

**DRAFT Minutes**  
**21st Meeting of the Ocean Exploration Advisory Board**  
**17-18 February 2022, Woods Hole Oceanographic Institution**

**Notification and Availability of Meeting Materials**

The 21st meeting of the Ocean Exploration Advisory Board (OEAB) was announced to the public through the *Federal Register* and on the [OEAB website](#). Background materials and presentations prepared for this meeting are posted on the OEAB website.

**Ocean Exploration Advisory Board Members in Attendance**

- Ambassador (Ret) Cameron Hume, Consultant (Chair)
- Vicki Ferrini, Columbia University
- Christopher R. German, Woods Hole Oceanographic Institution
- Eric King, Schmidt Ocean Institute
- Justin Manley, Just Innovation Inc.
- David Millar, Fugro USA
- Clara Smart, Johns Hopkins University Applied Physics Laboratory

**Designated Federal Officer for the OEAB**

- David Turner, NOAA Ocean Exploration

**NOAA Ocean Exploration Staff in Attendance**

- Genevieve Fisher, Director (A)
- Rachel Medley, Deputy Director (A)
- Caitlin Adams, Expedition and Exploration, Deputy Chief (A)
- Adrienne Copeland, NOFO Competitive Grants Program Manager
- Kristen Crossett, Outreach and Education, Chief
- Aurora Elmore, Cooperative Institute Manager
- Joanne Flanders, NOAA Ocean Exploration, OEAB Facilitator
- Kelley Suhre, Expedition and Exploration, Chief (A)

**Invited Speakers**

- Peter de Menocal, President and Director of the Woods Hole Oceanographic Institution
- Environmental Analyst from the National Intelligence Council
- Jennifer Francis, Acting Deputy Director & Senior Scientist with the Woodwell Climate Research Center

## Observers

A number of individuals from the public, NOAA and other organizations observed the meeting at various points.<sup>1</sup>

- 1. Meeting Opening.** Designated Federal Officer (DFO) David Turner opened the meeting on February 17, 2022. This meeting was held in person on the Quissett Campus of Woods Hole Oceanographic Institution in Falmouth, MA.
- 2. Chair Opening Remarks.** Chair Ambassador Cameron Hume reviewed the [meeting agenda](#). The Chair observed that the opportunities for ocean exploration have never been more rich however, the available tools are not equal to that task. He encouraged government leaders to reach for opportunities as opposed to managing risk. He also evoked the role of the Board to formulate good questions and to seek out the perspectives that can inform and provide good advice to those government leaders to better highlight potential avenues for success. The Chair concluded by expressing an interest in having the Board engage the Secretary of Commerce regarding her agenda with the ocean.
- 3. NOAA Ocean Exploration Update.** Genene Fisher, NOAA Ocean Exploration's Acting Director, provided a short overview of the office's activities since the last OEAB meeting. She described NOAA Ocean Exploration's contributions to the National Strategy for Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone and highlighted the prominent role of the Blue Economy in both the Department of Commerce and NOAA strategic plans. Fisher provided an overview of upcoming NOAA Ocean Exploration and Ocean Exploration Cooperative Institute (OECI) expeditions and activities as well as highlights from the office's Outreach and Education and Science and Technology divisions. Several Board members expressed an interest in better understanding NOAA Ocean Exploration communications and outreach initiatives and projects. Board members also acknowledged the meaningful amount of leadership turnover in the previous year and cited the addition of new federal billets as a source of opportunity and stability. The OEAB Chair closed the session by suggesting a more indepth session about the scope of OECI projects be conducted at the next meeting.
- 4. Response to OEAB Recommendations about NOAA Ocean Exploration's Competitive Grants Program.** Adrienne Copeland, NOAA Ocean Exploration Competitive Grants Program Manager, provided a response to a set of recommendations the Board provided NOAA Ocean Exploration regarding the management and administration of this federal grant program. Copeland led a discussion about the federal grant process and addressed questions about quality

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<sup>1</sup> Given that the meeting allowed for virtual public participation, it was difficult to tell who was participating and when. Thus, this list may not be complete. About 63 individuals total participated or observed the virtual meeting over the two days.

control of the applicant review process, the involvement of small for-profit organizations in the program, the determination of appropriate funding tools (e.g. contracts vs. grants), and the role of early career scientists within the grant program. Members of the Board requested that at a future session more information be provided on the program's funding tools and the scope of Ocean Exploration investments. The Chair asked what the options are for funding receipt of innovative ideas that may not be suitable for the grant process. A discussion followed on the distinction between grants and contracts and a suggestion was made for the program to consider how it manages applicants and alternatives for funding innovative proposals that do not meet the existing funding framework. Ambassador Hume asked about opportunities for early career individuals. Special outreach is typically done for those applicants and efforts made to include at least one early career reviewer. Industry's strong interest in ocean exploration was raised by the Board and that the current outreach approach could be hampering its participation and efforts made to present to these constituencies. It was also noted the larger problem is available funding levels.

**5. Review of Draft NOAA Ocean Exploration Strategic Plan (FY22-FY27).**

Fisher walked the Board through a high-level overview of NOAA Ocean Exploration's draft strategic plan. She highlighted the role of diversity and inclusion as a deeply embedded value that cuts across all aspects of NOAA Ocean Exploration's work. Diversity is a standalone goal due to its importance and the reflection of change it represents. There was some discussion about the importance of Goal 6 (Data) and why it was listed last in the order. There was also discussion about why Goal 4 (Diversity and Innovation) was broken out separately versus threaded throughout the all of the other goals. The discussion focused on calling attention to that issue; clearly stating that it was an important focus of the Office; and that the intentions of the goal are indeed interconnect to the other goals. Several Board members discussed the possibility of including a specific reference to contributing to climate science. Some members provided feedback that the term "Deep Ocean" may be overly specific and hyper-focused. Goal 2 (Partnerships) was raised and that partnerships in innovating technologies i.e. "we want to innovate collaboratively," is explicitly needed. The three-trillion dollar ocean carbon market was discussed and knowledge still to be gained that provides significant opportunity for the program.

**6. Remarks from RADM Nancy Hann.** RADM Hann, Director of the NOAA Office of Marine and Aviation Operations (OMAO) and the NOAA Commissioned Officer Corps (NOAA Corps), addressed the Board virtually, for an administrative working session during the lunch break, to discuss the status of a dedicated NOAA ocean exploration vessel. There was extensive discussion about the history surrounding this issue. RADM Hann noted that OMAO does not use the phrase "dedicated vessel" for ocean exploration. She encouraged the use of language that references "primary" and "secondary" users. She referenced the NOAA Fleet Plan and its references to activities that fall within a primary mission; with Line Offices prioritizing individual requirements across the entire Agency. As a consequence, NOAA will not have a

dedicated vessel for ocean exploration, but rather some vessels will have ocean exploration identified as a primary mission category. She clarified that the NOAA Ship *Discoverer* will not include Ocean Exploration as the primary mission. She also referenced that the service life of the NOAA Ship *Okeanos Explorer (EX)* had been extended to 2030. There was some hesitation expressed about the serviceability of the EX over that period of time. The RADM offered the possibility of designating ocean exploration as a primary mission for a new class of vessels that are being developed by NOAA. Some members had questions about the operational capabilities of these new vessels meeting the requirements of NOAA Ocean Exploration. OMAO staff were reluctant to discuss those possible capabilities because the design of the ships has not yet been finalized. The OEAB Chair thanked RADM Hann for her time and for addressing the Board on this long standing issue.

- 7. Status Update: Dedicated NOAA Vessel for Ocean Exploration.** Kelley Suhre, Acting Chief of NOAA Ocean Exploration's Expedition and Exploration Division, led the Board through a discussion about the history surrounding the dedicated vessel issue, an overview of the expedition requirements that have been developed to date, and a rough outline of several ways NOAA Ocean Exploration might be able to have those requirements met. Suhre indicated that based on the current designed specifications, the NOAA Ship *Discoverer* will not meet NOAA Ocean Exploration requirements. Additionally, the proposed alternative vessels also may not meet NOAA Ocean Exploration requirements. Suhre noted that the need to maintain sufficient expedition capacity was specifically identified in NOAA Ocean Exploration's draft strategic plan. Other options for securing the necessary operational days-at-sea, including chartering commercial vehicles, use of fly-away systems, and use of alternatively funded platforms were also discussed. Several Board members inquired about the characteristics of a dedicated vessel that are fundamentally necessary for the program in terms of output (i.e. mission, not in terms of technology) and noted that the US Navy is requiring out some of its needs, and that is the future, and advised that the program should determine what part of the mission must be done with a person aboard a vessel, and what can be done with a robot. Flexibility was also raised and that without a dedicated vessel the program could be more nimble in the future although there might be operational tradeoffs that would occur from frequent changes in platform and the need for more frequent calibration.
- 8. Status Update: The Pacific Campaign.** Rachel Medley, Acting Deputy Director for NOAA Ocean Exploration, led the Board through a discussion about how the office is approaching the use of a systematic series of expeditions that are: multi-platform, multi-sensor and multi-partner to meet criteria for a Campaign framework to achieve exploration mission objectives. The focus of this discussion was on applying that approach to the planning and preparations for a comprehensive regional campaign in the Pacific. She referenced the five existing campaigns that OER is actively engaged in as a proof of concept for the approach: ASPIRE, EXPRESS, Seabed 2030 (Global), NOMEAC (All US EEZ), and Seascape Alaska.

Medley addressed how the items identified in the Pacific Priorities working group, conducted by Consortium for Ocean Leadership on behalf of NOAA Ocean Exploration, were incorporated into the planning for the Pacific Campaign. Several Board members inquired about the possibility of engaging and partnering with British or Japanese interests in the Pacific. There was a robust conversation focused on the need for common terminology and shared technological, operational, and data governance standards across all participating partners - the idea of “community consensus standards” was discussed. Several Board members responded positively to the regional campaign approach, but also noted that NOAA Ocean Exploration could do more to promote additional representation from non-governmental organizations within NOMEAC activities.

**9. Remarks from Peter de Menocal, President and Director of the Woods Hole Oceanographic Institution.** Peter de Menocal addressed the Board members about how the nature of institutional partnerships within the ocean exploration community have evolved to include a broader cross-section of actors and interested parties. He argued this a necessary condition to address the grand challenges society is now facing. He noted that the Woods Hole Oceanographic Institution (WHOI) Vision 2030 initiative is nothing short of transforming ocean science for the global good. Much of this approach is built on aggressively pursuing nontraditional partnerships and being open to unconventional opportunities. In particular, he identified the urgent need to better understand the ocean’s relationship with the climate. He argued that the focus must be on developing private sector partnerships around scalable, high-risk/high-impact ideas and he specifically called out the need to attract capital markets to participate in what was traditionally thought of as an academic space. He referenced the marshaling of these resources, applied to the climate question, as both a “War Time Effort” and a “Moon Shot”. The Chair thanked Dr. de Menocal for hosting the Board and for sharing his vision for the future.

**10. Brief: National Intelligence Estimate (NIE) on Climate Change.** An Analyst from the National Intelligence Council provided a brief about the projected implications of climate change for national security. This briefing was closed to the public.

**11. Ocean and Climate Interactions.** Dr. Jennifer Francis, Acting Deputy Director and Senior Scientist, Woodwell Climate Research Center delivered a presentation to the Board members about the state-of-the-science of ocean and climate interactions. Board members inquired about the possibility of providing integrated data forecasts for ocean weather forecasting. Dr. Francis responded that the necessary condition for reliable forecasting and modeling is the availability and accessibility of granular level data. The Board engaged in a discussion about the integration of exploration and monitoring - one member suggested the possibility of deploying thousands of Saildrone-like platforms to establish a downward facing grid of sensors (similar to the Argo floats). Such a network would also require meaningful investments in data

infrastructure and governance to effectively absorb that much information. There was a discussion about how best to ensure the communities who need access to ocean/climate data have access to it. As part of that process, it is necessary to have a functional understanding of where all the current data is held, in what formats, and under what governance structures. Several Board members observed that “data wrangling” is an underfunded functional area that would benefit from additional resources. There was also a discussion about the most effective formats for data consumption. One member noted that “95% of people want the Map” and not a raw data set. There was further discussion about the next generation of Telepresence capabilities and the potential for informing commercial applications.

**12. Open Session.** The Pacific Campaign was discussed and protocols for releasing information on submerged resources. The Board asked for ways to be more informed and provide additional value to the program.

**13. Public Comment Period.** Katie Fillingham, from the Consortium for Ocean Leadership, provided an update on planning for the next National Ocean Exploration Forum, scheduled for March 2022. Dan Rogers, from the Consortium for Ocean Leadership, provided an update on the “Strategic Convenings” report and “Pacific Priorities” reports they developed under an agreement with NOAA Ocean Exploration. Allison Fundis, with the Ocean Exploration Trust, provided an update regarding the E/V *Nautilus* field season.

**14. Next Meeting.** The OEAB agreed that the next meeting should take place on May 23rd and 24th at Columbia University’s Lamont-Doherty Earth Observatory in Palisades, NY. The general theme of the meeting will be focused on governance and use of data within ocean exploration. In addition, the Board members expressed an interest in better understanding the full range of projects and initiatives supported by NOAA Ocean Exploration.

**15. Meeting Close.** The Designated Federal Officer closed the meeting at approximately 12:15 PM on February 18, 2022.

Dr. Vickie Ferrini, Chair  
Ocean Exploration Advisory Board

*Vickie Ferrini*