

901805 - Coastal Biogeochemical Sensing Program

Week 51

1. Thom Maughan
 - a. Support for glider integration and testing

Week 50

1. Thom Maughan
 - a. Ongoing testing of v4.1.6. Assisting setup for lab testing.
 - b. Experiment duty cycle feature.

Week 49

1. Scott Jensen
 - a. Found a design error with the battery measurement feature of the nanoFET.
2. Thom Maughan
 - a. Release pHFET-SOS v4.1.6 for lab testing. Support for new sensors and first release for nanoFET

Week 48

1. Thom Maughan
 - a. Driver testing for pico-ph, nanofet, ocr504, ctd sbe37 and 5860 with updated driver framework.
 - b. Verifying bug fixes, release prep for pHFET-SOS.
 - c. Industrial microSD stress testing - good so far.
 - d. BME280 support for nanoFET.

Week 47

1. Thom Maughan
 - a. Working on merge of Irene's instrument drivers and eddy covariance code. Updating drivers to new driver model. Wiring up instruments and testing.
 - b. Finished nanoFET as a pH instrument driver on MFET / MPHOX.
 - c. Scoping m2m protocol
 - d. Designing experiment duty cycle feature.

Week 44

1. Thom Maughan
 - a. Working on nanoFET instrument driver for MFET. Hit a snag on electrical mod for output voltage from MFET to drive nanoFET. Ordered a small boost converter.
 - b. In progress on experiment duty cycle statemachine.

Week 42

1. Thom Maughan
 - a. Cable diagrams, cabling for mfet to nanofet for driver dev.
 - b. Testing industrial microSD
 - c. New feature dev: experiment duty cycle, m2m, self cal
 - d. Merging Irene's pico-pH driver

Week 41

1. Jon Erickson
 - a. pico-pH sensor. Rev'd the parts in the shop queue.
2. Thom Maughan
 - a. Finished implementing and test of high rate sampling mode for the Wirewalker use case for Tuesday deployment possibility.
 - b. Working on new feature list. NanoFET as a peripheral, merging pico-ph driver and eddy covariance.
 - c. CCS v11 git integration appears to have fixed a painful bug that was hampering move to git... Thanks to Irene for blazing that trail.

Week 40

1. Thom Maughan
 - a. Met with Yui on remainder of 2022 planning, working on new feature list, update for Wirewalker use case.
 - b. Ordering industrial microSD 1G SLC cards for filesystem testing.
 - c. Evaluating Code Composer Studio v12 in hopes it fixes git integration.

Week 39

1. Jon Erickson
 - a. Waiting on the pH sensor pressure case parts from the shop queue.
2. Scott Jensen
 - a. Working on voltage tolerances of nphox ISFET tester
3. Brent Jones
 - a. Flying Spray 29 in support of Yui's experiments
4. Thom Maughan
 - a. Continuing to run microsd card stress test.
 - b. Talked with Taylor about Martz lab experience with microsd cards. Found out they are using industrial 2GB cards. Ordered some for test.
 - c. Working on merge of Irene's code.
 - d. Preparing release for next two pump deployment to Palmyra.

Week 38

1. Thom Maughan
 - a. Running tests on micro sd cards and ymodem.
 - b. Joseph tested the pump sequencer and firmware for CENCOOS pier MpHOX - all went well and the system was delivered.

Week 37

1. Jon Erickson
 - a. The pico-pH case design is in the shop queue. Three items.
2. Scott Jensen
 - a. Tests of nanopHOx
3. Brent Jones
 - a. Deployed spray 29 and am piloting in support of Yui's experiments
4. Thom Maughan
 - a. Added support for 128KB FRAM and provided a pre-release of phfet-sos to enable nanoFET lab testing with a durafet.

- b. Released v4.1.4 phfet-sos on MpHOX update for CENCOOS. In progress on Wirewalker MFET fast sampling.
- c. Continuing to run tests on microSD cards on MpHOX and MFET to create a test case for the bad block problem. So far, no errors using ymodem on 40+ MByte files. Changed the incoming QA procedure for new microsd cards from 'format with windows' to format with microsd card association utility.
- d. Working on continuous sampling in deployment for Wirewalker.

Week 35

- 1. Scott Jensen
 - a. Continued testing of nanoFET and adjustment to a resistor for WAKE
- 2. Brent Jones
 - a. Investigating Spray OCR two blocking issue. Prepping spray 29 for deployment

Week 34

- 1. Thom Maughan
 - a. Chasing ymodem bugs, found root cause issue was in microsd card f_read fail on MFET, two different MFETs had this problem. Looking into update of FatFS and building a test case
 - b. Working a bug on MpHOX test menu (no data config'd causes crash).

Week 33

- 1. Scott Jensen
 - a. nanoFET tested with DuraFET and results are very promising
- 2. Thom Maughan
 - a. Debugging a ymodem issue.
 - b. Wirewalker power cycle race condition that caused MFET to stop sampling after 2000+ profiles. Setting up a test harness to reproduce.

Week 32

- 1. Scott Jensen
 - a. Testing of nanoFET. Indications are that the analog front end is functional
- 2. Thom Maughan
 - a. Hallway pitch to Yui for a glass electrode halfcell with solid state AgAgCl electrode. Another ISFET vendor is being pursued so not likely of interest to the Carbon lab.

Week 31

- 1. Jon Erickson
 - a. Finished the top level design for the pico-pH-sub sensor tests.
- 2. Scott Jensen
 - a. nanoFET check out
- 3. Brent Jones
 - a. Recovered Spray 34. Teaching Yui lab people how to offload and process data
- 4. Thom Maughan
 - a. Suggested using glass electrode (half cell) with solid state Ag'AgCL electrode. Not likely due to previous ISFET investment. Carbon labs are looking at another ISFET vendor.
 - b. Nanofet software

Week 30

- 1. Jon Erickson

- a. Working on pico-pH case/chassis/flowcell integration.
2. Thom Maughan
 - a. Updated nanofet firmware, met with Scott. It looks like it's ready for analog testing.
 - b. pH sensor options to replace Honeywell ISFET

Week 29

1. Jon Erickson
 - a. Working on flow cells for nanoFET.

Week 28

1. Brent Jones
 - a. Recovered Spray 34 and processed data. Flying Spray 29

Week 27

1. Thom Maughan
 - a. NanoFET hardware debug
 - b. IrDA / Bluetooth dongle electronics

Week 24

1. Thom Maughan
 - a. Packed the dev box for remote work.

Week 23

1. Brent Jones
 - a. Final bench checks on Spray OCR integration
 - b. Prep Spray 29 for deployment

Week 22

1. Jon Erickson
 - a. Have three assembly designs, depending on the choice of sensor. No decisions yet.
2. Thom Maughan
 - a. Support for Spray pH and OCR-504 integration

Week 21

1. Thom Maughan
 - a. Wired up MFET+OCR504 to the Spray chassis in BOG lab to enable remote dev by Brent.
 - b. Worked on nanoFet, configured ads1248 for all inputs, however that did not solve the current draw problem.
 - c. Working on bug fixes / enhancements for mphox/mfet.

Week 20

1. Brent Jones
 - a. Final OCR bracket for Spray sent to production
2. Thom Maughan
 - a. Support for Brent on integration of MFET with OCR504.
 - b. Starting to organize parts ordered from Chinese contract manufacturers for an MpHOX, MFET build.

Week 19

1. Thom Maughan
 - a. Worked with Irene on nanoFET, will resume after wrapping up another project.

Week 18

1. Brent Jones
 - a. Designing OCR mount for Spray use
2. Thom Maughan
 - a. Worked with Irene on nanoFET and discuss plans for use of tagging in git.

Week 15

1. Thom Maughan
 - a. Released v4.1.1 pHFET-SOS for MFET on Wirewalker, MFET+OCR504 on Spray, and MPHOX for Cal Poly Pier deployment. Lab testing in progress.
 - b. Worked with Jacki on test plan.

Week 14

1. Brent Jones
 - a. Drawing up mounting brackets for pH sensor integration on Wire Walker
 - b. Flew and recovered Spray 34 in support of PIE experiment (Takeshita)
 - c. Diagnosing poor COMMS performance of Spray 34 last deployment

Week 13

1. Scott Jensen
 - a. User found a anomalous feature. Found and fixed.
2. Thom Maughan
 - a. Support for Wirewalker/RBR - added posix timestamp, 2 second sampling, implemented init fix per Scott Jensen that solved a spurious character problem at wakeup.
 - b. Chasing ymodem bug which turned out to be specific to a version of teraterm and not a pHFET-SOS bug.
 - c. Finishing revised CTD driver.
 - d. Testing Spray version of the MFET code with OCR-504 and pH support.

Week 12

1. Brent Jones
 - a. Flying Spray34 in support of tracking exercise with WG
2. Thom Maughan
 - a. Big push to wrap up development and release v4.x pHFET-SOS for lab testing.
 - b. Working to understand Seabird SBE37 SI firmware change. Opened a support case with Seabird, waited, escalated to the tech support manager, waiting... Working on a driver that handles both 'old' and 'new'.
 - c. Purchased parts from Chinese contract manufacturer inventory for a quantity 35 build of mphox and mcap thru Aliexpress. Most parts were showing 2Q2023 lead times from US distributors.

Week 11

1. Brent Jones
 - a. Completed rebuild and operational check out of Spray34. Deployed and am flying her

2. Thom Maughan
 - a. Parts purchased for MCAP / MpHOx, qty=30. Sourced most of the ICs on Aliexpress, hoping the Shenzhen shutdown does not affect delivery.
 - b.

Week 10

1. Thom Maughan
 - a. Working on pHFET-SOS v4.x release.
 - b. Provided support and updated firmware with new pump sequencer for octopus respirometer experiment.
 - c. Debrief with Chris L. on octopus respirometer experience.

Week 9

1. Brent Jones
 - a. Completed rebuild of Spray hydraulics. Completed integration of modem into Spray. Assembled for initial ballast
2. Thom Maughan
 - a. Pump sequencer for Barry lab octopus garden
 - b. Bug fixes, new features

Week 8

1. Scott Jensen
 - a. Debugging of a few problem boards.
2. Thom Maughan
 - a. OCR-504 support is in place for MFET. Driver, config, and sampling are tested. Ready for Spray integration testing.
 - b. Pump sequencer framework in place for BEAMS v1, Barry Lab octopus respirometer exp, self calibrating MpHOx. In progress on state machine implementation.
 - c. Met with Chris Lovera regarding octopus respirometry. We rescheduled the firmware upgrade until Thursday as hardware is being scrounged. Deployment is next Wed.
 - d.

Week 7

1. Jon Erickson
 - a. nanoFET - Working on the interior layout with the circuit board.
2. Brent Jones
 - a. Meetings
 - b. Begin degassing hydraulic oil for rebuild of Spray 29 hydraulics

Week 6

1. Jon Erickson
 - a. Working on interior layout with the nanoFET ph board.
 - b. And a pressure case to go with it. (neutrally buoyant of course).
2. Scott Jensen
 - a. Checkout of nanoFET continues as well as packaging starts.
3. Thom Maughan
 - a. Working on new datalogging/controller mode for BEAMS and Barry lab
 - b. New features, bug fixes

Week 5

1. Jon Erickson
 - a. kick -off meeting. I'm on the hook for the mechanicals of the "modFET" Ph sensor; press. Case, chassis, etc.
2. Scott Jensen
 - a. nanoFET check out and housing design
3. Thom Maughan
 - a. Working on release of v4.x pHFET-SOS with support for nanoFET, new sampling routine for BEAMS and the Barry lab, m2m protocol enhancements, bug fixes.
 - b. Handed off nanoFET programmed and tested to Scott for hardware checkout. Need to thoroughly review/test the menu system and config. QA works, ADC test code works.

Week 4

1. Scott Jensen
 - a. Minimally checked out new nanoFET so that it could be programmed to complete check out.
2. Brent Jones
 - a. Ordering replacement pressure cases for gliders. Updating schematics
3. Thom Maughan
 - a. Updating nanoFET support in pHFET-SOS. Programming the two boards for Scott to test hardware build.
 - b. Met with Yui on m2m interface for pHFET-SOS. Also discussed data dongle.
 - c. Working on release of pHFET-SOS v4.1
 - d. Comm protocol discussions with Irene.

Week 2

1. Scott Jensen
 - a. Finalized and sent out nanoFET
2. Brent Jones
 - a. Investigating noise source from last run of 2021
3. Thom Maughan
 - a. Working on v4.x release, bug fixes, features.
 - b. Spray planning meeting

Week 1

1. Thom Maughan
 - a. Met with Yui and Jacki to overview pHFETSOS usage, setup tests, and prep for bugfest on v4.
 - b. Brought OCR and MFET to my house to work on the driver for the Spray deployment..