

**NOAA's Atlantic Oceanographic and Meteorological Laboratory  
Science Review  
November 19-21, 2019**

**AOML Response to Panel Review Recommendations**

Submitted by:  
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**Introduction**

An onsite review of the Atlantic Oceanographic Meteorological Laboratory (AOML) was conducted November 19-21, 2019 by leading experts in the fields of oceanography, climate science, hurricane research, ocean circulation, modelling and instrumentation and ocean ecosystem research and services. Reviews such as this are conducted every five years by the National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (OAR) to evaluate the quality, relevance, and performance of research conducted at AOML. A link to the review materials, agenda, presentations and recommendations can be found at <https://www.aoml.noaa.gov/aoml-laboratory-review/>. The review covered the research themes:

1. Physical Oceanography and its Impact on Climate and Ecosystems:  
**Objective:** *Observe and understand the physical processes and mechanisms that control global ocean circulation, and characterize and predict how these mechanisms affect global and regional climate, extreme weather, sea level, and ecosystems.*
2. Ocean Chemistry and Ecosystems  
**Objective:** *Provide sound science to support informed water-quality decision-making at national, state, and local levels.*
3. Hurricanes and Modeling  
**Objective:** *Improve the basic physical understanding, data assimilation, and model forecasts of tropical cyclone intensity/structure change, with a focus on rapid intensity change and associated impacts such as rainfall.*

The review recommendations will be useful both for internal OAR/NOAA planning, programming, and budgeting, and for the laboratory's strategic planning of its future science. In this report, each actionable recommendation provided by the Science Review Panel is italicized and followed by AOML's response and planned action with a timeline for expected completion.

## Recommendations, Responses, and Action Plans Summary

AOML greatly appreciates the time and attention devoted by our reviewers to identify areas that will further improve the overall function and achievement of our laboratory. In consultation with the AOML workforce and leadership, Dr. John Cortinas, Director, Atlantic Oceanographic and Meteorological Laboratory, proposes the following actions to address the reviewers' comments. A table summarizing the actions with timelines for completion is included below. Detailed responses can be found in the Appendix.

<b>AOML Science Review Action Sheet</b>				
Section	Recommendation	Action	Target Start & Completion Dates	Status
<b>General Recommendations Champion: Dr. John Cortinas</b>				
<b>AOML 1</b>	<i>Recommendations for an AOML Strategic Plan</i>	Develop New Strategic Plan aligned with NOAA and OAR	Start Q1 FY2021 End Q4 FY2021	Completed Q1 FY2022
<b>AOML 2</b>	<i>Development of Remote Sensing Expertise</i>	Increase discussions with NESDIS to identify opportunities to increase AOML capabilities and complete hiring decisions	Start Q4 FY2020 End FY2022	Completed Q2 FY2021 and ongoing
<b>AOML 3</b>	<i>Development of Lab-wide Data Assimilation</i>	Assess staffing needs for greater data assimilation activities across AOML and ensure AOML engagement in broader NOAA-wide data assimilation activities.	Start Q3 FY2020 End Q4 FY2021	Completed new hires in Q2 FY2022
<b>AOML 4</b>	<i>Addressing Computing Needs</i>	Identify opportunities for greater access to HPC resources at CIMAS and NGI, including cloud computing.	Start FY2020 End FY2022	Completed \$3 million purchase of HPC with NOAA CIO Q4 FY2021
<b>AOML 5</b>	<i>Exploring Coastal Focused Research</i>	Use Strategic Plan process to focus future research directions	Start Q2 FY2021 End Q3 FY2023	Completed strategic plan Q1 FY2022; Strategic staffing requires implementation plan due to be complete in Q1 FY2023

<b>AOML 6</b>	<i>Striving for Funding Flexibility</i>	Work with OAR HQ to explore development of dedicated funding sources for facilities and infrastructure as well as increases to AOML's base budget.	Start FY2020 End Ongoing	Ongoing: AOML conducting in depth facility assessment in Q2 and Q3 FY2022; FY2022 base budget increases expected.
<b>AOML 7</b>	<i>Inventory of Intellectual Property and Training</i>	Hire AOML transition manager to increase transitions and technology transfers and work with TPO to conduct intellectual property training for staff	Start Q1 FY2021 End Ongoing	Completed hire Q3 FY2021; Ongoing training and collaboration.

**Hurricane Research Division Recommendations  
Champion: Dr. Frank Marks**

<b>Section</b>	<b>Recommendation</b>	<b>Action</b>	<b>Target &amp; Completion Dates</b>	<b>Status</b>
<b>HRD 1</b>	<i>Oceanographic Data Collection, Archival and Dissemination</i>	Develop and implement AOML-wide data archival and access plan	Start FY2021 End FY2022	Ongoing - Est completion of plan Q4 FY2022
<b>HRD 2</b>	<i>Modeling and Data Assimilation</i>	Build capacity following strategic plan priorities and ensure engagement of HRD in activities associated with recommendation AOML 3.	Start FY2021 End Ongoing	Completed new hires in Q2 FY2022
<b>HRD 3</b>	<i>Interaction with Stakeholders</i>	AOML/HRD will continue to participate in hurricane conferences and meetings that involve stakeholders and consider an annual event with the National Hurricane Center.	Start FY2020 End Ongoing	Completed Q1 FY2021 Hurricane and Ocean Testbed commissioning. Ongoing collaboration with GOMO, NESDIS, AOC, OMAO, IOOS an NHC.
<b>HRD 4</b>	<i>Participate in journals editorship</i>	AOML will continue to encourage scientists to participate in journal editorship.	Start FY2021 End Ongoing	Completed FY2021 (6 staff as editors)

**Physical Oceanography Division Recommendations  
Champion: Dr. Rick Lumpkin (replaces Dr. Gustavo Goni)**

<b>Section</b>	<b>Recommendation</b>	<b>Action</b>	<b>Target &amp; Completion Dates</b>	
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<b>PHOD 1</b>	<i>Tropical Cyclone Data Collection, Archival and Dissemination</i>	AOML will continue to investigate and support new observing technologies, including unmanned systems, as well as the techniques to archive and disseminate these data.	Start FY2020 End Q4 FY2021	Ongoing - Est completion of data plan Q4 FY2022 (joint with HRD 1). Completed FY2019-FY2021 field programs with gliders, Saildrones and other novel instruments led to increasingly accurate forecasts.
<b>PHOD 2</b>	<i>Modeling and Data Assimilation</i>	Build capacity as described in HRD 2 and AOML 3	Start FY2020 End Q2 FY2021	Completed new hire Q1 FY2022
<b>PHOD 3</b>	<i>Cross-cutting Inundation Research</i>	Participate in NOAA-wide activities associated with inundation research and build capacity following strategic plan priorities	Start FY2020 End Q4 FY2021	Completed Q4 FY2021 (NOAA-wide proposal); Ongoing research
<b>PHOD 4</b>	<i>Cooperation with Regional and Other Entities</i>	Participate in discussions with NOS on their coastal research needs and consider increasing coastal research capabilities based on discussions and strategic planning activities.	Start FY2020 End FY2022	Completed new hire Q3 FY2021; Completed NCCOS workshop Q2 FY2022

**Ocean Chemistry and Ecosystems Division Recommendations  
Champion: Dr. Chris Kelble (replaces Dr. James Hendee)**

<b>Section</b>	<b>Recommendation</b>	<b>Action</b>	<b>Target &amp; Completion Dates</b>	<b>Status</b>
<b>OCED 1</b>	<i>Need for a Strategic Plan</i>	OCED will participate in the development of an AOML strategic plan that will identify research areas and priorities for OCED to pursue.	Start Q1 FY2021 End Q4 FY2021	Completed Q1 FY2022
<b>OCED 2</b>	<i>Expansion of Research Areas</i>	AOML will work with other NOAA line offices to identify AOML's role in water quality research as part of the development of an AOML strategic plan	Start Q1 FY2021 End Q4 FY2021	Completed Strategic Plan Q1 FY2022; Est Implementation Plan Q1 FY2023; Ongoing - increasing collaborations with State, academic partners

<b>OCED 3</b>	<i>Collaboration with Other Divisions and Stakeholder Engagement</i>	Expand existing collaborations with other AOML divisions and line offices. Other opportunities will be considered during the development of the AOML strategic plan.	Start Q1 FY2021 End Q4 FY2021	Completed Q2 FY2021; ongoing
<b>OCED 4</b>	<i>Funding Structure</i>	AOML will work with OAR HQ to identify opportunities for increased base funding while continuing to pursue other sources of project funding	Start FY2020 End Ongoing	Completed Q4 FY21 (largest total funding for OCED); FY2022 base budget increases expected.