

General Counsel for Natural Resources • Office of Habitat Conservation • Office of Response and Restoration


DARRP

DAMAGE ASSESSMENT, REMEDIATION, & RESTORATION PROGRAM

DIVER and ERMA: Data and Visualization

DWH Long Term Data Management June 7-8, 2017


Ben Shorr (presenting)
Dr. Amy Merten, Marti McGuire, Mike Peccini, Jamey Redding
Nick Eckhardt, Jay Coady, Michele Jacobi, George Graettinger



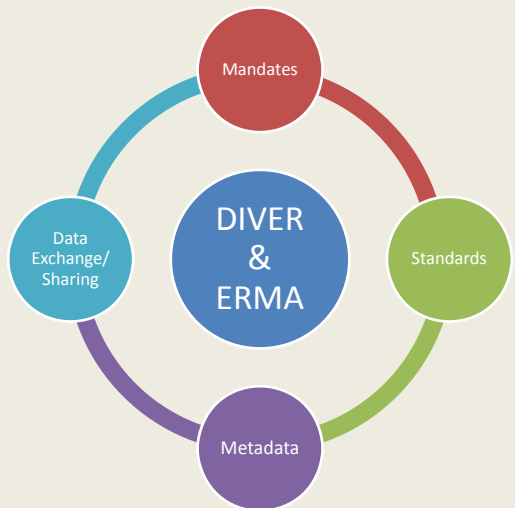
NOAA - NOS - Office of Response & Restoration
Assessment & Restoration Division: Spatial Data Branch

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DIVER & ERMA (Data & Visualization)



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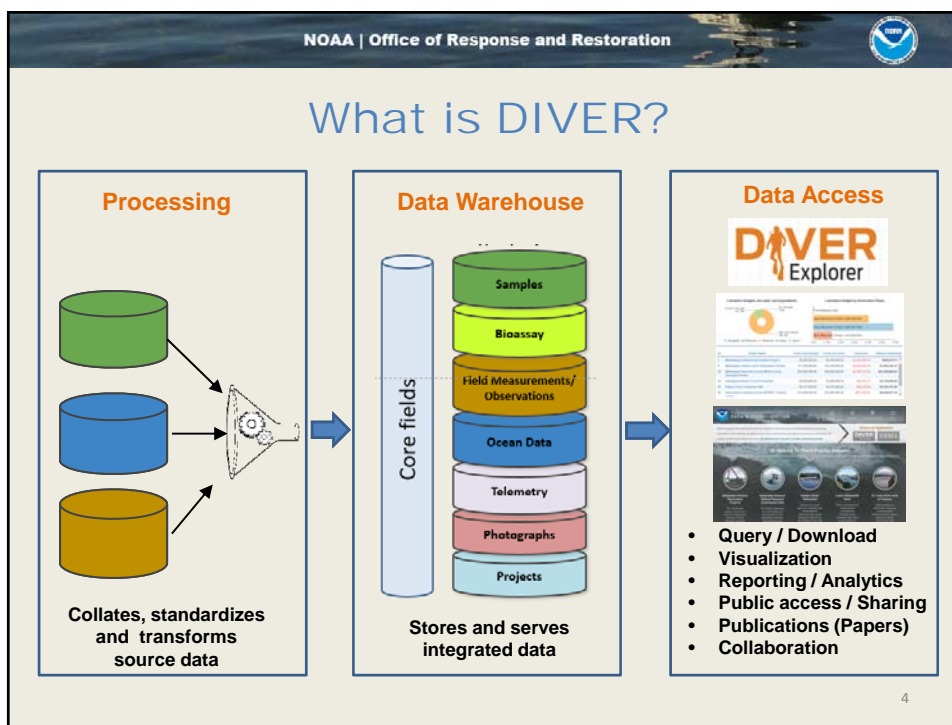
Overview


DIVER

(Data Integration, Visualization, Exploration, and Reporting)

DIVER is a **data warehouse, query tool, and collaboration** application. The DIVER approach **integrates standardized** datasets so users can query across data holdings and download **information and results**.

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DIVER: Key Capabilities

Data Integration and Sharing

- **Integrate** and **standardize** data from multiple sources (e.g. field-collected data, laboratory data, monitoring data, analysis)
- **Query, Export, Reporting** tools
- Federal **data sharing requirements** (e.g. Open Data Policy; PARR; ISO Metadata)


Secure

- Federal **IT Security** Requirements

Scalable/Flexible

- Evolving application to meet evolving needs


Cloud-based Infrastructure



DIVER Explorer is a querying tool that pulls together a broad array of environmental and restoration project data from numerous sources. The tool allows users to search, filter, and download data of interest.


Go Directly to a Regional DIVER Explorer


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DWH Damage Assessment Data


- **20,000** trips for field data collection
- **1 million** field data forms and related electronic files
- **100,000** water, tissue, oil and sediment samples
- **15 million+** database records
- **30 terabytes** of data
- Data Referenced in many Publications/Journals


Shoreline Data 


Marsh Assessment 


Oyster Collections 

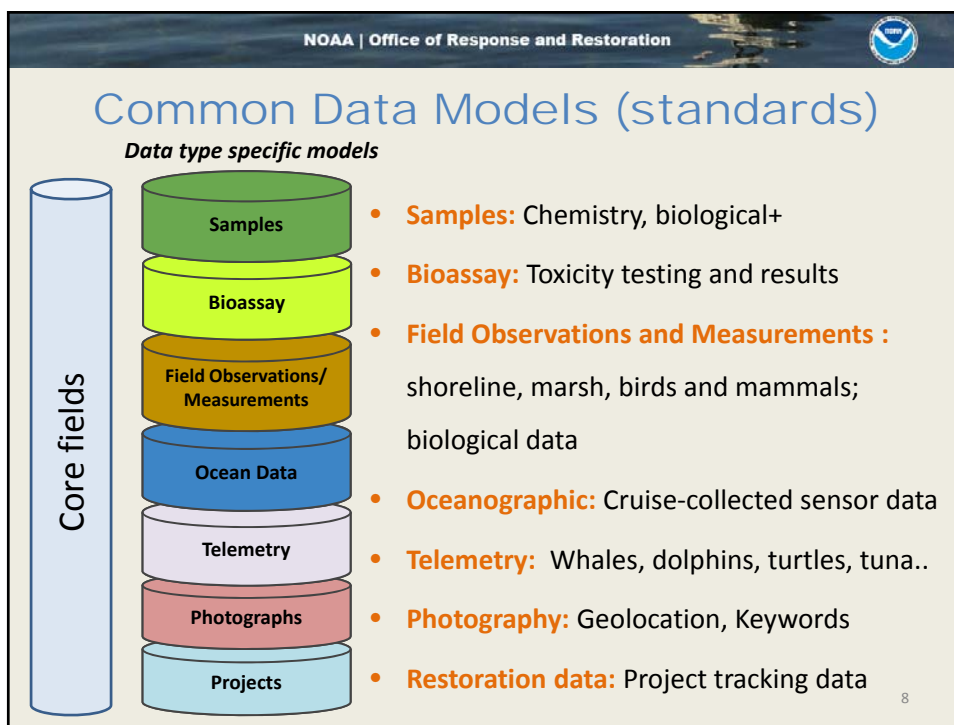
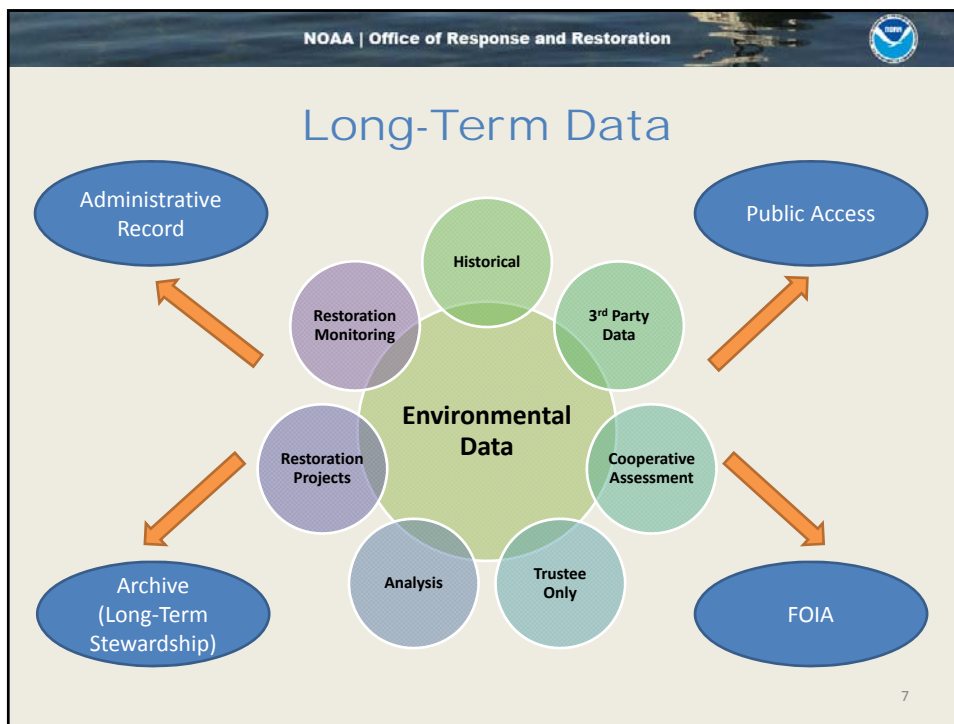
Telemetry Data 

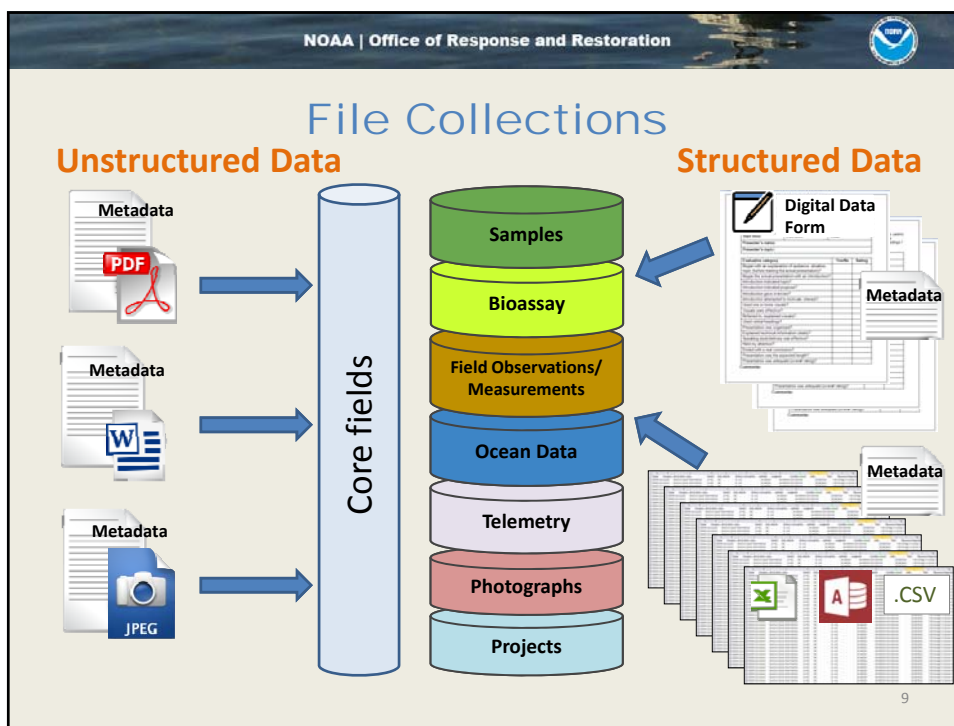
Toxicity Data 

Water Column 

Seafood Safety 

Marine Mammal & Turtle Assessment 





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National DIVER Portal Overview

SELECT A WORKSPACE

- Great Lakes
- Northwest
- Northwest & Arctic
- Southwest
- A. Bay Long Incident LA
- A. Deepwater Horizon
- Alabama TIG
- DWH File Collections
- DWH Handoff Hostfiles
- Equipment and Sample Forms
- Florida TIG
- Louisiana TIG
- Mississippi TIG
- Open Ocean TIG
- Regionwide TIG
- Restoration Plan Tracking
- Texas TIG
- Toxicity Data
- Treasure Council
- Demonstration
- A. Green Canyon 248
- A. Housley Canyon 919 (HESOPS)
- A. SE Brown Tracking
- A. South Alabama Mercury NINDAR
- A. Taylor Energy
- User Workspaces
- Southwest & Pacific Islands

Welcome to the DIVER Portal. Select an option in the workspace navigation menu to access collaboration features and files specific to your region or activity. For additional information on using the site and functions, please see the help materials located in the About the Data and Help menus.

RELEASE NOTES

BACKGROUND

DIVER EXPLORER

RELATED TOOLS

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National DIVER Portal Overview

Login environment; data sharing status

Help documents, data details and data management tools including OR&R Activities Database

Quick Access to query data by Regions

Quick Access to ERMA, online mapping and visualization tool

The Portal is organized into **Regions**, **Activities** and **Workspaces**. Regional pages provide DIVER Explorer filtered to regional data and case-specific data based on user access. Workspaces can contain File Collections, collaboration and data entry tools.

<https://portal.diver.orr.noaa.gov>

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DIVER Portal: Restoration

Project Details

Lake Hermitage Marsh Creation - NRD Early Restoration Project

Project ID: 4 | Project Status: In Progress

Description: The Lake Hermitage Marsh Creation - NRD Early Restoration Project involves the creation of marsh within a project boundary...

Trustee Implementation Groups: Louisiana

Implementation Trustee(s): Louisiana Coastal Protection and Restoration Authority (CPRA)

Restoration Type(s): Wetlands

Restoration Phase: Early Restoration Phase 1

Technical Implementation Groups (TIGs) have customized content and group specific permissions

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Public DIVER website

Public website for Assessment & Restoration data

<https://www.diver.orr.noaa.gov>

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DIVER Explorer: Query Result

DIVER Explorer is a query tool. Filter, map and download. Dashboard display.

Category	Count	Percentage
On Progress	279	21.42%
Complete	279	21.42%
Monitoring/IRM	479	37.14%
Terminated	479	37.14%

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DIVER: Data Access

DIVER EXPLORER / DEEPWATER HORIZON

File Collection for Collection ID B08F062D967
The following files are associated with the data collection:

Document Type	File Name
Observation Field Data Form	2011_0527_Obs_Sara.DM
Chain of Custody	2011_0527_Obs_Sara.DM
GPS File (gpr)	2011_0527_Obs_Sara.DM
GPS File (gpr)	2011_0527_Obs_Sara.DM
Original Image Files (zip)	2011_0527_Obs_Sara.DM
Photo Logger Document	2011_0527_Obs_Sara.DM
Other Document	2011_0527_Obs_Sara.DM
Readme Notes	2011_0527_Obs_Sara.DM

NRDA Chain of Custody Form
Deepwater Horizon/MC252 Non-Analytical Sample Data

Work File ID: 2011_0527_Obs_Sara.DM
Observation Team: 13
Number of Pages: 13
Type of Observation: (See key) SAV

Date of Observation: 5/27/2011

Observer: M. Stewart on Day
Location: Myrtle Grove, Myrtle Grove, LA
Status: Bayou (General)
Tide: Perch (MGS24)
Tide: Tide

Observer: M. Stewart on Day
Location: Myrtle Grove, Myrtle Grove, LA
Status: Bayou (General)
Tide: Perch (MGS24)
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Tide: Tide

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Dashboards

DIVER Portal

Red drum (*Sciaenops ocellatus*): embryo; 24 hr
Slick A HEWAF
Test: 201

NOAA's Deepwater Horizon Trustee Toxicity Testing Program Results

Export Data

Species: Common = "Test 201"

Select Download Types: All

Results

- Treatment mean results for each available time point and endpoint (bio_mean.csv)
- Individual replicate results for each available time point and endpoint (bio_rep.csv)
- Effect and Lethal Concentrations (ECLCs) from modeled concentration-response curve (bio_stat.csv)
- Details of modeled concentration-response curve (bio_stat_lethal.csv)
- Matched toxicity and analytical chemistry results (bio_chem.csv)
- Analytical chemistry and calculated results (lab_chem.csv)

Supplemental Data

- Field-collected sample information (field_samp.csv)
- Test conditions (test_cond.csv)
- UV exposure doses (uv_doses.csv)
- Water quality measurements (water_quality.csv)
- Chemistry notes (chem_notes.csv)

Metadata
All reports contain the following files for selected studies: Study Notes (study_notes.txt), Study References (study_ref.csv), Field Definitions (field_definitions.csv), Qualifier Definitions (qual_definitions.csv), and Metadata (DWH_Tox_ISO19115.html and DWH_Tox_ISO19115.xml).


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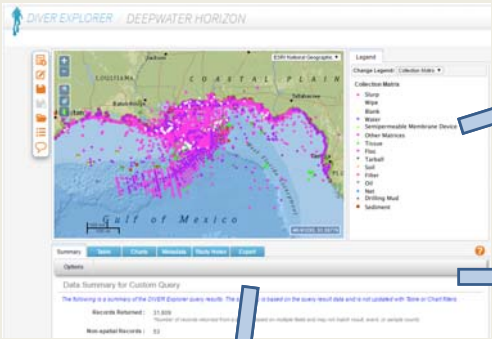
Data Access & Sharing

- **Explorer Query Tool**
 - Environmental and Projects data
 - New Search tool
- **Data Services**
 - ERDDAP
 - NCEI Archive
- **DIVER Data Specification**
 - Common Data Models
 - Data Templates

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DIVER Explorer: Export Packages



The screenshot shows the DIVER Explorer interface with a map of the Gulf of Mexico. The map displays data points in pink and purple. The interface includes a legend, a search bar, and a data summary section. Arrows point from the interface to various export options:

- Mapping/GIS**: Includes icons for Excel, KML, and ERMA®.
- Metadata & Study Notes**: Includes the ISO logo and a document icon.
- Data Packages**: Includes icons for Excel, ISO, and a document icon.
- Expanded Data Services**: Includes the ERDDAP logo and the text "Easier access to scientific data".

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Project details, activities & status



Locations



Monitoring

Restoration Data

- **\$8.8 billion** settlement paid out over **15 years**
- Funds allocated to **7 Trustee Implementation Groups (TIGs)** across **15 resource types**
- Projects will be implemented by **17 trustee agencies**
- Commitment to **data-driven adaptive management**



Budget, receipts & expenditures



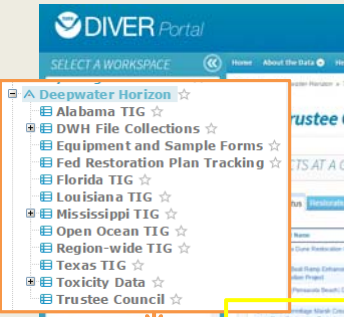
Environmental compliance



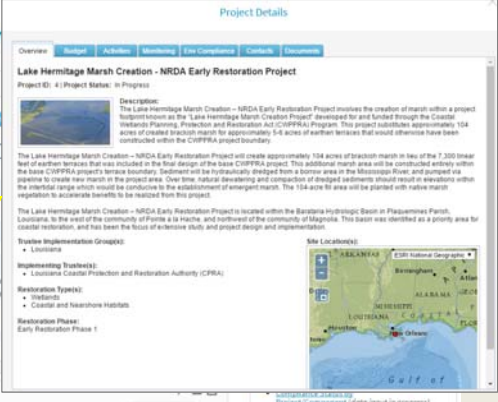
Accomplishments

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DIVER Restoration Portal



Technical Implementation Groups (TIGs) have customized content and group specific permissions



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Gulf Spill Restoration Website (Public)

Gulf Spill Restoration Projects

Restoration projects in the Gulf States approved by the Deepwater Horizon MDA Trustees.

Deepwater Horizon Trustee Council: DOI, EPA, NOAA, USFWS, AL, FL, LA, MS, TX

All Projects: FL, AL, MS, LA, TX, Open Ocean, Regionwide

Lake Hermitage Marsh Creation - NRDA Early Restoration Project
 Project ID: 4 | Project Status: In Progress

Description:
 The Lake Hermitage Marsh Creation - NRDA Early Restoration Project involves the creation of marsh within a project budget known as the "Lake Hermitage Marsh Creation Project" developed for and funded through the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Program. This project substitutes approximately 184 acres of created brackish marsh for approximately 5-6 acres of earthen terraces that would otherwise have been constructed within the CWPPRA project boundary.

The Lake Hermitage Marsh Creation - NRDA Early Restoration Project will create approximately 104 acres of brackish marsh in lieu of the 7,300 linear feet of earthen terraces that was included in the final design of the base CWPPRA project. This additional marsh area will be constructed entirely within the base CWPPRA project's terrace boundary. Sediment will be hydraulically dredged from a borrow area on the Mississippi River, and pumped via pipeline to create new marsh in the project area. Over time, natural desilting and compaction of dredged sediments should result in elevations within the intertidal range which would be conducive to the establishment of emergent marsh. The 104-acre area will be planted with native marsh vegetation to accelerate benefits to be realized from this project.

The Lake Hermitage Marsh Creation - NRDA Early Restoration Project is located within the Barataria Hydrologic Basin in Plaquemine Parish, Louisiana, to the west of the community of Plaquemine, and southward of the community of Magnolia. This basin was identified as a priority area for coastal restoration, and has been the focus of extensive study and project design and implementation.

Trustee Implementation Group(s):
 • Louisiana

Implementing Trustee(s):
 • Louisiana Coastal Protection and Restoration Authority (CPRA)

Restoration Type(s):
 • Wetlands
 • Coastal and Nearshore Habitats

Restoration Phase:
 Early Restoration Phase 1

Site Location(s):

NOAA | English (United States)

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ERMA (Environmental Response Management Application)

The Environmental Response Management Application (**ERMA**) is an online geographic information system (GIS) and visualization tool that allows you to **view** response, assessment, and restoration **mapping layers in context** with other environmental information

ARCTIC
 PACIFIC NORTHWEST
 GREAT LAKES
 ATLANTIC
 GULF OF MEXICO
 PACIFIC ISLANDS
 CARIBBEAN ISLANDS

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Gulf of Mexico ERMA

- Standard layers; specialized by region/state
- Public access; Login to view privileged data and additional tools

The screenshot shows the ERMA Gulf of Mexico web application. At the top, there is a navigation bar with 'Information', 'Help', 'Recent Data', 'Admin', and 'Upload'. A search bar is located at the top right. The main map area displays the Gulf of Mexico coastline with various data layers overlaid. A 'Map Tools' box highlights navigation icons. A 'Legend' box highlights the search bar and legend controls. A 'Layers' box highlights the layer list on the right, which includes categories like Background Layers, Admin Boundaries, Bathymetry, Environmental Quality, Marine Debris, Imagery, Natural Resources, Navigation, Public Safety, Response Planning, Weather, Incidents, Deepwater Horizon, ERMA Drawings, and Temporary Layers. A 'Bookmarks' box highlights the bookmark view controls at the bottom of the layer list. The bottom of the screen shows the scale (1:12,330,070), zoom level (5), and location coordinates (27.0422, -84.5861).


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Gulf of Mexico ERMA

Environmental data focused on the Gulf of Mexico specifically in support of Response, Assessment and Restoration efforts


This screenshot shows a more detailed view of the ERMA Gulf of Mexico interface. The map area is zoomed in to show specific data points along the Florida coast. The 'Layers' panel on the right is expanded to show 'Active View: Gulf of Mexico GAPS Analysis & Longterm Monitoring (0/0)'. Under the 'Restoration' category, several layers are checked, including 'Ocean Conservancy GAP Analysis', 'Shallow and Mid-water Corals', 'East and West Flower Garden Banks Coral Surveys', 'Southwest Area Monitoring and Assessment Program (SEAMAP)', 'Gulf of Mexico Reef Fish Survey (082)', 'Flower Garden Banks National Marine Sanctuaries - Stetson Bank Coral Monitoring', 'Florida Keys National Marine Sanctuaries Coral Reef Evaluation and Monitoring Project (NOAA) (298)', and 'Florida Keys National Marine Sanctuaries Acropora Corals UNC Wilmington NOAA Southeastern (169)'. The 'Northern Gulf of Mexico Protected Area Summary, Coral (NMPFS)' layer is also visible. The bottom of the screen shows the scale (1:6,166,950), zoom level (6), and location coordinates (22.7992, -80.1037).

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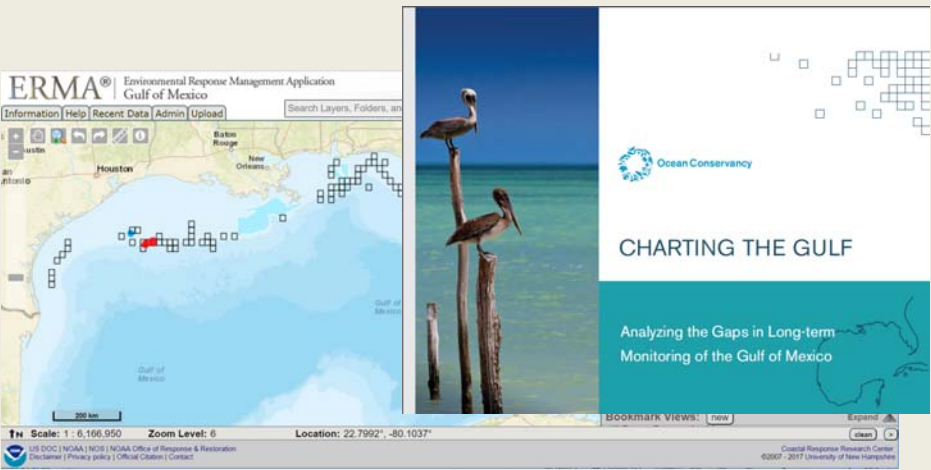
Gulf of Mexico ERMA

- Response spatial data
 - Common Operating Picture
- Natural Resource Damage Assessment data
 - Programmatic Damage Assessment & Restoration Plan
- Environmental resources and habitat
- Monitoring and Restoration information
 - Oceans Conservancy Data Gaps Analysis

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Gulf of Mexico ERMA



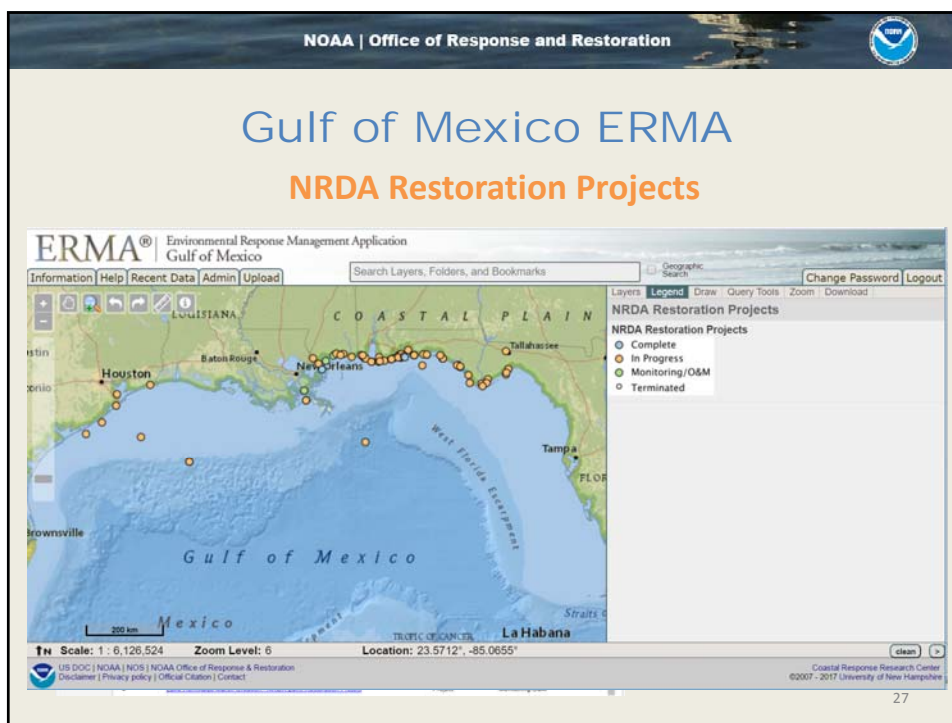
ERMA® Environmental Response Management Application
Gulf of Mexico

Information Help Recent Data Admin Upload Search Layers, Folders, and

Scale: 1 : 6,166,950 Zoom Level: 6 Location: 22.7992°, -80.1037°

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ERMA Data Exchange

- Opportunity to display and distribute spatial data (**projects, environmental, restoration**) in Gulf of Mexico ERMA:
 - State, Federal, Tribal, Non-governmental organizations, Academic
- Provisional (in process, under review) and Public data

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Gulf of Mexico ERMA

Standards


- Web Mapping services and
- spatial data files (shapefile)

Metadata

- ERMA ♥ Metadata.
- Flexibility to include notes (summary metadata) and FGDC or ISO Metadata files

- wms internal
- wms internal
- wms external
- georss internal
- georss external
- arcgis rest
- animation
- xyz external
- kml external
- annotation external
- drawing
- google
- EsriGeoJSON
- wmts external
- wms local

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Thanks!

Questions at the end?

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