

## **A DATA INTEGRATION FRAMEWORK TO ENHANCE RESEARCH, MONITORING, AND ASSESSMENT OF COASTAL AND OCEAN CONDITIONS TO BENEFIT COASTAL COMMUNITIES**

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The NOAA Integrated Ocean Observing System (IOOS<sup>®</sup>) Program is developing a Data Integration Framework (DIF) for NOAA's Integrated Ocean Observing System. The DIF is being developed because there are no widely accepted approaches to facilitating integration and interoperation of data from diverse, distributed sources that meet the geographic coverage, vertical and horizontal resolution, measurement accuracy, and timeliness requirements of the many NOAA decision-support systems (models and other decision support tools or communities).

Utilizing the principles of IOOS<sup>®</sup> Data Management and Communications (DMAC), the DIF will achieve improved integration of selected data sets by identifying, adopting, and adapting community-developed standards and services for data content, metadata, quality control, and transport, and will deploy these services at selected data sources serving four decision-support tools. The DIF premise is that data integration and improved access to ocean-related data will increase the data's value and effectiveness in supporting decisions that impact coastal communities.

The selected decision-support tools perform research, monitoring and assessment of coastal and ocean conditions that impact coastal communities and the Nation. The initial four decision-support areas were selected because they address critical environmental issues aligned with NOAA mission goals: Coastal Inundation, Hurricane Intensity, Integrated Ecosystem Assessments, and Harmful Algal Blooms. The value and success of the resulting integration will be measured and evaluated by its ability to enhance the efficiency and/or effectiveness of these tools and the benefits to coastal communities.

A number of candidate projects were investigated and evaluated in each of the decision-support areas, and one was selected in each area. The anticipated benefits of the DIF to these decision-support tools and the coastal communities they serve were evaluated; the benefits will be measured after integration of DIF data into these tools (anticipated to be late FY09 or early FY10). Anticipated benefits include: a measurable increase in the spatial and temporal accuracy (skill) of Harmful Algal Bloom forecasts, improved accuracy of hurricane intensity and track forecasts, increased tools and availability of data for Integrated Ecosystem Assessment (IEA) developers, and improved

communication of real-time data to emergency managers to better inform their decisions in the timeframe before a hurricane's landfall.

By employing existing community standards to design and build the DIF, it is expected that the common data sharing infrastructure that is developed will be extensible to not only additional variables, data sources, and systems, but to the larger IOOS<sup>®</sup> community.

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