Data Management Advisory Committee (DMAC) Meeting
Feb 25, 2015, Anchorage
Draft Summary prepared by Darcy Dugan on April 1, 2015

Members in Attendance: *Phil Mundy (Chair, ABL/AFSC), Warren Horowitz for Dee Williams (BOEM), Mike Couch for Angel Corona (NWS), Louise Fode (NWS), Robert Raye (Shell Oil), Greg Demer (will be replacing Robert for Shell), Allison Gaylord (Nuna Technologies), Chris Hamilton (ADNR), and AOOS/Axiom Staff: Molly McCammon, Darcy Dugan, and Rob Bochenek.* **Members on the Phone***: Steve Lewis (NMFS), Scott Pegau (OSRI/PWSSC).*

Phil Mundy chaired the meeting, which ran from 9am-3pm at Axiom.

Follow-up items from last meeting:

- The meeting notes from fall 2014 were adopted with no objection.
- Axiom's name is now officially Axiom Data Science to better reflect their mission. Their email addresses have changed to axiomdatascience.com.
- At their October 2015 meeting, the AOOS board approved extending the Axiom contract for an additional three years (Sept 1 2015 – August 31 2018).
- An external review of Axiom will occur in the next 2 years, and will likely be included in the 2016 or 2017 budget.
- Draft revisions to the DMAC Terms of Agreement were circulated prior to the meeting and were discussed during the meeting.
- Google Analytics has been set up to generate monthly reports. AOOS staff will circulate the report to committee members starting in March.

Update on Recent AOOS Activities – Molly McCammon

National activities:

- Molly remains on the executive committee of the IOOS Association. The IOOS budget is holding steady and got a small increase.
- There is no longer an ocean subcommittee in the House.
- For the ICOOS Act Reauthorization, there are two issues of interest to AOOS: (1) Liability. For certain purposes, RA staff would be covered as federal employees for tort liability; and (2) Language clearing up gray area about federal agency members serving on RA boards.
- Certification – this not a requirement for RAs, but an option AOOS will pursue this fall. PacIOOS is going through the process to pave the way for other RAs but there are still issues on data management QA/QC. AOOS has most of the systems in place for certification but will need to work on documenting some of these.

- Arctic Observing – AOOS' two priority areas are Southcentral and the Arctic. AOOS is on a number of planning teams for the Arctic. Molly thanked Phil for being a vocal supporter of AOOS and communicating about AOOS resources within NOAA Fisheries.
- New proposals: AOOS/Axiom is participating in the Arctic Marine Biodiversity Program (AMBON) and Axiom is participating in another of the MBONs. AOOS/Axiom will also be part of a new project called MARES: the Marine Arctic Research Ecosystems Study. This is a multi-agency program funded by BOEM, NASA, USGS and others, with the focus on the eastern Alaska Beaufort and western Canadian Beaufort. Total funding is unknown.
- An FFO just came out from NSF to compete for the ACADIS (NSF's Arctic data) system, and AOOS has been approached by multiple groups to partner.
- Molly is working with Scripps on a Pacific OOS workshop on anomalies.
- Molly is on a national task team to establish an animal telemetry network. The initiative is co-funded by the IOOS national office and the Office of Naval Research and has been focusing on governance of the network and roles and responsibilities of players. There is no commitment from NOAA yet, but the plan is to house the network within the IOOS program office.

<u>Alaska Activities:</u>

- Gulf Watch Alaska is going strong and provides an excellent example of data sharing within the Research Workspace. AOOS houses all the data from the monitoring projects.
- The 10th Anniversary Film Contest was a big success. 32 films were submitted and AOOS has been highlighting them at venues across the state. An upcoming event at the Beartooth will be on March 28th in collaboration with Alaska Geographic.
- Molly is on the steering committee of the NWAB Science Program, which has $750K for this year. $200-300K have been allocated to ocean/coastal projects this summer. There is an ocean and coastal subcommittee figuring out how to spend the money.
- AOOS had 2 new positions on the street this winter. Holly Kent is the new program coordinator and will start March 23rd. The Operations Director position is still under consideration. Axiom is hiring a new data coordinator position.
- Axiom is working on a beluga sightings database with funding from NMFS; it is not yet public, but almost complete.
- BOEM is planning a lease sale in Cook Inlet. There is currently a push to get Cook Inlet data together.

DMAC Terms of Reference – discussion led by Phil Mundy

The DMAC Terms of Reference have not been updated since 2004. The committee went through the document and proposed changes, to either clarify responsibilities or update various sections.

Committee Action: Set review period for terms of reference draft: Monday, March 30.

The committee adopted the interim terms of reference subject to final editing and comments by the committee and ultimately, the AOOS Board.
Motion: Steve Lewis. Second: Scott Pegau. Passed Unanimously.

Committee Member Updates

Scott Pegau, OSRI/PWSSC: The hydrological modeling in PWS that OSRI and AOOS sponsored is fairly mature and has produced two model varieties. Scott is interested in AOOS serving up climatologies - monthly average air and water temp information. The atmospheric data is available through the Western Region Climatological Center, and further averages can be created or simply downloaded from the NDBC or Tides and Currents website.
***Suggestion for Axiom*:** Add climatologies to AOOS. Rob suggested Will or Luc could help with this.

Steve Lewis, AK Fisheries Science Center: There is a new bathymetry project for the entire Alaska EEZ with 5 million multi-beam points. Also, ShoreZone imagery/video is complete, converted to mp4, and uploaded to YouTube with the help of Axiom.

Warren Horowitz, BOEM: The SEIS for the Chukchi has been published and is awaiting a court decision in March. If approved, industry is planning to work in the Chukchi this summer. The Cook Inlet lease sale is certain, and BOEM will hire a contractor to do the EIS. Data is being gathered and it would be good opportunity for AOOS to work with BOEM. BOEM has a new studies interface called GEOESPIS that contains all BOEM studies and reports going back to the 1970s. You can search by study name or geography. The prototype is available for testing if people are interested. BOEM is also developing links to some of the data at NODC.

The BOEM sea ice forecasting study was going to help pay for HR radar operation and maintenance (to supplement AOOS funds), but funding for the project fell through so they no longer have the money. The Cape Simpson HF radar was funded through CIAP and that funding is going away too. The Cape Simpson radar is a unique system and extremely important since it can reach all the way from the Western Beaufort to Point Lay. Shell is helping close the HF radar funding gap for this year, and Warren hopes to move forward with the ice forecasting study next year and pick up the radar again.

BOEM will conduct a dye study this summer, releasing dye into the water to resemble an oil spill. There will be a carbon glider study at the same time. Warren also mentioned an ice drifter study starting in March and suggested getting in touch with Jeremy Kaspar and Andy Mahoney. Warren also has HF radar data on surface currents. He is interested in CTD data, which Axiom will have eventually through BASIS surveys.
Suggestion for Axiom: Get HF radar from Warren. Also let Warren know when BASIS CTD data is ready.

Allison Gaylord, Nuna Technologies: Permits are underway for a fiber optic cable to come ashore in the Arctic in the next two years. Allison has been involved in a CIAP-funded mapping effort for late 2016, creating a detailed wetlands map and producing ground validation via GPS for a high-res DEM. This is for a concentrated area 1000 sq km around Barrow, and should be helpful for flooding and inundation products. The team includes UAC Science, Umiat, NSB, Univ. of TX, UC Boulder, UAF, and Univ. of MN. Allison also reported on a coastal working group for the North Slope comprised of the Arctic LCC and others that has been under discussion but hasn't formed yet. Allison has been somewhat involved in ADIwg but not as closely as past years. Nuna Technologies is working on a translator for metadata and data entry, and is heavily into the documentation phase. Erika Key will be leaving NSF and requested a machine-readable standard for the location of instruments funded by NSF. The information will be available for review sometime soon. It will also include last min information on ship tracks for NSF funded research, which usually come from Renée Crane. Allison is happy to share a GeoDatabase.
Suggestion for Axiom: Look into putting the historical part of the NSF instrument database into the AOOS Research Assets map.

Louise Fode, National Weather Service – The NWS was hoping to get extra funding for installing new observations last fall, with the highest priorities being water level sensors. They did receive funding and are now working with NOS to get higher level stations in Norton Sound, and with AOOS on other types of water level stations or sensors across Alaska. In addition, NWS is trying to further invest in observations in general, and is hoping to expand and replace outdated land based sensors. This includes the lightning detection network, which is owned by the Alaska Fire Service. The network needs improvements for detecting lightning over water, which is relevant to mariners and the oil industry.

The NWS is also trying to transition some of the upper air observations currently launched by humans to 'autosonde', which is an automatic balloon release system.

In terms of data management, the NWS' web services in Alaska are all run locally but will soon be transitioned to national headquarters. Most of the data processing and some of the maps will still be generated in Alaska, but national headquarters will handle a lot of the data and there will be changes to the websites.
***Suggestion for Axiom*:** Put NWS ice forecast on mobile app since NWS isn't allowed to have mobile apps.
***Suggestion for Committee members*:** Right now everything currently provided by the Alaska NWS region will be switched over to the national office. Some tools or pages on the NWS may get dropped unintentionally. If you are interested in a particular product or tool, email Louise and she will help make sure it gets picked up by headquarters.

Gregg Demer – no report at this time.

Phil Mundy, TSMRI, NOAA: Directives from federal executive orders, OMB, and OSTP on metadata management have finally made it to NOAA. By July, everyone will be required to have metadata records for their data. Data.gov is up and running with over 800 metadata records from TSMRI under the keyword "AUKE". This is a big initiative, requiring researchers within a year of July to link data that's been around for more than one year.

Phil has watched a big push for Arctic data, from Norway's centralized "Strategic Initiative Arctic" to Russian data from ice flows, and now the Japanese and Chinese developing Arctic data agencies. A lot more data will be generated in this region as international entities begin to wrangle with fisheries management. SAON is now part of the IASC data committee and wants to do an inventory of Arctic monitoring. They are working on comprehensive list and will run it by NASA. This may be of interest to AOOS.

Robert Raye, Shell – *was gone for this portion of meeting, but had previously noted the following in discussion*: The University of Washington USAIDP is deploying its first round of ice beacons in the next 30 days, and planning a lot of fieldwork. Robert also mentioned there will be webcams on buoys in Chukchi this year, providing one snapshot per hour. Louise mentioned some of NDBC's buoys have cameras too.

Data Portal Update – Rob Bochenek

Cyber infrastructure progress:

All AOOS systems have been transitioned to HTML 5. The next step is a new generation HTML5 allowing users to fly through the ocean in 3D. Axiom is also working on a process allowing users to find real-time data and immediately compare it with models.

Updates

- There are new advanced search options in the AOOS data portal and you can now apply filters using time, geography, and method of access.
- BASIS datasets from NOAA are almost ready for public view.
- The first iteration of the Bering Sea SubNetwork subsistence harvest data was made public last fall.
- The Cook Inlet beluga observation portal is nearly complete but not released yet.
- The Bering Sea seabird vulnerability assessment is still wrapping up.
- Major progress has been made on the RUSALCA zooplankton data (Russ Hopcroft's 30 year time series of zooplankton).

Partners for shared cyber infrastructure approach:

Developing functional standalone DMAC systems is laborious, time consuming and expensive. IOOS regional associations are similar to one another in that their DMAC systems must meet IOOS DMAC requirements and each regional association must support the local needs of their constituents. Sharing DMAC personnel, expertise, and cyberinfrastructure across several regional associations has the following tangible benefits:

- Reduced Costs - Support and upkeep of a single DMAC system instance leveraged across several partners is more cost effective than support and upkeep of several stand alone systems. Dividing the cost of general infrastructure costs among several partners frees up funds for additional activities and advanced DMAC capabilities.
- Accelerated System Development - Collective system development allows individual partners to fund specific functional system improvements that can be seamlessly leveraged across the collective. New partners are also provided with immediate access to a mature, IOOS-compliant, technologically-advanced DMAC system.
- Increased Performance - Pooling resources for cyberinfrastructure enables Axiom engineers to cost effectively build systems that have orders of magnitude higher performance capabilities and higher availability than stand-alone DMAC stacks.
- Consistent Interfaces and Tools for Users - The ocean-data user community is presented with a consistent set of tools and interfaces as they move between regional association portals, thereby reducing frustration and increasing the utilization of data.

Axiom partners include USGS (Woods Hole, Santa Cruz, CIDA); SWFSC through CenCOOS; AXYS (private sensor manufacturer); NFWF (east coast Hurricane Sandy program), and the Marine Mammal Commission

Data management support for integrated research campaigns:
Rob provided a demo of the current Research Workspace. A large number of programs are now using the Research Workspace, including Arctic EIS, RUSALCA, Arctic MBON, SW/SE MBON, EVOS Gulf Watch/Herring Programs, PacMARS/DBO, and MARES. AOOS/Axiom determines the cost to these programs based on what data management requirements/support are needed. If the project wants specialized products then the cost is higher. Overall, the Research Workspace is much cheaper than the standard data manager, and the centralized approach means data is retained indefinitely. Rob emphasized that purchasing even just one month of Axiom's time can help maximize the use of the Research Workspace. IOOS now has a gateway to Research Workspace, along with AOOS and CenCOOS.

Axiom plan for next 6 months

- New capabilities for visualization and analysis of biological/physical parameters
    - 4D data sets
    - Applications for RUSALCA, Seward Line, DBO, and BASIS datasets
    - Convergence upon NetCDF for archiving sensors, gliders, profiles, etc.
    - Coordination with OBIS-USA for convergence upon Darwin Core schema for biological data – IOOS biological data feeds
- AOOS Mobile/Lite - simplified interfaces for users and smart phones

Other Suggestions from the committee:

- If ocean acidification gliders are going back into PWS this year, talk to Scott about more effective outreach.
- The AOOS/ACCAP Sea Ice Atlas doesn't include Cook Inlet. AOOS needs to talk to ACCAP about why not. Maybe the new pan-Arctic version will include Cook Inlet?
- Allison Gaylord suggested reaching out to John Dunham at UAC, Barrow's science advisory committee, as a new partner.
- AOOS should touch base with GINA about getting a MODIS feed. GINA did some testing this spring with a wmst feed and it may be time to circle back.
- AOOS is not currently incorporating industry data into visualizations and there is interest in doing so, particularly for locations of drill sites.
- Work with Steve Lewis to figure out what habitat data products exist and what we should incorporate. For fish, we would want benthic habitat models – starting with sediment type – to characterize substrate.
- Work with Steve Lewis to keep bathymetry updated.
- AOOS should provide more demos with agencies, organizations, and the public. Doing this multiple times a year is important.

Setting next meeting date:

The next DMAC meeting is proposed for the week of September 21.¨ AOOS will send out a doodle poll to confirm the date.