

BENEFITS FROM OCEAN INFORMATION IN THE SMARTPHONE ERA

The U.S. Integrated Ocean Observing System (IOOS®) is an investment of tremendous national value and significant importance. As an enterprise among federal, regional, and institutional observing programs, IOOS links ocean¹ sensing information together to provide important real-time data to enhance our nation's predictive capability and decision support infrastructure. IOOS has proven effective in protecting lives, property, and the environment and provides a foundation from which expanded partnerships can continue to generate valuable private, public, and national opportunities.

In the last ten years, Americans have felt over \$100B of financial impact due to tsunamis, hurricanes, and fisheries collapses. The impacts of natural hazards, in particular, are large. Lives are lost and people displaced. Property is damaged - sometimes irreparably. Jobs are eliminated or set back, and environmental damage is significant - sometimes permanent. IOOS is now relevant in every major ocean event, enabling us to reduce these losses by supporting day-to-day decision making through a decision support system based upon ocean science and technology advances.

U.S. IOOS Data and Products were used to forecast and prepare for Superstorm Sandy

Just before Superstorm Sandy, IOOS information allowed vessels in the ports of NY and NJ to be diverted to other east coast ports. Over 23,000 cargo vans were safely delivered and then trucked or shipped via rail to the NY-NJ metropolitan region. This action ensured the critical 2012 Christmas shopping season occurred without disruption.

In Hoboken, NJ, 1,700 buildings were severely flooded, impacting up to 34,000 people. Advanced warnings provided by IOOS-derived storm surge forecasts reduced more extensive damage to property, allowed for timely evacuation, and spared discomfort, injury, or worse. The mayor's decision to order the evacuation of thousands of ground floor apartments by midnight the day before landfall saved a significant number of lives.

The Navy's Atlantic Fleet Headquarters sent 80 ships out of Hampton Roads ports and shipyards three days prior to the onset of the storm at a cost of \$10M. All safely exited with no damage or loss of life. Based on historic damage to the fleet from past hurricanes, a storm of Sandy's magnitude otherwise could have caused \$500M in damage to ships.

U.S. IOOS works, but is incomplete. Imagine the power of a comprehensive IOOS!

¹ The word "ocean" is used in this document to denote oceans, coasts, and the Great Lakes.

U.S. IOOS VISION

IOOS is an innovative public/private enterprise of integrated national and regional ocean, coastal, and Great Lakes observations that equips the nation to face natural and manmade risks to economic growth, prosperity, and survivability, and to ensure a safe, productive, and resilient ocean and coastal zone.

ENABLING the VISION

IOOS's **utility** will enable people through access to technology and information to connect quickly to support decisions in response to our society's greatest needs across individual to community to global scales.

IOOS's **importance** will help drive the definition of innovative products and services and will ensure they are integrated into operations in numerous sectors.

IOOS's **effectiveness** will be measured by positive impact on the lives and quality of life of our citizens, the efficiency of our commerce and the health of our environment.

IOOS will be **nimble** to ensure responsiveness to the demands of an increasingly diverse set of customers and partners.

IOOS will be **innovative** to promote exciting opportunities for new research and technology implementation by industry, academia, NGOs and government agencies.

Action and a commitment to a comprehensive IOOS will require leadership from a broad range of users and contributors that will empower the enterprise, encourage engagement, and lead us to expect excellence.

Empower IOOS to promote the growth and development of the enterprise, products and services, not simply to manage a system.

Encourage increased interagency governmental and non-governmental activity and trusted involvement in the enterprise.

Expect excellence and participation from collaborators and stakeholders to ensure maximum value and return on investment.