A Tale of Two Industries...and Hurricanes

Hurricanes are serious threats to citizens, the ecosystem and the national economy. The Gulf Coast has been devastated by several massive and expensive hurricanes in the recent past, including Katrina and Rita (2005), the one-two punch of Gustav and Ike (2008), and Isaac (2012). In addition to tragic losses of thousands of lives, Hurricane Katrina was the costliest hurricane in U.S. history, with insured losses of $46.6 billion.

The Gulf of Mexico Coastal Ocean Observing System (GCOOS), a stakeholder-based partnership of academic/research institutions, non-profit and for-profit private corporations, and local, state and federal agencies, provides important integrated ocean observations, data products, and outreach and education, in support of resilient Gulf of Mexico communities, ecosystems and economies. GCOOS is one of the eleven regional partners in the U.S. Integrated Ocean Observing System (IOOS).

Following are two examples of how enhancements to GCOOS' monitoring capabilities will help mitigate the impact of storms for two major industries in the Gulf.

The Eagle Centaurus unloads its crude-oil cargo at one of three Louisiana Offshore Oil Port buoys. Photo credit: AP File.

The Gulf of Mexico Coastal Ocean Observing System

Oil and Gas Industry

The oil and gas industry in the Gulf of Mexico provides 23% and 7% of the U.S. total crude oil and natural gas production, respectively, and 40% and 30% of the U.S. crude oil refinery capacity and natural gas processing plant capacity, respectively. When Hurricane Isaac entered the Gulf in 2012, nearly 35,000 offshore personnel were forced to evacuate, resulting in 23% of the nation’s oil and gas exploration and production to shut down, at an estimated cost of $130 million USD/day. Seasonal losses can reach $3.25 billion.

There remain critical gaps in both temporal and spatial measurements needed to develop refined storm track, intensity, and surge forecasts, information that will protect lives, refine evacuation windows, and minimize operational and supporting industry down-time.

2 U. S. Energy Information Administration, 2012

Some Members to the GCOOS

Aquatrak Corp.
Bureau of Ocean Energy Management
Chevron Texaco Energy Technology Co.
Dialytics, Inc.
Forristall Ocean Engineering, Inc.
Fugro GEOS
Horizon Marine
Lighthouse R&D Enterprises, Inc.
Liquid Robotics, Inc.
MacArtney Underwater Technology
Marathon Oil Co.
Naval Research Laboratory
NEOSgeosolutions
Nortek USA, LLC
QinetiQ North America
Radiance Technologies, Inc.
Raytheon Technical Services Co.
Science Applications International Corp.
Shell International Exploration & Production
SRI International
Tampa Bay PORTS
Teledyne ODI
Texas General Land Office
WeatherFlow, Inc.
Marine Commerce

The Gulf of Mexico has 12 of the top 20 U.S. ports by tonnage, providing 68% of the total U.S. tonnage\(^4\). In 2010, Texas and Louisiana ranked #1 and #2, respectively, in U.S. waterborne traffic\(^5\). Like the oil and gas industry, the shipping industry is vulnerable to hurricanes. These storms threaten the safety of mariners and cruise ship passengers, delay the offloading of product, and have ripple effects throughout the U.S. economy. For example, Hurricane Isaac forced the Port of New Orleans to shut down for four days in 2012, costing the U.S. more than $400 million dollars and causing ripple effects throughout the global supply chain\(^6\).

The Ports of South Louisiana and New Orleans are two of the top five in the world. Photo credit: Don Young.

Benefits of a Fully Built-Out GCOOS

- Significantly improved hurricane forecasts with enhanced environmental wind field and large-scale atmospheric pressure system information, refining the temporal and areal extent of evacuations;
- More accurate hurricane intensity forecasts with better upper ocean thermal structure and air-sea interface interaction data;
- More accurate surge and coastal flooding forecasts with a network of regional water level gauges and coastal radars throughout the Gulf, the latter also providing coastal current and wave information; and
- Real-time data collected in the storm path from fixed platforms and a fleet of gliders to drive National Weather Service numerical models and help inform offshore engineering standards.

GCOOS is Good for the Gulf

All data and products served from the GCOOS Data Portal (http://www.gcoos.org) are the result of information from numerous industry and regional partners. The same sustained core variables measured, aggregated, integrated and served freely provide numerous societal benefits, ranging from resilient communities to sustainable ecosystems and growing economies.

Hundreds watch as the USS Cole (DDG 67) is returned to the fleet following a 14-month repair effort in Pascagoula. Photo credit: David Nagle.

For more information on GCOOS or to become a Member, contact Executive Director, Dr. Barb Kirkpatrick at barb.kirkpatrick@gcoos.org or visit http://gcoos.org.