The Mid-Atlantic Regional Coastal Ocean Observing System (MARCOOS)

CLIENT:

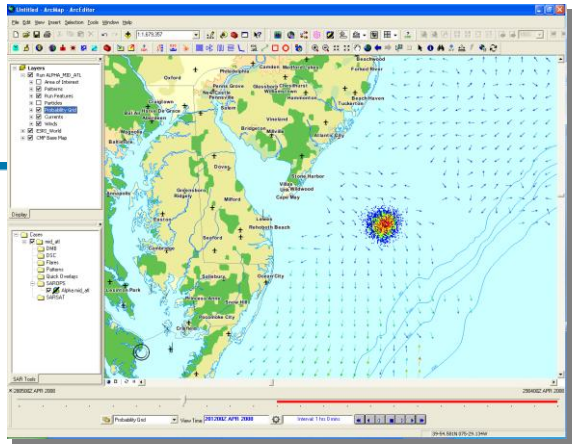
NOAA / U.S. Integrated Ocean Observing System (IOOS)

PROJECT #:

2007-089

PROJECT ELEMENTS:

- Integrated ocean observing and modeling
- Data management and communications (DMAC)
- Real-time Environmental Data Server (EDS)
- SAR data
- Marine forecasting integration



PROBLEM. PURPOSE.

The Mid-Atlantic Regional Coastal Ocean Observing System (MARCOOS) covers the coastal ocean from Massachusetts to North Carolina and this component of the U.S. Integrated Ocean Observing System (IOOS) aims to provide decision makers with highly accurate predictions of ocean and atmospheric conditions useful for a range of management issues, from search and rescue operations, to predictions of hurricane tracks, coastal flooding, energy demand and the fate of pollutant spills, to fisheries management.

SCIENCE. SERVICES. SOLUTIONS.

A sophisticated monitoring system using weather stations, satellites, coastal radar, and a fleet of robotic underwater vehicles is producing a three-dimensional view of real-time ocean conditions in the coastal Mid-Atlantic. ASA is the lead partner for the Data Management and Communications (DMAC) group and is responsible for DMAC strategies as well as the specific integration of data for search and rescue operations.

Four technologies are being used for the actual 'observing' or data collection: a network of automated coastal weather stations, satellite imagery, coastal ocean radar, and a fleet of undersea robotic vehicles. The weather network provides high resolution wind observations at the land-sea interface. Satellites provide a wide spectrum of ocean conditions, from surface temperature to biological activity. Coastal Ocean Radar provides real-time ocean surface conditions (current and wave height) that dictate the fate of objects or materials on the surface. Undersea robotic 'gliders' provide a variety of subsurface data throughout the water column as they glide downwards and then upwards along a programmed pathway that may be hundreds of kilometers long.

These data streams are processed into a near real-time four-dimensional model of surface and subsurface ocean conditions. This allows much more accurate predictions of the track of major weather events like hurricanes and nor'easter storms; conditions affecting sea breezes, navigation, and rip-tides; and biological features like harmful algal blooms or distribution of shellfish larva.

PRODUCTS. RESULTS.

The system is intended to augment emergency management, search and rescue, and pollution response efforts, as well as enhance management of natural resources through better prediction and management of energy consumption, fisheries stocks, beach and coastal sediments, and storm water.