

Engineering Weekly Report 4/6/2023 - 4/13/2023

Executive Council Notes

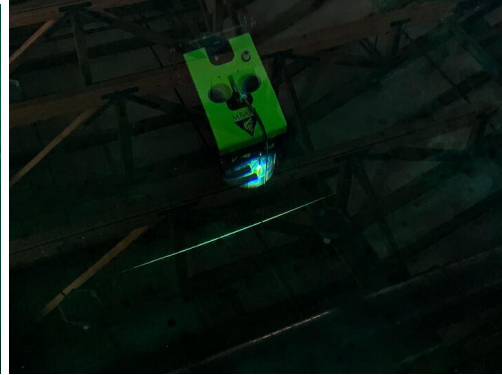
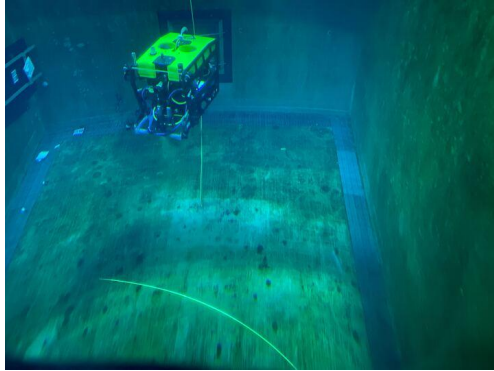
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Individual Activities

- Michael Anderson
- Kevin Barnard
 - 902204 - Scalable Robotics
 - Working on calibrating new stereo cameras
 - DQ2209 - Ocean AI 2
 - Supporting work for QSCP service
- Francois Cazenave
 - 901405 - PowerBuoy Development
 - Preparing buoy for deployment
 - 902106 - Niobicon-Based AUV Docking Development
 - Buoy assembly
 - Charge rod fabrication
 - 902306 - SINKER
 - Met with Paul and Enoch to discuss mechanical design
 - Overhead
 - Took one week of vacation
 - Helped Enoch get settled
- Danelle Cline
 - Out of Office
 - out-of-office vacation April 3-7th
- Duane Edgington
 - 901009 - CANON
 - Team meeting April 6.
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Working session with Danelle April 11.
 - Exploring human in the loop active learning tools
 - Experiments in progress on “top 20” midwater concepts
 - Out of Office
 - Working from home while recovering from sick leave
- Jon Erickson
- Kevin Gomes
 - 200105 - Core Navigation Data - MDUC
 - Trying to get some traction back on this by restarting the LCM message bridging and logger transition to single LCM type
 - 901009 - CANON
 - Planning meeting
 - Overhead
 - Met with IP related group

- Working on Python script to inventory code repositories and identify licenses and copyrights on CVS, subversion, GitHub and BitBucket repositories.
 - Presentation preparation for ODSS overview for Synchro meeting on Tuesday (4/11)
 - Presented and participated in the Synchro meeting on Tuesday
 - Working with Neil on scoping the addition of object storage to Titan
 - Talking with AWS (and Heidi) about presenting at event
- Out of Office
 - Mar 30, 31: Vacation
 - Aug 28-Sep 12: Vacation
- Andy Hamilton
- Kent Headley
 - Out of Office
 - vacation (4/28 - 5/1)
- Rich Henthorn
 - 300078 - DMO Divisional Support - AUV
 - Simulated test mission
 - 705102 - Open Wave-E Control System
 - Integrating logger for simulator
 - 901405 - PowerBuoy Development
 - Deployment prep
 - 902305 - Event Detection using the Sedimentation Event Sensor
 - Preparations for MARS wet node simulator testing
 - Acquire and setup next-gen control board
 - Overhead
 - Rec-com items
 - Out of Office
 - April 12 - illness
 - May 8: SES deployment on MARS node
 - June 1 - 9: Vacation
 - June 29 - July 10: Vacation
 - July 24 - Aug 3: Vacation, WFH
- Brett Hobson
- Irene Hu
- Scott Jensen
 - 706008 - READI-net
 - Making progress on a few fronts.
 - Puck blanks in and a few unload cycles indicate the volume is not that terrible!
 - Transferred clamp to complete design.
 - Progressed on documenting basic flow of instrument.
 - Located solenoid driver that might provide a nice complete solution.
 - 771131 - Great Lakes PCM/HAB
 - Supported integration of ESP into SeaTrac
 - 901405 - PowerBuoy Development
 - Working on BMS prototype. The chip talks!
 - Overhead
 - More E-tech hiring
- Brent Jones
- Chad Kecy
- Brian Kieft
- Denis Klimov

- Eric Martin
 - 901101 - Seafloor Mapping
 - Cruise prep, lab cleanup, need to get housing closed
 - 901206 - Coastal Profiling Float
 - More Testing boggled an SD card, had to replace and will continue testing.
 - 901405 - PowerBuoy Development
 - Repair of the yellow cable, checking out assets
 - Radar data collection tests
 - 902012 - Telepresence
 - Paper accepted with revisions! Meeting this week to discuss feedback and next steps.
 - 902204 - Scalable Robotics
 - Final prep for MiniROV expeditions, testing in tank to finalize software stack.



- Overhead
 - SEESC Position committee
 - SOVA Meeting Planning
- Out of Office
 - Impacted by minimum week for kids, working ½ days M-W, will work this Friday.w
- Thom Maughan
 - 300083 - DMO Divisional Support - LRAUV
 - Meetings with Quinn regarding LRAUV to battery backplane software. We have a plan
 - 2 battery backplane boards have been received. To aid software development for i2c mux and multidrop rs232 protocol a small dev board was designed and fabricated.
 - Battery charger boards have been picked up at Indtec
 - Installed MCUexpresso
 - 901009 - CANON
 - Edna1 and edna2 servers are online and have accounts setup via IS. Working plans to gather user requirements for software setup. Had a brief discussion with Brian Schlinning about providing requirements review and feedback.
 - Organized edna lunch box and parts.
 - JHU has received funding, expecting activity to startup on LRAUV in-situ edna
 - 901805 - Coastal Biogeochemical Sensing Program
 - Code composer studio v12 eval on new laptop. No issues found, however git integration is not yet tested.
 - 902004 - Planktivore
 - Weekly report has been missed for several weeks - here's the backlog.
 - Aaron ordered 600m of line for Paragon EcoHAB deployment.
 - Aaron is designing and fabricating bracket for Noot battery pack.
 - Jose and James have provided first class and timely support for electronics assembly. Hand building boards with subminiature parts designed for automated assembly is

- challenging! Jose has approval to purchase a reflow oven which will be great moving forward.
- Denis has a reflow setup and was able to resolve our solder challenges in very timely fashion.
 - Camera controller is firing the strobes but we've not yet measured light/electrical output. The new v2.4 strobe energy board was delayed by the vendor and we are working thru how to use v2.3. Looks like best path is to modify the microscope endcap.
 - Denis and Thom attempted to assemble the microscope chassis into the housings, mechanical issues were found and we have a plan to address those on Mon/Tues modulo multi-tasking on other projects. The interference problems will require some minor rework of the optical chassis.
 - Brent / Paul successfully tested XavierNX software with the LRAUV and lcm.
 - Paul has a prelim algorithm for automated detection of pseudo-nitzchia
 - Paul is working on housing assembly and providing valuable assistance with mechanical, electrical, optics and software.
 - EcoHAB Paragon PN (pseudo-nit) sampling is our first deployment goal. 600m of line is inbound expected friday, Aaron has design and is fabricating bracketry and protective measures.
 - Optical chassis fit issues are on track to be resolved in the next day or so with lower profile screws and some of Denis's craftsmanship. Once we have the chassis installed, we'll be able to machine the microscope endcaps for the v2.3 energy boards. Pressure testing the machined endcaps is tbd, and dependent on Paragon access. Jon E is on vacation and we'll assess the risk next week.
 - Strobe pulse current measurement is not done yet but hopefully today as Thom is taking vacation Wed - Sun in Dallas...
 - Camera controller electronics is tested.
 - Software for the camera controller has some work but mostly it's removal of the board bringup code.
 - LRAUV Galene integration is being worked and the syntactic foam status will be updated after Jon is back.
 - Final assembly is moving forward, with issues popping up and thankfully being readily addressed by a capable team. There is a rework needed on the Camera Controller to enable the Console rs232 port, but other than that, it's ready for integration.
 - Jon is back from vacation and has the machined syntactic foam and is working the 3D printed 'foil' that goes on the end of the microscope tubes.
 - EcoHAB Paragon PN sampling readiness this week is our goal.
 - Aaron has received 600m of line and is working on the spool.
 - Aaron has designed and is finishing up the Noot battery bracket. Note: we do not have a pressure transducer for depth measurement at this time.
 - Brent and Paul have the XavierNX software setup and tested and Brent is replicating for use on Fluum and spare. XavierNX hardware is painfully expensive and difficult to find.
 - Paul finished Camera Controller board testing and it was wired up to the bulkhead connectors and XavierNX and running all weekend (burnin).
 - Denis, Paul and Jon worked thru mechanical fit issues and as of Monday these are all fixed thru the miracle of 3D printing and a touch of machining on the endcap.
 - Working on integrating the strobe/camera integration with Camera Controller and XavierNX, Thom, Denis and Paul found an electrical issue (VarVo at 11.3v is hitting short

circuit protection at startup), the fix is to increase the value of a current limiting resistor. These are on order and due to arrive on Wed.

- Jon is working on second rev of the 3D printed hydro foil.
- Fluum progress has been halted and final assembly will happen after we finish priority tasks. We will operate Plantivore v2 at 2usec pulse for first test off Paragon
- Planktivore is assembled (11 Apr 2023 at 7:12pm) and is running overnight 'soak' tests. 11 Apr test stopped, but likely due to loose cable and/or windows update.
- Wed 12 Apr 6:07pm test is running on Noot battery supply. Minor mechanical alignment issue, but images are looking good.
- First deployment will be off Paragon, hopefully by Apr 14 if all goes well.

- Overhead

- Weekly ISFETology / techfest

- Out of Office

- End of April camping
- Vacation June 26 - July 12

- Mike McCann

- 200105 - Core Navigation Data - MDUC

- Checking with Lonny on monitoring Linda's progress – nightly emdb load jobs are working fine

- 300083 - DMO Divisional Support - LRAUV

- Supporting ECOHAB by ensuring data is flowing into [stogs_ecohab_april2023](#)

- 901910 - Plankton Taxonomic Groups from AUVs

- Evaluating auv-python generated proxies with datashader plots Jupyter Notebooks

- Overhead

- Met with capstone students and Tom O'Reilly about building MB-System with cmake
- Submitted 2 more capstone projects for CSUMB online students

- Rob McEwen

- 300078 - DMO Divisional Support - AUV

- Debugging large pitch oscillation that occurred on a steep hill on Dave's EMARK_vents mission.
- Received the map from Dave, cut it up into .grd tiles, and created octree tiles.
- The simulator then reproduced the oscillation quite accurately.
- Devised and coded a fix. Added a new method for computing altitude from the Dvl beams. The algorithm fits a plane to the four beams with least squares, then takes the normal to the plane for altitude.
- The simulator then verified that this eliminates the oscillation on that mission.

- Paul McGill

- Enoch Nicholson

- Tom O'Reilly

- 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach

- Trinity UAV flight with 'RedEdge' 10-band multispectral camera payload, flew over MLML aquaculture tanks at 60 meters altitude to test near-infrared response to chlorophyll. This false-color image consists of visible red and green bands plus near-IR band. Chlorophyll

appears red. Most of the water-filled aquaculture tanks contain living alga.



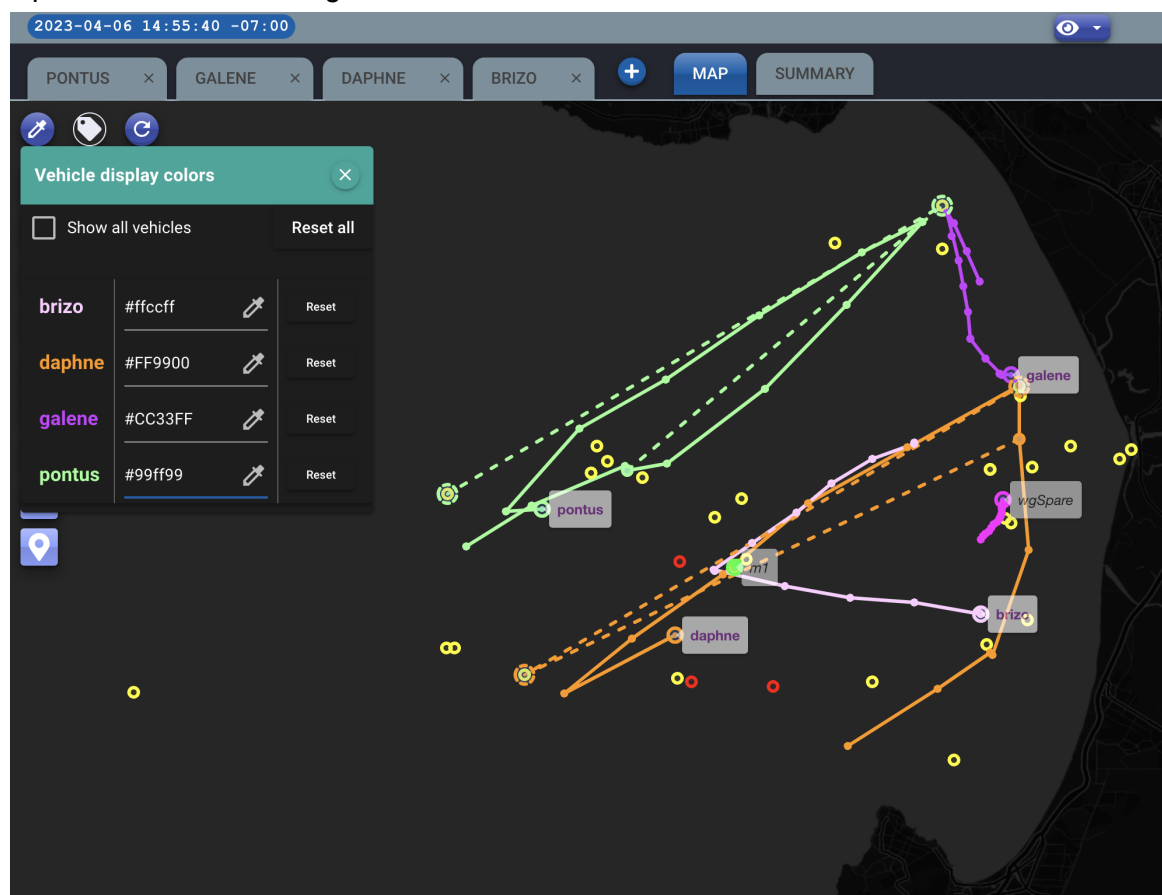
- UAV flight with Sony RGB camera payload. We stationed a small boat with Secchi disk suspended over the rail at 0.5 meters depth while UAV flew overhead at 60 meters altitude to assess underwater target visibility in somewhat turbid conditions (measured Secchi depth = 1

meter). Target at 0.5 meter depth is easily visible from UAV at 60 meters altitude.



- Overhead
 - Working with team on Oceans 2023 paper 'Ocean-based carbon dioxide removal: Role of standards and best practices'
- Mike Risi
 - Out of Office
 - Out of office on Fridays
- Paul Roberts
 - 901809 - Deep Sea Bioinspiration
 - migrating DeepSTARia to new yolov5 deepstream model
 - 902001 - Ventata 4k camera
 - testing new optical corrector
 - 902004 - Planktivore
 - V2 assembly and testing for EcoHAB
 - 902204 - Scalable Robotics
 - Mola Flat port tank testing
 - 950 m laser housing
 - 902306 - SINKER
 - camera testing and lab setup
 - dev meeting
- Brent Roman
 - 708165 - MERHAB19:ESP
 - Helping NWFSC with prepare for upcoming deployments of their 2 x 2G ESPs
 - 901205 - ESP SURF Center

- Supporting ESPs in ECOHAB
- Configured 3G ESP for integration into SeaTrac
- Working with GLERL to remotely access the SeaTrac Autonomous Surface Vessel
 - Battery failure on SeaTrac is complicating this
 - Installed SeaTrac's windows only GUI under WINE
- Testing and remotely updating GLERL's 3 x 2G ESPs to reconfigure for USB cell modems
- Created a new variant of "daily" scheduler that supports time-limited sampling
 - Terminates sampling early if the next sampling time scheduled will otherwise be missed
- Carlos Rueda
 - 902101 - LRAUV Technology Development and Fleet Operations
 - TethysDash system: Changing build/release workflow so each component (backend, frontend, okeanids homepage) gets packaged in its own docker image. This new scheme offers a more flexible and streamlined release workflow (e.g., sometimes only one component, say, the UI, is updated, so no need to also rebuild/repackage the backend component along with it). Moving repos to GitHub toward a more uniform setup mechanism as with several of my other applications. Also, enabling continuous deployment for TethysDash (using [watchtower](#) as with the MXM system, but even more efficiently, that is, via explicit API request from the GitHub actions workflow, instead of by polling for updates from the server – see overhead bullet below).
 - Bug fix in the backend. (Issue noted on Dash4 – thanks Yanwu for reporting).
 - Dash4: By "popular demand," new LRAUV coloring feature so users can override the color reported from the tracking database:



- LRAUV UX: some slack/github exchanges.
- 902204 - Scalable Robotics
 - Completed and demoed initial webapp prototype, very well-received. Again, one more successful use of the amazing Quasar framework (and Vue3).
 - Delineating and starting 2nd iteration on the webapp prototype (thanks Giancarlo and Sebastián for the productive discussions).

- Overhead
 - IE meetings (technical focus).
 - Created this [watchtower-cd](#) repo, to consolidate a basic guide to setting up continuous deployment (CD) using Watchtower and GitHub Actions.
 - Refined my QDarkMode vue3/quasar2 component, so it not only switches dark mode on and off, but also handles an “auto” mode, which automatically synchronizes with the OS setting. Here’s in use in the [Okeanids homepage](#), which I recently updated in general:



- Out of Office
 - ~1 day this week: vacation (school spring break)
- Karen Salamy
 - 300057 - Mooring Maintenance
 - Monitoring the issues with the M1 microcat CTD data.
 - 902101 - LRAUV Technology Development and Fleet Operations
 - I have been focusing mainly this week on addressing implementation of tools and bug fixes on the LRAUV dash5.
 - Cleaned up the tethysadmin’s home directory of unneeded dash5 development folders for Carlos.
 - Out of Office
 - Now in the office 3 days/week M, T, Th..
- Brian Schlining
 - 500055 - VARS, M3/RS, DSG
 - Iron Mountain video imports
 - Closed out contract with Paul Rogers for [Sharktopoda](#) development.
 - 901618 - Pelagic-Benthic Coupling
 - Started scaffolding a dedicated image annotation application that integrates with VARS.
 - 902002 - FathomNet
 - The FathomNet server VM has been upgraded to 4CPU and 8GB RAM.
 - Added community features to the FathomNet API. (Find [observations](#) and [verifications](#) by users, List [badges](#) for a user)
 - Met with OVAI team to debug SQL issues in [fastapi-qcsp](#).
 - Tested and deployed new release of the [FathomNet web UI](#) (1.0.3)
 - 902304 - Piscivore Cam
 - Spun up a new model server with a fish detector at <http://perceptron.shore.mbari.org:8082/>
 - DQ2209 - Ocean AI 2
 - Met with OVAI team to present details about MBARI’s video annotation workflows.
 - Presented MBARI’s media and video asset management to Aurali Dade (NSF).
 - Overhead
 - Responded to IS’ request for info for a security audit for servers in MBARI’s DMZ.
 - Out of Office
 - Apr 12 - Apr 17 - Out of office
 - May 8 - 16 - Out of office

- Jul 28 - Aug 6 - Vacation
- Alana Sherman
 - 902208 - MiniROV Support
 - Calibrated heading sensor with help of the Compass lab
 - Spent a morning troubleshooting a fiber issue that left us without HD video
 - Tore down lab set up of topside electronics in prep for Fulmar mob on Thursday
 - Documented connections on topside for Fulmar mob
 - Lots of wrangling of help and scheduling between NOAA, the aquarium, and mbarians to get all the schedule logistics set for these three weeks of ship days
 - Overhead
 - Reread implementation plan section of the SR
 - Out of Office
 - Was on vacation last week
- George Stern