SCIENCE ADVISORY BOARD

External Review of the Cooperative Institute for Climate, Ocean and Ecosystem Studies

Denise Reed, Review Panel Chair

1 August 2024

Outline

- Science Review Panel
- Overview of the Cooperative Institute (CI)
- CICOES Themes
- Findings and Recommendations
  - Strategic Plan
  - Science Review
  - Education and Outreach
  - Science Management
- Final Comments

SCIENCE ADVISORY BOARD

Science Review Panel

Denise Reed (Chair), University of New Orleans

John Chiang, University of California, Berkeley

Olaf Jensen, University of Wisconsin, Madison

Kristopher Karnauskas, University of Colorado, Boulder

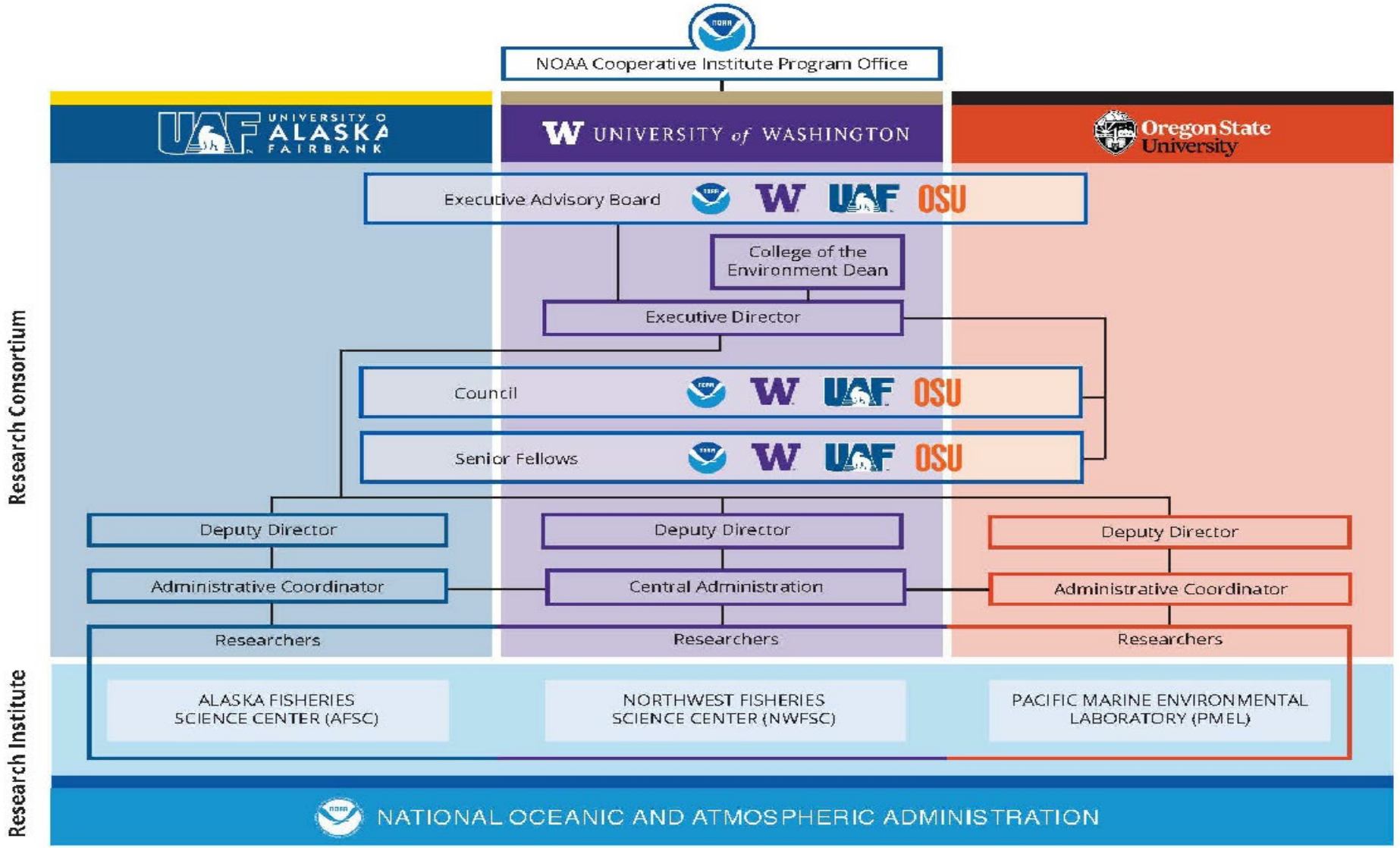
Douglas Luther, University of Hawaii at Manoa (Dir. CIMAR)

Molly McCammon, Alaska Ocean Observing System

CICOES

- Co-located consortium CI (UW, UAF and OSU)
- Administratively a research unit headquartered within the UW's College of the Environment
- Draws on faculty from:
  - up to ten CICOES-affiliated UW departments,
  - the College of Fisheries and Ocean Sciences, the International Arctic Research Center, the College of Natural Sciences and Mathematics and the Geophysical Institute at UAF, and
  - the College of Earth, Ocean, and Atmospheric Sciences at OSU

SCIENCE ADVISORY BOARD



SCIENCE ADVISORY BOARD

CICOES Themes

1. Climate and Ocean Variability, Change, and Impacts
2. Earth Systems and Processes
3. Environmental Chemistry and Ocean Carbon
4. Marine Ecosystems: Observation, Analysis, and Forecasts
5. Ocean and Coastal Observations
6. Environmental Data Science
7. Aquaculture Science
8. Human Dimensions in Marine Systems
9. Polar Studies

SCIENCE ADVISORY BOARD

Strategic Plan: Findings and Recommendations

The process of developing a strategic plan - especially one that could be reviewed and updated on an annual basis - would be advantageous to CICOES and further support its success in the next five years.

The Review Panel strongly recommends that CICOES undertake a Strategic Planning process over the coming year. This is not a time for further external review but for introspection and building excitement for a shared vision for the institute. To that end, the buy-in of members of CICOES across all ranks be critical to the success of this process from planning to implementation.

Strategic Plan: Findings and Recommendations

The Review Panel considers that research themes like Human Dimensions and Environmental Data Science might be better viewed as ‘cross cutting’ themes touching on many of the others. However, the breadth of CICOES research can be more effectively reported without the need for structural changes.

CICOES leadership needs to identify and report contributions of the CI to its research themes in a more synthetic manner so that, for example, work in social sciences and data science, an integral part of many projects where it is not the focus, can better emerge, and CICOES integrated contributions can be recognized and built upon.

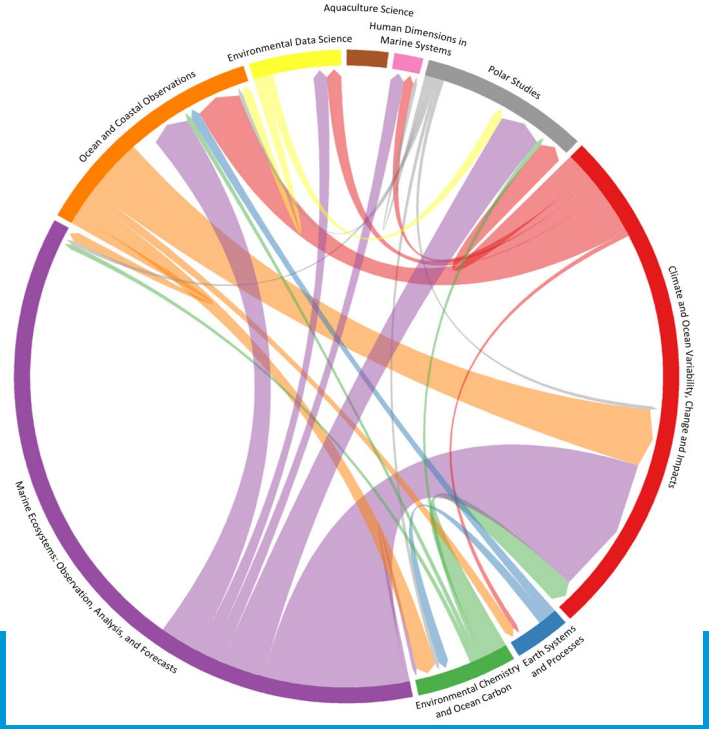
SCIENCE ADVISORY BOARD

Science Review: Finding

The Review Panel notes that CICOES researchers are engaged in an array of impressive endeavors that are producing important findings relevant to many aspects of NOAA's mission.

Research output is high with typically between 200-300 peer-reviewed papers published each year. Research topics that impressed the panel include:

- Freshening of the Waters of the Arctic's Beaufort Gyre and its Impacts.
- Global Ocean Carbon
- Saildrones
- Alaska Climate Integrated Modeling



SCIENCE ADVISORY BOARD

Education and Workforce Development: Findings and Recommendations

CICOES is strategically and for the most part effectively utilizing Task 1 funds to support workforce development to support NOAA's mission.

CICOES postdoctoral fellowships are a remarkable opportunity for early career scientists to gain from both academic departments and the breadth of scientific research conducted by CICOES but this needs to be deliberately cultivated rather than left to chance. The Review Panel sees an opportunity for better integration of the postdocs with the CICOES community.

Ready access to NOAA facilities is essential to the advancement of postdoctoral fellows and their contribution to NOAA science needs and is presently often hampered by a cumbersome process and lack of support to navigate it.

The Review Panel recommends that a working group be formed to evaluate the CICOES postdoctoral fellowship program and identify opportunities to enhance the CICOES student and postdoctoral community.

SCIENCE ADVISORY BOARD

DEI and Outreach: Findings and Recommendations

Existing DEI programs, while strong, are operated independently with little evidence of coordination limiting their potential to provide opportunity to underrepresented groups.

Improve coordination and integration across CICOES and partner university educational and DEI programs. Better coordination among programs could have multiple benefits for students, resulting in a more effective pipeline to careers in marine science and employment at NOAA.

The Review Panel notes that almost all of the public/K-12 outreach activities described were centered on UW and the Seattle area. If CICOES is to operate effectively as a consortium, efforts must be made to ensure CICOES science is visible and accessible to these audiences via OSU and UAF as well.

Seek opportunities to expand outreach across all partner institutions and NOAA laboratories, and the audiences they can reach.

SCIENCE ADVISORY BOARD

Science Management: Findings and Recommendations

The structure of CICOES and its funding through a cooperative agreement means there is little opportunity to explore new areas without specific funding being available. The Research Development Fund is a suitable approach to stimulating research in new areas given the limited amount of discretionary funding (Task 1) available.

Explore opportunities, (e.g., through the development of outside partnerships), to increase resources available through the Research Development Fund.

SCIENCE ADVISORY BOARD

Science Management: Findings and Recommendations

The existing advisory groups are appropriately constituted per the CI Handbook, but many members did not seem effectively engaged in, nor understand, their CICOES role. This limits the EAB's ability to provide effective oversight and guidance and the Council's ability to strategize and coordinate research and technology efforts. Participation in these groups may not be broad enough to effectively engage the CICOES community.

The advisory bodies need to be more effectively utilized. Their roles and membership could be strengthened and used more strategically to build relationships between NOAA and university faculty, and to support the coordination and integration of research across CICOES.

SCIENCE ADVISORY BOARD

Science Management: Findings and Recommendations

There are opportunities for additional partnership and relationship building that could be utilized if prioritized by the CICOES administration and the resources to do so made available.

Nurturing relationships among OSU, UAF, and NOAA researchers will be critical to building the role of OSU and UAF within the CICOES consortium.

CICOES should explore additional opportunities for strengthening and enhancing existing relationships between NOAA scientists and university researchers, including reaching out more aggressively to existing NOAA programs that have extensive engagement and outreach mechanisms.

SCIENCE ADVISORY BOARD

Final Comments

Overall Rating: **Outstanding**

A co-located consortium with such a wide array of themes is an ambitious goal.

CICOES scientists and faculty are delivering science to NOAA that speaks to many aspects of its mission.

Recommendations provided here are focused on providing a clearer path forward, fostering the CICOES community, strengthening the consortium, and leveraging regional resources to further this work.