

Environmental Disasters Data Management (EDDM) Update

February 3, 2016



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Project Leads

- EDDM NOAA Co-Lead: Amy Merten, NOAA ORR, ARD, Chief Spatial Data Branch
- EDDM NOAA Co-Lead: Sharon Mesick, NOAA National Centers for Environmental Information
 - Russ Beard retired in Fall 2015
- EDDM Facilitator: Nancy Kinner, Coastal Response Research Center, University of New Hampshire



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Welcome and Introductions

- EDDM Working Group Speakers:
 - Julie Bosch, NOAA National Centers for Environmental Information
 - Amy Merten, NOAA ORR, ARD
 - Ben Shorr, NOAA ORR, ARD
 - Richard Knudsen, Florida Fish and Wildlife Research Institute



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Presentation Overview

- EDDM Goals
- EDDM Workshop and Report
- EDDM Steering Committee
- EDDM Working Groups
 - Objectives, Outcomes, and Status



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EDDM Overall Goals

- **Foster communication** between collectors, managers, and users of data (e.g., scientific and research communities, industry, NGOs, and government agencies)
- **Identify and establish best practices** for orderly data collection, storage, and retrieval



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EDDM Objectives

- Engage data users, managers, and collectors to foster a culture of applying **consistent terms and concepts, data flow, and QA/QC**
- Provide oversight in the establishment and integration of **foundational, baseline data** collected prior to an event, based on user requirements



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EDDM Objectives, cont'd

- Provide best-practice **guidance for data and metadata management**
- Suggest infrastructure design **elements to facilitate quick and efficient** search, discovery, and retrieval of data



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EDDM Objectives, cont'd

- Define the characteristics of a **"gold standard" data management plan** for appropriate data sampling, formatting, reliability, and retrievability
- Deliver conclusions to end users to **promote protocols, practices, and recommendations**



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EDDM Workshop

- September 16 - 17, 2014
- Participants: industry, government, NGOs and academia
 - Regional, national, and international levels.
- Disciplines: human health, environmental health, and informatics
- “Environmental disasters” defined as floods, earthquakes, hurricanes, tornados, and discrete pollution events (e.g., oil spills).



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Workshop Recommendations

- Use Existing Resources and Tools
- Review Federal Open Data Policy
- Compile Background Data
- Work Toward a Common Data Model and Interoperability
- Identify and Answer Fundamental Questions
 - User Centered Design
- Identify Data Dictionaries



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Workshop Recommendations, cont'd

- Include NGO and Academic Data
- Incorporate Data Management Plans
- Include Data Managers in Response
- Address Planning and Training
- Work Across Disciplines
- Perform Outreach and Prepare Outreach Materials



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EDDM Steering Committee

- Co-Lead: Amy Merten, NOAA, OR&R
- Co-Lead: Sharon Mesick, NOAA NCEI
- Randy Clark, NOAA NCCOS
- James Gibeaut, Harte Research Institute, GRIIDC
- Nancy Kinner, Coastal Response Research Center, UNH
- Michael LeVine, OCEANA
- Anthony Lloyd, U.S. Coast Guard
- Michael McCann, Monterey Bay Aquarium Research Institute (MBARI)
- Aubrey Miller, National Institutes of Health
- Gary Petrae, Bureau of Safety & Environmental Enforcement (BSEE)
- Steve Ramsey, Social & Scientific Systems/NIH GuLF Study
- Pasquale Roscigno, Bureau of Ocean Energy Management (BOEM)
- Stephanie Sneyd, Chevron
- Evonne Tang, National Academy of Science
- Jason Weick, Coastal Waters Consortium/LUMCOM



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EDDM Working Groups

- Field Protocols and Training
- Common Data Model
- Gold Standard (including vocabularies, interoperability, QA/QC, baseline data)



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Working Groups

- CRRC is facilitating all working groups
- Calls via WebEx
- Document storage and sharing in Google Drive
- Groups reviewed workshop recommendations and determined objectives, outcomes, and schedule
- Currently, each group is well into development of their first objective



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Field Protocols and Training Working Group

- Kim Anderson, Oregon State University
- Shawn Fisher, USGS
- Amy Merten, NOAA ORR ARD, Spatial Data Branch
- Greg Minnery, Chevron
- Steve Ramsey, Social & Scientific Systems/NIH GuLF Study
- Carol Rice, University of Cincinnati, Environmental Health
- Laura Weems, US Army Corps of Engineers



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Field Protocols and Training

- Objective 1: Inventory existing resources for field data collection. Document what is available and gaps.
 - Outcome: Compiled list of existing resources and gaps(may include field protocols, training materials, agreements (blanket IRBs, access permits, and others), websites, questionnaires, citizen science protocols, personal monitoring)
 - Schedule: 6 months



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Field Protocols and Training Status of Objective 1

Table of field data collection resources is being compiled:

- Resource name, description, and type
- Publishing agency/organization, lead author, and date
- Reference citation
- Matrix and parameters covered - includes human and environmental (abiotic and biotic)
- Sampling regime
- Type of disaster
- Equipment covered
- Hyperlinks
- Any documents the resource supersedes
- EDDM contact person for each resource



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Field Protocols and Training

- Objective 2: Inventory existing equipment, devices, and monitors for field data collection. Document what is available and gaps.
 - Outcome: Compiled list of existing tools (including stationary monitors - pre existing and staged, field equipment, personal monitors - badges etc.) and gaps
 - Schedule: 6 months concurrent with objective 1



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Field Protocols and Training

- Objective 3: Apprise academics and NGOs of sampling protocols they should use to get data included.
 - Outcome: Sampling protocol(s) for NGO/Academic data that can be shared
 - Schedule: After completion of Objective 1 and 2, ongoing



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Field Protocols and Training

Longer Term Objectives

- Objective 4: Compile existing planning and training resources. Identify gaps.
- Objective 5: Develop recommendations for planning and training.
- Objective 6: Work across disciplines in many or all of group's activities.
- Objective 7: Develop outreach materials and perform outreach.



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Common Data Model Working Group

- Steve Delgreco, NOAA National Climatic Data Center
- Dan Hudgens, Industrial Economics, Inc
- Mike McCann, Monterey Bay Aquarium Research Institute
- **Ben Shorr, NOAA ORR ARD, Spatial Data Branch**
- Fred Sparks, Chevron
- Mark Stenzel, Exposure Assessment Applications, LLC
- Scott Thompson, Gulf Research Program, NAS



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Common Data Model

- Objective 1: Document what specific data models, portals (data sets), and web services people are using across different disciplines and compile details regarding each one (portal name, description, type of data accessible, data base compatibility, url, key contacts).
 - Outcome: Spreadsheet of data systems pertinent to environmental disasters
 - Schedule: 3 months



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Common Data Model - Status of Objective 1

Table of data systems is being compiled, which includes:

- Portal name, purpose, and location
- Category (e.g., human health, weather, shipping traffic)
- Frequency of data updates
- Hardware
- Application software
- Webserver
- Database
- url
- Priority for integration
- EDDM contact person for each system
- Use restrictions



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Common Data Model

- Objective 2: Crosswalk existing data models to find similar elements.
 - Outcome: Identify redundancy, compatibility across data models
 - Schedule: 6 months after objective 1 completed



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Common Data Model

- Objective 3: At all levels (field collection, synthesis, analysis) inventory/identify existing ways to be interoperable.
 - Outcome: Make recommendations where we can leverage approaches to interoperability and security.
 - Schedule: After objective 2 completed, will take 3 months



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Common Data Model

Long Term (requires funding):

- Objective 4: Find and build connections to create something more extensive and broad. Unify models that exist. Create a virtual infrastructure connecting the nodes. Demonstrate interoperability of the databases.



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Gold Standard Working Group

- Julie Bosch, NOAA, NCEI
- Linda Cook, Exponent
- Felimon Gayanilo, Harte Research Institute/GOMRI
- Jim Gibeaut, Harte Research Institute/GRIIDC
- Matt Howard, GCOOS/GOMRI/GRIIDC
- Ann Jones, Industrial Economics, Inc
- **Richard Knudsen, Florida Fish and Wildlife Research Institute**
- Ben Shorr, NOAA ORR ARD, Spatial Data Branch
- Trish Stewart, Stewart Exposure Assessments, LLC
- Jason Weick, Coastal Waters Consortium/LUMCON
- Sarah Wright, BP (consultant)



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Gold Standard

- Objective 1. Identify the functionality needed for information management and decision support tools for different disaster types and where these functionalities are located (e.g., IPAC, HAZUS, ERMA) or missing (gaps).
 - Outcome: Report including a series of matrices of tool vs. disaster type for different disaster scenarios
 - Schedule: 3 months



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Gold Standard Status of Objective 1

Table of functionalities needed during disasters is being compiled, which includes:

- Functionality and why it is needed
- Does it exist? Where?
- Is it a gap?
- Examples of key data types
- Type of disasters it is needed for



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Gold Standard

- Objective 2. Identify criteria to evaluate data, (tools?), and procedures (for QA/QC, data transport, security, and data use analytics) that can be considered a Gold Standard. Criteria developed based on lessons learned from past experience.
 - Outcome: List of criteria, subdivided depending on types of data, methodology, disaster. Develop an evaluation worksheet - of criteria and ranking/result.
 - Schedule: 6 months



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Gold Standard

- Objective 3. Identify critical data types for baseline data for different environments and types of disasters.
 - Outcome: Report including a series of matrices of data type vs. disaster type for different environments
 - Schedule: 1 year, in parallel with Objective 1 (with input from other teams)



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Gold Standard

- Objective 4. Identify Definitions of Terms (Data Dictionaries).
 - Outcome: Survey different data dictionaries as a function of environmental disaster type and provide access to them. Identify terms that may need to be mapped (cross-walked) for different types of disasters.
 - Schedule: 1 year consecutive with others



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Gold Standard

Long Term Objectives

- Identify strategies to assess the accuracy and reliability of the data. This may cover the range of formal statistical analyses of uncertainty to development of subjective estimates of confidence.
- Assess and compile existing baseline/background data sets and what it will take to make them interoperable.
 - Outcome: One approach discussed was to establish data sets and see if available, choose a region - determine what data sets are required and what available, data sets brought together in common network.
 - Schedule: This is long term goal, with input from other groups



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Questions or Comments?

EDDM information available at:
<http://crrc.unh.edu/EDDM>



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