

11 July 2017

Honorable John Culberson
Chairman
Subcommittee on Commerce,
Justice, and Science
Committee on Appropriations
U.S. House of Representatives
Washington, D.C. 20515

Honorable Richard Shelby
Chairman
Subcommittee on Commerce,
Justice, and Science
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Honorable José Serrano
Ranking Member
Subcommittee on Commerce,
Justice, and Science
Committee on Appropriations
U.S. House of Representatives
Washington, D.C. 20515

Honorable Jeanne Shaheen
Ranking Member
Subcommittee on Commerce,
Justice, and Science
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Dear Chairman Culberson, Chairman Shelby, Ranking Member Serrano, and Ranking Member Shaheen:

As the House and Senate develop Fiscal Year (FY) 2018 funding recommendations for the National Science Foundation (NSF), on behalf of the Consortium for Ocean Leadership (COL) and the leading ocean research and technology institutions (from academia, industry, and aquaria) COL represents, I write to recommend your support for both the key science priorities laid out in the National Academy of Sciences' report, *Sea Change: 2015-2025 Decadal Survey of Ocean Sciences* – and for the infrastructure and underlying fields of science needed to address these priorities.

The U.S. is a maritime nation, with more ocean area in our Exclusive Economic Zone than in our terrestrial 50 states combined. From the very beginning, the U.S. has turned to the sea for protection, exploration, lifestyle, economic security, food, recreation, and energy. The ocean is an economic driver to more than three million Americans who work in ocean and coastal industries (which are worth \$359 billion annually). Our nation's energy needs are met by the ocean's production of 63 million gallons of oil every day from offshore drilling and could be expanded by sustainably producing more than five billion gallons of algae-based diesel annually by 2020. The ocean's role in food security is critical – it provides 20 percent of the animal protein we depend on for food, provides fishmeal that fertilizes the nation's crops, and is the major driver of the weather and water cycle that bring warmth and water to inland farms. Ocean data and information support analysis and understanding of our rich ocean resource. From this, businesses and communities can build new ocean-dependent enterprises and maintain and grow current endeavors, all while effectively managing risk. Ocean science and technology provide the nation with a knowledge advantage against myriad maritime threats we face, both now and in the future. Ocean research forms the critical foundation needed to ensure continuity of our superior knowledge of the ocean, which in turn generates warfare advantage, ensures homeland security, enhances economic prosperity, fosters healthy populations, and builds a dynamic workforce.



VOTING MEMBERS

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Duke University
FAU Harbor Branch Oceanographic Institute
Harte Research Institute
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IOOS Association
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MARACOOS
Monmouth University Urban Coast Institute
National Aquarium
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North Pacific Research Board
Nova Southeastern University
Romberg Tiburon Research Laboratory
Savannah State University
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DISCOVERY • UNDERSTANDING • ACTION

Sea Change outlines a strategy to balance the research and infrastructure portfolio to ensure a strong future for ocean science, and thus for our nation and people. With fiscal discipline and wise research investments now, the next decade and beyond could be a time of opportunity and progress in ocean science, with advances that benefit society and further economic goals not only of the nation but also the world. *Sea Change* is the result of an extensive effort by a distinguished committee, at the request of NSF's Division of Ocean Sciences, to identify a limited number of major priorities that would guide the direction of NSF and other relevant agencies to strengthen the health of the ocean science and technology enterprise. The eight *Sea Change* priorities are:

- What are the rates, mechanisms, impacts, and geographic variability of sea level change;
- How are the coastal and estuarine ocean and their ecosystems influenced by the global hydrologic cycle, land use, and upwelling from the deep ocean;
- How have ocean biogeochemical and physical processes contributed to today's climate and its variability, and how will this system change over the next century;
- What is the role of biodiversity in the resilience of marine ecosystems and how will it be affected by natural and anthropogenic changes;
- How different will marine food webs be at mid-century and the next 100 years;
- What are the processes that control the formation and evolution of ocean basins;
- How can risk be better characterized and the ability to forecast geohazards like mega-earthquakes, tsunamis, undersea landslides, and volcanic eruptions be improved; and
- What is the geophysical, chemical, and biological character of the seafloor environment and how does it affect global elemental cycles and understanding of the origin and evolution of life?

Underlying several of these priority areas is the need to maintain strong federal support both for the academic fleet – specifically in the form of new research vessels, the Regional Class Research Vessels (RCRVs) and for the existing unique world class capabilities that support marine seismology research.

The RCRV project will fund construction and acquisition of new regional class vessels to carry out the eight priority science questions laid out in *Sea Change*. In FY 2017, Congress provided initial support for three RCRVs for each major coastal region – the East and West Coasts and the Gulf of Mexico. **COL urges Congress to maintain the funding necessary in FY 2018 and beyond to complete the construction and acquisition of and operational support for the RCRVs.**

Marine seismology is also essential to address *Sea Change* priorities, including forecasting geohazards (such as earthquakes and tsunamis), understanding processes that control the formation and evolution of ocean basins, as well as characterizing the seafloor and its relationship to global elemental cycles and the origin and evolution of life. As NSF is actively considering options that will impact the future of marine seismology, **COL recommends that Congress help ensure the key principle driving NSF's decision-making is the academic marine geology and geophysics community's continued access to marine seismic capabilities that are at least as comprehensive and sophisticated as those now contained within the academic fleet.** Doing so will help ensure that the highest-priority objectives in research and education requiring those capabilities can be fully met in the future.

The ocean science and technology community is encouraged by the committees' continued dedication to the national science enterprise. We welcome the opportunity to work with you in sustaining and strengthening the strong science framework necessary to facilitate discovery and innovation while nurturing and training the next generation of scientists and supporting our nation's economic and national security. These efforts are crucial to keeping America competitive.

Respectfully,



Jonathan W. White, RADM (Ret.), USN
President and CEO
Consortium for Ocean Leadership

cc: Dr. France Córdova, Director, NSF;
Dr. Bill Easterling, Assistant Director for Geosciences, NSF;
Dr. Richard Murray, Director, Division of Ocean Sciences