Environmental Disasters Data Management

Coastal Response Research Center

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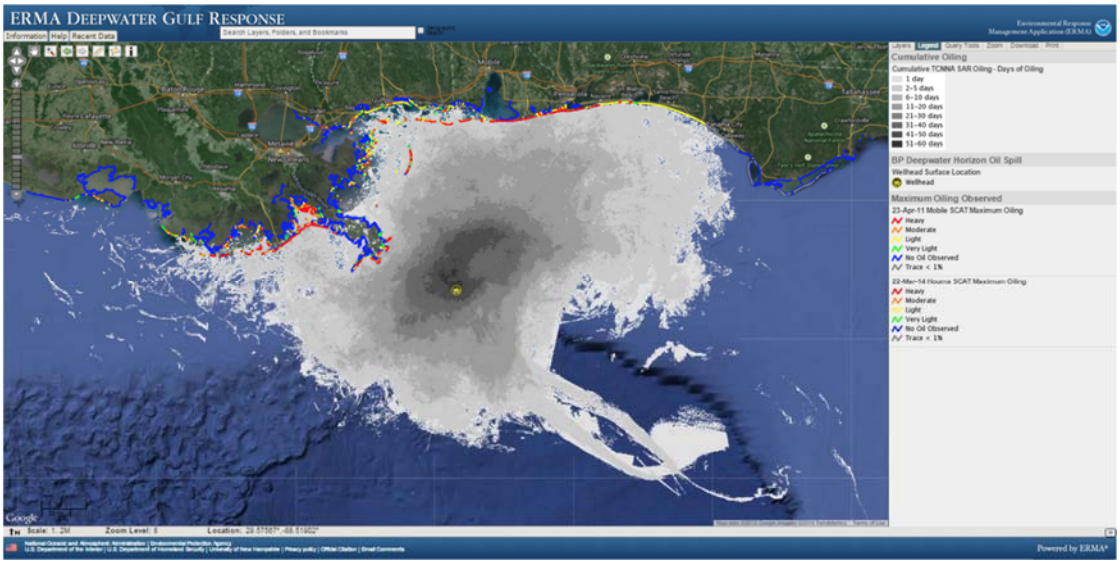
What is EDDM?

Environmental Disasters Data Management (EDDM) is a project created by a joint partnership between the National Oceanic and Atmospheric Administration (NOAA) and the University of New Hampshire's Coastal Response Research Center (CRRC) that seeks to improve the decision-making process when responding to environmental disasters by allowing data collected by a variety of organizations to be brought together and analyzed. A steering committee, which includes members from government, academia and research organizations, industry, and NGOs, provides oversight for this project. Three working groups have been organized to develop and implement specific goals, strategies, and tasks.



Impact of Deepwater Horizon oil spill on the Gulf of Mexico (gray=days of oiling) as evidenced by data available in ERMA (Environmental Response Management Application). Photo courtesy of NOAA/Department of Commerce

What are the Working Groups?

- ***Common Data Model:*** Document what existing data models are being used across disciplines. Find similarities between them and assess existing gaps. Inventory and identify ways for these data systems to be interoperable.
- ***Field Protocols and Training***: Inventory existing resources and equipment for field data collection and identify gaps. Provide academics, NGOs, and others with sampling protocol recommendations to facilitate the utility of their data.
- ***Gold Standard:*** Identify data dictionaries, critical data types for baseline data, and criteria to evaluate data and procedures (for QA/QC, data transport, security, and data use analytics) that can be considered a "Gold Standard". Identify functionalities needed during a disaster for information management and decision support tools and assess where they are currently located and identify gaps. This also includes consistent vocabularies, interoperability, and QA/QC.

For more information:
www.crrc.unh.edu/EDDM

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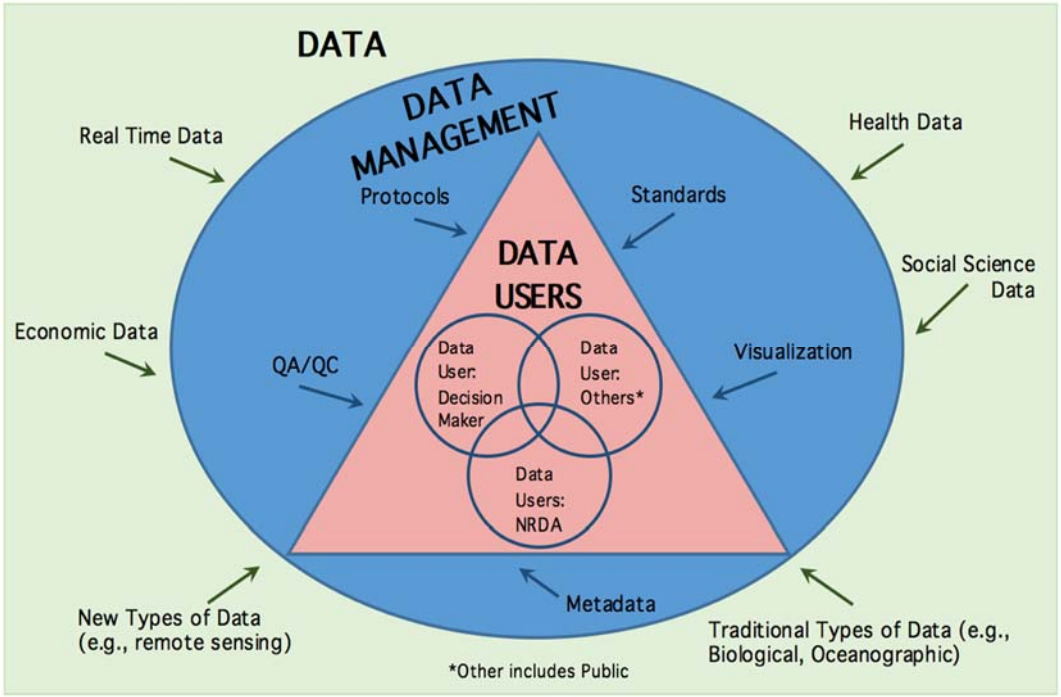
The Conceptual Goal

Pictured below is the ideal process for data management that EDDM is working towards for future response to environmental disasters. The first step would be to collect disaster-relevant data from a variety of sources, as shown on the outside of the circle. From there, the data is assessed using the "Gold Standard" to make sure that the data follow the same format, as shown in the larger circle. Finally, the data is readily available in an organized manner so that it is useful for observation and comparison by data users ranging from the public to decision-makers before, during and after the disaster, shown by the intersecting circles.



Objectives

- Engage the community of data users, data managers, and data collectors to foster a culture of applying consistent terms and concepts, data flow, and quality assurance and control.
- Provide oversight in the establishment and integration of foundational, baseline data collected prior to an environmental event that is based on user requirements.
- Provide best-practice guidance for data and metadata management.
- Suggest infrastructure design elements to facilitate quick and efficient search, discovery and retrieval of data.
- Define the characteristics of a "gold standard" data management plan for appropriate data sampling, formatting, reliability and retrievability.

Why is EDDM important?

During a disaster, it is common for multiple entities (federal & state agencies, NGOs, academia, & responsible parties) to collect data to characterize environmental and health effects. The data can vary significantly with respect to quality objectives, collection methods, data management, and access. These differences can result in limitations for use of the data including comparing results, expanding the range of data, or making decisions. For example, hundreds of millions of dollars' worth of information was collected for the Gulf of Mexico Deepwater Horizon oil spill. Without a common data model, much of the data is difficult to assess and use to understand the damage done, and restoration of the environment. By streamlining the data management process, and enabling quality data to be included and assessed together, response to environmental disasters can be faster, more efficient, and effective.

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