

Engineering Weekly Report 7/20/2023 - 7/27/2023

<https://docs.mbari.org/internal/projects/Engineering/Weeklies/2023/>

Executive Council Notes

- Eric Martin presented a talk, *“Bringing the Lab Into the Ocean: Designing Scientific Robotic Vehicles”*, as part of the UCSC COSMOS Discovery Lectures, to an audience of high school STEM camp and the broader university community, Tuesday July 18th.

Individual Activities

- Michael Anderson
- Kevin Barnard
 - 500055 - VARS, M3/RS, DSG
 - Made some progress on time synchronization issue
 - 901809 - Deep Sea Bioinspiration
 - Preparing for Open House
 - 902002 - FathomNet
 - Started migrating models from GitHub/Zenodo to Hugging Face
 - 902204 - Scalable Robotics
 - Identified issues with visual loop closure detection in RTAB-Map
 - DQ2209 - Ocean AI 2
 - QSCP retrospective/planning discussion
 - Out of Office
 - Vacation August 7-11
- Francois Cazenave
 - 901221 - Midwater Time Series
 - Planning tow test
 - 901405 - PowerBuoy Development
 - Monitoring buoy
 - 902106 - Niobicon-Based AUV Docking Development
 - Designing hardware for Chiton payload
 - 902204 - Scalable Robotics
 - Making hardware for test tank
 - 902306 - SINKER
 - Meeting
- Danelle Cline
 - 500055 - VARS, M3/RS, DSG.
 - Working on a rapid prototype of a video ML endpoint
 - Working on cluster similarity sort in vars-gridview to accelerate ML proposal corrections
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Discussion with the team on the next steps
 - Tested loading label taxonomy into our database
 - 901502 - Passive Acoustic Sensing

- Processed millidecade netCDFs for 2021, 2022, 2023 in AWS. John Ryan confirms the results match the groundtruth exactly. Cost is 6.5 cents per day for the cloud workflow. Wow! Processing will be migrated to an automated flow in mid-August.
- 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Weekly meeting
 - Tested loading label taxonomy into our database
 - Need to schedule label training and work on label taxonomy
 - Database being moved from a physical machine to the VM `manta.shore.mbari.org`
- 902204 - Scalable Robotics
 - Hoping to join the next sprint in mid-August
- Overhead
 - Summer intern mentoring
 - Danelle is preparing a Zoom presentation on technology for 125 6-8th grade students attending a STEM summer camp on the east coast. This group will be doing an ROV dive and using drones to explore local birds, fishes, and invertebrates in Five Islands Park, New Rochell NY
- Out of Office
 - July 31-Aug 4th
- Duane Edgington
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Building tracking model against i2MAP localizations
 - Intern Tarun Sharma wrapping up a very productive summer of exploration of semi-supervised / self-supervised model exploration against midwater image datasets
 - Out of Office
 - July 23-July 29 2023. ICML (virtual). HST (UTC-10) Semi-supervised learning representations tutorial.
 - AWS summit July 26 (virtual)
 - Oct 16-18 2023. Pytorch conference. SFO (in person). PDT (UTC-7)
- Jon Erickson
- Kevin Gomes
 - 200105 - Core Navigation Data - MDUC
 - Restarting on this work as proposal review slows down
 - Refactored to pull out JSON config from main
 - Refactoring config code to use trigger set to channel level instead of item level
 - 300059 - DMO Divisional Support - David Packard
 - Weekly networking meeting
 - Going to see if I can run down more information on MarineTraffic for API usage and a service that DMO can use.
 - 300070 - DMO Divisional Support - Ventana
 - Starting to think about DiveLog app upgrade
 - Playing around with Qt/API to see if it might be a good replacement for Xojo thick client
 - 706008 - READI-net
 - Meeting to go over API with regards to web application
 - 901915 - Improving MBARI Data Impact
 - Starting research on large scale data storage
 - Overhead
 - Proposal review
 - Reporting working for proposal review
 - Met with CEO Search committee
 - MiniROV/EE interview

- Out of Office
 - July 5-7: Vacation
 - Aug 28-Sep 12: Vacation
- Andy Hamilton
- Kent Headley
 - 300078 - DMO Divisional Support - AUV
 - Fixed issued with QNX simulator Makefile
 - 500055 - VARS, M3/RS, DSG
 - VARS users reported long processing times (12-15s) for 4k frame grabs (FG). Brian Schlining did some testing and found the issue to be somewhere in the frame grab server, which I maintain. I made some diagnostic updates and we isolated the issue to the ImageMagick library. It turns out that the PNG image format can have particularly long write times. After experimented with some operations that affect compression and storage size, we found a good balance between size and speed, ~11MB and 750 ms.
 - Libbmagic updates: Added support for new BlackMagic SDK, added support for GraphicsMagick builds (alternative to ImageMagick), added configuration option to set quality at run-time
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - Helping Rob with TRN integration into Dorado simulation
 - 901101 - Seafloor Mapping
 - Helping Rob with dorado sim MB-System setup
 - Call w/ Dave C and Christian Ferriera at MARUM
 - Prep for Axial
 - Wrote up some notes on building MB-System under Cygwin
 - 902204 - Scalable Robotics
 - Put together a complete pipeline example for converting sonar data to LCM logs and/or live stream for SLAM. Also wrote some documentation for the example, and put together a makefile for generating an example distribution, and delivered it to Sebastian.
 - Overhead
 - Hiring : preparing offer for SE-EAD, scheduling AOSE interview
 - Proposal review
 - Out of Office
 -
- Rich Henthorn
 - Out of Office
 - July 19: WFH, available on all, PDT timezone
 - July 24 - 27: Vacation: available on email, EDT timezone
 - July 31 - Aug 4: WFH: available on all, PDT timezone
- Brett Hobson
- Irene Hu
 - 901805 - Coastal Biogeochemical Sensing Program
 - Nanofet rB sent out for fab
 - Laid out and sent out battery adaptor board
 - Looked at some data from Wirewalker Humboldt, and helped Jacob troubleshoot their Durafet
 - Wrote some EC data processing code, planning how to deploy EC instrument
 - 901904 - Deep-Sea Coral Community Observatory
 - Finished building multispec instrument with nylon screws. Confirmed to work
- Scott Jensen
 - Out of Office
 - Vacation July 24-28

- Vacation Aug 28- sept 1
- Brent Jones
- Chad Key
 - Out of Office
 - Out of office on Fridays
- Brian Kieft
 - 300082 - DMO Divisional Support - Wave Glider
 - Recovered WG Hansen following bioacc deployment
 - 300083 - DMO Divisional Support - LRAUV
 - On call for MBTS
 - 902101 - LRAUV Technology Development and Fleet Operations
 -
 - 706007 Great Lakes
 - Pulled more EK80 data and looking into some data flow issues
 - Worked with Mike on animation for simulated oil spill presentation
 - Pulled full Triton/Makai logs
 - Overhead
 - Shipping quote for Denmark
 - Supporting WHOI deployment from the Bigelow. SW releases, GF consults, mission testing, etc.
 - Out of Office
 - 08/02 - 08/06 (EDT)
 - 08/06 - 08/09 (PDT)
 - 08/14 - 08/18 (PDT)
 - 08/16 - 08/19 (EDT) alternate
 - 09/26 - 10/04 (EDT)
- Denis Klimov
- Eric Martin
 - Out of Office
 - on vacation 8/1-8/6
- Thom Maughan
 - 300083 - DMO Divisional Support - LRAUV
 - LRAUV BatMan firmware development.
 - Making progress on I2c and smbus for battery status.
 - Ran out of code space on the 24KB lpc11e13. Scrunched some functions but no joy. Tried compiler for size optimization but lost single step debug and code is not working. Found a pin compatible part with 32KB.
 - Reading thru NMEA style WHOI protocol for multi-drop rs232. Drafted a more compact, energy efficient and less labor (for me) machine-to-machine proposal based on previous rs485 experience.
 -
 - 901009 - CANON
 - Investigating use of VMWare for consistency with MBON server and to address concerns about introducing too many new technologies to the user base of the eDNA servers. Docker would come in a subsequent phase.
 - Met with Peter in IS to get info from ticket system on MBON server.
 - Attended Zack Golds talk and had a follow up discussion.
 - 901805 - Coastal Biogeochemical Sensing Program
 - Starting rework on serial interface to improve machine to machine interface for labview.
 - Getting ready for new nanoFET and collaboration with Scripps.

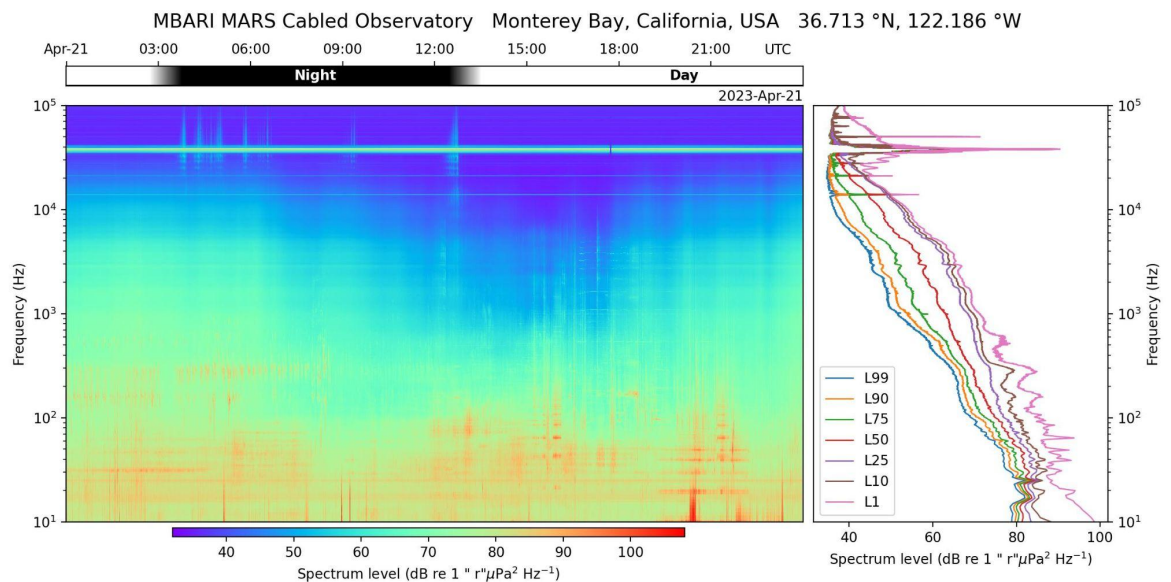
- 902004 - Planktivore
 - Aaron has assembled the 2nd housing for pressure test on Aug. 8.
 - Reviewed Jon's pressure transducer 'add on'. Submit for fab should be in the next day or so with 6 week shop turnaround.
 - Paul has started processing on Durkin Lab deployment data. Planktivore V1 will be disassembled, tight tolerance face plates installed, filled with golf balls for pressure test along with Planktivore V2.
- Overhead
 - Crane training 7/25
- Out of Office
 - Vacation Sep 24 - Oct 2 Ohio
 - Vacation Oct 12 - 16 Nevada Eclipse
- Mike McCann
 - 200105 - Core Navigation Data - MDUC
 - Examining edited nav data flow into Expd's RovctdData for improving midwater STOQS DBs
 - 300083 - DMO Divisional Support - LRAUV
 - Exploring x3dom's <VolumeData> and <ImageTextureAtlas> nodes for visualizing oil spill simulation data in the STOQS database for current Great Lakes LRAUV deployments
 - 901221 - Midwater Time Series
 - Resurrected ROVCTDloader.py script to update midwater STOQS databases
 - 901910 - Plankton Taxonomic Groups from AUVs
 - Currently loading [stogs_all_dorado_t](#) as a test of auv-python generated and QC'ed data
 - Overhead
 - Working the open house on Saturday – supervising our parking volunteers
 - Out of Office
 - 7-11 August: SIGGRAPH in LA
 - 12-20 September: Vacation
 - 9-11 October: Web3D 2023 Conference
- Rob McEwen
 - Out of Office
 - First two weeks of August.
- Paul McGill
 - 701147 - MARS O&M IV
 - Met with MBARI management to discuss plan for financing UW cost overrun
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Spent all day at Terrace Point in Santa Cruz on Fri waiting for fog to clear and winds to calm. Finally flew UAV in the evening and recorded 414 survey images.
 - 902304 - Piscivore Cam
 - Released version 1.2.0 of camera controller code with user interface improvements
 - Out of Office
 - Out on sick leave since Mon caring for wife after surgery
- Enoch Nicholson
 - 706008 - READI-net
 - Continued detailed design of the October prototype.
 - Received mechanical components.
 - 902306 - SINKER
 - Revised system controller board layout.
 - Contacted glass manufacturer
 - Concept design of wiper compensator.
 - Met with Zebra Tech about deep hydro wiper.

- Tom O'Reilly
 - 901101 - Seafloor Mapping
 - Helping prepare next MB-System software release; installation now managed with 'cmake' build scripts which simplifies package configuration and maintenance
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Conducted our first survey over kelp beds offshore from Terrace Point near the Seymour Marine Discovery Center (UC Santa Cruz). Science team now assessing images.



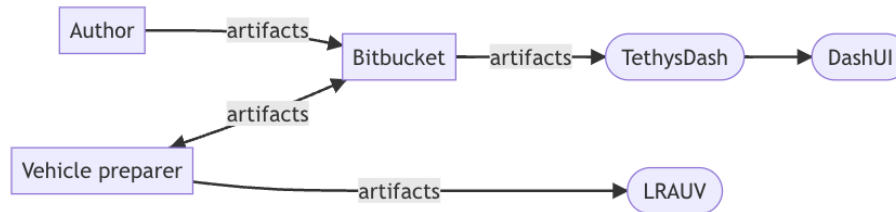
- Mike Risi
 - Out of Office
 - Out of office on Fridays
 - May 30 - June 6

- Paul Roberts
 - 902204 - Scalable Robotics
 - PoE Interface Can solid modeling
 - 902306 - SINKER
 - Design review planning
 - Budget review
 - Overhead
 - Open house posters and planning
- Brent Roman
 - 708165 - MERHAB19:ESP
 - Continuing to support ESP off LaPush WA and prep for the swap next month
 - 771131 - Great Lakes PCM/HAB
 - Added support for a water sensor so ESP3G can be deployed without an LRAUV
 - Strategizing on how best to handle new Function cartridges
 - Because they define actuators differently depending on the type of cartridge loaded
 - 901205 - ESP SURF Center
 - Support for WHOIs upcoming deployments
 - Added Integral and Derivative gain to ESP 3G's pressure control
 - This seems to be effective at reducing the amplitude of the pump's pressure spikes
 - 901913 - Wet Wifi
 - Demonstrated sustained, reliable ssh sessions to galene in the test tank
 - Out of Office
 - May 26 - June 6
- Carlos Rueda
 - 901502 - Passive Acoustic Sensing
 - Daily hybrid millidecade band spectra products have been generated for 2021, 2022, 2023, also with associated summary plots (plotting code provided by John R.). They are being put in a public AWS bucket, most immediately for access by NCEI and Axiom.



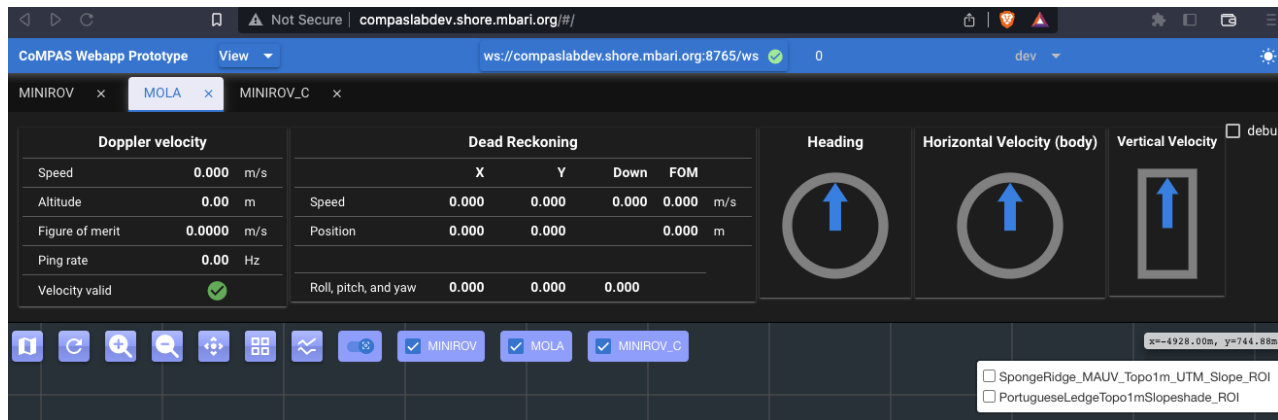
- Did some repo cleanup at <https://github.com/mbari-org/>, including removal of our PyPAM fork (I was given additional permissions in the upstream repo).
- 902101 - LRAUV Technology Development and Fleet Operations
 - Exchanges with WHOI regarding git-related issues affecting their operations (apparently they made direct changes to the lrauv-config clone, which is only to be managed by TethysDash). Added email notification to the admins in case of failure at TethysDash init time, and added and pointed them to a new section in the documentation: <https://docs.mbari.org/tethysdash/git/>

(thanks Brian K. for reviewing).



- 902204 - Scalable Robotics

- Adjustments to the GUI prototype, including underlying use of a yaml file for the definition of platforms (in terms of associated LCM channels, attributes, etc.), whose structure is very preliminary.



- Discussions about a possible request for additional work hours this year, depending on other projects that may not need initially requested allocation (tbd), and about planning for 2024.

- Overhead

- Proposals.
- Technology evaluation: Reimplementation of the [odss2dash](#) service in Rust.

- Out of Office

- July 21: sick
- August 8–28: vacation (out of the country)

- Karen Salamy

- 200103 - Core CTD Data - MDUC

- Weekly checks on updates to the EXPD

- 300057 - Mooring Maintenance

- Weekly monitoring of system status. There has been an issue with one of the CTDs sending/SSDS downloading data from M1 recently.

- 902101 - LRAUV Technology Development and Fleet Operations

- Working on main Dash5 requests and issues with SUMO Creations in React.

- Overhead

- Met with Kevin G. to discuss some project proposal requests for my time.
- Received my new laptop from IS yesterday. I have been spending some time to transfer files and update Apps today.
- Working the Open House this weekend.

- Out of Office

- On-campus 3 days/week (M, T, Th).

- Brian Schlining

- Out of Office

- Jul 28 - Aug 6 - Vacation
- Aug 14 - 17 - Vacation
- Aug 21 - 22 - Vacation

- Alana Sherman
 - Out of Office
-
- George Stern