



ADVANCING EARTH  
AND SPACE SCIENCE

27 August 2018

White House Office of Science and Technology Policy  
National Science and Technology Council  
Eisenhower Executive Office Building  
1650 Pennsylvania Ave NW  
Washington, DC 20504

Re: Comment on “Science and Technology for America's Oceans: A Decadal Vision”

Dear Mr. Wackler,

On behalf of the American Geophysical Union (AGU), a non-profit scientific society representing 60,000 Earth and space scientists, I am writing to comment on the recently released draft report, *Science and Technology for America's Oceans: A Decadal Vision*. AGU applauds your commitment to robust and strong ocean science to support national security, economy, and public health. The five priorities outlined in the report—understanding the ocean in the Earth system, promoting economic prosperity, ensuring maritime security, safeguarding human health, and developing resilient coastal communities—are all goals that rely on a dedicated scientific work force and enterprise. AGU looks forward to working with you in building the science infrastructure to achieve these goals. As such, please see our comments below on the draft report.

### **Modernizing R&D Infrastructure**

AGU appreciates the report's recognition of the importance of “Modernizing Research and Development Infrastructure” (page 8). To accomplish the goals outlined in the report and to advance science, the nation must invest in research infrastructure, including state-of-the-art facilities and technologies and a robust workforce of trained, educated scientists. From research vessels and fleets, to air craft and satellites, to unmanned underwater vehicles, expanding and improving the tools used to collect data and study our oceans is paramount in our understanding of the world around us. A strong and robust fleet and technology is necessary for the U.S. to remain a leader in ocean research.

### **Addressing Climate Change**

AGU supports the report's recommendation to invest in research and technology— including climate modeling – in order to understand how climate change is impacting public health,



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infrastructure, and the economy. Nevertheless, while the report makes references to the changes in Earth's energy budget, the importance of community resilience in the face of extreme weather, and sea level rise, there is no explicit mention of the underlying connection of all these issues to anthropogenic climate change.

Because *Science and Technology for America's Oceans: A Decadal Vision* is intended as a roadmap for federal agencies and the public to understand the most critical areas for research in oceans, it is a glaring oversight for the report not to call out the fundamental role played by global climate change. Understanding climate change should be listed as one of the top goals in the report, explicitly connected to each of the existing top goals, or both.

As the report notes, environmental changes will have defense and commercial implications as diminished sea ice affects the accessibility of the Northwest Passage and the Northern Sea Route. Climate change will also create ocean-related human and marine health hazards such as increase in the occurrence of harmful algal blooms. Moreover, as the report mentions, 2017 was the costliest year on record for natural disasters, causing \$306 billion of damage.

AGU agrees that "because our Nation's security and prosperity is affected by our communities' access and use of coastal resources ... it is important to understand the factors that affect the ability of communities to respond to, and recover from, natural and manmade disturbances." (page 41). As extreme weather becomes more devastating, coral reefs continue to suffer, and the ocean's heat budget continues to change, it is critical that understanding the cause of these issues – climate change - be considered a top goal.

### **Promoting the Blue Workforce**

AGU applauds the report's focus on promoting the blue workforce (page 23). A strong science pipeline and dedication to scientific education is critical for our country to continue to lead the way in research and technology. The security of the nation and quality of lives across the country relies on strong science literacy in our communities. While we agree with and support your suggestion of community and technical colleges as an avenue of exposing a more diverse body of students to the blue workforce, we recommend expanding upon the importance of STEM education even earlier in life. K-12 education is a critical time for students to develop an interest in ocean science that will lead to a career in this critical field. According to the Bureau of Labor Statistics, employment in occupations related to STEM is projected to grow more than 9 million between 2012 and 2022 levels, an increase of about 1 million jobs over 2012 employment levels.



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In order to ensure that we have a robust science workforce, and scientists to fill those jobs, we must invest in programs that will inspire the next generation of scientists from a young age.

### **Funding**

While the report states that implementation of this plan is dependent upon available resources and will vary year to year, predictable, reliable funding for our federal science agencies is an essential element to achieving strong research outcomes. The report should acknowledge the importance of strong funding sources to support these goals. Several of the priorities outlined in this report span years to decades to accomplish, and without strong science funding, we will not be able to reap the benefits that this research and innovation will yield.

Thank you for the opportunity to weigh in on this important report. AGU welcomes the opportunity to work with you to address these and other critical issues and ensure that science can continue to appropriately inform decision-making. Thank you for your consideration, and we look forward to the finalized decadal report.

Respectfully,

A handwritten signature in black ink that reads 'Christine W McEntee'.

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