

Forum on Risk Management and Assessments of Natural Hazards

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The NOAA National Ocean Service is dedicated to support and provide the science (including basic and applied research), information, management, and leadership necessary to balance the environmental and economic well being of the Nation's coastal resources and communities.

Our goals include:

- 1) Preserve and restore the US coastal and ocean environments.
- 2) Reduce the costs and risks to people, the economy, and natural resources associated with both natural and man-induced hazards.
- 3) Expand and improve navigation products and services in response to changing technology and needs of our customers and increase the safety of vessels movements on the Nation's waterways, especially in major ports.
- 4) Increase coastal communities ability to adapt to changing conditions and to mitigate the impacts of all natural and man-induced hazards, including climate change.

Many NOS projects and programs are supporting these goals and in this short presentation I would like to just touch on four of these programs.

I- PORTS

The Physical Oceanographic Real-Time System (PORTS) is a program that support safe and cost effective navigation by providing ship masters and pilots with accurate real-time information required to avoid groundings and collisions. This technological innovation has the potential to save maritime insurance industry from multi-million dollar claims resulting from shipping accidents. PORTS system are in place or being developed in: San Francisco Bay, New York/New Jersey Harbor, Houston/Galveston, Tampa Bay, Narragansett Bay, Chesapeake Bay, and Soo Locks.

PORTS includes centralized data acquisition and dissemination systems that provide real-time water levels, currents, and other oceanographic and meteorological data from bays and harbors to the maritime user community in a variety of user friendly formats. Also, by using numerical circulation models, PORTS provides nowcasts and predictions of these parameters.

Telephone voice access to accurate real-time water level information allows U.S. port authorities and maritime shippers to make sound decisions regarding loading of tonnage (based on available bottom clearance), maximizing loads, and limiting passage times, without compromising safety.

PORTS is critical to environmental protection, since marine accidents can lead to hazardous material spills that can destroy a bay's ecosystem and the tourism, fishing, and other industries that depend on it. The human, environmental, and economic consequences of marine

accidents can be staggering, as demonstrated by the 35 deaths caused by the May 1980 ramming of the Sunshine Skyway Bridge in Tampa Bay (which led to the first PORTS installation), and the estimated \$3 billion cost of the EXXON Valdez accident in 1990.

For more information visit the web site: http://co-ops.nos.noaa.gov/d_ports.html

II-Response and Restoration

Each year, millions of gallons of oil and hazardous chemicals spill into U.S. waters, often because of accidental releases from marine vessels and transportation pipelines. These discharges and releases can alter habitat, kill or injure important fish and bird populations, and reduce food supplies for aquatic life and for humans. Ecological effects can persist for long periods of time and over geographic areas large and small.

Within NOS, scientists in the Office of Response and Restoration (OR&R) respond to dozens of oil spills and other hazardous materials each year, help emergency planners prepare for potential accidents, create software, databases, and other tools to help people respond to hazardous material accidents, work to find remedies for the environmental damage caused by hazardous waste sites in coastal areas, assess injury to coastal resources from releases of oil and hazardous materials, and pursue restoration from those responsible for the harm .

The Hazardous Materials Response group (HazMat) consists of an interdisciplinary scientific team that responds to oil and chemical spills in U.S. waters. This team provides and coordinates critical advice on science and natural resource issues to the Unified Command. The group forecasts the movement and behavior of spilled oil or chemicals, evaluates the risk to resources, and recommends protection priorities and appropriate cleanup actions.

The Coastal Protection and Restoration Division implements the Secretary of Commerce's natural resource trusteeship by protecting and restoring coastal habitats and resources affected by hazardous materials releases. This team works with the U.S. Environmental Protection Agency, other lead waste cleanup agencies and responsible parties through the CERCLA remedial process to insure that selected remedies are protective and that appropriate measures are implemented to restore our trust resources.

The Damage Assessment Center also implements our trustee responsibilities by carrying out natural resource damage assessments for releases of oil and hazardous substances. This team is also activated in case of ship groundings or other navigation incidents. The Center has primary responsibility for maintaining the natural resource damage assessment regulations under OPA and for providing guidance to pursuing damage assessments under these regulations. The Center's scientists and economists provide the technical foundation for these assessments and work with other trustees and responsible parties to restore injured resources.

For more information go to: <http://www.nos.noaa.gov/Programs/ORR.html>

III- The NOS Disaster Response Team

A few years ago, NOS has created a Disaster Response Team to provide assistance to States or other Federal agencies in case of natural or man-made disaster. This covers also plane crashes and other dramatic incidents. The response team is composed by representatives from all

the NOS program but at time can also involve personnel from other line offices such as the National Weather Service and will provide many different types of assistance. For example, in the case of a hurricane landfall, our group will assist the State that has declared the disaster and FEMA by providing rapidly well geo-referenced areal photographs (photogrametry) and coastal areas images of various kinds (e.g, remote sensing, hyperspectral, etc). Comparison of images taken before and after an event speed up the damage assessment and the emergency response and assist in the recovery phase of the response too. Immediately following a hurricane, our group also assist the State in evaluating the status of its harbors and assess the risk of bathymetric changes to the maritime industry, thus insuring the quick re-opening of harbors that are vital for our coastal economies

In the case of a plane crash (such as the TWA or the Alaska Airline crashes), our group has assisted the Coast Guards and the Navy in the search and rescue phase as well as in the recovery phase of the operations. To do so, NOAA provides not only vessels, planes and field personnel but also hydrodynamic measurements, back trajectories modeling, and weather information and forecasts.

The NOS Disaster Response Team has produced a Response Plan that explains the functioning of the team. This plan includes a special section that deals exclusively with ecological disasters such as red tides or anoxic events.

For more information go to: <http://www.nos.noaa.gov/Programs/>

IV- Ecological Forecasting

This represents a new NOS effort which is lead by the National Center for Coastal Ocean Science (NCCOS). This group has been created two and a half years ago to provide NOS and NOAA with the scientific and research support needed to protect our coastal environment. All our activities have been centered around “Integrated Assessments” which represent a formal bridge between science and management.

The integrated assessment includes four steps:

- Document the status and trends
- Describe the causes and consequences of the trends
- Predict future outcomes under various action scenarios
- Provide guidance for potential actions.

These four steps can be applied to assess the causes and the consequences of any type of disaster including ecological disasters such as red tides or anoxic episodes.

In the last few months, we have been successful in identifying and tracking harmful algal blooms and in forecasting their landfall in the Gulf of Mexico. As the result of this forecast, our group was able to send warnings to coastal managers in Florida that alert them of the incoming HAB event. This allowed them to respond better to the event by closing beaches to safeguard public health (respiratory problems and others) and by targeting their sampling strategy thus saving money to the tax payer.

We are presently working closely with coastal zone managers around the country as well

as with marine sanctuaries and estuarine research reserves managers and science coordinators to assess and understand what kind of forecasts they need. This constant communication and feed back is needed to guide us in our work. In the near future, this concept will also be presented to the academic community during special session of national and international conference in order to gather the support needed to fillout the gaps still present in our knowledge.

For more information, please visit: <http://www.nccos.noaa.gov/>

Conclusion:

These are the four areas that I wanted to present to you in the short time allocated for this presentation. But this is a very small sample of all the activities that are taking place in NOAA/ NOS and I would recommend that you visit our web site: <http://www.nos.noaa.gov/>. Thank you for your attention.