

Engineering Weekly Report 2/29/2024 - 3/7/2024

<https://docs.mbari.org/internal/projects/Engineering/Weeklies/2024/>

Executive Council Notes

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Individual Activities

- Michael Anderson
- Kevin Barnard
 - 902002 - FathomNet
 - Planned FathomNet workshop on Mar 14, 2024
 - Reworked vars-kb-model-resolve to support FathomNet-WoRMS taxa API to support training of midwater and benthic supercategory object detectors
 - 902204 - Scalable Robotics
 - Debugging RTAB-Map visual SLAM on imaging sled for Falkor too cruise
 - Started validation of GIM WP2 sonar SLAM
 - Calibrated StereoPi cameras in first HSI camera on Falkor too imaging sled
- Francois Cazenave
 - 901405 - Wave-Energy Conversion for Oceanographic Applications
 - Helped with PTO test
 - Working on tether order
 - New housing for heave cone
 - 902106 - Niobicon-Based AUV Docking Development
 - Assembling Pontus nose
 - Working a Stretch hose and cable replacement
 - Overhead
 - First aid and CPR class
 - Out of Office
 - Out sick on Monday
- Danelle Cline
 - 902111 - Carbon Flux Ecology
 - Assisting Fernanda with SDCAT questions and debugging in Colab
 - Working on REDIS workflow for automated data loading
 - 500055 - VARS, M3/RS, DSG
 - Added support for adjustable disk allocation and longer timeouts to handle processing master video with larger YOLOv5 1280 models
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Working on REDIS workflow for automated data loading
 - 901502 - Passive Acoustic Sensing
 - Minor corrections needed for [PR](#)
 - Upcoming discussion on Google summer of code project
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Working on REDIS workflow for automated data loading

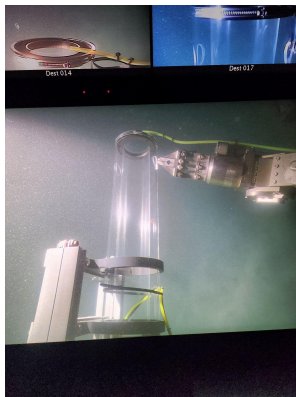
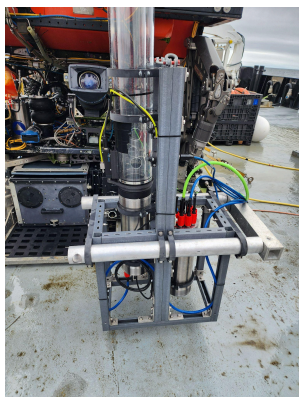
- Expense report for OSM
 - Researcher at [KAUST](#) who is using drones to monitor canopy stress has reached out about using our software to detect sting rays which can be seen in their low-altitude surveys
- Out of Office
 - Medical leave March 18-April 22
- Duane Edgington
 - 500055 - VARS, M3/RS, DSG
 - Completed AWS ECS runs using DeepSea-AI ecsprocess of i2MAP, Ventana master video files, and Ventana mezzanine files, for Kris W. and Lonny L. Pushed output track files to DeepSea-AI repo on titan.
 - 901502 - Ocean Soundscape
 - Explored Pamguard <https://www.pamguard.org/> Requires Microsoft Windows to run (their Mac version is not installable, and their support email is blocked)
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations and Outreach
 - Working on next steps with Danelle.
 - Need to prepare poster for EGU meeting April 12.
 - Out of Office
 - Feb 27 - 28. Sick
 - Feb 29, 2024. Personal
 - March 28 - April 12, 2024. Vacation UTC+3
 - April 12 - 21, 2024. EGU UTC+2
 - June 10 - 21, 2024. Vacation UTC-8
 - Oct 21 - Nov 8, 2024. Vacation UTC+1
- Jon Erickson
- Kevin Gomes
 - Out of Office
 - March 12-21: Vacation
 - March 25-29: Data Council Conference: Austin, TX
- Andy Hamilton
- Kent Headley
 - 3000?? - DMO Support - Ventana
 - Ventana valve pack controller board bringup.
 - Worked with DJ and technical support group to recover information about the valve controller hardware and software, previously maintained by Dave French
 - programmed the boards and brought them up
 - documenting location of drawings, software and procedures
 - 902204 - Scalable Robotics
 - Extended MB-System Kongsberg M3 sonar support to include real-time UDP data ingest
 - This intended to be used by Giancarlo during the ongoing Falkor Too cruise to potentially enable SLAM
 - Updating mb1stream/mbsystem docker builds
 - Overhead
 - Ventana valve controller board
- Rich Henthorn
 - 902305 - Event Detection Using the Sedimentation Event Sensor
 - V3 controller Linux kernel 8250_ts module integrated
 - All serial and ethernet ports setup for system testing
 - 902306 - SINKER
 - Carson cruise Mar 5 to observe current flow in and around sinker tube
 - 902401 - Geo-Sense

- Weekly meeting
- 902405 - Precision Control Technologies
 - Vehicle TRN inputs integrated into CoNav computation
- Out of Office
 - Mar 18 - 21: Vacation and WFH
- Brett Hobson
- Irene Hu
 - 300078 - DMO Support - AUV
 - Sat in on meeting re: updated electronics
 - 901805 - Coastal Biogeochemical Sensing Program
 - Continued forensics, including visit to Indtec, especially focusing on different versions of digital and analog boards within spectrometer for ISUS
 - Various planning meetings
 - 901904 - Deep-Sea Coral-Sponge Community Observatory
 - Making some changes to schematic based on design review
 - Had Kevin set up DISCO project in bitbucket
 - Out of Office
 - March 4-5: out of office
 - May 3-15: Taiwan
- Scott Jensen
 - 706008 - READI-Net
 - After a long two weeks the dock deployment is over. It was a learning experience and while it did not work perfectly a great todo list has been generated
 - Finally settled upon a circuit topology for ambient light abatement through the opto-interrupters
 - 901205 - ESP SURF Center
 - Preparations for upcoming field deployments
 - New terrestrial housing is being assembled
 - Out of Office
 - April 5-9 vacation
 - June 17-21 vacation
 - July 18-23 vacation
 - July 24-29 vacation
- Brent Jones
 - 901112 - Monterey Bay Time Series
 - Designing PIC24 interface card that uses new EPOS4 motor controller
 - 901502 - Ocean Soundscape
 - Trip to SEC to improve MBARI exhibit
 - 901805 - Coastal Biogeochemical Sensing Program
 - Helping Carbon lab recover CF2 programming ability after personnel departure
 - 902004 - Planktivore
 - meeting
 - 902311 - Power Generation Onboard Wire Walker
 - Finished preliminary drawings for piston cylinder
- Chad Kecy
 - Out of Office
 - Jan. 22- Potential Jury Duty
 - Out of office on Fridays
- Brian Kieft
 - 901513 - Targeted Sampling by AUVs
 - Working on PAM changes with Yanwu to get higher precision buoyancy control

- 902101 - LRAUV Technology Development
 - SOW approved for UX support through mid-year
 - Created header text for export control and IP. Waiting on legal.
 - Ran forensics on tail mission failure. Issues were misconfigured DAT and issue with WPT behavior.
 - Lots of GZ sim work for TRN
 - Supported Ahi/Galene deployments for testing vertical control changes and tail mission fixes.
 - Flipped AHRS configs to base for all vehicles
 - Pushed docker sim to public repo with latest
 - Merged Feb release and started march
 - Met with battery team to discuss integration/architecture. Folded repo into LRAUV project.
- Overhead
 - Met with cofounder of Oshen to discuss UX and potential ASV demo here
 - Met with TNC CTO for pressure testing of whale tracking housing
 - Supported WHOI offshore deployment and issues involving battery drain
 - Worked with Cornell on human/robot interaction proposal.
- Out of Office
 - 03/12-14 (MST) tentative
 - 04/04-04/10 (CST)
 - 04/15-04/19 (GMT+8)
 - 06/03-06/18 (GMT+1)
- Denis Klimov
- Eric Martin
 - 300078 - DMO Support - AUV
 - Meeting last week on new INS connector
 - 901101 - Seafloor Mapping
 - Strobe Cable ordering
 - MBES Spec
 - Lidar PM
 - Technical Meeting with group
 - Getting new team members spun up.
 - 901911 - ROVVR
 - HMC Meeting
 - 902204 - Scalable Robotics
 - MBES spec
 - Boxfish spec
 - Boxfish maintenance
 - Overhead
 - Trustees tour
- Thom Maughan
 - 300083 - DMO Support - LRAUV
 - LRAUV BatMan status and alignment meeting. Working thru alignment with WHOI battery protocol and whether it's possible to deliver asap. Conclusion was the LRAUV team will handle the WHOI protocol in the battery component and then thru config handle the MBARI protocol.
 - Working with Erik to use his team for some of the remaining hardware board bringup in order to focus on finishing the firmware.
 - 901009 - CANON
 - Chat with Kobun regarding potential microfluidics company
 - 901805 - Coastal Biogeochemical Sensing Program

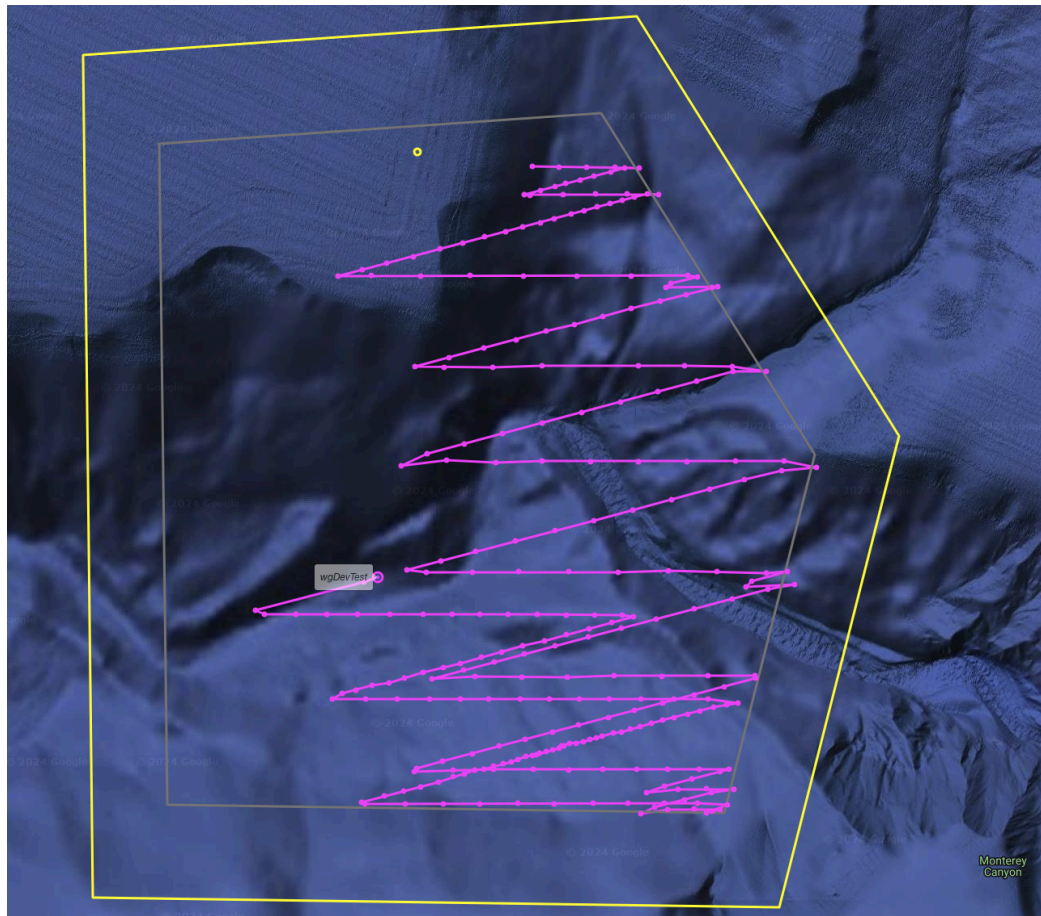
- Starting Feb 19 and OSM, I've been working to understand MBARI Sensor Controller (MSC1) CF2 code. Upon return from OSM, there was a big push to identify source code, schematics, boards, parts inventories, etc. All the hardware, software, contractors, POs that had been managed by Luke Colleti.
- IS has been very helpful providing access to various mac desktops, laptops and Windows VMs
- Working with Irene, Yui, Ken and team we are starting to get on top of a plan forward.
- Working on FPGA source build and config eeprom programming.
- Phone call with contractor regarding status on new PSoC board development. Getting PSoC code to build.
- Brent and Yui helped me get up to speed on CodeWarrior, PicoDOS to start going thru the various code snapshots. Dana Swift of UW provided the binary executable in production, delivered by Luke and that is a big help.
- Too many activities to list, it's been a painful couple weeks but it's looking good and there is a plan. Next step is to slow down and move methodically.
- Hours for working the float challenge will be charged to 901805.
- 902004 - Planktivore
 - Planktivore weekly meeting. Planning for March, April and May
 - Planktivore is a candidate for DOEST in June.
 - Paul has processed the 27million mooring images from last spring. We are chasing an image aberration and its in those images as well though the effect is minor and the plan is to complete operations this spring before opening the housing.
- Out of Office
 - Apr 4 - 10 Eclipse Mexico, Cuatro Cienegas and stromatalites
- Mike McCann
 - 901910 - Plankton Taxonomic Groups from AUVs
 - Investigating data quality issues that Monique is finding with the diamond data
 - 902403 - Expedition DB Modern
 - Working on [expd-django](#) that connects to expd on foggy
 - Overhead
 - Installed SentinelOne on desktop - replacing Symantec Endpoint Protection
- Rob McEwen
 - 902101 - LRAUV Docking
 - Added Dvl Scale factor error (%DT) to the simulation. This approximates the data the best so far.
 - Prepared presentation.
- Paul McGill
 - 300070 - DMO Support - Ventana
 - Continuing to help DJ sort out power issues on ROV.
 - Helping DJ figure out why hydraulic valves are slow. Looking at valve drivers and made some measurements on the valves.
 - 701147.99 - MARS IV Node Upgrade
 - Investigated bias resistors on floating power supply outputs, as what was done previously wasn't well-documented.
 - Bi-weekly meeting with UW to update on progress.
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations and Outreach
 - Ran ground station for two flights on Monday.
 - 902101 - LRAUV Technology Development
 - Got second AOS sensor wired for testing in pressure test tank.
 - 902304 - Piscivore Cam

- Got three processors labeled, programmed, and attached to new I/O board to build new cameras.
- 902305 - Event Detection Using the Sedimentation Event Sensor
 - Opened battery sphere to configure for autonomous deployment.
- 902401 - Geo-Sense
 - Re-laying out electrical connectors so we can use stock cables and connectors instead of long-lead-time custom assemblies.
 - Getting vendor quotes for parts.
 - Preparing for Loning trip next week.
- Enoch Nicholson
 - 706008 - READI-Net
 - Met with Jim, Scott and Kevan to debrief dock deployment & discuss next steps for / current status of Sampler. Still targeting April 1 for a complete model.
 - 901007 - Benthic Biology & Ecology
 - Sealed chamber by blocking off pump block & placing o-ring between lid and chamber body.
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations and Outreach
 - Built servo linkages
 - 902306 - SINKER
 - Preparing for 03-05 deployment.
 - Deployed SINKER on ventana (kept on vehicle). Tested sample accumulation. Used a dye injector to investigate flow around the sinking column. No major failure. Lots of lessons learned.

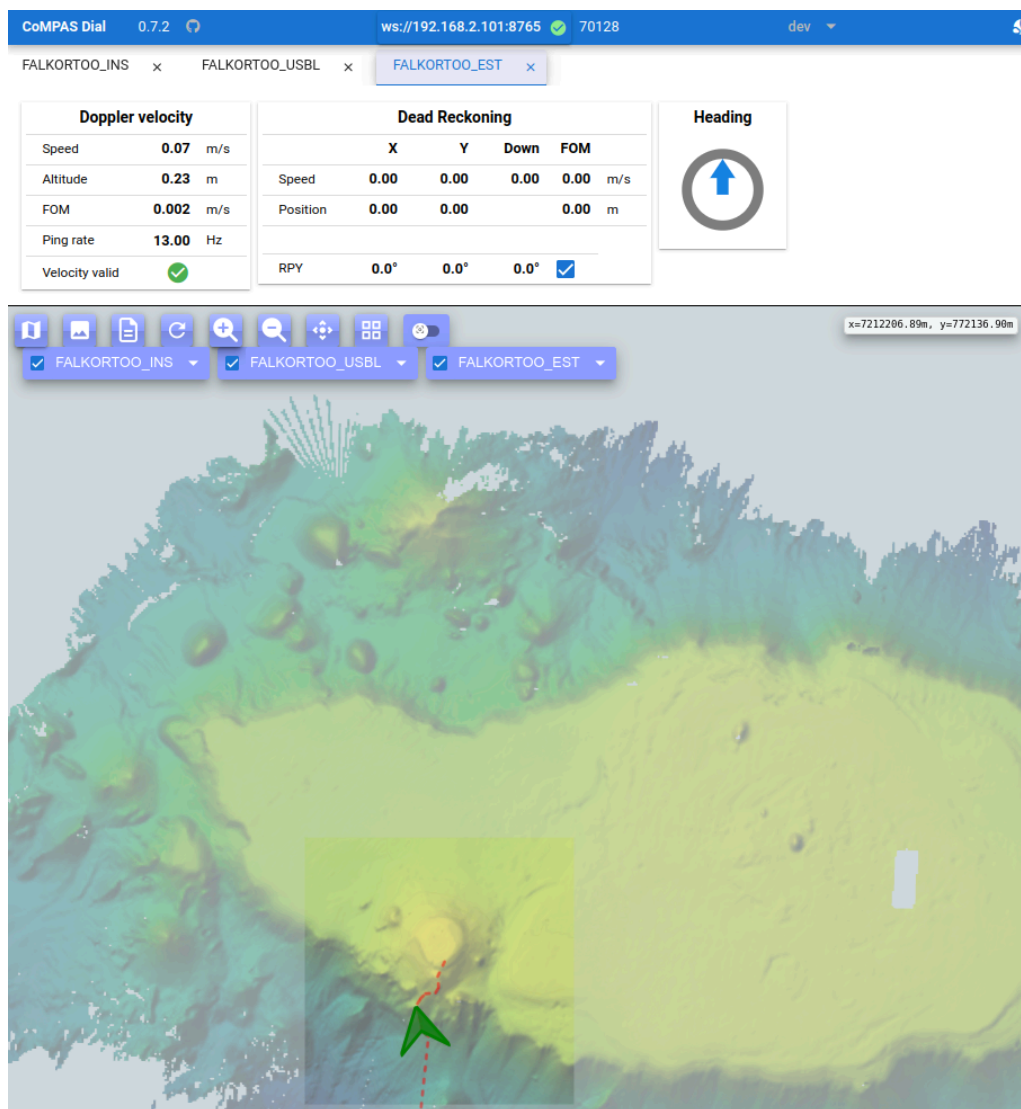


- Out of Office
 - April 5-10 Vacation (Available via Slack & Email)
 - April 14-18 IEEE Oceans (Available via Slack & Email)
 - April 19-23 Vacation (Unavailable)
 - September 19-24 Vacation (Available via Slack & Email)
- Tom O'Reilly
- Mike Risi
 - Out of Office
 - Offsite on Tuesday and Friday
 - January 16 - January 19, 2024
 - February 22, 2024
 - March 4 - March 8, 2024
 - May 20 - May 24, 2024
- Paul Roberts
 - 901809 - Deep Sea Bioinspiration
 - EyeRIS on SCUBA design
 - 901904 - Deep-Sea Coral-Sponge Community Observatory
 - Camera computer setup
 - 902004 - Planktivore

- Mooring data processing and import into RIMS
- 902306 - SINKER
 - First SINKER deployment on Ventana
- Out of Office
 - March 30-April 7
 - April 14 April 20
- Brent Roman
- Carlos Rueda
 - 901009 - CANON
 - Enabled Prometheus [metrics](#) for MXM
 - 901513 - Targeted Sampling by AUVs
 - A super successful thermal front tracking exercise using a wave glider ([wgDevTest](#)) has been carried out, with complete autonomy start to end, and lasting more than a full day —still ongoing at time of writing— and without suffering any impact upon the internet outages that happened yesterday. Many thanks to Chris W. and Tom O. for your help.



- 902101 - LRAUV Technology Development
 - TethysL now [3.9.5](#).
 - Working with Yanwu toward [more mission conversions](#) to TethysL, and making use of macros where appropriate. As an example ([Science/smear_yoyo_sampling](#)), in terms of file size:
 - 136k - original XML
 - 80k - once converted to TL
 - 27k - using arrays/macros
 - So, the resulting file is only 20% the size of the original, while being more readable and less error-prone.
- 902204 - Scalable Robotics
 - Dial: Giancarlo has shared some Dial screenshots taken during the ongoing Falkor cruise.



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- Dial: Ingestion of JPEG image (binary) streams now in place. Thanks Kevin B. for your great work on the lcm-websocket-server side, which makes things very easy for Dial!
- Out of Office
 - Mar 18 – Jury duty
- Karen Salamy
 - Out of Office
 - **Feb. 29 - Mar 10** - Trip to east coast for personal family reasons
 - On-campus 3 days/week (**T, W, TH**).
- Brian Schlining
 - 500055 - VARS, M3/RS, DSG
 - Tuning performance of recently updated services. Instrumented the services with prometheus metrics (for both [annotations](#) and [media](#)). Installed a [prometheus](#) server to collect the metrics and a [grafana](#) server for visualizing them.
 - Working on outstanding bugs in vars-annotation.
 - Modified the [view-raw-in-sharktopoda](#) to visualize ML output on ProRes files.
 - Consolidated the [docs](#) for the m3-support project.
 - Updated the VARS services and applications on the Rachel Carson to the new stack.
 - 701165 - OVAI Phase II
 - Reviewed resumes for ML Ops engineer position.
 - 901221 - Midwater Time Series
 - Updated the [midwater transects app](#) to work with the new database on venus. Ran analysis of all midwater transects.

- 902002 - FathomNet
 - Investigated issues where fathomnet was pulling the entire WoRMS knowledgebase on load.
 - Published a new release of [FathomNet](#) v1.3.6 ([code](#)).
 - Published a new release of the [worms-server 0.5.1](#). One notable change is that it can resolve the most up-to-date taxa name in usage for any concept. Examples: (note that the top name in the list is the accepted name):
 - <https://fathomnet.org/worms/synonyms/Swiftia%20pallida>
 - <https://fathomnet.org/worms/synonyms/Loligo%20opalescens>
- 902403 - Expedition DB Modern
 - With Mike and Kevin, working out the [workflow for pre/post cruise info](#)
- 902404 - 5th Marine Imaging Workshop
 - Met with Jen Durden and worked out additional people to invite to the MIW's science committee.
- Alana Sherman
 - 902208 - Mini ROV Operations
 - Helping as needed with troubleshooting van integration including: core j-box, M3RS, and other issues
 - Almost have both operations on the Fulmar scheduled, submitted NOAA request for Fulmar time for Giancarlo last week
 - 902401 - Geo-Sense
 - Helped Aaron on some CSEM loan agreements
 - Collected materials for Sintela in prep for Paul and Aaron's visit
 - Still working on getting quote from Birns for cable
 - Overhead
 - Post doc selection committee meeting
 - Out of Office
 - Tues and Weds for medical appts
- George Stern
 - 902204 - Scalable Robotics
 - Began work on Mola fixturing design
 - 902306 - SINKER
 - First Carson cruise to see sinker deployment
 - Worked with Enoch to improve battery pack electronics design packaging
 - Completed battery pack safety review package
- Johann Voigtlander
 - 902208 - Mini ROV Operations
 - Completed 20' container topside wiring
 - Ballasted MiniROV with Frank
 - Modified Labview code to accept GPGGA NMEA sentences
 - Overhead
 - Completed Moxie training for maritime signaling