AOOS

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AOOS Data Management Advisory Committee Meeting Summary
19 October 2016
Draft meeting summary prepared by Carol Janzen Nov 4 2016
Meeting held at Axiom Data Science offices, Anchorage

DMAC members attending in person: Phil Mundy (DMAC Chair, Director NOAA Auke Bay Lab); Steve Lewis (Information Technology, NOAA Fisheries); Anne Johnson (Geographic Information Officer, AK DNR)
AOOS and Axiom staff attending: Molly McCammon (Executive Direction AOOS); Rob Bochenek (AOOS Data Manager AXIOM Data Science); Carol Janzen (Operations Director AOOS)
DMAC members attending by Phone: Allison Gaylord (Barrow Area Information Database); Scott Pegau (oceanographer and OSRI Science Director)
Guest: Jesse Lopez (oceanographer and numerical modeler)

10:00   Molly McCammon roundtable introductions and roll-call

DMAC Meeting Minutes from 11 March 2016 meeting reviewed and approved.
> Phil Mundy noted that AOOS staff will email out final draft DMAC Meeting summaries to the DMAC as well as posting on the AOOS website.

10:15   Programmatic Update, Molly McCammon

1. Funding: AOOS received add-ons to its main grant for projects from other parts of NOAA and other federal agencies. Some of this funding is channeled through AOOS for Axiom to do work for the national IOOS Program and a USGS geospatial portal. Other add-ons came from the AK National Weather Service and the NOAA Ocean Acidification Program.
2. OA Network funding, $15K a year for 2 years. Darcy Dugan is the network coordinator with her primary focus on the OA Network website and a pre-proposal aimed at data synthesis in northern Gulf of Alaska, which is the most OA data rich region in Alaska. Note: Phil Mundy mentioned that Auke Bay Lab at one time had a coastal OA program that was then discontinued once PMEL took it over. Mandy Lindeberg has the data.
3. AOOS is hosting an OA State of the Science Workshop, November 30- December 1, 2016 in Anchorage:
    a. Day 1 - Public participation on state of the science presentations and discussions

b. Day 2 - Research priorities and planning with members of the AK OA Network. This group will also identify what activities the network will do.

4.   AOOS is still funded to support an animal telemetry workshop. Molly is coordinating with Bill Woodward in IOOS office. Probably will happen in the winter 2017.

5.   AOOS/AXIOM received a sole source data ingestion project from BSEE/BOEM to integrate and visualize data from Arctic.

6. North Slope Borough Arctic program data (Shell funded) data ingestion and archival contract with AXIOM is underway.

7. National Academy of Sciences proposal to take subsistence data from Steve Braund and Associates and integrate/visualize it like BSSN data on the AOOS Portal is still pending (UPDATE: awarded, October 26, 2016).

8. AOOS and Axiom submitted an Arctic Domain Awareness Center (ADAC) proposal related to improving bathymetric charting in the Arctic. The proposal is to help prioritize where ship-based mapping and charting are needed based on vessel traffic, bathy data condition or existence.

9. AOOS hosted the fall RA and semi-annual IOOS meeting in Alaska the 3rd week of September.

10. National funding: House and Senate side both gave an additional $2 million to IOOS (asked for $4.7 million) in their proposals. Hopefully, this will be included in any final budget.

11. ICOOS Act legislation passed the Senate, and Congressman Don Young is still sponsoring on the House side.

Follow-up: Scott mentioned that the North Slope Science Initiative wants some information about the AK OA Network and OA risks. John Payne is the potential contact.

10:40 Rob Bochenek - Data Team Report

1. National IOOS Activities:
- Environmental Sensor Map: Developed in response to request to build a data ingestion/analysis/gap analysis/visualization of global sensor networks.
- Artificially scaled to sensors, ingest, QC data, do some analysis, and provide the end user tools to use it

2. NOAA office of coastal surveys:
- OCS prioritizes bathymetric efforts using a hydrographic health model. Interested in areas where known Keel Depth is close to bottom, age of data, vessel traffic etc.
- They currently can only use small subsets of AIS data in this model. 80 billion AIS pings (~65 TB). They are struggling with the data size.
- They can currently use thru ESR pipelines about 1 month of data, for specific region (Florida), and create raster heat map. This took a week!
- They came to Rob (who is using ASPI SPARK) to handle more data. Axiom ran a week of data on National scale, which took 9 minutes.
- $60K pilot project. This will lead to next projects like the work proposed in the Arctic IoNS (ADAC) proposal.

- Data products are aggregates and ship info is made anonymous. (Phil raised concern over right to use AIS data as ship operators might want that information to be confidential. In some areas there might not be enough ship traffic to aggregate, so confidentiality is an issue.
  - **ACTION ITEM: Check Confidentiality of AIS data**

Molly said the bigger issue is Alaska AIS makes its money thru its system, which is partially paid for by subscribers and the USCG is the biggest customer. In other states, USCG is managing this at federal expense, and the data are already public.

3. Projects:
- Animal Telemetry work. Stanford currently is hosting ATN Data Assembly Center (via Barbara Block). Axiom is coming in with researchers who have data but who do not have their data in the current ATN DAC. The idea is to standardize data with the researchers to get it into the Stanford DAC. ($50k to kick start or demo).
- IOOS Sensor data map: IOOS helping fund a real-time sensor map for the entire U.S. using open source software packages.
- IOOS program office provided funds originating from USGS coastal morphology program, leveraging and contributing portal code base to connect and expose a variety of seafloor model outputs for west coast. It is also using it for hurricane data sets and numerical models.
  - Rich Signell (WHOI USGS modeling), Nadine Goldon (USGS). Helping develop skill assessment for models, and building tools, refining climate products. Facilitates model forecast capability for USGS and sediment transport, and contributes to data sensor map.

Molly: Regional DM and IOOS DM have developed a vision, mission, roles and responsibilities document for the RAs and IOOS program office. This is still being vetted at the regional level.

4. Regional Association work efforts:
- SECOORA has been a great partner and ally.
- CeNCOOS has had some staffing and funding challenges this past year.
- Cost sharing and leveraging a single cyber infrastructure stack across regions to save money makes sense. Some regions are not positive cost sharing would be effective. However, starting to see benefits with SECOORA and CeNCOOS.

Phil: Lots of history of RA DMACs. Sounds like they are starting to come to a sensible solution. AOOS does not want to be subsidizing all the RAs…we need to get some costs recovered. USGS is now benefitting from our system. NSB. Shell. BOEM. How is AOOS recouping costs?

Issue raised: who runs the AOOS DMAC? AOOS or the national IOOS Program. Answer: AOOS does, but has to comply with national standards and requirements.

11:45 Rob Bochenek - Axiom Workplan Review

1. AOOS meets with Rob weekly, and together the two review workplans quarterly.
   a. Discussed how to recover infrastructural support from other organizations using the AOOS Data System, and discussed a user fee that gets fed back to recoup the core DMAC budget costs.
   b. Research workspace activities are typically paid for by clients and usually leads to AOOS ingesting their data (that is then paid for), so that method is mutually beneficial.
2. Data Certification: Rob mentioned how this turned out to be a bigger undertaking than he originally thought, but has had overall benefits to the program.
3. Discussion on hosting HAB tool: Liability is an issue, so needs to be heavily caveated.
   a. Rob noted that many groups are collecting HABS and oceanographic data: Sitka, Port Walter, Kachemak Bay NERR, others.
   b. Carol requested a list of what each place (of the many groups Rob mentioned) and what it is they are doing to evaluate suitable data for ingestion.

Special Projects and Product Development: Molly McCammon and Rob Bochenek

The Axiom work plan has $115K for product development this year. These are the items being considered (not able to do it all, but we need help prioritizing):

1. Integrated Water Level Observing System (with Nic Kinsman and Jackie Overbeck)
   a. Web Page Links to the Project
   b. Ingest the data sets
   c. Expand upon and integrate Grumbine Tool, Coastal Profile products
2. OA Network: create data portal with all relevant Alaska data
3. HABS: create data portal with all relevant Alaska data, plus site for Alaskans to insert the data they have collected.
4. Navigation Safety - Bathymetry Data Compilation, AIS Vessel Traffic trends
5. Integrated Sentinel Monitoring System - Collect and visualize the Core Physical/Biological long term datasets of these organizations and integrate into an electronic Status of Alaska's Oceans and Coasts Report
   a. PWSSC
   b. Sitka tribe and Sitka Sound Science Center
   c. KBNERR and Kasitsna Bay lab
   d. AOOS Ecosystem Mooring in each basin (GAK, M2 Bering, Chukchi, Beaufort)l
   e. UAF: Seward Line
   f. DBO lines
6. Regional Ocean Plan Data Portal (NOP). If this goes thru, AOOS DAC should be the place to house the portal. Barbara Blake in the Lt. Governor's office is supportive.

Comments from committee members:

- Phil: Challenge in ocean reporting is putting all the data into a system that can reduce information into something people can use.
- Molly mentioned her interest in a State of the Oceans report for AK, and Phil said that Canada is abandoning State of the Oceans report for more timely and useful seasonal reports on focus issues.
- Scott: Would like to see water temperature averaging using existing data we have to make climatologies. (Rob will demo this at lunch).
- Molly summarized the integrated WL concept and discussed all the activities going on in AK, including i-gages, piloting new shore-based instruments (ASTRA), and community based observations.
- Rob mentioned the Grumbine model: High resolution unstructured grid that uses astrophysical forcing. Take numerical model output, and make a tool for users to see what various astrophysical forcing undertones that are driving tides.
- The group discussed priorities of this list but did not take any action.

Lunch: 12:30   AXIOM Staff: AXIOM Demonstrations

Brian Stone demonstrated the developing Climatology tools.
- Scott would like to be able to download the files of processed files, not just the full time series.
- Currently, the client computer does the computations from the whole data set.
- Make it possible to download CSV of data computations either shown or in download option, ask user what they want.
- Brian proposes we have a fallback system for pre-calculating on the server for people with slow downloading.
- Scott reiterated that we still need some pre-computed climatologies that are simple and easy to upload and update. Start with one like Seth's. (Carol asked for this initially).

Brian demonstrated the Glider data tool: Lots of visual options, but not yet able to download data that are making the plots.
- The problem is how to explain to the end user what was done to the data.
- Carol explained that this all depends on the sampling, so Carol mentioned this was just a tool to explore data and look at it different ways, but not as an end goal for analysis.
- Perhaps we pick one way to contour data and make that available for download.

Rob discussed the Ocean Research Workspace. Researchers can load their data into the workspace, compare their data with other AOOS data, and do analysis and keep it all documented along the way.

13:20 Molly: External review of AOOS Data System

AOOS is seeking DMAC comments on the review process, what should be reviewed, who should do it, etc. DMAC members were asked to submit responses to a Survey Monkey questionnaire sent to them prior to the meeting.

Initial input:
- Anne: She said geospatial priorities
- Allison: Data products and portals, data curation and archiving

How will the review be done?
- Molly was thinking a review committee would be convened consisting of: Another RA data person (not Axiom customer); IOOS DMAC person; users; external person from NOAA or private sector.
- Reviewer would perform a site visit, review the website, meet with data team
- Potentially contract with someone to lead the review. Last time used someone recommended from Boston Office of Tetra Tech.
- Steve: recommends: John Olssen, Carl Schoch. Get with users and sit down with them and give them 30 minutes of time to have them use the portal.
- Carol suggests having a few homework problems for the reviewers on usability.
- Molly thinks we need to evaluate if we are meeting user needs more than reviewing usability.
- Phil says to boil down to 2-3 top priorities. Core Cyberinfrastructure. And Customer Service. The Board is going to be interested only in understandable and digestible conclusions about how good we are doing, with some actionable recommendations.
  - Are we spending our money appropriately?
- Scott: He wants to see usability addressed. He asks who decides what Axiom does for AOOS. We responded: Axiom provides suggestions and recommendations, but AOOS decides.
- Allison: web user ability where we could get more feedback by sitting there with people or do some virtual system. Scenarios to work with ahead of time to casual users, experienced users, novice (new) users. Scenarios to work through for Survey Monkey where they do the scenario, and give feedback on the survey. Try not to get too bogged down on individual applications.
- Maybe crowd source it?
- Molly: suggested, based on these comments, it is possibly the internal data processes that we should focus on.

Phil: Look at the customer service model. He finds his staff waste a lot of time not only trying to get to the data, but also analyzing it. Perhaps AOOS can take a role in higher level data mining and data analytics.

- QUESTIONS TO ASK:
  - WHAT IS OUR CUSTOMER SERVICE MODEL?
  - IS IT APPROPRIATE?
  - IT IS SERVING OUR CUSTOMERS CORRECTLY?
  - If we want to institutionalize AOOS…what do we need to do to do that?

ASIDE: IOOS needs to do this as well.

Molly suggested the following relevant questions for Product Development going forward to better guide outcomes:

- Where are the user requirements for "this" product?
- Who is paying for it?
- What does it need to do?
- What did the customer ask for?
- What could be our value added?
- What is the timeline?
- How will it be marketed?

We currently do this very ad hoc. Also, even if we lay out what we want, the end result is often different. Need to work on this.

ACTION ITEMS:
FOLLOWUP EMAIL AFTER DMAC MEETING SHOULD INCLUDE THE FOLLOWING:
1. Request from Steve to email the MSWORD version of the Survey Monkey questionnaire to DMAC.
2. Links to Data Management Plan

14:00 Carol: Data Management Plan
Carol summarized the work done for Certification and the updated DM Plan and associated Data Stream Plans.

Allison: Feedback to AXIOM. The titles used for discovery in metadata need to be clearer and more descriptive. Use open web services.

14:15 Carol: ROMS Model Revisited
- Carol showed use analytics for the ROMS model (provided by Will and BJ).
- Phil reiterated that the model does not work without observations and without data assimilation.

- Carol explained that the model is run in data assimilation mode, but data scarcity is the big issue there. Chao confirmed they are assimilating data and using atmospheric forcing.
- First validation experiment was a miserable failure according to Phil, when it ran without data assimilation.
    - Everybody failed on the test. Circulation model in the absence of atmospheric forcing was not useful either.
- Model got some atmospheric forcing behind it, and worked better. And with more observations, even better.
- Phil: This model is like having a set of drill bits with no drill.
- Scott: ERMA does not do modeling it just shows output.
    - Steve: ERMA is serving up the AOOS funded PWS ROMS model.
- How much will it cost to get out more real-time sensors to run model effectively?
    - Molly: AOOS can't afford it and industry in PWS isn't willing to do so.
- Initial thought was the model will fill in gaps.
- Improvements on model have been made but not perfect or perhaps not even effectively better for operational purposes.
- $50K a lot to spend on a model that is not used much or has inaccuracies.
- Scott: Are we at the point we can add value to the model by coupling larval drift model to the circulation? Can we add larval drift? What would be the cost? OSRI has done a larval map.
- How many ways can we use the model? If only 2, probably not justified.
- Carol said future of ROMS discussion will continue in next few months.

ACTION ITEMS:
1. Verify if USCG is using Yi Chao's ROMS for SAR? (Find out).
2. ROMS does not have wind, or GFS winds from NCEP (Confirm).

14:25   Carol: Shell data Situation
Carol updated the committee on the availability of data collected by Shell that is now in the hands of AOOS. We are looking at costs of hosting the data and making it publicly available and then seeking the funds to do so.

14:30   Final Comments
Steve: Suggested having Axiom convene a Data Management Workshop in Juneau, have it well defined for a specific workgroup. Hold the workshop either here or have Axiom go to Juneau to give training or workshop on an aspect of the data portal and Research Workspaces.

Rob: Said they are planning a workshop at the AMSS and will be introducing the updated version of the Research Workspace at that time.

14:35   Meeting Adjourned