

Ocean Observatories Initiative Facility Board (OOIFB)
&
Data Dissemination and Cyber Infrastructure (DDCI) Committee
Meetings
National Science Foundation - Room W3170
Alexandria, VA

- Monday, 10/29/18: OOIFB Meeting
- Tuesday, 10/30/18: OOIFB & DDCI Joint Meeting
- Wednesday, 10/31/18 AM: DDCI Meeting

Day 1: Monday, October 29 – OOIFB Meeting – Location: NSF Room W3170

Welcome, Introductions, Review agenda – Larry Atkinson opened the OOIFB meeting. Participants introduced themselves. The participant list is included as [Appendix I](#). Larry explained the [role of the OOIFB](#). The [agenda](#) for this meeting as has evolved over the weeks and has been thoroughly vetted.

Update from NSF: NSF Division Director, Terry Quinn, welcomed the group to NSF and remarked that there is great science that can be done with OOI data and looks forward to seeing results.

Lisa Clough provided the report for NSF. It was a very challenging time over the past months, but the transition from 1.0 to 2.0 has gone well. There are still pieces that they are working on. They may write a case study on this. There hasn't been a major change in operator for an NSF large facility in the past. Lisa thanked the Facility Board for their assistance during this in this period. The DDCI will be busy over the coming year.

Bob Houtman continued the NSF report and reported on staff changes. A new Grant & Agreement Specialist, Anna Misiano, has been appointed for OOI.

Lisa Clough reported that there are a group of NSF program officers that she draws on, including George Voulgaris, Barbara Ransom, Nick Harmon, Kandace Binkley, Lisa Rom, Kevin Butler, and Gayle Pugh. Gayle Pugh and Kevin Butler will be assisting with the metrics analysis.

Admin Support Office - Annette provided the status of the OOIFB Admin Support Office (ASO). Her slides are included as [Appendix II](#).

The ASO start date was October 1, 2018 and is located at the University of Rhode Island - Graduate School of Oceanography. The PI is Annette DeSilva and the Administrative Assistant is Karen Besson.

The OOIFB Website <OOIFB.ORG> domain has been transferred from ODU to URI. A G-Suite Account was purchased and list serves will be created soon <name@oirfb.org>.

Review OOIFB action items (pending, completed) – Annette reviewed the list of OOIFB action items. See [Appendix III](#).

In 2017 there were eight total actions; five are complete and three delayed to OOI 2.0. In 2018 there have been seven total OOIFB actions plus two DDCI actions. Four of the OOIFB and one of the DDCI actions are complete. Three OOIFB and one DDCI actions are pending.

Kendra Daly is no longer supported by OOI, so she is again a voting member of the OOIFB.

An OOIFB statement regarding OOI Non-Profit collaborations is still needed. Larry will reach out to ONC, NANOOS, and others. Some of these groups are currently renewing their MOUs.

We reviewed the OOI organization chart (see Appendix III). The arrows of the chart are important. The chart needs to be updated (this is an **action item for NSF**). The OOIFB does not provide Guidance.

UPDATE FROM OOI PROGRAM OFFICE:

Status of Transition & OOI 2.0 - John Trowbridge (WHOI) provided the report. His slides are included as [Appendix IV](#).

On October 1, 2018 the OOI program office was transitioned to WHOI. John reviewed the transition completed activities (see list in Appendix IV). One pending activity includes the final Configuration Management System alternative to SAF. It will be selected by November 15.

John reviewed the OOI 2.0 Mission and Goal. The Mission includes operation and management of the OOI arrays, CI and Data Delivery, and community engagement. The goal is to have OOI recognized for its value to the community and leadership in data quality and delivery, community engagement, engineering, and operations.

The organization structure was reviewed and includes the staff listing for the Project management Office (PMO) as well as the array and CI project scientists and managers. They feel that they have put together a good team.

Ruoying He asked about Data Delivery and where it falls within the structure. John Trowbridge explained that Data Delivery has been put on the MIOs.

Next John reviewed the OOI 2.0 Governance and responsibilities of the OOI PI, OOI PM, and the PI/PS Team. The interaction of Program with OOIFB was described.

There will also be a Science Oversight Committee (SOC). The draft charter is currently under review by NSF and OOIFB. Members of the SOC will include John Trowbridge, Deb Kelley, Al Plueddemann, Ed Dever, and Peggy Brennan-Tonetta. Ex-Officio members will also include

Larry, Lisa, and Bob. They would invite other people as needed. They haven't decided how often they would meet.

Discussion:

- Larry Atkinson suggested Tim Crone as DDCI Chair be added as an SOC ex-officio member.
- Larry - It was good for he and Annette to be on the SOC calls in the past. Most of the time we just listened.
- Folks seem to think meetings should be held every two weeks.
- There should be an agenda for each meeting.
- Lisa Clough - It is John's committee.
- Lisa encouraged Annette's participation.
- John Trowbridge – He will add Annette and Larry as ex-officio members.
- In the past there were data people on the SOC calls.
- Open item - should Tim Crone be an as ex-officio as DDCI Chair.
- Lisa - COL is on a no-cost extension until June, so you might want to have them on-board as Ex-officio. It can be Kristen or Chris Rutherford.
- A possible time for the SOC web conferences is Tuesday's from 4-5 pm.

Status for each component:

Endurance Array Update - Ed Dever (OSU) provided the report. His slides are included as [Appendix V](#). Ed is replacing Sheri White on the OOIFB and replacing Jack Barth as Endurance MIO PI. Ed reviewed the Endurance team.

Images from the Endurance Array Turn Cruise 10 are included in Appendix V. The first cruise was on R/V *Sally Ride*. They have used many different ships for the cruises. This year they staged the cruise out of Seattle for the first time. It was a bit of a challenge but worked well.

Endurance Array Platform status was reviewed. From the slide images, systems that are operating, not telemetering, but sampling, or not deployed/working are illustrated.

- The shallow water profilers are not deployed because the winter weather and wave heights are too severe.
- They log all of the failures using the red-mine system.
- Some systems are sampling, but not telemetering. This is due to electronics issue.
- Some systems have failed.
- Some systems don't have battery back up, so no data.
- They have design updates planned to correct some of the problems.
- The weather was very good, thankfully because funding is short.
- The cruises are about 2 weeks - 16 days plus 2 mobe. They are considering reducing the number of cruise days on their ship time requests going forward.
- Kendra Daly - Is there a problem of getting cruises scheduled outside of the weather window? Ed - so far they made statements of concern, but no big stink. They have been able to accomplish their work.
- We do a better job of advertising the open berths on the cruises.

Next Ed reviewed the Endurance Array Glider Coverage since May 2018.

- 10 gliders have been deployed between 3 May and 17 Oct
- 3/10 deployments to full duration
- 3/10 deployments deployed and operating normally
- 4/10 gliders leaked (O-ring leaks not the issue)

See the slides for additional details.

There was a glider review in June.

- They think the leaks might be due to sediment from the bottom. Overtime, they see pinhole leaks. It is usually the second deployment when they start to see the leaks.
- Sarah Gille - Why do you see the leaks at the beginning of the deployment? Ed - When they sit on the shelf, they dry out. There has never been a real fix.
- They typically don't send the whole glider back to the manufacturer for repair; they just send the pump. These are Slocum Gliders.
- They started with 12 gliders, but lost one and it hasn't been replaced due to cost.
- Ed commented that OSU received their funding quickly from WHOI.
- Sarah Gille - Has there been any thoughts of getting a different brand of glider? Ed - that would entail a major tech refresh. Perhaps it could be considered in a year or two.

Ed reviewed the CSPP deployment summary since the May 2018 meeting.

- There were 6 operational CSPP deployments between May and Oct
- 1/6 deployments completed normally
- 3/6 deployments profiling ended early due to firmware issues. These issues were resolved prior to the September Endurance 10 cruise.
- 2/6 deployments were on the September Endurance 10 cruise at the CE02SHSM and CE07SHSM sites. They are operating normally as of 26 Oct with recovery planned for the first week of December (using R/V Rachel Carson).

Ed reviewed notable technical progress (see slide).

Ancillary/data verification activities have included adding biofouling settling plates to Endurance Moorings as part of a study by Lindsey Haram (Smithsonian Environmental Research Center). Biofouling has been a concern and they hope to hear the results of the study.

Ed reviewed the science results for Endurance Array data. This included contributions to three articles in OceanObs19 collection of white papers.

There have been a few proposals that have been submitted to NSF. He prepared two letters for the proposals.

The AWP 1 Budget reductions of \$199k to support increase in CI scope resulted in Endurance changes to:

- Mooring refurbishment materials
- Glider refurbishment materials
- Mooring instrument refurbishment ODC
- CSPP refurbishment ODC

Ed reviewed the reductions and justification for them. In some cases it was based on the performance of the sensor.

Kendra Daly - Why isn't the CI budget being distributed to the MIOs. Ed - In the transition from 1.0 to 2.0 it was recognized that the CI effort wasn't where it should be. We needed to increase the funding for CI. The cost for this was distributed. It is 2% reduction for Endurance.

Other Challenges for Endurance include:

- Instruments:
 - Continued CAMDS issues
 - OPTAA service continues to be slow
- Glider leaks in summer 2018
- UNOLS ship costs higher than budgeted. R/V *Sikuliaq* day rate is higher than other ships. However, they were able to carry more and reduce days to stay within budget.
- Heavy lift winch - issues with line read outs.

Discussion:

- Annette - Will the budget reduction be felt every year? John Trowbridge - The AWP indicated that if areas of need were identified, they would be addressed. Jeff Glatstein identified areas where CI needs improvement. To accomplish this, additional resources are needed. To support this, there is the reduction across the MIOs.
- Kendra - Was Raytheon tasked to provide documentation? Chris Rutherford - Raytheon provided documentation. Many came in towards the end of the transition. The documents provided had areas of question. They answered many of the questions. It is all there, but still needs work.
- Ruoying He - Is 2.5% budget reduction across the board? John Trowbridge - yes.

Cabled Array – Deb Kelley (UW) provided the report. Her slides are included as [Appendix VI](#).

Deb reviewed the changes in RCA in OOI 2.0:

- Took over management of terrestrial west coast infrastructure in partnership with Pacific Northwest GigaPop
- UW is now responsible for port agent drivers and data parsers
- Port agent drivers and data parsers will be moved to the Shore Station
- The data positions have been formalized, advertised and they hired 1.5 FTE's
- End-to-end process formalized and implemented for calibration, instrument metadata, and data evaluation (Orest)

Deb reviewed the Data and Network personnel changes:

- Deb is the PI/PS.
- Orest Kawka is the research scientist
- Mike Vardara is the data scientist
- Wendi Reuf - worked for AI Devol and is now the lead data evaluator.
- Katie Brigham is a data evaluator.
- Mitch Elend - data specialist
- They now have 4 undergraduates
- The engineering team includes Ken Feldman as the network engineer.

A description of how RCA operates was described and includes daily talks and regular meetings.

They are conducting deep-dives into metadata, instruments, and data Q//QC.

RCA field operations in 2018 have included:

4th Operations and Maintenance Cruise 47 days, 6/19 to 8/5 on R/V *Revelle* with ROV *Jason* (58 dives):

- Turned 5 Junction Boxes
- 3 Shallow Profiler Platform Assemblies, 3 Shallow Profiler Science Pods (Axial Platforms Recovered)
- 2 Benthic Experiment Platforms
- 84 CORE instruments turned-installed
- 3 Deep Profiler moorings
- 11 Installations of new PI instruments/Platforms & Turning of 2
- Recovery of Jason elevator dropped last year (2 instruments). Remarkably, it wasn't a bunch of shrapnel.
- 15 verification CTDs plus Jason Niskins and gas-tights

The VISIONS'18 was carried out and included 23 undergraduate and graduate students from UW, Grays Harbor, Queens College NY, and Chico - California State.

RCA uses an Operations Management System Weather map that provides Live Status network traffic with the ability to drill down to the instrument.

Deb reviewed the Cabled Array operational status:

- There have been >>30,000 shallow profiles since 2015.
- One of the big issues that they had at Axial Base was with the wetmate connector providing power and bandwidth. It was damaged during the ROV connection either last or this year. They have identified an Alignment Funnel and put in a rush order. They are expensive, so couldn't install on all connectors.
- Deep profilers - Data is not on CI and they are investigating why.
- They have received poor support from Kongsberg, so they are phasing in new cameras from SubSea.

- Blue Ocean Explorer is very close to operational and will provide integrated operational status, assets, issues, etc.
- The IRIS user base continues to grow.
- When will Axial Seamount Erupt? This is the only submarine volcano where eruptive predictions may be rigorously tested. This gets updated every daily.
- Expansion of Cabled Array - 11 PI instruments are now on the cabled array.
- Axial has been the site to go to for testing.
- For all of these programs, the PIs must have money to remove the instruments at the end of their award.
- Programs for next year include:
 - ONR - Clare Reimers and Peter Girguis
 - NASA Exobiology
 - NSF – Wilcock
 - Pending IODP
- The Cabled Array Issues and Implications for 2018 and 2019 were reviewed. These will be a challenge and they don't have a solution. Cabled Array Deck Space issues continue. The deck space on Revelle as compared to the space on the Atlantis was illustrated. They are trying to figure out how this will work.
- The report concluded with outreach highlights from the VISIONS' 18 program.

Break

Pioneer and Global Arrays - Derek Buffitt (WHOI via WebEx) provided the update. His slides are included as [Appendix VII](#).

- He began with an update on the Pioneer Array. They have had some successes. The profiler moorings continue to work well. All moorings completed refurbishment on time for the fall cruise. The R/V *Neil Armstrong* turnaround cruise is currently underway.
- Next the Global Arrays were reviewed (see slides for details).
 - The Southern Ocean array will go back in the water with funding by NERC. The mooring completed refurbishment in time for shipment to Punta Arenas. After the surface mooring is deployed, it will likely be in the water for 24 months.
 - Irminger is entering the fall storm season. SUMA data collection and delivery working well. For refurbishment, they are receiving instruments from vendor servicing. The 2019 cruises will have to mob in Reykeyvick, which will be challenging.
 - The Papa Array operations and mobile assets look good.
- There have been some personnel changes. John Wren is the electrical lead. They hired one software developer to assist Stephanie Petillo and have hired an assistant for Sheri White.
- The 2.5% reduction is coming out of refurbish as opposed to new purchases. They also suspended some spending until the next year.
- One of the risks is the vehicle refurb. They will schedule some discussions with Teledyne - Webb. They will also look at the contract issues.

Discussion:

- Brian Glazer - The CI transfer to DataPop saved \$200K. Was that part of the reduction? Deb - The program took advantage of that cut. It was part of the AWP. It came before the 2.5% reduction.
- Ed - NANOOSE is interested in the Glider raw data. Some of the data from OOI is going to the national glider DAC. However, he thinks this is limited to CTD. Not everyone tells you what they are doing near the OOI arrays. Sometimes people are installing things or working very close to the Endurance moorings. Ed will reach out to them to find out what is being deployed and where.
 - John Trowbridge- He had a list of some of the programs - EXPORTS, MOC/NERC work in Southern Ocean, etc. At the Pioneer Array there is a LTER being headed up by Heidi Sosik. Dennis McGillivray also has a program.
 - Kendra Daly - Is the WHOI mesopelagic program up near Irminger? John – The OTZ (Twilight Zone program) site is still under consideration.
- Larry - Data has been an issue for a long time. Now we are seeing money pulled out of MIO observations.
 - John - There is a problem with Data Delivery and it needs to be fixed.
 - Ed Dever - It is less bad than you think. Much of the data is available through the OOI data portal, but it isn't easy to get to. The Q/A Q/C is still a problem.
- Ed Dever - We need to address the help-desk issues. Now the inquiries that come in will be distributed to the MIOs. His team complains about CI, now it is their job so it will be interesting to see how this works.
- Deb Kelley - The data team worked very hard. They developed a lot of good tools. There was not way that they could access the data. They were very responsive to the help desk.
- Jim O'Donnell - Was there an effort to ingest the recovery data, particularly the ADCP data? Orest - This was a recommendation that was a very high priority. Hopefully it still is.
- Annette - Will the UNOLS new policy of charging for homeport days have an impact? Deb Kelley - yes.
- There was discussion on ROV Jason and its issues supporting the cabled array. Kendra Daly commented that this is a risk to the program. We have continued loss of data from a whole mooring. Bob Houtman remarked that OOI should provide feedback on the Jason operations directly to NSF.

Lunch Break – start here

Annual Work Plan (AWP):

Review OOIFB involvement – Larry Atkinson reported that NSF requested OOIFB's review if the OOI 2.0 AWP. The OOIFB recommendations were reviewed by NSF and then forwarded on to OOI 2.0.

Discussion:

- Kendra Daly - The most confusing part of the AWP this was the FTEs. Ed Dever - Each organization has a different structure, so it is understandable that it can be hard to understand.
- Kendra Daly – She was concerned that the level of support was too low. Ed - He thinks it will be okay as long as John Fram is on their team.
- John Trowbridge - The draft AWP is due in April 2019. Lisa Clough - This would be good timing for a spring OOIFB meeting. It would be good to have the AWP available for the spring meeting.
- Jim O'Donnell – He is concerned about fractional people. Deb Kelley – This is true, you risk losing them.
- Kendra - Do the institutions contribute? Lisa – There isn't cost sharing but the institutions provide space and management.
- Bob Houtman - Unless otherwise noted, the budget is \$44M. The President's budget request will be released in February. If there is a budget change, John Trowbridge will need to include it in their plan.
- Ed Dever - An issue is that OOI ship time is often scheduled over the Fiscal Year date (September through Oct). This makes budgeting challenging.
- There could be occasions when changes are needed to the AWP. The process would be John Trowbridge would send it to NSF. Then NSF could task OOIFB for feedback. The bi-weekly SOC calls will also help alert us to issues.

Timeline:

- The draft AWP is due in April
- OOIFB can review it at their May meeting
- The final AWP is due in August.

Discussion on OOI Science Plan and current/future Network Design – What is the OOIFB role in the 'science plan'?

Background on the history of the 'Science Plan' - Kendra Daly reported that the original plan was developed in 2005 at the Denver Airport. In 2007, there was a new plan and the traceability matrices were introduced.

This brings us back to last spring and OOIFB's review of the traceability matrices. Kendra remarked that when she looked over at the high-level science plan themes, they still apply. However, in terms of the traceability matrices, some sites have never been deployed and some instruments never turned on. The challenges in updating the matrices were a lack of information on what instruments are in the water.

Discussion:

- NSF wanted the updated traceability document for the National Science Board. Does NSF still want it?

- Lisa Clough - Most facilities of this scale have Plans. When NSF provides the 2007 Plan, it is a bit awkward. There is a need for an update. We could map things.
- Kendra - We are addressing very complex long-term questions that need OOI.
- Bob Houtman – The updated plan would be a valuable tool to the FB. When they receive ECOs or AWP changes, the FB can refer to the updated Plan to see if it is consistent and if it addresses the science questions.
- Kendra - Site maps would be a good reference.
- Deb Kelley - We don't have site maps, but they should be done for each array.
- Lisa Clough - A white paper type document on why OOI enables exciting science, then with a section on each component. She understands that FB doesn't have the information to do a science plan.
- Bob Houtman - As a first step, OOIFB can prepare a request for the information that is needed to prepare a plan.
- Sarah Gille - Is the traceability the right format? Can we simply have a narrative? Should we have workshops to gather feedback?
- Ed Dever - There are instrument lists on the OOI website.
- Kendra – However, it is hard to figure out what instruments are where.
- Larry Atkinson - Who is the audience for the plan? Lisa - NSB and the users.
- Lisa - We need to break it down to what is on the FB plate. What are the highest priorities? For OOI 2.0, we are hearing that the users are having challenges finding the data and information.
- Orest - Anything that is broken, is identified in Redmine and known, but the users don't have this information. There should be a way to provide this info to the users.
- Ed Dever - There are quick-look brochures.
- Larry - **OOIFB will come up with an outline for a plan.** It would be high level. The DESCEND-2 report is an example. We will pull away from the Traceability matrices.

Transition of PI instruments to core OOI supported instruments - Deb Kelley provided the report. Her slides are included as [Appendix VIII](#).

What are the critical science drivers for a PI instrument important enough to be considered transitioning into CORE? Some considerations:

- How big is the user community? Is there community support?
- Does this require removal/tradeout of an OOI Core instrument?
- What are the refurbishment/refresh costs - is the instrument reliable/robust?
- What are the costs for storage/serving of data?
- Will additional permitting be required - what are the costs?

There are multiple PI's who now want to extend their instrument deployments past the duration of their NSF Proposal They may ask NSF for a 1-year no cost extension. Alternatively they may submit a new proposal, for example, to extend another 5 years.

Considerations:

- How “important is the science” - Is there community support?
- Is the instrument robust - will it require turns each year? Return costs?
- What are the costs for storage/serving of data
- Does continued use of ports prevent other awards or deferment to another year?
- How to decide priorities if there are multiple requests for given site?

Discussion:

- Jim O’Donnell - Unless there is a very strong justification, it should be removed. Are we the best group to evaluate these requests?
- **OOIFB Statement - Transition of PI instruments to Core should be the rare exception.**

Assessment of science use of OOI and User Metrics:

- Larry - Is there a way to do this? John Trowbridge - He thinks that it is possible to do this. They will need to collect data.
- Lisa - We must be able to show that there are users of OOI and there are proposals. At the next meeting, Gayle Pugh can present data on proposals. The hardest part of OOI is that we don’t know who is using OOI. We need to know this. Demonstrating diversity is important.
- Nick Hayman - The DOIs are a universal tool.
- Annette - Do other groups track users - ONC, IRIS? Deb Kelley - Yes they do track users. The users log-in to access the data. John Trowbridge - We can do this.
- Rouying He - One way to increase use is to have a special call for proposals. He thinks that the funding mechanism needs to change.
- Lisa Clough - There isn’t a single way to do business. For NEON, they choose to create a new program. Under Rick Murray, it was stated that OOI would be funded within the science programs.
- George Voulgaris - He has seen some good proposals, earmarking funds for OOI doesn’t serve the community.
- Hedy Edmonds - It won’t be popular to take money from core science programs to fund OOI.
- Kandy Binkley - It would be hard to justify that OOI is special enough to fund separately.
- Hedy Edmonds - There isn’t a section of the Ocean community that doesn’t know that OOI exists.
- Brian Glazer - What is the relation to Big Ideas?
- Lisa Clough – There are some solicitations for Big Ideas that are being released. They are related to Polar, harnessing the data revolution, etc. Proposals funded through Big Ideas will be new funds.
- Nick Hayman - In MG&G, there are OOI activities that get funded.
- Jim O’Donnell - There is severe lack of enthusiasm for OOI. [Program officers - objected.] Jim said that he is not supportive of diverting funds to support OOI proposals. He feels that the grand discoveries that were envisioned for OOI have not come to fruition.
- Lisa Clough – These can be coming. The British have provided a lot of support for the Southern Ocean Array.

- The enthusiasm that was with OOI at the start is diminished.

Break

Continue discussion on user metrics:

- Lisa Clough - Does FB want emphasis on user metrics?
- Sarah Gille - OOI is a good candidate for an REU. She is thinking of science programs and diversity of users. She feels that undergrads could be included in these types of programs.
- Larry – OOIFB should prepare a statement regarding user metrics and REU type activities.

Review of posted Guidance for Researchers preparing NSF proposals to use OOI – Guidance for researchers is available on the OOI site at:

<https://oceanobservatories.org/information-for-researchers/>.

OOIFB Membership - Should OOIFB include an ‘early career’ member? Update on staggered membership.

The current OOIFB membership list and terms are included as [Appendix IX](#).

Discussion on Early Career representation:

- Should the OOIFB membership be increased by one?
- We would need to put out a call for nominations.
- Ruoying He – Perhaps it would be better to have a student committee.
- It was decided to have this discussion after the Outreach and Engagement.

Changes to DDCI Charter - Several small changes to the DDCI charter are recommended. These include:

- Increase DDCI membership from 8 to 9.
- Change “Data Integrator” to “Data Manager”
- Remove Section E, which addresses the initial DDCI appointments.

A motion was made and approved to accept the recommended changes (Daly/Crone).

The revised DDCI terms of reference are available at: <https://ooifb.org/about-us/mandate/>

Outreach and Engagement – OOIFB and OOI 2.0 can work together in this area.

What is planned during Year-1 of OOI 2.0? – John Trowbridge provided the report on community engagement plans. His slides are included as [Appendix X](#).

The plan is a deliverable of OOI 2.0 in Q1 of Program Year 1. It will cover a five-year timeframe and will inform specific activities in each Annual Work Plan. Draft 1 of the plan is currently

under review by the PI/PS Team. There will be further development in close collaboration with OOIFB.

Inputs to the plan include COL and SOC recommendations. Experience and ongoing commitments of the PI/PS Teams is also included.

OOI 2.0 role models include:

- International Ocean Discovery Program (IODP) – community
- Ocean Networks Canada (ONC) – metrics
- National Ecological Observatory Network (NEON) – well developed Community Engagement, Communications, and Evaluation Plans

The draft goals include:

1. Optimize the OOI,
2. Build a robust, active, and inclusive OOI user community, and
3. Cultivate future OOI users.

The Goal 2 objective is to increase non-IO participation.

Program Year 1 OOI-wide activities include:

- Website refreshment
- OceanObs19 article
- Data use and statistics
- Data citation & DOI
- OOIFB engagement

Each of the IOs reviewed their respective activities:

WHOI - Al Plueddemann presented:

- National meetings
- Regional Outreach
- Early Career: Graduate student and postdoc participation on cruises.
- Public/Museum: Proposal to turn Pioneer Array data into "soundscapes" to make ocean data accessible to the visually impaired.

UW – Deb Kelley presented:

- Oregon Fishermen’s Cable Committee and Fisheries Management
- Ocean Obs19
- Meeting with OOI WA Tribal Communities
- IEEE meetings
- Seismological Society of America Meeting April 2019
- VISIONS19 (~ 25 undergraduate, graduate, early career)

- Ocean411 Seagoing Research and Discovery (~ 20 undergraduate students use OOI data & cruise imagery to produce documentaries, video, senior theses)
- Queens College, NY (undergraduate sea-going experiences and mentoring using CA OOI data)
- West Sound STEM Senior Leadership (several thousand K12 students)
- Several talks/year to K12 schools

OSU - Ed Dever presented

- National meetings
- Regional Outreach
- STEM/Early Career: continue undergraduate student participation on cruises.
- Public/Museum: Hatfield Marine Science Center Marine Science Day in spring 2019 in Newport, OR; tours of OOI facilities in Corvallis to university students including summer REU fellows from across the US.

Discussion:

- Deb Kelley - One of the things that we haven't spoken about is HackWeeks. We also haven't talked about members of the community, non-OOI institutions, submitting proposals to support workshops.
- Lisa Clough - Outreach is part of OOI, but education is not. There is a hard-line between the two, but they influence each other. Outreach should be on everyone's plate. There are costs for these efforts.
- Jim O'Donnell - The early career workshops held this year were excellent. They should continue because they are valuable. It really helps people to be guided in these areas.
- Lisa Clough - The workshops were handled by OOI 1.0.
- Ed Dever - He would like to have a Data Access road show. It can be used to reach out to the non-OOI institutions.
- Lisa Clough - Because the original Rutgers provided the workshops, we can provide a certificate for plank owners of the Data Team (Action).
- Bob Houtman - Jay Pearlman was funded for an RCN that supports lecture series, webinars, etc. This could be expanded to include OOI. OOI has been active under the current RCN Ocean Obs. [RCN.iode.org: RCN: OceanObsNetwork].
- Lisa Clough - For the initial effort, the outreach activities may not fit as an RCN, it sounds like a community of practice. Also, it isn't clear whether it fits best under the PMO or the FB. We are going to hear about another award at OOI 1.0.

OOIFB plans for Year-1 – Larry presented the OOIFB outreach plans. His slide is included as [Appendix XI](#). Plans include an AGU Town Hall in December 2018. There is an ASLO Aquatics Meeting in February 2019. If the OOIFB can host a Town Hall at the Aquatics Meeting if the FB feels it would be effective. Requests for Town Hall sessions must be submitted by January.

COL's Funded OOI-related Activities - Kristen Yarincik (COL) presented the report. Her slides are included as [Appendix XII](#).

The official title of the project is “ Educational support and synthesis based on the initial phase of the Ocean Observatories Initiative.” For short, they refer to it as, “OOI Synthesis & Education (OOISE).” It is a one-year project from Oct 1, 2018 to Sep 30, 2019. The overall goal is lifting barriers to use OOI data and community engagement.

The project task areas include (see slides for details):

- Evaluation of OOI 1.0 datasets
- Support educational engagement in use of OOI 1.0 data
- Synthesis & further evaluation of OOI 1.0 community engagement

The workshops are complete.

Discussion:

- Sarah Gille – From the workshops, do you have a sense of what they plan to do? Kristen - there weren't projects identified for going forward. Sarah - It would be good to track these individuals.
- Orest – For a one-year project, there is a lot of data to look at. What are the priorities? How will you avoid duplication with 2.0? Kristen - She suggested a web call on this topic. Orest – Perhaps the focus could be on things like CTD data.
- Deb Kelley - The Python notebooks came out of the workshops. There are folks developing these now. It might be good to get these people together.
- Lisa Rom - How will this be incorporated from 1.0 to 2.0.
- Deb - A few phone meetings would be good to address issues, problems, and the way forward.
- Ed Dever - Will Leila and Laura have access to Redmine?
- Deb Kelley - it would be good to have a call every couple of weeks.
- Bob Houtman - What is the goal? Between the 2 teams, can you say that this data stream is available for science? It would be good to identify by person, the individual who will address this.
- Jim O'Donnell - The training workshops that were done last year were valuable. Should they continue? Tim Crone - If training is required on how to access the data, you should spend the funds to redo the website.
- Deb Kelley - There are other goals of the workshops. It is about getting together.
- Larry Atkinson – Should there be a Subcommittee on Education and Outreach?
- Lisa Clough - We are at a point where there are a lot of pieces of education and outreach bubbling around. What is the role of FB compared to the OOI 2.0? Maybe this should be an ad hoc group as apposed to PMO.
- Tim Crone - Are there other groups doing this?
- UNOLS does not have an education committee.
- Lisa Rom - There is funding available at of EHR.
- Lisa Clough - Would an ad hoc OOIFB group be useful?

- Deb Kelley - It might be good to have an inventory of what it is being done in terms of education proposals.
- Lisa Clough - Maybe we are too early to have a working group. Perhaps a workshop would be more valuable. There might be participants/individuals already doing this work.
- Lisa Rom - She thinks that you need access to the data to move this forward.
- Bob Houtman - It should be very clear about the goals of the workshop and what the expected outcome.
- Sarah Gille - She would like to see hands-on data access.
- Larry Atkinson - Lets get a subcommittee of Sarah, Lisa, and Dax to brainstorm this.
- Sarah Gille suggested a call for an inventory of educational programs.
- The May 2019 OOIFB meeting at WHOI could be used as an opportunity to engage early Career Scientist users (UConn, BU, others).

Round the table:

- Tim Crone - ONC has invited OOIFB And DDCI to the Canadian Embassy on Tuesday during the AGU Fall meeting.

1700 Adjourn Day-1

Day 2: Tuesday, October 30 – OOIFB & DDCI Joint Meeting – Location: NSF Room W3170

Introductions & Recap Day 1 – Larry Atkinson reconvened the meeting and provided welcome remarks. Participants introduced themselves.

OOIFB Data Dissemination and Cyber Infrastructure (DDCI) Committee – Tim Crone, DDCI Chair, introduced the DDCI membership. See his slide in [Appendix XIII](#).

Tim thanked the new DDCI members for their willingness to serve. The next year will be busy and it is important that they receive honest, expert feedback going forward.

Tim reviewed the DDCI [terms of reference](#).

Larry Atkinson stated that the DDCI Committee reports to the OOIFB, not to NSF. We provide feedback and guidance.

NSF Tasking for DDCI - Lisa Clough presented the draft DDCI tasking statement (see [Appendix XIV](#)). Note, this isn't the official final charge, but the final version is expected soon. [The official NSF charge was delivered on November 9, 2018 and is available at: [DDCI-2018-3: NSF Tasking to DDCI – Provide a report which evaluates OOI Data Delivery](#).]

The tasking to DDCI is for the committee to answer the question, “Does OOI Data Delivery meet the needs of the oceanographic community?”

The second order goal is to evaluate other available options and what it would take to employ those. NSF hopes the DDCI Committee report would take it to this next step.

If we don't have users, we won't have a 25-year facility.

As a first step in the tasking, a SWOT (Strengths, Weaknesses, Opportunities, Threats) exercise is suggested.

Lisa explained that the DDCI committee would be the writers of the report. They will get input from OOI 2.0, but they need to connect with the community. Surveys, meetings, etc. will likely be necessary. NSF is willing to entertain consultants to look into other data delivery options.

Tim Crone - When it comes to meetings, would community workshops be entertained? Lisa Clough - NSF understands that there will be a supplement to support the work of the DDCI committee.

The audience for the DDCI report is:

- 1) NSF
- 2) OOI 2.0
- 3) External panel - Nov/Dec 2019

4) Everything should be completed by January 2020.

Lisa explained that when the National Science Board (NSB) approved OOI 2.0, they indicated that an update on Data Delivery is needed by May 2020. This will be a very important report. It must be grounded in data. NSF understands that they must put resources into this.

Discussion:

- Ed Dever - The AWP is due in April. Will this effort impact the AWP? Lisa - If there are things that could be incorporated into the next AWP, it would be welcome, but NSF understands that it may not be feasible. Bob Houtman - If there were things that are identified as inadequate that could be addresses sooner, it would be helpful.
- Tom Gulbransen – Identify the most threatening weaknesses first. We should identify those items in the next couple of months. We need to think about how to focus on tasks. A first draft report before the next AWP would be helpful.
- Orest - What is the pathway for getting information from OOI 2.0? Tim Crone – DDCI requests go through OOIFB.
- Larry - If we have something from DDCI by late March, it can be used for review of the AWP. It would be valuable.
- Jim Potemra - In terms of the standard, which audience does it apply to? Are there priorities for each different group? Tim Crone - Emphasize the scientific user in his opinion. If we don't have proposals, OOI goes away. Lisa - There are 2 criteria, intellectual merit and broader impacts.
- Bob Houtman - We are entering a new way of doing science, OOI and NEON. At top floor, they want to hear that this has transformed the way the community (fishing, etc.) and educators get data.
- Tim Crone - When we talk about “adequate,” what does this mean? We may have to come up with the list of what we are evaluating. Lisa - There is still a lot of defining to be done.
- Jim Potemra - Is there an effort to make the OOI data similar to other observing systems - interoperability? You could build this system that is unique and excellent. Or you can make a system that may not be as great, but it is much more compatible with other systems. This also has value. Lisa - She hope that the SWOT gives you those options.
- Ed Dever - Community input is important. One way to do this is a survey on the OOI website. The longer you can have it open it would be good. Response - the survey would be done by OOIFB not OOI. We could put the link on the OOI site.
- Tom Gulbransen - Joel Gershingfeld conducted a survey for NEON. The challenge is getting the survey out to the right audience.
- Annette DeSilva - There is an opportunity to reach out at AGU at the OOIFB Town Hall.
- Ruoying He - How difficult would it be to bring the OOI data into GPS? Sarah Gille – This has been explored and OOI was not tasked to do this.
- Jim Potemra - It would be good to try to augment the OOIFB community email list at the Town Hall by making an announcement.
- Sarah Gille – At the OOIFB Town Hall, we can ask for questions to include on the survey.

- John Trowbridge - during OOI 1.0, there was a lot of requirements that were suggested for data delivery. Lisa - We are no longer in construction, so we don't have the resources.
- Orest - As part of the transition, there was a current assessment of the system. Can this be provided to DDCI? Jeff Glatstein- This would be a good reference.

Break

CI and Data Delivery Updates from OOI Program Office – Jeff Glatstein, OOI Data Delivery Manager, provided the report. His report is included as [Appendix XV](#).

Jeff's report topics included:

- OOI 1.0 Metrics
- CI 2.0 Structure
- CI Risks and Mitigations for OOI2.0
- Strategic Roadmap
- Data Management
- QA/QC Outline
- Analysis of Alternatives (AoA)

Jeff reviewed the OOI 1.0 Metrics and covered the statistics on visits to the sites (ooinet, M2M, opendap, and raw data); data transferred stats, and the system stability. There are 701 total open tickets. The metrics represent a 3-month snapshot.

Comments:

- The raw data seems low.
- Deb Kelley - the IRIS numbers need to be included in this summary
- Dax Soule - Can duplicate requests be identified? Jeff - Yes. There is some sensitivity to having data (such as email addresses) stored. The EU has a rule on this.

The CI 2.0 Data Delivery Manager oversees the development efforts for the CI platform and data management. He acts as the Operations Manager and point of contact for RU Project Manager.

Jeff reviewed the CI 2.0 organization, operations, and governance. The CI 2.0 Operations is organized to foster collaboration. The MIOs are represented at all meetings.

The CI risks that have been identified for OOI 2.0 include:

- Incomplete documentation
- Knowledge transfer of data team
- Knowledge transfer of software development team
- Approximately 600 outstanding Redmine tickets pertain directly to CI
- 32% gap in requirements – 328 requirements researched across 18 categories
- Gaps in user experience and system efficiencies

- QA/QC program not as mature as needed

CI risks mitigation efforts include:

- Temporary extension of development resources
- Build internal expertise in raw data preparation
- PMO management of software development
- Target high value tickets early
- Develop repeatable method for system and data metric reporting
- Introduce formalized and uniform data quality program

Jeff reviewed the Strategic Roadmap and tactical plans for the next 2-3 months and for the 4-5 month period. In the 2-3 month period, self-evaluation and identifying high priority issues and defects is planned. [See slides for details.]

Raytheon and Case Ocean Services.

Discussion – there was considerable discussion on Redmine:

- Tom Gulbransen - Can you explain which Redmine tickets are putting the most demand on the system? It would help us understand the threats. Jeff - He will look into this.
- Redmine is used as communications system
- Tim Crone - Are there a lot of Tombstones? Jeff - You never delete data in Cassandra, it is a setting in Cassandra. There might be a script in Cassandra for removing tombstones.
- Orest - Do you see giving DDCI internal access to Redmine?
- Rich Signell commented that he has access.
- Users access the Redmine through the OOI help desk.
- Sarah Gille - How many tickets have come in? Jeff - Three since October.
- Annette DeSilva - For users who go through the help desk, do they get feedback? Jeff - they get acknowledgement of their ticket, and some get status updates.
- Lisa Clough - Are there a few key people on DDCI who should have access? We need transparency.
- Tim Crone - Some of the DDCI members use OOI data, so they don't want access if it will give them an unfair advantage.
- Lisa Clough - Who is responsible for Redmine - Rutgers or WHOI? Jeff - it sounds like it is in-between the two.
- Tim Crone – What is the DDCI's thoughts on whether there should be access to Redmine? Rich Signell - There are comments on Redmine that perhaps should not be public. Deb Kelley added that folks on Redmine didn't realize that their comments would be public.
- Jeff Glatstein - There are some security issues and sensitive information in Redmine. This information is important and needs to be communicated.
- Tim Crone – He doesn't feel that if something is private, it should now be public.
- Jeff - A help desk should be able to include sensitive information. There should be mechanism for communicating these issues.
- John Trowbridge reminded everyone that Jeff's workload is very heavy.

- Brian Glazer - Are duplicates manual. Jeff - Yes. Brian - Maybe there could be radial buttons. Jeff - This is in there. He is going through and minimizing the buttons.
- Chris Wingard - He doesn't have access to all of the Redmine buttons. He feels that Redmine has to be cleaned up for the MIOs.
- Jeff offered to give a demo of Redmine.

Data management objectives include:

- Develop tools to increase efficiency and effectiveness of loading data
- Build library of algorithm and data quality checks
- Build uniform repeatable automated QA/QC process
- Report on metrics of data use
- Report on metrics of data quality
- Document methods of retrieving data from the system
- Introduce ability to correct data in place
- Data Governance
- Cyber security

The QA (process)/QC (product) program outline addresses:

- Document data quality requirements
- Repeatable process to assess data
- Metadata management
- Check data validity on an ongoing basis at determined intervals
- Feedback
- Jim Potemra - How much QA is put on the MIOs and how much is on the PMO? Jeff - the MIOs know QA best, so they are on QA.
- Jim Potemra - If the MIO detects a CTD delay, is that transferred to PMO? Jeff - No.

OOI 2.0 will conduct an Analysis of Alternatives (AoA) study. The goal of the study is to determine whether the current system should continue as is, be modified, be replaced in part or in whole. The product will be a recommendation of approach and the technologies and/or products to be used.

The initial research for the AoA study will work to understand the problem. The current CI architecture is modular and can be broken into four basic functions: Data Staging, Data Preparation, Data Ingestion, and Data Dissemination. The will conduct research to identify applicable products and technologies. Jeff provided examples of some of the experts in the field and technologies that can be explored (see slides). They will assemble an AoA Analysis Panel of about 7 to 9 members with differing expertise backgrounds. It will require a major time and effort commitment. The timeline for this effort is aggressive. The AoA panel will be assembled in November 2018 and the results are needed by June 2019.

- Deb Kelley - How will this interface with DDCI? There is a huge amount of overlap. Jeff – There should be overlap. They still need to put together a panel. Lisa -NSF will value the

external (DDCI) report. Tom Gulbransen - It would be good if DDCI doesn't have to do the introspective study.

- John Trowbridge - He thinks the program should outweigh the DDCI. Lisa - DDCI provides input. They don't provide guidance.
- Jim O'Donnell - The DDCI and OOIFB should provide the perspective of the community.
- Deb Kelley - In making these decisions, rather than having two separate efforts, it would be good to keep abreast of each effort. Lisa - She sees value in both.
- Tim Crone - He likes the idea of having liaisons between the two. Shared analysis, not shared facts.

Jeff concluded his CI presentation with a summary:

- OOI 1.0 Metrics
 - Redmine tickets opened vs. closed is even
 - Understanding how the system is used will inform the management and enhancement of it going forward
- CI 2.0 Structure
 - Consolidation of oversight of resources and responsibilities
 - Designed to foster collaboration, transparency and consistency
- CI Risks and Mitigations for OOI 2.0
 - Knowledge transfer, QA/QC and gaps in requirements are biggest risks
 - Extension of resources, QA/QC approach, dev management and Redmine ticket approach will mitigate risk
- Strategic Roadmap
 - Target defect and system quality tickets immediately, perform a CI self evaluation
 - High value larger efforts such as automation, UX, data quality and continuing documentation
 - Plan to manage external resources and set work priorities for next year
- Data Management
 - Data has both physical and logical aspects that drive enhancements, policies and procedures
 - Need for QA/QC, metrics and reporting
- QA/QC Outline
 - QA/QC approach – do not need to complete all steps for every data element at once – gain value early
 - Need to find balance that is sustainable by resources
- Analysis of Alternatives (AoA)
 - Will deliver a recommendation of approach to CI future
 - Outlined research approach
 - Reviewed the 3 possible outcomes and impacts – Keep as is, Replace fully or Hybrid

Next Jeff explained how the role of the MIOs changed. The MIOs now have the responsibility for:

- Asset Management

- Data Ingestion
- Data QA/QC
- Help Desk Support

The MIOs are building teams including hiring of new personnel. They are performing training within the teams to expand the knowledge base. Communication is ongoing real-time between the MIOs including use of Slack and Webex. The PMO supports the communication through a weekly Data Management meeting to ensure uniformity and forward progress. Formerly Data Team responsibilities under OOI 1.0, now coordinated by PMO in OOI 2.0 include software, system, and UI testing and ERDDAP development

Lunch Break - OOIFB members were asked to stay in the meeting room for OOIFB discussion:

- Sarah Gille - George Voulgaris said making the data available isn't the end of the line. It is making connections with the science community.
- Annette - Reach out to the early career scientist groups like PODS and DISCO.
- George V - We should not call these workshops "OOI"
- Sarah Gille - If you are going to prepare a proposal that uses free and open data, you need to prove that the data is available.
- Deb - For proposals that add instruments to OOI, the MIOs assist by providing technical advice. She suggested the same should be true for the data. This shouldn't take much effort now that the data is at MIO.
- Ed Dever - "How to access OOI data for your proposal" - put this as a slide deck on the OOI sites.
- Larry - Should we have more workshops? Should we have a workshop on how to access the data?
- Lisa Clough - Proposals can put a snapshot of the quick look data. This could be a useful tool.
- It was suggested to have a phone meeting in a couple weeks.
- Think about a 2-year term for an Early Career position.
- Before holding a workshop, we need user demand and publications.

Current MIO Data and QA/QC Activities

RCA Data and QA/QC Activities - Orest Kawka made the presentation. His slides are included as [Appendix XVI](#).

The current data processes for instrument data ingestion was described. Data is automatically parsed into CASSANDRA upon arrival at the servers on shore. No post-recovery ingestion needed. They are investigating issues with the Deep Profiler data ingestion. Raw data synced to the OOI Raw Data Server from OMC repository at UW. Any interruptions in the ingestion process require back filling of gaps using purge and playback from the OOI Raw Data Server or Port Agent Logs.

Current ongoing UW priorities include:

- Continuing QA/QC work of 1.0 Rutgers Data Team
- Reviewing/updating existing and adding new data annotations
- Data Algorithm updates as needed to resolve data issues
- Exploring existing tools and scripts provided by 1.0 Rutgers Data Team
- Asset Management Updates (Critical Priority)

A new UW responsibility is final QC checks of all instrument associated metadata post-upload, including “Critical Metadata.” “Critical Metadata” includes instrument calibration data and instrument assignments. A current high priority is to check historical critical metadata prior to OOI 2.0 (2013-2018).

Orest displayed charts for the:

- Comprehensive End-to-End Instrument and Data QA/QC quick view
- RCA instrument and critical metadata QA/QC workflow with roles and responsibilities
- RCA Instrument Calibration Data and Assignment (ICDA) Verification Workflow

RCA 2018 critical metadata entry statistics were reviewed. RCA historical (2013-2018) verification information was also presented and translates to 39150 historical fields to verify. The status of 10/23/2018 is that they examined first-pass calibration data for 68 individual sensors. There are 46 missing calibration files and 13 calibration coefficient errors.

The sources of potential error include:

- Calibration Coefficients – mis-entry
- Instrument Assignments
- Instrument configuration
- Instrument issues
- Cyberinfrastructure

Endurance Array (EA) Current Data and QA/QC Activities - Chris Wingard made the presentation. His slides are included as [Appendix XVII](#).

Chris reviewed the Current Activities/Priorities:

- Asset Management (increased responsibility).
- Data Ingestion (new responsibility).
- Data QA/QC (new responsibility).
- Coordination and collaboration between MIOs under direction of PMO (new responsibility).

QA/QC Plans include:

- Gaps and metrics of quality.
- Annotations.

- Biofouling mitigation.

The EA team was already largely responsible for asset management (pre-2.0). However, new tasks include testing and review, and improving reliability by double-checking calibration values against vendor- provided information. They are complete and up-to-date through most the recent glider deployment on 2018-10-17. Future work, in collaboration with MIOs and under direction of PMO, is to coordinate the process, improve workflows, testing, timeliness, and ensure accuracy of data (e.g. calibration coefficients).

They are using pre-existing CI M2M interface and Data Team scripts to initiate data ingestion. It is a straightforward process with well-developed code available for use with little modification. However, during the ingest of telemetered Endurance 10 data, there was an error on the server side ingest handling that has blocked all telemetered ingest (2018-10-11). PMO and CI are actively working the issue.

They are building off of current Data Team scripts to develop new processes to automate monitoring of the ingestion process. They are working to generate metrics of the current ingest status and identify where issues may lie.

In terms of data and QA/QC, the Endurance Array team is utilizing internal systems to review mooring systems and instrument status (daily). A better system is needed to communicate directly to users, as we encounter not just issues, but interesting events, features, etc. They are working in coordination with MIOs and PMO to develop common QA/QC definitions and processes (existing and new).

Discussion:

- Jim O'Donnell - Will there be a paper on the results of the biofouling study? Chris - There should. Controlling the biofouling assists with improving the data by 95%. The power requirements are workable.
- Jim Potemra – There is concern about having bad data. If he uses the data and then later it is determined as bad, how would he know? Chris Wingard - Once you download the data, it is your dataset. There isn't a method in place for notifying data users. There isn't a method in place and this isn't unique to OOI. You could use a DOI system to indicate the data is unique. Sarah Gille - This will become urgent so that data can be reproduced for journals.

WHOI CGSN MIO - Sheri White provided the report. Her slides are included as [Appendix XVIII](#).

For asset management, there is no significant change in responsibilities, MIOs were primarily responsible for asset management data. There are some additional responsibilities surrounding testing and review of asset data. They are using existing resources. They are importing Pioneer 11 (currently at sea) and Southern Ocean 5 (Nov-Dec deployment) asset management data. They are working on processes for review of all updates, and use of automated tools. There are four personnel available to perform asset management (not full FTEs).

Data ingestion is a new responsibility for all MIOs. They are using pre-existing Data Team scripts to initiate data ingestion. The MIOs are working together, discussing tools/processes for tracking ingestions and generating metrics. There are up to 5 personnel available (not full FTEs) to initiate and monitor ingestions.

They are verifying ingestion of prior cruises and working through the backlog of incomplete ingestions from OOI 1.0. They are tracking progress by platform and stream, but need to develop better tracking metrics with the MIOs.

CGSN expects to initiate the ingest of new P11 platforms and P10 recovered data post-cruise in early November.

Next Sheri reviewed the current MIO Data and QA/QC activities. This is a new responsibility for all MIOs.

- Utilizing OMS and OMS++ to monitor arrays on daily basis
- MIOs are using existing scripts to check for gaps in the data and interruptions in data delivery.
- They are working with the PMO & MIOs:
 - Reviewing QA/QC practices,
 - Developing common and coherent QA/QC process and structure starting with CTDBP (instrument common to all MIOs).
 - Planning team pre-work activities and potential workshop in January 2019 post-cruise activities.
- Significant time and resources will be required
 - A full-time QA/QC hire is complete (AndrewReed)
 - They plan to view all open Redmine tickets to address data quality issues identified by the science community
 - They will review data availability through the OOI sites (DataPortal, Raw Data Server, ERDDAP server) and CGSN internal sites

Next Sheri reported on the Help Desk in reference to CGSN. The PMO is assigning subject matter experts and addressing Help Desk issues as they are raised. Previously the MIOs had little insight into the Help Desk requests. Increased responsibilities under OOI 2.0 on the part of the MIOs and PMO includes:

- Receive and categorize Help Desk tickets,
- Distribute to appropriate MIO subject matter experts,
- Provide quick initial response to acknowledge receipt and manage any action to close out,
- Assess Help Desk requests to understand any trending in issues.

Sheri reported that there is a UK-funded CUSTARD program that adds 2 instruments to the Southern Ocean Surface Mooring. Data will be embargoed for one year; following the embargo CI parsers will be required to support ingestion of the instrument data. Lisa explained that

because it is an international collaboration, they will have an embargo just on the added instrument data.

Break

QARTOD - Quality Assurance of Real-Time Oceanographic Data - Mark Bushnell provided the report. His slides are included as [Appendix XIX](#).

Mark Bushnell began his report by reviewing the many users of QARTOD. QARTOD had its start in 2004 but then really got momentum going in 2012 when they started work with IOOS. They currently have 12 manuals. Each manual starts with a small committee

QARTOD FY 2019 plans, which include one new manual, updates of manuals, QA, continued international interaction, and implementation support.

Mark provided an example of QARTOD's QARTOD Data Flagging Scheme, implementation quality report, and implementation quality dashboards.

In closing, Mark explained that QARTOD provides mature, broadly accepted standards for QC tests. They provide updated manuals about every three years. They adhere to an IOC data-flagging standard.

Discussion:

- Tim Crone - In the last example, why not change the test? Mark - it wasn't that the test that was bad, it was that the threshold wasn't correct.
- Kyle Wilcox - Can you really go to seasonal range inputs? Mark - Yes for climatology it should have seasonal ranges. Rutgers went to great lengths to establish the seasonal ranges.

Examples of other technologies and approaches:

Ocean Networks Canada (ONC) - Richard Dewey provided the report. His slides are included as [Appendix XX](#).

Richard showed a map that highlighted the ONC observing system locations. Oceans 2.0 offers a comprehensive data management system. It was initiated in 2001 with VENUS in the Salish Sea and then followed in 2003 by the addition of NEPTUNE. They utilize the original "Data Management and Archiving System" (DMAS). ONC has evolved into Oceans 2.0 by 2009 as NEPTUNE came online.

ONC's mandate is to:

- Manage all infrastructure systems and sub-systems
- Manage all instrument connections, control, and data flow
- Secure all data acquisition from all distributed sensors

- Manage all the metadata and calibration information
- Prepare the data and metadata for user/client access
- Provide means for users to discover, explore, and acquire data, data products, and metadata.
- Enable publication of innovative research with impact!

oceannetworks.ca → data.oceannetworks.ca

Richard reviewed a series of screen shots of the ONC data portal, plotting tools, and data search tools. At one time there was a requirement for users to log-in to the portal for data access. It is no longer required, but registration has its benefits. You can drill down to the sensor level. The system allows all infrastructure monitoring and control. Richard showed ONC's data flow from shore station, to archiver, to user interface. Extras include a sandbox that offers a local computing environment.

ONC is working to be Qartod compliant.

They want to maximize the number of publications using ONC data.

Richard commented that among the challenges is that it doesn't take too many critics to get a bad reputation.

Discussion:

- Jeff Glatstein - What is the interface, |the content management system? Richard- It has mostly been built organically.
- Dax - How did you build the sandbox and how much did it cost? Richard - They are testing the sandbox now, but they are resource limited. They mostly use Google
- Brian Glazer - How many FTEs does ONC have? Richard - They started with 10 programmers, but it has grown. They have been able to maintain 15 on the CI side. ONC is operating on \$20M annually including ship time. About half of this is labor. They are going to be the west coast node for IOOS.
- Tim Crone - What motivated ONC to develop the anonymous use? Richard - The benefit is the stats are high, but they don't know where the data is going. They are serving more data and volume is high. There was a call for anonymous use. They had a lot of drop offs at the registration page.

Cyberinfrastructure for [IOOS](#) and Beyond - Kyle Wilcox reported on Axiom and the services that the company provides. He also provided information about IOOS. His slides are included as [Appendix XXI](#).

Axiom was founded in 2006 and has 20 employees with offices in AK, OR and RI. Their mission is to build capabilities, which accelerate the synthesis and re-use of earth science data. Federal partners include: NSF, NOAA, USGS, BOEM, NASA, FWS, DARPA, and ONR.

IOOS is comprised of 11 regional coastal observing systems and is led by NOAA.

Kyle reviewed the Data Management Lifecycle:

- Data collection & quality control - Scientists or Ingestion
- Storage - Databases, Messages, Files, etc.
- Description - Metadata, Apply standards
- Archive & preservation - Repository submission pathway
- Access & discovery - Data portals, search catalogs, and services
- Reuse & transformation - Jupyter Notebook & data analyses

Axiom can provide support for each stage of the data lifecycle (see slides for examples).

Kyle reviewed the IOOS DMAC approach that applies to biodiversity, platforms (moorings, shore stations), products, grids, GIS, and unstructured data. The IOOS DMAC approach from observing systems to users passes through Regional Data Assembly Centers for quality control (QARTOD), services (OPeNDAP, ERDDAP, THREDDS, SOS, ISO WAF), curation, and archiving. There are also IOOS National Data Assembly Centers that manage HF radar, gliders, and ATN. There is an IOOS National center for cataloging.

The data management lifecycle were reviewed in more detail. Kyle closed with some results and recognizing their many partners.

Discussion:

- Jim O'Donnell - Is Axiom providing services? Kyle - They are providing services to three of the regions.
- Jim O - Is there an estimate of what went into developing IOOS? Kyle - The program office might have some ideas.

National Ecological Observatory Network (NEON) Data Delivery and Cyberinfrastructure - Tom Gulbransen provided the report. His slides are included as [Appendix XXII](#). Tom has been involved with NEON since 2016. CI is stable. NEON shares so many of the issues as OOI.

NEON provides a coordinated national system for monitoring a number of critical ecological and environmental properties at multiple spatial and temporal scales. NEON's 176 data products overlap multiple themes: Atmospheric, Organismal, Ecohydrology, Biogeochemistry, and Land Related.

NEON's cyberinfrastructure provides resources and tools and services for observation to delivery. It's a network of field observational results, sampling protocols, algorithms, data science methods, and practitioners.

For CI data delivery, five days is about as fast as they can go. For biological data it can be 1.5 years. Tom showed a chart with NEON data product types and their general latency times from sampling to the portal. Latency had various causes including staffing, reprocessing with new

algorithms, communications, volume, reviews, and external processing. In the observational sampling data pipeline the latencies range from 5 to 365+ days.

Data pipeline information for airborne observations and instrument systems was provided in the slides. The detailed instrumented systems data QA/QC framework chart is also included in the slides.

Automated flagging is applied on each calibrated data value. There are basic tests: Null, Gap, Range, Step, Spike, Persistence, as well as sensor-specific tests. If chosen, it can remove any data point that fails a test.

Tom described what's in a data package:

- Monthly or Annual data files with all basic data and quality flags
- CSV (IS, OS), HDF5 (EC, AOP), TIF (AOP), LAS (AOP), FASTA (metagenomics)
- Readme text file – general info about the data product
- Additional quality metrics, external lab data
- User guides & protocols; algorithm & sensor configuration documents Variable definitions, validation rules, and sensor positions
- Machine-readable metadata (EML)

Examples of the interactive browse, the interactive time series, and the prototype spatial viewer were provided.

There are partner repositories for work with specialized repositories for domain-specific data. NEON uses the partner's APIs to keep NEON caches in sync.

Tom presented a series of slides with detailed information on:

- Data Portal & Phenocam Gallery
- Data Portal & BOLD
- REST API: Programmatic Access <http://data.neonscience.org/data-api>
- NEON CI Software Architecture - Layers
- NEON CI Software Architecture - Elements
- NEON Data Flow in CI Architecture
- PDR Database – Observations Logical Model
- NEON CI Virtual Machine Resource Pools
- Denver Datacenter – Configuration Schema
- Cyber Security Overview
- NEON CI & Data Interoperability
 - Across the community of researchers
 - Between research facilities
 - In active collaboration with aggregators
- Data Product Collaboration (example)
- Data Science Tools and Training: NEON Science on GitHub

- Data Science Tools and Training: Tutorials & Workshops
- User Community Projects: Predictive Distributions

NEON CI improvement plans include:

- On going cyberengineering support
- Prioritized queue of CI or Data Product enhancements
- Service Management continued expansion/integration
- Asset management tools and methods assessment
- Proposed research & development towards VI version2

Discussion:

- Dax - What is the role of the people in the process? Tom G - There are 7 people at each site. Validation and calibration is another area where there are people. There is also someone for science flagging.

[ERDDAP](#) - Rich Signell provided the report. His slides are included as [Appendix XXIII](#).

ERDDAP provides easier access to scientific data.

ERDDAP is a data brokerage service, reading from many different types of files, databases and services, and providing access via a single standardized interface. RESTful API offers access in scientific analysis packages (Matlab, Python, R), web application developers (JavaScript), and by numerical modelers (Fortran, Bash). Advanced search features are built-in, and it also generates ISO and json-ld metadata records to allow search via sites like data.gov and Google Dataset Search. ERDDAP is widely used for delivery of “FAIR” data in the geoscience community. The USGS Integrated Ocean Observing System utilizes ERDDAP for sensors.

Rich showed examples of ERDDAP’s advanced search features, graphing capability, data access form, tutorials, and the CGSN Dashboard. Everything in a search is in the URL. Users can then send the URL to a colleague and they will see the same thing. If he wants to write a program to access a lot of data, he will use Pangea. If you don’t like the ERDDAP interface, you can make your own, from simple to the CGSN Dashboard.

Rich’s slides include a comparison between ERDDAP and M2M. ERDDAP is widely used by the community, offers advanced search, and is ISO, JSON-LD metadata, whereas M2M does not.

In summary:

- ERDDAP allows easier access to OOI Data
- ERDDAP makes OOI “FAIR” (Findable, Accessible, Interoperable, Reusable)
- ERDDAP works with the existing system
- Easier access to OOI Data results in more use by researchers
- Easier access to OOI Data allows more efficient data analysis, leaving more time for actual science

Rich recommends that ERDDAP be a first class citizen in OOI and to build OOI science and end-user applications using ERDDAP as a backend for data search and access.

Discussion:

- Lisa Clough - Who would create the DOI? Chris Wingard - He feels that it would be on OOI.
- Richard Dewey - What about a big search? Richard Signell - You have to break it up, or come up with a different solution for large data sets.
- Jim O'Donnell – A big advantage of ERDDAP is once you figure it out on OOI, you can use it for other systems.

[Pangeo](#) - Tim Crone provided the report. When available, slides will be posted as *Appendix XXIV*.

Pangeo has brought in a lot of users. Pangeo is a community platform for big data geoscience. Pangeo's goals are to 1) Foster collaboration around the open source scientific python ecosystem for ocean / atmosphere / land / climate science, 2) Support the development with domain-specific geoscience packages, and 3) Improve scalability of these tools to handle petabyte-scale datasets on HPC and cloud platforms. Support for Pangeo comes from several funding agencies and institutions including NSF EarthCube and NASA.

A motivation for development of Pangeo is the large amount of data streaming in from remote sensors. Datasets are growing too rapidly and legacy software tools for scientific analysis can't handle them. The days of downloading datasets is going away and Pangeo is there to help.

Pangeo is based around the python programming language and the scientific python software ecosystem. The Pangeo web site provides a [Guide for Scientists](#).

Pangea architecture is based on standard cloud computing. Use cases can be formatted as Jupyter Notebooks. Tim explained that in one of the OOI early career workshops, he introduced Pangeo to the group.

Tim built a pipeline to take images out of the raw data. He gave a Pangeo demo. They are building delayed arrays of images. You can do a lot of computing in a short amount of time.

Tim and Dax are working with Azure to see if they would be willing to host the OOI camera data.

Discussion:

- Chris Wingard - Currently, OOI is working in terabytes and the cloud is cost prohibitive. Tim Crone - NSF is working with cloud providers.
- Chris W - You can buy memory storage cheap now. Is that a better way to go?
- Kyle - He doesn't think it will be one solution. He will use his storage. Tim - The data doesn't have to be on the cloud, but the compute needs to be where the cloud is.

- Rich - The data may never all be in the same place.
- Ruoying He - Is Pangea mostly for computing and storage. Is it a tool for modeling? Rich Signell – It is designed for modeling.

Adjourn Day-2

Day 3: Wednesday, October 31 –DDCI Meeting – Location: NSF Room E3430

Recap Day 2 – Tim Crone provided a recap of Day 2 discussions. It was a useful, productive meeting. It was good to see how other groups are accessing data and CI. We heard from the MIOs and had a helpful presentation by Jeff Glatstein.

There were open questions from Day-2 and we would like to spend an hour or so on these.

Discussion: Tim Crone compiled a list of open questions from Tuesday (see [Appendix XXIV](#)).

- Is Redmine a useful source of information for this committee?
- Will OOI need to move into the cloud? Bring compute to data?
- What will be the relationship between this committee’s activities and the AoA?
- Is Rich the only person who cares about ERDDAP? Is ERDDAP a requirement? Is it meaningful that 2/3 MIOs use ERDDAP internally?
- Can/should this committee revisit OOI requirements vis à vis feedback from scientists?

Is Redmine a useful source of information for this committee?

Discussion:

- Jeff Glatstein provided a demo of Redmine. He reviewed the older tickets - some are older than 3 years.
- If something is resolved in a lower level - does it resolve the upper cases? Not automatically often.
- There seem to be control issues. Folks at the MIO level don’t have access and are locked-out of certain controls.
- Jeff G - To be frank, that was the philosophy of the past CI. It is not his. He will work hard to be collaborative.
- Jeff feels that the system is easily filterable.
- Tim Crone - He appreciates that Jeff is open.
- Richard Dewey - He agrees that Chris as part of an MIO should have full access. He wonders how the committee can see a report/summary of outstanding unresolved issues.
- Dax – A report showing where the problems have been is also important.
- Tim Crone - can Redmine pull out statistics? Jeff - Probably not directly, but it can be exported and the data can then be analyzed.

- Tom G - How often are the buttons, severity filled in? This would be useful. Jeff - They are looking to filling out these fields.
- Orest – He and Mike Vardara put together recommendations regarding high level data. This is contained in the 2.0 recommendations document. It would be good for DDCI to have these documents. The transition team should have them.
- Chris Rutherford and Tom Kearney indicated that the transition team is happy to share anything from 1.0. There are 26 documents that were generated. However, it is really John Trowbridge’s call on whether or not to share. 2.0 now owns the documentation.
- Tom G - Do the 26 documents reflect any of the user feedback?
- Rich Signell - Access to threads impacts ERDDAP. Jeff - they are working on this.
- Lisa Clough – We need to be sensitive of Jeff’s time. He has a lot on his plate. DDCI might take on things that Jeff was planning to do, so hopefully they can help.

Will OOI need to move into the cloud? Bring compute to data?

- Richard Dewey - This is a type of question that could be in a survey. He worries about words like “move to”. Doesn’t see a statement coming up at this time.
- Lisa Clough – It is absolutely appropriate to do a SWOT on Cloud. Also appropriate to do a SWOT on archiving.
- Jeff G - He talked to an Amazon colleague. Things to consider are:
 - How much CPU are you going to use?
 - With cabled data, you are not going to save on CPU - just keep this in mind.
- Chris W – There are just a few datasets in OOI that are so big, that cannot be handled on your own computer at a lower cost. As we go forward, the cloud might be preferred because of cost. You need to do the cost analysis.
- Dax – You must think about opportunity cost of not having the cloud. If you put data and computing in the same place, the Cloud, you open opportunities.
- Lisa Clough - She is concerned about data residing on edu computers, without acknowledgement of OOI.
- Jeff G – The Data use policy addresses acknowledgement practices of OOI.
- Tom G - The Cloud questions falls into the “Opportunity” area of SWOT. What are we assessing, 2.0’s ability to provide the Cloud? Or is it to assess the opportunity.
- John Trowbridge - CI does not have an academic PI. DDCI is in a unique role to provide input this feedback.
- Jeff G - For many, as long as the user gets the data, they aren’t concerned with the back end.
- Dax - Pangea allows them to provide a resource for students by providing them with URL. It stimulate opportunities through the Cloud.
- Lisa Clough – There must be an archiving capability. NCEI = National Center for Environmental Information. NSF needs a solution. In the OOI 2.0 solicitation it was stated that they would archive to NCEI.
- Rich Signell - NCEI is also moving to the cloud.
- Lisa - Archiving needs its own standalone SWOT.

What will be the relationship between this committee's activities and the AoA?

- Tim Crone - Just to confirm, the DDCI will need to do its own analysis, but we will have to think of ways to share facts between the two.
- Tom G - We don't want to duplicate some of the activities with OOI. For example, we don't want to go out to the same list twice, once for WHOI and once for DDCI.
- Jeff G - It is always a challenge to get user feedback.
- DDCI will do a survey and we will share the results with 2.0
- Jeff – OOI can do case studies and they will share the whole case study.
- The DDCI's AoA will be in parallel with PMO. They will share facts. The DDCI community survey will be done by a professional.

Is Rich the only person who cares about ERDDAP? Is ERDDAP a requirement? Is it meaningful that 2/3 MIOs use ERDDAP internally?

- ERDDAP is not a requirement of OOI
- Do we want to talk to the community about this?
- Chris Wingard - What was the response from the Ocean Sciences? [At the OOIFB Ocean Sciences Town Hall, Rich provided an ERDDAP video. We did not seek feedback from participants].
- We will have a community survey and can poll them on this.
- Orest - If ERDDAP is cost effective and helps to get data to science, it is worth while to pursue. Under SIO, ERDDAP was a requirement.
- James Potemra - It is almost trivial to get an ERDDAP server up and running. Chris W - It's getting the data to ERDDAP that is more effort. There are examples on-line on how to get ERDDAP running.
- Richard - ERDDAP is already established and is good.
- Jeff – There is still the question of anonymous versus sign-in.
- Tim Crone - there is a lot of interest in hearing how people are using the data.
- Richard Dewey - For ONC, they have a search on internal ID. It is different than a DOI. Tom G - The traceability to DOI is most important. We need to know what is getting published.
- Richard Dewey - There will be some that don't use the DOI. Just need to recognize that.
- Lisa - It is not the easiest system to explore the users. They have heard that it takes a week to get the info. There is a time-lag between capture and publication. We are starting to get the papers out, but not a lot.
- Jeff - He needs to be able to keep the system running and maintainable. Being able to get the usage metrics is important and feeds into this.
- Larry - Getting a presentation on OOI user metrics would be helpful.
- Rich S - can we put out a recommendation about ERDDAP?
- Jim O'Donnell - He was trying to convince EPA to use ERDDAP. The decision makers were not big data users. He convinced them to poll power users. Not all users are the same. Some communities may not need ERDDAP.
- Dax - One of the things that user survey can do is to weigh the users. Track the power users.

- ERDDAP is a requirement for the Quick-Look. The Survey should back up this statement.
- Metrics - Reach out to ONC on the status of metrics. This can be a WebEx with OOIFB and DDCI.
- We can have SWOT on anonymous access.
- Orest suggested reaching out to IRIS for their metrics.
- James Potemra - IOOS metrics might also be of interest - site hits, data downloads, etc.

Can/should this committee revisit OOI requirements vis à vis feedback from scientists?

- OOI Requirements for CI - Should DDCI look at this? The transition addressed requirements. Chris W - It wasn't an easy task because the requirements changed when SIO left. Instead during the transition, they looked at current capabilities and decided to assess the capabilities.
- Bob Houtman - He feels that we should not go back to the original requirements because changes were made over the year.
- Tom G - This could be part of the Survey.
- Tom G - They struggled with this in NEON as well. Their survey addressed requirements through questions.
- John Trowbridge - We need to keep mindful of work scope.
- Tom G - DDCI can provide recommendations to OOIFB.
- Tim Crone - Some of the requirements may be inhibiting science? Example - level of security is inhibiting. Bob Houtman - This won't be changed.
- Tom Kearney – The “requirements” are 5 years old. They are informative, but shouldn't be constraining. Lisa - We don't have money to fill the requirements from past.
- Dax – He doesn't understand the security issue. Bob Houtman - You can make recommendations regarding security, etc., but OOI won't be relaxing cyber-security. As long as it fits with the Cyber Infrastructure NSF policies it is fine.
- Lisa - There is a strong effort to standardize large facilities.

Break

DDCI Strategy and Tasking Discussion: DDCI revisited the NSF draft task statement.

- Tom G - Should there be any review of governance. Lisa - You have leeway to go in any direction you want under SWOT. She doesn't like to call out governance explicitly.
- Richard Dewey - There has been a shift of labor to MIOs in terms of data. Orest - The data team has been dissolved and now resides within MIO.
- Lisa - The task indicates “system” - NSF is comfortable with review of works flow, roles and responsibilities, processes, etc.
- Options for input to the task include meetings, surveys, both.
- Tim Crone - Should we request a Redmine analysis? Lisa – It would be better to specify “data” instead of Redmine or “Redmine access.”
- Lisa – The DDCI report will go to OOIFB and then to NSF.

- Lisa – It could be useful to get feedback on appropriate scaling if feasible (people and dollars). What is the capability within the current staff, or will it require redirect. Is OOI2.0 within scope? Is enhancement of scope needed? Should there be new scope?
- Tom - perhaps it would be good to be able to ground truth with the 2.0 team.

Timeline:

- Survey - preliminary findings by March.
- Quick-look within 4 months. - Informed by meeting or survey (survey is preferred)
- Some travel for DDCI members to brief out the quick-look may be needed.
- Report no later than November 2019

Quick-look report:

- Review all of the bits and pieces of the current system information.
- Create a resource library. Lisa - A password-protected library for documents is needed.

There was discussion on the SWOT:

- SWOT – Determine what systems will be analyzed. Lisa – SWOTs are often done in person to capture individual thoughts with stickies and then clustering.
- If needed, consider virtual meeting rooms.
- The SWOT will be iterative.
- Set up a Slack Channel
- Lisa – For the SWOT, it would be good if COL (Chris R/Tom K) could take on the moderator role. This would allow all DDCI members to participate.
- Jeff Glatstein - You might want to have overlaying SWOTs
- Tom G - You do it by value to the customer. An example is Cloud Computing. Break it out be customer:
 - Data Delivery to science users, including modelers
 - Data Delivery to educators
 - Data Delivery to community
- Rich Signell - Another way to break it up is cabled and versus uncabled.
- Is the data being delivered to the user community in an effective manner?
- There could be a SWOT on QA/QC
- Should MIOs be included in this as a SWOT?
- DDCI Members were asked to each send Tim a list of SWOT topics
- We discussed the week of AGU in DC as a possible time/location for the SWOT. DDCI members attending AGU can gather in person and do a SWOT or two. About 5 DDCI members will be at AGU. We can do the SWOT session on Tuesday afternoon, December 11th at COL.

Next the Community Survey was discussed:

- Include workshop feedback and Hack week feedback.
- Larry is exploring professional survey options with was on the phone with ODU's Social Science Research Center.

- Lisa Clough suggested that DDCI look at NEON's survey and if we like what they did, we can explore their professional services.
- Chris Rutherford and Tom offered their company's services and can provide an estimate. They offer survey services.
- Tom G showed the NEON Stakeholder Survey. They got 20% response.
- Jeff Glatstein - Are we willing to act on the community recommendations?

DDCI Membership - Tim said that end-dates for the first term of each DDCI member is needed. We would like to stagger the end-dates to maintain continuity. All would be eligible for a second term. Tom G volunteered for a 1-year first term. We will finalize the remaining terms after the meeting.

Lunch Break and Continued Discussion

Community Survey - We will evaluate the various professional options (NEON, ODU, LMI) and recommend a path forward.

Community Meeting:

- There was discussion on if, when, and where a community workshop should be held.
- We will want participant diversity
- OOI users should be well represented.
- We need to determine the goal and theme of the workshop - this will drive the audience.
- We need to give them an incentive to come to a workshop.
- Jim O'Donnell - The community is frustrated by the performance of the system. give them an opportunity to recommend refinement to the scope.
- Dewey - What are we going to get by a community workshop that we didn't already get from the survey?
- Orest - Do we need a community workshop to provide additional input.
- Tom G – The workshop could help us prioritize the recommendations from the survey and other input.
- Annette - If we go with Tom's plan, then how long will it take to finalize the report. Tom – We could draft the report in advance of the community workshop and then use the workshop to prioritize recommendations.
- Based on the results of the community survey, we can select workshop participants.
- We would use the workshop to verify the report and recommendations.
- What would be the size of the workshop? We should be inclusive.
- Jeff – It is important to acknowledge that we are trying to be forward looking.
- James P - Is there somewhere that ECS can go to find the science questions that can be answered by OOI? What is stopping them from doing that?
- Lisa – Some workshop options include:
 - Vetting the report to a small group for prioritization.
 - Are there some groups that we are missing and should target
 - The workshop could have a hybrid purpose, report prioritization and training.

- Conclusion - we don't have a resolution on the workshop at this time.
- Tom G - We can reflect on the past OOI workshop surveys.
- Lisa - We haven't had a survey since before OOI construction.
- ERDDAP will be up by the time of the survey.

DDCI Web Conferences – All agreed that DDCI should hold web conferences every two weeks. Annette will poll everyone for the optimal day/time.

May meeting at WHOI – Annette will create a Doodle poll for a May meeting. It would be a joint DDCI and OOIFB meeting.

General Comments:

- Any DDCI correspondence should go through Tim Crone.
- Include the DDCI ad hoc group report in the Resource Library Google Drive.
- For the Quick-Look, Redmine data would be useful.
- Richard Dewey suggested that DDCI have individual write-ups for the quick-look. Tim can send out a template.
- Quick Look Assessment would be valuable for AWP but shouldn't be a public document
- ONC's Metrics presentation - this will be a webinar with OOIFB and DDCI

Around the Table

- Larry thanked all participants for attending the meeting.
- Lisa Clough appreciates the forward looking and thanked everyone for their work. Will get the final DDCI charge next week.
- Orest thanks the organizers.
- Tom G – He appreciates the DDCI opportunity and NEON will benefit.
- Dax – He is excited to continue.
- Rich Signell - USGS supports his time, and they will benefit.
- Jim P – The observatory at UH will benefit.
- John Trowbridge – He likes the insight.
- Chris W – They have put a lot in the work in this and appreciates the feedback.
- Dewey - ONC is interested in this and would like a stronger link to OOI.

Adjourn – A motion was made and passed to adjourn the meeting (Wingard/ Kawka).

Summary of Action Items resulting from the meeting:

OOIFB 2018-8: OOIFB should prepare a Ship Scheduling Statement regarding potential risk to the OOI program when cruises are scheduled outside of the weather window.

OOIFB-2018-9: OOIFB should draft a Science Plan/White Paper:

- Develop a white paper type document on OOI's exciting science potential with a section on each component.
- Request information that is needed for the plan.
- Draft a high-level outline
- Pull away from Traceability matrices

OOIFB-2018-10: Prepare an OOIFB recommendation regarding transition of PI instruments to core OOI supported instruments.

OOIFB-2018-11: Develop education and outreach strategies.

- Form a working group to brainstorm strategies – Sarah Gille, Dax and Lisa Rom expressed interest
- Should there be a workshop?
- If so, what would be the goals?
- Create an inventory of educational programs.
- May OOIFB meeting – an opportunity to engage Early Career Scientist users.

OOIFB-2019 – Review and provide input to the 2019 OOI Annual Work Plan (AWP) – OOI will provide draft AWP in April. OOIFB can review and provide comment at their May 2019 meeting. The final AWP is due in August.

DDCI-2018-2 : Data Delivery Evaluation

- The DDCI is tasked to conduct a baseline evaluation on data delivery plans of the new OOI 2.0 operator no later than December 31, 2018.
- The DDCI is tasked to conduct a review of the success of the OOI data delivery for completion in April 2019 (6 months after the OOI 2.0 begins). Metrics for success will be established for the review.

DDCI-2018-3 - NSF Tasking to DDCI – Provide a report which evaluates OOI Data Delivery (NSF will provide the final task statement in Nov 2018)

DDCI-2018-4 \Carry out at a SWOT – Strengths, Weaknesses, Opportunities, Threats

- Identify Topics for SWOT
- Moderator – COL
- SWOT Session – Tuesday, December 11th at COL

DDCI-2018-5: Provide DDCI Chair access to Redmine

DDCI-2018-6: Create an OOIFB_DDCI Slack group

DDCI-2018-7: Carry out a community survey

- ODU Survey Group will implement survey
- DDCI will draft questions.
- Open survey in early 2018.

DDCI-2018-8: Create a DDCI Resource Library.

DDCI-2018-9: DDCI members are asked to provide initial impressions of resource documents.

- Tim Crone will provide a template for initial impressions.
- DDCI members are to each provide impressions using the template after reviewing the resource documents