ORAP Approach to OPC Tasking
[OPC Tasking provided during the ORAP Meeting on 13-14 Dec, 2023)

Landscape: During ORAP discussions on the OPC tasking, ORAP members noted key challenges with respect to the ocean including:

- Anthropogenic impacts on the ocean: over extraction and pollution including noise, plastics, nutrients etc.
- Loss of biodiversity
- Climate change – Lack of a comprehensive characterization as well as understanding and supporting adaptation and mitigation actions
- Coastal and community resilience
- Urgent needs to embrace environmental justice in all actions- to ensure we have a diverse, inclusive workforce and an ocean enterprise that engages with all and provides equitable services.
- Need for extensive efforts in ocean literacy

Task 1

OPC request: Emerging industries in the ocean economy *– The Ocean Policy Committee respectfully requests that the ORAP advise on areas of opportunity for partnership (such as through National Oceanic Partnership Program) on the topic of emerging technology (which could include Artificial intelligence/Machine Learning, eDNA, and similar technology) with ocean industry and others sectors over the next 5-10 years.*

Working Group 1- <u>Biogeochemical Sensors</u>: Maria Tzortziou and Danielle Dickson (co-chairs) and ORAP members: Purnima Ratilal-Makris, Jorge Corredor, Violet Sage-Walker, Tommy Moore, Eunah Hoh, Claudia Benitez-Nelson

Charge: Informed through briefings by subject matter experts, research reviews, and outreach, provide the larger committee with a landscape assessment and horizon scan of current and emerging technologies for ocean biogeochemical sensing (e.g., eDNA, microfluidics, optofluidics, lab-on-a-chip) including:

- Current and potential technology applications;
- Technology, market, and industry maturity level;
- Key innovators, manufacturers, adopters;
- Current partnerships and potential partnership opportunities to support market growth and technology adoption, and
- Existing technology and/or industry and market gaps, regulatory inefficiencies, and barriers to success.

Consider the role AI/ML plays as a tool to advance sensor technology. Also, consider the role that low-cost, durable, and distributed sensors can play in ensuring equitable management of ocean resources, access to opportunity, and mitigation of the environmental impacts of development.

Task 2: Self-defined by ORAP

Working Group 2. <u>Accessibility to comprehensive, inter-operable, interdisciplinary, and trusted data to meet research and user needs</u>. Ed Staade (chair) and ORAP members: Sandra Knight, Amy Trice, Ana Spalding, Derek Brockbank, Maria Tzortziou, Claudia Benitez-Nelson, Tommy Moore

Background: This area has been identified as critical in a number of reports including the Cross Cutting Themes to the US Contributions to the Ocean Decadal[1]. Yet progress has been slow to achieve the vision laid out in this report, specifically, "An Ocean of Data will improve data availability and access through the development of a framework for implementing findable, accessible, interoperable, and reusable (FAIR) and collective benefit, authority to control, responsibility, and ethics (CARE) data principles and the creation of a path toward a digital ecosystem that delivers ubiquitous compute-intensive data services."

Charge: Informed through briefings by subject matter experts, research reviews, and outreach, provide the larger committee with a landscape assessment and horizon scan of current ocean data management programs, priorities, and services in the United States including:

- Current federal and non-federal ocean data management programs
- Key federal data centers and repositories
- Existing partnerships (i.e. IOOS Regional Associations, Regional Data Portals) and opportunities to leverage, expand, and consolidate data services through new partnerships.
- Regulatory, economic, programmatic, and technical barriers to progress

Draft timeline for both Tasks:

January/February - Working groups conduct initial background review and prepare briefings for the full panel.

Late February/early March - Virtual ORAP meeting. Working groups brief full panel on findings to date; full ORAP discusses, requests further information, and suggests any needed refinement to working group focus.

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[1] National Academies of Sciences, Engineering, and Medicine. 2022. Cross-Cutting Themes for U.S. Contributions to the UN Ocean Decade. Washington, DC: The National Academies Press. https://doi.org/10.17226/26363.

April/May - Working groups expand background review and start to prepare potential recommendations.

May in-person ORAP meeting - Full panel discusses updated background material and reviews/creates/discusses potential recommendations.

June/July/August - working groups draft reports containing potential penultimate recommendations.

September in-person - Full panel approves recommendations and finalizes report(s) for transmittal to OPC.