

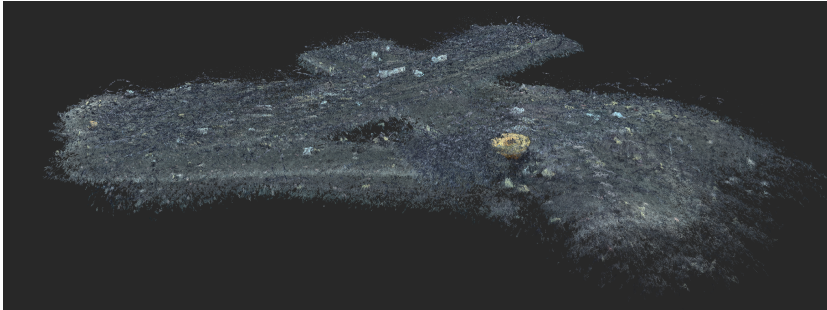
Engineering Weekly Report 10/12/2023 - 10/19/2023

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

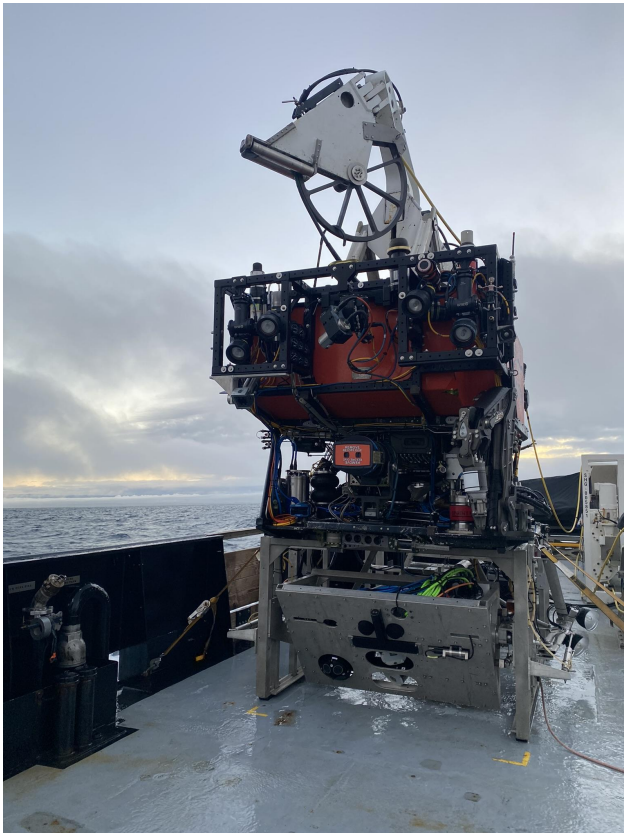
Executive Council Notes

- 902204 - Scalable Robotics - The lab participated in a 3 day expedition to test real-time Simultaneous Localization and Mapping (SLAM) using the Low Altitude Survey System at Sponge Ridge from October 10th to 12th using the ROV Ventana. We deployed our SLAM framework using stereo images and sensor integration for navigation. We were able to demonstrate successful SLAM despite challenges such as poor navigation input one day and numerous fish that made the application of this technique very difficult. Data were collected using the Forward Looking Sonar (FLS) for our efforts to enable navigation and mapping. We also have a visiting researcher from KTH as part of our collaboration in these efforts. [Troni, Rodríguez, Barnard, Headley, Martin]

- *3D map generated in real-time using SLAM methods at Sponge Ridge:*



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- *ROV Ventana Carrying the Low Altitude Survey System:*



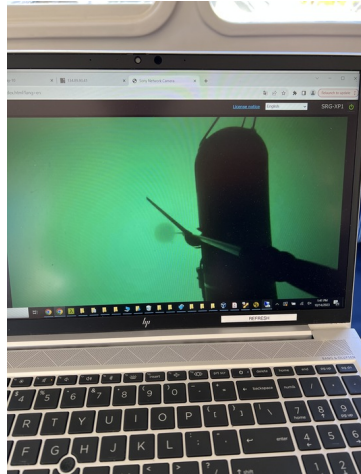
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Individual Activities

- Michael Anderson
- Kevin Barnard
 - 500055 - VARS, M3/RS, DSG
 - Began overhaul of VARS GridView querying/object graph management
 - 902204 - Scalable Robotics
 - Participated in LASS cruise Oct 10, 2023 – Oct 12, 2023
 - Calibrated MiniROV stereo cameras
 - Calibrated LASS stereo cameras
 - Prepared MiniROV SLAM launch configuration for cruise starting Nov 3, 2023
 - DQ2209 - Ocean AI 2
 - Defined requirements for FathomVerse Content Management System (CMS) development
 - Fixed all broken builds and runtimes of HF spaces in FathomNet model zoo
 - Out of Office
 - LASS on Ventana/Rachel Carson cruise: Oct 10, 2023 – Oct 12, 2023
 - CSIRO: Oct 20, 2023 – Nov 5, 2023
 - MiniROV/Fulmar cruise: Nov 6, 2023 – Nov 7, 2023
- Francois Cazenave
 - 901221 - Midwater Time Series
 - Designing a new cover for the nose of the i2map AUV
 - 901405 - PowerBuoy Development
 - Monitoring buoy
 - 902106 - Niobicon-Based AUV Docking Development
 - Deployed buoy
 - 902306 - SINKER
 - Reviewed the frame design with Enoch
- Danelle Cline
 - 500055 - VARS, M3/RS, DSG.
 - FastAPI for running video tracking processors (similar to cloud workflow) deployed to machine <http://maximilian.shore.mbari.org:8000/docs>
 - Dockerizing tools for large-scale batch processing to deploy to doris.shore.mbari.org
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Outlined workflow to backannotate Ctenophora sp. A
 - 901502 - Passive Acoustic Sensing
 - Processed millidecade netCDFs for 2022 soundtrap recorders in AWS Batch service.
 - Assisting with slides and Dask parallelization to process multiple days for upcoming NOAA SoundCoop Workshop, Boulder, CO October 24-25 2023
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Meeting and request for more time
 - Finished hierarchical saliency detection algorithm
 - 902204 - Scalable Robotics
 - Finished docker build and preliminary tests of HelloWorld and quad rotor simulations in RoboMaker. Focused team to discuss next Monday.
 - Overhead
 - Stanford and Cal Poly student mentoring
- Duane Edgington

- Out of Office
 - Oct 11-13 2023. [virtual conference on Generative AI](#). EDT (UTC-4)
 - Oct 16-18 2023. [Pytorch conference](#). SFO (in person). PDT (UTC-7)
- Jon Erickson
- Kevin Gomes
- Andy Hamilton
- Kent Headley
 - 901101 - Seafloor Mapping
 - Carson LASS cruise at Sponge Ridge 10/10-12:
 - Collected data set for testing TRN using a combination of Ventana and LASS LCM inputs and 5cm scale map
 - The data flow through the pipeline worked, but the geometry corrections were not all in place.
 - Have been working post-cruise to refine and test LCM TRN preprocessing. Geometry corrections seem to work, though TRN performance still not great.
 - Continuing to investigate with Steve and Dave
 - 902204 - Scalable Robotics
 - Carson LASS cruise at Sponge Ridge 10/10-12:
 - Collected Gemini sonar data
 - Though available time was too brief to collect a good data set, prepared a computer with libgemini and did get to see it run. Planning a tank test to compare libgemini
- Rich Henthorn
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - Scoping auxiliary LCM streams to support CoNav simulation
 - 902305 - Event Detection using the Sedimentation Event Sensor
 - Prepared SES for MARS power disruption scheduled for today
 - SES scheduled for recovery next Thursday the 26th
 - Prep for next phase in new SES controller development
 - 902306 - SINKER
 - Camera controller software dev
 - Out of Office
 - Oct 16 - 19: Remote work, PDT
 - Oct 26: Rachel Carson to MARS for SES
 - Nov 2: Out
 - Dec 18 - 28: Holidays
- Brett Hobson
- Irene Hu
 - 901805 - Coastal Biogeochemical Sensing Program
 - Shipment finally sent off to KAUST!
 - Working through eddy covariance processing code
 - Cable diagrams for BEAMS and Nanofet
 - 901904 - Deep-Sea Coral Community Observatory
 - Prep for design review
 - Refined MATLAB code for processing images
 - Obtained a giant tub
 - Overhead
 - Helping George with SINKER cables - Orin, Pi, and other cables
 - Out of Office
 - Oct 17: car issues
 - Oct 18: at home in bed due to COVID vaccine
- Scott Jensen

- Out of Office
 - Family leave
- Brent Jones
 - 902004 - Planktivore
 - Getting planktivore to send back real time ROI counts to the dash
 - 902311 - Wire-Walker Power Generation
 - Sourced a DC motor + gearbox combo and beginning bench tests. Designed a mounting system for said motor
- Chad Key
 - Out of Office
 - Out of office on Fridays
- Brian Kieft
 - 300082 - DMO Divisional Support - Wave Glider
 - Piloting Hansen this weekend.
 - 300083 - DMO Divisional Support - LRAUV
 - Supporting MBTS and Planktivore deployments this week.
 - 901513 - Targeted Sampling by AUVs
 - Troubleshooting and testing offshore of the PAM mission
 - 902101 - LRAUV Technology Development and Fleet Operations



- Docking runs on Tethys tuning up the horizontal control. Tethys has now officially charged on an underwater dock for the first time!
- Fixed RDI pathfinder and Rowe simulation issues
- SlowYo meeting to go over mass only vertical control progress
- Made a modification to the sci2 mission to terminate a downward yoyo based on light for the ongoing planktivore deployment.
- 706007 Great Lakes
 - Uploaded the rest of the EK80 data for the team. Reviewed the oil spill animation that Mike made.
- Out of Office
 - 10/23-10/31 vacation (PDT)
 - 11/06-11/09? Phoenix (MST)
 - 11/20-11/24 vacation (PDT)
- Denis Klimov
- Eric Martin
 - 300059 - DMO Divisional Support - David Packard
 - Minor questions around PPS and PTP timing options on the new vessel.
 - 901101 - Seafloor Mapping

- Cruise last week was successful, which enveloped much of the week.
 - This was a development effort that saw new features tested successfully like:
 - RevB LASS stack (now on the MiniROV as well) by Chad Keczy
 - New Navigation Driver suite by Eric Martin
 - New control software for the LASS stack by Mike Risi
- 901206 - Coastal Profiling Float
 - Prepping this week for another deployment tomorrow in the test tank.
- 901911 - ROVVR
 - HMC students are coming offshore with Haddock group tomorrow.
- 902012 - Telepresence
 - Paper submitted.
 - Telepresence was used during the LASS Cruise last week, and will be supporting the Haddock trip as well this week.
- 902204 - Scalable Robotics
 - Collected a lot of data last week, we were technically successful on SLAM and FLS exercises offshore.
- Out of Office
 - Vacation 10/16 & 10/17
- Thom Maughan
 - 300083 - DMO Divisional Support - LRAUV
 - Worked with Erik on Overvoltage, overcurrent testing of the charger board.
 - Changed resistors and 5v converter input voltage, retested
 - Worked on firmware
 - 901009 - CANON
 - Working on deepedna2 as an experimental setup mirroring DeepRip.
 - Install NVidia support, python, etc.
 - Worked with Peter on user account setup and approach for mounting network resources
 - 901805 - Coastal Biogeochemical Sensing Program
 - Testing and bug fixing the ymodem upload of PT coeff. Joseph found a but at 9600, fixed and released
 - In progress on m2m protocol for lab automation
 - 902004 - Planktivore
 - Scrubbed plans for deployment this week. Will try again next week.
 - Out of Office
 - Vacation Sep 27 - Oct 2 Ohio.
 - Oct 11 Jury/sick
 - Vacation Oct 12 - 18 Cancelled
 - Jan 9 - 12 CES
 - Feb 18 - 23 OSM24
- Mike McCann
 - 300078 - DMO Divisional Support - AUV
 - Processed dorado mission 2023.285.01 from hotel room in Spain
 - Writing matplotlib code to produce the quick look plots in auv-python
 - Overhead
 - Presented oil spill simulation visualization from STOQS at the Web3D Conference last week
 - Still discovering more things that need to be transferred from old laptop to new laptop
- Rob McEwen
- Paul McGill
 - 701147 - MARS O&M IV
 - Did calculations to modify HV power supply controls for reduced voltage

- Working on budget reallocation to fund UW's supplement request
 - Worked on serial splitter design
- 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Worked on antenna pointing system with Bryan but we're having problems with the radio link
- 901904 - Deep-Sea Coral Community Observatory
 - Read through review materials for upcoming
- 902304 - Piscivore Cam
 - Helped Jared with prep for this week's deployment
 - Did capacity test on controller Li-ion cell to see why it died
- Overhead
 - Helped Todd figure out why new forum projector is shutting down, more testing needed
 - Researched OBX-90 seismometers to prepare for Thu's planning meeting for Charlie Paull's canyon experiment next year
- Out of Office
 - Medical appointment Wed morning
- Enoch Nicholson
 - 706008 - READI-net
 - Met with Adam from USGS during OMICS meeting to discuss the current state of the sampler.
 - 902306 - SINKER
 - December deployment frame design
 - 901205 - ESP SURF Center
 - Connected and ran calibration fixture components. The PID controller is successfully driving heated beds.
- Tom O'Reilly
- Mike Risi
 - 200105 - Core Navigation Data - MDUC
 - Reviewed completed processes for David Packard with Kevin G.
 - Working on ROV UHS process based on preliminary specification
 - 300062 - DMO Divisional Support - Doc Ricketts
 - Converted one of the Accupositioners to the ROS Helios protocol after discussions with Drew B.
 - Continuing testing and driver development for Accupositioner.
 - 901101 - Seafloor Mapping
 - Misc. trigger board testing and LASS MOB
 - Participated in 3 day cruise series to sponge ridge with LASS
 - 902204 - Scalable Robotics
 - Support for LASS cruise series
 - Misc support and control system testing for new MiniROV sled
 - Developed application to capture stereo images from GigE cameras on MiniROV sled
 - Looking into a work around for lack of Procman support on Ubuntu 22.04 on Atuncita
 - Out of Office
 - Out of office on Fridays
 - May 30 - June 6
 - August 21
 - September 5 - September 7
 - March 4 - March 8, 2024
- Paul Roberts
 - 901904.99 - Corral Camera System
 - Multispectral design review preparation
 - 902004 - Planktivore
 - First deployment on Ahi

- 902204 - Scalable Robotics
 - Testing HSI can and system
- 902306 - SINKER
 - Testing sediment camera optics
- Out of Office
 - 10/19-10/21
- Brent Roman
- Carlos Rueda
 - 901502 - Passive Acoustic Sensing
 - Preparations for NCEI workshop next week
 - 902101 - LRAUV Technology Development and Fleet Operations
 - TethysL is now [3.5.1](#).
 - 902204 - Scalable Robotics
 - [Dial](#) maintenance release (now 0.4.0).
 - Out of Office
 - Oct 16-19: 1-2 days working remotely (school break)
 - Nov 15: (virtual) Generative AI (AI Barcelona)
 - Nov 20–22: vacation
- Karen Salamy
 - Out of Office
 - On-campus 3 days/week (**T, W, TH**).
 - JURY DUTY
- Brian Schlining
 - 500055 - VARS, M3/RS, DSG
 - New release of [Sharktopoda](#) video player that addresses issues [#50](#) and [#56](#) that deal with differences in frame number interpretation between ffmpeg and sharktopoda.
 - Wrote a fix for issue [#63](#) to sync i2MAP master and mezzanine video timestamps.
 - 902308 - M3/VARS for the Masses
 - Added integration tests for target databases (Derby, SQL Server, Oracle, Postgresql) to the video asset manager.
 - Out of Office
 - Sep 20 - Oct 10 - Working remotely
 - Oct 11 - 13 - Out of office traveling
- Alana Sherman
 - Out of Office
 - Vacation day Monday 10/9
- George Stern