IOOS Office Updates Presentation - Talking Points

Slide #7 - Work Plan Suggestions

- **IOOS role in implementing Executive Orders**
    - IOOS role and relevance to accomplishing EOs
    - How NOAA should leverage IOOS and the RAs
    - Pick 1 or 2 EOs where we are under-recognized, *or* should do a better job in
        - **Deep Sea Mining**
            - Advance US leadership in exploration, characterization, collection, and processing of seabed mineral resources, conduct deep sea mapping and technology advancement in the EEZ and outer continental shelf, and create a domestic supply chain.
            - Licensing and permitting for DSM. Potential connections and impacts to RA data collection (mapping/fisheries/bio and geophysical variables, environmental impacts).
            - OCM has responsibility for the Deep Seabed Hard Mineral Resources Act, and we are already processing industry applications for permits and will have revised regulations out for public review.
        - **Scientific Integrity ("Restoring Gold Standard Science")**
            - Rescinds previous policies and shifts oversight to the political leadership and the authority to define scientific integrity within their agencies.
            - To ensure that agencies: practice data transparency and reproducibility, acknowledge relevant scientific uncertainties, are transparent about the assumptions and likelihood of scenarios used, approach scientific findings objectively, and communicate scientific data accurately. Implications for DMAC.
            - NOAA is in the process updating the agency scientific integrity policy.
            - Any IOOS external review would need to align with this.
        - **Seafood Competitiveness**
            - IOOS' role here is providing real-time ocean and great lakes data to the public…collected by RAs:
                - This would include supporting the aquaculture industry growth by providing environmental data for site selection and monitoring.
                - Supporting coastal economies by providing data to equip managers and businesses to optimize harvest and maintain a safe supply chain.
                - And supporting fisheries and harvests by providing data that feeds directly into fisheries assessments and decision-support tools.
        - **Maritime Dominance**

- IOOS' real-time public data supports maritime domain awareness, safe and efficient port operations, and U.S. readiness in maritime and homeland security.
- This data supports safer energy development, smart port operations, and coastal hazard forecasting, as well as regional ship tracking, U.S. Coast Guard search and rescue, and maritime commerce and operational excellence.
- A potentially wide range of interest with this EO.

- **Core attributes and tenants of IOOS**
    - *Enterprise Excellence* *(AC previous recommendations not yet formalized)* - IOOS Enterprise should increase the connections among its components (the RAs, IOOSA, IOOS Office, and the Interagency Ocean Observing Committee (Consortium for Ocean Leadership) so that leadership can more effectively leverage existing support and further advocate for the program and its components, and anticipate future needs.
    - What the IOOS role should be in NOAA in a reduced funding scenario (RAs reduced or eliminated, NOS reduced as in the PresBud), i.e., retooling for priority areas to focus and provide the most impactful contributions to society (funds available in the "base").
    - Better promote IOOS as an interagency tool for filling gaps in accessible ocean and coastal data, both through data collection and data integration from a variety of partners.
        - IOOS is multi-mission supporting, but not necessarily utilized and leveraged to the extent it might be. This includes consideration of IOOS as a place for making commercially purchased data publicly accessible, which may be of interest to our new Administrator and of course the Administration.

- **External Review of IOOS**
    - NOS requires programs to conduct external reviews of each program office every 5 years; IOOS has yet to go through a review.
    - We would like for some AC members to be part of the reviewer panel in early 2027.
    - Topics of the review would be TBD, and that likely would influence which members are asked and then invited to participate.
    - No action right now; keep this in mind when formulating the work plan, including what might be the principles and objectives most needed for an IOOS holistic or targeted program independent review.
    - This one could be very beneficial, both for program priorities and future visioning, as well as marketing.

- **Data Management and Cyberinfrastructure requirements and operational efficiencies through coordination/collaboration**

- *Benefits*:
  - Coordinated development - write once, deploy in many places
  - Better interoperability for a consistent way to download and display subsets of datasets (e.g., the deployment of ERDDAP by all the RAs means we can create an ERDDAP of ERDDAPS for all IOOS real time data).
    - ERDDAP is a data server that gives you a simple, consistent way to download subsets of scientific datasets in common file formats and make graphs and maps.
  - Achieving reusable tools and data formats for more efficient cloud-optimized datasets (e.g., Kerchunk for more efficient cloud-optimized datasets and data subsetting).
    - Kerchunk – Python library that provides a way to create "reference files" for accessing large, traditional geospatial data formats (like NetCDF/HDF5, GRIB2, TIFF) in a cloud-optimized manner.
  - Advancing a coordinated vision and discussion among software developers from several organizations and open-source communities (e.g., more interactions with Pangeo community contributors).
  - Closer working relationships with IOOS partners, with a better shared understanding of missions and goals.
  - Repository of continuously updated, cloud-optimized datasets.
  - Advancing technology and processes to accelerate delivery on future IOOS projects.
  - Application to adjacent projects including CORA, NWM, COMT, CO-OPS Model Viewer.
- Two current projects exploring this concept:
  - “Reaching for the Cloud” (2021 - 2024)
    - System architecture illustrating an interoperable framework or system of interdependent components.
    - Demonstration of a modern, interconnected system via series of prototypes of system architecture, data ingest, storage and discovery, processing, analysis and presentation.
    - 13 prototypes with associated documentation, code, and configurations publicly shared on GitHub.
  - Cloud Optimized (CO) DMAC
    - Funded via IIJA/BIL for FY2025 - FY2029
    - Are there utilities/capabilities that are modular for RAs to implement as needed?
    - To help address common problems RAs have and how to solve.

- **IOOS as an intra- and inter-agency integrator of operational oceanography**
  - NOAA needs to start focusing on coordinating and integrating operational products and services among the federal agencies.

- How IOOS observations, modeling, DMAC, and products underpin other parts of NOAA (and possibly other agencies?) presently, and opportunities to strengthen or expand that role.
    - Examples could include:
        - NOAA/NOS water team - through BIL Provision 3 funding, connecting external partners with NOAA on operational water prediction;
        - HABs – better coordinating across NOAA offices including NCCOS and NMFS and RAs
        - Hurricane glider efforts - bringing together partners across NOAA for sub-surface ocean information incorporated into hurricane forecast models

- **Engagement of blue/ocean economy and the private sector**
    - Where can IOOS strengthen ties to key sectors for greater impact;
    - How NOAA should leverage IOOS and the RAs to provide data, products, and services tailored to those sectors' needs (pick 1-2 from the areas that we and IOOSA are messaging like maritime commerce & safety, fisheries/aquaculture/food security, homeland security and military ops/defense, public health, etc.)
    - Efforts to build out, support, and enhance public-private-government collaborations on coastal and ocean resilience, development of novel energy sources, and other adaptations to emerging ocean changes.
    - Consider opportunities to expand public science ("citizen science") to fill observational gaps.