



**Data Management Advisory Committee (DMAC) Meeting
September 25, 2014, Anchorage**

Members in Attendance: *Phil Mundy (Chair, ABL/AFSC), Peter Olsson (AEFF-UAA), Tom Heinrichs (GINA), Warren Horowitz for Dee Williams (BOEM), Louise Fode for Angel Corona (NWS), Igor Katrayev (NPRB), Robert Raye (Shell Oil), Scott Pegau (OSRI/PWSSC), Chris Hamilton (ADNR), (Stan Smith (USGS) and AOOS/Axiom Staff: Molly McCammon, Darcy Dugan, Rob Bochenek, and Ellen Tyler.*

Members on the Phone: *Allison Gaylord (Nuna Technologies) and Steve Lewis (NMFS).*

Phil Mundy chaired the meeting, which ran from 10 am-3 pm. Axiom hosted the meeting at their offices and Derrick Snowden, IOOS DMAC System Architect and Acting Division Chief, attended as a special guest.

Summary of national issues/ regional relevance

Derrick Snowden, IOOS DMAC System Architect and Acting Division Chief

- Axiom has been working on the national IOOS cyberinfrastructure
- This national cyberinfrastructure supplements (and does not replace) what exists in the 11 regions, with the primary focus on getting core observations delivered and published in a consistent way across regions. The job of the national office is to develop and provide the technology to implement the IOOS standards for the 26 core ocean variables.
- This year the focus has been on 1) use of OPENDAP (mostly THREDDS) for serving model data and 2) SOS – sensor observation service.
- In the coming year they are looking to develop products– such as an IOOS-wide product catalog representing data services across the regions. A beta version of this catalog will be rolled out in October.
- This year IOOS? will also be looking at developing or implementing tools and products to assist communities of practice (users of their cyberinfrastructure). Collaboration is needed among scientists, software developers and analysts to facilitate discovery and use of information for network data analysis. Education and outreach will be major components.

Discussion focused on AOOS/IOOS visibility issue related to data services. At the national level, there is a lot of interagency discussion about data management and IOOS is not the first service provider that comes to mind as a priority in these discussions. Derrick commented that AOOS has one of the most sophisticated interfaces, but he has no idea who is actually using these data services. One approach is using Google Analytics, but there is concern that this doesn't provide information in enough detail to base make decisions.

The committee came up with two possible reasons for the IOOS visibility issue:

1) The user interface is not mature: for example, there was concern that the current standard of hiding sensors which have not reported over some determined number of hours is problematic because the first impression a potential user coming to the map has is that this is not complete/accurate or “you don't know what is out there.” The fact that many real-time sensors

operate seasonally in Alaska due to weather and ice makes this problem especially acute in high latitudes.

2) Potential users simply are not aware that these services exist: one possible venue to demo would be the annual state climatologist association meeting.

Discussion moved on to data protocols and whether the IOOS office would be pushing NOAA to set up specific (consistent) data protocols. NOAA has no internal enforcement office but the NOAA-wide Environmental Data Management (EDM) Committee framework is similar to other frameworks set for other agencies and interagency policies. An emerging consistency across federal agencies is due to a lot of work going on behind the scenes. Directives are becoming more clear and directive.

There are fewer standards for biological data than for physical data, although the need for more high-level frameworks is being discussed and there is currently an emphasis on building relationships among labs. IOOS is at the forefront of an effort to target the program managers who fund projects as a way to get compliance. One way to get PIs to manage data in preferred ways would be to create "boiler plate" data management plans which encourage best practices, including data transfer formats and responsibilities. NODC just released an automated upload tool. There is a need to establish standards (mapping vocabularies) because NODC is overburdened by accepting any data in any format. Axiom spent 3 months trying to get one dataset into NODC. IOOS wants all the regions to be consistent; and perhaps it makes sense for IOOS to work jointly with NODC to set those standards.

Business

- Phil Mundy moved to approve the meeting summary from September 2013 (no objections).
- Molly shared her recommendation to the Board that AOOS not hold a competitive process this year for data management services, but instead extend the current contract with Axiom for another 5 years, to be followed by a competitive process at that time if desired. The committee was supportive of this recommendation and suggested that staff should cost-out a rough estimate of what it would take in staff resources and dollars to 1) go out to competitive bid and/or 2) conduct an external review (using a company such as Tetrattech or other).
- A subcommittee was formed to "refresh" committee terms of agreement and membership (Phil, Tom, Peter and Louise*), potentially splitting the existing document into a short Term of Reference and a more detailed Data Management Plan, and clarifying who the Board reports to - the ED or the Board. (*= pending approval from Angel).
- Haijo Eichen was suggested as a potential committee member experienced in using traditional knowledge; Allison Gaylord also volunteered to put AOOS in touch with a couple people, but she didn't have names off the top of her head ***follow-up** *. There was some discussion also of including another biologist (Phil Goldstein) and/or another data provider and user (Russ Hopcroft).

AOOS Data Management Services contract

Discussion focused on the success that the AOOS and Axiom team has had over the past 5 years; the resources required to hold a bid process; the fact that the two programs are highly leveraged; and the fact that there has been a high degree of review and oversight both from AOOS staff and the DMAC.

Rob Bochenek of Axiom shared that he would welcome an external review and thought it would be beneficial to Axiom. Chair Mundy suggested that staff look into the cost for the board - both looking

at how much time and money was spent on the open bid process last time, and a couple of estimates of external reviews by the board meeting. ** follow-up***

Chair Mundy, said a competitive bid would not be beneficial or productive at this time. 5 years ago things were not going well but now they are, and the AOOS/Axiom relationship is still developing, and he is pleased to see that Axiom is connected to the national level program. External high-level review may not be necessary, but it is worth looking into. If there is too much going on this year, it could be done next year.

Derrick shared that 2 regions have done this (CeNCOOS and GLOSS) and he would be willing to provide more information on their process.

The DMAC committee requested that AOOS staff share recent Google Analytics reports. ***follow-up***

Programmatic Updates (since March)

- User feedback (including data tagging schema) and data ingestion →. The latest updated spreadsheets were not reviewed by the committee, but members were urged to review them and provide any comments to Molly.
- This year's workplan was reviewed by the DMAC committee in July. Since then, there have been 2 additions: creation of an iPhone app for real-time sensors and a section on certification.
- Over the next year AOOS will be hosting workshops to plan for the next 5-year proposal to IOOS. The Federal Funding Opportunity (FFO) is expected to be released in January and will be due in June 2015.
- Over the last 5 years AOOS has focused on the southcentral Gulf of Alaska and the Arctic. We're looking at about the same about the same amount of funding for our next 5 years.

Discussion focused on completed and upcoming stakeholder workshops listed here:

- Anchorage, ecological forecasting: Sept 16
- Unalaska, climate vulnerability assessment: Sept 18
- Nome, marine navigation safety: Oct 6
- St. Paul, climate vulnerability assessment: Oct 9
- Anchorage, ocean acidification: Dec 2-3

It was noted that we had some great discussion at the March meeting that should inform the next 5 years as well. Several individuals felt that having climate, ecosystem, fisheries and oceanography in one category is a lot. Molly explained that we don't want to over-promise and under-deliver.

Molly also briefed the committee on the certification process being established through IOOS. AOOS is looking into becoming certified, and the biggest data management challenge is that we would have to QA/QC sensor data. Federal data is exempt and the focus is on RA-funded data. If a dataset has a home – like a state agency- there is probably an existing QA/QC process. For AOOS-funded projects we will be implementing QUARTOD standards. Molly would like to hire a contractor to help navigate the certification process. If anyone knows of someone to hire on an hourly basis, please be in touch!

Evolution of Data Tools – (See PPT)

Rob displayed his “Data Flows” graphic from the last DMAC meeting and reflected that existing data flow through the system is fairly comprehensive for sensor and other direct observational data, numerical modeled and project data. Local Indigenous Knowledge and social science data were identified as areas where gaps remain.

Over the past 6 months, the AOOS data system has improved catalog navigation via nested data layers for models and other multi-variable data layers. All applications have now been transitioned to HTML5 and all data and services have been geo-replicated. This means that data is stored in two distinct physical locations – Seattle WA and Providence Rhode Island. New interactive data layers include: Bering Sea Subsistence Network Subsistence Harvest Data, Cook Inlet Beluga Observations, and Bering Sea Seabird Vulnerability Assessment data layers.

The question of who owns the technology that is developed with AOOS funding came up and was answered: AOOS! This could be an issue if we start partnering with private sector entities and could also influence our non-profit status, although it could be a good revenue opportunity for AOOS.

Discussion focused on Axiom’s convergence upon NetCDF as their internal standard for storing the data they manage. Axiom believes that this is the ideal back end format for interoperability because it is widely accepted and supported in and out of government agencies, has been around since the 1980s, and is widely used in met-ocean data. What this convergence means is that Axiom will convert incoming data from sensors, gliders, profiles, etc into NetCDF. This takes effort (skill and technology) and will never be completely automated, but the team is becoming increasingly proficient. For AOOS data users: the information will still be delivered in csv and visual formats, so you don’t need to be able to work with NetCDF to use AOOS data.

Rob demonstrated the near-final scalability project funded by IOOS, which showed sensors streaming from across the nation. There were some locations in Fairbanks and elsewhere that were not reporting any information. A question was raised asking how do you know that it’s scalable if you’re only displaying 80% of the observations? Little fixes are still needed before this product is made public.

Updates from the DMAC Committee (highlights):

- Stan Smith (USGS) provided an update on ADIWG, see ppt for more.
- Steve Lewis (NMFS) shared that a beta site to serve up Shorezone imagery is now available: http://alaskafisheries.noaa.gov/mapping/szflex_video/index.html?T=SZ@L=B. Steve recently provided shore station data and Nearshore Fish Atlas information to be ingested into the AOOS data system this calendar year.
- Seth Danielson’s statewide bathymetry is already in the AOOS system; AOOS will also ingest Steve’s bathymetry data as soon as it is completed statewide.
- Igor Katrayev shared that while NPRB has a policy allowing PIs to keep data private for two years, project data is available via the project database after that. Some datasets are too big to serve from the database, but he will make them available upon request. The NPRB browser redesign is still in the works.
- Warren Horowitz shared that BOEM is hoping to complete a geo-environmental studies database going back to the 1970s by the end of this year. The idea is to map current and prior research, provide links to the data and potentially be able to query the data on a set of

attributes. Once complete, a user interface will be developed and tested internally, before public launch.

- Louise Fode shared that NWS may receive funding for observations in Alaska. NWS is working to identify gaps from their perspective and would like to work with AOOS and others to determine priorities.
- Phil Mundy attended the Arctic Council PAME Committee workshop in June. AOOS is working with the Canadian Dept. of Fisheries and Oceans staff who manage the Beaufort Sea Online Platform (BSOP) to share digital data relevant to both sides of the US-Canada border. He will be meeting again at the end of October and hopes to establish a transboundary Distributed Biological Observatory line or station with Canada.
- At the last DMAC meeting, Chris Hamilton recommended that AOOS join the Alaska Geospatial Council. This group is still in its formative stages, but he would be happy to give a larger presentation about it sometime in the future.
- Tom Heinrichs shared that GINA is moving from IARC back to the Geophysical Institute to better align resources with what is left of the satellite group and remnants of the supercomputing cluster. His STMI-ortho project is making a push as they reach the end of their grant cycle.
- Allison Gaylord was on the phone and got cut off but wanted to share that the Barrow Arctic Science Consortium (BASC) no longer exists. Umiq Science currently handles permitting, planning, logistics support and outreach (community talks, etc.) for NSF and other entities at Barrow. The effort to compile a location based inventory of sampling sites is ongoing as part of the Barrow Area Information Database (BAID). Updated webservice and ISO metadata are planned. Also, NSF Program Officers have requested an update of ship tracks animations for cruises that received funding from NSF between 2004-2014.

Wrap up

- Planned brainstorming of potential funding for habitat data - our priority data ingestion focus for the year – was moved to the next DMAC meeting.
- Next meeting will be set for some time in February. Please Doodle!