

Brent Roman Sorted By Project

300078 - DMO Divisional Support - AUV

300083 - DMO Divisional Support - LRAUV

708143 - CA Current HABS

708165 - MERHAB19:ESP

- Supporting NWFS effort to field a 2G ESP on a Navy Base (Week 3)
- Helped explain ESP 2G Fluid tracking to NOAA NorthWest Fisheries (Week 5)
- Working with Steph's lab to help diagnose trouble during recent ESP deployment off Navy pier (Week 6)
 - Likely bitten by serial driver bug (Week 6)
- Experimenting with snaking thermocouples through ESP 2G puck clamp tops to make thermal calibration more repeatable. (Week 7)
- Updating decade old scripts to automate thermal calibration using new model thermometers. (Week 7)
- Updated ESPfriday and ESPeddie with new ESP root filesystem and Linux kernel (Week 7)
- Updated NOAA NWFSC's two ESPs in anticipation of spring deployments (Week 8)
- Researched, coded and tested improved heater temperature calibration procedure for 2G ESPs (Week 8)
- Trying to solve mystery of sludge and particulate found inside Collection Syringe at NWFSC (Week 13)
- Zoom meeting to discuss particulate residue on inside of Collection Syringe of their 2G ESPs (Week 14)
- Helping NWFSC with prepare for upcoming deployments of their 2 x 2G ESPs (Week 15)
- Helping Nick Admas refine NWFSC's ESP missions for this season. (Week 16)
- Took part in conference call discussing project plans for upcoming 3 years (Week 26)
- ESPfriday deployed since May off La Push had a stuck hand. (Week 28)
 - Managed to recover and continue mission (Week 28)
- Helping NWFSC diagnose ESP syringe failures. (Week 29)
- Monitoring long running deployment off La Push (Week 29)
- Continuing to support ESP off LaPush WA and prep for the swap next month (Week 30)

708175.50 - SURF task

- Wrote script to extract water sampling events as a .CSV file (Week 26)
- Working with intern (Samarth) to help him create graphs from these raw data (Week 26)
- (Week 29)

771131 - Great Lakes PCM/HAB

- Updated their 3 ESPs with Linux kernel that fixes long standing serial driver bug. (Week 7)
- Starting work on ESP comms issues in the Sea-trac boat (Week 12)
- First test deployment of ESP in SeaTrac autonomous boat (Week 14)
- Coded new set of high level methods to facilitate driving the 3G ESP on surface vessels (Week 14)
- Installed OpenSSH on the Windows 10 machine in GLERL's SeaTrac autonomous boat. (Week 16)
 - A startup script holds open a tunnel to ESPshore allowing secure remote access (Week 16)
 - Of course, since its Windoze, everything is done graphically via VNC (Week 16)
 - Windoze has "PowerShell" now, which is vaguely POSIX-like. (Week 16)
 - Configured a Remmina client on Linux to provide one click remote screen access (Week 16)

- Documented our concerns about SeaTrans battery to GLERL (Week 17)
- Ready to comms: a router and a macbook for Ussler (Week 26)
- Tweaking Honu's configuration in preparation for next month's deployments (Week 29)
- Added support for a water sensor so ESP3G can be deployed without an LRAUV (Week 30)
- Strategizing on how best to handle new Function cartridges (Week 30)
 - Because they define actuators differently depending on the type of cartridge loaded (Week 30)
- Supported 3 ESPs deployed in the Lake Erie (Week 33)
 - Including first deployment on autonomous boat (Week 33)
- Supporting GLERL in their efforts to divorce their ESPs from the locked down NOAA lab networks (Week 50)

901009 - CANON

901101 - Seafloor Mapping

- Some exchanges re MB-System docker image status (Week 40)

901205 - ESP SURF Center

- Helping bring up new ESP portable for Docuette's lab "ESPmarin" (Week 1)
- Helping Preston improve ESP 3G Lysate recovery algorithm (Week 1)
- Working with Kyle Beadle@GLERL and John Mickett@APL to diagnose ESP cell comms failures (Week 1)
- Coded improvement to 3G Lysate Recovery procedure suggested by Preston (Week 2)
- Helping Nadia characterize higher torque stepper motors (Week 2)
- Found and fixed some file permissions issues in our ESP Linux "distro" (Week 2)
- Characterized ESP 3G stepper motors' power use (Week 3)
- USB modem sent to GLERL fixed their comms issue (Week 3)
 - Original issue still a mystery. Recommending they ship problem modem to us. (Week 3)
- Working with Preston to develop a reliable protocol for extracting Lysate from Function 3G Cartridges (Week 5)
- Managed to replicate ESP serial modem failure that plagues GLERL in my lab (Week 5)
- Found and fixed very long-standing bug in ESP's low-power ARM CPU board's XR16L788 octal serial port driver (Week 6)
- Shared edge-triggered interrupts are a royal PITA! (Week 6)
- Working with NOAA GLERL to verify this fix in the field before pushing new kernel to all ESPs (Week 6)
- Improved logic in ESP OS and kernel for detecting and reacting to Ethernet cable plug/unplug events. (Week 7)
- Updated >5 ESPs (Week 8)
- Created simplified framework for Kevan Yamahara's delta smelt 2G ESP deployments (Week 8)
- Added ability to time limit ESP sampling so we could run rapid-fire EDNA archives (Week 12)
- Coded Ussler's formulas to derive ng/L toxin from raw SPR data (Week 12)
 - Arranged for them to be uploaded acoustically (Week 12)
- Updated software on at least 7 ESPs (Week 12)
- Got ESP's SPR real-time analysis working with Bill Ussler's help (Week 13)
- Helped Nadia diagnose numerous ESP 3G pump problems (Week 13)
- Configured and tested cell communications in GLERL's ESP 3G autonomous boat (Week 13)
- Debugged time limited sampling with help from Kevan Yamahara (Week 13)
- Supporting Nadia, Ussler and Preston in their struggle to prep ESPs for ECOHAB (Week 14)
- Iterated with Ussler on real-time reporting of toxin concentrations derived from SPR results (Week 14)
- Supporting ESPs in ECOHAB (Week 15)
- Configured 3G ESP for integration into SeaTrac (Week 15)
- Working with GLERL to remotely access the SeaTrac Autonomous Surface Vessel (Week 15)
 - Battery failure on SeaTrac is complicating this (Week 15)
 - Installed SeaTrac's windows only GUI under WINE (Week 15)

- Testing and remotely updating GLERL's 3 x 2G ESPs to reconfigure for USB cell modems (Week 15)
- Created a new variant of "daily" scheduler that supports time-limited sampling (Week 15)
 - Terminates sampling early if the next sampling time scheduled will otherwise be missed (Week 15)
- Updated the last of GLERL's 3 ESP (Week 16)
- Shipped GLERL a firmware programmer to update their ESP's "sleepy" I2C gateways (Week 16)
- Updated the "sleepy" boards in our spares inventory (3 of 5 worked) (Week 16)
- Discovered that I need to move bafflehead from 32-bit to 64-bit linux (Week 16)
- Wrote fireAll script to eventually replace processAll (Week 17)
 - with more flexible sampler parameter overrides (Week 17)
- Helped Ussler work through post deployment SPR issues (Week 17)
- Helped Nadia diagnose position sensor error on ESPmv1 (Week 17)
- Added support for "blank" cartridges at Preston's request (Week 17)
- Working with Nadia to debug problems with Sampler Pump stalling (Week 26)
- Working with Scott to ensure new cooling system for ASV does not destabilize puck heating (Week 26)
- Prepared laptop and WiFi hotspot for away team headed to GLERL (Week 28)
- Provided lots of support to ESP intern Samarth so he could analyze filter rate data from old logs (Week 28)
- Determined that much of the 3G's pump oscillation is self excited (Week 28)
 - Intend to improve control law in firmware (Week 28)
- Added first cut a non-volatile command history storage (Week 28)
 - Complicated by fact that there are multiple simultaneous espclients on a given server (Week 28)
- Added shared, non-volatile command history to espclients (Week 29)
- Measured 3G ESP pump control instabilities (Week 29)
 - Added derivative control to pressure pump motor servo in attempt to address them (Week 29)
 - Began testing to measure effectiveness (or lack thereof :-) (Week 29)
- Support for WHOIs upcoming deployments (Week 30)
- Added Integral and Derivative gain to ESP 3G's pressure control (Week 30)
 - This seems to be effective at reducing the amplitude of the pump's pressure spikes (Week 30)
- Improved PID pressure servo to better cope with 3G ESP's pump pulsations (Week 33)
- Coding enhancements to support new Function 3G ESP cartridges (Week 33)
- Rewrote lowest-level byte oriented Ruby numeric conversions in 'C' (Week 37)
- Rewrote lowest-level byte oriented serial port input parsing in 'C' (Week 37)
- Removed Ruby support for extinct Dwarf firmware. (Week 37)
- Ruby ESP app can (finally!) log servo motor status at their full 64hz sample rate! (Week 37)
- Optimized PID gains for improved pressure control in the face of pump pulsations (Week 39)
- Identified that one of our 3G sampling pumps DOES NOT pulsate! (Week 40)
- Older pumps seem to work better. What changed? (Week 40)
- Automated 3G firmware update procedure. (Week 40)
- Improved lysate recovery protocol so better detects and corrects a stuck plunger. (Week 40)
- Continuing to investigate ESP 3G pump pulsations (Week 41)
- Supporting Nadia in her struggle to debug updated ESPkoa with modified parts (Week 44)
- Helping to support Nadia in her efforts to build up 2G and 3G ESPs (Week 47)
- Answered few support queries from WHOI (Week 47)
- Step up tools to calibrate the new ESP 3G heater boards (Week 48)
- Calibrated 7 new 3G ESP heater boards' temperature sensors (Week 50)
 - Before discovering that none of the boards heating elements worked (Week 50)
 - Returned them for rework. (Week 50)
 - Finished calibrating reworked heater boards (Week 50)
- Supporting Nadia at NOAA in Charleston by phone (Week 50)

901502 - Passive Acoustic Sensing

- Adjustments to PBP software (Week 39)

- Group meeting in preparation for NCEI workshop (Week 40)

901513 - Targeted Sampling by AUVs

- Possibly a new wave glider front tracking exercise coming up(?) (Week 40)

901913 - Wet Wifi

- Modems shipped back to MBARI (Week 1)
- Received OceanComms H150 modems back after faulty SDcard replaced (Week 2)
- Preparing tiny WiFi router to operate in modem test box on the MBARI dock (Week 12)
- Dealt with ITAR issue again (Week 17)
- OceanCom is already offering an improved “gen 2” modem. (Week 17)
- Built cheapo “deck box” for testing OceanComms modems (Week 26)
- Got them communicating reliably in the test tank by turning output down and limiting speed to 166kbs (Week 26)
- Submitted Phase I proposal for 2024 (Week 28)
- Preparing to use modem deck box with LRAUV in test tank (Week 29)
- Demonstrated sustained, reliable ssh sessions to galene in the test tank (Week 30)
- With Bret Hobson, designed experiment to test wetWiFi link to LRAUV loitering under Paragon (Week 33)
- Successfully connected to LRAUV galene @30m depth from Paragon (Week 39)
- Reconfigured router so it would work without an upstream internet connection (Week 39)
- Added forwarding rules to access backseat computer more conveniently (Week 39)
- Built cable to bypass modems for (dry) lab tests (Week 39)
- Added RSTP server to LRAUV galene’s backseat cpu and camera (Week 40)
- Stitched together a series of router forwarding rules to make this video stream available on MBARI network via WetWifi when galene is deployed. (Week 40)
- Implemented systemd services for recording the Optim camera on Galene (Week 41)
 - And simultaneously streaming (lower resolution) video (Week 41)
- More reliable video streaming between Waveglider and Galene in test tank (Week 44)
 - Switching H.265 encoder from omc to nvidia proprietary module helps a lot. (Week 44)
 - H150 moved to hang below the Waveglider’s sub section (Week 44)
- Put Galene and waveglider into the tank again. (Week 47)
 - Chris Wahl improved mounts for H150 modem under the sub body (Week 47)
 - Stable networking in tank, however video only works a few seconds without breakup (Week 47)
- Learned much more than I ever wanted to about video streaming protocol (Week 47)
 - Finally got GStreamer’s RTSP with RTCP error feedback working! (Week 47)
 - (At least in a network simulating 10% dropped packets) (Week 47)
 - Need to get Galene back into the tank to verify this! (Week 47)
- Got GStreamer’s RTSP RTCP working only to discover that their gst-launch tool does not allow access to all the parameters needed to configure it. (Week 48)
- Created a revised “gst-rtsp-client” from gst-launch that includes the necessary config magic (Week 48)
 - Hardcoded for now, plan to shape it into something more versatile soon. (Week 48)
- Lots of work learning the intricacies of gstreamer (Week 50)
- Managed to get RTSP’s AVPF profile working so client can request retransmission of lost packets (Week 50)
- Forked the standard gst-launch-1.0 utility to allow specification of critical, but hidden, properties (Week 50)
- Testing very low-power LTE Cat 1.bis USB dongle based on SIMCOM 7672G (Week 50)
 - <https://www.aliexpress.us/item/3256805723538488.html> (Week 50)
 - Works with Verizon sims! (Week 50)
 - Costs all of \$20! (Week 50)
 - Draws average of .15W (Week 50)
 - No GPS 😞 (Week 50)

902101 - LRAUV Technology Development and Fleet Operations

- TethysL significant updates (now v3.0.3). Very productive session with Yanwu, including a complete migration exercise going over the main steps in general. Thank you, Yanwu! (Week 39)
- TethysDash/dash4 updates as usual. Trying to revisit the modernization goal and see what could be advanced this year. (Week 39)
- Some assistance to Karen re Dash5. (Week 39)
- TethysDash backend now 4.54.0 (Week 40)
- Dash4 frontend now 4.54.2 (Week 40)
- TethysL: significant additions in TethysL 3.2.3! (Week 40)

902204 - Scalable Robotics

- Set up CompasWebUi on Atuncita: pretty straightforward: just installed/config'ed apache, and launched the services with the usual docker-compose. (Week 39)
- Struggling a bit setting up lcm-webserver+websockets locally for development/testing purposes. (All good on atuncita and compaslabdev though) (Week 40)

902302 - DEI

DQ2210 - READI-net

- Investigated various Iridium satcomms options (Week 1)
- Investigated various CPU board options (Week 1)
- Continuing discussion of various comms and processing options including Certus 100 (Week 2)
- Continuing exchange with consulting firm regarding compute hardware choices (Week 3)
- Participated in Zoom call with Bad Wolf consulting. (Week 6)
- Starting looking at potential SOC from Toradex (Week 7)
- Read over initial proposal for controller serial protocol design (Week 7)
- Helped evaluate prospective ARM processor board from Taradex (Week 8)
- Participated in call discussing UI and low-level command protocol design (Week 12)
- Attended zoom call with Elecia White, who will likely be writing the firmware (Week 16)
- Helped Birch interview prospective embedded systems contractor (Week 17)
- Attended meeting on mechanical design (Week 29)
- Attended conference call (Week 40)
- Attended Ready-Net meeting at MBARI (Week 41)

Out of Office

- March 8-15 visiting my dad in Sarasota, FL
- May 26 - June 6
- Aug 21 - Sept 1 (Aug 24 - Sept 31 off the net in the Grand Canyon)
- Oct 2-4: [QCon](#) (tentative)
- Nov 20-22: vacation
- ~~Oct 23-27: GOTO Chicago~~ (event has been postponed!)
- Oct 16-19: 1-2 days working remotely (school break)
- Nov 15: (virtual) Generative AI (AI Barcelona)

Overhead

- DEIA (Week 39)
- Tentatively exploring Fathomnet tasks for possible effort dedication this year (Week 39)
- Addressed vulnerabilities in two repos, reported by Dependabot (Week 39)

- ACM TechTalk (Week 39)
- IE mtg – one more cybersecurity (preliminary) discussion. Some input to “change” document. (Week 39)
- DEIA focus group mtg (Week 40)
- /etc/sudoers (and other files) corrupted on my Mac (thanks IS for the assistance to fix!) (Week 40)
- Ocean Visions seminar (Week 40)
- IE meeting (reviewing change management/cybersecurity document) (Week 40)
- Started migrating tethystest from CentOS to Ubuntu (Week 40)