Dr. Kathryn Sullivan
Under Secretary of Commerce for Oceans and Atmosphere and
NOAA Administrator
U.S. Department of Commerce
Washington DC

Dear Dr. Sullivan:

The Integrated Ocean Observing System Advisory Committee (IOOSAC) is encouraged by your leadership of NOAA in calling 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 has become clear that IOOS has a unique and important role to play and is already gathering 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 attached document includes examples that reflect IOOS' valuable role and potential for increasing resilience in the future. You likely are aware of others. The reliability, accessibility and usefulness of these data and information are requisite conditions for effective resilience plans and outcomes.

We applaud your previous recognition of the role of IOOS and encourage you to strengthen your support in the following ways.

- Make a stronger IOOS available to communities, local governments, industry and institutions to support the resilience decision-making. This is necessary to increase our nation's capacity to withstand climate stimuli and function under rapidly changing conditions. It is a basic principle of the IOOS Vision, which we previously shared with you.
- Focus the attention of the nation on the fact that IOOS has been a trusted source of ocean, Great Lakes and coastal information for the past 10 years and will continue to be so into the future.
- Elevate the visibility of IOOS, within NOAA and your federal agency 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 current 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.

The IOOSAC is available to discuss these recommendations. Thank you for your attention and support.

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 (hurricanes) disasters. 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 harms 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 and state agencies to improve detection and monitoring of harmful algal blooms 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.