAssociations.csv>

The various formats (for last, since, and between) for the position request is:

`position/<platformName>/last/<number>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`position/<platformName>/last/<number><s,m,h,d,w (for seconds, minutes, hours, days, weeks)>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`position/<platformName>/since/<isoStartDateTime>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`position/<platformName>/between/<isoStartDateTime>/<isoEndDateTime>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`positionOfType/<platformTypeName>/last/<number>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`positionOfType/<platformTypeName>/last/<number><s,m,h,d,w (for seconds, minutes, hours, days, weeks)>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`positionOfType/<platformTypeName>/since/<isoStartDateTime>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

`positionOfType/<platformTypeName>/between/<isoStartDateTime>/<isoEndDateTime>[/stride/<strideValue>]/data.[csv|html|xkml|kml]`

(For the `.xkml` and `.kml` formats you can specify 'googlemap' instead of 'data' to get a simple non-timestamped LineString KML representation of the track.)

Here are examples for getting counts and position data (**Note: the odss-staging server - used for development - has been retired. Look below for examples that work on our production server**):

[http://odss-staging.shore.mbari.org/trackingdb/position/PT\\_LOBOS/since/20110322T000000/count](http://odss-staging.shore.mbari.org/trackingdb/position/PT_LOBOS/since/20110322T000000/count)

<http://odss-staging.shore.mbari.org/trackingdb/position/ZEPHYR/since/20110322T000000/count>

`{http://odss-staging.shore.mbari.org/trackingdb/positionOfType/ais/last/10s/count}`

<http://odss-staging.shore.mbari.org/trackingdb/position/stella103/between/20101001T000000/20110131T000000/stride/1/data.html>

[http://odss-staging.shore.mbari.org/trackingdb/position/PT\\_LOBOS/last/2w/stride/100/data.csv](http://odss-staging.shore.mbari.org/trackingdb/position/PT_LOBOS/last/2w/stride/100/data.csv)

<http://odss-staging.shore.mbari.org/trackingdb/position/stella103/since/20110222T000000/data.html>

<http://odss-staging.shore.mbari.org/trackingdb/position/tethys/since/20110101T000000/stride/1000/data.html>

<http://odss-staging.shore.mbari.org/trackingdb/position/tethys/last/500/stride/20/data.html>

<http://odss-staging.shore.mbari.org/trackingdb/positionOfType/auv/last/20d/data.html>

<http://odss-staging.shore.mbari.org/trackingdb/positionOfType/mooring/last/20w/count>

[http://odss-staging.shore.mbari.org/trackingdb/position/PT\\_LOBOS/last/20m/data.html](http://odss-staging.shore.mbari.org/trackingdb/position/PT_LOBOS/last/20m/data.html)

<http://odss-staging.shore.mbari.org/trackingdb/position/m1/since/20110324T000000/data.csv>

<http://odss-staging.shore.mbari.org/trackingdb/position/367766000/last/1d/stride/10/data.html> (For the AIS positions of the Western Flyer)

```
$ curl "http://odss-staging.shore.mbari.org/trackingdb/position/m1/
between/20110301T000000/20110325T000000/stride/50/data.csv"
```

In order to pass the arguments for the query through the URL the ISO-8601 format has no '-'s or ':'s. The format is '%Y%m%dT%H%M%S'.

## KML output

You can replace the format specification, e.g. 'html' or 'csv' with 'kml' to get timestamp tagged KML with the proper MIME type to open the tracks directly in KML to any KML-capable viewer, such as Google Earth. If you specify 'xkml' you will get the kml but with a MIME type of text/html so that the KML will appear in the browser. This is useful for debugging. You may also specify 'googlemap' instead of 'data' in a kml request in order to get a simple LineString KML element without timestamps. This KML response works well for feeding a GoogleMap (or other map) display of the data.

## External Access

The odds-staging.shore.mbari.org server is inside MBARI's firewall. All of the above services are also available from outside of MBARI's firewall by simply using the server name odds.mbari.org. E.g.:

<http://odss.mbari.org/trackingdb/position/stella103/between/20110601T000000/20110630T000000/data.html>

<http://odss.mbari.org/trackingdb/position/stella103/between/20110601T000000/20110630T000000/data.xkml>

<http://odss.mbari.org/trackingdb/position/stella103/between/20110601T000000/20110630T000000/data.kml>

<http://odss.mbari.org/trackingdb/position/stella103/between/20110601T000000/20110630T000000/googlemap.xkml>

<http://odss.mbari.org/trackingdb/position/stella103/between/20110601T000000/20110630T000000/googlemap.kml>

<http://odss.mbari.org/trackingdb/position/stella101/between/20140922T171500/20141010T000000/data.csv>

## TODO

Add GeoJSON formatted output.

## Information Inputs

---

This page last changed on Dec 30, 2013 by [kgomes](#).

The ODSS is being constructed with a massive amount of input from both the internal MBARI community as well as from outside. The page documents the various sources of information that were used to define the requirements for what the ODSS is supposed to do.

This section contains links to various sources of information that was used to extract use cases and requirements from.

### Proposals

- [2009](#)
  - [2010](#)
  - [2011](#)
  - [2012](#)
  - [2013](#)
  - [2014](#)
- 

### Early Requirement Documents

1. Thom's requirements slides ([PPT](#)) ([PDF](#))
  2. [Data Analysis Requirements](#)
  3. [Additional Requirements from Sep 2012](#)
  4. [AOSN Data Policy Document](#)
- 

### Project Planning

- [2010 Calendar of Events](#)
  - [2010 Milestones and Activities](#)
- 

### 2010 Data Group

- Meeting Notes
    - [01/13/2010](#)
    - [01/27/2010](#)
    - [02/03/2010](#)
  - Presentations
    - [Experiment Summary by Sergey Frolov \(PPT\)](#)
    - [Pilots and Virtual Experiments by Mike Godin \(PPT\)](#)
    - [Tom O'Reilly's presentation on DataTurbine](#)
    - [Mike Godin's Presentation on AOSN Data Management](#)
- 

### Sampling Workshop (April 2010)

- [Workshop Notification](#)
  - [CANON Sampling Workshop Notes \(KJG\)](#)
  - [Sampling Workshop Follow on Meeting Notes](#)
- 

### Other

- [Notes from BloomEx, BioSpace and LatMix](#)
  - [The general science and technology for CANON 2010.doc](#)
- 

### CANON PI Meetings

- [10/21/2008 Numerical models of the Monterey Bay](#)
- [11/11/2008 Meeting Notes from November 11, 2008](#)

- [11/11/2008 John Ryan's Slides on Monterey Bay Experiment Planning \(PPT\)](#)
  - [12/09/2008 Sergey's Presentation on Pilot Study for HABs \(PPT\)](#)
  - [12/09/2008 John Ryan's Presentation on Thin layers, HAB ecology and CANON Requirements \(PPT\)](#)
  - [01/23/2009 CANON Marching Orders Meeting Notes](#)
  - [02/17/2009 Meeting Notes](#)
  - [02/17/2009 Open Ocean Bloom Applications \(Word\)](#)
  - [03/04/2009 Meeting Notes](#)
  - [03/04/2009 John Ryan's HAB Dynamics and CANON Presentation \(PPT\)](#)
  - [03/12/2009 Autonomy Presentation \(PDF\)](#)
  - [03/24/2009 Meeting Notes](#)
  - [05/12/2009 Meeting Notes](#)
  - [05/12/2009 Sergey's Presentation on why blooms collapse \(PPT\)](#)
  - [05/12/2009 CANON Sampling Strategies \(Word\)](#)
  - [11/10/2009 Meeting Notes \(Word\)](#)
  - [12/08/2009 Meeting Notes \(Word\)](#)
  - [01/19/2010 Dorado Water Sample Update \(PPT\)](#)
  - [01/25/2010 SHA Workflow - Julio \(PPT\)](#)
  - [01/01/2011 Jim Bellingham's Science Driver Presentation \(PPT\)](#)
  - [01/01/2011 Francisco's Slides \(PPT\)](#)
  - [01/01/2011 Jim Bellingham's Ecosystem Matrix \(XLS\)](#)
- 

#### **Focus Group: Numerical Modeling**

- [10/21/2008 Sergey's Presentation on Numerical Models for CANON \(PPT\)](#)
  - [10/21/2008 Sergey's Model Benchmark Document \(Word\)](#)
- 

#### **Focus Group: [Data Analysis and Classification Group \(DAC\)](#)**

- [Accessing BOG data from Matlab](#) (MBARI Internal)
- 

#### **Documents**

- [Library of Research Articles](#)
- [Interacting physical chemical and biological forcing of phytoplankton thin-layer variability in Monterey Bay, California \(PDF\)](#)

### Features requested for DSS

- Water sample management. Julio has a white board that shows allocations by ml for each of the 1.8L gulps. This request from Bob V.
- DMO - would like a map showing the location of the assets and project paths for mobile assets (AUV, Drifter, Glider). A google map showing asset type (not just name) Drifter, AUV, Glider, Mooring
- Science - would like an "activity log" to log planned activities and non-planned activities or "events" that describe when/where/how. One motivation for this is to be able to have a log to refer to after the experiment.

## CANON Marching Orders 2009\_01\_23

This page last changed on Dec 30, 2013 by [kgomes](#).

### I. CANON rationale and economics: potential benefits of CANON in following applications

- a. early HAB prediction systems (Judy, Sergey)
- b. management and monitoring of coastal ecosystems and MPA's (Judy, Sergey, Steve)
- c. evaluation of efficacy of mitigation strategies (Steve)
- d. fisheries (including aquaculture) (Steve)
- e. tourism (Judy)
- f. emerging practices of resource utilization in coastal ocean (energy extraction desalinization plants) (zk)
- g. benefits of CANON-type observatories for oceanographic research beyond the HAB problem, and coastal ocean (open ocean blooms, iron enrichment experiments) (zk)

### II. Objectives

The main objectives for CANON in MB are (a) identify factors that control HAB initiation, progression, and demise, (b) acquire capabilities for predicting bloom occurrence, size, and persistence, and (c) communicating this information to agencies responsible for coastal management. The potential goals/question that will drive the first objective are:

- 1) What are the spatial scales of ecosystem heterogeneity with respect to chemical and biological characteristics? (John Jim)
- 2) What processes determine these scales (local physics, local topography, the shape of the bay with respect to the California currents, upwelling/wind patterns?) (John, Jim, Francisco)
- 3) What kind of observation capabilities are required to follow ecosystem evolution/trajectory in response to episodic events (episodic upwelling, fresh water/nutrients discharges, wind events)? (Kanna, Jim)
- 4) What factors drive these trajectories? (Sergey, John)
- 5) What kind of observing/experimental capabilities are required to resolve biological rates in situ? (zk)
- 6) What are the sources of bloom seeding material? (John)
- 7) What is the relationship between the blooms and bloom predators? (John, Chris)

### III. CANON observatory: type of measurements to be carried out, the characteristics of the instrumentation platform/infrastructure that will carry these measurements, and the optimal operation of this infrastructure

#### 1. Physical, chemical and biological characteristics of HABs to be measured

- a. CTD (Jim, Francisco, John)
- b. Chlorophyll (zk, John)
- c. spectral characteristics of HAB pigments (zk, John)
- d. molecular markers (Chris)
- e. markers of physiological status of bloom initiation, progression, and demise (Chris, zk, Francisco)
- f. photosynthetic properties (zk)
- g. oxygen (Jim, zk, John)
- h. nitrates 
- i. pH (zk)

#### 2. Sampling requirements and constraints:

- a. spatial and temporal resolution of physical, chemical, and biological characteristics of the bloom fields (Kanna)
- b. requirements for retrieving water samples, sample volume, sample delivery time, and/or sample preservation (Chris)

#### 3. Operational characteristics of CANON mobile assets that will allow following the spatial and temporal bloom evolution with little, or no prior knowledge about the direction and/or speed of the bloom trajectory

- a. ability to follow the spatial and temporal evolution of the bloom (control) (Jim, Kanna, Sergey)
- b. ability to track the bloom for a period of time required to characterize bloom evolution (endurance) (Jim)
- c. the required speed, ability to operate in deep/shallow water (agility) (Jim, Kanna)
- d. ability to be deployed on short notice with little logistic support (readiness) (Jim, Kanna, John)

#### 4. Types of observations that will provide advanced cues about bloom initiation

- a. ocean color data (John)
- b. sea surface temperature (John)
- c. MBARI moorings/HAB mooring (John, Francisco, Sergey)
- d. CODAR data (John)
- e. Precipitation (John)
- f. operation of CANON assets in surveillance mode (Kanna, Jim)

### III. Field exercises and lab experiments planned for 2010.

What field exercises and lab experiments are worth undertaking to better prepare for 2010 proposal (John)

### IV. COS workshops.

Few of us will participate in the third COS workshop (Land-Sea Interaction). This will be the best forum to introduce CANON as a component of coastal observatory, coastal management program (John)

### V. Collaborations (John, Kanna, Francisco)



## CANON Sampling Workshop Notes (KJG)

---

This page last changed on Dec 30, 2013 by [kgomes](#).

### Notes

1. Francisco
2. Chris
  - a. Don't have to sample everywhere, can get enough info from strategically placed sensors
  - b. Can identify some patches by optical sensors (satellite).
  - c. Species are ephemerally and patchy
  - d. Sip = 10's ml per hour
  - e. Slurp = 100's ml - L's per hour
  - f. Gulp = L's per sec
3. Heidi
  - a. flow cytometry
  - b. needs full range of sampling strategies (observing platforms, sensor targets, sampling statistics)
  - c. There may be ways to improve the cytometry, but there are limits and if you are looking for one cell, that will take time. In her view, there will be time limits.
  - d. 5 micron to 300 micron organisms.
  - e. Flow cytometry on a chip, but their flow rates are SO slow that you will only see the highly abundant organisms.
4. Matt Church (University of Hawaii)
  - a. Ocean eddies
  - b. Focused on HOT
  - c. Our understanding of how eddies affect biochemistry is in it's infancy because of undersampling (in time and space).
  - d. The sample eddies with satellites, ships, moorings, glider/auvs, floats
  - e. These platforms give limited information about biology (ships are better for biological sample collection, they allow for the integration process of pulling information together on the fly.)
  - f. Eddie drive nutrient rich/poor water.
  - g. The monitor chlorophyll and nitrate/phosphate
  - h. Light penetrates deeply in ocean
  - i. We have abundance of platforms, better sampling tools needed.
5. Ricardo Oregon State (Sampling Low Oxygen)
  - a. O2 minimum can be thin (20m)
6. Dave Checkley (SIO)
  - a. Microzooplankton - 10-100um
  - b. mesozooplankton - **missed it**
  - c. **missed it**
  - d. SOLOPC (plankton counter)
7. Percy Donaghay
  - a. Thin layers
  - b. They were sampling with the resolution they had in their equipment
  - c. Some of these layers were .5 meters thick
  - d. 10cm to 3m is the "definition" of thin layer
  - e. Issues
    - i. What are temporal and spatial scales?
    - ii. What is biological composition and how does it differ from surrounding water and how does it change over time?
    - iii. What are the mechanisms that control the formation, maintenance and dissipation of this layers?
    - iv. AAAAHHH missed it **GET THE SLIDES**
  - f. Sampling challenges
    - i. **GET SLIDES**

### Desired Goals

1. Identify processes upstream and prior that lead to state of sample when acquired
2. Certain species can have a threat associated with it. There is some "desired" level that is safe and then there is a threshold when "action" must be taken (cell/L). These are Harmful Algal Blooms (HAB). However, not just about the bug, but there must be information about the toxin itself.
3. Monitor toxicity levels.

4. Must sample near shore to offshore
5. miles to Ls of water
6. Sample near surface 1-25m
7. Combine molecular analytical detection technologies in an adaptive framework.
8. Need to do perturbation experiments.
9. Are we looking for targeted species or community characterization?
10. Don't have adequate sensing for nutrients
11. Want to characterize, monitor and quantify the role of low oxygen regions in the elemental balance of the oceans.
  - a. Requires: Understand dynamics of oceanic oxygen content
  - b. Requires: Characterize the response of microbial assemblages to oxygen gradients and scales of variability.
  - c. Requires: Assess the sensitivity of metabolic processes to oxygen.
12. Fleet of AUVs that have environmental and biological samplers that are constantly circling and sampling.
13. We should be able to sample biological diversity and processes at the same scale as the physical parameters.
14. We will generate hypotheses from the data and then we need to perform perturbation experiments to prove the correlations.
15. Is biodiversity of plankton changing with climate change
16. what is the role of plankton in carbon cycle and biological pump
17. how does zooplankton move
18. Sampler
  - a. autonomous
  - b. adaptive sampling
  - c. statistics (dealing with low volumes of water)
  - d. flexibility
19. Continuous sampling of aggregated distributions
20. Find and characterize patchy distributions (concentration and distribution)

## Visuals in presentations

1. Images with names and sizes along side graphs
2. Concentration plots (also shown on maps)
3. Currents and eddy plots over global ocean map
4. 2-D contour type plots and then stack those (like cards) along a timeline to show change.
5. Concentrations of things vertically along depth.
6. On thing I note, is there is always some explanation that has to go with each graph. I would be great for the DSS to associate audio/video with each resource so it can be explained by the author and played back at will. Extended thought: maybe each resource should have a context menu that would give the user quick access to this contextual data.
7. 3D "drape" along a sampling line from the surface and displaying data on the drape.
8. 3D vertically exaggerated model of coast and bathymetry and 3D models of patches/blooms oxygen minimum zone
9. 2D view of 3D globe with contour plots overlayed on ocean.
10. Side-by-side density plots of data vs. models
11. Map view with expanding views blow up with data plots
12. Stacked (vertically) plots that align by time on horizontal axis, but vary greatly in the content they display.
13. Images of gene screens (arrays) linked to tree information.
14. System cartoon diagrams with images of real equipment and data overlayed.
15. 3D models of the equipment that is deployed.
16. 3D line plots (like those in excel).

## Data Analysis and Classification Group (DAC)

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This page last changed on Dec 30, 2013 by [kgomes](#).

Data Analysis and Classification working group is a team of scientists who actively analyze CANON data. The 'DAC' is the user base that drives the requirements for the 'Data Analysis' feature in the ODSS.

## Data Group Meeting Notes February 3, 2010

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This page last changed on Dec 30, 2013 by [kgomes](#).

### Attendees

1. Tom O'Reilly
2. Mike McCann
3. Fred Bahr
4. Kevin Gomes
5. Frederic Py
6. Francesco Chavez (1st 30 min)
7. Brent Roman
8. Thom Maughan

### Notes

1. Tom O'Reilly presented on an infrastructure data management component, DataTurbine.
2. Francisco commented on DSS Data being confusing in the slide showing the high level DSS block diagram. Recommends calling it DSS information (processed data).
3. The important piece for CANON are the sinks"
4. Fred B. asked what are the limits on number of channels and amount of data in dataturbine
5. It was noted that Datamanager has a similar UDP vs TCP/IP transport for quality of service
6. DataTurbine addresses the problem of 'standardized infrastructure' to enable data access across the CANON tool suite.
7. The slides from Tom's talk are [here](#)
8. Mike McCann Gave a bigger scope than just THREDDs and showed the plan and key data management components for the Upper Water Column Data Visualization project this year.
9. There was extensive information presented and they slides are posted at <https://oceana.mbari.org/confluence/display/UpperWaterColumnDataVis/Home>
10. Many thanks to Mike for filling so many blocks on the data stream inventory. We're getting close to drawing the picture to feed the DSS architecture discussions. Hopefully those who couldn't make the presentation can review the slides.

## Data Group Meeting Notes January 13, 2010

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### Motivation

This group was formed to try and coordinate all data related efforts to support the CANON project. From the list of proposals active for 2010, there appear to be resources allocated in at least four places:

1. Mike McCann's 'one stop shopping' successor
2. Kanna's Rajan's proposal for shore-side planning under a decision support system,
3. Jim Bellingham's lab core activity,
4. Possibly in CENCOOS

### Meeting Topics

1. Identify CANON data needs, e.g. what do people need from the data system in the context of CANON and the fall CANON field program?
  - a. What platforms need to be supported?
  - b. What shore-side software will use CANON data?
  - c. What are real time needs e.g. during field program?
  - d. Etc.
2. What is the present state of data systems & projects?
  - a. What functionality already exists?
  - b. What is in the works (e.g. what do the various teams already intend to do)?
  - c. What established standards or practices are already in place (and do these satisfy CANON needs)?
3. Where are the gaps?
4. Planning
  - a. Rough identification of areas of responsibility & players
  - b. Methods of coordination (e.g. meeting schedule).

### Notes

1. Attendees were:
  - a. Bellingham, James
  - b. Maughan, Thom
  - c. Godin, Michael
  - d. McCann, Mike
  - e. O'Reilly, Tom
  - f. Bahr, Fred
  - g. Rajan, Kanna
  - h. Ramp, Steven
  - i. Py, Frederic
  - j. Harvey, Julio
  - k. Frolov, Sergey
  - l. Gomes, Kevin
2. Topics:
  - a. Introductions & description of interests by all participants. Some highlights:
    - i. Data management activities relevant to CANON are embedded in a variety of projects. Some external funding is supporting activity that might also be synergistic with CANON portal. In addition to the increasingly familiar challenges associated with data management and decision making in coupled observation-modeling process experiments, CANON has some needs that are comparatively unique, e.g.:
    - ii. Planning software being created by the Rajan lab needs operational information (e.g. disposition of observational assets like ships and AUVs) in addition to more traditional science data streams.
    - iii. The acquisition of water samples by the AUV creates a number of challenges, including getting the data back in the system so it can be merged with other data and support adaptation of mission planning. Researchers working with the water samples are expecting a near overwhelming level of work in the foreseeable future.
  - b. Further discussions led to the following observations:
    - i. The Biospace experiment provides an excellent exemplar for CANON data management efforts.

- ii. CANON is intrinsically adaptive, for example in the Biospace experiment the CANON activity focuses on mapping and following a patch.
  - iii. There are a variety of ongoing efforts relevant to CANON and represented in the room including: SSDS, SIAM, Puck, ITOP (an ONR funded Typhoon experiment building on earlier ONR funded COOP and MOQuA activity), CenCOOS, Upperwater Column Visualization, etc.
  - iv. There is a fair bit of experience with CANON-like process experiments and we should spend some time getting "lessons learned" from individuals at MBARI.
  - v. We need to develop a system diagram, identify gaps, and understand responsibilities for the Biospace data system/portal.
  - vi. There were questions about how flexible the NRL Biospace folks would be in terms of possibly making use of MBARI contributions. The general sense is that we have very good relations with the NRL folks as well as some formal collaborations (ONR funded) which should provide a strong foundation for conversations.
3. Decisions:
- a. We will have weekly one hour meetings 2pm on Wednesday in the surface commons.
  - b. The first meetings will focus on 15 min reviews by each project contributing to the CANON data system: this is intended to develop an understanding of the available building blocks.
  - c. We will subsequently have brief lesson learned presentations on efforts like COOP (Mike Godin), MAPGEN (Kanna), and possibly SSDS & SIAM (Kevin and Tom O'Reilly)
  - d. From this we will develop our system block diagram, assign responsibilities, and identify gaps.
  - e. We will report our activities to the larger CANON team at the biweekly CANON meetings.
4. Some additional comments:
- a. We are starting with functional elements and thus should be able to bring new elements online incrementally. We should consider activities like Virtual Pilot Experiments which would allow the CANON users to interact with prototyped systems to understand how they might be used (or not) during the field program.

## Data Group Meeting Notes January 27, 2010

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### General Notes

1. Opening with John Ryan giving a short response to the question, what are you planning for Satellite data in CANON?
2. **Action Item:** schedule an agenda item for the CANON data meeting to discuss Satellite Data on Feb. 10
3. Mike Godin presented on the 'decision support' tools (COOP, MOQUA) used in AOSN 2006 and detailed the lessons learned.
4. Summary: The virtual experiments used in preparation for AOSN 2006 were definitely a best practice and the collaboration and data management tools that were built to address the needs of AOSN 2006 will serve as a great starting point for the requirements gathering to define the CANON Decision Support System.
5. **Action Item:** schedule an agenda item for Jim B. to discuss long term plans for MOQUA and COOP.

### Detailed notes

1. AOSN - Mike Godin (ask mike to post his slides on the CANON wiki <https://oceana.mbari.org/confluence/display/CANON/CANON+Data+Group+2010> )
2. AOSN Data History
  - a. 2000 MUSE experiment
  - b. 2003 AOSN-II exp
  - c. adaptive sampling decisions via sneaker net
  - d. later use of live access server and THREADDS
  - e. for data exploration, developed metadata oriented query assistant (MOQuA)
3. MOQUA
  - a. What data, When, Where
  - b. get data button - not working
  - c. Steve Ramp - "smart scalable box" is very useful
4. In 2006, leveraged SSDS for data management
5. Piloted Virtual Experiment (with Virtual Instruments) - Virtual Gliders (virtual glider data hosted at the place where the data would be later gathered)
6. Steve Ramp - Virtual Experiments were a huge value (predicted glider would be blown out of box)
7. Virtual Experiment surfaced the need for collaboration tools (COOP)
8. 2006 - data management done real time (2003 it was done after the fact) (Dorata did model comparisons and plots)
9. Distributed observatory management achieved (you could stay at home)
10. Tools other than portal were used (email)
11. Standard visualizations are useful,
12. Virtual experiments are useful
13. MB06 data, have the Decision Support team
  - a. Satellite data, in-situ data, model data (and leverage CENCOOS)
14. MB08
  - a. Modelers: Igor, maybe JPL
  - b. Yi Chao - visualization of model output (NETCDF) - interactive data viewer. Make sure modelers are aware of format requirements
  - c. Data providers gave pointers to their data formats and locations.
  - d. MBARI
    - i. 2 to 8 hours to convert each of the external data types.. converted to netCDF with CF metadata conventions. Conversions were in place for the Virtual Experiments and operation for the 'real thing'
  - e. COOP was not involved with platforms
  - f. Princeton group managed the tracks of the vehicles. (gliders on the racetracks and optimizing) Naomi Leonards group. Objective was to keep a set of glider running around the box and optimize coverage.
  - g. When the feature moved, gliders would not behave - this was what the voting was all about.
  - h. If you don't have good boundary conditions for the box (data outside the box), the model is not well behaved.
  - i. Princeton group created a tool that would let you play with different boxes and perform glider planning scenarios - this is along the lines of what Kanna's group is proposing for the 'planning tools'.
  - j. Steve Ramp managed the air planes, it would be good to follow up with him.

- k. VPE - Do we have a virtual patch?
- 15. 2003 data set is closer to what BIOSPACE will have
- 16. NRL mooring and glider array will observe the patches, Satellite will depend on the coverage and the processing to products
- 17. Decisions will be day to day. How much latency? Half a day latency.
- 18. Francisco - previous days data available in the morning processed for visualization. Note: modelers want the data for an overnight run.
- 19. If the modelers get the data and it is easy to assimilate, they can turn an updated model around. Either way the model data would be present (with more or less truth).
- 20. COOP - asynchronous input (aside from a synch conf call), at 2:00 a decision would be made.
- 21. 2006 Lessons
  - a. Standard visualization is very useful
  - b. Virtual Experiments very useful
  - c. Common format data needs formal continuous QC
  - d. Need versioning on both source (raw) data and common format data
  - e. Collaborative tools should interoperate with familiar tools
- 22. Brief discussion on plans for Typhon project 2010 ITOP
- 23. Integrating list serv
- 24. NETCDF may be superseded by RAMADDA (sucks in data, allows you to run tools on data, supports plugins, integrates to IDV).
- 25. Agenda proposal? What tools would be useful for CANON (schedule mid-Feb). RAMADDA, MOQUA, others.
- 26. Next week is Data Turbine, SIAM, and Mike McCann's THREDDS



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Participants: Judy Kildow, Steven Romp, John Ryan, Francisco Chavez, Kanna Rajan, Zbigniew Kolber

## 1. Report from Oregon HAB meeting (Steve, John)

- No new ideas that could influence the current MBARI CANON effort. Although the type and scope of observation and measurements required for HAB monitoring were well defined, the observational infrastructure required for effective monitoring and management of HAB blooms was not.
- CANON approach still appear to be the most effective in detecting and tracking blooms, and to study factors responsible for bloom initiation, persistence, and demise
- A subset of ESP-like observations/sampling operating on autonomous platform (LRAUV) would highly benefit HAB observation infrastructure
  - survey mode of operation
  - response mode of operation
  - sample retrieval
  - some in-situ capability to do molecular work, but will require the capability of characterizing the bloom prior to engaging the molecular gizmo (optics?)

## 2. Summary/Discussion on the last three COS workshops (all participants)

- HAB's were not elevated to a level of possible COS initiative. However, CANON infrastructure will support several of the potential COS initiatives that were discussed.
  - indicators of ecosystem status/health
  - California Current as protected area
  - effects of agricultural runoff
  - environmental effects of utilization of costal resources (power generation)
- If CANON qualifies as MBARI initiative, there will be a rationale for communicating the potential of CANON to support some of COS initiatives.
  - what are ground rules for such communications?
  - We should discuss these rules with Marcia

## 3. MBARI assets discussion: a CANON-wide consensus (all participants, the discussion will continue, Francisco and Jim will produce a CANON-wide answer)

- The loss of Zephyr will have no effect on CANON operations assuming that we retain the capability of LRAUV launch/recovery.
- CANON will not be affected by the potential loss of Ventana.
  - We need M1, we can replace M2 with routine LRAUV runs.
  - We critically need upper water column AUV operation.
  - We assume that this capability will be provided by a LRAUV fleet.
  - As this capability will be satisfied within the next few years, we may phase out the CTD AUV.

## 4. CANON as enabling technology for oceanographic research outside MBARI (Zbigniew)

*Case Study: Open Ocean Blooms*

- Productivity in North Pacific Subtropical Gyre NPSG is to large extent driven by eddies activity
- It is unclear if these activities will attenuate or intensify in response to increasing heat loading in the upper ocean
- mechanisms and links between eddies and biology remain ill defined: impossible to predict future responses of open ocean biology to climate change
- Understanding these mechanisms require

- persistent presence in the anticipated bloom areas
- ability to observe/acquire data at spatial and temporal resolution comparable to spatial scales of local blooms
- ability to follow the spatial and temporal evolution of local blooms
- ability to perform these tasks autonomously

**These are the operational characteristics of CANON infrastructure.**

**Problems:**

- (a) Do we need to demonstrate broader implications of CANON initiative?
- (b) Do we need to demonstrate the potential for technology transfer?
- (c) How to demonstrate this potential without losing HAB focus?

***Tentative agenda for the next meeting, March 3, 2009***

1. More on HAB economics (Sergey)
2. Modelling (Hey-Jin)
3. Autonomy (Kanna)
4. Dynamic of HAB blooms (John)

# Meeting minutes, March 04, 2009

## 1. ***CANON Partnering with Rutgers STC (Jim).***

### What is Rutgers STC?

- Computer Science exercise on application of distributed control in environmental sciences
- Looking for application in marine sciences
- Disappointed with Rutgers marine scientists

Potential applications that may be compatible with CANON

- HAB problem as an example of a small scale, highly dynamic problems requiring autonomous control (required decision rates exceed communication rates)
- Focus on resolving ecosystem dynamics
- Focus on dynamic component of the ecosystem
- Multi-vehicle coordination

What CANON would provide, what would be the benefits to CANON, at what cost/funding level

- We would concentrate on one high value asset (LRAUV) plus sensing payload
- We would verify the efficacy of their software, and demonstrate application on HAB problem
- Provide proof of concept for a system that later can be applied to other classes of oceanographic problems requiring agile assets and distributed control

### Consensus:

There are many aspects of STC that are compatible with CANON objectives. Collaboration with STC may be used to leverage our effort, while providing some level of external support for CANON activities and provide a mechanism for technology/knowledge transfer. However, CANON decisions and directions cannot be contingent on STC funding. Even if successful, it may take 2-3 years before funds will be available.

The short answer in to engage with Rutgers STC.

## 2. ***Scripps pH STC (Francisco)***

Scripps pH STC may offer another possibility, although less immediate, to utilize CANON capabilities for application related to ocean acidification. While focusing on HABS, should we make CANON infrastructure generic enough to retain such capabilities?

## 3. ***Sample retrieval in CANON infrastructure (Chris)***

Successful application of CANON in HAB will require sample retrieval capabilities

- Preserved samples (filters): can be stored for relatively long time
- Liquid samples (25 ml): will require fast delivery to the shore
- Capability to perform wet chemistry (demoic acid detection)
  - will open new class of applications related to HAB detection

Chris and Francisco will prepare the part of proposal detailing the requirements and approach toward sample retrieval using LRAUV.

## 3. ***Dynamic of HAB events: why do we need CANON (John)***

Monterey Bay as Biological Action Center (BAC):

not constrained to a particular season, but seasonal patterns do exist.

- Environmental extremes in summer/falls
- Nutrient driven seasonal shifts
- MB can completely change in 10 days, but it is unclear when these days will occur
- Land-sea artery: we know where things are likely to happen, much less so when, and even less why

Drivers for CANON activities?

- HABs threat to MB ecosystem and/or local human populations
- scientific curiosity and the need to understand the dynamic phenomena in MB

How compatible are these drivers?

CANON focus

- organism (Pseudonitzschia vs Alexandrium)
- tracers (dissolved acid detector)
- dynamic phenomena

Do we need to select particular focus, or should CANON be generic enough to address HAB problems elsewhere?

How to separate the generic and the specific aspects of CANON

- System engineering level: design at a generic level to allow CANON infrastructure to follow dynamic events and phenomena such as bloom patches, fronts, thin layers, and other hotspots (biology usually happens there)
- Sensor level: narrow the application of this infrastructure to particular organism, chemical, or molecular/genomic component of interest by equipping this infrastructure with a required suite of sensors (sensors will define the selection of biological phenomenon, and the focus of particular application).

Conceptual models of the HAB-relevant biological processes: can we observe MB dynamics from the organism's perspective?

- Events that the organisms of interest respond to
- Detection capabilities to observe both the events, and the responses
- Observing persistence similar to that of organisms persistence, required to capture the sequence of events that lead to bloom formation
- Identify responses that cannot be explained at existing level of observing capabilities
  - we don't see the events well enough,
  - we don't observe the organism responses well enough,
  - we cannot make sense of the events and responses that we do observe
  - all the above
- How to identify and acquire new observing capabilities to gain this understanding (CANONIZE?)

## **4. Autonomous control in CANON (Kanna)**

Characteristics of control in CANON : goal oriented commanding under conditions of

- Heterogeneous assets
- Poor to limited communication
- Loosely coupled system

Challenges: Adaptive sampling based on maximum information gain:

- How to quantify the information gain?
- How to identify regions that offer the highest information gain?
- What is the strategy for realizing this information gain: information gain/expenditure ratio?
- Is the physical, chemical, and biological activity is collocated with the areas of the maximum information gain? What is the causality?

Architecture: distributed field agents and shore control

- What is the environmental manager (EM)
- What kind of effort is required to build one?
- Can EM be initiated as simple enough to implement quickly, and built incrementally?

## 1. Report from the Santa Clara students meeting (Sergey, John)

Santa Clara students are designing a satellite (small multispectral imager) that will be launched in 2010/2011. They are looking for a science application for their satellite. Monterey Bay imagery, with emphasis on coastal blooms appears to be a good science driver. They are willing to work with us on imager specification, and are interested in using the device in CANON applications. John will help in specifying the imager, Sergey will provide communication conduit with CANON

Preliminary characteristics:

- Single target per orbit defined by the limited power budget of the targeting hardware
- 2-3 images of MB/day
- can potentially pick-up other location, but at added complication of the power management
- spectral range in 400 - 700 nm
- resolution defined in range of 500 to 1000 m, defined by the primary payload/destination

## 2. Rutgers STC (Jim)

- budget: how much effort will we contribute, at what cost
- define at least four different applications, compatible with CANON objectives
- writing assignments

## 3. Scripps STC (Francisco)

Features of the Scripps Ocean Acidification STC that are compatible with CANON:

- spatially variable, localized plumes of low pH, corrosive water are upwelled and advected along West Coast with unpredictable patterns
- the interplay between natural and the anthropogenic drivers remains unclear
- they present a natural laboratory for studying the effects of ocean acidification on marine biota in situation where biological responses to ocean acidification (besides calcification rates) are unknown
- applications of mobile assets with long endurance may represent the most effective approach to study these effects
- CANON strategy of utilizing auxiliary information (remote sensing, mooring data) to trigger deployment of CANON assets can be directly applied to chase pH plumes

## 4. CANON Microprocesses applications (Sergey, Jim, and John)

Techniques and tools to identify, localize, and study small-scale dynamic processes. These tools will be required to understand processes that govern the dynamics of ecosystem.

- define local scales of homogeneity that delineate "the patch"
- observe and follow patch trajectory
- track the succession of biological changes within the patch
- observe patch evolution: inception, growth and collapse
- ability to take samples
  - how many samples can be acquired?
  - how many samples can be analyzed?
- what kind of technology is required to perform these activities
- HABs as a special case of microprocess

## 5. Infrastructure needs for CANON initiative (Francisco)

- Vision

- Access to sea
- Marine systems

Prepare a document within next week that can be presented to Marcia.

# I. CANON response to COS RFP

At this moment CANON is not ready to respond to COS RFP. However, CANON can offer observing services to COS initiatives including land-sea interaction, and the possible ocean acidification initiative:

- Ken Johnsons is spearheading the land-sea interaction COS initiative (agriculture and nitrogen project), and he seem to like the idea of utilizing CANON in support of the marine part of this initiative.
- Stephen Schneider and Michael Mastrandrea from Stanford are spearheading the ocean acidification initiative

Francisco will prepare a document outlining the possible role of CANON in COS initiatives.

# II. CANON business

## 1. CANON first year effort:

- Focus on technology development
- Identify characteristics of HAB-like blooms (spatial extent, advection rates, photosynthetic signatures)
- Concentrate on HAB-like blooms:
  - can we follow such blooms (platforms, sensors, strategy)

## 2. CANON-type experiments (Sergey)

- Find the bloom as it blooms
- Follow the bloom evolution using following observing strategies
  - Slow observing platform that advect with the bloom in Lagrangian mode (drifter or glider)
  - Agile asset (LRAUV) operating in Eulerian mode, producing more synoptic picture of biology in the vicinity of the bloom
- Follow the bloom till demise
- Identify factors responsible for bloom spatial trajectory and sustenance
- Identify factors responsible for bloom demise
- Determine whether the bloom is the HAB, and whether is toxic

## 3. CANON Platforms

- LRAUV's: the most versatile in terms of operation mode, sensor load, and possible expansion toward sample return, genomic sensor, and molecular (toxins) detection
- Gliders
- Low-cost, ~\$10k mooring (ocean acidification mooring?)
- Autonomous surface vehicle?
- Smart profiling float

NOTE: MBARI will concentrate on LRAUV development, and possibly on smart float. We assume that other assets will be contributed by outside collaborations that CANON will attract.

## 4. Instrumentation

- CTD
- Photosynthesis
- Water samples
- Genomics



- Toxins

#### 5. Ship time:

1. Western Flyer: 10-12 days, large blooms/fronts with California current system.
  - - Verify the control algorithms for the Lagrangian and the Eulerian modes of observation
    - Verify the performance of the asset-borne sensors
    - Determine the performance of the water sample retrieval modes
2. Zephyr: deployment and recovery of the CANON assets in MB
  - Can Zephyr allow AUV and CTD operations at the same time?

## Meeting minutes for Nov. 11, 2008

[Notes provided by Kolber, Zbigniew]

### Tasks and deliverable for the CANON feasibility study 2009.

1. Evaluate potential significance and benefits of CANON operations to the coastal ocean management practices in MB and along California coast

(Judy, Steve)

2. Identify characteristics of MB HAB blooms that can be used to identify their presence, their physiological status, and their potential hazards using both in-situ sensors operating on CANON mobile assets, and remote observations

- Chlorophyll biomass
- Spectral characteristics of HAB-specific pigments
- Photosynthetic properties
- Molecular markers

(John, Francisco, zk, Chris).

3. Identify types of observations that may provide advanced cues about initiation of HAB blooms

- Sea surface temperature (remote observations)
- MB circulation patterns (CODAR)
- Local upwelling or stratification (moorings)
- Fresh water discharge (precipitation)

(John, Francisco)

4. Formulate technical requirements for CANON assets that will allow to respond, to follow, and to characterize evolution of algal blooms, including HABs, in Monterey Bay

(Kanna, Jim, zk, and Chris)

- Performance characteristics of mobile assets (agility, control)
- Logistic of deployment on a short notice
- Sensor suite
- Ability to return water samples

5. Develop a detection/classification, integration and metrics system (Jim, Sergey).

6. Develop products that will be useful to society and determine if management is improved (Steve).

### There are two issues with our list:

I. Most of the tasks described here (the rationale, observations, and performance matrix) are typical of other HAB program. To avoid duplicating existing programs, we need to ask:

1. How different our approach will be, what new tools will be required, and why should our approach be better?
2. What are the innovation paths that will allow us to develop these tools?
3. What level of effort, commitment, and investments is necessary for this development?
4. What is the right mix of management, technology development, and societal involvement that will make our effort more coherent relative to the existing, well established HAB programs?

II. The innovative aspect of CANON approach will be defined by the selection of a mobile sensor platform capable to follow and characterize the HAB blooms. Also, CANON success will be quantified by the efficacy of managing the HAB problem in MB. That makes our effort very HAB-centric. However CANON is a generic observation system, with potential applications extending beyond HABs. Therefore, we need to be careful allowing HAB applications to dominate CANON development. HABs present an excellent test case for CANON, but should not be the only driver.

Let's consider these two problems when working on our deliverables.

Preliminary agenda for the next meeting (after Thanksgiving)

1. Finalize the tasks/deliverables list
2. Discuss types of collaborations we should establish with external institutions/agencies:
  - - Center for Ocean Solution,
  - - ACT (Francisco e-mails),
  - - USCS,
  - - Other groups working on HABs.
3. Identify small-scale field exercises for year 2009

## Numerical models of the Monterey Bay and the CANON project October 21, 2008

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This page last changed on Dec 30, 2013 by [kgomes](#).

Minutes for the meeting on October 21<sup>st</sup>, 2008

Participants: John Ryan, Jim Bellingham, Hey-Jin Kim, Zbigniew Kolber, Yanwu Zhang, Sergey Frolov.

Discussing: Plans for using numerical models to support CANON project

### Introductory discussion: How using numerical models can advance your CANON-related activities

#### John Ryan:

- Using models to complement observations
- Choosing ecosystem models with the types of phytoplankton that we see in MB
- Scales and processes of interest
  - Seasonal cycle
  - Upwelling shadow
  - vertical structure of the water column is critical to future ecosystem model performance
  - Thin layers
  - Nutrient fluxes
  - Internal tidal pumping in the northern bay

#### Jim Bellingham

- Interest in cost-benefit analysis of the observatory designs (system-engineering component of CANON)
- - As a tool for OSSE experiments
  - Knowledge of the transport in the bay
  - Real-time prediction is not as important
  - Represents physics as pertinent to biology
  - CANON OSSE will need better ecosystem models
  - How to construct an observatory with imperfect engineering components (e.g. models)

#### Hey-Jin Kim

- Describing sources of water
- Land-ocean coupling (agricultural run-off)
- Climate forcings of the MB

#### Zbigniew Kolber

- Using models for process studies (verify hypothesis about the phenomena)
  - Local production vs. accumulation of HAB
  - Intensity and spread of HAB
- Can we be in place when bloom originates
- Use model to direct sampling, so we can track the bloom as it evolves

#### Yanwu Zhang

- Using model statistics to build signal detection tools for CANON mission planning
- Feature tracking

#### Sergey Frolov

- Pilot study for the system engineering component of CANON

- Developing ecosystem models capable of red tide prediction

## **Diversions**

- Ground water supply of nutrients
- Use physical models to investigate which sequence of events precedes HAB
- Viruses and parasitic dino
- We have surface and AUV climatology that describe average temperature, temperature gradient, frontal orientation, and distribution of chlorophyll.

## **Summary of existing modeling efforts in MB**

### **Sergey**

- Established models
  - Yi Chao, JPL: ROMS + U.Maine biology
  - Igor Shulman, NRL: NCOM + NRL biology
  - Pier Lermusiaux, HOPS (biology?)
- Emerging models
  - Oliver Fringer, Stanford: SUNTANS (unstructured grid + internal waves, no biology, no data assimilation)
  - Chris Edwards, UCSC: ROMS (hi-resolution nesting, experimental biological models)
- Other models
  - Baptista, NSF-STC CMOP: unstructured grid model
  - Kaplan, LDEO: ROMS Zbigniew
- How should we involve modeling teams
  - We will continue working with Yi Chao's models and as we learn more about the process, we will involve other groups as necessary.
- How much should we invest into developing a local modeling presence at MBARI?

### **Action items:**

- We will meet as needed, or when there is progress from Hey-Jin and Sergey
- We will next discuss specific physical processes and datasets that we can use to validate numerical models

### **Other notes:**

Pilot project web site: <https://oceana.mbari.org/confluence/display/CANON/Home>

## Sampling Workshop Follow on Meeting Notes

This page last changed on Dec 30, 2013 by [kgomes](#).

Notes from follow on meeting on Monday April 19

### Action items:

1. Thom to attach workshop materials to the confluence site after Francisco loads them into a project directory (\\Tornado\ProjectLibrary\901009\_CANON)
2. Workshop Report - create outline. Francisco to lead the relevant scientists to draft outline, draft paragraph.
3. What to do with engineering requirements (buy, build, collaborate) - look at how well the questions were answered and provide in a standardized way of reporting.
4. John Ryan to look at updating the existing sampling devices (acquire water).
5. Engineering is working on collating and summarizing the requirements into a google doc

### Notes

[Thin Layers Workgroup Notes \(KJG\)](#)

### Files

|                                                                                     | Name                                           | Size    | Creator                      | Date         | Comment                             |                                               |
|-------------------------------------------------------------------------------------|------------------------------------------------|---------|------------------------------|--------------|-------------------------------------|-----------------------------------------------|
|    | <a href="#">LowOxygen_CaseStudy.ppt</a>        | 401 kb  | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Case Study: Low Oxygen              | <a href="#">Edit</a>   <a href="#">Remove</a> |
|   | <a href="#">Thin Layer Breakout Group.doc</a>  | 26 kb   | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Case Study: Thin Layers             | <a href="#">Edit</a>   <a href="#">Remove</a> |
|  | <a href="#">HAB working group.ppt</a>          | 52 kb   | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Case Study: Harmful Algal Bloom     | <a href="#">Edit</a>   <a href="#">Remove</a> |
|  | <a href="#">OpenOceanEddiesGroup.ppt</a>       | 145 kb  | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Case Study: Open Ocean Eddies       | <a href="#">Edit</a>   <a href="#">Remove</a> |
|  | <a href="#">Vrijen_zooplankton1.ppt</a>        | 1.13 Mb | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Case Study: Zooplankton             | <a href="#">Edit</a>   <a href="#">Remove</a> |
|  | <a href="#">2010 OMZ sampling Letelier.ppt</a> | 5.18 Mb | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Intro by Letelier: Low Oxygen (OMZ) | <a href="#">Edit</a>   <a href="#">Remove</a> |
|  | <a href="#">Church_MBARI_CANON_2.pptx</a>      | 7.46 Mb | <a href="#">Thom Maughan</a> | Apr 19, 2010 | Intro by Church: Open Ocean Eddies  | <a href="#">Edit</a>   <a href="#">Remove</a> |

## Thin Layers Workgroup Notes (KJG)

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This page last changed on Apr 26, 2010 by [kgomes](#).

1. Summarize the research topic and goals
  - a. **To understand the organization, dynamics and distribution of plankton in thin layers.**
  - b. **Characterize the processes that go on inside these layers.**
  - c. Percy draws graph of rate vs. concentration
  - d. You may be interested in finding a difference in concentration of 0.5%
  - e. Early criteria was that if something appears in two profiles for more than two hours above some level, that is a thin layer. That means they were spatially and temporally coherent.
  - f. **The gradients are the interesting parts**
  - g. Identifying the structure
  - h. Really interested in the rates?
  - i. These are huge production sources.
  - j. Would like to high frequency sampling through the gradient.
  - k. Questions:
    - i. Are there multiple species in the layer
    - ii. What is the status of their health? (ESP style sampling)
    - iii. What is their activity? (ESP style sampling)
    - iv. What are the trophic linkages?
    - v. What is the chemical environment?
      - i. Nutrients
      - ii. Allelopathy
    - vi. What are the biological interactions?
      - i. Parasitism
2. Briefly summarize the role of water sample acquisition for thin layers.
3. What is the target measurement of the water sample (organisms, dissolved material, particulate material)?
  - a. phytoplankton, zooplankton,
4. Are there multiple target measurements?
  - a. Would like to high frequency sampling through the gradient.
5. Where should the samples be acquired (environments, depth)?
  - a. before and after the layer
  - b. higher resolution through both gradients
  - c. in the layer
6. When should samples be acquired?
  - a. When the layer is found!
7. What determines when a sample should be acquired?
  - a. Purely by location in the layer.
8. Does the sample collection need a moving platform, fixed, or both?
  - a. Moving through/with the layer. XY fixed, but Z moving.
  - b. The ideal would be to have a vertical view of the layer and moving with it.
9. What methods will be applied to the sample?
  - a. Methods to discover species makeup, health, activity, trophic linkages, environment chemical analysis
  - b. Microscopic examination/enumeration
  - c. Particle characterization
10. What volume of whole water is needed per sample
  - a. Couple of liters?
11. What are the requirements for sample purity?
  - a. This is critical as the only water that is in the sample is from the location of interest. This is important if you are trying to implement some type of sample buffering scheme.
12. How rapidly must sample be collected?
  - a. Assuming you can target the proper spot, the acquisition must be quick because things are moving rapidly.
  - b. Use constant flow-through for sampling.
13. Must the sample be processed immediately?
  - a. Yes, further decisions will have to be made based on in-situ analysis
14. How soon following acquisition must a sample be analyzed to be useful?
  - a. In situ, but is there a time constraint?
15. Is there a need to archive samples?
  - a. Yes, but it is not practical to do it all analysis back at shore, so do as much as possible out there (in situ). There will always be a need to do some stuff back on shore (look for unexpected critters) so yes.

- b. You are going to take one sample and split it out to several processes.
  - c. Micro Photographic/Video archiving has been very valuable.
16. What contextual data are required for the sample data
- a. Chemical
  - b. Internal Waves
  - c. Currents
1. Other Notes
- a. Have to have accurate at sampling the transitions in the boundaries.
  - b. Could have have some fluid delay.
  - c. **Keys are layers are spatially coherent and persistent.** This is key for targeting follow up sampling.
  - d. The layers can move very fast, especially in Monterey Bay so you risk sampling the same water multiple times.
  - e. No methane sensor for ambient concentration
  - f. CO2 sensors aren't good
  - g. Nutrient sensors not fine enough.





# LISST-HOLO Data Processing for CANON

## How to process an entire directory of raw PGM images

- Check-out the scripts to your local (not NFS mounted) directory

```
svn co svn+ssh://kahuna.shore.mbari.org/svn/repos/lisst-holo lisst-holo
```
- Follow installation instructions in [README.txt](#), including setting the environment variable HOLO\_SCRIPTS\_DIR, e.g.

```
export HOLO_SCRIPTS_DIR=~/.lisst-holo/trunk/workflow; export PATH=$PATH:$HOLO_SCRIPTS_DIR
```
- Execute script

```
process_all.sh -i /mnt/CANON_Images/LISST-HOLO/2011/sandbox/raw/ -o /mnt/CANON_Images/LISST-HOLO/2011/sandbox/processed_background_subtract/ -t "Testing background subtract"
```

## How to process a subset of raw PGM images

```
process.sh -s 020-6145.PGM -e 020-6345.PGM -i /mnt/CANON_Images/LISST-HOLO/2012/2012257/raw -o /mnt/CANON_Images/LISST-HOLO/2012/2012257/processed
```

## How to change the processing parameters

The processing options are set in the file hologrid.conf which is in the \$HOLO\_SCRIPTS\_DIR. Any changes to this file will take effect immediately, and all subsequent processing jobs will use these changed options. If changes are made to this file, check the changes back into the repository.

## How to find out how a Condor job failed

Regardless of how a Condor job ends, through an error and crash, successful termination, or otherwise, you will get an email that resembles the message below. From this message, we can see the job command was hologrid\_run.sh -i ..., and that it exited cleanly (exit status 0), took over 7 minutes of real time. If the status is not 0, clues for why it failed will be in the log files in the condor\_log directory of the output, and in the \*.dag.dagman.out files.

This is an automated email from the Condor system on machine "pantera". Do not reply.

```
Condor job 6540.0
/var/www/CANON_Images/LISST-HOLO/2011/sandbox/processed_no_background_removal/hologrid_run.sh -i
images-020-3911.PGM-to-021-0111.PGM.tar.gz -o processed-images-020-3911.PGM-to-021-0111.PGM.tar.gz
has exited normally with status 0
```

```
Submitted at: Thu May 30 20:44:22 2013
Completed at: Thu May 30 20:51:51 2013
```

Real Time: 0 00:07:29

Virtual Image Size: 3511008 Kilobytes

Statistics from last run:

Allocation/Run time: 0 00:07:11  
Remote User CPU Time: 0 00:14:32  
Remote System CPU Time: 0 00:00:17  
Total Remote CPU Time: 0 00:14:49

Statistics totaled from all runs:

Allocation/Run time: 0 00:07:11

Network:

107.4 MB Run Bytes Received By Job  
2.9 MB Run Bytes Sent By Job  
107.4 MB Total Bytes Received By Job  
2.9 MB Total Bytes Sent By Job

ProcessedResultsURL = "http://pantera.shore.mbari.org//CANON\_Images/LISST-HOLO/2011/sandbox/  
processed\_no\_background\_removal//processed-images-020-3911.PGM-to-021-0111.PGM.tar.gz-index.html"

-----

Questions about this message or Condor in general?

Email address of the local Condor administrator: dcline@mbari.org

The Official Condor Homepage is http://www.cs.wisc.edu/condor

## For Developers

- [LISST-HOLO Source Code](#)
  - [Condor pool installation notes](#)
  - Debugging notes  
Matlab compiler installed on machine avedvm because this was similar in architecture and OS to the holoprocvm.
- Sandbox code in ~/dev. Login as user aved to compile with:

```
[aved@avedvm]/home/aved/MATLAB/R2013b/bin/glnxa64/mcc -mv -R -singleCompThread hologrid_run.m
```

If get the error:

Fatal Error on startup: Cannot locate com/mathworks/jmi/OpaqueJavaInterface class

Need to unset MATLAB\_JAVA

```
[aved@avedvm]unset MATLAB_JAVA
```

| Tasks: thingsToDo |
|-------------------|
|-------------------|

- |                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>✖ Refactor name of HOLOPROC error file after processing to avoid conflict on post script check (del)</li><li>✖ holoproc is case sensitive to file ext; after file test for pgm/PGM search/replace holoproc.conf file accordingly (del)</li></ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Add Task:

## Relevant Sites and Documents

[http://www.sequoiasci.com/products/fam\\_LISST\\_HOLO.cmsx](http://www.sequoiasci.com/products/fam_LISST_HOLO.cmsx)

[LISST-HOLO manual version 1.0](#)

[LISST-HOLO manual version 2.0](#)

## LISST-HOLO Condor pool notes

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This page last changed on Dec 18, 2013 by [dcline](#).

# Overview

Because LISST-HOLO processing is computationally expensive, the work to process a dive which produces thousands of images is distributed to a network of computers to manage processing, data storage, etc. To manage the LISST-HOLO workflow, the workflow management and batch job management tools provided with Condor are used.

Condor provides many capabilities useful for processing including:

- Scalable computing
  - Install required software for processing images (Matlab Runtime Compiler, Imagemagick, etc.) and Condor on as many machines as needed
  - Jobs are matched to the available machines
- Resource management
  - Memory and CPU load monitoring
  - Configure policy to only run if resource available
  - User receives email when job is complete

## About Condor

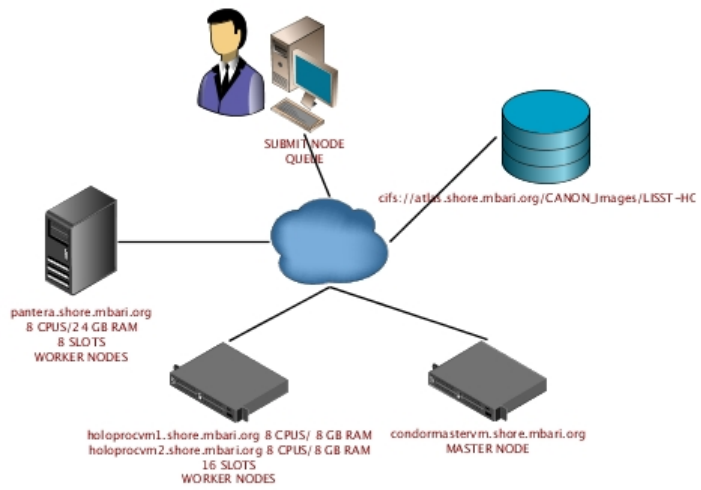
From the website <http://www.cs.wisc.edu/condor/>

Condor is a specialized workload management system for compute-intensive jobs. Like other full-featured batch systems, Condor provides a job queueing mechanism, scheduling policy, priority scheme, resource monitoring, and resource management. Users submit their serial or parallel jobs to Condor, Condor places them into a queue, chooses when and where to run the jobs based upon a policy, carefully monitors their progress, and ultimately informs the user upon completion.

## LISST-HOLO Condor Pool

The pool currently consists of four machines, three of which are virtual machines.

| machine                                        | physical location     | administrator                  | Condor installation notes                            |
|------------------------------------------------|-----------------------|--------------------------------|------------------------------------------------------|
| holoprocvm1/<br>holoprocvm2/<br>condormastervm | building A COMMS room | Pat Allen/Danelle Cline        | <a href="#">Virtual machine Condor configuration</a> |
| pantera                                        | building B TBD        | Thom Maugham/<br>Danelle Cline | <a href="#">Condor installation on Pantera</a>       |



## Condor Installation on a Mac

This page last changed on Dec 30, 2013 by [dcline](#).

## Condor Installation on a Mac

1. Download Condor 8.0.4 Stable Release for Mac here:  
<http://research.cs.wisc.edu/htcondor/downloads-v2/download.pl>  
and untar

```
tar -zxvf condor-8.0.5-x86_64_MacOSX-stripped.tar.gz
```

2. Install with, replacing the install-dir to your home directory

```
cd condor-8.0.5-x86_64_MacOSX7-stripped/
./condor_install --install-dir=/Users/dcline/condor/ --type=submit --central-
manager=condormastervm.shore.mbari.org --type=submit
```

which returned

```
./condor_install --install-dir=/Users/dcline/condor/ --type=submit --central-
manager=condormastervm.shore.mbari.org --type=submit
Installing Condor from /Users/dcline/Downloads/condor-8.0.5-x86_64_MacOSX7-stripped to /Users/
dcline/condor
```

Condor has been installed into:  
/Users/dcline/condor

Configured condor using these configuration files:  
global: /Users/dcline/condor/etc/condor\_config  
local: /Users/dcline/condor/local.mbari1831/condor\_config.local

In order for Condor to work properly you must set your CONDOR\_CONFIG  
environment variable to point to your Condor configuration file:  
/Users/dcline/condor/etc/condor\_config before running Condor  
commands/daemons.

Created scripts which can be sourced by users to setup their  
Condor environment variables. These are:  
sh: /Users/dcline/condor/condor.sh  
csh: /Users/dcline/condor/condor.csh

3. Modify the Condor installation to send mail and authenticate appropriately, by editing the local  
configuration file e.g. /Users/dcline/local.mbari1831/condor\_config.local and adding/modifying:

```
CONDOR_ADMIN = <youtremailaddress>
```

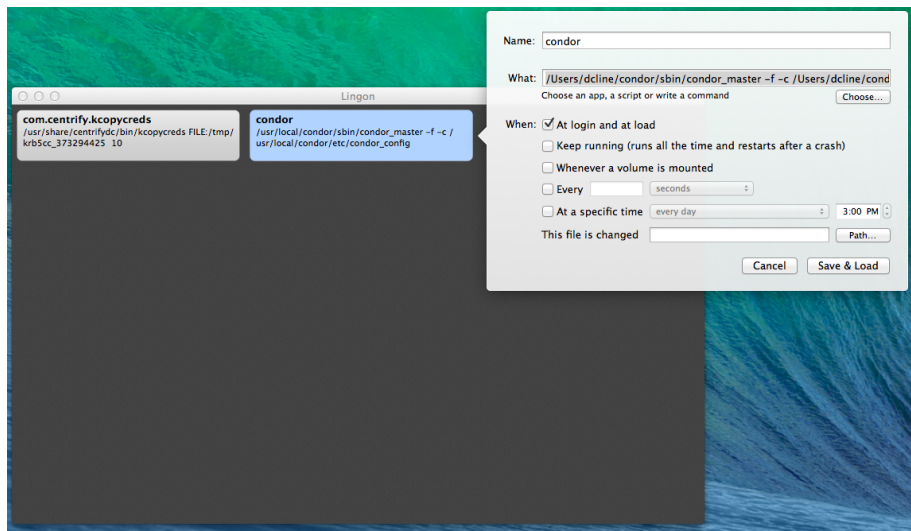
4. Copy the generated environment variables to your ~/.profile

```
cat /Users/dcline/condor/condor.sh >> ~/.profile
```

5. Use [Lingon](#) to create a launchd item to execute Condor as a service.  
Create a new service and enter the command, substituting your user name:

```
/Users/<username>/condor/sbin/condor_master -f -c /Users/<username>/condor/etc/condor_config
```

Select "At login and at load" to have it run every time you login



# Condor installation

Linux installation should roughly follow the notes here: [Installing Condor As Execute-Only Node on Linux](#)

## Kerberos installation

Pantera is a non-centrifed machine and required Kerberos for authentication. This is because jobs are run as the same user that submitted the job for security reasons. Centrif is a tool IS uses to simplify authentication, access, and control to our shared resources like Atlas as well as to support single sign on to our internal resources like web pages.

Make sure iptables are turned off now and after reboot. We could alternatively specify ports or ranges needed for Condor, but this works for now.

```
sudo service iptables off
sudo service iptables stop
sudo /etc/init.d/iptables save
sudo /sbin/chkconfig iptables off
```

\*Install kerberos

```
sudo yum install krb5-user
```

\*As user who will be running jobs, run kinit

```
kinit dcline@SHORE.MBARI.ORG
```

## Virtual machine Condor configuration

---

This page last changed on Jan 15, 2014 by [dcline](#).

### Install Condor

```
[dcline@holoprocvm1] sudo yum-config-manager --add-repo http://research.cs.wisc.edu/htcondor/yum/
repo.d/htcondor-stable-rhel6.repo
[dcline@holoprocvm1] sudo yum install condor
```

\* Edit `/etc/condor_config.local`, add/modify following lines

```
Machine that is the central manager
CONDOR_HOST = condormastervm.shore.mbari.org
Your user account or whomever is administering this machine
CONDOR_ADMIN = your_email@mbari
Authentication for running jobs
SEC_DEFAULT_AUTHENTICATION_METHODS = KERBEROS
Internet domain of machines sharing a common UID space.
Because the machines share a common UID space, or use Kerberos to authenticate user this must be
set
UID_DOMAIN = SHORE.MBARI.ORG
Define as having the Matlab Compiler Runtime(MCR) capability for the class ads
HAS_MCR = True
STARTD_EXPRS = HAS_MCR, $(STARTD_EXPRS)
Read access. Machines listed as allow (and/or not listed as deny)
can view the status of your pool, but cannot join your pool
or run jobs. Doesn't matter to open this up, since the machines are behind
the firewall.
ALLOW_READ = *
Write access. Machines listed here can join your pool, submit
jobs, etc. Note: Any machine which has WRITE access must
also be granted READ access. Granting WRITE access below does
not also automatically grant READ access; you must change
ALLOW_READ above as well.
ALLOW_WRITE = *.shore.mbari.org
```

- Start the condor service

```
[dcline@holoprocvm1]# service condor start
```

### Install Matlab Compiler Runtime

- Download and install the Matlab Compiler Runtime MCR to the default path `/usr/local/MATLAB/MATLAB_Compiler_Runtime`. Do not install it in an alternative directory as this is referenced in the Condor environment and execution will fail if it is placed elsewhere. Download from here <http://www.mathworks.com/products/compiler/mcr/>

### Setup Matlab

- Generalize path to matlab tp match that on pantera

```
[dcline@holoprocvm1]#sudo ln -s /mbari/matlab/bin/matlab /usr/bin/matlab
```

Install required libraries

Additional libraries referenced in the processing scripts that must be installed include:

- Install `imagemagick`, e.g. `sudo yum install imagemagick`
- Install `libvirt`, e.g. `sudo yum install libvirt`
- Install `semanage`, e.g. `sudo yum install policycoreutils-python`
- Install `perl`, `perlmagick`, e.g. `sudo apt-get install perl perlmagick`



- Install perl Simple module, e.g. `sudo yum install perl-XML-Simple`
- Install exiftool.  
Download the Image-ExifTool distribution from the ExifTool home page  
(The file you download will have a name like "Image-ExifTool-#.#.#.tar.gz".)  
Unpack the distribution and make it your current directory with:

```
[dcline@holoprocvm1]# cd <your download directory>
[dcline@holoprocvm1]# tar -zxvf Image-ExifTool-#.#.#.tar.gz
[dcline@holoprocvm1]# cd Image-ExifTool-#.#.#
```

where "#.#.#" is the version number of the ExifTool you downloaded.  
Test and install ExifTool by typing:

```
[dcline@holoprocvm1]# perl Makefile.PL
[dcline@holoprocvm1]# make test
[dcline@holoprocvm1]# sudo make install
```

Above ExifTool instructions are found [here](#).

- Install ffmpeg

```
[dcline@holoprocvm1]# sudo yum-config-manager --add-repo=http://apt.sw.be/redhat/el6/en/
x86_64/dag
[dcline@holoprocvm1]# sudo yum install --nogpgcheck ffmpeg
```

This page last changed on Oct 08, 2013 by [dcline](#).

### About Subversion

SVN (Subversion) is a tool used by many software developers to manage changes within their source code tree. SVN provides the means to store not only the current version of a piece of source code, but a record of all changes (and who made those changes) that have occurred to that source code. Use of SVN is particularly common on projects with multiple developers, since SVN ensures changes made by one developer are not accidentally removed when another developer posts their changes to the source tree.

In order to access a Subversion repository, you must install a special piece of software called a Subversion client. Subversion clients are available for most any operating system. Information about the official subversion client can be found at <http://subversion.tigris.org/>. Excellent documentation on using Subversion can be found at <http://svnbook.red-bean.com/>

### Subversion Access

This project's Subversion repository can be checked out through SVN with the following instruction set:

```
svn co svn+ssh://kahuna.shore.mbari.org/svn/repos/lisst-holo lisst-holo
```



#### Warning

This is a generic Subversion checkout command which will pull all modules, tags and/or branches of the project. In most cases, you will want to add '/trunk' to the SVN URL above to check out only trunk (main development line).

To see web version of the trunk of this code:

<http://kahuna.shore.mbari.org/viewvc/lisst-holo/trunk/workflow/>

## Project Management

---

This page last changed on Dec 30, 2013 by [kgomes](#).

The ODSS development effort is a substantial effort and requires careful management. Here is the project management information for the development of the ODSS.

## CANON Engineering and Logistics Tasks

This page last changed on Dec 01, 2014 by [kgomes](#).

This page: <https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>

### ODSS

#### Configuration Management

| Task ID | Status                                                                              | Task                                                                               | Due Date | Owner  | Notes                                                             |
|---------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------|--------|-------------------------------------------------------------------|
| 1       |    | Deploy management of server scripts                                                |          | KGomes |                                                                   |
| 2       |    | Clean up Erddap war files in build and on odss-test                                |          | KGomes |                                                                   |
| 3       |    | Deploy ODSS to normandy                                                            |          | KGomes |                                                                   |
| 4       |                                                                                     | Deploy updated ODSS to Malibu (replace with CentOS VM)                             |          | KGomes |                                                                   |
| 5       |  | Deploy updated ODSS to Zuma                                                        |          | KGomes |                                                                   |
| 6       |                                                                                     | Change build.xml to install .conf apache configs in the conf.d directory in Apache |          | KGomes | Done on malibu, zuma and normandy, needs to be fixed on odss-test |
| 7       |  | Deploy continuous integration testing for Node server                              |          | KGomes |                                                                   |
| 8       |  | Deploy continuous integration testing for web application                          |          | KGomes |                                                                   |

#### Bug Fixes

| Task ID | Status | Task | Due Date | Owner | Notes |
|---------|--------|------|----------|-------|-------|
|---------|--------|------|----------|-------|-------|

|    |                                                                                   |                                                                                                  |  |        |                                                                                                                                  |
|----|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--|--------|----------------------------------------------------------------------------------------------------------------------------------|
| 9  |  | Fix bug where tracks are not consistently displayed (Issue #95 and #113)                         |  | KGomes | I could play with the number of points that are rendered or keep all the last 10 points closest to current position for example. |
| 10 |  | Date parsing in ObservationDetailWindow.setObservation not handling the timezone offset fix that |  | KGomes |                                                                                                                                  |

#### General

| Task ID | Status                                                                              | Task                                                                                              | Due Date | Owner  | Notes                              |
|---------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------|--------|------------------------------------|
| 11      |    | Clean out AIS data from tracking DB on odss-test                                                  |          | KGomes |                                    |
| 12      |  | Implement ODSS integration of drop down and catalog view rendering                                |          | KGomes |                                    |
| 13      |  | Add scale bar to map (Issue #111)                                                                 |          | KGomes |                                    |
| 14      |                                                                                     | Look at moment.js for ODSS                                                                        |          | KGomes |                                    |
| 15      |                                                                                     | Overhaul playback/time control (Issue #4 and #98 and #100 and #112)                               |          | KGomes |                                    |
| 16      |                                                                                     | Apply UI concepts from NASA Worldview to ODSS (Layer selection), I don't like there time selector |          | KGomes |                                    |
| 17      |                                                                                     | Move the pospub process                                                                           |          | KGomes | This process should be moved so it |

|  |  |                                  |  |  |                                                                                                                        |
|--|--|----------------------------------|--|--|------------------------------------------------------------------------------------------------------------------------|
|  |  | running under misctrack on pismo |  |  | runs under the 'kgomes' account on pismo (or the ssdsadmin account) and then we can scrap the whole misctrack account. |
|--|--|----------------------------------|--|--|------------------------------------------------------------------------------------------------------------------------|

#### Platform Tracking

| Task ID | Status                                                                            | Task                                                                                                                    | Due Date | Owner  | Notes                               |
|---------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------|--------|-------------------------------------|
| 18      |  | Create form(s) to allow the user to specify platforms and layers they want in the experiment (Issue #74)                |          | KGomes | Partially done, but needs more work |
| 19      |                                                                                   | Display AIS tracks in ODSS                                                                                              |          | KGomes |                                     |
| 20      |                                                                                   | Develop markers on platforms that show last date, time and position of platform                                         |          | KGomes |                                     |
| 21      |                                                                                   | Develop mechanism that when user mouses over section of track (point), lat lon displays                                 |          | KGomes |                                     |
| 22      |                                                                                   | Develop mechanism where users can 'hide' a track (and unhide) while clicking on it                                      |          | KGomes |                                     |
| 23      |                                                                                   | Develop functionality that allows user to quickly highlight a specific platform (maybe clicking on it in the left pane) |          | KGomes |                                     |

|    |   |                                                                                                  |  |        |                               |
|----|---|--------------------------------------------------------------------------------------------------|--|--------|-------------------------------|
| 24 |   | User double clicks on track and it zooms the track to fit the viewport (Issue #79)               |  | KGomes |                               |
| 25 | ✓ | Create REST service for platform tracking that returns tracks in html, csv, and geojson          |  | KGomes |                               |
| 26 |   | Add capability in browser for user's to specify when platform was deployed and recovered         |  | KGomes |                               |
| 27 |   | The ODSS should not show platforms if they are in recovered status (or user can turn on and off) |  | KGomes |                               |
| 28 |   | Develop mechanism to allow user to download track data by clicking (Issue #124)                  |  | KGomes |                               |
| 29 | ⚠ | Create WebSocket implementation to provide mechanism for sending events to the browser           |  | KGomes | Not completed and seems buggy |
| 30 |   | Change polling mechanism to push over Websockets when new platform data arrives (Issue #92)      |  | KGomes |                               |
| 31 |   | Develop mechanism to display range and bearing of platform from                                  |  | KGomes |                               |

|    |  |                                                                                                              |  |        |                                                                                                                                                                                                                              |
|----|--|--------------------------------------------------------------------------------------------------------------|--|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |  | user's current location                                                                                      |  |        |                                                                                                                                                                                                                              |
| 32 |  | Develop capability for user to select two platforms and the ODSS will show range and bearing between the two |  | KGomes |                                                                                                                                                                                                                              |
| 33 |  | Document current system for pushing asset positions to Winfrog                                               |  | KGomes | Some notes are here: <a href="https://oceana.mbari.org/confluence/display/CANON/Communication+Backplane+Report+-+Fall+2012">https://oceana.mbari.org/confluence/display/CANON/Communication+Backplane+Report+-+Fall+2012</a> |
| 34 |  | Design proper Winfrog configuration for viewing positions pushed from the ODSS (Issue #120)                  |  | KGomes |                                                                                                                                                                                                                              |

#### Mapping Data

| Task ID | Status | Task                                                                                                       | Due Date | Owner  | Notes                                                                               |
|---------|--------|------------------------------------------------------------------------------------------------------------|----------|--------|-------------------------------------------------------------------------------------|
| 35      |        | Develop indication to show what the date and time of the currently visible data set (map) is. (issue #115) |          | KGomes |                                                                                     |
| 36      |        | Develop capability for user's to specify min max on color scales for maps (Issue #64 and #100)             |          | KGomes | This should be persisted in their preferences. Or should it be per experiment/view? |
| 37      |        | Create service that runs under tomcat                                                                      |          | DCline |                                                                                     |



|    |  |                                                                                                             |  |        |  |
|----|--|-------------------------------------------------------------------------------------------------------------|--|--------|--|
|    |  | and when the erddap datasets.xml files change, it synchronizes the mapserver, tilecache and layers catalog  |  |        |  |
| 38 |  | Develop mechanism to allow users to add KML straight to the map and it gets uploaded and shared (Issue #72) |  | KGomes |  |
| 39 |  | Add capability for users to upload their "mappable" data sets                                               |  | KGomes |  |

#### Data Repository and Catalog

| Task ID | Status | Task                                                                                                                         | Due Date | Owner  | Notes |
|---------|--------|------------------------------------------------------------------------------------------------------------------------------|----------|--------|-------|
| 40      |        | Implement mechanism for user's to be notified of the data policy associated with the data when they sign in to an experiment |          | KGomes |       |
| 41      |        | Evaluate ElasticSearch for Catalog                                                                                           |          | KGomes |       |
| 42      |        | Implement catalog method to enable search of the data repository                                                             |          | KGomes |       |
| 43      |        | Investigate Graph Databases for repository or other repository mechanism (like Solr)                                         |          | KGomes |       |
| 44      |        | Create separate page                                                                                                         |          | KGomes |       |

|    |  |                                                                                                      |  |        |  |
|----|--|------------------------------------------------------------------------------------------------------|--|--------|--|
|    |  | view of data repository and catalog interaction (Issue #127)                                         |  |        |  |
| 45 |  | Choose/create backend data store for repository catalog                                              |  | KGomes |  |
| 46 |  | Implement mechanism to allow users to specify services (i.e. external resources) in the repository   |  | KGomes |  |
| 47 |  | Create method for users to load their data and provide provenance while entering                     |  | KGomes |  |
| 48 |  | Implement mechanism for users to comment on data and products                                        |  | KGomes |  |
| 49 |  | Develop mechanism to let user's create a top level 'curated' list of data products for an experiment |  | KGomes |  |

#### Synchronization

| Task ID | Status | Task                                                | Due Date | Owner  | Notes                                                          |
|---------|--------|-----------------------------------------------------|----------|--------|----------------------------------------------------------------|
| 50      |        | Develop better synchronization system (Issue # 121) |          | KGomes | Some things we talked about were Dropbox, WAN Optimizers, etc. |

#### Sample Management

| Task ID | Status | Task | Due Date | Owner | Notes |
|---------|--------|------|----------|-------|-------|
|---------|--------|------|----------|-------|-------|

|    |                                                                                     |                                                                                                                       |  |        |                                                     |
|----|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--|--------|-----------------------------------------------------|
| 51 |    | Work with Francisco to define what sample management actually means                                                   |  | KGomes |                                                     |
| 52 |    | Use the sample information gathered from Tim, Francisco and Mike/Julio to design REST services and storage in MongoDB |  | KGomes |                                                     |
| 53 |    | Develop mobile application to allow users to enter sample data                                                        |  | KGomes |                                                     |
| 54 |                                                                                     | Develop mechanism to link the samples together (i.e. one samples was taken from a parent sample)                      |  | KGomes |                                                     |
| 55 |  | Design form for ODSS to allow users to enter sample data                                                              |  | KGomes | Started, but never utilized as mobile app was focus |
| 56 |  | Display sample information on ODSS                                                                                    |  | KGomes |                                                     |
| 57 |                                                                                     | Defined query mechanism to look for samples based on location and time.<br>This should go across experiments too.     |  | KGomes |                                                     |
| 58 |                                                                                     | Implement method to allow users to tag samples that need further processing                                           |  | KGomes |                                                     |

## Planning

| Task ID | Status | Task                                                                                                | Due Date | Owner  | Notes |
|---------|--------|-----------------------------------------------------------------------------------------------------|----------|--------|-------|
| 59      |        | Add back end storage for planning geometries                                                        |          | KGomes |       |
| 60      |        | Add "Planning" layer that when select (and user logged in) the OpenLayers drawing becomes available |          | KGomes |       |
| 61      |        | Implement mechanism to keep plans 'private' until user wants to share them                          |          | KGomes |       |
| 62      |        | Create sharing mechanism where plans can be shared to different users or to the entire experiment   |          | KGomes |       |
| 63      |        | Integrate views of backend planning geometries into ODSS                                            |          | KGomes |       |
| 64      |        | The planning view should be individual for each day (i.e. each day's plans are different)           |          | KGomes |       |
| 65      |        | Only one plan should be designated as the 'operational' plan                                        |          | KGomes |       |
| 66      |        | Situational awareness (tracks and maps) should be available                                         |          | KGomes |       |

|    |  |                                                                                                                                        |  |        |  |
|----|--|----------------------------------------------------------------------------------------------------------------------------------------|--|--------|--|
|    |  | during planning                                                                                                                        |  |        |  |
| 67 |  | Users should be able to view planned tracks against actual tracks                                                                      |  | KGomes |  |
| 68 |  | Develop mechanism to allow users to click on points and have it calculate distance.<br>Could just be part of planning too (Issue #103) |  | KGomes |  |
| 69 |  | Create a daily planning page that people can edit                                                                                      |  | KGomes |  |
| 70 |  | Implement Resource Calendar improvements (Issues #117, 118, 119)                                                                       |  | KGomes |  |
| 71 |  | Integrate virtual drifter tool from JPL for planning purposes (Issue #11 and #116)                                                     |  | KGomes |  |

#### Collaboration

| Task ID | Status | Task                                         | Due Date | Owner  | Notes |
|---------|--------|----------------------------------------------|----------|--------|-------|
| 72      |        | Create datastore for entries and attachments |          | KGomes |       |
| 73      |        | Choose backend chat service (Openfire?)      |          | KGomes |       |
| 74      |        | Develop Collaboration viewer for ODSS        |          | KGomes |       |

|    |  |                                                                               |  |        |  |
|----|--|-------------------------------------------------------------------------------|--|--------|--|
| 75 |  | Develop front end integration into the ODSS                                   |  | KGomes |  |
| 76 |  | Implement logging entry form in ODSS to allow entry via browser (Issue #123)  |  | KGomes |  |
| 77 |  | Implement query mechanism for log entries (date, time, location, author, tag) |  | KGomes |  |
| 78 |  | Implement logging entry via email (Issue #122)                                |  | KGomes |  |

#### Mobile Application

| Task ID | Status | Task                                                                                                                      | Due Date | Owner  | Notes |
|---------|--------|---------------------------------------------------------------------------------------------------------------------------|----------|--------|-------|
| 79      |        | Develop mobile application to enter collaboration data                                                                    |          | KGomes |       |
| 80      |        | Develop mobile version with collaboration tools (Issue #37 and #105)                                                      |          | KGomes |       |
| 81      |        | Overhaul observation logging app and add features of ODSS (should operate offline and send observations when reconnected) |          | KGomes |       |
| 82      |        | Develop mechanism for users to be able to specify when a platform was                                                     |          | KGomes |       |

|    |  |                                                                              |  |        |  |
|----|--|------------------------------------------------------------------------------|--|--------|--|
|    |  | deployed and recovered                                                       |  |        |  |
| 83 |  | Add function to view the current location of all platforms (visual and text) |  | KGomes |  |
| 84 |  | Fix bug when switching from portrait to landscape you lose entries           |  | KGomes |  |

## STOQS

1. Address use cases brought up during hot wash and weekly CANON update meetings (McCann, Cline, Ryan, Messié, Michisaki - expecting have good progress throughout 2014):
  - a. Incorporate processed LISST-100 and LISST-Holo data
  - b. Build tools/evolve schema to enable classification, tagging, and machine learning
  - c. Further incorporation of Sample data
  - d. Enhance 3D visualization capabilities (as part of AUV Infrastructure project)
2. Continue with bug fixes and minor enhancement requests managed as Issues in Google Code (McCann - ongoing through 2014 and beyond)
3. Continue with data management tasks, documentation, and training (McCann, Edgington, Michisaki, Bahr, Ryan, ...)
4. Upgrade Django (McCann, consultant? - must do in 2014 as version 1.3 is no longer supported for security bug fixes)
5. Investigate implementing data access controls and login capability (McCann, consultant? - Fall 2014)

For full details see <https://code.google.com/p/stoqs/issues/list>

| Task                                                                                         | Who          | When | Status                            | Notes                                                                                     |
|----------------------------------------------------------------------------------------------|--------------|------|-----------------------------------|-------------------------------------------------------------------------------------------|
| Sample location items in map are not selectable                                              | McCann       | Fall | Needs further study of OpenLayers |                                                                                           |
| Create Overview document on how to use STOQS                                                 | TBD          |      | Bellingham to write first cut     | Is this important?<br>- yes, if concise and simple<br>You Tube video (ITD) would be great |
| Add ability to select a geographic region from the map for addition to the query constraints | McCann       | 2015 |                                   |                                                                                           |
| Share this view                                                                              | OTG & McCann | Fall | Needs Fixing                      |                                                                                           |
| Replicate Plot radio button                                                                  | McCann       | Fall | Started                           |                                                                                           |

|                                                                            |                         |        |                                      |                           |
|----------------------------------------------------------------------------|-------------------------|--------|--------------------------------------|---------------------------|
| Parameters measured from multiple platforms may be plotted in Spatial area | McCann                  | Fall   | Started                              |                           |
| Organize Parameters by ParameterGroup name in the UI                       | McCann                  | Fall   |                                      |                           |
| Allow loaders to append data to an existing activity                       | McCann                  | Spring |                                      |                           |
| Add ability to manually enter a depth/time range                           | McCann                  |        | Not sure if this will be implemented |                           |
| Add Samples indicator to Parameter/Parameter plots                         | McCann                  | Spring |                                      |                           |
| Standard names need updating                                               | Edgington/<br>Michisaki | Spring |                                      | Update Sept 2013 Campaign |
| Color-code the parameters                                                  | McCann                  |        | Fixed                                |                           |

OTG: Open Technology Group (Chander Ganesan)

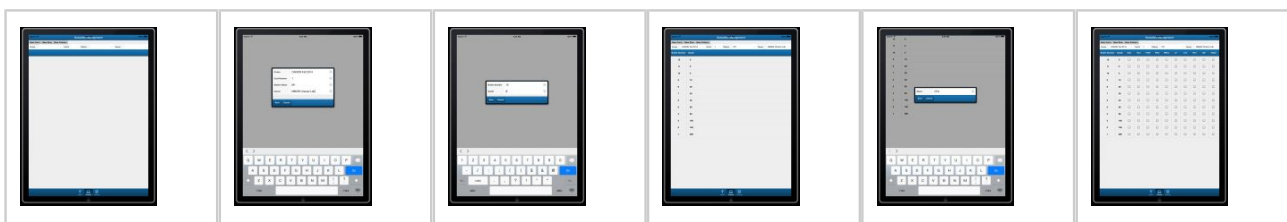
[edata](#)

## Sample Form Screen Shots

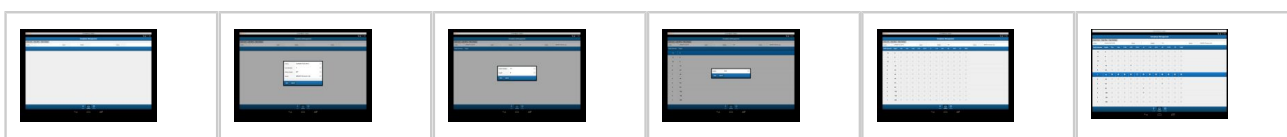
### ODSS

To Be Developed

### iOS



### Android



## Platforms:



| Task                                                                                                                                                          | Who                    | When            | Status                                          | Notes                             | Data                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------|-------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LRAUV:</b> <ul style="list-style-type: none"> <li>Daphne run box pattern</li> <li>tethys run transects</li> </ul>                                          | LRAUV team/<br>Danelle | Spring          |                                                 | stage in Moss Landing or So Cal?  | Data will be sent via 3G from vehicle or by hotspot. The data will be a decimated set that will need to be processed into NetCDF so John can load into STOQS on the Carson                       |
| <b>Waveglider:</b> <ul style="list-style-type: none"> <li>prepare SV3 (Tiny) for ECOHAB as hotspot (in addition to 1 LRAUV with 3G comms) and Fall</li> </ul> | Waveglider team        | Spring and Fall |                                                 | Truck to Southern Cal or transit? | Data is currently available over fetch and will be processed into Matlab files by Fred Bahr. We should look at Reiko's processing from last time to see if we could apply to create NetCDF files |
| <b>Carson:</b> <ul style="list-style-type: none"> <li>run ODSS and STOQS locally on zuma</li> <li>synch over 3G network?</li> </ul>                           | Gomes & Ruston         | Spring          |                                                 |                                   | We will need to capture the UCTD and PCTD data. John will have access to it on board and knows how to process the data into STOQS so he has everything he needs.                                 |
| <b>Dorado</b>                                                                                                                                                 | John                   |                 |                                                 |                                   | John will get the data from the vehicle and send it through the shore side processing and then load into STOQS                                                                                   |
| <b>Drifters</b>                                                                                                                                               | Wahl                   | Spring          | need 5. Francisco to coordinate with Chris Wahl |                                   | Nothing to do here, just positions                                                                                                                                                               |

|                                                                                                                   |  |                                                      |                       |  |                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|-----------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ESPs</b> <ul style="list-style-type: none"> <li>• Mack will be ESP 1</li> <li>• Bruce will be ESP 2</li> </ul> |  | Early April deployment continuous through experiment | Canning ESP currently |  | John is just going to use the web application over the 3/4G and will watch the CTD data from the boat. Kevin will look into the processing of the CSV files that was done in the past to generate NetCDF in case John (or anybody) wants them. |
| <b>Yellowfin</b>                                                                                                  |  |                                                      |                       |  | There is CTD data that John is interested in, but not sure how to get it (he mentioned Alyssa)                                                                                                                                                 |
| <b>USC Gliders</b>                                                                                                |  |                                                      |                       |  | There is data, but John is the point of contact and he has not been able to get data from them                                                                                                                                                 |

## CANON identification and classification of biological communities

This page last changed on Apr 17, 2014 by [kgomes](#).

### List of CANON data per campaign

[google doc](#)

### Meeting 03/20/2014

Francisco Chavez  
Jim Bellingham  
Julio Harvey  
Sebastian Sudek  
Mike McCann  
Dorota Kolder  
Danelle Cline  
Monique Messié  
~~Yanwu Zhang~~  
John Ryan

#### Meeting summary

Review of current and past efforts related to phytoplankton/zooplankton identification and classification from AUVs  
Path forward

#### Instruments list

("Data" is more largely any source that contains information regarding biological communities)

| Data       | Platform | Target population  | Corresponding variables    | Who?                     | Notes                                                                                                                                                                                                                                                        |
|------------|----------|--------------------|----------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LISST-100X | Dorado   | 1 to 250 microns   | particle size distribution | Dorota, John, Diane Wyse | step 1 - processing to get size distribution (now in good shape), step 2 - species from size distribution (more complex). Note because of unknown background, getting realtime information is problematic (background computed after the end of the mission) |
| LISST-HOLO | Dorado   | 25 to 2500 microns | idem + plankton images     | Diane Wyse               | plankton images useless?                                                                                                                                                                                                                                     |
| LOPC       | Dorado   | zooplankton        |                            |                          |                                                                                                                                                                                                                                                              |

|                          |                      |                                                             |                                                                                                                                   |                    |                                                                       |
|--------------------------|----------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------|
|                          |                      |                                                             |                                                                                                                                   |                    | lots of information, good potential if someone has time to look at it |
| ADCP                     | Dorado               | zooplankton                                                 |                                                                                                                                   |                    |                                                                       |
| fluorescence/backscatter | AUVs, ships          | sediments, phytoplankton, zooplankton? (spikes in raw data) | C:Chl, particles count                                                                                                            | Danelle, Monique   |                                                                       |
| bioluminescence          | Dorado               | dinoflagellates and zooplankton                             | may be more qualitative than quantitative information                                                                             | Monique (starting) |                                                                       |
| beam-c                   |                      |                                                             |                                                                                                                                   |                    |                                                                       |
| gulper samples           | Dorado               | phyto & zoo                                                 | counts                                                                                                                            |                    |                                                                       |
| ship samples             | ships                | phyto (& zoo?)                                              | counts                                                                                                                            |                    |                                                                       |
| ESP samples & realtime   | ESP                  |                                                             |                                                                                                                                   |                    |                                                                       |
| large-scale conditions   | satellites, moorings |                                                             | e.g. upwelling/relaxation, season                                                                                                 |                    |                                                                       |
| local conditions         | AUVs & ships         |                                                             | e.g. temp, salt, stratification                                                                                                   |                    |                                                                       |
| location                 |                      |                                                             | e.g. lon/lat, depth, bathymetry, time of day, distance to shore, distance to bottom, "incubator" vs front vs upwelling plume, etc |                    |                                                                       |

## Methods

- classification & clustering based on fluo/bbp - Danelle, Monique
- correlation matrix (identify proxies) - Jim & Dorota, based on Dorado. To be applied on a subset of data (eg. as identified from prior classification) to characterize the imprint of each class
- surrogates - Jim, Dorota, Diane based on LISST-100X
- species-dependent Chl per cell to combined with LISST-100X (Diane Wyse)
- particles counts - Jim, based on bbp
- particle size & number from noise - Jim
- lab experiments (controlled situations) - Jim, Sebastian, Diane Wyse
- STOQS role?

**Resources**

- Danelle has some time in CANON to work on clustering. Needs scientific input.
- Yanwu to improve trigger algorithms to target populations of interest
- Monique (bioluminescence)
- else?

**Future work/issues**

- Monique - list which CANON experiments for which instruments/samples. Pick one for people to focus on.
- Visualization techniques? ie. once we identify phyto/zoo classes, how do we visualize them in space and time?

## Requirements

This page last changed on Jan 29, 2014 by [dcline](#).

### Generic Features

| Requirement                                                                                                           | Priority | Notes                                    |
|-----------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------|
| All ODSS features will be supported in Firefox browser                                                                | 1        |                                          |
| All ODSS features will be supported in Safari browser                                                                 | 1        |                                          |
| All ODSS features will be supported in Chrome browser                                                                 | 1        |                                          |
| All ODSS features will be supported in Internet Explorer browser                                                      | 1        | There is probably a minimum version here |
| If not supported, the ODSS will display a note "Your browser is not supported, suggested using <one of the above>..." | 1        |                                          |
| Users will be able to login to access content, features and preferences in the ODSS                                   | 2        |                                          |
| User logins will support SSO across the various ODSS components and services                                          | 2        |                                          |
| The ODSS will notify users when scheduled maintenance and downtime are to be performed.                               | 2        |                                          |
| The ODSS will operate without interruption during an experiment (i.e. 'five nines')                                   | 2        |                                          |
| The ODSS will not suffer from DOS (Denial Of Service) attacks                                                         |          |                                          |
| The ODSS will cover all experiment regions (global coverage)                                                          |          |                                          |
| The ODSS shall keep track of usage metrics on all aspects of the application                                          |          |                                          |

### Services

| Requirement | Priority | Notes |
|-------------|----------|-------|
|             | 1        |       |

|                                                                                                                                             |  |                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Services must have authentication and authorization                                                                                         |  |                                                                                                                                                       |
| The ODSS will utilize a communication backplane to make event and message data available to various components and clients                  |  |                                                                                                                                                       |
| The ODSS will provide platform positions in various formats (text/html)                                                                     |  | Final list of formats TBD. Make sure timezone is provided/ highlighted                                                                                |
| The ODSS will provide a platform finder service which will provide push asset locations in a form that can be used over low/ poor comm link |  |                                                                                                                                                       |
| The ODSS will provide a logging service to catalog and provide access to logging observations                                               |  |                                                                                                                                                       |
| The ODSS will provide a synchronization service that will keep data products in sync across multiple instances of the ODSS                  |  | Ideally, this should be driven by users declaring which files/data they want to share across ODSS instances (maybe even select which ODSS instances). |

## Situational Awareness

| Requirement                                                                                                   | Priority | Notes                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The ODSS situational awareness features are available to all users, a login is not required                   | 1        |                                                                                                                                                                                                                                                                                          |
| Users can select a 'home' location in map view that is remembered for individual users                        | 2        | Done in current release, but should be associated with login, not just as a cookie                                                                                                                                                                                                       |
| The ODSS will provide mechanisms and documentation for users to add a new platform to the ODSS                |          |                                                                                                                                                                                                                                                                                          |
| Users can quickly get all platform locations (visually, and numerically within 5 seconds)                     |          |                                                                                                                                                                                                                                                                                          |
| The ODSS will optimize the response to track queries so users can effectively scroll back and forward in time |          | From Mike M:<br>"How about if we write a background job to simplify the historical points for each platform and save it as a LineString geometry type in a new table in mbaritracking, then odss can read that with one request and append to the line with every single point (say 1 or |

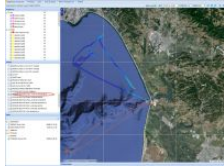
|                                                                                                                                                 |   |                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                 |   | 2 hours of data) of recent data from the position table.<br>We can take it a step further and store a collection of time stamped line segments and have all of it stitched together by OpenLayers. I need to do this anyway for STOQS so maybe I can do the backed server stuff on mbaritracking." |
| Users can select which platforms they want to see (or not see)                                                                                  |   | Should be able to select all/none or groups on/off.                                                                                                                                                                                                                                                |
| The ODSS will feed real time platform positions to active browsers                                                                              | 1 |                                                                                                                                                                                                                                                                                                    |
| The ODSS will provide a way for platforms to update their positions with a better track than what is shown as just points connected with lines  | 2 | Unclear requirement                                                                                                                                                                                                                                                                                |
| The ODSS will display date and time of last update for each selected platform                                                                   | 1 |                                                                                                                                                                                                                                                                                                    |
| The ODSS will display range and bearing from two user selected platforms in ODSS or from user's current location (if available)                 |   |                                                                                                                                                                                                                                                                                                    |
| The ODSS will display AIS data sources as platform tracks                                                                                       | 1 |                                                                                                                                                                                                                                                                                                    |
| The ODSS will indicate when certain platforms were deployed and recovered and should indicate when they are on board after recovery             |   |                                                                                                                                                                                                                                                                                                    |
| Platform tracks should be as stable as possible regardless of the zoom level and end position should always be consistent                       |   | Mike suggests the Douglas-Peucker line simplification algorithm                                                                                                                                                                                                                                    |
| The ODSS should show location and time of location fix when user places mouse over track                                                        |   |                                                                                                                                                                                                                                                                                                    |
| The ODSS should provide visual indications of platforms who have not reported in some interval of time                                          |   |                                                                                                                                                                                                                                                                                                    |
| Platform locations will be available in text form to allow copy and paste from browser. The users can also download full resolution track data. |   |                                                                                                                                                                                                                                                                                                    |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------|
| Users should be able to 'lock' a specific layer in time and keep that particular instance in time as the tracks updated underneath it                                                                                                                                                                                                                                                                                                                                                                               |   |                               |
| The ODSS will make the current 'operational' plan available as a layer to show on experiment map                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 |                               |
| Users can create and view observations                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |                               |
| Users can playback through time and view platform location, platform tracks, remote sensing, and observations at any point in time                                                                                                                                                                                                                                                                                                                                                                                  |   |                               |
| The ODSS playback feature will be responsive                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0 | What is 'responsive' exactly? |
| Users will be able to 'bookmark' a link which freezes the ODSS in time and creates a URL to send to others                                                                                                                                                                                                                                                                                                                                                                                                          |   |                               |
| <p>The ODSS will support this use case:</p> <ol style="list-style-type: none"> <li>1. The user selects a time window (3 days ago to today)</li> <li>2. A preview screen opens with a row x column arrangement of all the available remote sensing data.</li> <li>3. The user selects a series of clear images using checkboxes below each image</li> <li>4. The user selected subset is arranged into a stack of array for viewing</li> <li>5. The user can adjust a sliding bar to adjust color scaling</li> </ol> |   |                               |

## Mapping Requirements

| Requirement                                                                                                                                        | Priority | Notes | Rationale |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|-----------|
| ODSS will display layers as specified here <a href="https://oceana.mbari.org/confluence/display/">https://oceana.mbari.org/confluence/display/</a> | 1        |       |           |

|                                                                                                                              |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <a href="#">CDATA/Data+Products+Working+Group</a>                                                                            |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                 |
| ODSS will display low res sensor data as track color for mobile assets sending sensor data (AUV, Waveglider, LRAUV, gliders) | 3 | <p>Was done in 2013 with KML updated hourly per each platform. Example Rachel Carson underway temperature layer:</p>  <p>Query back in time currently not supported.</p>                                                                                                                                                                                                                                                                                                                                                              | Needed during the experiment to get an quick overview for experiment planning/ decision making. |
| The ODSS will display a legend on the color map for each layer selected                                                      | 1 | <p>Currently legend displays when hover over selected layer. Need a way to persist the legend e.g. as an overlay on the map. CenCOOS portal screenshot for example:</p>                                                                                                                                                                                                                                                                                                                                                             | Needed to interpret data with scale and color map.                                              |
| On layers that support it, the ODSS shall provide the user's the capability to specify min/max range on overlays             | 1 | <p><b>Note that this is true for most of the remote sensing layers, not just the Ryan SST layer.</b> From Danelle:</p> <p>"Kevin,<br/>Please add support for the min/max temperature range for the Ryan SST layer. This will allow John Ryan to adjust the visualization of his custom satellite data to see finer scale features. I've added min/max support in the map spec for this.<br/>Mike also mentioned it would be worthwhile to calculate the histogram of the data and base the min/max on 2.5% and 97.5% bins, but I'm not entirely clear how this would work through WMS. Perhaps this is something we</p> |                                                                                                 |

|                                                                  |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                    |
|------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|                                                                  |   | <p>can put on our wish list for September. You should be able to add this with an OpenLayers specification similar to the following:</p> <pre>var layertestsst = new OpenLayers.Layer.WMS( "Ryan Declouded SST", "http:// beach.mbari.org/ tilecache/ tilecache.cgi?", { layers: 'sst', version: "1.1.0", format: 'image/png', filename: "d20111162207m6b.hdf" , min: "10.0" , max: "20.0" , transparent: true } );</pre> <p>If you leave off the min/max values, the default is 8 - 22 degrees C. To get the legend for this scale:</p> <p><a href="http://beach.mbari.org/thredds/wms/ucsc/sst/d20111670435mff.hdf?service=WMS&amp;version=1.3.0&amp;request=GetLegendGraphic&amp;LAY">http://beach.mbari.org/thredds/wms/ucsc/sst/d20111670435mff.hdf?service=WMS&amp;version=1.3.0&amp;request=GetLegendGraphic&amp;LAY</a></p> <p>There are also different palettes. To see those available palettes:</p> <p><a href="http://beach.mbari.org:8080/thredds/wms/ucsc/sst/d2011162207m6b.hdf?SERVICE=WMS&amp;REQUEST=GetCapabilities&amp;VERSION=1.1.0&amp;C">http://beach.mbari.org:8080/thredds/wms/ucsc/sst/d2011162207m6b.hdf?SERVICE=WMS&amp;REQUEST=GetCapabilities&amp;VERSION=1.1.0&amp;C</a></p> <p>The old ODSS file TestDecloudQuery.java will give you some ideas on how to parse and lookup the most recent declouded image. Here is a list of what's available now:</p> <p>d20111162207m6b.hdf*<br/> d20111660456mff.hdf*<br/> d20111662127m6b.hdf*<br/> d20111640039mff.hdf*<br/> d20111661716m6b.hdf*<br/> d20111670435mff.hdf*</p> |                                                                    |
| The ODSS will provide the users the ability to add layers from a | 2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Needed to support experimental layers without engineering support. |

|                                                                                                  |   |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| GeoTIFF, KML file or WMS                                                                         |   |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                      |
| Documentation on how to add data products that will be made available in the overlay selections  |   | Documentation exists here for current overlay, and will be updated as features evolve: <a href="#">Adding your data as a map overlay in ODSS</a>                                                                                                                                                                                                                                                                   |                                                                                                                                                      |
| The ODSS will make the current 'operational' plan available as a layer to show on experiment map | 1 | Since plans are dynamic, will need a way to store the plans. A <a href="#">postGIS</a> database could be appropriate for this, or if there is a MongoDB support for GIS queries, we could put it there. Best if the data has an API that will work with Mapserver to simplify the integration. Map drawing could potential fit after the 'token on timeline is set in the planning interface' <a href="#">here</a> |                                                                                                                                                      |
| In real time mode, all layers should reflect that closest to the current time only               | 1 |                                                                                                                                                                                                                                                                                                                                                                                                                    | This means forecast data will also be the closest. To see forecast data in the future, need to use playback (or playforward which should also work). |
| Users will be able to ascertain age of layers                                                    | 1 | Can currently tell the age of some layers by the timestamp on the legend. Is this an additional request for another way to see the age of the layers ?                                                                                                                                                                                                                                                             |                                                                                                                                                      |
| The ODSS playback feature will be responsive                                                     |   | What is 'responsive' exactly? Ambiguous requirement. Suggest removing this for alternative movie creation requirement.                                                                                                                                                                                                                                                                                             |                                                                                                                                                      |
| The ODSS will display water sample locations on map                                              | 2 | Suggest STOQS WFS-Mapserver bridge to implement this. Can currently be done in STOQS. What is the use case for ODSS ? Is this useful for planning, or is this really a data analysis requirement ?                                                                                                                                                                                                                 | Can be confusing to know what platform collected water where.                                                                                        |

|                                                                                                    |   |                                                                                                                                                                                                                                                                                                 |                                                                                                           |
|----------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| The ODSS will display water sample metadata on a map                                               | 2 | <p>Suggest STOQS WFS-Mapserver bridge to implement this. Example from SCCOOS website in So Cal of water sample metadata. Shows just location and basic data, then links to URL with more detailed plots:</p>  |                                                                                                           |
| The ODSS will provide the user the ability to download 'movies' of the experiment in playback mode | 1 | <p>Users queue up the layers/platforms they want and back-end process creates an animated GIF, or bundles up the animation in a KMZ file for playback on the client in Google Earth.</p>                                                                                                        | <p>Useful for planning and presentation purposes. This could also be a replacement for playback mode.</p> |

## Planning

| Requirement                                                                                                           | Priority | Notes                                                                        |
|-----------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------|
| Users must login to have access to the ODSS planning features                                                         | 1        |                                                                              |
| The ODSS will provide tools for users to visually specify plans for platforms                                         |          |                                                                              |
| If platforms have means for calculating resources limitations, the ODSS will check plans against platform limitations | 1        | Should cover plans that have x, y and depth plans (yo-yo is classic example) |
| The ODSS will provide feedback regarding 'keep out' areas to users who are creating plans                             |          |                                                                              |
| Users can view all situational awareness data while using visual planning tools                                       |          |                                                                              |
| Plans created by users are considered draft plans and will be marked as such                                          |          |                                                                              |
| Plans created by users may be shared to other users (all, individual or group)                                        |          |                                                                              |

|                                                                                                                         |  |                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|
| Plans can be promoted to 'operational' by designated user with sufficient privileges                                    |  |                                                                                                   |
| The ODSS will have a virtual drifter tool to allow users to see projections on drifter locations into the future        |  | <a href="http://ocean.jpl.nasa.gov/MB/mbmangen.jsp">http://ocean.jpl.nasa.gov/MB/mbmangen.jsp</a> |
| Users can compare actual vehicle tracks against planned tracks                                                          |  |                                                                                                   |
| The ODSS will combine all platform plans into campaign timeline view                                                    |  |                                                                                                   |
| The ODSS will utilize a shore-side planner for calculating constraints in the campaign timeline view                    |  |                                                                                                   |
| The ODSS campaign timeline view and planner will integrate with the DMO ships calendar                                  |  |                                                                                                   |
| The ODSS campaign timeline view and planner will integrate with MBARI's cruise planning through the expedition database |  |                                                                                                   |
| There should be a way for users to read and contribute to a single experiment summary, hypothesis definition            |  |                                                                                                   |
| There should be a plan view for each day (something that could be compared to actual)                                   |  |                                                                                                   |

## Shore-side (server) Autonomy

| Requirement                                                                                                  | Priority | Notes |
|--------------------------------------------------------------------------------------------------------------|----------|-------|
| Users must login to have access to the autonomy features                                                     | 1        |       |
| The ODSS will display shore-side computed autonomy projections using a well defined API to autonomy services | 3        |       |

## Observation Log

| Requirement | Priority | Notes |
|-------------|----------|-------|
|-------------|----------|-------|

|                                                                                                                                         |   |                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|
| Users must login to have access to the ODSS observation log                                                                             | 1 |                                                                                    |
| The ODSS will provide several mechanisms for users to create log entries                                                                |   | Some options are direct message (AMQP), email, web application, mobile application |
| The ODSS observation log will allow users to enter text and an optional photo as a log entry                                            |   |                                                                                    |
| The observation log entry mechanisms will provide the option to geo reference log entries                                               |   |                                                                                    |
| The observation log entry mechanisms will provide the option to tag the entry with date and time that defaults to current date and time |   |                                                                                    |
| The observation log entry mechanisms will provide the option to tag entries with multiple keywords                                      |   |                                                                                    |
| The observation log service will allow multiple way to query for observations                                                           |   | Like time, location, keyword/tag, user                                             |
| The observation log should provide at least one disconnected option for entering observations                                           |   |                                                                                    |
| There should be 'chats' that are organized around platforms                                                                             |   |                                                                                    |

## Collaborative Science Tools

| Requirement                                                                                          | Priority | Notes                                                        |
|------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------|
| Users must login to have access to the ODSS collaboration features                                   | 1        |                                                              |
| The ODSS will allow users to select and view email threads related to a specific experiment or topic |          |                                                              |
| The ODSS will provide tools for users to upload and share data with other users                      |          |                                                              |
| The ODSS will provide interactive 'chat' environments so people can discuss topics                   |          | The ODSS should store, catalog and provide them back as well |

|                                                                             |  |                           |
|-----------------------------------------------------------------------------|--|---------------------------|
| The ODSS will provide drawing tools for people to share ideas interactively |  | Like annotations on a map |
|-----------------------------------------------------------------------------|--|---------------------------|

## ODSS Data Analysis Feature

| Requirement                                                                                                               | Priority | Notes                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------|
| Users must login to have access to the ODSS data analysis features                                                        | 1        |                                                                                                              |
| Users must be presented the data policy for the ODSS                                                                      |          | <a href="#">Example AOSN policy</a>                                                                          |
| The ODSS will provide a central data location where users can store data products                                         |          |                                                                                                              |
| The ODSS will provide documentation on best practices and recommendations for data products in the repository             |          |                                                                                                              |
| The ODSS data repository will provide protection against accidental deletion of products                                  |          |                                                                                                              |
| The ODSS will provide a mechanism to 'lock down' (i.e. make read-only) the products in the repository after an experiment |          |                                                                                                              |
| The ODSS will provide a mechanism for users to comment and document the quality of data products                          |          |                                                                                                              |
| The ODSS will provide a catalog of what data is available and where the users can find it                                 |          | Basic access                                                                                                 |
| Users will be able to find data based on a description of the archive or service                                          |          |                                                                                                              |
| The ODSS will provide descriptions of data that is available in the catalog                                               |          | Users can add and view descriptive data. Also, there might be a need for a text/PDF dump of the data catalog |
| The ODSS will provide mechanism for data product specific citation obligation                                             |          |                                                                                                              |
| The ODSS analysis catalog will allow users to register services as well as data products                                  |          |                                                                                                              |



|                                                                                                                        |  |                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The ODSS analysis catalog can organize data products and services by experiment                                        |  |                                                                                                                                                                                                |
| The ODSS analysis catalog will provide query by space, time and instrument (or platform)                               |  |                                                                                                                                                                                                |
| The ODSS analysis will provide query access to experiment data through several mechanisms                              |  | Advanced feature. Matlab seems to be primary user interface to this feature and should be in an NC Toolbox usage model                                                                         |
| The ODSS will provide a view that will construct queries in various forms based on GUI input from users                |  | i.e. create SQL or web service call based on view, platform selections, and time window selection. Matlab and R have been mentioned. Maybe that even downloads a combined file in some format. |
| The ODSS will provide a consistent data access mechanism across all data in an experiment                              |  | This does not have to be in real time although it would be nice                                                                                                                                |
| The ODSS will provide authorization mechanisms to allow data providers to specify what users have access to their data |  |                                                                                                                                                                                                |
| The ODSS will mandate that user's agree to citation obligation before getting access to data                           |  |                                                                                                                                                                                                |
| The ODSS will provide a mechanism for user's to subscribe to or view data update history                               |  |                                                                                                                                                                                                |
| The ODSS will integrate data from the LRAUV                                                                            |  |                                                                                                                                                                                                |
| The ODSS should integrate the functionality of MOQUA and STOQS                                                         |  |                                                                                                                                                                                                |
| The ODSS should provide command line usage help for data access and analysis                                           |  |                                                                                                                                                                                                |
| Users can discover data in STOQS and repository by platforms, instruments, measurements, etc.                          |  |                                                                                                                                                                                                |
| The ODSS should be able to catalog workflows to give user's insight into the provenance of data processing             |  |                                                                                                                                                                                                |

|                                                                                                                                |  |  |
|--------------------------------------------------------------------------------------------------------------------------------|--|--|
| The ODSS should provide data archive 'descriptions' that can be edited                                                         |  |  |
| The ODSS should have a mechanism where users can 'subscribe' to data products to get notified when they are updated (RSS-like) |  |  |
| The data products generated by STOQS should be able to then be displayed on the map in the ODSS                                |  |  |
| Each experiment should have a single 'curated' list of data products from the experiment                                       |  |  |

## Water Management

| Requirement                                                                                                                     | Priority | Notes                             |
|---------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| Users must login to have access to the ODSS water management features                                                           | 1        |                                   |
| The ODSS will provide graphical representation of water sample management plan                                                  |          | Confluence/Wiki?                  |
| The ODSS should track sample locations                                                                                          |          |                                   |
| The ODSS should provide processing steps and results associated with each water sample                                          |          |                                   |
| The ODSS will link the water sample locations and information to the information in the situational awareness view              |          |                                   |
| The ODSS should provide tools to indicate and facilitate the tagging of which water samples should undergo expensive processing |          | This is still a vague requirement |

## Mobile Application

| Requirement        | Priority | Notes |
|--------------------|----------|-------|
| Must run on iPad   |          |       |
| Must run on iPhone |          |       |

|                                                                        |  |  |
|------------------------------------------------------------------------|--|--|
| Must run on Android tablets                                            |  |  |
| Must run on Android phones                                             |  |  |
| Must have way for users to declare platforms 'deployed' or 'recovered' |  |  |

## Additional Requirements from Sep 2012

This page last changed on Dec 30, 2013 by [kgomes](#).

These are some additional requests and requirements and ideas that were gathered during the September 2012 experiment:

1. Improve track line stability on zoom and pan (Douglas-Peucker line simplification/generalization algorithm?)
2. Make sure end point is always the most recent position fix (there were reported cases of the end point moving on zoom/pan, yikes!)
3. ODSS should show location and time of location when mousing over track.
4. Make sure it is very easy for the users to see what the time and date of the layers are.
5. For the simplified text view (read servlet) make sure time zone of dates is highlighted on the return
6. Add a scale bar on the map
7. Improve LOD management and speed and scaling of track queries. From Mike M:

How about if we write a background job to simplify the historical points for each platform and save it as a LineString geometry type in a new table in mbaritracking, then odss can read that with one request and append to the line with every single point (say 1 or 2 hours of data) of recent data from the position table.

We can take it a step further and store a collection of time stamped line segments and have all of it stitched together by OpenLayers. I need to do this anyway for STOQS so maybe I can do the backed server stuff on mbaritracking.

8. Ensure the server can fend off DOS attacks (especially from itself 😊).
9. Add way for users to select/deselect whole groups of platforms.
10. Add more spaces to the 'hours' time control. (Actually, I think the time control needs an overhaul).
11. Add range and bearing tool on tracks (like Winfrog)
12. Redesign the 'Dropbox' functionality. Maybe make it driven from the ODSS (e.g. user clicks on an icon for a file and is warned of the satellite, but then the file is marked for sync). Users could enable/disable syncing.
13. Indicate comms stats/last update on the tracks to identify old positions.
14. Move all MBARI platforms to satellite positions where possible.
15. There is a bug in the 'Data' view and sometimes the file tree gets scrozzled. Even the refresh button does not fix it.
16. Add ability for users to set min/max scales dynamically on satellite layers.
17. Idea: Add ability to mark individual platforms and other assets as "deployed" or "not deployed". Not deployed would show up differently in tracking view since they are riding on the back of other assets (example Dorado on R\_C; Moe and Stella 101 on W\_F...)
18. Idea: Add additional NOAA charts as layers (I thought the "shipping lanes" chart was cool and useful).
19. Bug?: If the user zooms their browser at all, white lines show up on google map. Is there a way to prevent that or have OpenLayers handle it? It affect iPad as well.
20. iPad notes:
  - a. you can't scroll down pages (both chrome and safari). Situational awareness is not a problem, but if you go to planning you only see down to "Distributed Deployment Planning" and can't go further down. Interestingly in cosci it's true for the discussion but not for the collections, where you can scroll down.
  - b. clicking on links that should open in a new tab in collection doesn't (chrome only, safari is fine). Meaning that you get stuck there and have to reload the ODSS to get out of it. Not a big deal as I can do a right click / open in new tab but I need to think of it.
21. Under planning and data analysis, clicking on a link makes you stuck there - you can change to another tab, but can't go back to the original tab with all the choices without reloading ODSS. It would be great if there was a way to go back to that original tab. I can avoid that by right click / open in new tab from a computer and from safari on ipad, but somehow can't in chrome on ipad.
22. From distributed autonomy team:

It looks like we are getting data from T-REX which indicates where the gulpers were triggered, to shore. So this is coming to STOQS and in theory should be available and displayable within the ODSS. Any chance you'd have some bandwidth working with Frederic to display this (and potentially some AUV waypoint data) visible?

23. Allow the user to "lock" a layer in time while the rest of the data scrolls over time.
24. Check satellite downloads for redundant times as this causes ERDDAP to stop cataloging

25. Add <http://coastwatch.pfeg.noaa.gov/erddap/griddap/erdMWsstd1day.graph> to the layers per Francisco's request

## Data Analysis Requirements

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This page last changed on Dec 30, 2013 by [kgomes](#).

must, should, nice are specifically used to denote priority



R1. ODSS must 'collect' the experiment summary and description from the science users during experiment planning

R2. ODSS should collect the experiment high level goals and hypothesis

R3. Data Archive descriptions

R3.1 Centralized data archive descriptions with pointers to the data (z'catalog)

R3.2 Data processing workflow with status should be documented in a central location especially for data access locations that will change through time

- example: data is dumped on an ftp site, during the experiment 'real time' access is via ftp. Later this data is loaded into BOG and then subsequently loaded into STOQs to support query from Matlab or other tools

R4. Improve data access

R4.1 CANON data archive descriptions must be available in the data analysis perspective of the ODSS.

Sent: Friday, March 30, 2012 3:47:18 PM

Subject: DIscussion with Monique

Discussion about data access, data types. Chavez lab has data in BOG, a sql database.

Data Flow from experiments: Nutrients are done weeks or more after the experiment, then it goes into BOG (samples are frozen), chlorophyll takes a day and is likely not on FTP site along with other RV Martin data

Notebooks and observation log data goes somewhere (need follow up to understand 'searchability')

Log sheet - ctd has a spreadsheet with numbers and binders and binders - on one page, you have all the info on the CTD cast, (might be able to get it out of BOG)

Before finding the data, having a list of what is available is important. Provide a list of platforms, sensors for platforms can be listed in a central location. List globally what is typically on the vehicle and then document the differences on each deployment.

Diagram that shows 'platforms per day' during the experiment would be helpful

Web archive description is subsetted by CANON experiment, (2011 Oct) but the pointers are to all data - needs to be subsetted as you traverse down to specifics in the filesystem

Plots are important as a precursor to data set selection for deep analysis (see Moniques plots for Martin data)

CoSci - 'data tab' plots as well as plots shared in discussion tab should be available thru the 'data analysis tab and in general searchable and easily accessible

Experiment Time line with vehicles (thumb nail with sea surface temperature image, better descriptions)

Note: with respect to 'read only' data. Martin data - ftp access gives away the password to the ftp site

Need a centralized location to put plots generated by contributors - Plot central with some structure.

CoSci is one way, but would like to be able to store files

(!!Plots generated stay on 'my location' need a 'plotcentral')

Cosci Data and Data Analysis tab (with data archive description and pointers to data) should be combined / consolidated

Basic file system access is important. Nice to have more advanced query based access, but need to apply to all data to be useful (consistent access where possible for the data)

Spent some time looking at data, what is done when errors are found? Software Bug tracker style means of reporting and fixing data sets. Need to build in data qc.

Error: 30 Mar 2012 has glider data from 2010 MBARI Scripps Spray Glider

Error: december 2012 has data from MODIS - the MODIS plot likely is wrong in it's date label

When a user is looking at a plot having a means for annotating or tagging would be good - the notion of tagging (we discussed quite a bit about FB crowdsourcing)

CoSci needs a search on discussions

CoSci discussions need to be accessible to data analysis tab (request repeated)

Would be great to get notifications on data updates or fixes. Talked about daily 'news check' of journal articles etc using Google Reader.

RSS feed in ODSS or at least on Data Analysis tab (confluence) (user decides daily updates, weekly updates for CoSci discussions or email notification).

Look to Journals as the model. Thoms note: software developers use this as well for updates on checkins, bug fixes etc.

When you havent read something yet, can you color the discussion item (like Zimbra)

Survey Monkey - what do you think about answering a survey about tools usage, data access, etc.

do you use RSS

do you use Matlab

Thom note to self: Check into Confluence RSS and Zimbra RSS feed reader

<http://blog.zimbra.com/blog/archives/2007/05/zimbras-built-in-rssatom-feed-reader.html> Zimbra RSS feeds

## Testing

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This page last changed on Dec 30, 2013 by [kgomes](#).

Here is information related to the testing that goes on during the development of the ODSS.



## CANON Logistics Meeting

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This page last changed on Feb 08, 2018 by [duane](#).

### **Notes from CANON Logistics Meeting:**

<https://oceana.mbari.org/confluence/display/CANON/CANON+Logistics+Meeting>

### **Meetings:**

#### **CANON Weekly Meeting**

#### **CANON Planning February 8, 2018**

Francisco Chavez  
Yanwu Zhang  
Brett Hobson  
Duane Edgington  
Kevin Gomes  
Mike McCann  
Danelle Cline  
John Ryan  
Thom Maughan  
Trygve (Trig) Olav Fossum  
Monique Messié  
Reiko Michisaki  
Brian Kieft  
Kathleen Pitz  
Carlos Rueda  
Kristine Waltz  
Brent Jones  
Chris Wahl  
Tim Pennington  
Marguerite Blum  
Tom O'Reilly  
Hans Thomas

1. Trygve gave a presentation on his background and interests
  - a. NTNU Postdoctoral student from Trondheim, Norway
  - b. grant from the Norwegian research council. work at MBARI from the 20th of January to end of July 2018.
  - c. working with Thom Maughan and John Ryan in the areas of autonomy, robotics, and oceanography.
  - d. combine models with robotic sensing and remote sensing. Explore modeling, sampling, machine learning
  - e. research page here ( <http://www.ntnu.edu/employees/trygve.o.fossum> )
2. Francisco: potential tie in for Trygve with CANON data and activity
  - a. KISS Campaign
  - b. Hawaii LRAUV deployments
  - c. monthly mini-campaigns
3. Francisco:
  - a. preparing annual report writeup
    - i. send him any visuals for the annual report.to end of July 2018.
  - b. working with Thom Maughan and John Ryan in the areas of autonomy, robotics, and oceanography.
  - c. combine models with robotic sensing and remote sensing. Explore modeling, sampling, machine learning
  - d. research page here ( <http://www.ntnu.edu/employees/trygve.o.fossum> )
4. Francisco: potential tie in for Trygve with CANON data and activity
  - a. KISS Campaign
  - b. Hawaii LRAUV deployments
  - c. monthly mini-campaigns
5. Francisco:

- a. preparing annual report writeup
    - i. send him any visuals for the annual report. some ideas:
      - i. Kathleen work
      - ii. Kevin genetic samples
      - iii. Dorado runs
      - iv. cool pictures of ODSS or STOQS in action
  - b. Tim put together a schedule for monthly ops
    - i. Hans: Dorado run one week, followed by I2MAP the next week is a problem
      - i. Tail sections are shared between the two vehicles – swapping on that tight turnaround is the issue
      - ii. Try to break that pattern (more separation between the deployments)
    - ii. Try to break that pattern (more separation between the deployments)
  - c. June 5-10 cruise with Lasker.
    - i. makai, other LRAUV (tethys?)
  - d. Sept 8-13 cruise
6. Duane:
- a. asked about staffing to generate after deployment full-resolution netCDF for Waveglider, other assets
    - i. Francisco: on todo list for recent addition to staff
7. Danelle:
- a. 2018 task in LRAUV group to work on data, corrections of location, update to workflow
8. Francisco:
- a. plan session in 2 weeks to go over data things
    - i. ODSS organization (campaigns and on-going continuous routine data collection)
    - ii. STOQS organization (span across multiple years?)
    - iii. LRAUV data

#### **CANON Planning January 28, 2016**

Francisco Chavez  
 Yanwu Zhang  
 Severine Martini  
 Duane Thompson  
~~Brett Hobson~~  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Thom Maughan  
 Monique Messié  
 Reiko Michisaki  
~~Brian Kieft~~  
~~M Jordan Stanway~~  
 Carlos Rueda  
 Jason Smith  
~~Brent Jones~~  
 Chris Wahl  
 Tim Pennington  
 Marguerite Blum

1. Jason Smith gave a science presentation on thermocline hotspots
2. Yanwu presented his assignment to review [LRAUV publications](#)
3. Francisco asked the data team to present list of papers on ODSS & STOQS at a future meeting
4. At MBARI, May 2016
  - a. Instrumentation and Applications of Microscopes and Cytometers
    - i. Case studies
      - i. present at that meeting our experiments over next two months
    - ii. HABS
5. HABS case study
  - a. Francisco [drawing](#) on whiteboard
    - i. winter
    - ii. upwelling
    - iii. relaxation
    - iv. more relaxation

- v. what do you need to measure?
- vi. cycle during the year?
- vii. sensors
  - i. waveglider microscope
  - ii. LISST Holo dorado
  - iii. backscatter sensor bbp420
  - iv. biolum on dorado
- 6. status of launch & recovery of Dorado via Paragon
  - a. Doug Conlin taking Paragon class this week.
- no meeting Feb 4.

#### **CANON Planning January 21, 2016**

1. Data Synthesis Meeting more or less I think
2. Science topics
  - a. HABs
  - b. Classifieds
  - c. Fronts
  - d. Hotspots - thermocline
  - e. Upwelling dynamics
  - f. Physical/biological coupling
3. Monique to go over her stuff
  - a. Defining plankton proxies from bioluminescence
  - b. She used data from MUSE 2000, SPOKES (2002), and AOSN (2003)
  - c. The combination of fluorescence and biolum might be able to proxy what kind of organisms are there
  - d. Yanwu could work on a classifier using this
  - e. Back scatter is measure of carbon
  - f. It might be possible to use back scatter, biolum and fluorescence as a proxy for a classifier
  - g. Danelle has been working on clustering using this
4. Severine Martini gave a [presentation](#)
  - a. Using biological sensors on observatories for long time series
  - b. Can we use biolum as proxy for biology in situ?
    - i. Use kinetics
    - ii. use models based on environmental variables
  - c. Using biolum to discriminate groups of organisms
  - d. Using a sensor in lab
  - e. She records photo emission on each organism
  - f. Can we use shape of emission as a classifier or is there too much variability?
  - g. It looks possible
  - h. She is using different parameters to differentiate across species. Can that be used to classify species?
    - i. Trying to get most relevant parameters to classify species
    - j. Using unsupervised classification - K-means
    - k. Then reverse application on Dorado data set to use non-lab data
    - l. Goal is to make linkage between clusters and parameters used to classify in the lab
  - m. 2nd part of work is to use model from environmental variable
  - n. Tried to create function to calculate biolum based on a bunch of physical parameters
  - o. Fed data into training to create a decision tree
  - p. Creates a tree-based classifier
  - q. Results seemed quite good
  - r. Maybe use the model in the field on the AUVs?
5. Technology
6. Data

#### **CANON Planning January 14, 2016**

Francisco Chavez  
 Yanwu Zhang  
 Brett Hobson  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann

Danelle Cline  
John Ryan  
~~Thom Maughan~~  
Monique Messié  
Reiko Michisaki  
~~Brian Kieft~~  
~~M Jordan Stanway~~  
~~Carlos Rueda~~  
~~Jason Smith~~  
Brent Jones  
Chris Wahl  
Tim Pennington  
Marguerite Blum

1. Today's meeting focused on the synthesis effort. Everyone was invited but the key participants were Ryan, Messié, Zhang, Michisaki, Chavez, and the data team.
2. Francisco put on the whiteboard aspects of the synthesis effort. A snapshot is [here](#)
3. A way to look at the aspects is to think about what papers have been written, and which are to be written.
  - a. technology papers
    - i. overall technology review paper?
  - b. methods papers (e.g. targeted sampling)
  - c. science synthesis
4. A topic of discussion was Lagrangian specification
  - a. Do we need to be more Lagrangian?
    - i. Is the system actually Lagrangian? (does vertical mixing violate the model?)
    - ii. or do we need to track a particle better (do we need to have a smaller measurement platform that communicates with everyone else?)
5. For looking at the data, do we need:
  - a. a single entry point? (system of systems) This may be too big to handle
  - b. or pick a focus, then look at the data that relates to that focus/question
6. Dig into the dataset with synthesis in mind
7. John presented his status on [ECOHAB/CANON Synthesis](#)
8. Action items:
  - a. Yanwu: present summary of papers published on targeted sampling techniques. What has/has not been published (that needs to be published)
  - b. Duane: present summary of where all the data from past CANON and related activities resides. What is missing?

#### **CANON Planning January 7, 2016**

Francisco Chavez  
Yanwu Zhang  
Brett Hobson  
Duane Edgington  
Kevin Gomes  
Mike McCann  
Danelle Cline  
John Ryan  
~~Thom Maughan~~  
Monique Messié  
Reiko Michisaki  
Brian Kieft  
~~M Jordan Stanway~~  
Carlos Rueda  
~~Jason Smith~~  
Brent Jones  
Chris Wahl  
Tim Pennington  
Marguerite Blum

Here are the revised cruise dates for 2016

1/13 Carson

2/3 Carson  
 3/10 Carson  
 3/30 Carson  
 4/21 Carson  
 5/19 Carson  
 6/8 Carson  
 6/28 Carson  
 8/2 Fulmar  
 8/31 Carson  
 9/23 - 10/2 Flyer  
 10/11 Carson  
 11/1 Carson  
 12/14 Carson

The Fall experiment will run from 8/31 to 10/11.

#### 2016 CANON organizational meeting

1. 2016 schedule/logistics (Pennington, Blum, Kieft, Jones, Wahl, Chavez)
  2. CANON synthesis (Ryan, Messié, Zhang, Michisaki, Chavez)
  3. Scientific Priorities
  4. Technology priorities - Sensors and systems
  5. Technology priorities - Data, ODSS
1. Francisco: went over the general plan for 2016
    - a. coordinate with monthly MBTS cruises (see schedule above)
    - b. Try out launch of Dorado from shore (tow from the harbor to sea using Paragon)
      - i. OPs to work out how to launch into Harbor (crane, Carson on-board crane, etc)
        - i. Brett: How to manipulate through Harbor. tow along side? tow behind? add float? etc.
    - c. Set target of tow coordinated with Feb 3 MBTS cruise (Get in water Feb 2, stay out overnight).
      - i. Imagine a test before then, maybe just out of the harbor, cruise for an hour, bring home, all using Paragon only.
      - ii. Dorado deployment team: Brett, Hans, Dorado Group, Chris Wahl.
  2. LRAUV: Management team feedback: only 6 off season runs in 2016 requiring engineering resources
    - a. No coordination with Feb 3 Carson cruise (i.e. no LRAUV)
    - b. Brett: OK to run additional LRAUV missions if staffed out of Francisco Lab
      - i. Brent Jones is up to speed on running LRAUV by himself
    - c. plan coordination of LRAUV with 3/10 Carson, 3/30 Carson, 4/21 Carson, 5/19 Carson.
    - d. Science goal:
      - i. structure in water column (Spring, Fall upwelling)
      - ii. HABs. Will HABs persist after El Nino?
    - e. LRAUV prep time less than with WG (due to need to swap equipment on WG)
      - i. New WG Sparky will allow this swapping to be eliminated
    - f. End goal – have WG run separate mission from ship track
      - i. coordinated with CTD ship days
    - g. Makai
      - i. Feb cruise Planned
      - ii. coordinate schedule as possible with CANON activities / cruises
        - i. coordinate sampling from Ship casts, Dorado sampling, Makai sampling
    - h. want LRAUV samples:
      - i. same day as water sample from CTD casts (direct compare/ground truth)
      - ii. with the week as CTD casts (general compare)
      - iii. coordinate with MBTS cruise week
        - i. launch ~2 days before CTD cruise day
      - i. each LRAUV sample bag is 100ml (due to design change to address bursting problem)
        - i. currently firing 2 bags at each sample point to get 200ml of sample
        - ii. allows a number of different analysis types to be run (nutrient, etc)
  3. Mentioned Keck Foundation Funded activity, potential collaboration
    - a. Andrew Thompson (Caltech), Steve Chien (JPL), Yi Chao (Remote Sensing Solutions), James Kinsey (WHOI)
      - i. Fall 2016, Spring 2017 coordinated opportunity
        - i. Francisco sent out a copy of the project description
  4. discussed adding Planning (Carlos), Data (Duane), Dorado (Hans) to 2016 schedule/logistics team
  5. use planning tool to communicate asset plan

6. use email and SLACK (#canon) for communications regarding schedule and logistics
  - a. note we think multi vehicle has a couple of meanings:
    - i. more than one vehicle in the water
    - ii. coordinated ops with comms between assets
7. general plan
  - a. upwelling seasons – run multiple patterns
  - b. rest of year – run one pattern per week
8. Ryan: Synthesis
  - a. Holly and John R. looking at datasets
    - i. a couple of papers are coming out of the datasets
      - i. 2013 offshore eddys
      - ii. 2015 huge bloom. subsurface populations
9. Organization small teams to meet, report at Thursday weekly meeting on summary of logistic plan:
  - a. 2016 schedule/logistics (Pennington, Blum, Kieft, Jones, Wahl, Chavez)
  - b. CANON synthesis (Ryan, Messié, Zhang, Michisaki, Chavez)
  - c. Scientific Priorities
  - d. Technology priorities - Sensors and systems
  - e. Technology priorities - Data, ODSS
10. Next meeting Thursday, January 14

#### **CANON Planning Sep 17, 2015**

Francisco Chavez  
 Yanwu Zhang  
 Brett Hobson  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Thom Maughan  
 Monique Messié  
 Reiko Michisaki  
 Brian Kieft  
 M Jordan Stanway  
 Carlos Rueda  
 Jason Smith  
 Brent Jones  
 Chris Wahl  
 Tim Pennington  
 Tom O'Reilly  
 Kakani Katija

1. Francisco presented map of plan, see ODSS planning tab
  - a. Dorado run, to sample
  - b. First week, start south of Año Nuevo, to allow recover of vehicles if needed. Identify fronts
  - c. Second week, move North.
  - d. eDNA as measure of larger organisms
  - e. acoustics as measure of fish etc. Anchovy, whale interaction. National Geographic and Discovery Channel partly funding tagging of animals. Would like to go out and get some video with us. Would also like some video of LRAUV ops.
  - f. Hopkins group wavegliders used for shark tag listening off Año Nuevo
    - i. Reiko to put waypoints on SLACK <https://mbari.slack.com/messages/canon/>
    - ii. How far away can you hear a tagged organism? Hopkins group will be testing that. (to calibrate range of detector on mooring)
  - g. Break in schedule, then plan remaining Carson days
2. M Jordan Stanway
  - a. LRAUV status. Tethys was missing, now recovered via MLML RHIB. Spotted by plane.
    - i. At least four things went wrong that caused that.
      - i. on bottom for about a day
      - ii. why did she come up?
      - iii. drop weight worked as designed.
      - iv. no visible damage. no sign it got caught in a fisherman's net.
  - b. Daphne to launch first

- i. Plan to launch Monday
  - ii. Tethys tbd. Possibly Monday as well, but too early to tell.
    - i. Francisco: run the top lines of the Triangle. Better to repeat the same line than
    - ii. ~20 hours to do the transect. Francisco says that is fine.
  - c. "Find the front" mission worked fine.
- 3. Francisco. Once the wind kicks up, the front will appear. Once the winds die down, the front will disappear.
  - a. LRAUV
    - i. As we go further North, the charts are lower resolution.
      - i. Francisco says better to expand the off-the-bottom margin (9 meters instead of 7) than to risk getting stuck in/on the bottom.
- 4. Waveglider
  - a. Thrusters in for Tiny
    - i. Waveglider Tiny to deploy Monday
    - ii. OA to deploy Tuesday
  - b. Jelly tagging? Aquarium says no big jellies out there.
  - c. Taggers will be tagging animals
- 5. When we go North, how close can the WF go to shore? Due to shallow water...
  - a. Acoustics on WF? How shallow?
- 6. Out of clean sipper bags.
  - a. Can we clean engineering bags? Probably
- 7. Spray glider. Put a shark tag on it and track it? Spray can hover. 50 meters of greater of depth. To be determined...
- 8. ODSS
  - a. 2015 Fall CANON set up.
    - i. needs platforms populated
    - ii. has the waypoint layer
    - iii. needs data directories set up
    - iv. check STOQS link
      - i. Mike: have moved to new STOQS version. check campaigns.
- 9. Algorithms:
  - a. Front tracking algorithm in place. Temperature. Switching to salinity possible. Sigma T in the future.
    - i. Possible to port to waveglider in the future
    - ii. May have to tweak the parameters depending upon nature
  - b. Using waveglider data to be done next year.
- 10. Planning
  - a. new capability to do measurements of time to travel a drawn track.

#### **CANON Planning June 25, 2015**

Francisco Chavez  
 Yanwu Zhang  
 Brett Hobson  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Thom Maughan  
 Monique Messié  
 Reiko Michisaki  
 Brian Kieft  
 M Jordan Stanway  
 Carlos Rueda  
 Jason Smith  
 Brent Jones  
 Chris Wahl  
 Tim Pennington

- 1. This meeting focused on:
  - a. Analysis of Spring data
  - b. Planning for Fall experiment
  - c. 2016 proposal

2. Francisco led with a chart, generated by John R., showing Winds, Temp, Salinity, and days that Dorado or Ships were sampling, vs. time
  - a. would like to get to a point where plots like this can be generated automatically from our data stores
3. John R. had contributed a [document](#), prepared for NOAA ECOHAB annual report, along with some [notes](#)
  - a. discussed getting all the data sources John indicated into STOQS
4. Plan Hot Wash of Spring 2015 campaign in Early August 2015
  - a. after all data together and scrubbed
5. Moving forward, discussed doing on-going experiments with assets, to avoid ramp up, ramp down delays during campaigns
  - a. Generate STOQS database for this "off season" June to Sept 2015
    - i. all assets
    - ii. LRAUV data during "off season" deployments
    - iii. MBTS Time series data
  - b. discussed modifying SLACK organization, adding sub-channels
    - i. Science
    - ii. Ops
    - iii. planning
    - iv. daily "weather report" (forecast for the day)
  - c. add water analysis data as it comes in
  - d. science team to stay engaged (Monique, John)
6. Discussed Fall high level ideas:
  - a. be up in upwelling source region
  - b. look at Top Predators
  - c. Dorado yoyo along upwelling front, very shallow water, sample at isopycnal
  - d. try to capture the dynamics of front, productivity, and predator activity
  - e. add microscope
  - f. acoustic comm to waveglider (SV3) and LRAUV
  - g. drifts?
  - h. no ESP in Fall experiment, unless LRAUV ESP available
  - i. Discussed using localization with wave glider and LRAUV
7. Discussed abstract and proposal for CANON 2016 and beyond
  - a. 3-5 year extension of CANON
  - b. add mivegas vehicles
  - c. roughly the same level of resource request or less
  - d. areas being considered:
    - i. Targeted Sampling
    - ii. HiPP and SharkCam
    - iii. Neptus / Planning
      - i. see [email](#) from Carlos
    - iv. ODSS
    - v. AUVs (ops time in LRAUV proposal)
    - vi. WGs
      - i. STOQS in Bob Vrijenhoek research proposal
      - ii. Sampler and LSTs in Time Series proposal
8. Next meeting Thursday July 9 2015, 9:30AM, Harbor View

#### **CANON Planning June 18, 2015**

Francisco Chavez  
 Yanwu Zhang  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Monique Messié  
 Reiko Michisaki  
 Carlos Rueda

1. This meeting focused on recap of activities and findings from Spring 2015 ECOHAB / CANON Campaign
2. John R. - South Bay was target of 3rd week due to high concentration



- a. coverage with gliders etc will give great dataset
- b. included productivity measurements in the Bay
- c. had opportunity to do a cast in the bloom patch
- d. No drifters were lost during campaign!
- e. very little satellite data during campaign due to cloud cover
- f. wharf monitoring still reporting pseudo-nitzchia but waning
  - i. Francisco: SST's going up
- 3. SLACK was a big hit during the campaign
  - a. useful record of activity and products
    - i. John R. - pretty good
    - ii. Reiko - would prefer to see the date on each posting, not just time, since date on block marker can be cryptic when there are a lot of posts during each day
    - iii. Monique - display .pdf's as a thumbnail. Currently only see a link that one has to download to see anything visual (eg. "drifts.pdf" - June 5)
- 4. Discussed June 5 AUVCTD plots
  - a. John R. - "we nailed it"
  - b. Monique - Biolum signal surprizing, since during daylight hours
- 5. Planning page
  - a. Francisco: was it used?
  - b. Monique: need to be able to hide tokens so one can add new ones without deleting the old ones
    - i. Carlos: difficult to mix the "plan" with "operational reality". The tool is being used for both planning and updated plan reflecting what actually happened (both important to capture)
- 6. Francisco: for ODSS team:
  - a. need to get Data plan for pulling all campaign data into STOQS in final full-res form
    - i. including USCS gliders
    - ii. including Jupiter wave glider
    - iii. including final LRAUV data
    - iv. including OA1, OA2
  - b. need to get centralized catalog of campaign data into ODSS (ongoing need)
- 7. Francisco: going to try to do continued, small experiments all the time until Sept
  - a. collect overview info
  - b. have everything fully ready to go and tested when campaign starts
    - i. avoid lag of getting going when campaign starts with a bang
- 8. Francisco: ODSS does not load
  - a. after meeting, Duane confirmed, and filed IS help ticket to get Normandy up and accessible

Francisco: Plan on weekly meetings from now until Sept campaign. Thursday morning, 9:30AM, Harbor View

## **CANON Planning April 23, 2015**

### **Attendees**

1. Chris W.
2. Carlos R.
3. Francisco C.
4. Jason S.
5. John R.
6. Danelle C.
7. Yanwu Z.
8. Tom O.
9. Reiko M.
10. Tim P.
11. Brent J.
12. Brett H.
13. Kevin G.
14. Jordan S.
15. Mike M.
16. Mandy A.

### **Notes**

1. Francisco wanted to go over LRAUV sampling strategies.
2. Francisco talk to whiteboard (matrix), take picture

3. Carson in pretty good shape
4. LRAUV plan needs more work
5. Talking through LRAUV ops
6. Abort scenarios
7. Sampling plans
8. Depth
9. Time
10. Location
11. What else?
12. Can LRAUV do the sample sample behavior as Dorado?
13. Similar, but not as accurate as Dorado
14. Traverse towards shore
15. For the Carson, would sample after dropping AUV on its way back in
16. Do we need Carson tracking assets directly? NO
17. What is the separation? Say 500 meters
18. Dorado: can we use Dorado to map volume in exchange zone? Yes, everything is on the table
19. We can move things around during the experiment
20. Should do we make decisions

## **Status**

1. Ano Nuevo mooring: A vessel needs to be scheduled for the deployment of the mooring. The choices are the Shana Rae which will be on the ESP mission or the Rachel Carson. Francisco will speak to the ESP team to see if this will be possible.
2. ESP: No update
3. Adaptive Sampling: Yanwu says it is going well.
4. Sampler: TBD. Jordan is work on spiral mission roughed out. If we do chl then trigger aggregate would be needed. Yanwu says more work needs to be done on this.
5. LRAUV: Brian says there are comms/RF issues. 4 radios are mux'd together and there are noise issues. Configs for vehicles - Brian
6. Dorado:
  - a. EK15? John Ryan needs to ask Hans
  - b. LISST & LISST Holo: John Ryan
  - c. Jupiter SV2: Plan John Ryan
7. ECOHAB: Path decided. Teledyne gliders, Chris Wahl is working with John Ryan and Raphe Kudela.
8. Bathymetry: John Ryan will create image with bathymetry and satellite image with a climatology.
9. Planning Tools: Carlos Rueda made improvements to the planning tool. He sent out an email with link to odss-test where users can try the new version.
  - a. Need the ability to input and output location points.
  - b. Would be nice to use ODSS layers on the map.
10. Data Process: John Ryan and Danelle Cline have been working on standard product plots. Danelle will demo at the next meeting.
11. Drifters: Batteries on order. Need to have 5 on hand and ready to go.
  - a. The plan is to deploy on the way out on the Rachel Carson and recover with either the Martin, Paragon, or Rachel Carson.

## **CANON Planning April 16, 2015**

## **Attendees**

1. Carlos R.
2. Francisco C.
3. Yanwu Z.
4. Tom O.
5. Reiko M.
6. Tim P.
7. Brent J.
8. Kevin G.
9. Jordan S.
10. Mike M.
11. Brian K.

## **Action Items**

1. Check with DMO (Jared/Craig) on who does notice to mariners (Chris W)

2. Need to work out sampling schedule for the LRAUV sampler (Brett/Francisco)
3. Chris will work with Brian on the operations of Waveglider (and sharing with LRAUV) (Chris, Brian)
4. Need to work out all scenarios for LRAUVs (Brett/Francisco)
5. Need to work through the piloting of the Wavegliders and how that works with Liquid (Chris, Thom, Brian, Tom, etc.)
6. Need to work with Carson crew (Aaron) to decide what positions they want in Winfrog (what tools are they using to track things) (Kevin)
7. Test SBD data processing next week (Danelle)
8. Put the planning tool on ODSS test and people can try and give feedback (Carlos/others)
9. Francisco to think about standard data products for LRAUV (Francisco)
10. No assigned person to handle STOQS through the experiment, this needs to be resolved (ODSS Team)
11. Determine who takes of Waveglider data processing (Francisco/Kevin)

## Notes

1. Mandy
  - a. Reminder about permits
  - b. New condition: really sensitive to entanglement. We need to let them know within 24 hours of walkabout moorings or entanglement hazards
  - c. Mission planning and waveglider conditions are the same. Every time it is deployed, we have to notify the sanctuary.
  - d. Do we handle the notice to mariners. Who does that now? Will check with Jared/Craig
2. Francisco
  - a. Sharing of assets with biogeochemistry teams
  - b. Coming up with scenarios of adaptive sampling
    - i. Peak capture (a lot of cells) - are they toxic?
    - ii. Tracking on isopycnal or isotherms: following. Are the pseudos waiting to get upwelled/bloom
  - c. Dorado will be in long transect mode
  - d. Carson will sample three locations (offshore, plume and inshore)
  - e. We need to work with ops actions for dorado, LR and Carson
3. LRAUV Status
  - a. Do we have time to test our configuration
  - b. Dress rehearsal was to be next week
  - c. Makai and Daphne and waveglider
  - d. Moored acoustic modem (maybe adrift), LRAUV to track
  - e. We are flat out trying to implement upgrades and features: new batteries, radio upgrade, making headway
  - f. There is an antenna issue they are working on
  - g. Daphne is not hotspot compatible
  - h. Hoping for week before
  - i. Following week will be sampler testing
  - j. Still some risk, but progressing
  - k. This should be the training session (next Wednesday)
  - l. Brett and Tom O will be away, Brian will be around
- m. Sampler
  - i. Checked with Larry, still waiting for wiring
  - ii. Pipe plug end cap cracked, remaking it today
  - iii. Opportunity to re-organizing connectors, it should be ok
  - iv. April 30th we will try to rendezvous with Carson for side-by-side sampling
  - v. Still have some refinements on the mission
  - vi. How fast can we turn the sampler around? TBD
  - vii. Still hopeful the sampler will be ready by the 30th and will test it
  - viii. If we don't have sampler, should we still do mission?
  - ix. I would not go out if we don't have sampler
  - x. Options are to recover at M1 or the next morning
- n. Waveglider
  - i. Hotspot team did some testing yesterday
  - ii. Acoustic tracking of Tethys
    - i. Verified that we can now issue navigation commands on the vehicle so we can take the shore out of the loop
    - ii. Need to after safety features, etc.
  - iii. Radio relay function
    - i. This was tested with LRAUVs in the parking lot and will test next week.

- iv. Logistics
    - i. Engineering is driving LRAUVs, what about wavegliders?
    - ii. That will be Brian to coordinate how much of waveglider ops can be put on the LRAUV operators
    - iii. For now, LRAUVs and Waveglider are being operated as a package
- 4. Experiment dates
  - a. Start date: Wed: May 6th deployment of the ESPs (Shana Rae)
  - b. Carson starts week after
  - c. LRAUV can deploy with ESPs. Dates might be dependent on testing.
- 5. What are the abort scenarios: LRAUVs is automatic
- 6. We won't be able to get a commanded abort to the LRAUVs
- 7. Long term is to communicate goals underwater (NPS is interested in this for their gliders)
- 8. Watch standing for LRAUV
  - a. Are those going to sea, let us know about training sooner than later (next Wednesday for an hour or so)
  - b. This will not be an all day training scenario, only an hour or so
- 9. Waveglider
  - a. Can we have SV2 for the experiment?
  - b. We could deploy it in it's last state, but no changes (temp, salinity)
  - c. DO and PCO2 are back but not calibrated
  - d. Not sure about piloting, do we have the funds to do this?
  - e. Need to work through the piloting of the Wavegliders and how that works with Liquid Robotics
  - f. We are trying to operate the wavegliders without Liquid
  - g. Would take a little bit of work to get the current configuration
  - h. We could have the other instruments out there and they can record internally, but data does not come back in realtime
  - i. Low priority to fix anything, deploy in it's current state
- 10. Mooring
  - a. It's being worked, glider has been taking most of the focus for Chris W.
- 11. ODSS Planning
  - a. Carlos demo the planning tool, looking for feedback
  - b. Can we put a point and a polygon to show where we are starting. Yes, you can define multiple geometries per mission
  - c. LRAUV: With what you have, it's 80% of what we need.
  - d. For vertical profiling it will be outside of the tool
  - e. Critical is to understand what area an asset can cover (limitations). It's on the list
  - f. Francisco: We can try to play around with it and use it while planning discussions are happening.
  - g. Carlos will deploy to test machine and send out a note so it can be tested.
  - h. Feedback will be welcome.
  - i. It would be good to compare planned with execution (looking into past experiments)
  - j. Looks good.
- 12. ODSS: do we need to have everything on the carson? I don't think so
  - a. Decide on the Carson stations the day before
  - b. Put the STOQS/Layers at a lower priority because the day nature of the operations.
- 13. ESP
  - a. 2 instruments undergoing testing ahead of deployment - so far, so good - we are on schedule. I understand Holly has been talking with Jason re: water budget, etc. Please let me know if there's any tires that need kicking.
- 14. LRAUV data processing
  - a. Has that loop been close? No, still open. Need to talk to John Ryan about this.
  - b. Some issues, need to do the analysis
  - c. But something will be in place for the experiment (may change later)
  - d. We want to make sure data gets into STOQS
    - i. SBDs are being processed and those go into a realtime database
    - ii. Next week will be a good time to test it.
    - iii. Cell path needs to have a directory and database created for STOQS.
    - iv. Can we get standard plots for LRAUV?
      - i. What period of time and what parameters (a day and a week). A panel of plots is easy
      - ii. Does Tethys dash have this, depends on how logs are being handled (it will follow log splitting), might be able to do it, but probably easier to use Matlab to extract from STOQS. Monique could do this, she could use Matlab/SQL or even Python
      - iii. Engineering can chime in: needs are met by the Dash. Can test next week.

- iv. Reiko: can you do this? Query from STOQS? Yes, getting there.
- 15. Waveglider data processing
  - a. Jeff working on that and we will have to decide who picks up the shepherding of this after initial deployment

#### **CANON Planning April 2, 2015**

##### Attendees

1. Francisco
2. Tom
3. Jason
4. Reiko
5. Mike
6. Yanwu
7. Jordan
8. Monique
9. Tim
10. Thom
11. Kevin
12. Brett

##### Action Items

1. Need to get folks and plans for watch stands for LR's and WG's
  - a. We need expectations from each platform as to what they need for operational watches.
  - b. Could we have dual-watch expectations. Engineering team should meet to discuss this before next meeting (2 weeks). Will do it at next weeks time slot.
2. Need to work through LRAUV scenarios over next couple of weeks, how to track thermocline
3. We need a definitive plan for full post-processing of LRAUV data
4. 'Adaptive Sampling Group' to come up with options for sampling and how different platforms operate during the month (Dorado and LRAUV). Have a set of optional plans.
5. What products do we need (and on the ODSS) to make decisions.
6. We need to reserve Paragon for the month.
  - a. LRAUV will be putting in their dates for LRAUV ops
  - b. We won't use it all the time, but should be available
  - c. Waveglider, stellas, web gliders, etc.
7. We need to understand when the tracking will take place as it is intensive on operations (batches of a couple days 3-4, M-F). Plans needed.

##### Notes

1. Looking through the science plan that Jason sent around
2. ESPs going in north and south bay
3. Adding acoustic comms to Makai
4. Data processing for LRAUV
  - a. We probably don't need to worry about post processing right now
  - b. We want enough information to make decisions
  - c. Do we have any times that are decision points where we can push to get higher resolution data? That might help with planning.
  - d. Waveglider needs to be within a couple hundred meters to the LRAUV to transfer data.
  - e. Is Dorado hot spot needed? No, don't think so. Mission durations are so short.
  - f. Should plan on needing the hotspot for data transfer
  - g. Introduces logistics issues
  - h. John is working data plan for realtime data, getting more data this week on summary sets
  - i. Separate discussion on post-experiment processing of full data set.
5. Dorado plan has not been decided.
6. Carson will move around to sample
7. Francisco to draw idea of Dorado ops
  - a. LRAUV Makai could sample as it moves up front (thermocline)
  - b. But Dorado could do the same (Yanwu to think about)
  - c. Ship might take point samples across
8. Other platforms:
  - a. Web gliders (UCSC, but we will deploy) will be deployed for ECOHAB, will run similar as last time: ESP into the plume and back.

- b. Submersible microscope/waveglider: possibly using for triggering the ESP.
  - c. Some stella drifters will be deployed in shore for retention measurement
  - d. Martin will be out as well.
- 9. Hotspot team is working on onboard tracking for Waveglider (right now done from shore)
- 10. Drifter tracking will be done in short spurts during the week as it's operationally intensive
- 11. The setup and getting going is expensive for tracking
- 12. Getting back in sync is tough/expensive. Things will be moving faster than last time. That may impact science.
- 13. We should be closer than 10km to shore (operational area)
- 14. Martin will mostly be in the south bay, could run up to North bay
- 15. Francisco will be out next week, what do we do with this meeting? No plan to have the meeting, but room is reserved if people want to meet.
- 16. Sample planning? LRAUV will have one sampler. On track to start integration in a week.

#### **CANON Planning Meeting Mar 26, 2015**

##### **1. Attendees**

- a. Carlos Rueda
- b. Jordan Stanway
- c. Francisco Chavez
- d. John Ryan
- e. Chris Wahl
- f. Tim P
- g. Brett H
- h. Thom M
- i. Tom O'Reilly
- j. Reiko
- k. Jason
- l. Monique
- m. Kevin
- n. Danelle
- o. Yanwu

##### **1. Action Items**

- a. ?: We need to know what the adaptive sampling plan. Better to have sampler on drifter or driven vehicle?
- b. ?: Now that we know what we have, we should plan around that.
- c. ?: Monique is asking for 1 file for mission (Jordan, this is not straightforward). This is why we are trying to get full res raw into STOQS. John: this might be too big and maybe we should have a single clean concatenated file. Mike is recommending separate STOQS database for raw data. Monique: wouldn't it be slower to try to get raw from STOQS than from files? Jordan: Yes, but it would be all in one place. John: Mike strides even the 2 second data as STOQS can have a rough time with really large data sets.
- d. ?: Brett is asking if we want to do a run next week to exercise data pipeline
- e. Francisco: Tom O: can we get map of experiment range
- f. Carlos: Get the list of what is available to Monique
- g. ?: We need operational plans from groups to see how we can share running field programs
- h. ?: We should have run downs on how each platform is driven

##### **1. Staring with LRAUV**

- a. Makai:
  - i. We have a challenge with Makai acoustic modem
  - ii. Cannot fit acoustic transducer in nose shell of Makai because of larger DVL
  - iii. We should use Makai as is with ADCP, cannot be tracked by waveglider
  - iv. Other possibility is to use long nose shell and buy new transducer
  - v. No ISUS
  - vi. It will be doing what Tethys did last time
- b. Daphne and Tethys
  - i. They will have acoustic modems so they can be tracked by waveglider
  - ii. Daphne has DAT/USBL and can be used to circle like she did last year
  - iii. Tethys will have sampler and will be drifting
  - iv. Daphne has ISUS, oxygen cl, par, backscatter
  - v. Not quite as interchangeable, but should work
  - vi. Tethys has ISUS, but port limitation will require it be removed for other instruments
  - vii. Sampler could have problem with optode for space, but O2 is important

- viii. Can have rhodamine or par, since no rhodamine, all have par
    - ix. Daphne could have camera, but ports will be problem, it would cost O2 sensor
    - x. 7 ports in total and they are all spoken for
  - c. AI: We need to know what the adaptive sampling plan. Better to have sampler on drifter or driven vehicle?
  - d. AI: Now that we know what we have, we should plan around that.
  - e. Brett has configuration sheets that he will send around and then planning can happen
  - f. Let's keep Makai as flexible as possible
2. Processing of LRAUV data
- a. Still is question about how this is done
  - b. LRAUVs collect at very high frequencies (cl @ 10Hz, CTD @ ~2Hz)
  - c. Raw data is archived on atlas
  - d. LRAUV team has some tools to visualize the data, but somewhat disjointed
  - e. Brian and Jordan have been working on Python toolkit to visualize the data from the vehicles
  - f. For the science data, John:
    - i. Realtime:
      - i. There have been two field tests to optimize summary data and it's getting better each time
      - ii. That is ongoing
      - iii. T,S some binning onboard and can get that over if we have cell link
      - iv. That data goes into STOQS, this is the work that Danelle is doing
    - ii. After vehicle returns with full data set:
      - i. John bins down to make it tractable and do quality control
      - ii. Sometimes uses Dorado as reference for QC
      - iii. The issues with CTD data spikes (and other issues) and they feel its fixed.
      - iv. The end products are Matlab files and then a condensed representation
      - v. And then John circulates these products
      - vi. Two second averaged data is what goes into STOQS
      - vii. 10 second averaged data goes into STOQS (realtime and is happening now)
    - viii. AI: Monique is asking for 1 file for mission (Jordan, this is not straightforward). This is why we are trying to get full res raw into STOQS. John: this might be too big and maybe we should have a single clean concatenated file. Mike is recommending separate STOQS database for raw data. Monique: wouldn't it be slower to try to get raw from STOQS than from files? Jordan: Yes, but it would be all in one place. John: Mike strides even the 2 second data as STOQS can have a rough time with really large data sets.
    - ix. AI: Brett is asking if we want to do a run next week to exercise data pipeline
    - x. Tom O: do we need hotspot? John says yes. This needs to be factored into planning
    - xi. LRAUV mapped cell service. Hotpot can reach farther offshore with higher antenna. We can practice this?
3. Water samples
- a. We will meet after this to talk about how to distribute the water samples.
  - b. We will try to get logistics down for Dorado and Carson. We will add pieces as we go along.
  - c. AI: Tom O: can we get map of experiment range
4. ODSS Planning
- a. Go through slides [ODSS Planning.pdf](#)
  - b. Deployments and Mission: Are there going to be 2 deployments for 3 LRAUVs? Yes. With multiple missions in the deployment
  - c. Given path: know asset, know speed, know the vertical extent, we can deliver approximate duration of mission.
  - d. User can define nominal deployment time to let the user know of normal parameters.
  - e. Voting is not the right term, but something like that
  - f. For non-waypoint, how do we visualize? For following, how do we visualize?
  - g. How much of this is LRAUV work? The LRAUV work is operational visualization. There is some discussion of mission visualizer later this year. Not directly tied into the ODSS. LRAUV has a 'set' of missions it can run. New ones are slow to generate. Standard stuff is waypoints now.
  - h. There should be a free-text information that can be sent on to platform teams so they have some idea of what the plan entails.
  - i. How do we do the multi-vehicle positions.
5. AOSN data
- a. What should we do?
  - b. AI: Carlos to get the list of what is available to Monique
6. John: Carlos has been improving planning tool
7. HIPP

- a. Work to do, but conference gave good possibilities
- b. Could work on List HOLA being towed and sending the organism identification back to shore
- c. Looking for the use case that we can run with.
- d. We may want to do simulator
- e. May just collect video for a training set as Thom doesn't have time right now.
- 8. Operation challenge in May, we are running around the clock. Plan is to distribute driving duties.
  - a. AI: We need operational plans from groups to see how we can share running field programs
  - b. AI: Should have run downs on how each platform is driven
  - c. We should use April days to show how to use waveglider and LRAUVs together.

#### **CANON Planning Meeting Mar 19, 2015**

Fred Bahr  
 Francisco Chavez  
 Yanwu Zhang  
 Brett Hobson  
 Duane Edgington  
 Tom O'Reilly  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Thom Maughan  
 Monique Messié  
 Reiko Michisaki  
 Brian Kieft  
 M-Jordan Stanway  
 Carlos Rueda  
 Jason Smith  
 Brent Jones  
 Chris Wahl  
 Tim Pennington

1. Reviewed [Whiteboard](#) session (still on the whiteboard) from last week
  - a. Discussed linkage between realtime LRAUV data activities and ODSS activities (Carlos R.)
  - b. Tom O'Reilly: reestablishing exploration of Porto mission planning tool to be incorporated in ODSS.
    - i. discuss during Oceans conference
2. Francisco: is data from LRAUV and the LRAUV tools integrated into ODSS?
  - a.
    - i. Brett: looking at Realtime console
    - ii. Realtime data ingest into STOQS, not just during campaigns, but also missions before and after campaigns
      - i. Mike M.: easy to set up, just communicate need so receiving STOQS database can be set up
    - iii. Brett: looking at mission planning and control in ODSS
  - b. Discussed ECOHAB activities and CANON activities Spring 2015
    - i. coordination of time-series days
    - ii. detailed plans will enable decision of who gets assigned to what cruise
    - iii. explore concurrent RV Carson and RV Martin ops to get better spatial coverage
3. Modems on all the AUVs?
  - a. this would enable using any as drifters
  - b. Brett: Makai would be hard due to packaging/space constraints
4. Discussed: no drifters
5. Discussed: no Rhodamine in the spring
6. Sediment traps:
  - a. 4 bottles
    - i. control independently? (4 samples per time period or 16 samples at different time points (or perhaps multiple bottles tripped at the same time)?)
    - ii. ability to change size of collection funnels?
      - i. tradoff: ease of handling vs. largest funnel for max collection
      - ii. big honcho trap compatibility was the design goal
      - iii. note: 3000 meter trap is the not same as a 50 meter trap
  - b. for fall, 16 cups, easier to handle is the goal
7. Sampler



- a. found a pump, being integrated, ~slow (about 1 minute or more to fill sample bag)
    - i. thus, stop and hover when taking a sample, not gulp on the fly
  - b. worth testing sample preservation (Ammonium)
    - i. [mercuric chloride](#) as preservation
    - ii. incubations - test with (3)H tritium
- 1. Action items update (see March 12 2015 notes and action items)
  - f. Carlos contact Mike Godin
  - g. Need separate working group to discuss Rhodamine in Fall. Not needed for Spring
- 1. After meeting discussion:
  - a. Something that came up after the meeting was "standard" processing methods for LRAUV that follow those developed for Dorado.
    - i. Francisco: Does anyone have that on their plate? We are continuously collecting LRAUV data and it would be good if all of this ended up in a long term database.
    - ii. Danelle: Yes, we have plans to put the LRAUV data into the STOQS database and I will be working with Mike McCann, John Ryan, and Jordan on that effort.
    - iii. Francisco: I think that is different than the standard processing that gets kicked off after each Dorado mission. Those files can then be imported into STOQS or used by other applications as needed. I am looking for routine processing and "archival" of ALL LRAUV missions, not only those that are part of our experiments.
    - iv. M Jordan Stanway: The data from LRAUV missions is stored on ATLAS. The raw full-resolution logs are automatically pulled when an LRAUV is connected via tether after being recovered. The raw logs are then automatically unserialized to .mat and .nc4 files. Those files are the current standard data product. This system has been in place for a couple years, with few changes.
      - i. There is some time allocated this year to refine okeanidanalysis - our open-source python package for plotting and analyzing the logs. The package is hosted publicly on github. That work is ongoing.
      - ii. Any other standard data products will be via okeanidanalysis or through STOQS. Working on additional data products will be subject to time available, but we welcome specific suggestions (e.g., make an example script that will output a PDF of temperature sections in 12-hour segments per page).
      - iii. Francisco: Thanks Jordan, That is a good starting point. I think John Ryan has a process that runs through the data and does some QC and bins it to 2 sec  intervals and those files are the ones typically ingested into STOQS. I would like to find time within our CANON allocation to formalize this process and create products that will let us assess data quality on a routine basis. We can discuss at our next meeting
  - b. Another after meeting topic: (inter) calibration of fluorometers. We will want to do this prior to the experiments.

#### **CANON Planning Meeting Mar 12, 2015**

Fred Bahr  
 Francisco Chavez  
 Yanwu Zhang  
 Brett Hobson  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Thom Maughan  
 Monique Messié  
 Reiko Michisaki  
 Brian Kieft  
~~M Jordan Stanway~~  
 Carlos Rueda  
 Jason Smith  
 Brent Jones  
 Chris Wahl  
 Tim Pennington

## Notes

1. First meeting of the year
  2. [Whiteboard](#) session from FC
    - a. Two field experiments (Summer/Fall)
    - b. Experiment planning
    - c. Goal: Track upwelling and how biology evolves through processes. How the structure of the water mass sets up and breaks down over time. How does the structure in space evolve given certain forcing.
    - d. 3 LRAUVs (no 3G ESP)
    - e. Two Wavegliders
    - f. Sampler in Daphne (16 samples, 150 ml) - 1 minute to fill. Not a gulp
    - g. Dorado
    - h. ECOHAB: Will have gliders, what are they bringing to the table?
    - i. What biology will be measured? Echosounder, the 20?, tags?, vemco fish tag, two wavegliders with vemcos
  3. John R going to talk to Steve about towing Dorado out
  4. ECOHAB (John R): Kudela wants to know about overlap in space and time. Who will do what with water measurements on the Carson. We are not doing any toxicity stuff. Will be a water budget issue. We need to know what they want to do.
  5. Rhodamine? It's in permit, but we don't have funds to purchase it. What do we want to do?
  6. Do we want drifters (they are logistical issue)? We need a reason why we want to use them and if we want to lose them.
  7. We need to fine tune the science questions over the coming days.
  8. What are we targeting with sampling. What algorithms do we want to use when acquiring samples?
    - a. We do have Dorado gulper and ship CTD. LRAUVs could tell us where we want to sample with the ship.
  9. Will we use Spray gliders (NPS)?
  10. Let's run through the list of the other things.
  11. Brent Jones working on getting floats together. Won't be ready for Summer.
    - a. upgrade idea is to get multiple samples. How many? How big do the cones need to be?
  12. Sampler: Integration into the LRAUV. Waiting on pump. Things are looking good. Final step is pump decision. The team wants two samplers. Pump decision timeline needs to be driven by timeline to make a second one.
  13. 3G ESP might be ready in August. (60 archive only)
  14. Can we use the summer days for testing for targets to come online in August?
  15. ODSS: How do we combine in situ and gridded data. Can we work with Axiom on that? This could be used to validate models in realtime. Three sources of navigation. Ship, on board nav and tracked nav. Get the ODSS the most accurate map for chlorophyll. Working on improvement to getting accurate realtime data. Issue was decimation of data that caused issues (undersampled) and gave improper guidance. Will give updates in future meetings.
  16. For samples, average contextual data over time that sample was collected. Sample: X,Y,Z,T,S,etc.,Analysis Results
  17. STOQS: No real development under CANON, just to support experiment. Curious about how sample information matches up to STOQS models. There is a [mailing list](#) that people should sign up for. Question: Does the data have to be averaged? No.
  18. HIPP: Looking at processing imagery on board as it can't be sent back. Only send results back. Taking advantage of GPU processing.
  19. Rhodamine: Can we do something simple? We can put heads together and come up with new way.
  20. Meet weekly, Thu 9:30 AM
1. Action Items
    - a. All: Fine tune science questions trying to answer.
    - b. John R: Talk to Steve about towing Dorado.
    - c. ?: Decide on if we want to use Spray gliders.
    - d. ?: Decide on drifter use. Can we afford to lose them?
    - e. ?: Need to clarify what ECOHAB vs. MBARI are doing.
    - f. ?: What about AOSN data (can we get it into STOQS?)?
    - g. ?: Need to decide on Rhodamine. Come up with something simple we can do with Rhodamine.
    - h. ?: Decisions need to be made on sediment trap cone size and number.
    - i. Brent/Brett: Talk to Larry Bird to see how long it will take to build second sampler (drives timing of pump decision).
    - j. Kevin/Brian: Work on methods to get sample information into the ODSS.
    - k. ODSS Team/FC: Work on plan for Axiom interactions (Monday meeting).

## **CANON data meeting October 27, 2014**

Fred Bahr  
Francisco Chavez  
Yanwu Zhang  
~~Brett Hobson~~  
Duane Edgington  
Kevin Gomes  
Mike McCann  
Danelle Cline  
~~John Ryan~~  
~~Thom Maughan~~  
Monique Messié  
Reiko Michisaki  
Brian Kieft  
M Jordan Stanway  
~~Carlos Rueda~~

Pre-hot-wash notes:

1. pCTD from RC and WF.
  - a. netCDF files regenerated, and ready for STOQS except for 2 files requiring manual update by Erich.
    - i. Duane to contact Erich to get status on manual fixes. (contacted)
2. Drifter files
  - a. Chris, Reiko to check Drifter files in ODSS data store area (Atlas).
3. Location of ships at all points during the experiment
  - a. in underway data
4. Gliders
  - a. data is from Scripps
  - b. Fred does some minimal QA, publishes as netCDF, which continues for the entire deployment of each glider
  - c. action item, to make netCDF from this data just for the campaign (done by Reiko on 10/29)
5. Tiny WaveGlider
  - a. need Tiny data MBARI repository (as is done for Dorado)
  - b. need Tiny data for the Fall experiment in ODSS data store area (Atlas)
6. Dorado
  - a. data on Atlas, pointer in ODSS data store area
7. LRAUV
  - a. decimated real-time data has been loaded into STOQS
  - b. full data as downloaded after deployments is available, has not had time resolution harmonized (i.e. all instrument data recorded at full frequency for each sensor)
  - c. needs common time-resolution dataset (2 sec) plus QA on navigation data. Put pointer in ODSS data store area to the full LRAUV data

## **CANON Fall experiment operations plan**

1. [Daily Operations Plan CANON 2014 - Rachel Carson - September 22 - 25 & October 7 - 10, 2014](#)
2. [Daily Operations Plan CANON 2014 - Western Flyer - September 27 - October 3, 2014](#)

## **CANON Logistics Meeting September 18, 2014**

BOG Lab members (Chris, Gernot, Reiko, Marguerite, Tim, Jules, Lisa etc)  
~~Brett Hobson~~  
Francisco Chavez  
~~Jim Bellingham~~  
Yanwu Zhang  
Duane Edgington  
Kevin Gomes  
Carlos Rueda  
~~Mike McCann~~  
Danelle Cline  
John Ryan  
Monique Messié

Reiko Michisaki  
Jason Smith  
Paul McGill  
Brian Kieft  
Thomas Hoover  
Tom O'Reilly  
M Jordan Stanway  
Thom Maughan  
Holly Bowers  
Chris Scholin  
Mark Chaffey

1. Francisco
  - a. Deployment timeline
2. Kevin
  - a. Sample Entry tool
3. Francisco
  - a. Reviewed deployment timeline
    - i. Daphne is deployed, so the experiment has started! 18 to 22, then 23-27.
    - ii. Makai 23 - 27. In test tank Sept 18, to be ballasted...
    - iii. Tethys - plan Monday, run for 5-6 days. 22- 27.
  - b. Sept 22: Carson test day
    - i. Sept 23 deploy patch (or 24 if need be)
    - ii. Sept 24-26 Carson expt
  - c. Dorado 23 - 26.
  - d. Spray - no rhodamine sensor. Borrow it from Dorado on 27, then deploy Spray.
  - e. Flyer 27 - Oct 3
  - f. Carson and Dorado again Oct 6 - 10
  - g. CPF does not look like it will be part of campaign.
  - h. Best depth, looks like 50m, but the temp is about 12 degrees at that depth.
    - i. subject to change, will be set by on-ship measurements Monday Sept 22.
    - ii. looked at Daphne salinity, looks like it is high (offset?)
  - i. remove the DO real-time sensor data transmission from Makai to reduce on-surface time.
  - j. Dorado status: has a 20 chamber gulper. Being ballasted. Software being prepared for cruise.

#### **CANON Logistics Meeting September 11, 2014**

Brett Hobson  
Francisco Chavez  
Jim Bellingham  
Yanwu Zhang  
Duane Edgington  
Kevin Gomes  
Mike McCann  
Danelle Cline  
John Ryan  
Monique Messié  
Reiko Michisaki  
Jason Smith  
Paul McGill  
Brian Kieft  
Thomas Hoover  
Tom O'Reilly  
M Jordan Stanway  
Thom Maughan reported status via email  
Holly Bowers  
Chris Scholin  
Mark Chaffey

1. Francisco:
  - a. showed ODSS displaying cpf1 being circled by wgTiny
  - b. status of data source logistics
    - i. Duane enumerated asset list and information about sensor set per asset
      - i. Francisco: need info on what sensor data will be returned in real time by LRAUVs
      - i. Yanwu email with list of LRAUV real time sensor data [email](#)

- ii. Get sensor set for dorado from Hans
  - iii. Asset spreadsheet being filled in - asset, sensors, realtime data feeds [spreadsheet](#)
- 2. Yanwu:
  - a. plan for commanding assets to respond to patch sensors, and thus follow patch
    - i. Yanwu working on dorado mission to make crossing trajectory through patch
- 3. Francisco:
  - a. Drifters
    - i. no 200 series (pH) drifters in this campaign
    - ii. plan
      - i. droughed at 50m Stella drifter in center of patch. deployed by Paragon
      - ii. drifter Stella at edge of patch. deployed by Paragon
      - iii. drifter Stella with sediment trap (real time position only). recovered and redeployed daily, middle of the patch, by Ship
      - iv. surface Stella drifter for those studying surface water
  - b. wgTiny
    - i. confirm who is doing the data processing (Fred?)
    - i. confirm that calibration info for the sensors is in the hands of the data processor
- 4. Thom: Waveglider sensor status:
  - a. GPCTD+DO is working
  - b. EcoPuck worked until Oct.5 when an onboard network bug struck when comms auto shifted from iridium to cell, it's a known issue with Regulus (according to Liquid). LR will push a new Regulus OS and reboot after the waveglider recovery.
- 5. NPS glider
  - a. deploy week of Sept 14
  - b. run manually across the patch
  - c. Practice loading PCTD, UCTD on Sept 15 cruise data
- 6. CPF
  - a. GPS working, but not confident of robustness. Skeptical of readiness, but ok to use test schedule for the campaign.
  - b. CPF test area is the van in the parking lot
  - c. integrate CANON stuff next week
- 7. Kevin
  - a. discussed sample log app

#### **CANON Logistics Meeting September 4, 2014**

- 1. Francisco:
  - a. Discussed Stanford Microstructure instrument
    - i. not sending real-time data
  - b. Discussed update to campaign plan
    - i. no test deployment
    - ii. 1st day Carson Sept 22 do Ops without tracer (pump water)
    - iii. 2nd day Sept 23 go live with tracer
  - c. Dorado to do daily ops, with Rhodamine sensor
  - d. CPF deployment tests Sept 4 and 4
- 2. Yanwu:
  - a. LRAUV Drian and Yanwu testing behaviors
    - i. holding (Makai)
    - ii. dye tracking (Tethys)
- 3. Francisco:
  - a. Spray Glider #29 carrying Rhodamine sensor
    - i. working through how to modify glider path when needed

#### **CANON Logistics Meeting August 14, 2014**

Brett Hobson  
 Francisco Chavez  
 Jim Bellingham  
 Yanwu Zhang  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan

Monique-Messié  
Jason-Smith  
Paul McGill  
Brian-Kieft  
Thomas-Hoover  
Tom-O'Reilly  
M-Jordan-Stanway  
Thom-Maughan  
Holly-Bowers  
Chris-Scholin  
Mark-Chaffey

**Status:**

1. Brett: LRAUV
  - a. Yanwu is running Tethys
    - i. tracking rhodamine patch
      - i. chevron plus yoyo. uses Godin's algorithm
        - i. first test, first day of campaign, then full rhodamine release on 3rd day of campaign.
          - i. need Carson. first test could potentially be done on the 15th, but that is up for discussion
  - b. Daphne off shore for testing
    - i. yoyoing
    - ii. Jordan is doing the tracking software, being tested now.
    - iii. Brian/liquid robotics doing the Waveglider software
      - i. running PAR. cannot carry rhodamine sensor without a lot of extra work.
  - c. Waveglider next week
    - i. interactions with Daphne and Waveglider
      - i. Francisco: test how far they can be apart
      - ii. Brett says 1km range expected
  - d. Makai not ready yet
    - i. need values of parameters, to be set by Francisco, before expt. deployment
    - ii. close to deployment; final checkout of wiring etc
      - i. will carry rhodamine sensor
    - iii. status to be updated into planning tool (developed by Carlos)
      - i. odss-test currently, on production release (Normandy) in a week or so
    - iv. Rhodamine sensors Turner set to medium setting?
  - e. one turner Rhodamine sensor on float, another on ctd. float not realtime
    - i. one coming from Seapoint for waveglider. replaces chlorophyll
    - ii. Turner on profiling ctd added to chlorophyll
  - f. ctd being added to waveglider. in test tank tomorrow
    - i. modem to be added to waveglider. plan in place.
    - ii. add pCO2 to waveglider? end of next week return from repair
2. McGill: Float
  - a. Gene making progress on his problems
    - i. GPS is a problem
      - i. NAL problem. GPS and Iridium integrated - antenna is a problem.
      - ii. looking at a separate GPS unit
        - i. tests planned for test tank, then paragon tethered, then letting go...
      - iii. looking for argos transmitters to add to float in case comes go bad.
        - i. borrow from ops?
      - iv. DesertStar is another potential supplier
        - i. borrow from Sal?
    - ii. integrate galvanic time release as emergency release?
    - iii. plus depth guillotine
      - i. discussed issues with making something robust to deployments and yet robust to failure.
    - iv. pursuing adding an internally development/built board to toggle power to components
3. Spray
  - a. match the rhodamine sensor to the LRAUV (setting 10x)
4. ODSS
  - a. Kevin to write up
  - b. Danelle and Monique have reviewed the plan

- c. synthesis of all the platforms that are tracking rhodamine
  - i. monique to output a product that can be loaded into ODSS as KML?
- d. winfrog
  - i. too many things to track using winfrog
  - ii. supersubmini as a solution?
    - i. Irauv does not carry those
    - ii. interface is to winfrog
- 5. Jason is leading coordination effort on the carson
  - a. sample plan (ctd)
  - b. two fs6 guys on board running measurements on board
- 6. General discussion of overall coordination plan

#### **CANON Logistics Meeting July 10, 2014**

- Schedule
  - Aug 4-5, external collaborators will be here
    - David Ho - SF 6
    - Stephen Monosmith - REMUS/ turbulence sensor, Stanford
    - Nick welshmire - traps
    - Jules Jaffe
    - Raphe Kudela
  - Aug 1
    - Daphne will testing with buoy to practice behavior
    - Tethys needs testing with SDCp
  - Aug 15
    - Makai testing by itself
  - Could we do a dry run with all the assets in Sept (early)?
  - 4 day period with Carson
    - 1st Rhodamine
  - 7 days with flyer
  - 4 days Carson
  - Daphne can run 5-7 days (2 days to turn around)
  - Tethys can run 5-7
  - Can Brett map out schedule?
  - CPF assumption is we will have in September
- LRAUV - Brett went through slides
  - Makai - sampler vehicle. Rhodamine sensor
  - Daphne - data will stay down, not return data. Continuous sampling around makai.
  - Tethys - doing its own thing. Yanwu will be driving and will be doing plume tracking.
  - Decision of what goes on what vehicle needs to be made by aug 15th
  - Waveglider will be tracking makai and coastal profiling float
  - How do we same Rhodamine? Needs further discussion
  - How do we get drifting platforms in pancake? Probably deploy after
  - Ship will be doing casts over all this
  - Schedule: provide to Kevin
- Need to survey current Winfrog situation on ships
- Waveglider
  - When is acoustic modem being integrated?
  - Get schedule from Brian.
  - Are we using hotspot? Probably from Tethys and daphne
- Coastal Profiling Float
  - Still want self contained modem. Fewest changes
  - Weight is an issue.
  - Which should we use?
  - Do we use heavier and float or buy a new one (6 weeks)?
  - 925 should be available for float and there is a float pack that can be used.
  - Will meet later (today)
  - CPF team will be testing from aug 1-sep 1, then we can get it for testing
- ODSS
  - Yanwu's algorithm can produce patch size.
  - Display in map
- Ships
  - Carson
  - Flyer

- Fulmar
- Paragon?
- Ship can track acoustically USBL
- Relay positions through ODSS to Winfrog?
- Ships will operate on a very fixed schedule
- Tethys will be the one to watch.
- Tracer delivery
- Drifters/Traps
  - Can we map extent of whole patch? Deploy drifters at beginning of Rhodamine release, one in the middle and one at end. Would this continue to mark the edges? Unsure.
  - Depth will be 30-50.
- Dorado
  - Could put Rhodamine sensor on board
  - Dorado could give us quicker picture
  - Could give us samples for SF6
  - Use dorado for cross streak sections?
  - Needs further discussion.
- 2015
  - ECOHAB will be Spring in Monterey Bay
  - It will include our ships

#### **CANON Logistics Meeting June 19, 2014**

Francisco Chavez  
~~Jim Bellingham~~  
 Yanwu Zhang  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Monique Messié  
 Jason Smith  
 Paul McGill  
 Brian Kieft  
 Thomas Hoover  
 Tom O'Reilly  
 M Jordan Stanway  
 Thom Maughan  
 Holly Bowers  
 Chris Scholin  
 Mark Chaffey

1. Francisco:
  - a. Presented deployment plan for dye release and assets Fall 2014, and NO2, NH4, NO3 potential depth profiles.
    - i. [Images from white board](#)
    - ii. Tim did a test, Rhodamine is not toxic (does not interfere with photosynthesis)
      - i. looking now to see if there is any impact on the other optical instruments (crosstalk on fluorometers?)
    - iii. Feature to track: NH4+, 25.5 Sigma-T, temperature profile (seasonally adjusted)
    - iv. Dorado plan?
    - v. First days of Carson, allocate as Survey days
    - vi. Lay out the tracer, day 2 or 3 or 4...
    - vii. Jason data analysis from Fall 2013 and earlier fall datasets: will see feature clearly between M1 and C1 (i.e. in the bay).
    - viii. CPF (coastal profiling floats), Makai LRAUV 200m apart.
      - i. Hope to confirm that CPF follow the patches, using Rhodamine (short term), SF6 (long term) as tracer.
2. Kevin: since locations of Makai will be coming from packets sent by Daphne over acoustic modem to wave glider,
  - a. Need someone to take these locations out of the messages and send them to ODSS as platform positions
    - i. Kevin/Danelle/Monique to work this out



- ii. [see clarification from Brett Hobson / Brian Kieft / Francisco / Mike McCann](#)
- 3. ADCP
  - a. Is there a cruise between now and the expt where we can test ADCP and using it to compute water velocity (having subtracted dorado velocity)?
  - b. Test injecting and detecting rhodamine before the cruises? i.e. on the Fulmar?
    - i. Would want the dorado to be doing its yo yo mission through Rhodamine patch
    - i. NPS investigator interested in computing water velocity profiles from moving vehicles... engage them in the expt?
- 4. Plan for pre campaign meeting, including collaborators outside of MBARI, week of August 4

#### **Action Items:**

1. Monismith - Rockwell instrument to measure NH4
  2. Kevin et al - ODSS Situational Awareness Platform positions
  3. John Ryan / Gernot - Tracer
  4. McGill / Wald - CPF
  5. Jason - Science Plan
  6. Yanwu / Ryan / Hans - ADCP
  7. Yanwu - 25.5 or temp for feature detection?
  8. Yanwu / Monique / John Ryan / Steve Monismith - How fast will dye diffuse? Simulation on ODSS Situational Awareness.
1. Next meeting in two weeks (week of July 7)

#### **CANON Logistics Meeting June 5, 2014.**

Francisco Chavez  
~~Jim Bellingham~~  
 Yanwu Zhang  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
~~Danella Cline~~  
 John Ryan  
 Monique Messié  
~~Jason Smith~~  
 Paul McGill  
~~Brian Kieft~~  
 Thomas Hoover  
 Tom O'Reilly  
~~M Jordan Stanway~~  
~~Thom Maughan~~  
~~Holly Bowers~~  
 Chris Scholin  
 Mark Chaffey

#### **Action Items**

1. John to continue to collect information on Rhodamine and report back
2. Paul to meet with Francisco offline
3. Kevin to meet with Francisco offline about Samples Management

#### **Notes**

1. Tim doing experiments with Rhodamine
2. John is collecting information and will pull together information
3. We can use coastal profiling float during experiment
  - a. Target depth is 50m
4. Looks like we can get a week of time with float
5. Francisco would like to use rechargeable batteries
6. Makai will be drifting with patch
7. Need to figure out how float and Makai work together
8. Francisco and Jason will work more on science questions.
  - a. Might be more interesting to do it inshore
  - b. Logistics might be more tractable inshore

9. ODSS: Kevin walked through task list
  - a. Francisco and John: combine CTD tech log and water sample group
  - b. Maybe filter by tags in observation log
10. STOQS
  - a. Working on classification
  - b. Needs input
  - c. Looks like schematic changes won't impact existing data sets
  - d. Will work with an existing data set to help Mike flesh out the schema, code and UI
11. [photo of white board](#)

**CANON Logistics Meeting May 29, 2014.**

Francisco Chavez  
 Jim Bellingham  
 Yanwu Zhang  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Monique Messié  
 Jason Smith  
 Paul McGill  
 Brian Kieft  
 Thomas Hoover  
 Tom O'Reilly  
 M-Jordan Stanway  
 Thom Maughan  
 Holly Bowers  
 Chris Scholin  
 Mark Chaffey

1. Planning for Sept CANON
  - a. Francisco: presented rough timeline Carson and Western Flyer
    - i. Focus on vertical mixing component. Try to minimize lateral component through selection of site.
    - ii. location near M1, or more in shore?
    - iii. Pycnocline where Ammonia, Nitrate, etc. accumulate
  - b. Tracer in Thermocline 30-50m, LRAUV, Glider, Floats to track
  - c. platforms: LRAUV, Gliders, Floats, Dorado on Carson, R. Carson, W. Flyer
  - d. In shore optimal for biogeochemistry?
    - i. Turbulence measure capability? Smith? ADCP on the vehicles?
    - ii. If too shallow, sediment events complicate that analysis. <100m
    - iii. Stay on off-shore portion of the front?
      - i. Evection is a problem in the greater bay? Rhodamine will diminish quickly?
  - e. Two sides of the front still up for discussion...
    - i. There is a lot of horizontal structure
    - ii. Tide pumping?
2. Questions to answer:
  - a. What vehicles do we have available?
    - i. Do surveys before the Sept CANON to help decide where to conduct the campaign?
      - i. Fulmar?
    - ii. Daphne? has usbl
      - i. Jim to meet with Brett
        - i. Constraints, decisions on scenarios
      - ii. Want to make multi vehicle (talking to each other) a priority
      - iii. Water sampler on LRAUV not needed for this experiment
      - iv. Need to localize and track the vehicles from the surface, within 100m
  - b. What work do we do before to help make the decisions?
  - c. What other capabilities do we need?
    - i. Turbulence, zooplankton (nets, acoustic backscatter, camera)
      - i. Can we do net tow on Carson if Dorado is in the water? (do they share the same crane?)
    - ii. close to M1 is an advantage with the 360

- d. Survey in the area to get a sense of the horizontal distribution of the feature
- e. What do we do with Dorado?
  - i. spatial context?

#### **CANON Logistics Meeting May 15, 2014**

Francisco Chavez  
~~Jim Bellingham~~  
~~Yanwu Zhang~~  
~~Duane Edgington~~  
 Kevin Gomes  
 Mike McCann  
~~Danelle Cline~~  
 John Ryan  
 Monique Messié  
 Paul McGill  
~~Brian Kieft~~  
~~Thomas Hoover~~  
~~Tom O'Reilly~~  
~~M Jordan Stanway~~  
 Thom Maughan  
 Holly Bowers  
 Chris Scholin  
~~Mark Chaffey~~

#### **Action Items**

1. John to find out max depth rating on Rhodamine dispenser
2. John and Francisco to talk to Larry Bird about taking a look at the Rhodamine dispenser
3. John to get Rhodamine to Tim
4. Thom will talk to Brian K about float comms discussion
5. Francisco will follow up on Axiom collaborations
6. Mike, John, Duane and Francisco will revisit the current status of work to try and automate loading of data into STOQS
7. At the CANON engineering meeting on May 26th, Francisco will come to discuss ODSS/STOQS tasks

#### **Notes:**

- John Ryan talking about Rhodamine
- Got it from Stanford and talked through how it works
- John to find out max depth rating
- We first need to decide how we are going to use it
- Maybe have Larry Bird to look it over
- John to get Rhodamine to Tim
- patch experiment planning
  - Paul
    - Coastal profiling float looks like it should work
    - We want to add something to allow for locating the float. benthos?
    - Evaluating options. Sonar dyne might be an option, maybe not
  - Francisco walked through three options: CLD, Spray, LRAUV
  - There will be follow on meetings
  - Thom will talk to Brian about all this.
- Francisco will follow up on Axiom collaboration
- STOQS: adding capability to work towards robowhale
  - Tagging of data to give capability to enable algorithm development
  - Revisit loading of STOQS data automatically

#### **CANON Logistics special meeting May 14, 2014**

1. John Ryan:
 

Update on dye tracking effort for CANON fall experiment: For the purpose of us learning about the dye and dye-release equipment (that needs work to be functional), Derek Fong is available to host a visit at Stanford next Wednesday morning. Any dye-tracking enthusiasts able to join me?

## CANON Logistics Meeting May 1, 2014

- Note: no meeting May 8
- Note: Next meeting May 15

Francisco Chavez  
~~Jim Bellingham~~  
Yanwu Zhang  
Duane Edgington  
Kevin Gomes  
Mike McCann  
~~Danella Cline~~  
John Ryan  
Monique Messié  
Paul McGill  
~~Brian Kieft~~  
~~Thomas Hoover~~  
~~Tom O'Reilly~~  
~~M Jordan Stanway~~  
~~Thom Maughan~~  
~~Holly Bowers~~  
~~Chris Scholin~~  
~~Mark Chaffey~~

1. ECOHAB South
  - a. John: deployment went very well
  - b. Wind event was right at the end of the deployment
  - c. Some samples before deployment period
  - d. Bloom during Deployment, fading at end
  - e. Good experiment, great science
    - i. All drifters recovered
    - ii. Waveglider is back in Moss Landing; status of ecopuck? Thom to follow up.
    - iii. ODSS and STOQS used heavily during experiment
    - iv. STOQS data available immediately at end of experiment
      - i. Hotwash held with STOQS/ODSS team
2. Francisco: influence of Rhodamine on growth rates?
  - a. Stanford looking at this. Derrick
    - i. Any literature on this?
    - ii. Try it ourselves... Time series cruise or SECRET cruise add-on
    - iii. Francisco: will follow up with investigator regarding Rhodamine sensor on Remus
3. Yanwu: LRAUV issues in Southern Cal. Added logging swamped the system.
  - a. Integration of adcp: three vehicles being worked on.
  - b. Integration of dat
  - c. Integration of acoustic comms
    - i. Need to prioritize what goes on which vehicle - JGB is working on that
  - d. Francisco: need a separate meeting to talk about coordination of vehicles, and how they communicate with each other
4. Floats: McGill
  - a. Coastal floats: Gene - sea test next week
  - b. Some oscillation, but think they can hold a depth station
  - c. Draft requirements nearly complete
  - d. Francisco: Chris Wahl: drawings nearly pulled together
  - e. Status of software? Andy Hamilton
5. Waveglider
  - a. User committee formed, first meeting held
  - b. Thom M., Brian K., Francisco C., Jared F., Jim B., Charlie P. on committee. DMO representative?  
[https://mwww.mbari.org/rd/wave\\_glider\\_use/index.html](https://mwww.mbari.org/rd/wave_glider_use/index.html)
  - c. Dissolved O2 ordered
    - i. Thom to visit LR 15th of May
    - ii. OA payload has priority
6. Intercomparison of flow cytometer work continues.
7. AXIOM visit April 15, 2014
  - a. Follow-up: Kevin and Francisco
8. ODSS

- a. Franciso: Sample form repository: thinking about assigning someone to use the tool with historical data
- b. Would like to see an expanded task list with who, what and when made more clear (not just high level goals)
  - i. <https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
- c. Thom: request that Planning calendar tool be moved to production ODSS
- 9. STOQS
  - a. discussed pipeline to load data into STOQS
    - i. Documentation on how to set that up?
      - i. Available on line (aimed at expert database and linux admin)
      - ii. John Ryan and Duane/Reiko have their own notes - AI for them to collate notes such that the notes are useful to someone else...
- 10. Monique
  - a. Optics data work continues

#### **CANON Logistics Meeting April 10, 2014**

Francisco Chavez  
 Jim Bellingham  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline  
 John Ryan  
 Monique Messié  
 Paul McGill  
 Brian Kieft  
 Thomas Hoover  
 Tom O'Reilly  
 M Jordan Stanway  
 Thom Maughan  
 Holly Bowers  
 Chris Scholin  
 Mark Chaffey

- 1. Discussed waveglider deployment
  - a. Thom: Waveglider to be deployed shortly in Southern Cal if the batteries are strong enough. Brian K. is there for the deployment.
- 2. LRAUV
  - a. LRAUV Daphne has been deployed in Southern Cal. Can see it tracked on ODSS.
- 3. Discussed current data flow, sensor integration, for Waveglider and LRAUV. [Diagram of Waveglider data flow attached](#) and [Diagram of LRAUV data flow attached](#)
- 4. ESP
  - a. ESPs have been deployed in Southern Cal. Moe, Bruce, Mack.
    - i. See Data pane of ODSS Situational Awareness tab (Data -> Platforms -> ESP -> ESP\_Web\_application) to see sensor data streams and images of sample filters.
- 5. Discussed Neptus integration
  - a. Received word from MBARI IP committee on Neptus license
- 6. Flow Cytometer sensor inter-comparison had a good cruise. plan to repeat, building on lessons learned, in the near future
- 7. Axiom to visit afternoon April 15. We will plan who will present what from MBARI at Monday 1:15PM ODSS/STOQS engineering status meeting.
- 8. Discussed plan for waveglider use in the fall campaign
- 9. Discussed (briefly) Floats

#### **CANON Logistics Meeting March 20, 2014**

Francisco Chavez  
 Jim Bellingham  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 Danelle Cline

John Ryan  
Monique Messié  
Paul McGill  
Brian Kieft  
Thomas Hoover  
Tom O'Reilly  
M Jordan Stanway  
Thom Maughan  
Holly Bowers  
Chris Scholin  
Mark Chaffey

**Next Meeting in two weeks (April 3).**

1. Discussed wave glider deployment plan.
  - a. [Waveglider ECOHAB Email from Francisco](#)
  - b. LRAUV higher priority than hotspot
  - c. Ecohab first extended operation for tiny
  - d. Tiny planned deployment April 1. Would need another vessel if change the date.
  - e. LRAUV deployed two weeks only and start date dependent on ocean readiness and ocean conditions
  - f. Role of waveglider in Ecohab is to support LRAUV, thus LRAUV is a higher priority
  - g. A.I.: Kevin Duane look at process to Get and ingest waveglider data. Write down the detailed process to drive a plan to get it done.
2. Floats
  - a. Looking at purchasing solo-II floats from Scripps or using Massion Coastal Profiling Floats.
  - b. Paul: Gene's is best current alternative, although we would be relying on developments that are not yet done.
    - i. Benthos modems need to be integrated.
    - ii. Francisco to work with Chris W. to get drawings ready to build in the shop starting in 3 weeks.
3. Discussed LRAUV status
  - a. Daphne tested this week
  - b. Tethys test next week (week of March 24). Jim B. says have to integrate the adcp before deployment.
    - i. If necessary go with daphne only for ECOHAB.
  - c. Ready to trailer the following week (week of March 31)
  - d. Daphne: Need to look at a data reception issue
4. Francisco - so far the water is quiet down in Southern Cal. John will look at remote sensing data to see what the trend predicts...
5. Need to put up the plan for fall, and work out what that means for staffing
6. Tracking float or tracer - have daphne be the float?
7. Tracking payload and sampler occupy the same bay in the LRAUV... So Daphne cannot be both a float and a sampler.
8. Sampler LRAUV tracking float, within 1 kilometer.
  - a. Mikai (sp?) availability for Fall campaign (sampling LRAUV)
9. Jim to write down and circulate the plan for fall 2014
  - a. Rhodamine flourometer on dorado
  - b. Gliders with rhodamine sensor
10. Monique: Meeting this afternoon about optics data
  - a. Including LISST
  - b. Field trial to understand capabilities of flow systems coming together. Systems are in the lab now.
11. Stoqs: John up to speed on loading ecohab data into stoqs, and capturing documentation
12. Comms on carson: 4g modem to be integrated as a flyaway system, with an antenna
13. Need to make a decision on neptus integration
  - a. Danelle and ODSS team to look at neptus license terms and report on if the terms are a issue for us to distribute our work
14. May 6 target for sample log use by Tim and Reiko

**CANON Logistics Meeting March 13, 2014**

Francisco Chavez  
Jim Bellingham

Yanwu Zhang  
Duane Edgington  
Kevin Gomes  
Mike McCann  
Danelle Cline  
John Ryan  
Monique Messié  
Paul McGill  
Brian Kieft  
Thomas Hoover  
Tom O'Reilly  
Holly Bowers  
Chris Scholin  
Thom Maughan  
Mark Chaffey

**Next meeting Thursday March 20 9AM Harbor View.**

1. Wavegliders:
  - a. Tex returned to Liquid Robotics - not available for ECOHAB
  - b. Tiny being prepared for ECOHAB
    - i. Test deployment week of March 13 or 14, 2014
    - ii. Ecopuck plus Hotspot package
      - i. no CTD
      - ii. clamp on a self-contained CTD (no telemetry)?
  - c. use case - use Hotspot to get high-res (no heavily decimated) LRAUV data
    - i. use for decision on when to fire ESP
  - d. Need to discuss priority of waveglider in Southern Cal for ECOHAB vs effort to complete waveglider outfitting
  - e. [Waveglider Status from Thom Maughan](#) May 12, 2014
2. LRAUV:
  - a. daphne to run the box. Ready.
    - i. add 3G modem to daphne to enable high res data return without hotspot in Southern Cal ECOHAB?
      - i. high res data used to steer the ship to locations of interest, and for decision of when to fire ESP sampling
  - b. tethys to run transect - have 3G cell modem
  - c. Action Item: talk off-line about staging plan for LRAUV
    - i. how to optimize response time and 2 week deployment window
    - ii. requires 3 days to deploy in Southern CA, and 3 days to recover
3. Floats: Paul
  - a. 2 AUE shipped to MBARI, and received
  - b. Paul has received them, and investigated their current capabilities and maturity
    - i. AUE's are demonstration vehicles, not ocean ready for science
      - i. drop weight not implemented
      - ii. not tested autonomously (always run tethered)
      - iii. not run with satellite data telemetry
  - c. mini-AUE being planned
    - i. next generation floats
    - ii. smaller
    - iii. passive acoustics only (to compute navigation history after recovery)
  - d. Francisco: discussing use of Mission Coastal Profiling Float for CANON
    - i. build 2 of them for fall CANON campaign?
    - ii. can hover
    - iii. Paul to get detailed status from Gene and Wayne
    - iv. track with waveglider? LRAUV? Dorado?
  - e. solo-II floats not yet purchased
  - f. could use LRAUV as hover vehicle in lieu of float...
  - g. Francisco: use case for marking a water mass
    - i. follow floats (frequently)
    - ii. follow tracers ( SF6/rhodamine) (infrequently)
4. STOQS:
  - a. John is going to do LRAUV data input to STOQS
    - i. off-line discussion needed on decimation vs interpolated data

- i. temporal binning instead?
  - ii. John did a test STOQS load with Mike to learn the procedures
- 5. Francisco: Axiom to visit after noon, April 15
- 6. Neptus: Danelle trip to Porto during May campaign is canceled
  - a. Godin to do (backend) Neptus integration into ODSS
    - i. Joao reports that Neptus tool chain is now all open source
      - i. <http://whale.fe.up.pt/neptus/>
      - ii. <https://github.com/LSTS/neptus>
- 7. Monique: Jim/Monique. bring group together to discuss optical data
  - a. Danelle, Monique, Francisco met to discuss optical data
    - i. need to convene larger group. Larger meeting planned for Thursday March 20.
  - b. Collaboration focusing on Sept 2012
  - c. John: correlated LISST data with chlorophyll signal?
    - i. looking for data set that enables ground truth
    - ii. spring 2013 dataset may be the best to investigate this
  - d. drives building classifiers, and ultimately autonomous decision making (eg when to sample)
- 8. Kevin: ODSS
  - a. updated sampler form. See task list for sample screen shots and CSV file  
<https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
    - i. met with Reiko and Tim P. to review
    - ii. Kevin is retooling based on Tim/Reiko input
    - iii. Francisco: use exactly the same names that are in used in BOG to simplify integration and understanding
      - i. Objective of sample Form: track what samples were taken and where they are (contact person), for all collaborators

#### **CANON Logistics Meeting March 6, 2014**

Francisco Chavez  
 Jim Bellingham  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 John Ryan  
 Monique Messié  
 Paul McGill  
 Brian Kieft  
 Thomas Hoover  
 Tom O'Reilly  
 Danelle Cline  
 Holly Bowers  
 Chris Scholin  
 Thom Maughan  
 Mark Chaffey

**Next meeting Thursday March 13 9AM Harbor View.**

- 1. Francisco: Fall 2014: Sanctuary: Approved Dye Release Plan as part of permit
- 2. Wavegliders:
  - a. Tex returned to Liquid Robotics - not available for ECOHAB
  - b. Tiny being prepared for ECOHAB
    - i. Test deployment week of March 10, 2014
  - ii. Ecopuck plus Hotspot package
    - i. no CTD
    - ii. clamp on a self-contained CTD (no telemetry)?
  - c. use case - use Hotspot to get high-res (no heavily decimated) LRAUV data
    - i. use for decision on when to fire ESP
- 3. LRAUV:
  - a. daphne to run the box. Ready.
  - b. tethys to run transect - have 3G cell modem
  - c. Action Item: talk off-line about staging plan for LRAUV
    - i. how to optimize response time and 2 week deployment window
- 4. STOQS:



- a. John is going to do LRAUV data input to STOQS
    - i. off-line discussion needed on decimation vs interpolated data
    - i. temporal binning instead?
- 5. Francisco: Axiom to visit after noon, April 15
- 6. Neptus: Portal group would like Danelle to visit to support campaign in May
  - a. Godin to do (backend) Neptus integration into ODSS
- 7. Monique: Jim/Monique. bring group together to discuss optical data
- 8. Kevin: ODSS
  - a. updated sampler form. See task list for sample screen shots and CSV file  
<https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
    - i. schedule discussion with Reiko and Tim P. to review
  - b. Action item: have discussion on ODSS for Porto May campaign. Ready?

#### **CANON Logistics Meeting February 20, 2014**

Francisco Chavez  
~~Jim Bellingham~~  
 Duane Edgington  
 Kevin Gomes  
~~Mike McCann~~  
 John Ryan  
 Monique Messié  
 Paul McGill  
 Brian Kieft  
 Tom O'Reilly  
 Danelle Cline  
~~Holly Bowers~~  
 Chris Scholin  
 Thom Maughan

**No meeting next week, Ocean Sciences.**

- 1. Francisco reviewed the last meeting discussions and activities for John, Thom, Paul:
  - a. Waveglider priorities: Fall is the priority.
- 2. Showed movie from STOQS and plots from Fall experiments, to be shown at Ocean Sciences meeting next week:
  - a. [https://odss.mbari.org/data/canon/2013\\_Sep/Products/AUV\\_Gliders/stoqs\\_september2013\\_tethys\\_daphne\\_slocums\\_FI\\_vs\\_bb\\_red.m4v](https://odss.mbari.org/data/canon/2013_Sep/Products/AUV_Gliders/stoqs_september2013_tethys_daphne_slocums_FI_vs_bb_red.m4v)
  - b. [http://www.mbari.org/bog/CN/canon2013\\_bb\\_chl\\_reg4.htm](http://www.mbari.org/bog/CN/canon2013_bb_chl_reg4.htm)
- 3. Paul: no AUE (autonomous underwater explorer) float received yet at MBARI
  - a. Francisco: SOLO-II 2014 plan: purchase SOLO-II floats <http://www.mrvsys.com/products-and-services/item/solo-ii>
- 4. John: ECOHAB Spring
  - a. discussing logistics with DMO (Dorado, gulper)
    - i. 20 guplers on Dorado is the plan
  - b. Francisco: planning a Monterey Bay evaluation of a number of plankton imagers and flow cytometers
    - i. either week of April 2, before ECOHAB, using the Carson
    - ii. or week of April 22, using Fulmar
      - i. the advantage of the Carson is that the pumping system is in place and stable.
      - ii. The disadvantage of the Carson is the timing just before the cruise, requiring swapping LISST-Holo etc off & then back onto Dorado
  - c. Drifters for Ecohab - need 5. Francisco to coordinate with Chris Wahl
  - d. Thom: plan for Notice to Marineers
    - i. John: need to follow up. Probably handled by Orange County Sanitation crew as part of ESP deployment
- 5. Francisco: Science Team activity
  - a. looking at 2011 and 2013 campaign data
  - b. looking at hotspots of activity - thermoclines?
  - c. Fall 2014 - use tracers? (sanctuary to sign off on this)
    - i. use Daphne new LRAUV sampler, firing around patch
- 6. Francisco: Sample Form

- a. see mockup: <https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
- b. Reiko to work with Kevin to ensure correct metadata is captured for BOG and more
- 7. Duane: update Platforms tasks on tracking sheet as required:
  - a. <https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
    - i. note the Platform task area at the bottom of the page...

#### **CANON Logistics Meeting February 13, 2014**

Francisco Chavez  
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 Thom Maughan

1. Duane: showed CANON Engineering and Logistics Task list
  - a. <https://oceana.mbari.org/confluence/display/CANON/CANON+Engineering+and+Logistics+Tasks>
  - b. Discussed ODSS "Command and Control (Neptus integration)" and task "Planning - draw on the map"
    - i. Two separate tools, or one integrated tool?
      - i. Neptus focus is on operations support
      - ii. ODSS focus is on science support
  - c. Discussed STOQS "Overview Document" task
    - i. feedback: having a simple document, maybe also a simple You Tube demo (with ITD help), is important for outside engagement
      - i. Jim B. volunteered to make a first cut 1 page simple overview "how to" document draft
      - ii. Then pass document to Reiko M.?
2. Mike: STOQS db user group met.
3. Brian: SV2 as part of Spring ECOHAB?
  - a. for use as hotspot
  - b. Francisco: science instruments on waveglider nice to have for ECOHAB, not essential
  - c. what happens if WaveGlider not part of Spring Ecohab?
    - i. SV3 integration delayed
  - d. Jim: Fall experiment is the focus for Waveglider / LRAUV integration (SV3). Critical for Fall.
  - e. Use 3G comms of LRAUV (one of them) during Spring ECOHAB for Hi-Res data?
  - f. ODSS effort for Spring Ecohab:
    - i. input LRAUV data into ODSS after landed to shore by hotspot
    - ii. input LRAUV data into ODSS if brought to ship or shore by 3G
      - i. what is the effort to do that? Duane to find out and report.
4. Francisco (after formal meeting broke up due to other commitments): clarify Data archive plan
  - a. need well understood Data Archive for all data sources, with index collected at one place
  - b. need source file control for all software that generates products
  - c. need source file control for software that generates NetCDF for STOQS ingest
    - i. including CenCOOS processing and non-MBARI processing
  - d. need well understood archive for data products and derived data (netCDF, etc).

#### **CANON Logistics Meeting February 6, 2014**

Francisco Chavez  
 Jim Bellingham  
 Duane Edgington  
 Kevin Gomes

Mike McCann  
John Ryan  
Monique Messié  
Paul McGill  
Brian Kieft  
Danelle Cline  
Holly Bowers  
Chris Scholin  
Thom Maughan

1. Floats: McGill / Chavez
  - a. AUE (autonomous underwater explorer) plan to be shipped this week. Designed by same engineer that designed original Ken Smith Rover <http://jaffeweb.ucsd.edu/node/81>
  - b. Plan: After evaluating the units, discuss with Francisco how they could be incorporated into CANON program
    - i. Can they be tracked by waveglider?
    - ii. What can we do with them?
  - c. SOLO-II 2014 plan: purchase SOLO-II floats <http://www.mrvsys.com/products-and-services/item/solo-ii>
    - i. maybe use them with AUE's
  - d. What would be a Lagrangian flow science scenario?
    - i. Hovering mode?
    - ii. Comms? (with waveglider, AUVs, etc.)
  - e. McGill: Also available, mini-AUE
    - i. Acoustic receiver only. For post deployment reconstruction of navigation.
2. LST
  - a. Funds allocated to rebuild them
3. ECOHAB: Ryan
  - a. No specific updates
  - b. Kieft: Waveglider - hot spot to be ready for April 1 launch off of Narissa
    - i. Narissa - Orange County Sanitation Boat, ship of opportunity for launch/recovery
    - ii. Integration with LRAUV - software ~done, mechanical integration and test to be done.
    - iii. Plan dress rehearsal at MBARI 2 weeks before ECOHAB
    - iv. Plan 3G modem comms - 100x more data, cheaper than Iridium
      - i. During ECOHAB, have option for 3G direct comms from AUV, plus available Hot spot if 3G insufficient
4. LRAUV: Bellingham
  - a. Plan: 2 weeks of deployment during ECOHAB, in a one month window.
    - i. Ready to deploy when ESP goes in the water
    - ii. Adaptive deployment?
      - i. Deploy when something "interesting" is detected? (upwelling pulse)
      - ii. Predict upwelling based on regional winds?
    - iii. Need to have staff available during deployment for emergency recovery due to intensive shipping traffic in the area.
5. ODSS: Gomes
  - a. Working on Sample stuff. Ready to show progress.
    - i. Francisco: this important.
    - ii. Jason Smith putting together 2012 sample info. Test case?
  - b. Danelle is working on layers. Gliders.
6. Porto Tool and LRAUV data products
  - a. Jim: Mike Godin is looking at integration into Neptus of LRAUV and other platforms
    - i. command, control interface
  - b. Kevin: message from Kanna Rajan inviting interaction with Porto campaign
  - c. Brian: would it be valuable to be able to vary data transmission during a mission?
    - i. Jim: capability needed for fault response and diagnosis remotely
    - ii. Francisco: products are useful, but need to be able to tell how reliable the products are, and to be able to navigate the many products to deduce events of interest
      - i. Jim: it is a whole project to control and understand data decimation
      - ii. Kevin/Monique: it is useful to integrate LRAUV products into ODSS catalog, especially "most recent products"
7. STOQS data flow:
  - a. Francisco: Automate load?
    - i. Mike: challenging to automate load into STOQS. Some steps require human intervention (such as building a new database)

- ii. Francisco: Axiom - vendor who built CENCOOS portal <http://www.axiomalaska.com/> could have useful capability
- b. LISST-HOLO: ready to data products, such as particle size distribution, into STOQS
  - i. Danelle: LISST-HOLO data processing in place, to process 1000 volume images/hour
  - ii. user interface available, accessible external to MBARI
  - iii. think about a STOQS loader?
- c. Francisco: flow cytometer folks have developed clustering routines (in R). Have we envisioned adding that kind of capability on top of STOQS?
  - i. Mike: yes, in Python, using Python libraries with functionality equivalent to R.
  - ii. Envision that the analysis will be accessed via programmatic call to STOQS database, not in the STOQS GUI.
- 8. Francisco: Science team meeting this morning. Working on scenarios that might be illuminating to engineering and logistics team.
- 9. HIPP: no report

Next meeting February 13, and then February 20.

No meeting during week of OS (Feb 24 - Feb 27).

#### **CANON Logistics Meeting January 23, 2014**

Francisco Chavez  
 Jim Bellingham  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 John Ryan  
 Monique Messié  
 Paul McGill  
 Holly Bowers  
 Chris Scholin  
 Thom Maughan

1. Francisco
  - a. **No meeting next week Jan 30!**
2. John
  - a. EcoHAB review meeting held Jan 21
    - i. Planning for Spring 2014
    - ii. Review of Spring 2013
    - iii. Planning tool
    - iv. Overview from NOAA
  - b. LRAUV for EcoHAB 2014?
    - i. Jim Bellingham is mapping out logistics plan for 2014; not clear yet what assets available for Southern California campaign. Expect status/plan update in a couple of weeks.
    - ii. Hotspot available? New system is getting field test Feb 4.
    - iii. Integration of LRAUV and Hotspot planned for March
      - i. Thom to enter Hotspot and Wave Glider schedule in the ODSS calendar tool
3. Francisco
  - a. Science team thinking of using 9/2012 campaign as test case. Lots going on in that field campaign.
    - i. High priority to be able to track samples and to enter/display history of samples
      - i. correlated with the contextual data (depth, sensor data, etc)
    - ii. Discussed capabilities - need to make effort a priority early in the year.
4. Kevin
  - a. ODSS Authorization/authentication
    - i. Proposal is to enable login-in through google/facebook username/password
    - ii. Pop up data policy (ala AOSN) and require acceptance (once) to get access to data
5. Francisco
  - a. ODSS Integration with Porto tool (Neptus)?
    - i. Kevin: plan bridges between ODSS and Neptus, but not full integration, because that would be hard, and the tools have different ambitions. Neptus is a more operational tool; ODSS is a more science query tool.
6. Francisco
  - a. STOQS plan.

- i. Dorota Kolber and John Ryan are almost ready with LISST-100 Matlab processing code that can be "production-ized"
  - ii. LISST-HOLO data, once processed, can also be loaded into STOQS
  - iii. The August 2013 SIMZ data [http://kraken.shore.mbari.org/canon/stoqs\\_simz\\_aug2013/query/](http://kraken.shore.mbari.org/canon/stoqs_simz_aug2013/query/) will prove to be a good data set for ground-truthing spectral/backscatter data with microscopic and molecular observations
- 7. Francisco
  - a. LISST-Holo processing.
    - i. Danelle is working on setting up VM's with IS.
    - ii. Two datasets are set up as top priority. August 2012 dataset.
      - i. John: tuned research tool settings for optimal analysis of Monterey Bay data.
      - ii. Currently, optimal sampling is at 1Hz, and deal with periodic pauses in data sampling while system flushes its buffer. To eliminate those pauses, would need to pull directly off the LISST-Holo instrument via ethernet, and store it ourselves. Currently, no plan to do that integration with Dorado AUV system.
- 8. Spring: Focus on supporting EcoHAB goals
- 9. Fall: developing plan within science-focus team

### **CANON Logistics Meeting January 16, 2014**

Francisco Chavez  
 Jim Bellingham  
 Duane Edgington  
 Kevin Gomes  
 Mike McCann  
 John Ryan  
 Monique Messié  
 Paul McGill  
 Holly Bowers  
 Chris Scholin

- 1. Francisco
  - a. This is the beginning of regular weekly meetings focused on planning and implementation of CANON engineering and field activities
  - b. 9AM Thursday. First meeting in Harbor View conference room.
- 2. Activities and responsibilities enumerated below
  - a. Each lead person will develop and document a plan
- Floats: Paul McGill
  - Jules Jaffe float transfer to MBARI. Feasibility work in 2014
  - Assess available floats and their application to CANON
- Waveglider/Hotspot: Brian Kieft / Tom O'Reilly
  - Data flow using Hotspot: LRAUV -> Hotspot -> MBARI -> Carson?
- 2014 Fall campaign: Francisco Chavez and Jim Bellingham
- ODSS: Kevin Gomes and Duane Edgington
  - ODSS development high level plan:
    - for Fall: Data catalog
      - pipeline to load data into STOQS
      - pipeline to generate layers
    - for Spring: Sample Form Repo
    - for Spring: Calendar resource tool
    - for Fall: Planning - Draw on the map
    - for Fall: Collaboration - expand observation log functionality
    - for Fall: Command and Control
      - Mike Godin available under contract?
    - Axiom - vendor who built CENCOOS portal <http://www.axiomalaska.com/>
      - <http://data.cencoos.org>
      - will visit us in mid-April, with an eye toward collaboration
      - Axiom focus: data intensive
- STOQS/data analysis: Mike McCann / Monique Messié
  - STOQS: see google code site for issue list
    - <http://code.google.com/p/stoqs/issues/list>
    - ~10 outstanding issues/enhancements

- Mike McCann is looking for input on that list
- HIPP (High Performance Processing): Thom Maughan
- 2014 Spring campaign: John Ryan
  1. Ecohab meeting Tuesday Jan 21 at MBARI
  2. ECOHAB schedule
    - ESP April 1 - 30
    - Carson April 12 - 14, 17 - 19
      - a. Carson transits to Southern California leaving Tuesday April 10
      - b. Carson is available at MBARI dock for software install, testing on:
        - Feb 21 - 28
        - March 7
        - March 21
        - March 28
        - April 4
        - April 7 - 8
    - LRAUV ?
      - Cover the Northern shelf?
      - Focus on ESP locations? (for process studies)
    - Waveglider ?
      - Hotspot
    - Yellowfin April 2, 7, 25 and 30
    - Drifters? Which and how many?
    - Layers & Model output?
    - John to develop scenarios for 1 week, or 2 week, LRAUV & waveglider deployment during Spring CANON

## Platform Timeline Editor Spatial Component

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This page last changed on May 19, 2015 by [carueda](#).

- Prototype version **0.7.3** - <http://odss.mbari.org/odss/>  
(the version label is shown in the upper right corner of the planning section)

This page briefly describes a prototype version of the planning component with the ability to associate spatial information.

These notes initially targeted at testers that can provide feedback regarding the new features. We are mostly interested in general aspects to incorporate usable planning definitions, including spatial information that could be exchanged with other teams and relevant tools for purposes of review, refinement, and execution.

We have discussed some of these aspects and demoed our initial prototype in recent CANON meetings. Please see [ODSS planning slides 2015-03-26](#).

## Change Log

- 0.7.3: (2015-05-19)
  - several usability improvements: better token tooltips; added tooltips on geometries; token/geometry selection can now be done on the map itself; bidirectional visual sync between timeline and map.
  - escape key clears token selection
  - map resized according to window size, with a minimum height (500px)
  - reduce timeline item padding, mainly to save vertical estate
- 0.7.2: (2015-05-10)
  - some fixes
- 0.7.1:
  - geometry can now be defined for brand new item in the timeline
  - removal of token in timeline also removes associated geometry
  - geometry modification now also triggers a change of the "modified" status of token for purposes of saving
- 0.7.0: initial prototype

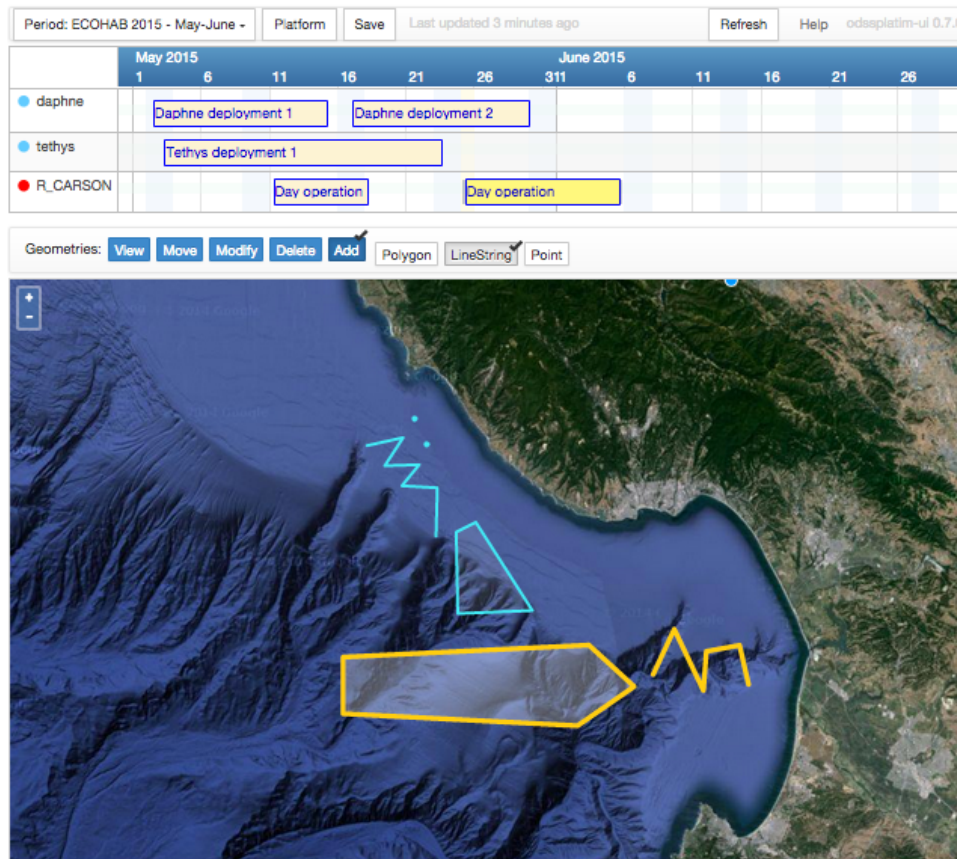
## Interacting with the planning tool

(**note:** not all of the latest changes may be accurately reflected below.)

For the temporal definitions please see the instructions at [ODSS Platform Timeline Editor](#).

Complementing the upper section where temporal definitions are entered, the new version also includes a map to associate geometries to the timeline tokens. The interface looks like this:





At this point we are using "geometry" as the central element to capture the spatial information for the planning. Later on we will be looking into incorporating other relevant elements to facilitate the capture of such information. By "geometry" we refer to the set of (2D) geo-spatial polygons, line strings, and points associated with a token in the timeline.

As shown in this brief [screencast](#):

- Hovering the pointer over a token in the timeline also highlights the corresponding geometry on the map
- Selecting tokens on the timeline also selects all associated geometries on the map. Individual token selection is done via a simple click on it; for multiple selection, long press on a token to add it to the current selection.
- Geometry editing functions, however, are only enabled when a single token is selected
- With one token selected, one can:
  - Move its individual geometry components. Note: one component can be moved at a time.
  - Modify the geometry. Depending on the specific type of component:
    - Drag a vertex to change its position
    - Click somewhere over a line segment to add a vertex
    - Shift-click to remove a vertex
  - Delete individual geometry components:
    - Shift-click the specific component

## Future development

- A goal of the ODSS Planning component is to support the overall planning of experiments/campaigns with the ability to assign platforms to particular activities/missions within a spatio-temporal frame.
- Once a plan is defined (and perhaps iteratively refined during execution), it can be combined with other displayed elements within the Situational Awareness tab.
- Similarly, elements from Situation Awareness can be included in the Planning for context



- In general, the tool is intended to provide export/import capabilities to facilitate the exchange of plan specifications with other tools, in particular, as a baseline for refinement and execution by platform teams. Refined plans can then be imported so they are combined with the other data elements in the ODSS.
- (other ideas?)

## **Some specific possible improvements**

### **Conceptual model**

Our initial conceptual model is intentionally simple to serve as a basis for discussion. For example, at the moment we have a 1-to-1 token-geometry relationship: only one geometry can be assigned to a given timeline token (that is, to a given single platform in a specific time span).

Possible aspects for refinement of the model:

- Allow to associate multiple tokens to a single geometry? Specific examples please?

### **Operations**

(Suggestions for actual mechanism/sequence of operations are welcome.)

- Selection from predefined path templates
- Re-use of elements from previous plans
- Ability to move all geometry components associated to a token in a single drag operation
- Waypoint table / ability to manually enter or adjust geometry coordinates
- Expose the actual geometry coordinates

## **Known bugs**

In general, we are for now more interested in improving the model and the overall sequence of actions, but of course please let us also know of any glitches, specially if they are affecting your testing.