

Engineering Weekly Report 1/30 - 2/5

Executive Council Notes

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Individual Activities

- Francois Cazenave
 - 901405 - PowerBuoy Development
 - Working on assembly of PTO
 - Designing housing for laser distance sensor
 - Making modifications to the buoy
 - 901807 - Next Gen Acoustic Dorado
 - I attended the weekly meeting
 - I ordered a new guard for the transducers
 - 902000 - Multi-Spectral StealthCam
 - Working on LED housing.
- Mark Chaffey
 - 300082 - DMO Support - Wave Glider
 - Completing assembly of 2nd payload box.
 - Assembled antennas and submitted wiring to tech support.
 - 902001.99 - 4K ROV Camera Development
 - Much effort coordinating between optical engineer, DSP&L and Canon USA getting additional paraxial parameters to help the optical design work.
 - Built a detailed solid model of Canon lens from demo unit dimensions.
 - Optical engineer, DSP&L and MBARI committed to Canon lens and ordered.
 - Ordered Sony Remote Control Panel (RCP) for camera control.
 - Completed mature block diagram of the electrical system including telemetry and forwarded to operations for comments.
 - Started chassis design while waiting for the camera to arrive.
 - Overhead
 - Spending a few days on the external review presentations. Will have to spend a few more to make sure I'm ready if needed.
- Danelle Cline
 - 901502 - Passive Acoustic Sensing
 - Applied and was approved by AWS open data program to freely share acoustic data - all 95 TB!
 - Assisting student Daniel DeLeon with embedded TensorRT code project. Having success using Google Colab+GCP for this effort.
 - Was invited and joined the [OrcaSlack channel](#)
 - Testing Keras inference speed improvements
 - 901809 - Deep Sea Bioinspiration
 - Requested 2020 task list from K.Katija for allocated 240 hours
 - 901915 - Improving MBARI Data Impa
 - Meeting to discuss TimescaleDB and STOQS
 - 902005 - VARS Annotation Assistance

- Team is working towards benchmarking cost/performance of cloud compute and preparations for testing with new ML-aware video player
 - Meeting scheduled for February 12@2pm with video lab to brainstorm about the future use of machine learning for enhancing and augmenting video and image analysis at MBARI. Contact Lonny Lundsten if interested in joining.
 - Fixed bug in Tensorflow batch inference
 - Successful deployment of MLFlow in dockerized container in AWS in Cloud9
- Overhead
 - ACloudGuru training on CloudWatch logging with group members
- Duane Edgington
 - 901618 - Pelagic-Benthic Coupling
 - Paul has identified a [paper](#) on camera calibration for Dan and Duane to read
 - 901915 - Improving MBARI Data Impa
 - Team meeting
 - Training session on Logging and Monitoring in AWS
 - 902005 - VARS Annotation Assistance
 - Demonstrated serverless deployment of ML model for inference in AWS environment via [Chalis \(Lambda\)](#)
 - Weekly VAA working session Monday Feb 3
 - Continuing work on integration of MLflow into AWS
 - Working on draft schematic diagram of VAA components and dataflow
- Jon Erickson
 - 701145 - Penguin Hotspots
 - Waiting for approval from the Udel people of the preliminary design.
 - Waiting on a circuit board design to finish the interior chassis.
 - Lots of time tied up in drafting.
 - 800139 - EyeRIS
 - The Lens extension tube is in the shop.
 - 901217 - Chemical Sensor Program
 - Working on Tolerance stack Issues for th EquiTech Probe.
 - 901405 - PowerBuoy Development
 - Load Dump case it assembled - ready for paint or wiring.
 - Waiting for the anodizers to deliver the Gen_V7 parts.
- Kevin Gomes
 - 901205 - ESP SURF Center
 - Working on code to parse .out files in addition to .log files for Gulf of Mexico deployment. This is more work than I thought it would be because of some choices I made based on the idea the .log file was the sole source of information.
 - Enabled Waldo in the ESP portal
 - Disabled Gordon parsing in the portal
 - 901502 - Passive Acoustic Sensing
 - Starting to scope the migration of the backend Alexa skill code from NodeJS 8 to 10 as AWS is deprecating NodeJS 8 very soon.
 - 901915 - Improving MBARI Data Impa
 - Held project meeting to look over LRAUV data structures and how that maps to the data models used by TimescaleDB. We are evaluating TimescaleDB's applicability to very large time series data.
 - Looking into the possibility of uploading individual STOQS databases into single TimescaleDB as test.
 - Overhead

- Finishing up performance reviews
 - Slide changes and practicing for external review
 - Held lunchtime brown bag where we watched some talks on AWS CloudWatch logging and monitoring. Could be useful for centralized logging and monitoring.
- Out of Office
 - May 6-7: Vacation
- Andy Hamilton
- Kent Headley
 - 600034 - Control Tech - Rock
 - Preparing for dive day this Thu: wrote web-based configuration tool for terrain relative nav (TRN) application, which has a lot of options. Worked with Rob and Hans on software testing.
 - 901704.99 - 8 Camera Obs Lander
 - Distributed a documentation update
 - 901803 - Carbon Wave Glider Development
 - Starting to work on data handling plan
 - Overhead
 - Annual review wrap up
 - Misc admin
- Rich Henthorn
 - Out of Office
 - Thu Jan 30 - Wed Feb 5: Vacation, VPN access, PST
 - Mon Feb 24 - Thu Feb 27: Vacation, VPN access, PST
- Brett Hobson
- Scott Jensen
 - 901205 - ESP SURF Center
 - Preparation and packing for Gulf of Mexico deployment
 - 901405 - PowerBuoy Development
 - Waiting for parts to try and solve an over-current condition during bring up
 - 901805 - Coastal Biogeochemical Sensing
 - Layout beginning for MphOx
- Brent Jones
 - 901112 - Change in MB & CA Current
 - Prepped/Deployed/Flew/Recovered Daphne LRAUV in support of monthly MBTS run. Simulated and deployed new dedicated MBTS LRAUV mission.
 - 901502 - Passive Acoustic Sensing
 - Working on getting Sam Urmy's click detection software running in Julia. Sam is leaving so I will be taking over daily processing of Hydrophone.
 - 901800.98 - Bioacoustic Payload
 - Working with Pargett to get the pressure case finished. Parts are starting to flow in
 - 901805 - Coastal Biogeochemical Sensing
 - Beginning orders for parts needed to instal pH + DOX sensor on second NPS glider SN34
- Chad Keczy
- Brian Kieft
 - 708158 - DHS Y6
 - On Deployment at WHOI running test missions in Buzzards Bay prior to heading to N Maine for under ice. A delayed shipment and weather are causing delays for Maine but we hope to head up on Saturday.
 - Vehicle arrived in good shape and everyone here at WHOI is happy to have it on the E coast!

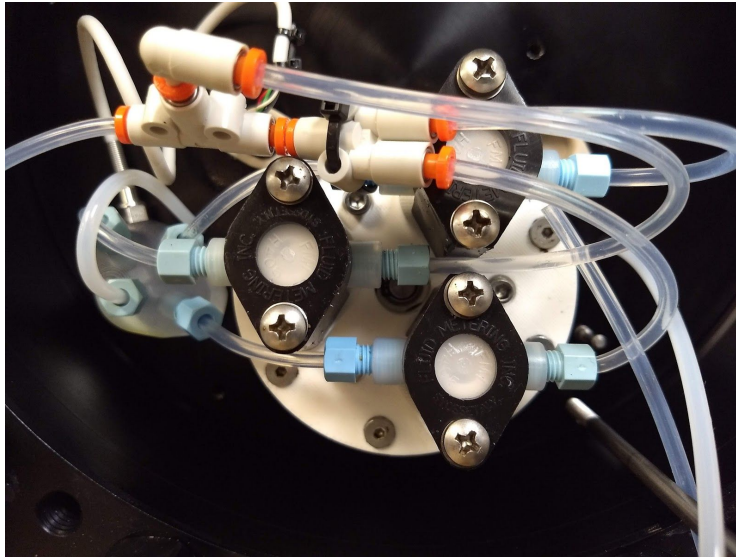


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- Out of Office
 - Feb 1-13 WHOI/Maine under ice, EST
 - Feb 17-21 Ocean Sciences?, PST
 - Mar 2 - 10, Vacation, GMT -7
 - Mar 16-25 Michigan (NMU) under ice, EDT
 - July 18-31 Arctic, ADT
- Denis Klimov
 - 300083 - DMO Support - LRAUV
 - Reviewing requirements for next generation battery pack
 - 901800 - LRAUV Payload & Support
 - Testing 2 more PAR sensor boards
 - 901809 - Deep Sea Bioinspiration
 - Template for cutting glass windows for an indicator cap is ready. Material for a separation gasket is found. Need to source double-sided tape in order to make windows
- Eric Martin
 - 901101 - Ocean Imaging
 - Working on new strobe position evaluation
 - getting spare boards built up
 - 901206 - Coastal Profiling Float
 - Battery audit
 - Battery pack builds
 - 901405 - PowerBuoy Development
 - PTO wiring edits
 - Finalized the fix on the PTH sensor and reflected changes in schematic for the bridge controller board. Need to decide if we'll modify the new spring controller next.
 - Bringing up the new Technologic SBC.
 - 901807 - Next Gen Acoustic Dorado
 - Noise has returns on the last set of dives, we'll dig deeper to see if the multiple collisions on the AUV has damaged something in the sphere.
 - 901911 - ROVVR
 - The camera is mid cycling, and domes apparently are holding up well. We'd like the system back next week for integration onto the ROV.
- Thom Maughan
 - 300083 - DMO Support - LRAUV
 - Power Savings concept for instrument servicing on LRAUV. Selected a 6 serial port ARM processor for the proof of concept that has a code base and tool chain I've used before.
 - 901009 - CANON
 - eDNA HiPP. Met with Francisco on project priorities. Looks like the eDNA work needs to be moved up.
 - 901805 - Coastal Biogeochemical Sensing

- DeepSeaDurafet, aka, nanoFET: Selected a processor and worked through the pin mux / signal assignment to help software compatibility by doing a proto design schematic.
 - Reviewing ADC options for performance and long term silicon availability. There is an updated version of the ADS1248 that is mostly compatible.
 - Handed off processor and pin assignments to Scott.
 - Working on bias battery measurement
- 902000 - Multi-Spectral StealthCam
 - EE is working to finalize the hardware and have the board made soon.
 - Project deployment goal was set for mid-May, along with most of my other projects
 - Stared coding to add a 4th PWM output and hit a number of complexities that exceed the time allotted.
 - Discussed with Proj. Mgr about adding a plan B for PWM. Found an i2c 4 channel PWM device in a small package and worked with Jose to assess layout impact - he had it added and the entire board layout complete for review by end of day. Working to ensure compatibility with the LT3476.
- 902004 - Planktivore
 - Project management
 - Working with Bridget Benson on embedded linux software development for TX2. She is up and running on the TX2 with GC2450 camera and working on dependent components install for the app.
 - In progress on LED ring illuminator design. Parts purchasing, footprints and prep for test boards for light and pressure testing.
- 901713 - Nearshore FOCE
 - I was added to the nsFOCE project (6 days) 29 Jan 2020 to add conductivity sensor support and to assist the FOCE team with MFET use. Working this project on off-Fridays in exchange for comp time.
 - Added protocol to support MFET Labview GUI development with Optode and Conductivity simulated. Delivered to Dale, a couple things found and fixed.
 - Scoped M2M protocol and data format to ease future integration - this will be put on the enhancement request for future. Plan for delivery is similar to what is done for the Glider integration.
- Overhead
 - Contingency project is finishing the build of bio-electric field instrument
 - Hosted 35 Cal Poly Biology students for a tour on Friday 31 Jan 2020. Former intern Gabe Santos drove up to assist. Met with Gabe on our Pier Peer project
- Out of Office
 - Mar 12 - Mar 30 Vacation (St. Helena with Georgia Aquarium)
- Mike McCann
 - 901009 - CANON
 - Continuing to implement and test improvements for performance of the 3D curtain playback
 - Tested using watchtower for Continuous Delivery – need to think about scenarios where automated service restarts might interrupt long-running load processes that may be using the same container
 - 901111 - AUV Infrastructure Supprt
 - Processed survey Dorado389_2020_035_00_035_00
 - 901800 - LRAUV Payload & Support
 - Turned on backend data processing for February 2020
 - 901910 - Plankton Taxonomic GrpAUV
 - Solved postgresql killing problem on Catalina – added 'oom_kill_disable: true' directive to my docker-compose.yml file

- Trying to find mutual time to meet with Monique
- Overhead
 - Meeting with CSUMB Capstone students on Wednesday afternoon
 - Meeting with other Engineering staff in preparation for External Review Committee
- Rob McEwen
 - Out of Office
 - 13 Feb - 19 Feb.
- Paul McGill
 - 701127 - MARS O&M III
 - Continuing to work on NSF proposal
 - 901221 - Midwater Time Series
 - Final editing for predator/prey paper, working on poster for Ocean Sciences.
 - 901618 - Pelagic-Benthic Coupling
 - Collected graphics and did on-camera interview for Station M video. Working on pressure test of Larval Sampler pump, and adding a regen shunt to its controller.
 - 901700 - 2017 Acoustical Ocean Eco
 - Trying to use a signal generator and oscilloscope's FFT function to characterize filters in the 0 to 500 kHz range, as we don't have a spectrum analyzer that works this low.
- Ed Mellinger
 - 300083 - DMO Support - LRAUV
 - Reviewed WHOI plan for revised battery system; email and in-person discussions with Erik and Denis
 - Reviewed checkout rig for Load Control Board, preparations for running test scripts
 - 901206 - Coastal Profiling Float
 - Assisted Eric with battery checkout; fixed an error regarding noise pickup on Wake/Sleep lines from endcap reed switches. Updating docs and will re-release schematics.
- Tom O'Reilly
 - 901618 - Pelagic-Benthic Coupling
 - Planning to integrate various acoustic geolocation software into Hot Spot for application to Benthic Rover at Station M; discussed schedule with project team.
 - 901800 - LRAUV Payload & Support
 - Testing functionality and measuring performance of LCM/Slate software, which enables easy communication between applications running on main LRAUV cpu and other applications running on other onboard cpus, e.g. for Terrain Relative Navigation (TRN).
 - 901809 - Deep Sea Bioinspiration
 - Planning to implement MesoBot acoustic tracking from Hot Spot, and acoustic command/data capability of MesoBot. Discussed requirements and approaches with project teams at MBARI and WHOI.
 - 901902 - Aerial Drones for Sci&MO
 - Planning software design review for onboard, ground, and data processing systems.
- Craig Okuda
 - 300079 - DMO Support-RC
 - Troubleshoot routing problem
 - 901007 - Benthic Biology & Ecology
 - BRS flush valve redesign
 - 901220 - Midwater Ecology
 - ADCP mount
 - Overhead
 - Lab setup
 - DMO support paragon

- Simrad sonar noise troubleshooting
- Doug Pargett
 - 901205 - ESP SURF Center
 - MV-2 now needs starting up prior to installing the oil dome and high pressure testing.
 - MV-3 A-dome assembly is almost complete. Center plate, pump, pump pressure sensor, penetrators and bulkhead valve assembly all installed.



- Still haven't found everything I'm looking for. 35 bar pressure sensor (more ordered, but long lead time)
- Still cleaning lab and organizing tools and parts. Will get more help with this next week.
- 901800.98 - Bioacoustic Payload
 - The pressure domes being made at Scripps have arrived, and they look great.
 - Test fit with the (un-anodized) caps and looks good so far.



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- Ben Raanan
- Mike Risi

- 901101 - Ocean Imaging
 - Testing first cut of automated surveys for February cruise series
- 901809 - Deep Sea Bioinspiration
 - Testing VARS microservice that Brian S. added to access annotation information in real-time over ZMQ
 - Working on subscriber to publish VARS annotations to LCM log for the March cruise series
- Out of Office
 - February 19-22: Ocean Imaging Cruise
 - March 9-12: Vacation
 - September 18-29: Ocean Imaging Cruise
 - September 30 - October 2: Vacation
- Brent Roman
 - 901205 - ESP SURF Center
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 - DQ1865 - Bryde Whale
 - Successfully tested mooring in Test Tank with Iridium comms from bld B roof mounted antenna.
 - Worked with Mark Chaffey, Aaron Schnittger, and Larry Bird to assemble Iridium antennas.
 - Debugged (hopefully) lots of comms recovery logic.
 - Worked with Scott Jensen to measure mooring energy use and estimate its endurance.
 - Put together a kit with router and Verizon + T-Mobile cell modem for comms staging in Louisiana
- Carlos Rueda
 - 708158 - DHS Y6
 - Email with WHOI to clarify aspects related with TethysDash/LRAUV communication at the application level.
 - 901009 - CANON
 - MXM development, including expanded operations to the MXM provider API on top of TethysDash to start testing actual submission of missions.
 - 901800 - LRAUV Payload & Support
 - Some monitoring of the recent Daphne deployment. Very glad to see the mbts_sci2 mission in action and performing well. Thanks Brent and Brian for putting it to work. Would be great to reflect the recent changes in the TethysL version. (Riley Rettig, our summer intern last year, helped write the first version of this mission in TethysL.)
 - Overhead
 - Put together and shared [some notes about CI/CD](#).
 - SE IE Group meeting. Presented the MXM setup for continuous deployment using [Watchtower](#).
 - Advancing CentOS migration for 'tethysdash' and looking into time frame for 'oceanids' as well.
 - ESIP asking me about possible time frame for one more AWS instance migration for the COR.
 - Out of Office
 - Feb 21, Mar 11-12, Apr 9: vacation
- Karen Salamy
 - 704109 - NavDORISS
 - Building up new DORISS 2 board stack and power cords with Jim Montgomery.
 - Met with Peter Walz and Bill Kirkwood to view existing DORISS 2 system, took pictures and notes.
 - Will order a new Micro SSD card for the new system this week.
 - Have noted that several of the new system electrical drawings do not line up with the existing Falcon Board. I have noted the discrepancies and have alerted Bill K.
 - 901915 - Improving MBARI Data Impa

- Attended an SE Group meeting to review extremely large time series data (e.g., LRAUV data structures) used with TimeScaleDB data models.
 - Overhead
 - Working with Lonny to locate a bug in the Postcruise Web Entry Form. The option to add multi-dives to one EXPD appears to still be problematic.
 - Out of Office
 - Feb 10 - Vacation. Daughter does not have school this day (School holiday).
- Brian Schlining
 - 500055 - Video Annotation DM
 - To support Kakani's LCM tool, added ZeroMQ notifications to annosaurus so that external tools can be notified when an annotation is created or modified. See [M3-88](#) and [annosaurus 0.6.0](#)
 - Addressing JVM [crash when VARS Annotation made a framecapture](#). Turns out this was due to changes in how macOS handles secure access to cameras. A fix should be out shortly.
 - Addressing a bug in annosaurus when resolving existing annotations with a bogus time of `1970-0101T00:00:00Z`.
 - 901221 - Midwater Time Series
 - Investigating data issues with midwater transects annotations. [M3-89](#), [M3-90](#), [M3-91](#).
 - 902002 - Fathomnet Detect and Classify
 - Investigated methods to integrate localized labels of parts of organisms into existing annotations. [M3-87](#)
 - FathomNet kick off meeting
 - 902005 - VARS Annotation Assistance
 - Continue to work with external contractor on a video player that supports annotation localization (i.e. draw and display bounding boxes around organisms in real-time)
 - Assembled basic automation tests for the video player. See [cthulu-phase1](#)
 - Published new release of [VCR4J](#) which patches issues that appeared while creating automation tests.
 - Out of Office
 - Apr 3 - 13: Vacation
- Rich Schramm
 - 200105 - Core Nav - MDUC
 - Continue datamanager/navproc work
 - 300070 - DMO Support- Ventana
 - Assist pilots with windows-10 issue effecting dataprobe display on Infernalis
 - Assist pilots and GSS access to Ventana system LCM log files
 - 901915 - Improving MBARI Data Impa
 - Attend impact mtg
 - Overhead
 - Transition planning
 - Out of Office
 - Feb 20: Vacation
 - Mar 20: Vacation
 - Mar 23 - 27: XOJO Developers Conference
- Alana Sherman
 - 901809 - Deep Sea Bioinspiration
 - Order parts for tilt motor
 - Testing extended ODI pair
 - Overhead
 - Two days out with sick kid
 - Working on ER presentation

