IOOS DMAC Vision Document
Draft as of March 3, 2016

IOOS DMAC MISSION: To promote broad access to and use of ocean and coastal data for the benefit of stakeholders, NOAA, and other IOOC agencies.

ROLES & RESPONSIBILITIES

IOOS PO DMAC
• Serve as the architect (system design, and standards) for the overall IOOS DMAC system, which is made up of two components: national (federal programs serving up core oceanographic data and functional Data Assembly Centers), and regional (RA Data Assembly Centers).
• Facilitate mission implementation by IOOS PO, RAs and functional DACs
• Facilitate mission implementation within NOAA
• Facilitate mission implementation with other IOOC agencies & global programs

IOOC
• Establishes required observation data variables to be gathered by both Federal and non-Federal assets and identify, in consultation with RAs, priorities for System observations;
• Establishes protocols and standards for System data processing, management and communication
• Develops certification standards and compliance procedures for the RAs to ensure compliance with applicable standards and protocols

IOOS RAs
• Serve as regional Data Assembly Centers *
• Facilitate access to regional federal, state, local, tribal & private data, including both data collected by RA and other relevant regional data
• Develop regional data products & tools in response to stakeholder needs
• Collect regional stakeholder requirements for data and information for internal prioritization and to be shared with the PO and other RAs. Through sharing requirements we can create the most flexible DMAC design and reduce inefficiencies in the implementation
• Provide stewardship/services to local and regional data providers in addition to access, which could include data ingestion, QA/QC, archiving at national data center and other

* Data includes in situ and remote observations, as well as numerical model output and other derived products.
PROCESS FOR DECISION-MAKING

1. Continued progress toward system implementation as described in the Ocean.US DMAC Plan, IOOS Blueprint (approved by IOOC), and IOOS PO DMAC Implementation Plan
2. Other guidance and standards from ICOOS Act and IOOC
3. Compliance with federal mandates and policies (e.g., NOAA Data Sharing Policy, President’s EO on data sharing)
4. Desire to meet NOAA mission and priorities and global program goals
5. Some opportunistic (what initiatives are getting additional funding, traction, etc.), where is unique IOOS niche

GOALS & OBJECTIVES

Goal 1: Develop and support overall architecture for national IOOS DMAC, which ties together the RA regional DACs, the functional DACs, and federal programs that observe core oceanographic variables.

Objective 1: Develop DMAC entry point (ioos.us) to provide standardized discovery of and access to core set of oceanographic variables datasets, products & services
   a) Support centralized web access (IOOS PO)
   b) Provide data discovery through searchable metadata repository (e.g. data.ioos.us by RPS/ASA)

Objective 2: Foster technical capacity for functional DACs: HFR, ATN, glider
   a) Increase transparency of process for deciding which ones to fund and who to implement and sustain

Objective 3: Create portals and products for national audience
   a) Develop asset maps depicting the breadth of observations and models available (e.g., through Environmental Data Server by RPS/ASA and National Real-time Sensor Map by Axiom)
   b) Develop national brokering services to re-serve select data from regions and federal sources (e.g., through Environmental Data Server by RPS/ASA and National Real-time Sensor Map by Axiom)
   c) Support ingestion of nation-wide federal datasets common to all regions

Objective 4: Coordinate/integrate within NOAA in order to ensure that NOAA oceanographic data meet common standards & protocols
   a) Coordinate with NOAA Big Data initiatives
   b) Develop partnerships with NERRS, sanctuaries, CO-OPS & NCCOS, OCM and OR&R, NMFS, other
Objective 5: Coordinate/integrate outside NOAA to ensure that other federal agencies’ oceanographic data can be integrated within national & regional systems and meet common standards & protocols
a) Foster development and compliance with standards developed by IOOC
b) Foster development of QARTOD manuals for all core oceanographic variables
b) Coordinate w/Big Data Initiatives (US GEO DM WG)

Objective 6: Ensure compatibility w/global systems especially GOOS, JCOMM, GEOSS, OTN, GEOBON

**Goal 2: Facilitate development of RA DMAC capacity**

Objective 1: Foster base level technical capacity across all regions
a) Develop base level web services: THREDDS, SOS across regions
b) Support RA capacity to ingest non-IOOS funded local data in compliance with federal policies, IOOS standards

Objective 2: Provide technical support to RAs to ensure implementation across all regions
a) Support RA compliance with standards and requirements including QARTOD
b) Develop & assist with regional implementation of open source software to implement standards (e.g., ncSOS THREDDS plugin, i52N SOS server, netCDF compliance checker, Python client tools)
c) Develop and operate system monitoring tools to monitor the health of the regional systems (server up time, metadata compliance, etc)
d) Foster archiving of regional data at national archives (e.g., NCEI)

Objective 3: Foster regional support for other observing efforts like Marine Biodiversity Observing Network (MBON) and Marine Mammal Habitat Map (MMHMAP)

**DISCUSSION WITH RAs**

1. Are we all on the same page?
2. Are we clear about who and how decisions & priorities are getting made?
3. Do we know where we want to be in 5 years?
4. How do we move forward? What issues need further discussing, who, how & by when?

**Outcomes/vision for 5 years from now**
- RAs are established as an operational complement to Federal efforts in their provision of services and maintenance of cyberinfrastructure
• RAs have clear understanding of O&M costs and a strategy for minimizing.
• RAs are recognized as capable, agile, and reliable providers of ocean information.
• RAs are sought after, hired, and provided long term funding to manage data and develop products and services. O&M charges are clear and budgeted.
• Value added products are developed based upon RA data offerings.
• Links from RA data to GTS are operational.
• Use of RA data by feds is tracked.
• RAs have established, transparent processes for prioritizing specific requirements identified by RAs for datasets, technology, metadata, etc.
• RAs are exemplar performers in balancing agility/flexibility with operational stability.
• RAs are individually and collectively present in all known/important community discovery portals.
• Configuration management and technology adoption pathways and drivers are clear and mutually agreed to (we must stay current but not chase the latest fad).
• IOOS is an exemplar program in implementing NOAA Environmental Data Management policies which are increasingly Federal policies.
• Increased focus on educating constituents on how to use IOOS services (both technology and science based products).
• RAs are promoting their data access services as much as their web portals.
• Establish consistent and reliable link to NOAA programs
  o ORR ERMA has IOOS layers accurately branded.
  o NowCOAST has IOOS layers accurately branded.
  o Coastal modeling programs are using IOOS in situ data as an indispensable part of model development, validation, assimilation, operationally.
  o Same are using IOOS regional models when appropriate. IOOS runs models for the feds as appropriate based on research to operations transitions.
• Incentivize data sharing by adopting and developing technologies that enable and encourage attribution to funding sources and personnel involved with various stages of the data life cycle like doi, fundref, cross-reference etc.
The sensor map developed by Axiom was a successful scalability experiment that has evolved into an IOOS product slated for release on ioos.us. When completed, the map will display real-time observations for locations around the globe, leveraging available web services. In particular, all real-time observations\(^1\) provided through Regional Associations will be shown and appropriately labeled.

One challenge is determining a suitable (yet catchy) name for the map. IOOS PO has come up with a few options, and needs your help choosing one or determining a different name:

1. IOOS Environmental Sensor Map
2. Global Environmental Sensor Map
3. Integrated Sensor Map
4. Integrated Global Observations
5. Integrated real-time observations map
6. Ocean Sensors Map
7. Global Ocean Observations Map

\(^1\) Axiom has had trouble harvesting data from a few RAs; however, we will follow up with RA DMAC representatives to determine a solution.
8. Other options??

Note that the map shows sensor data across the continental US, so this is not limited to ocean data. The choice to filter out terrestrial observations or not is something we welcome input on.

Contact Kathleen.Bailey@noaa.gov with suggestions/opinions.