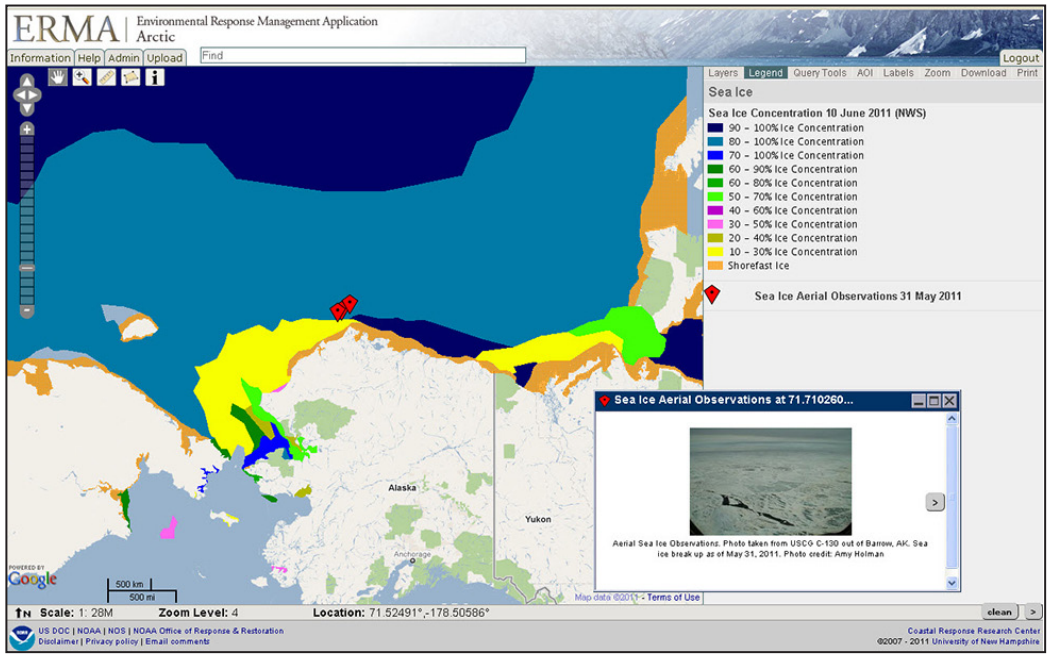
Environmental Response Management Application (ERMA®)

The Environmental Response Management Application (ERMA) is an online mapping tool that serves as a "one-stop shop" for environmental response information. ERMA integrates both static and real-time data, such as Environmental Sensitivity Index (ESI) maps, ship locations, weather, and ocean currents, in a centralized, easy-to-use format. It provides environmental responders and decision-makers ready access to relevant data for oil spill drills, planning, response, assessment, and restoration, as well as for other incidents and natural disasters. The system incorporates data into a fast, user-friendly Geographic Information System (GIS) that is accessible to a command post as well as people in the field and other locations. The site was developed by the National Oceanic and Atmospheric Administration (NOAA) and the University of New Hampshire with the Environmental Protection Agency, U.S. Coast Guard, and the Department of the Interior in a cross-agency effort. Originally developed for the Portsmouth, NH region, the ERMA prototype was tested during area response drills, where it proved to be both effective at providing data transparency and simple to operate for multiple users.

ERMA enables a user to quickly and securely upload, manipulate, export, and display spatial data, resulting in high-impact visualizations of information for solving complex environmental response and resource management issues. Non-GIS experts can use ERMA to view, manipulate, and analyze data on maps. The application is based on open source software (PostgreSQL/PostGIS, MapServer, OpenLayers) that ensures compatibility with other commercial and open source GIS applications. Because the ERMA platform is web-based, it can easily bring together various types of information, providing a common operational picture for all individuals involved in incident response operations and improving communication and coordination among responders and stakeholders. ERMA provides environmental resource managers with the information necessary to make informed decisions.

ERMA for Spill Response: Deepwater Horizon Response

The key to effective emergency response is efficiently pulling current science, information technology, and real-time observational data into the decision-making process. ERMA for the Gulf of Mexico remains the common operational picture for the Deepwater Horizon Unified Command, keeping decision-makers up-to-date on the latest response information. With over 11,000 layers of information to date, it is a robust system that allows access to a wide array of response-related data.



Arctic ERMA is one of the many regional ERMA projects. ERMA can display infrastructure and environmental information in layers useful for planning, response, and later assessment and restoration efforts.

ERMA is also being used to power a multi-agency Web site, GeoPlatform.gov/gulfresponse, which provides critical information to the public.

Regional ERMA Applications

Each Regional ERMA implementation includes the standard ERMA base data layers as well as specific content tailored to meet the needs identified by the regional stakeholders.

New England

By expanding and enhancing the Portsmouth, N.H., pilot project, NOAA created the ERMA-New England site to support the Spill of National Significance (SONS) exercise in March 2010. The US Coast Guard Academy and state partners from Maine, New Hampshire, and Massachusetts provided relevant spatial data for this effort. This site was intended to provide a common operating picture of the response effort to the various command posts during SONS, although NOAA has maintained and continues to operate this regional ERMA site.

Caribbean

The ERMA-Caribbean site is operational and was used during a regional spill drill and has been used to map small vessel groundings near coral reefs. Additionally, after the devastating 2010 earthquake in Haiti, ERMA developers collaborated with EPA, Telascience Lab, and OpenStreetMap.org to incorporate important humanitarian response information as well as to visualize the damage of this disaster.

Puget Sound

NOAA is also building an ERMA site for Puget Sound, WA, in support of its Climate Assessment and Proactive Response Initiative (CAPRI). CAPRI is intended to help prepare for, mitigate, and adapt to climate change-related contaminant impacts along the coast. CAPRI will link contaminant sources, climate scenarios, and vulnerability assessments within ERMA. ERMA will allow stakeholders and communities to visualize and prioritize increased risk of releases of hazardous waste and oil, as well as the need for adaptive habitat restoration due to climate change.

Arctic

NOAA's Office of Response and Restoration partnered with the Office of Coastal Resource Management to initiate Arctic ERMA. The Arctic ERMA project grew out of a strong desire by NOAA and interagency partners to focus on preparedness for Arctic emergency response due to changing ice conditions and increased energy and transportation activities.

Pacific Islands

The Pacific Islands ERMA is primarily focused on impacts from coastal storms and marine debris. The site will be used for assessments focusing on storm runoff, high energy impact waves, vessel groundings, and marine debris impacts. By incorporating these types of concerns, in addition to spill response, preparedness, and assessment, this ensures that ERMA can serve the diverse needs of stakeholders and NOAA partners in the region. The Pacific Islands ERMA also incorporated data for the 2011 Japanese earthquake and tsunami response.

ERMA supports NOAA's mission and national priorities of hazard-resilient coastal communities, integrated ecosystem assessments, integrated water resource services, and outreach and communication. A valuable tool that can be applied to any location, the ERMA initiative exemplifies NOAA's emphasis on bringing national and regional priorities together.

Further information

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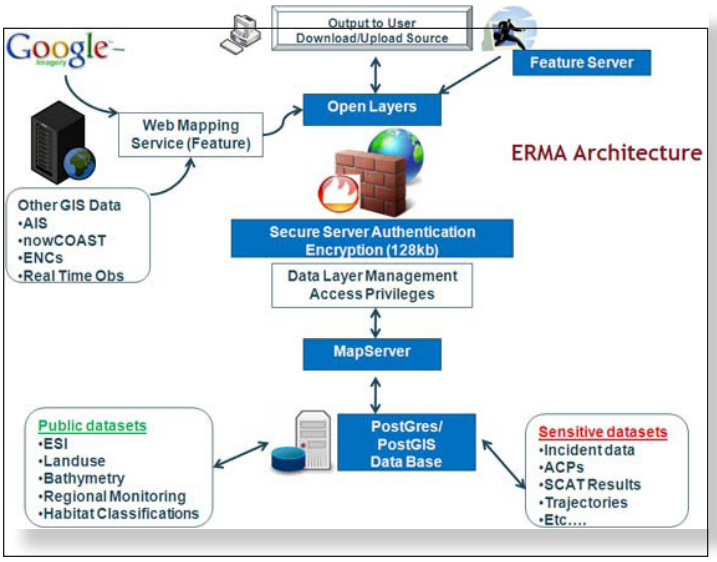

This diagram represents the basic software architecture and data flow for ERMA.

NOAA's Office of Response & Restoration—Protecting our Coastal Environment

For further information about NOAA's Office of Response and Restoration, please call (301) 713-2989 or visit our Web site at response.restoration.noaa.gov