February 7, 2013

The Honorable Harold Rogers  
The Honorable Nita Lowey  
The Honorable Barbara Mikulski  
The Honorable Richard Shelby 

United States Congress  
Washington, DC 20510  

Dear Chairpersons Rogers and Mikulski and Ranking Members Lowey and Shelby:

On behalf of the 99 member institutions of the Consortium for Ocean Leadership and the 104 member research universities and academic affiliates of the University Corporation for Atmospheric Research (UCAR), we would like to thank you for the investments that the Hurricane Sandy Supplemental bill makes to advance our forecasting and prediction capabilities for future extreme events. We also greatly appreciate your leadership in securing funds to repair ocean observing assets and damages to oceanographic facilities and your support for weather modeling to improve future forecasts.

While forecasting the path of hurricanes has improved significantly in recent years, we have not made nearly as much progress in predicting the intensity of hurricanes – which of course significantly influences the magnitude and variability of the impacts from wind, storm surge, flooding and coastal erosion. The lack of progress is in part attributable to a dearth of real-time sub-surface ocean measurements. However, the $50 million included in the legislation for mapping, charting and geodesy will provide critical bathymetric and tidal data necessary for accurate forecasting of storm surge. Poor intensity and storm surge forecasts result in potentially avoidable and costly property damages and imprecise evacuation and storm preparations.

The refinement and enhancement of models and forecasts can be aided by better monitoring of the primary driver of storm intensity, the heat content of the ocean, from which storms derive their energy. These data need to be coupled with atmospheric and bathymetric measurements for better regional-scale forecasts. Currently, the National Climate Prediction Center collects roughly 1,000 times more atmospheric than sub-surface ocean measurements for their storm models. Given that satellite measurements are limited to surface temperature, and are frequently impeded by storm clouds, we believe a significant portion of the $50 million investment for NOAA laboratories and Cooperative Institutes should be used to develop, deploy and evaluate sensors and other ocean monitoring and technology assets to procure critical ocean data. Additionally, these funds should facilitate the integration of ocean-related data into operational weather and environmental forecast models to enhance our capacity to forecast and prepare for future ocean-driven extreme events.
The Cooperative Institutes are uniquely positioned to leverage the investment from these funds through their wide array of technical and scientific expertise in the academic community that complements the intramural research capacity of NOAA. Because the Cooperative Institutes are embedded in academic institutions, this partnership also provides important context about disaster-related needs for decision-making and response. The IOOS Regional Associations also have great reach into the communities affected by the storms and can make one-time investments in upgrading both observing and modeling capacity.

Ocean Leadership and UCAR also support the utilization of a portion of the $25 million in emergency funds dedicated for improved weather and hurricane intensity forecasting capabilities to be made available for enhancing our ocean observation capabilities as well as integrating the data along with enhanced bathymetric data into hurricane intensity and storm surge models. The integration of more comprehensive oceanographic data into the operational atmospheric models is required for the United States to regain its role as a world leader in weather and environmental forecasting.

Finally, we greatly appreciate the $111 million allocation for a weather satellite data mitigation gap reserve fund as there is a desperate need for alternate methods for obtaining weather data. We believe that the National Research Council, or some other external oversight entity, should work with NOAA to provide an expedited analysis of alternative methods, which could include acquiring contingency sensors, purchasing data from other nations and upgrading computer hardware/software to handle new data streams as well as NASA development of new technologies and lower risk approaches to obtaining remotely sensed data.

One worthwhile use of the weather satellite data mitigation reserve fund is for NOAA’s COSMIC II, a American-Taiwanese joint mission to launch a constellation of twelve small, low-cost satellites which would utilize GPS radio occultation technology to collect a large amount of atmospheric data for meteorological, climatic, ionospheric, and geodetic research, as well as for weather forecasting and space weather monitoring. The COSMIC system is notable for its potential to provide data to NOAA and research scientists about un-manned and remote regions of the world, such as the poles and oceans, the same data at risk of being lost as a result of the gap in our national polar orbiting satellite coverage expected in 2016. Using its innovative technology, COSMIC II could provide much of these imperiled data at a much lower cost to the American taxpayer.

Collectively these funds provide a unique collaborative opportunity for the atmospheric and oceanographic science communities to improve our understanding of critical physical processes and better integrate this knowledge and enhanced observations into better predictive models. Thank you again for your foresight in providing these funds and dedication to ensuring that our nation is better prepared for future extreme events.

Sincerely,

Robert B. Gagosian
President, Ocean Leadership

Thomas J. Bogdan
President, UCAR

Cc: Jeffrey Zients, Acting Director of OMB
Rebecca Blank, Acting Secretary of Commerce