Ocean Research Advisory Panel

September 4-5, 2024

Koi Room
East-West Center
Hawaii Imin International Conference Center at Jefferson Hall
1777 East-West Road
Honolulu, Hawaii

Present:

Mary Glackin, Co-Chair
Chris Ostrander, Co-Chair
Claudia Benitez-Nelson
Derek Brockbank
Jorge Corredor (virtual)
Danielle Dickson
Sandra Knight
Tommy Moore
Claire B. Paris-Limouzy
Purnima Ratilal-Makris (virtual)
Edward J. Saade
Ana Spalding
Amy Trice
Maria Tzortziou
Kawika Winter

Also Present:

Viviane Silva, Designated Federal Officer
Victoria Kromer, Alternate Designated Federal Officer
Deerin Babb-Brott, Assistant Director for Ocean Policy at the White House Office of Science and Technology Policy
Amanda Carter, Deputy Director for Ocean Resource Management at the White House Council on Environmental Quality
Solomon "Uncle Sol" Pili Kaho'ohalahala, Maunalei Ahupua'a/Maui Nui Makai Network^
Rosie Alegado, University of Hawaii
Haunani Kane, University of Hawaii*
Angelicque White, University of Hawaii

Charles "Chip" Fletcher, University of Hawaii
Emily Fielding, The Nature Conservancy
Ryan Rykaczewski, Pacific Islands Fisheries Science Center (PIFSC), NOAA National Marine Fisheries Service (NMFS)

Day 1, September 4, 2024

Meeting Opening & Review Agenda

Viviane Silva, ORAP Designated Federal Officer; Chris Ostrander and Mary Glackin, ORAP Co-Chairs

Ms. Silva opened the meeting at 9:00 a.m. and provided logistics for the meeting. ORAP members introduced themselves and Co-Chairs Glackin and Ostrander reviewed the agenda and objectives for the meeting. The primary objectives of the meeting were (1) to provide ORAP members a better understanding of Native Hawaiian and Pacific Islander communities perspectives, knowledge, and practices related to ocean management and natural resources and (2) to review, discuss, and approve the ocean data report and frame and refine the Biogeochemical Observing Technologies (BOT) report for possible delivery at the next public meeting.

Subgroup Presentation and Discussion: Ocean Data Preliminary Report

Ed Saade (Ocean Data Chair) & Team

This report was a decisional item on the agenda. Co-Chair Glackin informed members that they were not going to call for a decisional vote during this session. They would wait to hear the public comments and the two panel discussions first, and decide on this report on the following day.

The ORAP Ocean Data Subgroup discussed its draft report to the U.S. Ocean Policy Committee (OPC) on developing a National Ocean Data Strategy (NODS). The primary goal of the NODS is to improve data management, foster partnerships, and enhance access and usability of ocean data.

The draft report outlines several key recommendations, including:

- Improving Federal Data Management: Implementing FAIR (findable, accessible, interoperable, reusable) and CARE (collective benefit, authority to control, responsibility, ethics) principles, assessing and establishing best practices for managing federal data, and reducing redundancies in data programs.
- Incentivizing Partnerships: Facilitating data sharing among federal and ocean community partners, while recognizing the sovereignty of Indigenous communities and the needs of vulnerable coastal communities.
- Advancing Public Access: Creatively designing access and usability of ocean data, supporting innovative approaches like artificial intelligence (AI) and data analytics, and evaluating federal policies related to data sharing and storage.

Three case studies were presented to illustrate potential implementation pathways for the NODS:

1. United States Geological Survey (USGS) 3D Elevation Program (3DEP): A successful example of federal leadership in coordinating data collection and improving data accessibility.
2. Offshore Wind Data Sharing Repositories: Highlights the challenges of the current ocean data infrastructure and the need for the NODS to accommodate the growing volume of data from offshore wind development.
3. Indigenous Data Sovereignty: Emphasizes the importance of incorporating Indigenous knowledge and addressing data sovereignty issues within the NODS.

ORAP members discussed the definition of ocean communities and the need for clarity in this regard. Members addressed topics related to data access, management, and trust. They highlighted the importance of user-friendly interfaces, data quality, and data sovereignty. They emphasized the need for easy access to ocean data, including for non-scientists and Indigenous communities. They discussed the importance of data quality and consistency, with examples from past experiences. They reiterated the need to respect and protect Indigenous data sovereignty. They addressed the challenges of managing large volumes of data and ensuring data integrity. They discussed the potential impact of emerging technologies like AI on data management and analysis. They acknowledged the challenge of defining "ocean data" and emphasized the importance of a flexible approach.

Co-Chair Glackin said that in the transmittal letter that accompanies the report, if approved by ORAP members, would note in particular that the ORAP may continue to address Ocean Data issue, which is a very complex area. She also saw big improvements on the draft report in the last few days and liked the introduction of the term “ocean communities”. We need to make sure all ORAP members are comfortable with the “ocean communities” definition in the report. She also noted that the presentation didn’t highlight that the draft report recognizes the great work the Federal Government has already done towards a federal data strategy.

Panel Discussion #1: Native Hawaiian and Pacific Islander communities’ perspectives, Indigenous Knowledge relating to the ocean, Indigenous science, and data sovereignty for Indigenous Peoples (with insights on emerging technology)

Panelists: Solomon "Uncle Sol" Pili Kahoʻohalahala, Chair, Maunalei Ahupuaʻa/Maui Nui Makai Network; Rosie Alegado, Associate Professor, Oceanography, Sea Grant College, University of Hawaiʻi, Mānoa; Haunani Kane, Assistant Professor, Department of Earth Sciences, University of Hawaiʻi

Uncle Sol highlighted the importance of Indigenous genealogy, the Kumulipo, in understanding the deep connection between Hawaiian people and the ocean. He emphasized the need for Indigenous peoples to have a voice in decision-making regarding ocean resources and data management. He discussed his experiences advocating for Indigenous rights at international forums, such as the International Seabed Authority.

Dr. Alegado said data about Indigenous peoples, nations, and communities can be tangible or intangible. It encompasses information on land, water, animals, plants, ecosystems, demographic data, health records, cultural information, languages, and ancestral knowledge. Dr. Alegado contrasted Indigenous Science and Settler Colonial Science: the former is typically collected by community members and is composed of diachronic (long-term) data where the knowledge is held collectively, whereas the latter is often collected by a small group of professionals and is made up of synchronic (short-term) data where the knowledge is owned by individuals or institutions. The right of Indigenous peoples to govern the collection, ownership, and application of data about them stems from tribal sovereignty, inheritance rights, and international frameworks. Challenges include dispossession of data rights through historical policies, lack of recognition of Indigenous data governance in ocean science policies, privatization of ocean observation data services, and lack of data management plans for ocean-related projects.

Dr. Kane emphasized the importance of incorporating Indigenous perspectives into ocean science research and decision-making. She highlighted the challenges faced by Indigenous scientists, including systemic barriers, imposter syndrome, and the need to balance multiple identities. She discussed the importance of mentorship and community-based research in supporting Indigenous scientists and ensuring that research is relevant to local needs and priorities. She presented profiles of Indigenous ocean scientists and their research projects, focusing on topics such as coral reef health, marine mammal conservation, and coastal resilience.

The discussion explored how to incorporate Indigenous data sovereignty principles into the National Ocean Data Strategy. The ORAP members discussed the need to consider a broader definition of ocean data that includes Indigenous knowledge and perspectives. They also emphasized the importance of community-based research in addressing local needs and priorities, and the role of mentorship in supporting Indigenous scientists and fostering diversity in the ocean sciences.

The panelists emphasized the importance of Indigenous peoples having control over their own data and information. They highlighted the historical injustices and colonial policies that have dispossessed Indigenous peoples of their data rights. They discussed the need for Indigenous communities to lead the development of their own data governance frameworks. They discussed the challenges and opportunities for data sharing between Indigenous communities and external researchers. They called for greater recognition and support for Indigenous-led research and data governance initiatives. They recommended that federal agencies and other organizations adopt a more collaborative and respectful approach to working with Indigenous communities.

Subgroup Presentation and Discussion: Biogeochemical Observing Technologies (BOT)

Danielle Dickson & Maria Tzortziou (BOT Co-Chairs) & Team

ORAP has been tasked with developing a report to offer an initial set of recommendations to OPC about opportunities to leverage public-private partnerships to advance emerging marine biogeochemical observing technologies and advance national ocean science initiatives.

Since the May ORAP meeting, the subgroup has decided to narrow the examples of emerging technologies that would benefit from public-private partnerships to three that align with key societal needs/research priorities and the challenges discussed in the report:

- Microfluidics Applications for Ocean Biogeochemistry
- Environmental DNA (eDNA)
- Advanced Sensors for Carbon-Related Chemistry

Under each of these categories, the report will discuss current and potential technology applications and technology, market, and industry maturity level.

ORAP Members offered several suggestions for further consideration, including:

- Establishing clear use cases and standards: Developing a national catalog of standard protocols and best practices for data formats, reporting rules, communication guidelines, and accreditation procedures.
- Convening a White House Summit: Bringing together relevant federal agencies, private industry, academic researchers, nonprofits, and tribal governments to discuss ocean science priorities and partnership opportunities.
- Offering incentives: Providing incentives to leverage industry infrastructure for data collection and sharing, such as using the proposed ARPA-E model.
- Bolstering agency investment: Increasing federal agency investment in innovation prizes and competitions to support startups and small businesses.
- Addressing regulatory challenges: Developing a more supportive regulatory environment for ocean technology innovation and adoption.
- Developing a national ocean technology strategy: Creating a comprehensive strategy that outlines the goals, priorities, and mechanisms for supporting ocean technology innovation and adoption.
- Incorporating Indigenous knowledge: Incorporating Indigenous perspectives and knowledge into ocean technology development and deployment.
- Strengthening international collaboration: Fostering collaboration with international partners to share knowledge, resources, and best practices.

The members identified several challenges and barriers to public-private partnerships, including:

- Market maturity: The need for a sufficiently large and diverse market for emerging technologies.
- Visibility of U.S. companies: The need to enhance the visibility and competitiveness of U.S. companies in the global ocean technology market.
- Government demand: The lack of a consistent and consolidated set of technology performance requirements across U.S. agencies.
- Research and development investment: The need for consistent and predictable government involvement in ocean innovation.

- Regulatory framework: The need for a well-defined regulatory environment that supports technology development and adoption.
- Partnership mechanisms: The limited options for developing public-private partnerships beyond traditional requests for proposals and the challenges of blending public and private funding.
- Funding and investment: The need for increased public and private funding to support ocean technology development and deployment.
- Data management: The need for improved data management and sharing practices to support ocean research and decision-making.

ORAP members called for continued collaboration and innovation to address these challenges and advance public-private partnerships in ocean technology. They also emphasized the importance of involving Indigenous communities and incorporating their perspectives into ocean science initiatives.

The draft report is scheduled for further review at the December ORAP meeting. Several ORAP members volunteered to help, including Co-Chair Glackin and Members Saade, Paris-Limouzy, Benitez-Nelson, and Spalding.

Public Comment Period

Brent Greenfield of the National Ocean Policy Coalition, an organization of diverse interests representing sectors and entities that span the blue economy. They support the development and implementation of sound, balanced ocean policies that recognize and enhance the critical role that our oceans, coastal areas, Great Lakes and marine and terrestrial ecosystems play in our nation's economy, national security, culture, health and well-being while at the same time conserving the natural resources and marine habitat of our ocean, coastal and Great Lakes regions for current and future generations. Coalition members include interests ranging from fishing and energy to waterborne transportation and beyond that depend on ocean access to provide the nation with economic and societal benefits.

Brent had a brief comment with regard to the Ocean Data Report and specifically the reference to scenarios where regulated industries are required to collect data as a condition of federal permits and approvals, but then such data isn't used or applied. The report's reference to this scenario is welcomed and it's a point that we have made in several different contexts, including the efficient permitting and national strategy for ocean mapping, exploration and characterization as well as opportunities for partnerships in ocean science and technology.

The Coalition members have seen firsthand how insufficient agency resources and funding have precluded the storage and application of ocean data collected by federal permit holders. They recommend that ORAP take every opportunity to highlight the importance of prioritizing agency resources and funding to support the storage and application of ocean data collected by industries across the ocean economy, which will further facilitate effective public private partnerships and science-based sound resource management.

Sonya Legg of the Center for Ocean Leadership, based at UCAR. They serve and support the ocean science technology and education community as represented by more than 80 affiliate institutions. These affiliates come from academia, nonprofit, and also the commercial sector.

Sonya had a comment related to the data report. They conducted a virtual discussion forum in March with affiliates and about 50 people attended altogether, all from different institutions. The topic was first on the sustainability and modernization of the Ocean Observing System. Data stewardship and access was an important topic of discussion at this forum. Some of the key recommendations that the attendees came up with overlapped with the recommendations in the report. In particular, one of their recommendations was to create a formalized environment data agenda, which sounds very much like the National Ocean Data Strategy involving all sectors and engaging data creators. Another one was to invest in innovative solutions and tools that enhance data access and operability, which she thinks also overlaps with one of ORAP recommendations. However, there was one of their recommendations, which Sonya didn't see reflected in the ORAP report. One of their recommendations was to invest in workforce development and user engagement to ensure effective data utilization. Sonya emphasized that it is very important that we train the data creators and the data users, if we're going to get the most out of the data that we collect and store correctly for the future. Sonya hopes that ORAP will consider including something about the importance of training, if we're going to have an effective National Ocean Data Strategy

Panel Discussion #2: Ocean research needs and priorities at scales ranging from coastal/community to global

Panelists: Angelicque White, Professor, School of Ocean and Earth Science and Technology (SOEST, University of Hawai'i at Mānoa and director of the Hawaii Ocean Time-series (HOT) program; Charles "Chip" Fletcher, Interim Dean of the School of Ocean and Earth Science and Technology (SOEST), University of Hawai'i at Mānoa; Emily Fielding, Hawai'i Marine Conservation Director, The Nature Conservancy (TNC); Ryan Rykaczewski, Marine Scientist, Pacific Islands Fisheries Science Center (PIFSC), NOAA National Marine Fisheries Service (NMFS)

Dr. White presented an overview of the Hawaiian Ocean Time-series (HOT) program, a long-term ocean observing program based in Hawaii. She discussed key findings from the program, including changes in ocean temperature, pH, and primary productivity. She highlighted the challenges of integrating data from different sources and the importance of training the next generation of ocean scientists.

Dr. Fletcher presented an overview of the current state of climate change and its impacts on the ocean. He discussed the urgent need to reduce greenhouse gas emissions to limit global warming. Emissions need to be cut 28 percent by 2030 to limit warming to two degrees Celsius. Dr. Fletcher highlighted the significant risks of sea level rise and the need for adaptation measures.

Dr. Fielding presented an overview of The Nature Conservancy's work in community-based marine conservation in Hawaii. She discussed the importance of respect, trust, and collaboration in working

with communities. She highlighted the need for research and monitoring to inform effective conservation and management. She identified key challenges and opportunities for marine conservation in Hawaii, including climate change, pollution, and habitat loss.

Dr. Rykaczewski presented an overview of the pelagic research program at the Pacific Islands Fisheries Science Center. He discussed the impacts of climate change on marine ecosystems and coastal communities. He highlighted the challenges of obtaining and integrating data at relevant scales for ocean modeling and management.

Key topics from the ensuing discussion included:

- Data integration: The importance of integrating data from different sources to better understand ocean processes.
- Next-generation technologies: The potential of emerging technologies to advance ocean research.
- Training and education: The need for training and education to develop the next generation of ocean scientists.
- Climate action: The urgent need for global cooperation to address climate change and its impacts on the ocean.

Adjourn

Viviane Silva (DFO) & ORAP Co-chairs

Ms. Silva thanked the panelists and participants for their contributions and officially closed the meeting for the day at 5:11 p.m. She announced that the meeting would resume the following day at 8:30 a.m.

Day 2, September 5, 2024

Meeting Opening

Viviane Silva (DFO); Chris Ostrander and Mary Glackin (Co-Chairs)

Ms. Silva reopened the meeting at 8:32 a.m. Co-Chair Ostrander reminded members that upcoming meetings are scheduled for December 3-4, 2024, in D.C.; April 28-30, 2025, at a location to be determined; and October 27-29, 2025, potentially in Anchorage, AK.

Recap of ORAP Subgroups Discussions and Next Steps

ORAP Co-Chairs & Members

Discussion of Ocean Data Preliminary Report

Participants discussed the appropriate framing language for the document, balancing the importance of the ocean as both a resource and a place of cultural heritage. They considered the importance of acknowledging Indigenous data sovereignty and including mechanisms for collaboration with Indigenous communities. They addressed the need for a governance structure to coordinate data collection,

sharing, and use. They touched on the importance of public participation in decision-making processes related to ocean data.

Co-Chair Glackin explained that the panel is not under Robert's Rules of Order, so unless a member objected, the report would be considered approved. There was no objection. The co-chairs promised to have the edited report and the transmittal letter ready by September 23, in time for the OPC principals meeting. Individual members are invited to consult on the transmittal letter, but it will not be circulated to the full ORAP for review. Both the report and transmittal letter will be publicly available on the ORAP website.

Discussion on Biogeochemical Observing Technologies (BOT)

Members revisited the points discussed the previous day on emerging technologies such as eDNA, carbon sensors, and microfluidics; the need for public-private partnerships to promote the development and deployment of ocean data technologies; and challenges in developing public-private partnerships and potential ways to address them.

Discuss next steps including document delivery and future topics for ORAP to address

ORAP Co-chairs & Members

ORAP Members shared their thoughts on recent discussions, emphasizing the importance of integrating Indigenous knowledge and data sovereignty into ocean science research. The members discussed the need for a broader range of ocean research, including long-term time series, fisheries modeling, and climate downscaling. They suggested several areas for future focus, such as:

- Community-Driven Research: The value of community-driven research and the need to improve its implementation.
- Data Integration and Decision Making: Improving the use of data in decision-making processes.
- Low-Cost Sensors: Exploring the use of low-cost sensors for ocean observation.
- Governance and Education: Addressing the need for faster governance and improved education on climate change.
- Infrastructure: Enhancing ocean infrastructure, including physical, data, and financial infrastructure.
- Communication and Collaboration: Improving communication and collaboration among stakeholders.
- Aquaculture: The importance of aquaculture and the need to update the National Aquaculture Development Plan.
- Workforce Development: The importance of workforce development, particularly for underrepresented groups.
- Social and Natural Sciences: Participants discussed the importance of integrating social and natural sciences in ocean research.

Adjourn

Viviane Silva (DFO) & ORAP Co-Chairs

Ms. Silva thanked the participants for their contributions to the meeting and the staff for their assistance in organizing and conducting the meeting smoothly. She officially closed the meeting at 11:33 a.m.