IOOS | Integrated Ocean Observing System

U.S. Integrated Ocean Observing System Advisory Committee

Dr. Kathryn D. Sullivan
Under Secretary of Commerce for Oceans and Atmosphere and
NOAA Administrator
1401 Constitution Avenue, NW
Room 5128
Washington, DC 20230

Dear Dr. Sullivan,

The U.S. Integrated Ocean Observing System Advisory Committee (US. IOOS® AC) is encouraged by your leadership and call for a renewed commitment to environmental intelligence and enhancing economic, environmental and societal resilience. In our deliberations and meetings with federal agencies, regional IOOS representatives and others, it is increasingly clear that IOOS plays a unique and important role in supporting these goals. In response to your request to the IOOS AC to address marketing and communications in support of the role of IOOS of the national economy and coastal investments, we have attached some specific examples of how IOOS enhances national resilience in a variety of ways.

IOOS gathers and provides the necessary data, information, and input from stakeholders that are essential to enhancing the nation's resilience. This issue is most pressing now due to growing effects of climate change, which call for expanded and improved data to inform forecast and hindcast models and other decision support tools. The reliability, accessibility, and usefulness of these data and information are requisite conditions for effective resilience plans and outcomes.

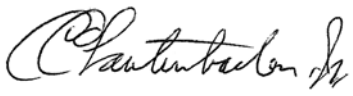
We applaud your continuing recognition of the role of IOOS and recommend that you:

- Make a stronger IOOS available to communities, local governments, industry and institutions to support the resilience decision-making.
- Focus the attention of the nation of the role that IOOS plays in enhancing resilience, and on the fact that IOOS has been a trusted and essential source of ocean, Great Lakes and coastal information.
- Improve the visibility of IOOS within NOAA, and with federal agency Interagency Ocean Observation Committee (IOOC) partners, as an essential, valuable tool in the race to acquire the information and data for shaping a resilient and sustainable future for our country.
- Provide IOOS the funding and administrative support needed to maintain and expand its resilience efforts.

As the lead agency in the national IOOS enterprise, NOAA has a unique opportunity to change the way federal agencies interact with each other and with non-federal entities to coordinate and organize the multitude of national resources that when integrated through the IOOS enterprise will improve resilience for our nation.

We have provided the attached examples of how IOOS supports resilient solutions in the face of environmental variability and climate change. The IOOS AC is available to discuss these recommendations.

Thank you for your attention and support.



Conrad Lautenbacher
Chair, U.S. IOOS Advisory Committee

Attachment: Examples of IOOS Supporting Resilience Solutions in the Face of Environmental Variability and Climate Change

Cc: Interagency Ocean Observation Committee

Examples of IOOS Supporting Resilience Solutions in the Face of Environmental Variability and Climate Change

1. **Hurricanes and Massive Storms**: The IOOS enterprise provides real-time information for emergency managers and responders during natural disasters such as hurricanes. During hurricanes Katrina and Rita in 2005, IOOS partners provided real-time non-federal data sets into the federal data stream for National Weather Service use in forecasting efforts. By the time of Superstorm Sandy in 2012, the regional IOOS assets included substantial data and information that supplemented federal data, leading to improved forecasts that allowed NOAA to issue advanced warnings to local governments, leading to timely evacuations that saved lives and mobile property, and gave the maritime transportation industry and U.S. Navy additional time to take preventive measures, including preparation for landfall of the storm and diversion of vessels out of harm's way.

2. **Oil Spills**: The IOOS enterprise provides real-time information during anthropogenic disasters. The Deepwater Horizon oil spill was an example of how the immediate accessibility of non-federal data sources and IOOS regional partners enhanced the information available to the federal, state, and local responders. The non-federal inputs consisted of data from coastal stations throughout the northern Gulf, including High Frequency Radar currents, as well as regional forecast modeling outputs of winds and currents from state-sponsored (e.g., Texas General Land Office) and academic sources. Additionally, regional assets from around the country were mustered to track the subsurface oil plume. IOOS partners similarly provide data and information that aid responders on smaller pollutants spills, such as the recent pipeline break and resulting oil spill off California's Refugio State Beach.

3. **Relative sea level change**: Data and maps produced by IOOS show anticipated changes in coastlines due to sea level rise and support coastal community planning efforts that include long-term infrastructure and usage adjustments in response to the environmental changes.

4. **Coastal community planning:** Real-time information related to planning for events impacts by climate change (e.g., ocean acidification, surface water pH changes and events, warming Arctic waters and melting ice that will change the lifestyle of the subsistence population, fishermen, and others, and increase in wave activity and energy causing beach scour) is provided by IOOS partners to local, state, and federal agencies across the nation and territories.

5. **Decision making for natural hazards**: IOOS partners are assembling historical data for use in evaluating trends (winds, waves, ocean temperature) and integrating interdisciplinary data types to improve understanding of how ecosystems are impacted by natural hazards.

6. **Maritime Safety**: Data, models, and information generated by IOOS assist the Coast Guard and local officials in Puerto Rico and the Virgin Islands to find missing persons at sea and make use of bays and harbors safer under changing conditions.

7. **Public Health:** IOOS partners are working with federal, state, and tribal agencies to improve detection and monitoring of harmful algal blooms (HAB) of various algal species. IOOS data help the state health departments and federal agencies, including NOAA, to monitor HAB events and to decide whether to issue HAB warnings or close fisheries. IOOS

partners provided monitoring data associated with the May-June 2015 bloom of *Pseudo-nitzschia* with its toxin, domoic acid, on the U.S. West Coast. In particular, data from Monterey Bay aided the California Public Health Department. IOOS partners provided Texas agencies with data giving an early detection of the first-ever observed bloom of *Dinophysis* in the Gulf of Mexico, as well as five other HAB events. IOOS partners around the nation provided outreach information to the public on HABs. Mycrocystin toxicity from cyanobacteria in drinking water plagues the western basin of Lake Erie in the Great Lakes. Improved detection as well as mitigation actions are being pursued, and the integrated observing systems of diverse IOOS partners is an ideal foundation for enhancing the additional monitoring needed.

8. **Contributions to Supply Chain Strategies:** IOOS observations and services contribute to robust supply chain strategies through safe maritime navigation. The Physical Oceanographic Real-Time System (PORTS), which is a source of critical real-time data related to tides and currents is one example of these efforts. Accurate real-time information has increased maritime safety, lowered shipping costs, lowered consumer prices, enhanced the nation's competitiveness, as well as increased resiliency in our economies and communities at certain locations. An expanded PORTS program will require more IOOS data, but it is feasible with leadership from NOAA and the IOOC to obtain those advantages nationwide to obtain a robust supply chain. Another strategy to ensuring an effective and robust supply chain is the use of IOOS data to anticipate the appropriate timing and methods for navigational channel dredging, as well as monitoring our coastal regions via IOOS data to comply with environmental concerns while keeping the supply chain pathways available for not only vessels of the past but ever-increasing vessel sizes of the future. IOOS information is an important component to navigation and the National Water Level Observation Network (NWLON); therefore, a critical element in a robust supply chain.

9. **Ecosystem-based management**: IOOS seeks to work with federal and state agencies to enable the integration of the national fishery and marine ecological data sets required to assess the state of the marine environment and undertake ecosystem-based fishery management