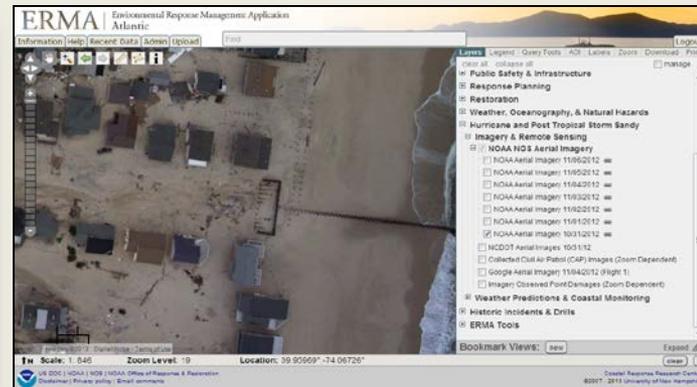
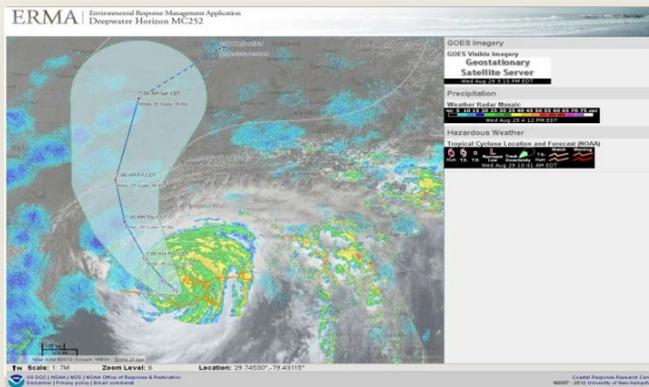


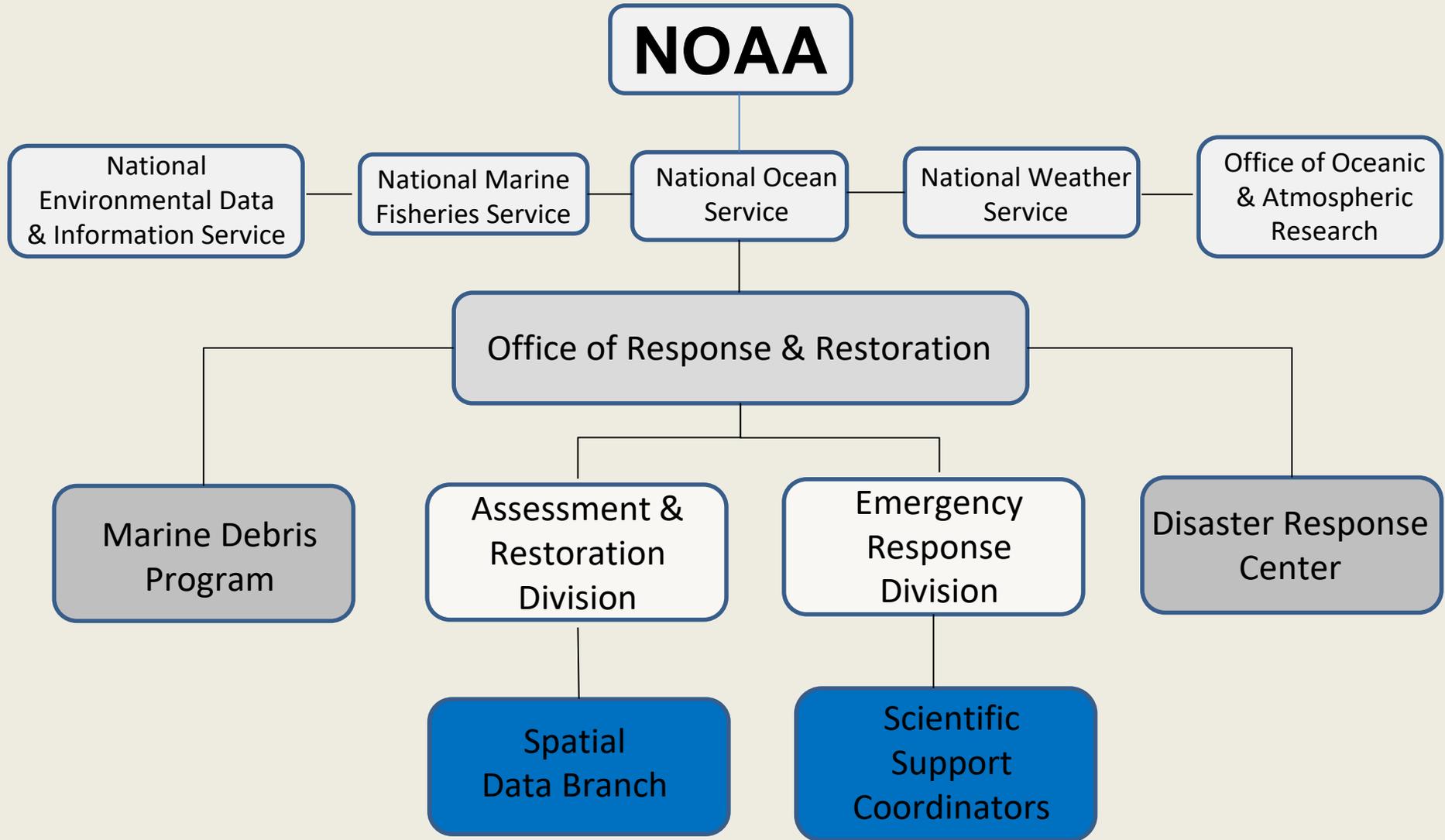


ERMA Update



*NOAA's Office of Response & Restoration
Jay Coady
Regional Response Team 2 Meeting
June 19th, 2019*

Background

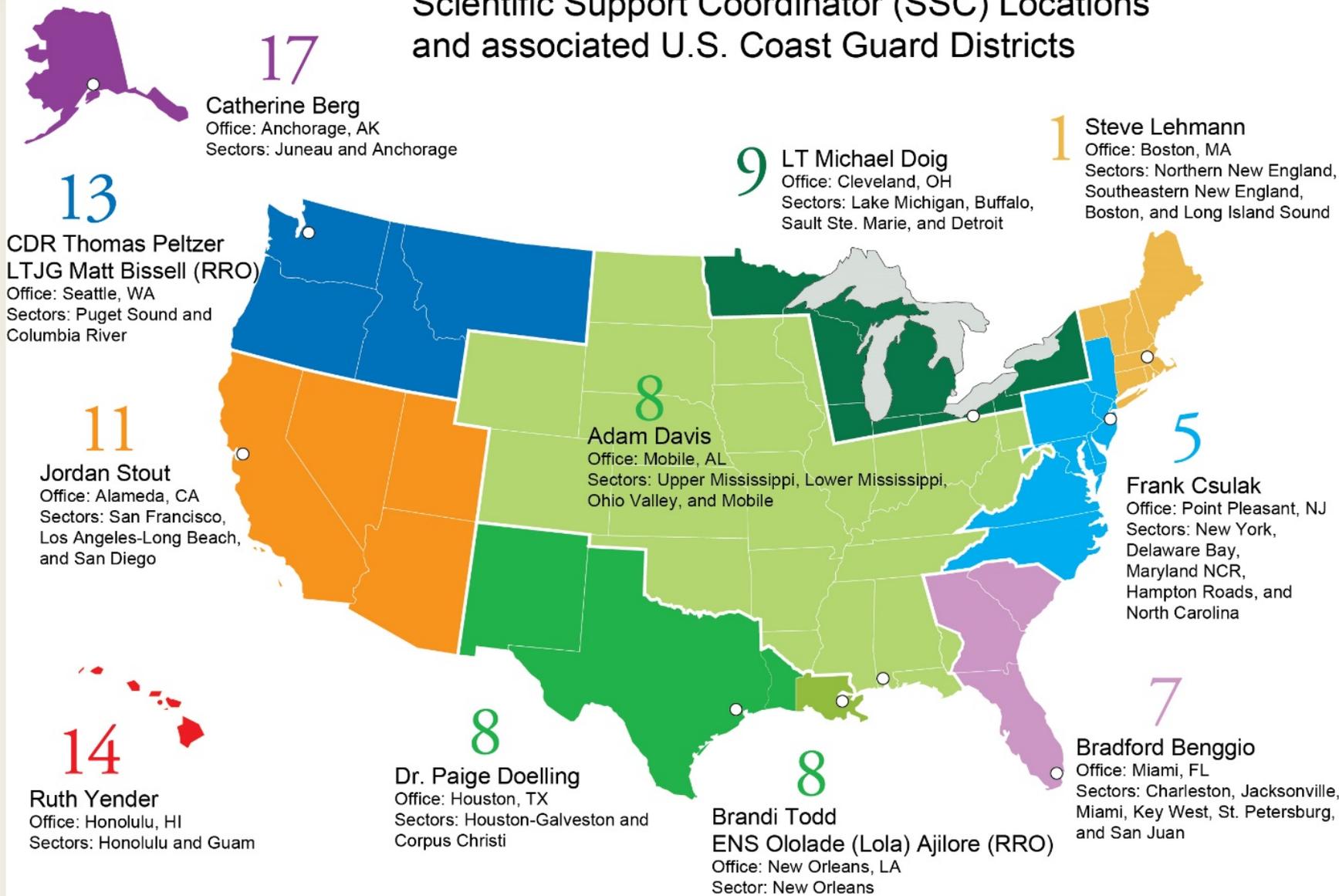




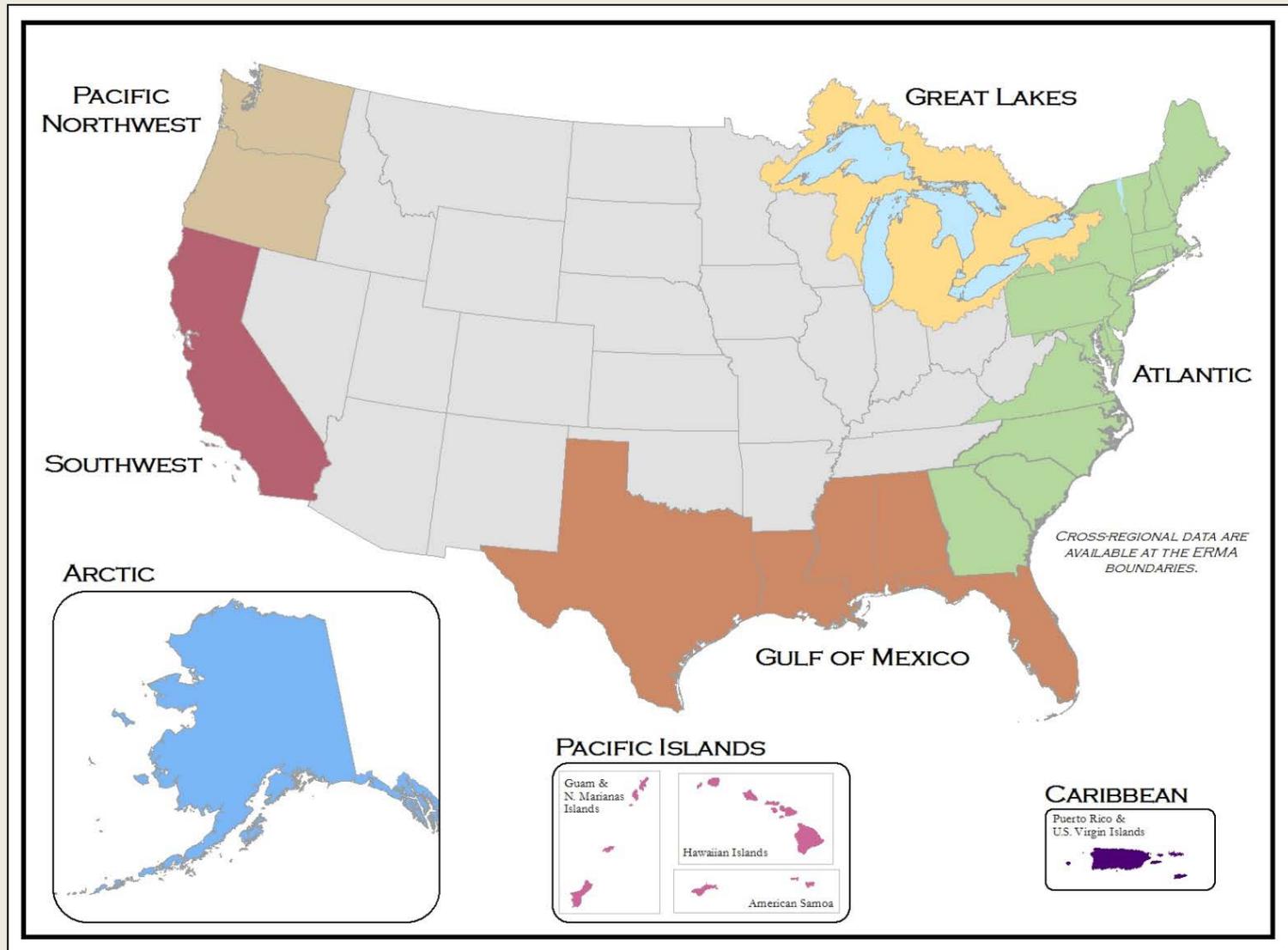
ORR Staff locations



Scientific Support Coordinator (SSC) Locations and associated U.S. Coast Guard Districts

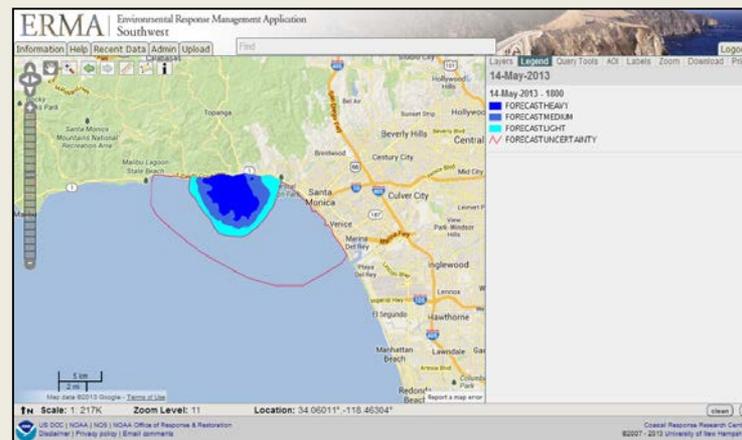


ERMA Regions



Environmental Response Management Application (ERMA)

- NOAA Common Operating Picture (COP)
- Web-based mapping tool
- Centralized access to information
- Increases communication, coordination, and efficiency
- Prepare for, respond to, assess impacts from incidents or conditions
- Analyze and visualize environmental information relevant to all hazards



<https://erma.noaa.gov>

ERMA Layout: 3 Things...

The screenshot displays the ERMA web application interface. At the top, the title "ERMA | Environmental Response Management Application" is visible. Below the title, a navigation bar includes links for "Information", "Home", "Recent Data", "Admin", "Upload", "Incident", and "Search Layers, Folders, and Bookmarks". The "Recent Data" and "Search Layers, Folders, and Bookmarks" links are circled in red. The main area shows a map of the Northeastern United States, with an orange box labeled "Recent Data" pointing to the "Recent Data" link and another orange box labeled "Search" pointing to the "Search Layers, Folders, and Bookmarks" link. On the right side, there is a "Layers" panel with a list of map layers. An orange box labeled "Bookmark Views" points to the "Bookmark Views" section in the layers panel, which is also circled in red. The "Bookmark Views" section includes a "new" button, also circled in red. At the bottom of the interface, there is a status bar with "Scale: 1 : 5M", "Zoom Level: 6", and "Location: 45.44249°,-83.63681°". The footer contains copyright information for NOAA and the University of New Hampshire.

ERMA | Environmental Response Management Application

Information | Home | **Recent Data** | Admin | Upload | Incident | **Search Layers, Folders, and Bookmarks** | Geographic Search

Recent Data | **Search**

Bookmark Views

Bookmark Views: new

Scale: 1 : 5M | Zoom Level: 6 | Location: 45.44249°,-83.63681°

US DOC | NOAA | NOS | NOAA Office of Response & Restoration
Disclaimer | Privacy policy | Official Citation | Email comments

Coastal Response Research Center
©2007 - 2016 University of New Hampshire

Accessing ERMA

ERMA Requires

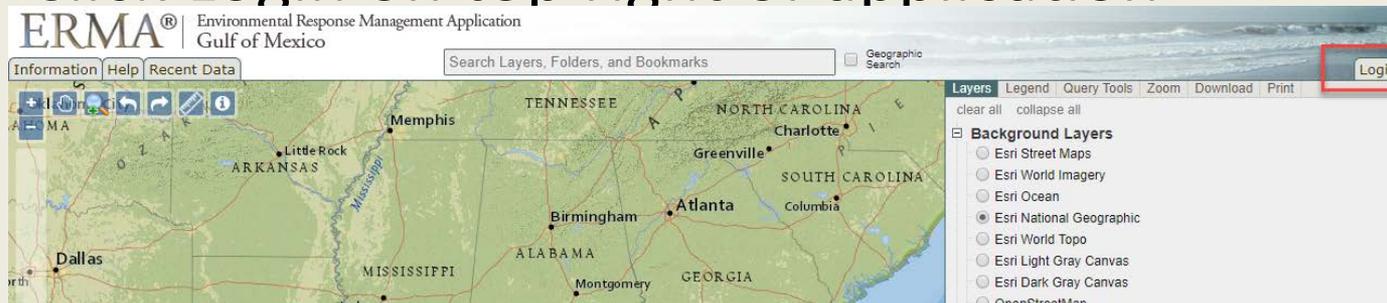
- Modern browser
 - Firefox, Chrome, Edge
 - Not IE
- Internet connection
- Agency email address
- NOAA Sponsor

ERMA URLs

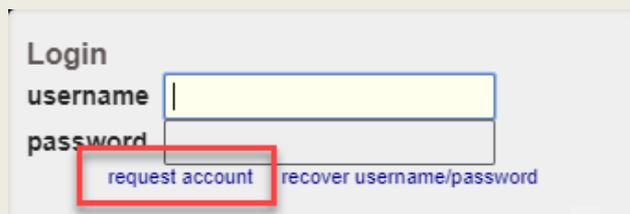
- erma.noaa.gov
- erma.noaa.gov/atlantic
- erma.noaa.gov/gulfofmexico
- erma.noaa.gov/greatlakes
- erma.noaa.gov/caribbean
- erma.noaa.gov/northwest
- erma.noaa.gov/arctic
- erma.noaa.gov/pacific
- erma.noaa.gov/southwest

How to Request an ERMA Account

- Click Login on top right of application



- Click [Request Account](#)



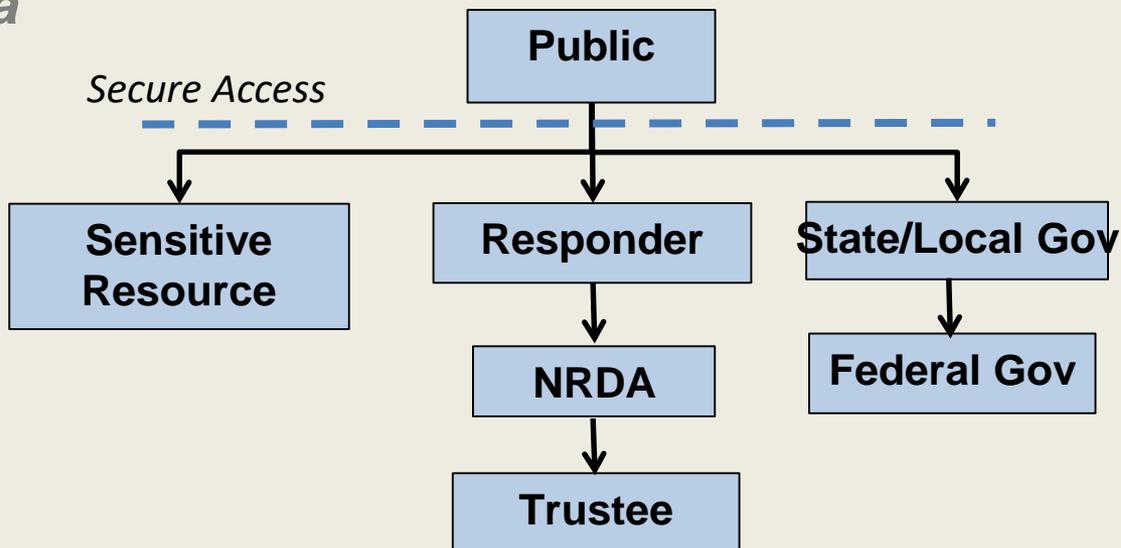
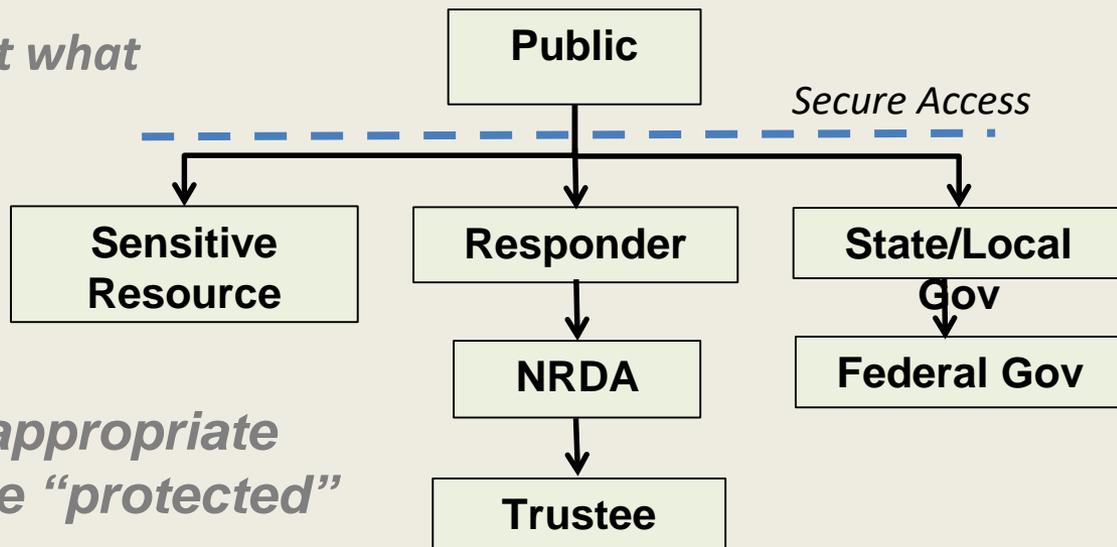
- Fill out form and hit submit
 - Agency email only
 - Use your SSC as your NOAA sponsor

ERMA Layer Security

User and Layer security will limit what any given user will see in ERMA



Only users with the appropriate security level can see "protected" data



Data Sharing/Partnerships

Partnerships and data sharing are key

- USCG/NOAA IAA
- EPA MOA
- BSEE MOUs
- States & other Federal Agencies

Formal Data Sharing Plans

(Incident Name) Response Information Management Plan
(This is a Drill)

I=

Information Management Plan

(Incident Name) GIS data, Photography, SCAT, Remote Sensing, and Response Sampling

Purpose:

The purpose of this Plan is to address how data and information related to the [Incident Name] (the "Incident"), should be collected, share, and be retained. Information and data generated as a result of the response operations, mitigation efforts, or other similar activities (the "Response") are to be used in support of the Unified Command's Critical Information Requirements (CIRs). This Data Management and Sharing Plan (the "Plan") is meant to ensure continuity of information across the various CIRs and to facilitate sharing amongst the response personnel during the incident, in a manner consistent with the *Information Management Handbook* (USCG 2014). Furthermore, this plan will set the foundation for access to information and data archival.

Implementation of this plan will:

- Reduce compartmentalized isolation of information within ICS units and sections
- Memorialize the Signatories understand responsibilities, methods, and resources available
- Maintain information continuity over time regardless of personnel changes
- Provide the basis for periodic review, evaluation, and updating of procedures
- Ensure the proper archival of data for post-incident retrieval and analysis

What is covered under this Plan:

This plan includes all incident related documents, Geographic Information Systems (GIS) data, photography, video, remote sensing, response sampling, response databases, and corresponding metadata as described in accompanying appendices.

The incident related information and data that may be **excluded** under the scope of this plan are:

1. Proprietary, confidential, privileged or non-incident related information or data.
2. Licensed, sensitive, or cultural resources as determined by data provider.
3. Information developed for the sole purpose of the Natural Resource Damage Assessment (NRDA).

The overarching objective of this plan is to facilitate availability of information to all parties involved in the response. The Documentation Unit and Situation Unit were integral to the development of this plan and the establishment of daily documentation and sharing procedures.

Unified Command Signatures:

United States Coast Guard FOSC _____ Date

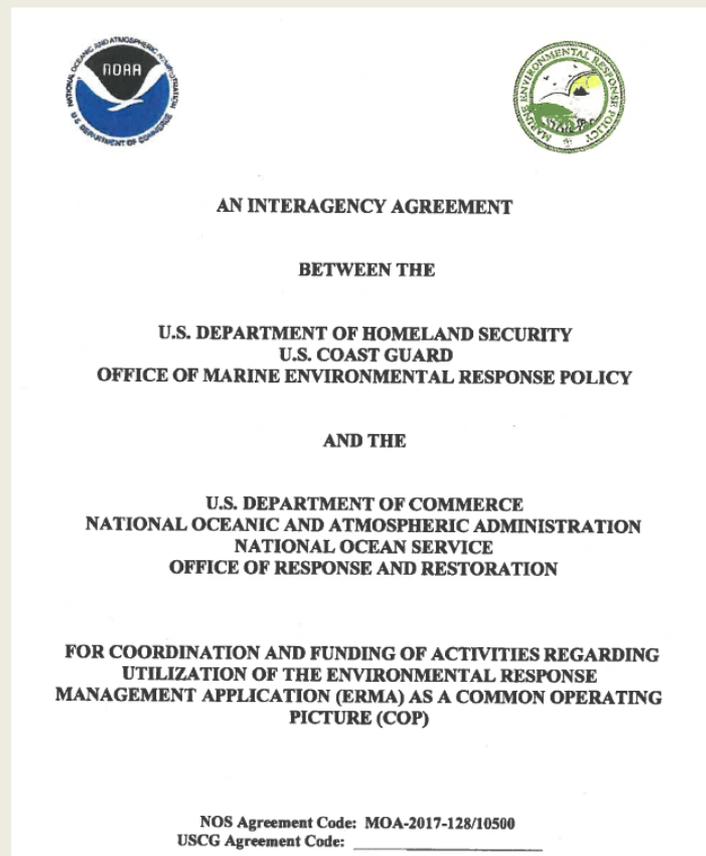
State Representative _____ Date

Responsible Party (RP) _____ Date

USCG Interagency Agreement ERMA

Key Point:

- “Standardize the use of NOAA’s Environmental Response Management Application (ERMA®) as the Common Operating Picture (COP) for USCG-led training, exercises, oil spill responses and releases of hazardous substances, pollutants, and contaminants”



Data Highlights

Abandoned Derelict Vessels

- Marine Debris

Geographic Response Strategies (GRS)

- Coastal & Inland (NY/CA)

Electronic Data Capture

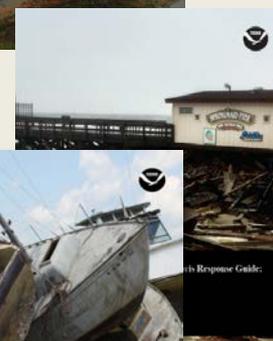
- Survey 123

Aerial Imagery/Remote Sensing

- NESDIS
- Drones, Fast turn-around, and Automation

Emergency Response to Marine Debris

- Every event is different
- Debris can threaten **navigation, natural resources, and human safety**
- 2012 MDP reauthorization included specific language on response mandate
- 2014 began focused effort to conduct response planning
- 2018 Save our Seas Act: authorizes cleanup and response actions from severe marine debris events
- Internal: Developed a response framework and list of core services
- External: Working with relevant agencies to create Regional Response Plans



Marine Debris Tracker Application

ERMA® Environmental Response Management Application
Gulf of Mexico



Marine Debris Tracker Points (2019-05-16)

Marine Debris Tracker Points (2019-05-16)

- CLOTH
- FISHING GEAR
- GLASS
- METAL
- OTHER ITEMS
- PAPER & LUMBER
- PLASTIC
- RUBBER

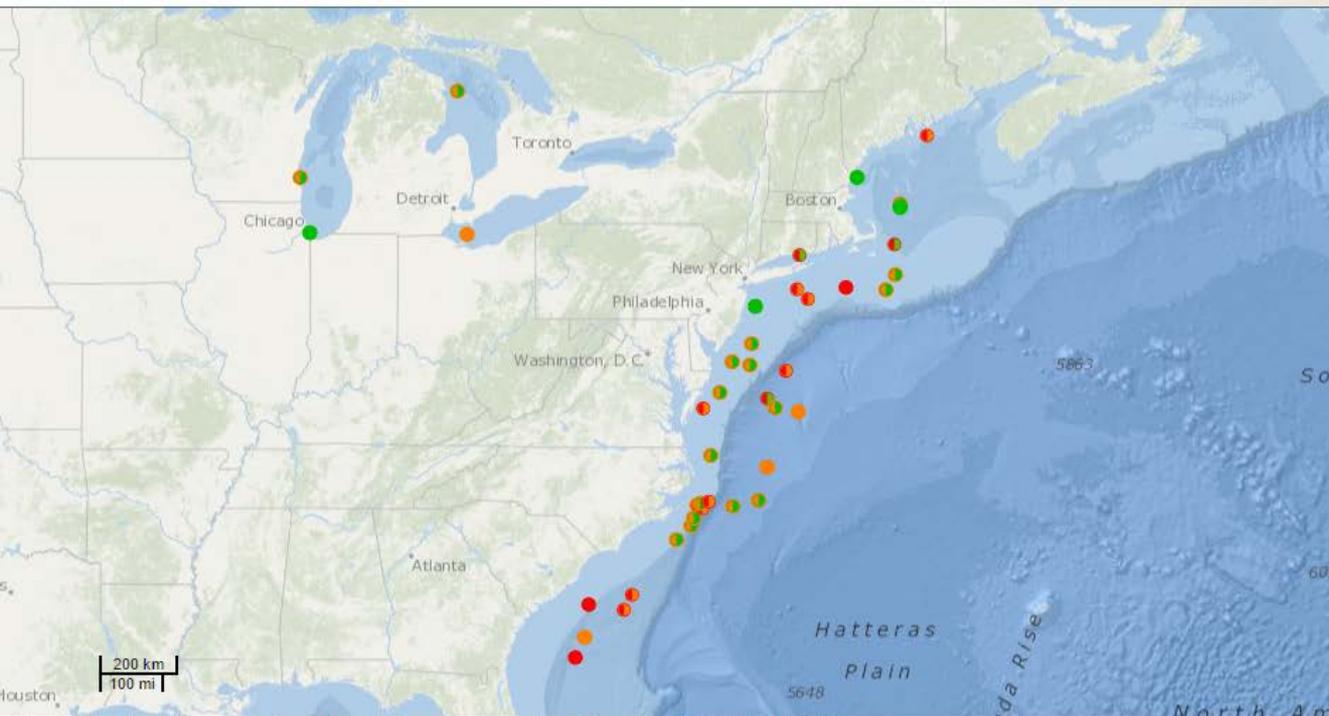
Esri National Geographic

Scale: 1 : 22,195,045 Zoom Level: 4.0

Location: 44.4965°, -52.4707°

NOAA RULET

ERMA® Environmental Response Management Application
Atlantic



Wrecks and Obstructions

Remediation of Underwater Legacy Environmental Threats (RULET) (NOAA)

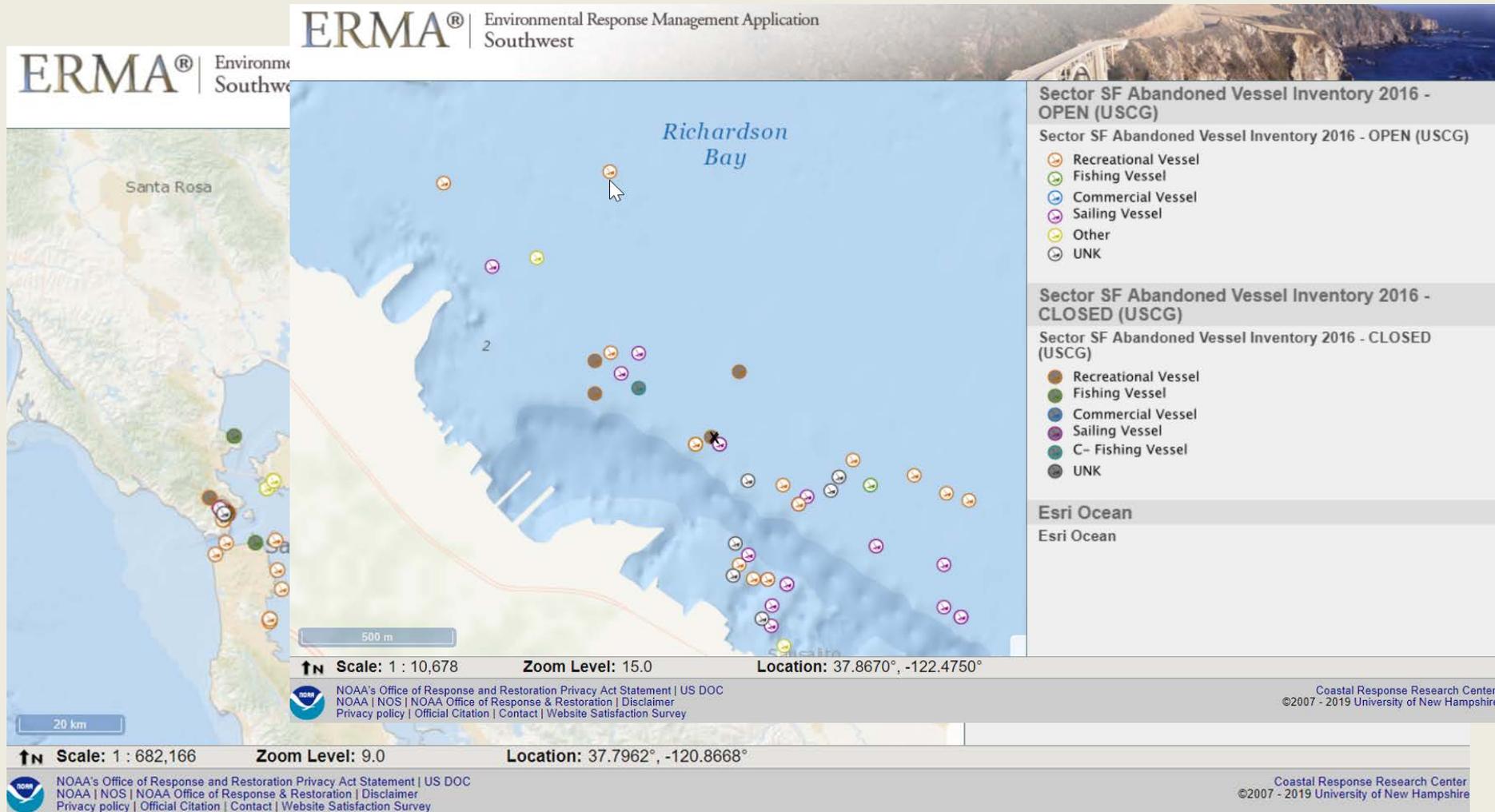
RULET July 2012 Final Scores

Worst case discharge / most probable discharge score

- High / High
- High / Medium
- High / Low
- Medium / Medium
- Medium / Low
- Low / Low

Scale: 1 : 11M Zoom Level: 5 Location: 40.67081°,-69.51627°

Abandoned and Derelict Vessels (ADV) Sectors San Francisco/San Diego



Abandoned and Derelict Vessels (ADV) Sectors San Francisco/San Diego

ID Location: 37.86649, -122.48613

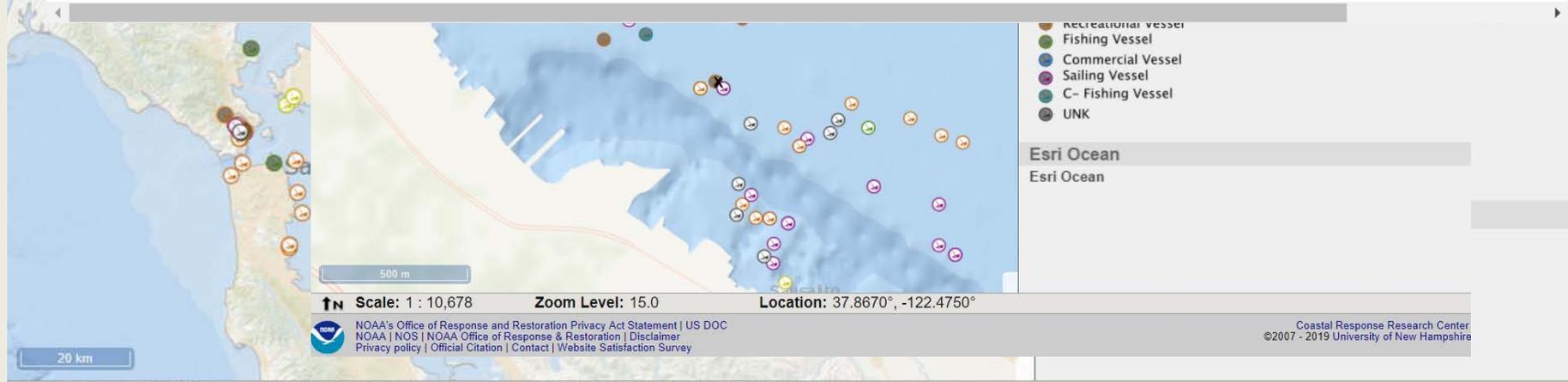
Add Selected Features To Query Tools Tab (Polygons Only)

Sector SF Abandoned Vessel Inventory 2016 - CLOSED (USCG)

gid	county	date	status	a_dv	vessel_nam	vessel_siz	registrati	resgistrat	vessel_typ	additional	hull_color	house_color	hull_type	lat	long	photo_
3	Marin	2012-07-12	CLOSED	ADV	HO CHOY	est 30ft	N/A	N/A	Recreational Vessel	power boat	White	UNK	UNK	37.8665	-122.486233	Yes

Sector SF Abandoned Vessel Inventory 2016 - OPEN (USCG)

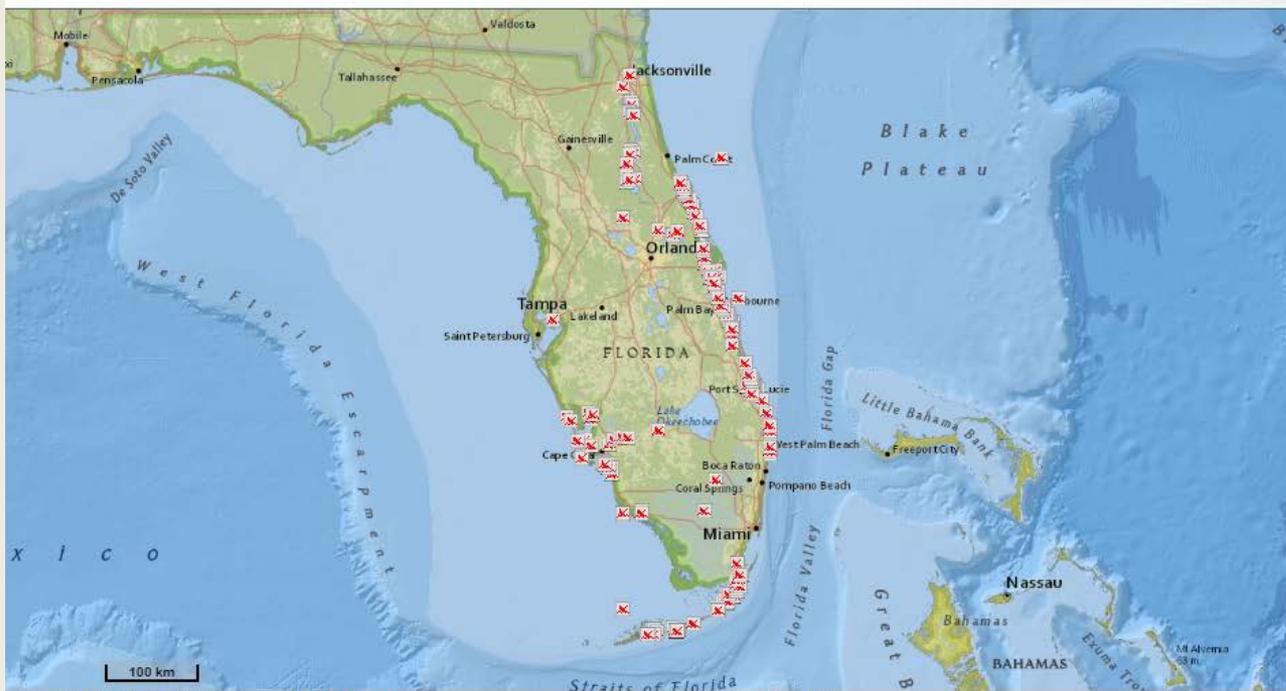
gid	id	county	date	status	a_dv	vessel_nam	vessel_siz	registrati	resgistrat	vessel_typ	additional	hull_color	house_color	hull_type	condition	haznav	latitude	long
19	19	San Francisco	2015-11-04	OPEN	ADV	N/A	35ft	N/A	N/A	UNK		UNK	UNK	UNK	Sunk	No	37.866283	-122.485917
20	20	Marin	2012-07-12	OPEN	ADV	N/A	65ft	CF 6587 UF	2013	Sailing Vessel		White	WHITE	CEMENT	Afloat-salvage possible	No	37.866283	-122.485917



Scale: 1 : 682,166 Zoom Level: 9.0 Location: 37.7962°, -120.8668°

Identified Vessels by State of FL 09-28-17

ERMA® | Environmental Response Management Application
Gulf of Mexico



FWC DLE Identified Derelict Vessels (FWC DLE)
FWC DLE Identified Derelict Vessels (FWC DLE)
FWC DLE Identified DV

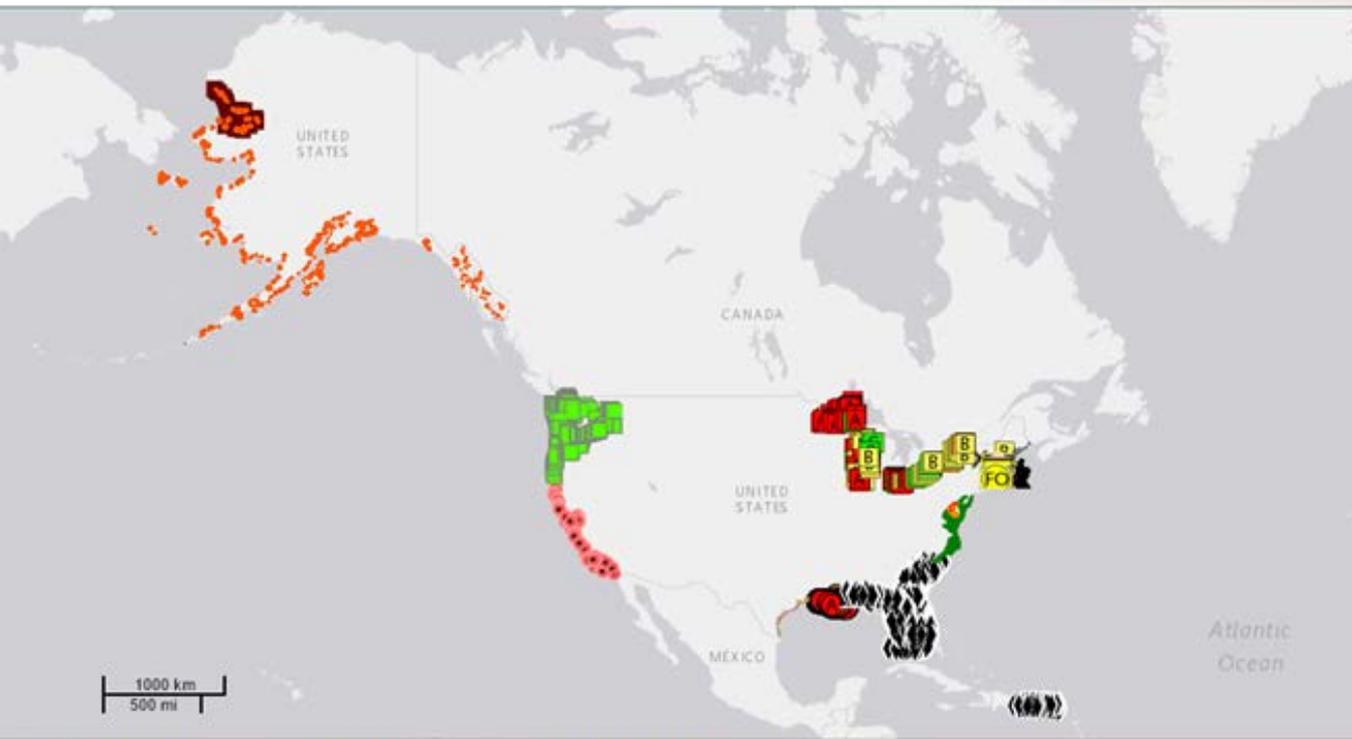


Esri National Geographic
Esri National Geographic

Scale: 1 : 4,339,725 Zoom Level: 6.5 Location: 25.3462°, -74.1846°

Coastal Geographic Response Strategy (GRS) Effort in ERMA

ERMA® Environmental Response Management Application
Atlantic



- MSU Toledo**
DRAFT-Priority Sites (last update 27-June-2016)
■ A - Highest Protection Priority
- Sector Lake Michigan**
DRAFT - Priority Strategy Sites (updated 14-Mar-2017)
■ A - Highest Protection Priority
■ B - Protect after A Areas
■ C - Protect after B Areas
- MSU Duluth**
DRAFT-Priority Sites (last updated 27-June-2016)
■ A - Highest Protection Priority
■ B - Protect after A Areas
■ C - Protect after B Areas
- Sector Detroit**
DRAFT - Priority Strategy Sites (updated 14-Mar-2017)
■ A - Highest Protection Priority
■ B - Protect after A Areas
■ C - Protect after B Areas
- Sector Buffalo**
DRAFT-Priority Sites (last updated 6-May-2016)
■ A - Highest Protection Priority
■ B - Protect after A Areas
■ C - Protect after B Areas

Scale: 1 : 35M Zoom Level: 3 Location: 30.13607°, -39.52582°

Ongoing Coastal GRS Effort in ERMA

Ongoing GRS Status Updates/Training

D1/D2 –

Sector Long Island GRS updated July 2018
USCGA added New Haven, New London, Bridgeport,
Hudson, Raritan Bay, Jamaica Bay in 2017/2018
Massachusetts GRP updated April 2018
21 NYS Inland County GRP/GRS added summer 2017

D3 –

Sector Maryland/NCR added March 2019
Sector Hamilton Roads added 2018
Sector North Carolina added 2018

D8 –

LOSCO GRS updated January 2018
Sector Corpus Christi added 2018
Sector Houston/Galveston added 2018

D9 –

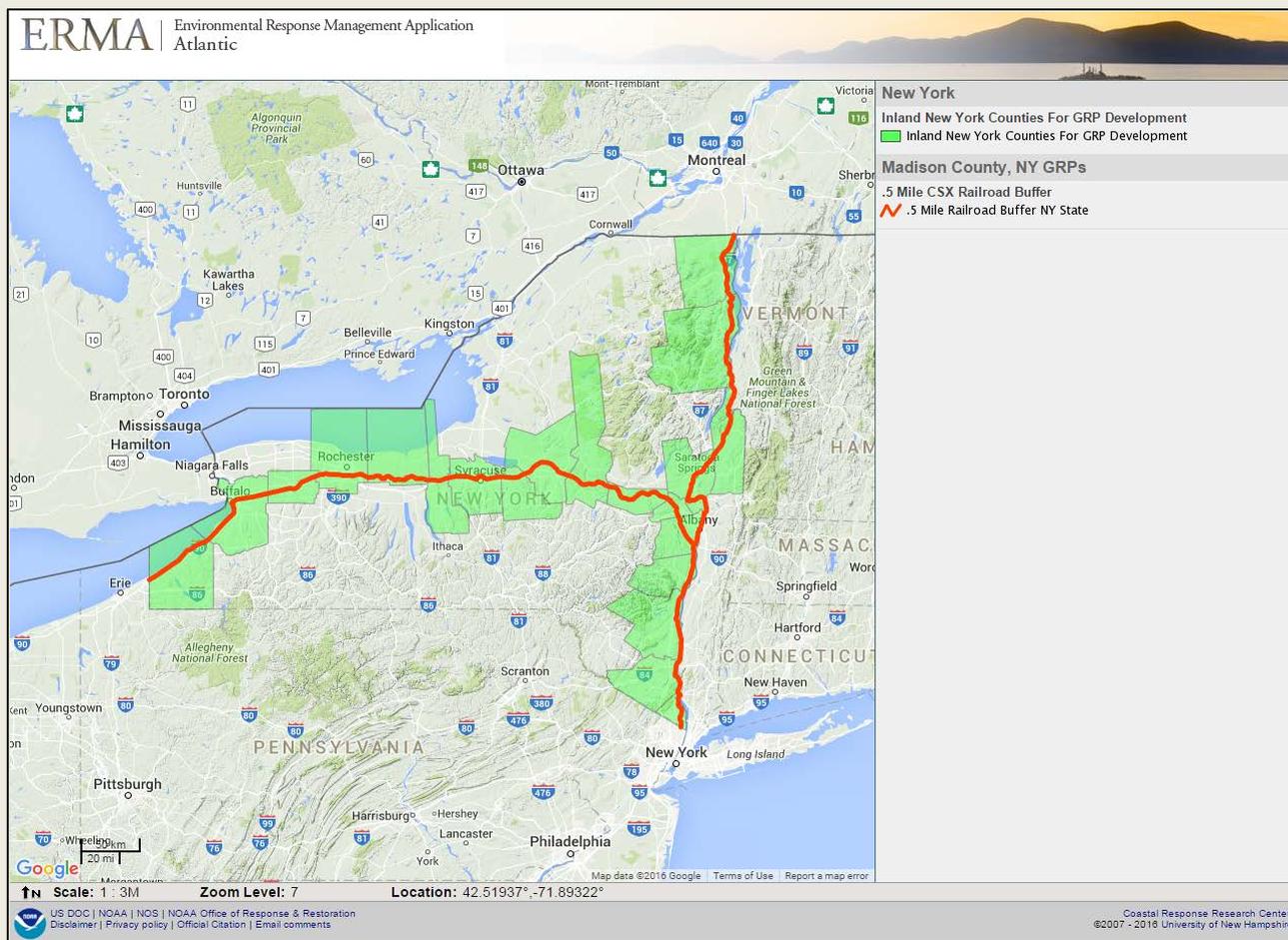
Sectors Buffalo/Detroit/Southern Lake Michigan
updated April 2018
Sector Training March 2017
Sectors Detroit/Southern Lake Michigan updated
March 2017

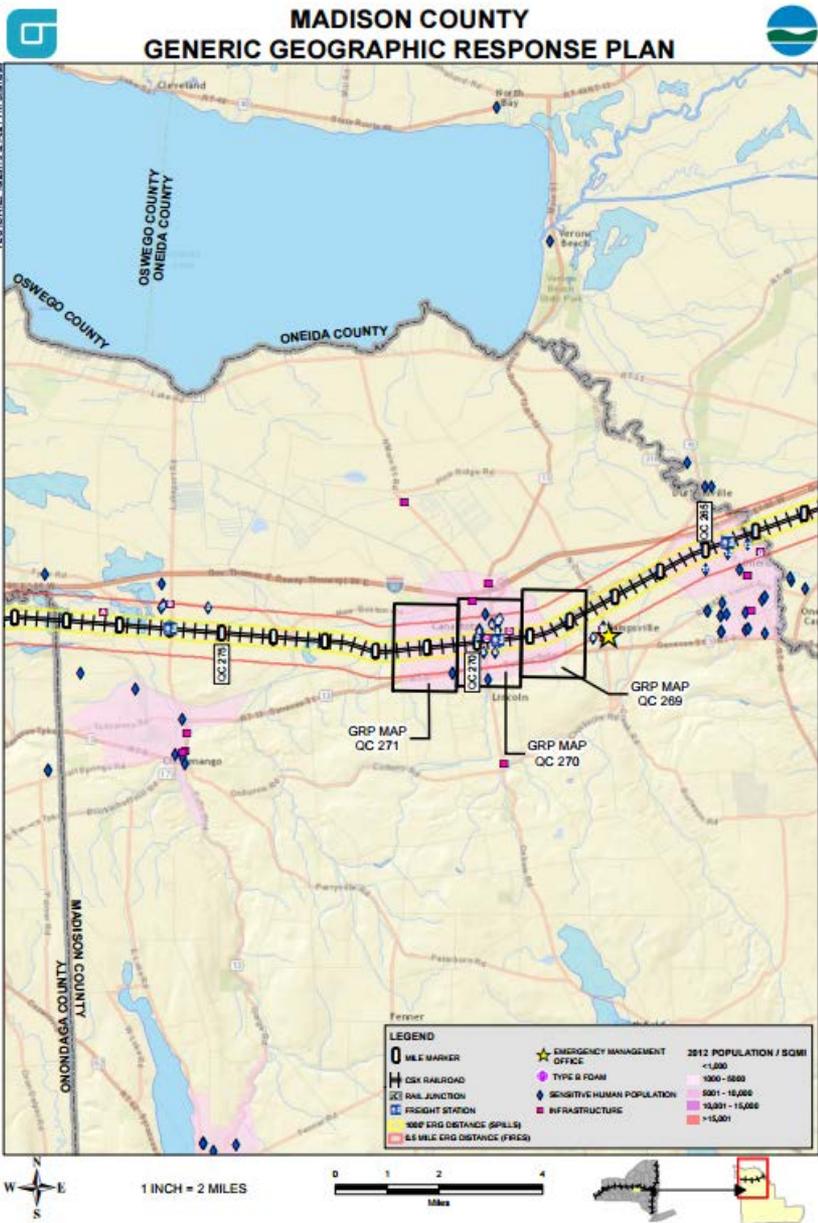
D13 –

California Inland Response Plans added October
2017
Oregon DEQ updated March 2018

New York Inland Rail GRS

COUNTIES OF INTEREST:





RR Mile QC 270 – Canastota, Madison Co.

Location: Town of Lenox, Madison County
Coverage Area: Village of Canastota
Railroad Mile Markers: CSX 270.38 to CSX 269.16

CONTACT ALL NUMBERS BELOW	
Local Fire & Police	911/ (315) 366-2280
National Response Center (EPA)	(800) 424-8802
DEC Spill Response	(800) 457-7362
CSX Railroad	(800) 232-0144
Madison Co Emergency Mgt.	(315) 366-2789
State Watch Center	(518) 292-2200
Oneida Indian Nation Police	(315) 829-8100

FIRE/EXPLOSION:

- IDENTIFY PRODUCT(S).
- NOTIFY POTENTIAL RECEPTORS AND RESPONSE CONTACTS. REQUEST STATE WATCH CENTER TO MOBILIZE FOAM ASSETS.
- EVALUATE 1/2 MILE.
- IF MORE THAN 3 CARS ON FIRE, EVALUATE RESPONDERS AND LET IT BURN.
- IF 3 OR FEWER CARS INVOLVED, DOES FIRE THREATEN POPULATIONS OR CRITICAL INFRASTRUCTURE?
 - IF SO, FIGHT FIRE USING FOAM AND WATER. ADDITIONAL FOAM FROM STATE WATCH CENTER. UTILIZE HIGH VOLUME DRAFT POINTS IF POSSIBLE.
 - IF NOT, LET IT BURN, APPLY COOLING WATER TO ADJACENT CARS VIA UNMANNED MONITORS
 - CONSIDER RUNOFF CONTROL MEASURES TO MINIMIZE HEALTH AND ENVIRONMENTAL IMPACTS.

SPILL/LEAK:

- IDENTIFY PRODUCT(S).
- VAPORS – FLAMMABLE OR TOXIC? APPLY FOAM SUPPRESSION?
- SAFELY REMOVE POTENTIAL IGNITION SOURCES.
- NOTIFY RECEPTOR CONTACTS – 1,000 FEET DOWNWIND. EVALUATE OR SHELTER IN PLACE AS NECESSARY.
- NOTIFY RESPONSE CONTACTS. RAILROAD AND/OR NYSDEC MOBILIZE SPILL RESPONSE ASSETS.
- EVALUATE FLOW PATH(S). PREVENT FLOW INTO SEWERS/WATERWAYS WITH BOOM/DIKE/BERM.
- IF SPILL REACHES WATERWAYS, NOTIFY DOWNSTREAM RECEPTORS AND DEPLOY BOOM WHERE POSSIBLE.

DERAILMENT/ACCIDENT (NO OBVIOUS FIRE OR LEAK)

- IDENTIFY PRODUCT(S).
- NOTIFY RESPONSE CONTACTS.
- REMOVE POTENTIAL IGNITION SOURCES.
- ESTABLISH SECURE PERIMETER.

GEOGRAPHIC ACCESS

Primary access route: I-90 to exit 34 to Rt-135 (S. Peterboro St).

Alternative access route: From the west, Rt-13/Rt-5 (Seneca Turnpike) to Rt-13N or from the east Rt-5 (Seneca Turnpike) to Rt-13N (S. Peterboro St).

RAILROAD ACCESS

Northern railroad access: From S. Main St westward, at Railroad St, access is available along an unmaintained stone/dirt access road (Barlow St. runs to the north). Northern access to the tracks is also available eastward off S. Main St via Railroad St.

Southern railroad access: A paved walking trail (3 ft wide) provides access west of S. Main St to mile mark 171.45 and then continues west along an unmaintained path. Access from Rt-13 eastward runs through the Lenox Skate Park, continues to the intersection of Galavotti Pl, and continues eastward along dirt access road.

NOTIFICATION AND EVACUATION

DOWNWIND CONSIDERATIONS

- Canastota School System:
 - Pat Mitchell: 315-697-8354 / 315-697-2192
 - Nick Campbell: 315-697-7491 / 315-697-2194
- Madison County Head Start: 315-697-9833
- Lil Punkkins Daycare:
 - Jennifer Hook: 315-697-9240
- Celebration Children's Center: 315-697-8680
- Elder Haven Adult Day Care: 315-697-3306
- Lenox Town Hall/ Canastota Village Hall: 315-697-5575

DOWNSTREAM CONSIDERATIONS

None Identified

ICP / STAGING

- Madison County Highway Garage
 - 139 N. Court St, Wampsville, NY 13163
- Canastota Middle / High School
 - 101 Roberts St, Canastota, NY 13032
- Joseph Stag Ln Park
 - Joseph Stag Ln, Canastota, NY 13032 (-75° 45' 0", 43° 4' 47.0")

SITE AND SEASONAL CONSIDERATIONS

- Canals may be frozen and/or drained during winter months.
- Notify NYSDEC Spill Hotline for any wildlife impacts.

FIRE SUPPRESSION

- Local Foam Resources: Minimal Class B foam available locally.
- High Volume Class B Foam Trailer:
 - West (30 min) - 511 South State Street, Syracuse, NY 13202
 - East (35 min) - 552 Bleeker Street, Utica, New York 13510
- Water Drafting: Erie Canal at various location on Canal St and through municipal water hydrants.

WATER RESPONSE STRATEGIES

- Boom: Deploy boom at first downstream location ahead of oil migration.
 - Canastota Creek: W. Chapel St (-75° 45' 10.0794", 43° 4' 51.6")
 - Canastota Creek: Lewis St (-75° 45' 11.16", 43° 4' 59.16")
 - Canastota Creek: Ball Ave (-75° 45' 11.16", 43° 5' 2.7594")
 - Canastota Creek: Wilson Ave (-75° 45' 9.72", 43° 5' 7.0794")
 - Canastota Creek: Maple Ave (-75° 45' 10.0794", 43° 5' 11.0394")
 - Canastota Creek: Joe Stagnit Ln (-75° 45' 21.6", 43° 5' 20.04")
 - Old Erie Canal: Buck St (-75° 45' 25.56", 43° 4' 45.95")
 - Old Erie Canal: Main St (-75° 45' 17.28", 43° 4' 45.8394")
 - Old Erie Canal: Commerce St (-75° 45' 7.92", 43° 4' 45.8394")
 - Old Erie Canal: Diamond St (-75° 45' 0.36", 43° 4' 45.8394")
 - Old Erie Canal: West of Clark St on Canal St (North) and Center St at Precision Reel (South) (-75° 44' 51", 43° 4' 45.12")

BERMING RESOURCES

- Canastota DPW: 315-366-2221
- Madison County Highway Garage: 315-366-2221
- Callahan Industries: 315-697-9569
- CCI: 315-697-2547

Clinton County, NY

ERMA® Environmental Response Management Application
Atlantic

Information Help Recent Data Admin Upload Incident Search Layers, Folders, and Bookmarks Geographic Search

Layers Legend Draw Query Tools Zoom Download Print

- Clinton County, NY GRPs
- Emergency Management Office
- ★ Emergency Management Office
- FOAM Agency
- ⓘ FOAM Agency
- Dams
- Dams
- Historic Sites
- Historic Sites
- Schools, Daycares, Colleges
- College
- School
- Daycare / Preschool
- Booming Strategies
- Booming Strategies
- Bird Conservation Areas
- Bird Conservation Areas
- Freight Stations
- Freight Stations
- County Boundary
- County Boundary
- Human Use
- ACCESS
- BOAT LAUNCH
- CULVERT
- CURRENT
- DAM
- DPW
- DRAFT
- DRAIN
- FIRE DEPARTMENT
- GOVERNMENT OFFICE
- HOME CLUSTER
- HOSPITAL
- ICP
- NOTABLE INFRASTRUCTURE
- POLICE DEPARTMENT
- QUARRY
- SENIOR LIVING FACILITY
- STAGING AREA
- UTILITY
- WATER INTAKE
- WATER CULVERT

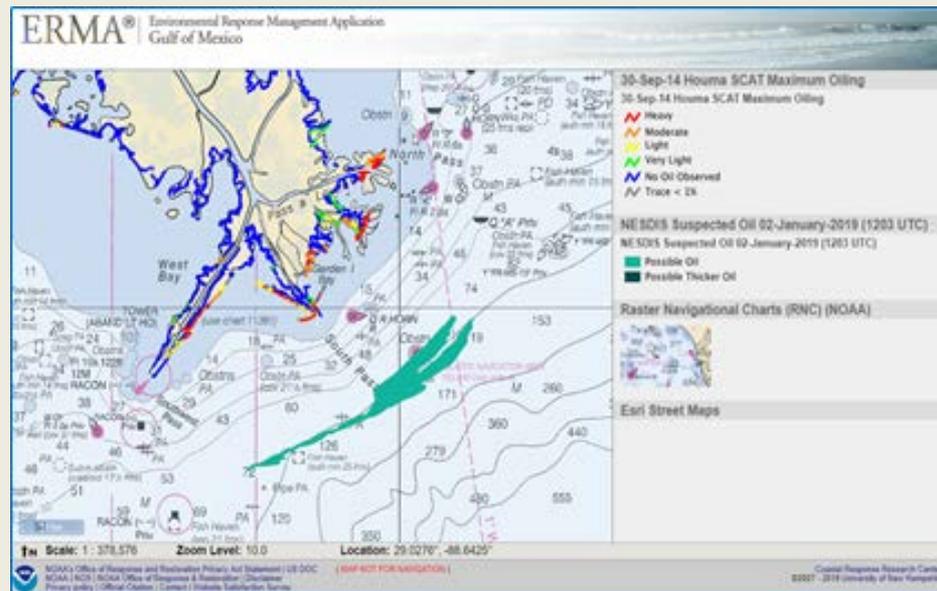
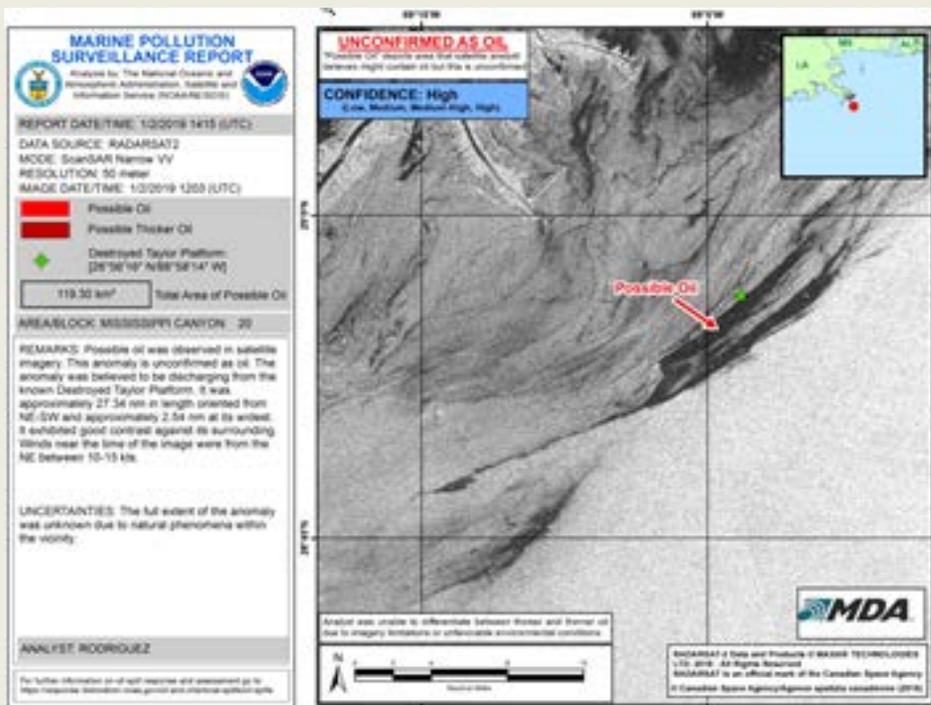
Scale: 1 : 19K Zoom Level: 14 Location: 44.67311° -73.48157°

Map data ©2017 Google Terms of Use Report a map error

US DOC | NOAA | NOS | NOAA Office of Response & Restoration
Disclaimer | Privacy policy | Official Citation | Contact

Coastal Response Research Center
©2007 - 2017 University of New Hampshire

NOAA NESDIS Remote Sensing Marine Pollution Surveillance Reports (MPSR)



MARINE POLLUTION SURVEILLANCE REPORT



Analysis Provided by: The National Oceanic and Atmospheric Administration/National Environmental Satellite, Data and Information Service (NOAA/NESDIS)

REPORT DATE: APRIL 10, 2017
 REPORT TIME: 1345Z (0945 EDT)
 ANALYST: BOLL

DATA SOURCE: RADARSAT-2
 MODE: ScanSAR Wide VV
 RESOLUTION: 100 meter (wide)
 IMAGE DATE/TIME: 4/10/2017 1053Z (0653 EDT)

Legend

- Possible Oil
- Possible Thicker Oil
- Coimbra Tanker Shipwreck: [40°24'4" N / 72°22'14" W]
- 2.7 km² Area of Possible Oil
- False-Positive (not oil)

CONFIDENCE: High

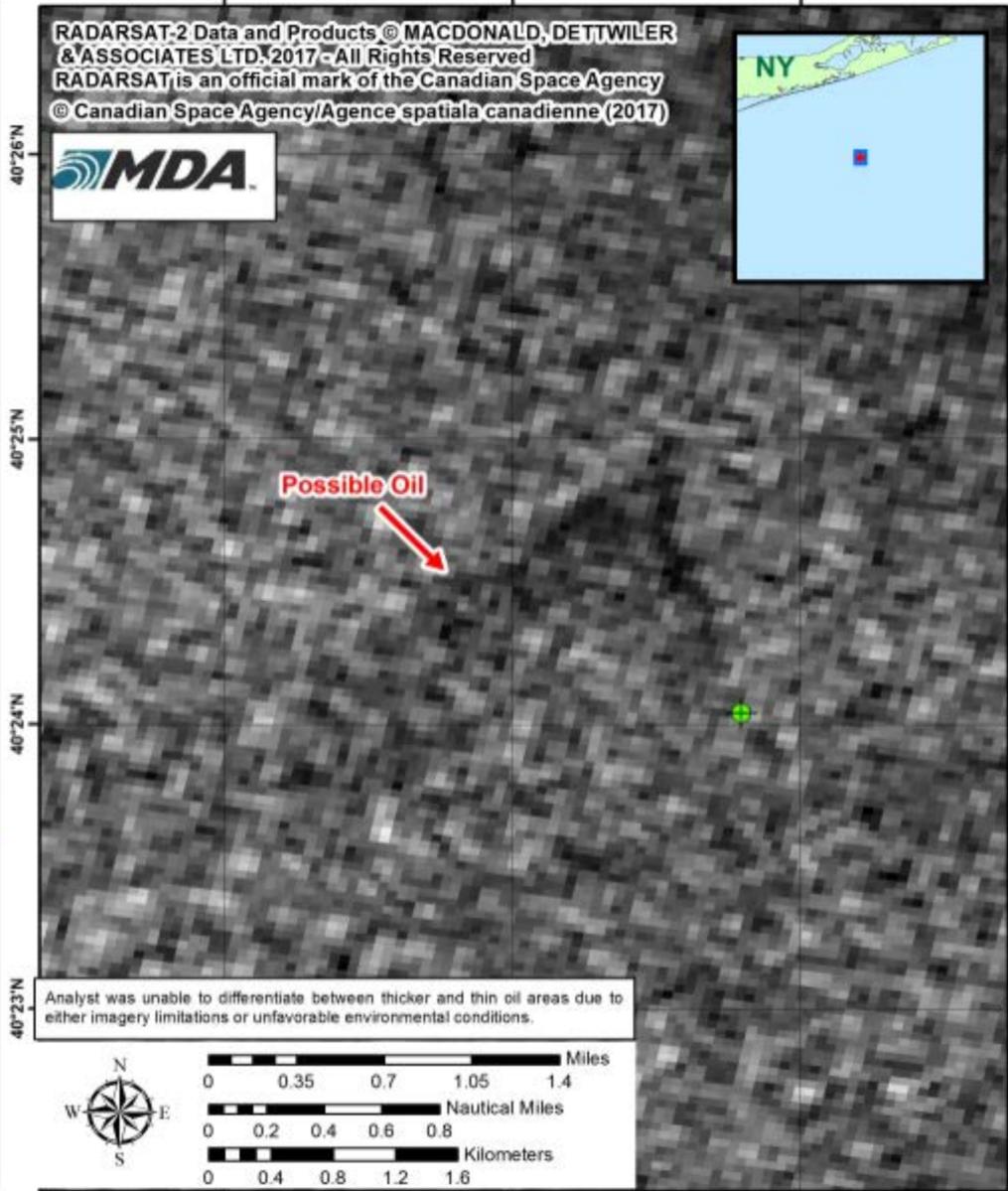
REMARKS:

Satellite analysis indicated a possible oil anomaly emanating from the known repeat leak source the sunken Coimbra Tanker off the coast of Long Island, NY. The anomaly was 1.7 NM in length and 0.5 NM in width.

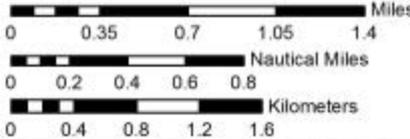
Measured winds in the area were 10 knots and from the South. Modeled ocean currents were under 0.75 knots with variable directionality.

Confidence was High given the anomaly was connected to a point source, displayed a contrast to its surroundings, and appeared out of place.

RADARSAT-2 Data and Products © MACDONALD, DETTWILER & ASSOCIATES LTD. 2017. All Rights Reserved
 RADARSAT is an official mark of the Canadian Space Agency
 © Canadian Space Agency/Agence spatiale canadienne (2017)



Analyst was unable to differentiate between thicker and thin oil areas due to either imagery limitations or unfavorable environmental conditions.

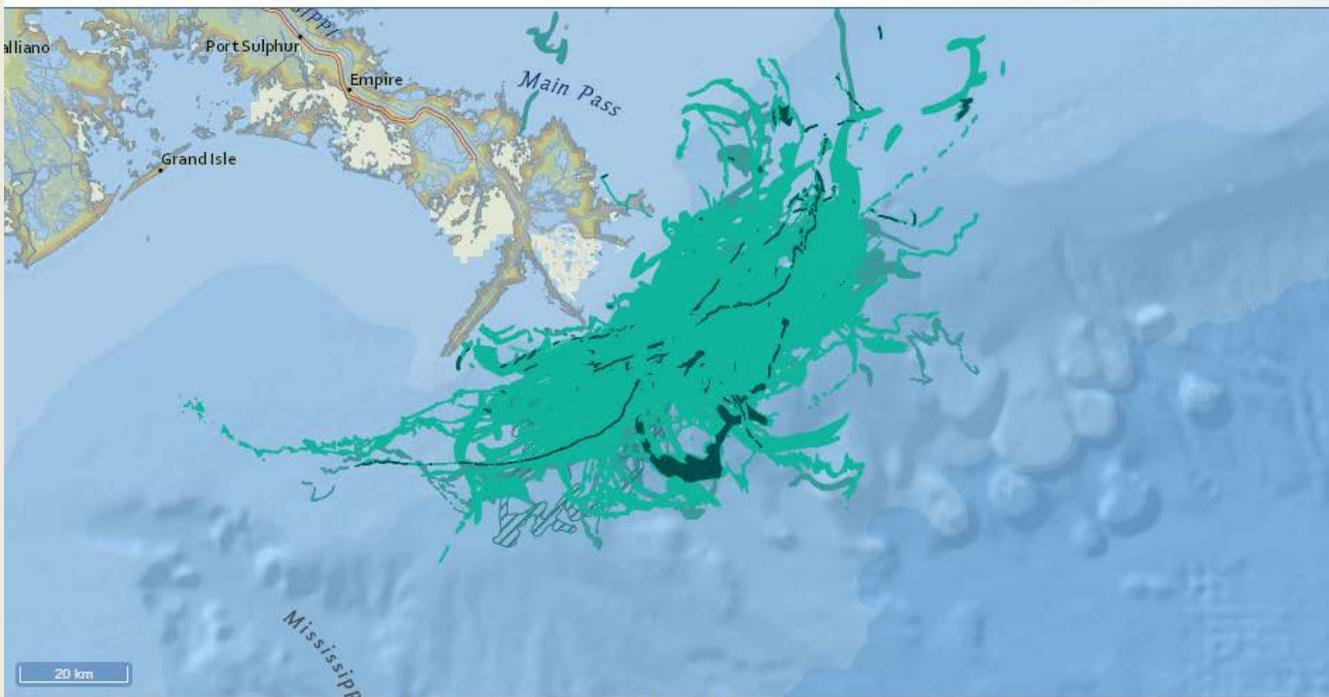


ERM

Threats

MC20 – Gulf of Mexico

ERMA® | Environmental Response Management Application
Gulf of Mexico



NESDIS Suspected Oil 05-June-2019 (0001 UTC)

NESDIS Suspected Oil 05-June-2019 (0001 UTC)

- Possible Oil
- Possible Thicker Oil

NESDIS Suspected Oil 17-June-2019 (0001 UTC) B

NESDIS Suspected Oil 17-June-2019 (0001 UTC) B

- Possible Oil
- Possible Thicker Oil

NESDIS Suspected Oil 02-May-2019 (1625 UTC) B

NESDIS Suspected Oil 02-May-2019 (1625 UTC) B

- Possible Oil
- Possible Thicker Oil

NESDIS Suspected Oil 23-May-2019 (1725 UTC)

NESDIS Suspected Oil 23-May-2019 (1725 UTC)

- Possible Oil
- Possible Thicker Oil

NESDIS Suspected Oil 03-May-2019 (1628 UTC)

NESDIS Suspected Oil 03-May-2019 (1628 UTC)

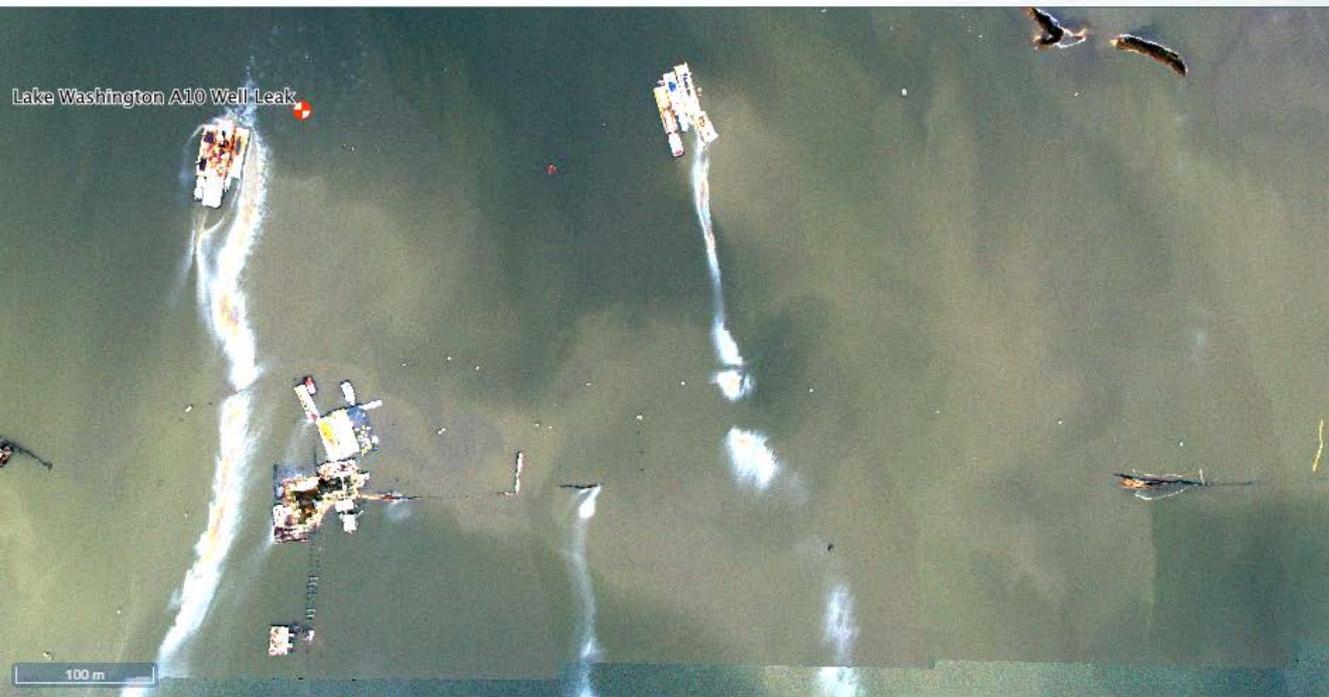
- Possible Oil
- Possible Thicker Oil

NESDIS Suspected Oil 17-May-2019 (1444 UTC)

Scale: 1 : 757,638 Zoom Level: 9.0 Location: 28.9973°, -87.7039°

Quick Turn-Around Imagery

ERMA® | Environmental Response Management Application
Gulf of Mexico



Lake Washington A10 Well Leak - LW21RASU, Port Sulphur, LA 70083, USA (2018-12-09, #9831)

Lake Washington A10 Well Leak - LW21RASU, Port Sulphur, LA 70083, USA (2018-12-09, #9831)

📍 Lake Washington A10 Well Leak

OI RGB 2018 1216 Run 10

OI RGB 2018 1216 Run 10

- Red: Band_1
- Green: Band_2
- Blue: Band_3

OI RGB 2018 1216 Run 5

OI RGB 2018 1216 Run 5

- Red: Band_1
- Green: Band_2
- Blue: Band_3

OI RGB 2018 1216 Run 2

OI RGB 2018 1216 Run 2

- Red: Red
- Green: Green
- Blue: Blue

OI RGB 2018 1216 Run 8

OI RGB 2018 1216 Run 8

↑N Scale: 1 : 2,946 Zoom Level: 17.0 Location: 29.3984°, -89.7756°

Quick Turn-Around Imagery

ERMA® | Environmental Response Management Application
Gulf of Mexico



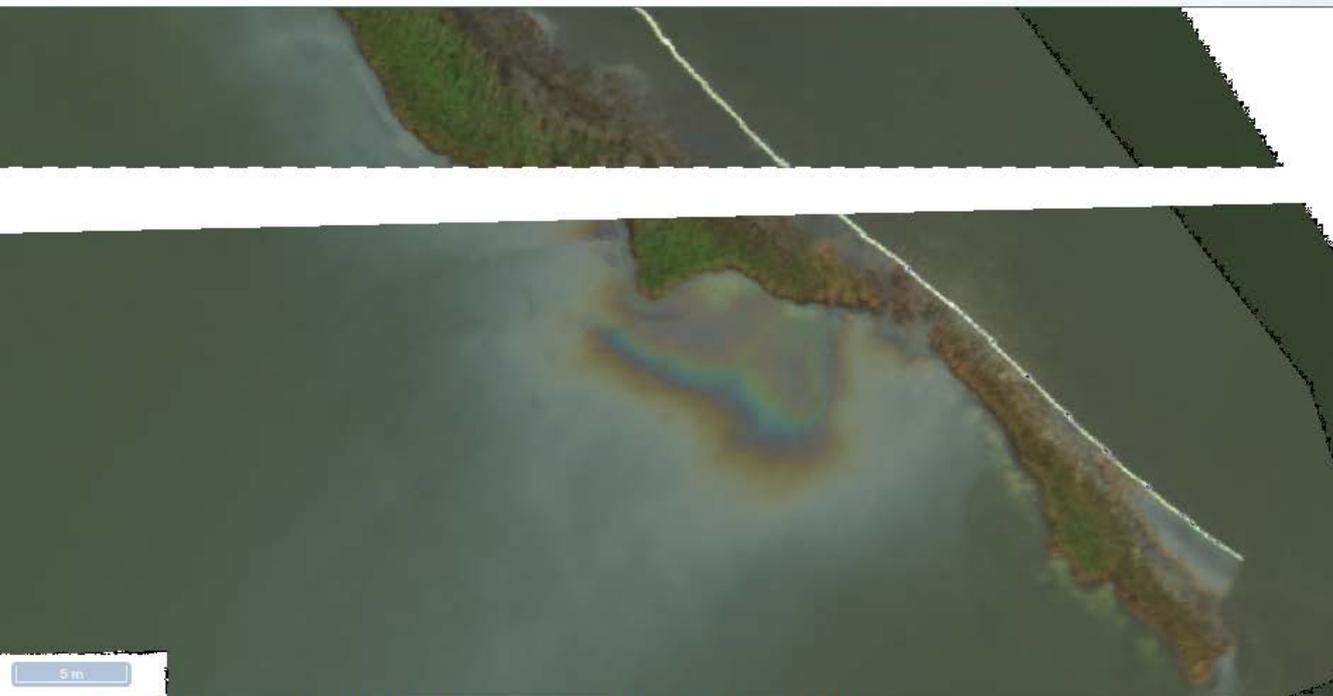
Planet
20181211_161238/39/41_1040_3B_AnalyticMS
Planet 20181211_161238/39/41_1040_3B_AnalyticMS

Esri National Geographic

↑N Scale: 1 : 94,308 Zoom Level: 12.0 Location: 29.4242°, -89.6745°

Drone Imagery

ERMA® | Environmental Response Management Application
Gulf of Mexico



Ortho Vis Imagery 16-Dec-2018 Flight 6b
Ortho Vis Imagery 16-Dec-2018 Flight 6b

Ortho Vis Imagery 16-Dec-2018 Flight 5
Ortho Vis Imagery 16-Dec-2018 Flight 5

Ortho Vis Imagery 16-Dec-2018 Flight 6a
Ortho Vis Imagery 16-Dec-2018 Flight 6a

Ortho Vis Imagery 16-Dec-2018 Flight 4
Ortho Vis Imagery 16-Dec-2018 Flight 4

Ortho Vis Imagery 16-Dec-2018 Flight 6c
Ortho Vis Imagery 16-Dec-2018 Flight 6c

Ortho Vis Imagery 16-Dec-2018 Flight 7
Ortho Vis Imagery 16-Dec-2018 Flight 7

Ortho Vis Imagery 16-Dec-2018 Flight 3
Ortho Vis Imagery 16-Dec-2018 Flight 3

Ortho Vis Imagery 17-Dec-2018 Flight 2
Ortho Vis Imagery 17-Dec-2018 Flight 2

5 m

↑N Scale: 1 : 184 Zoom Level: 21.0 Location: 29.3960°, -89.7618°

Evolving Data Capture

Paper to Digital Form

- Efficiency
- No transcription
- Less errors
- Less time
- Quick field data quality checks
- Quick data visualization
- Better sample tracking

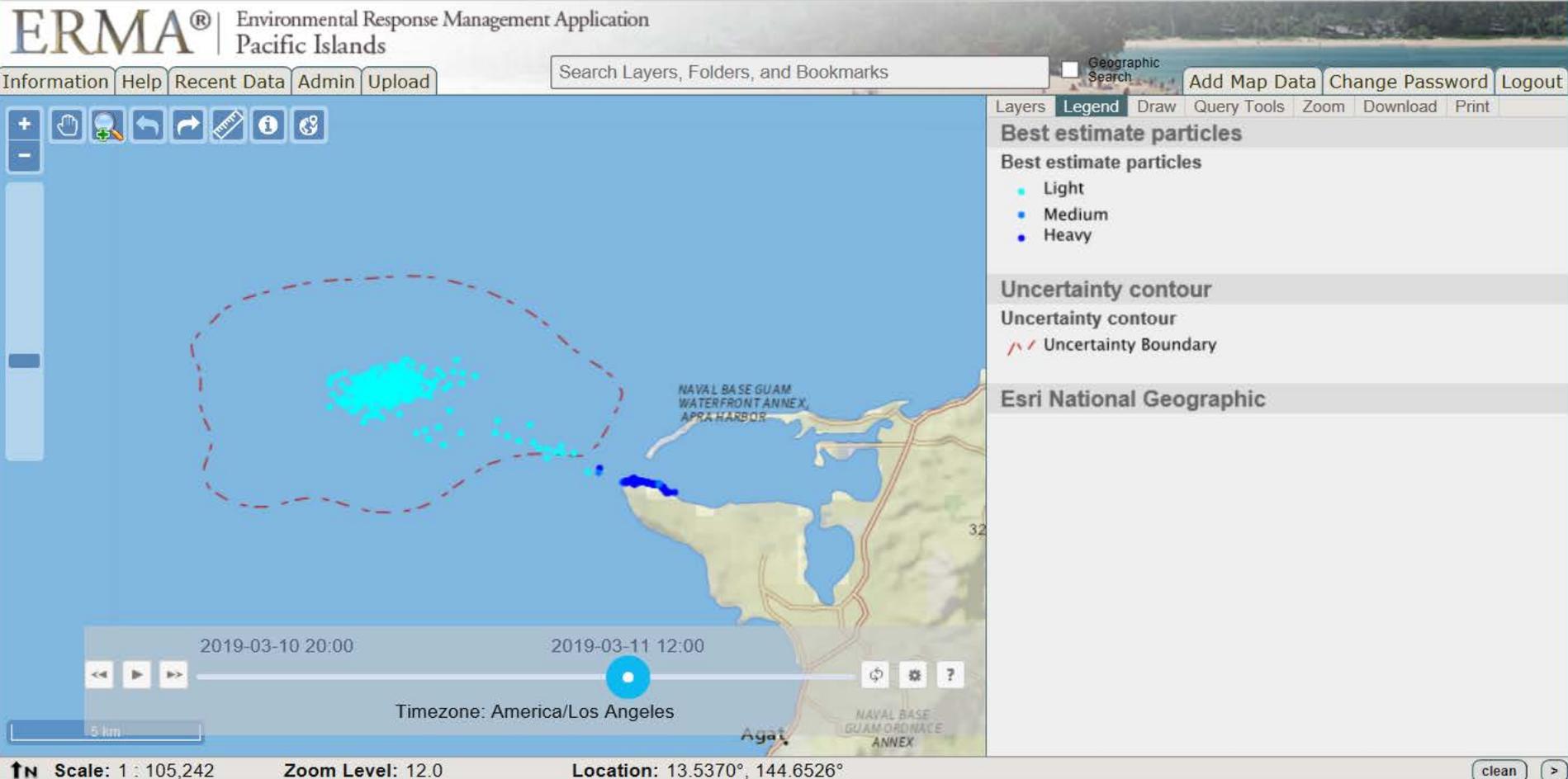
Considerations

- Connected/Disconnected
- Need back up
- Technology is always evolving

A scanned paper form titled "Water Quality Log and Reporting Form" with handwritten entries. It includes sections for "Site Information", "Sampling Information", and "Water Quality Data". A site map is drawn on the form, showing a shoreline with various sampling points labeled. A blue arrow points from this form towards the digital interface.

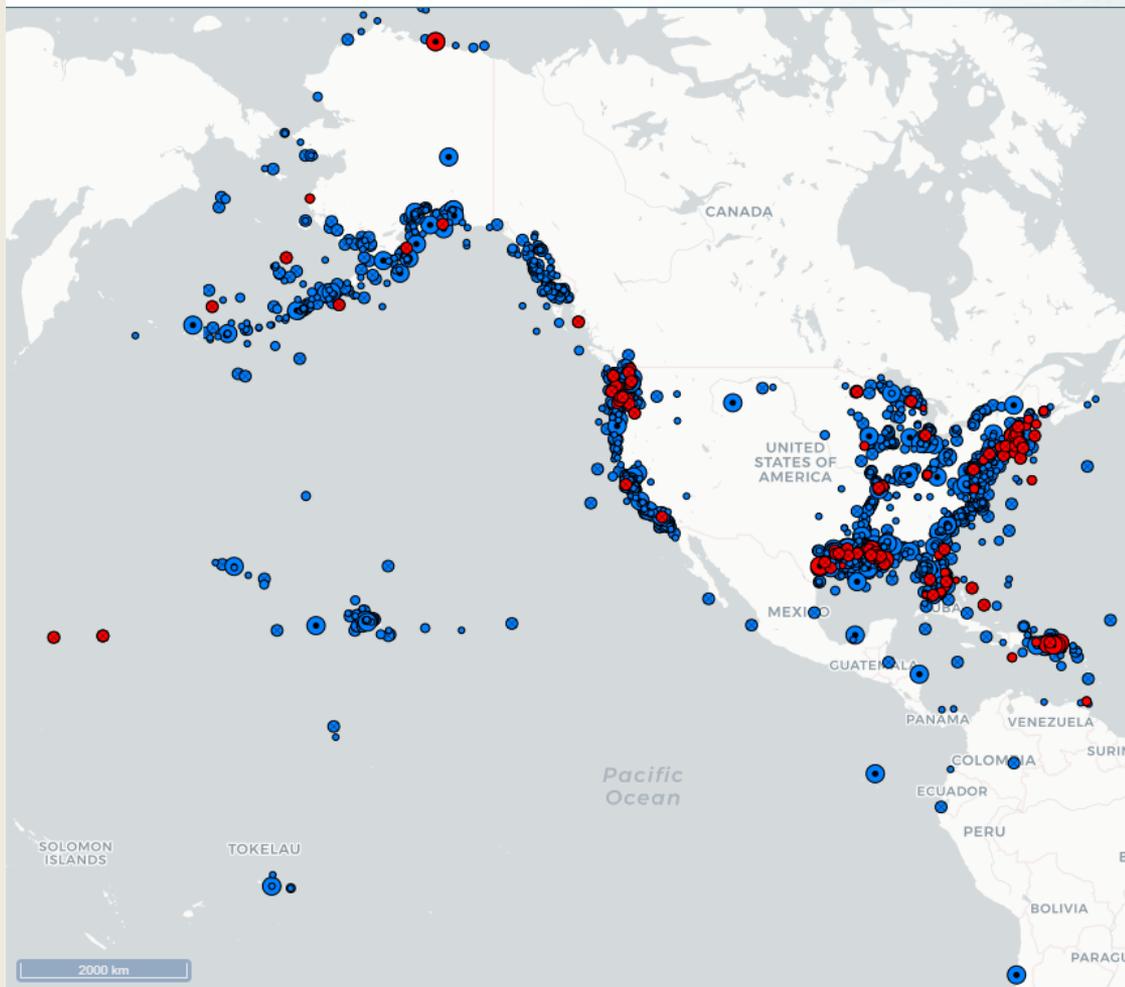


Time Series Enabled Data Sets



OR&R ResponseLink Data Feed

ERMA® Environmental Response Management Application
Gulf of Mexico



Active ResponseLink Hotlines (NOAA)

Active ResponseLink Hotlines (NOAA)

- Notification
- Phone Support
- Products Generated
- On-Scene Support

All ResponseLink Hotlines (NOAA)

All ResponseLink Hotlines (NOAA)

- Notification
- Phone Support
- Products Generated
- On-Scene Support

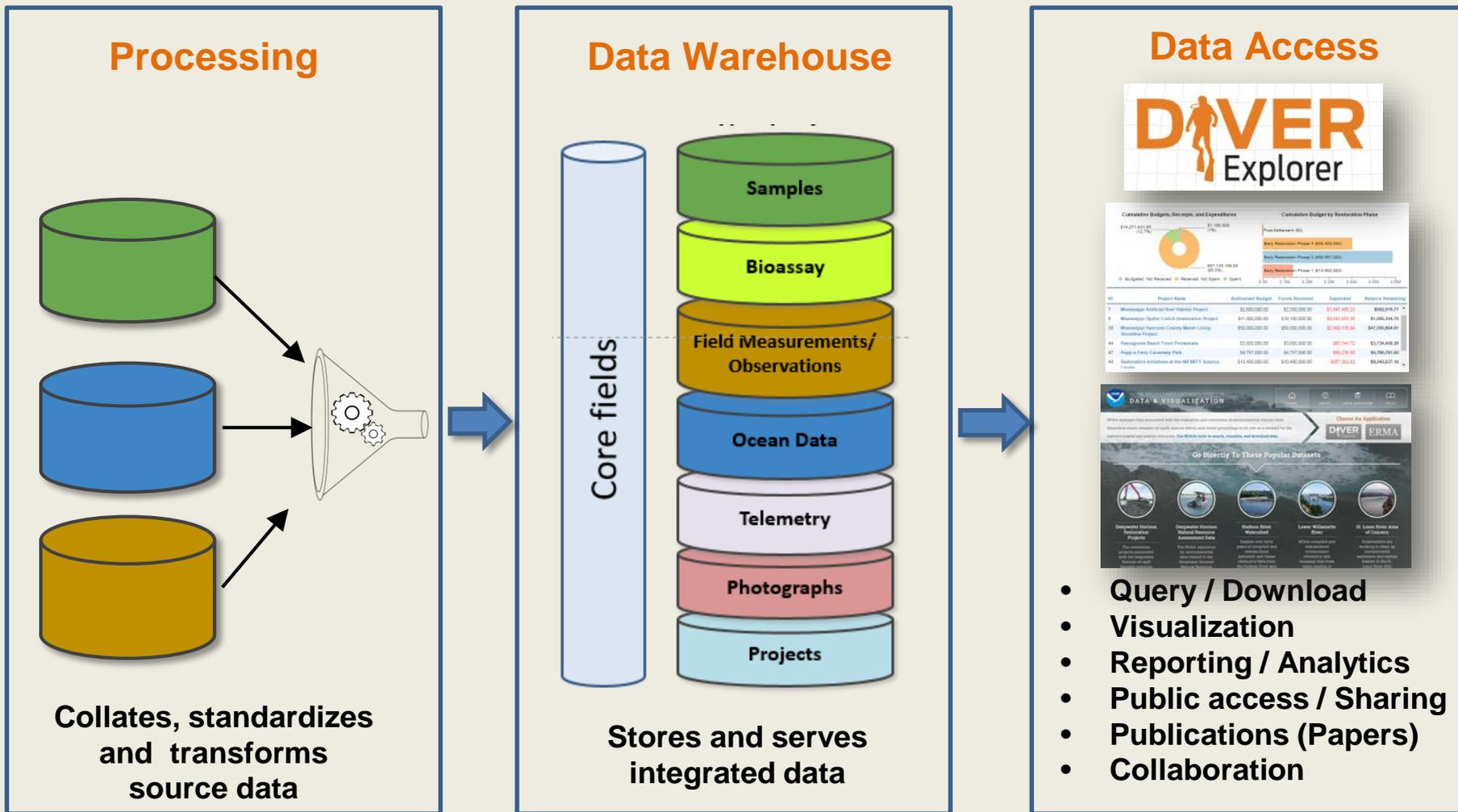
OpenStreetMap Light Gray (CARTO)

OpenStreetMap Light Gray (CARTO)

↑N Scale: 1 : 45,064,101 Zoom Level: 3.0

Location: -5.8783°, -61.6992°

NOAA's DIVER Interoperability



DIVER Environmental Data Specification

- Data Structures
- Fields and Definitions
- Valid Values
- Text for people who read; tables for cross-reference

NATURAL RESOURCE DAMAGE ASSESSMENT & RESTORATION

DATA & VISUALIZATION

HOME

ABOUT

DATA OVERVIEW

HELP

WHAT'S NEW

DATA OVERVIEW

DIVER (Data Integration, Visualization, Exploration, and Reporting) is a NOAA application for the integration and distribution of primarily NRDA-related response, assessment, and restoration data, as well as historical data collected from hazardous sites around the country. Both environmental data and project planning data are available in DIVER. Below, we provide a general description of the data structures used in DIVER, and access to detailed data specifications.

Check out the forms and guidance NOAA uses to collect field data

ENVIRONMENTAL DATA STRUCTURE

Environmental data are organized by data category:

- Samples:** Collection data and analysis results for discrete samples;
- Bioassay:** Results from field and laboratory-based bioassay studies;
- Instruments:** Packages of data from CTDs or other oceanographic instruments;
- Field Observations:** Observations and measurements from field studies;
- Telemetry:** Position tracks and related data for tagged animals; and
- Photographs:** Field photos keyword tagged using NOAA's Photologger.

Each data category contains a set of fields necessary to describe that data. Some common fields, like date and coordinates, appear in multiple categories (see diagram). Fields that appear in every environmental data category are known as **core fields** and form the fundamental relationships among data categories.

In DIVER, queries which are run across multiple data categories return and map information at the core fields level (also called "Overview"). In these cross-category queries, data category-specific fields are available as related downloads. For queries within a single data category (e.g. Samples or Field Observations), the data table and maps will present a wider set of fields specific to that data category.

The **DIVER Environmental Data Specification** describes the underlying data structures and data exchange methods, including detailed field information and valid values, and is intended as a resource for both data providers and data users. The data specification includes a discussion of the core fields required to organize and categorize data brought into DIVER, as well as general requirements regarding submission of structured and unstructured data and metadata. Tabular versions are available for **Appendix 1B**, defining available DIVER fields across different data categories, and **Appendix 2**, valid values and chemical dictionary.

Relationships Between Environmental Data Categories

<https://www.diver.orr.noaa.gov/data-overview>

DIVER Data Packages

- Shoreline Cleanup Assessment Techniques (SCAT) NOAA Data Standard
- Photos Packages
 - Photos with GPS
 - Geotagged Photos

FIELD FORMS AND GUIDANCE DOCUMENTS						
Document Type: <input type="text" value="Document Type(s)"/>		Resource: <input type="text" value="Resource(s)"/>		Search: <input type="text" value="SCAT"/>	<input type="button" value="RESET FILTERS"/>	<input type="button" value="DOWNLOAD"/>
SELECT ALL <input type="checkbox"/>	DOCUMENT TYPE	RESOURCE	DESCRIPTION	FILENAME		
<input type="checkbox"/>	Guideline	Ephemeral, All	Link to NOAA Office of Response and Restoration's (ORR) website where you can download NOAA's Shoreline Assessment Manual that describes SCAT team members, SCAT roles and responsibilities, the methods and process for conducting shoreline assessment, and using the results to make cleanup decisions at oil spills.	Shoreline Assessment Manual		
<input type="checkbox"/>	Guideline	Ephemeral, All	This document describes standards for the storage and management of observational Shoreline Cleanup Assessment Technique (SCAT) data collected by field survey teams during oil spills and similar incidents to evaluate shoreline conditions and oiling, recommend and guide treatment, and document compliance with cleanup endpoints. The standard includes a conceptual data model, QA/QC recommendations and a data dictionary as well as topological and tabular requirements.	NOAA SCAT Data Management Standard 508a.pdf		
<input type="checkbox"/>	Template	Ephemeral, All	Electronic Data Deliverable (EDD) template files with examples demonstrating the structure and attributes described in the NOAA SCAT Data Management Standard. These files contain synthetic SCAT data (not from an actual incident) in all three formats acceptable according to the current version of the NOAA SCAT Data Management Standard. (SHP, CSV, ESRI FGDB, and JSON/GEOJSON). These files should be used by an external agency to provide SCAT data to a NOAA SCAT data manager for incorporation into DIVER Explorer.	SCAT Interchange Demo 12.3.18.zip		

DIVER - ITC Tank Fire (Texas)

Recent Updates

This section of DIVER provides information on recent data updates, document uploads, new and updated activities and workspace information, and user management.

Region *Southeast* ▼
Activity *ITC Tank Fire* ▼
Workspace *Select Workspace* ▼

Date Range 01/01/2019 > 06/19/2019 
Update Type *All Types* ▼

RESET FILTERS

Group By: *Month* ▼ Sort Order: *Ascending* ▼ Card View [EXPORT](#)

875 Files / 1 Activities / 3 Workspaces / 3 Data Streams

MAR, 2019

150 Files
1 Activities
3 Workspaces

APR, 2019

532 Files
2 Data Streams

MAY, 2019

73 Files
1 Data Streams

JUN, 2019

120 Files

Technical Advancements

Interoperability

- Survey 123
- Response Manager
- DIVER
- ResponseLink
- NESDIS
- NOAA HSPO
- Trajectories (Advancing)
- Weather - Tides/Currents (In Discussion)
- Marine Debris (In Discussion)

Data Integration

- Our position is to build integration pathways, not attempt to force integration partners to work with what we already have.
- API tools allow all data management tasks and operations to be automated.
 - We provide an API client (written in Python) to partners that wish to integrate, and also provide some level of assistance.
- Comprehensive data import tools allow us to import data – even in non standard formats.

Data Service Interoperability

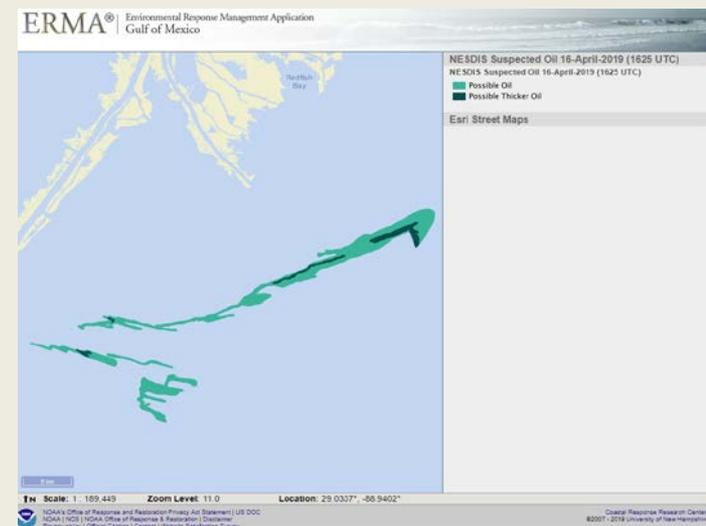
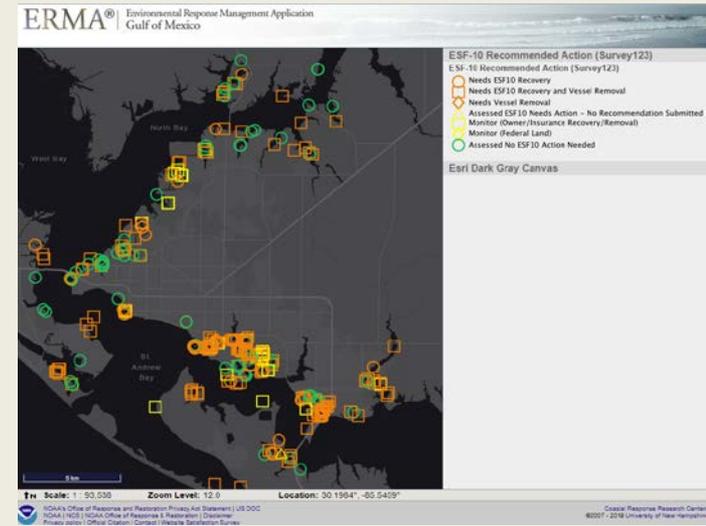
Secure sharing of ERMA services

- All ERMA data layers are available as a WMS
- Protected layers can be securely shared via WMS through a token setup
 - Individual/single layer
 - All layers associated with a specific ERMA “event”
 - Layers associated with a specific level of ERMA layer security, i.e. NOAA Sensitive Resources
 - Requires IPs to lock down to specific machines for proxies

ERMA can also use protected (u/p or token) layers from other sites using our proxy server.

ERMA's Data API

- ERMA has a data API allowing system-to-system connections
- Allows trusted partners to push data into ERMA.
 - Can create a new layer in ERMA (NESDIS MPSRs & ResponseLink)
 - Update existing layers (ESF-10 Survey123, water level stations)



Third Party Providers

- Complete RESTful API allows third party integration (you tell us what to do)
 - Add new data sources
 - Upload/add data to ERMA (we host)
- We respect your authority.
 - Limit access based on organization (Federal, State, Municipality, Company, etc.)
 - Limit access based on Event Type (i.e., DWH Spill, Taylor Energy Spill)
 - Limit access based on region – or a single user.
- You can keep your data (proxy services available)

ERMA down the Road

Looking to create/ leverage 'dashboards' to provide real-time statistics with multiple data layers

Tighter integration with EPA's Survey123 setup for FeatureServer exchanges

Next version of ERMA will work with AWS' containers, allowing seamless dynamic scaling of server resources

Recent Enhancement

Loading Local Data

All users, including public, can load shapefiles or mapservices into ERMA.

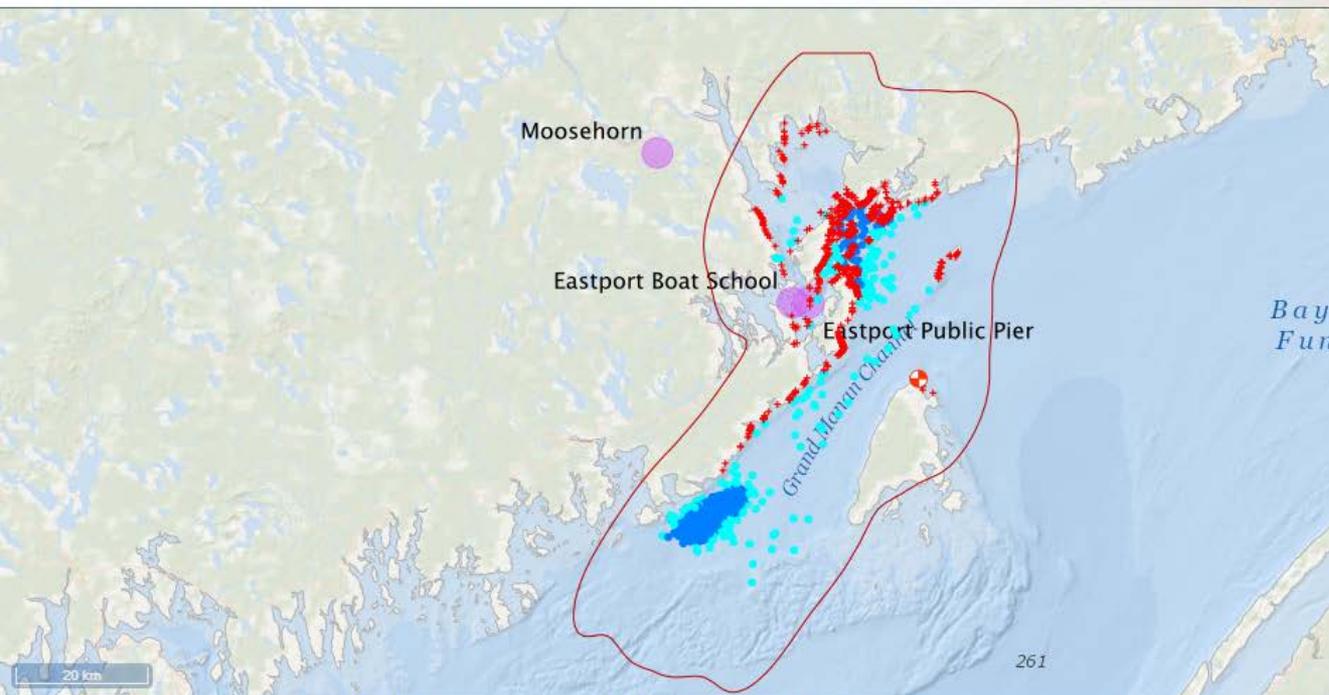
- Becomes a temporary layer in ERMA
- Stored by session or as long as browser cache is stored



CANUSLANT 2019

- Worked with US and Canadian Partners
 - Transport Canada, Environment Canada

ERMA® | Environmental Response Management Application
Atlantic

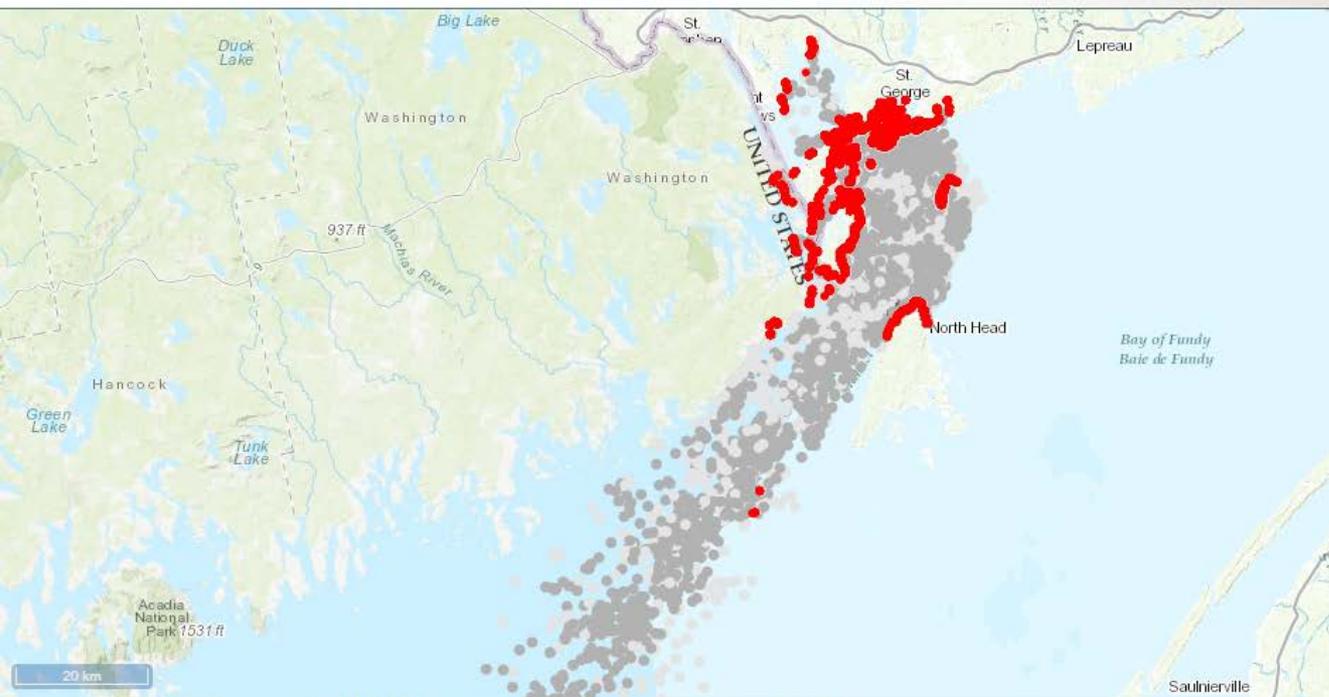


Incident Location
Incident Location ● Incident Location
Uncertainty contour Jun 13 2019 18:00
Uncertainty contour Jun 13 2019 18:00 ∇ Uncertainty Boundary
Beached particles at Jun 13 2019 18:00
Beached particles at Jun 13 2019 18:00 ● Beached ● Floating
Floating Oil at Jun 13 2019 18:00
Floating Oil at Jun 13 2019 18:00 ● Light ● Medium ● Heavy
Staging Areas - US
Staging Areas - US ● CANUSLANT Staging Areas
Esri Ocean
Esri Ocean

Scale: 1 : 613,902 Zoom Level: 9.0 Location: 44.9094°, -65.9866°

CANUSLANT 2019

ERMA® Environmental Response Management Application
Atlantic



Canadian trajectories

Canadian trajectories

- shorepoints
- < 0.001
- .001 - < .001
- 0.01 - < 0.1
- 0.1 - < 1.0

Incident Location

Incident Location

- Incident Location

Esri World Topo

Scale: 1 : 615,043 Zoom Level: 9.0 Location: 44.6989°, -66.0059°

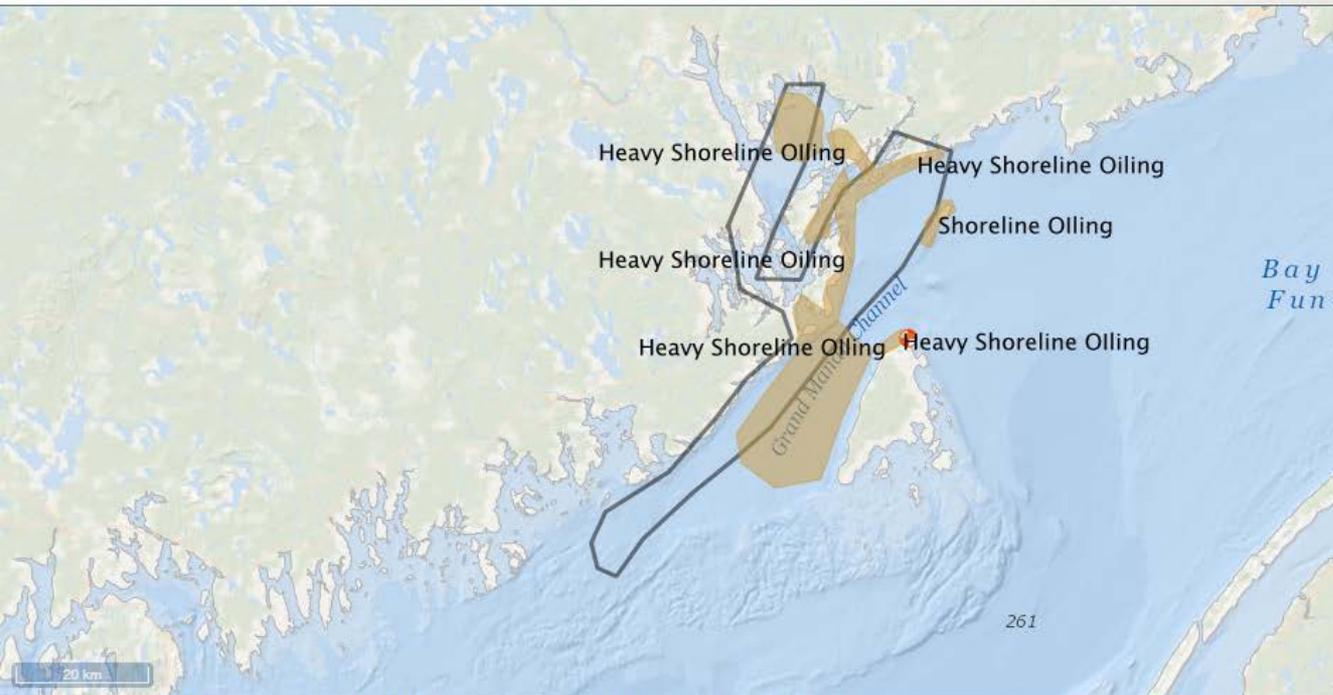
NOAA's Office of Response and Restoration Privacy Act Statement | US DOC
NOAA | NOS | NOAA Office of Response & Restoration | Disclaimer
Privacy policy | Official Citation | Contact | Website Satisfaction Survey

(DRILL -- DRILL -- DRILL)

Coastal Response Research Center
©2007 - 2019 University of New Hampshire

CANUSLANT 2019

ERMA® Environmental Response Management Application
Atlantic



Overflight Oil Observations 2019-06-13 0900

Overflight Oil Observations 2019-06-13 0900
 CANUSLANT overflight obs 20190623 0900

Overflight 2019-06-13 0900 Flightline

Overflight 2019-06-13 0900 Flightline
 CANUSLANT 20190613_overflight_lines

Incident Location

Incident Location
 Incident Location

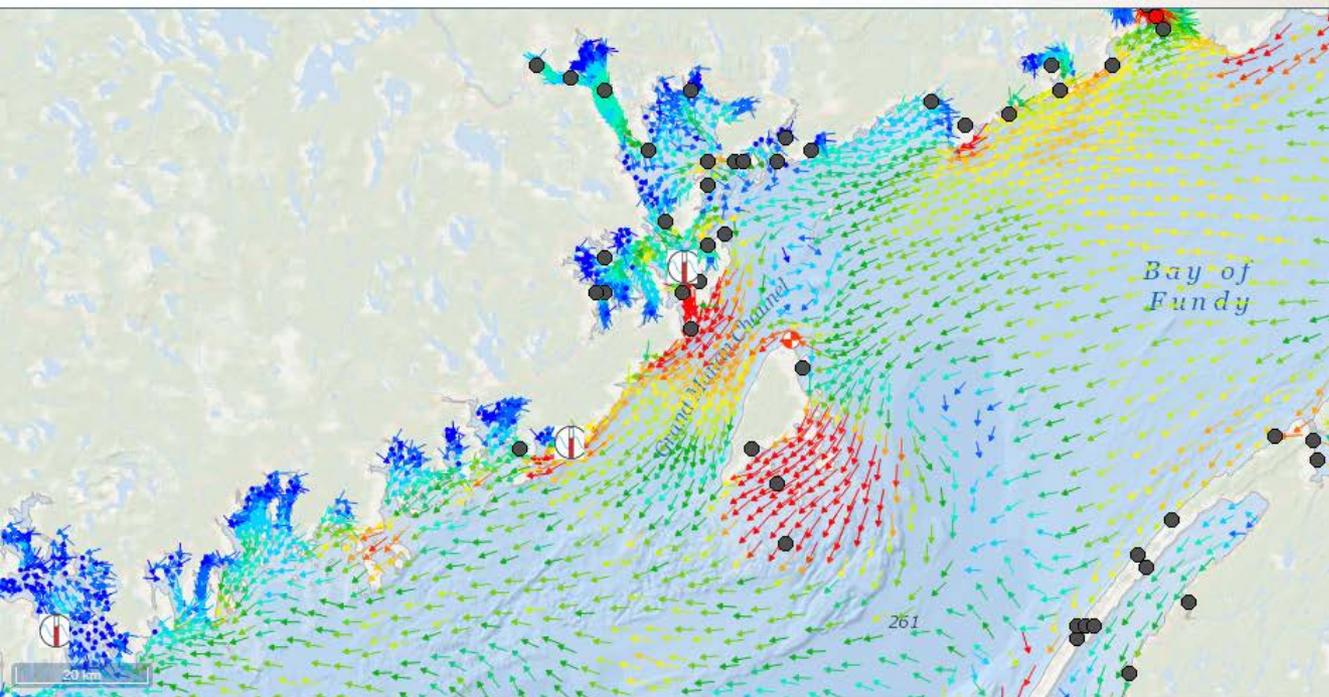
Esri Ocean

Esri Ocean

Scale: 1 : 614,476 Zoom Level: 9.0 Location: 44.7184°, -65.9399°

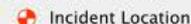
CANUSLANT 2019

ERMA® Environmental Response Management Application
Atlantic



Incident Location

Incident Location



NOAA CO-OPS Water Levels (NOAA-COOPS-NWLON)

NOAA CO-OPS Water Levels (NOAA-COOPS-NWLON)



Canadian Tidal Stations (DFO-MPO CA)

Canadian Tidal Stations (DFO-MPO CA)

- Permanent Water Level Network Station
- Tidal Bore Station
- Tide and Water Level Station

FVCOM NECOFS Gulf of Maine Currents (IOOS)

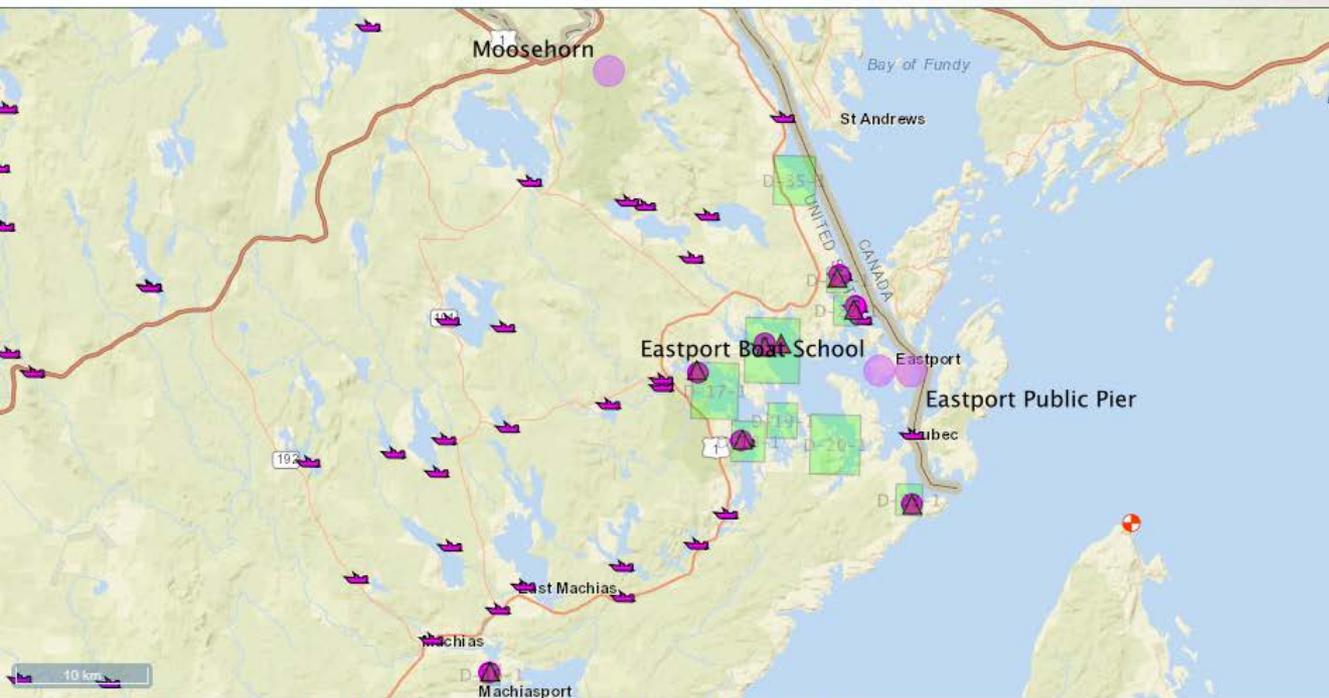
FVCOM NECOFS Gulf of Maine Currents (IOOS)

Currents (Knots)	Color
0.00 - 0.25	Blue
0.25 - 0.50	Light Blue
0.50 - 0.75	Green
0.75 - 1.00	Yellow-Green
1.00 - 1.25	Yellow
1.25 - 1.50	Orange
> 1.50	Red

Scale: 1 : 614,485 Zoom Level: 9.0 Location: 44.6599°, -65.7147°

CANUSLANT 2019

ERMA® Environmental Response Management Application
Atlantic



Skimmers (ME DEP, 2019)

Skimmers (ME DEP, 2019)

🚤 Skimmers

Staging Areas (ME DEP, 2019)

Staging Areas (ME DEP, 2019)

📍 Staging Area

ME-NH Geographic Response Strategy (GRS) Extent

ME-NH Geographic Response Strategy (GRS) Extent

🟩 Geographic Response Strategy Extent

Collection Point (ME DEP, 2019)

Collection Point (ME DEP, 2019)

📍 Collection Point

Boat Launches (ME DEP 2019)

Boat Launches (ME DEP 2019)

🚤 Boat Launches (ME DEP 2019)

Staging Areas - US

Staging Areas - US

📍 CANUSLANT Staging Areas

Scale: 1 : 306,510 Zoom Level: 10.0 Location: 44.9905°, -66.5840°

Recent Hurricanes 2017-2018

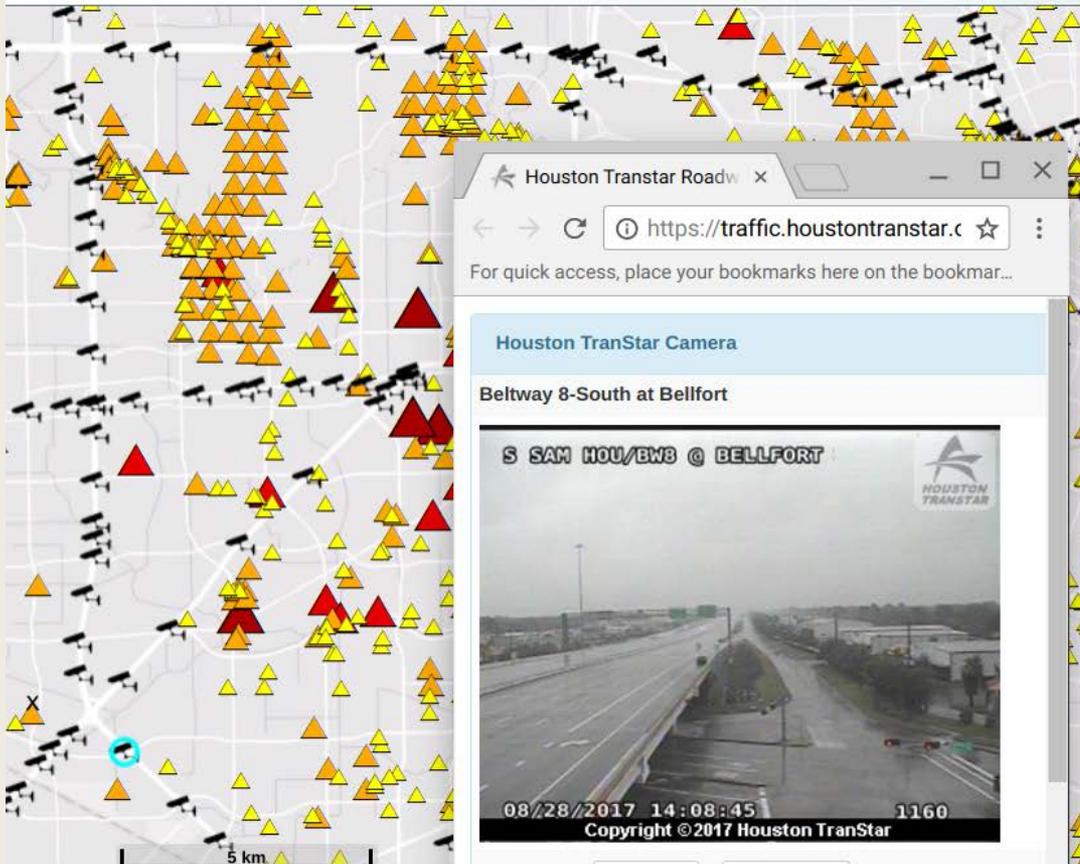
- Harvey (2017)
- Irma (2017)
- Maria (2017)
- Nate (2017)
- Florence (2018)
- Michael (2018)



Harvey



ERMA[®] | Environmental Response Management Application
Gulf of Mexico



Esri Light Gray Canvas

Esri Light Gray Canvas

NOAA Locations with Staff Counts

NOAA Locations with Staff Counts

- 1-5
- 6-15
- 16-50
- 51-100
- 101-2700

Houston Power Outages (CenterPoint Energy)

Houston Power Outages (CenterPoint Energy)

- ▲ 1 - 10 customers without power
- ▲ 11 - 100 customers without power
- ▲ 101 - 300 customers without power
- ▲ More than 300 customers without power

Houston Traffic Webcams (Houston TranStar)

Houston Traffic Webcams (Houston TranStar)

Houston Traffic Webcams (Houston TranStar)

Houston TranStar Camera

Beltway 8-South at Bellfort

S SAM HOU/BWB @ BELLFORT



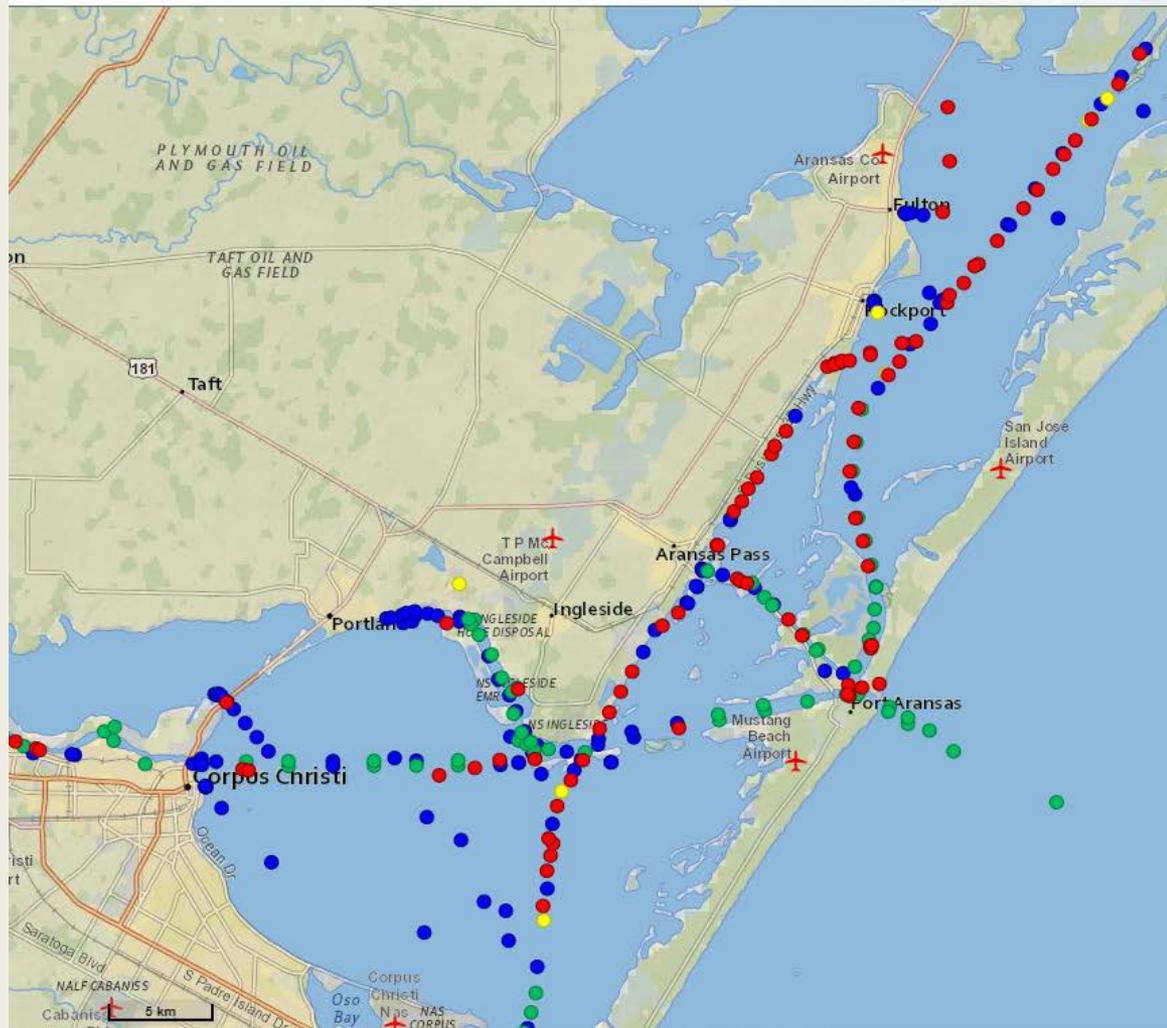
08/28/2017 14:08:45 1160
Copyright ©2017 Houston TranStar

✕ Close
↻ Refresh

↑N Scale: 1 : 93,988 Zoom Lev

Harvey USCG Support for ATONS

ERMA® | Environmental Response Management Application
Gulf of Mexico



USCG Sector Corpus Christi & Sector Houston Galveston All ATONs September 5, 2017

USCG Sector Corpus Christi & Sector Houston Galveston All ATONs September 5, 2017

- Hurricane-Caused - Inactive
- Hurricane-Caused - Corrected
- Not-Hurricane-Caused - InActive
- Not-Hurricane-Caused - Active

Esri National Geographic

Esri National Geographic

Scale: 1 : 191,235 Zoom Level: 11 Location: 27.9746°, -96.8967°



Hurricane Irma Water level stations 9/6, 10am

ERMA® | Environmental Response Management Application
Caribbean

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

Barbuda at 17.5908 -61.8206 - Google Chrome

about:blank

NOAA/NOS/CO-OPS
Observed Water Levels at 9761115, Barbuda
From 2017/09/05 00:00 GMT to 2017/09/06 23:59 GMT

Height in feet (MLLW)

NOAA/NOS Center for Operational Oceanographic Products and Services

— Predictions — Verified — Preliminary — (Observed - Predicted)

Lameshur Bay, St John at 18.3182 -64.7242 - Google Chrome

about:blank

Lameshur Bay, St John at 18.3182 -64.7242

NOAA/NOS/CO-OPS
Observed Water Levels at 9751381, Lameshur Bay, St John VI
From 2017/09/05 00:00 GMT to 2017/09/06 23:59 GMT

Height in feet (MLLW)

NOAA/NOS Center for Operational Oceanographic Products and Services

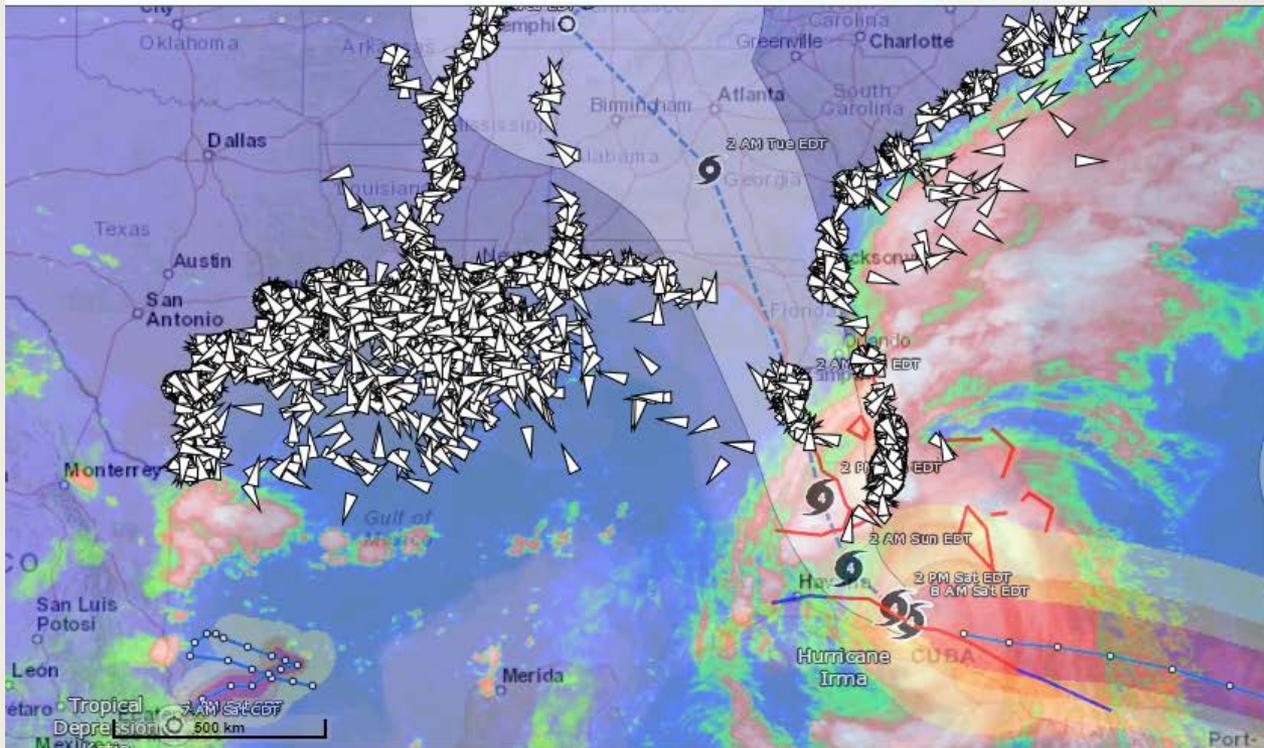
— Predictions — Verified — Preliminary — (Observed - Predicted)

Datums (MLLW)

- MHHW MHW
- MTL MSL
- MLLW MLW

Response and Research Ship Tracking

ERMA® Environmental Response Management Application
Atlantic



NAIS - All Vessels (last 8 hours)

NAIS - All Vessels (last 8 hours)

- ◁ General
- ▷ Response
- ◀ Research
- ▶ Skimmer
- ▲ Government
- ▼ Source Operations

Tropical Cyclone & Hurricane Location and Forecast (NOAA)

Tropical Cyclone & Hurricane Location and Forecast (NOAA)

Atlantic, Central Pacific and Eastern Pacific Ocean Regions

Tropical Cyclone Watches and Warnings for Coast

- Hurricane Watch
- Hurricane Warning
- Tropical Storm Watch
- Tropical Storm Warning

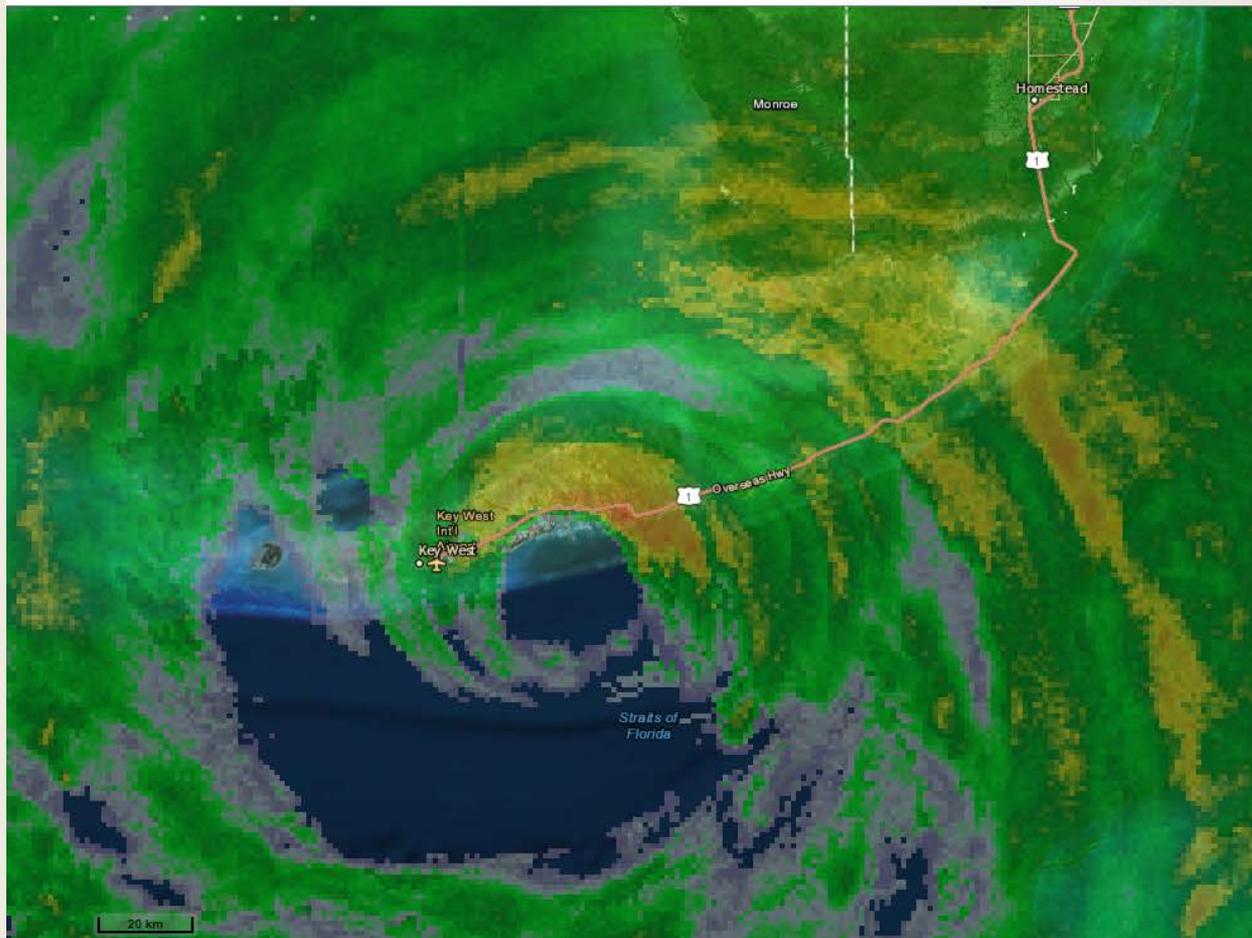
Tropical Cyclone Center Position Forecasts

- Major Hurricane (Category 3 - 5)
- Hurricane (Category 1 - 2)
- Tropical Storm
- Tropical Depression
- ⊗ Potential Tropical Cyclone, Subtropical Depression, Subtropical Storm, Post-Tropical

Scale: 1 : 10,279,921 Zoom Level: 5.25 Location: 33.5649°, -96.1763°

Hurricane Irma Florida Keys - Irma 9/10 - 8am

ERMA® | Environmental Response Management Application
Atlantic



Reference Features and World Boundaries/Places

Reference Features and World Boundaries/Places
World Boundaries and Places

Reference World Transportation

Reference World Transportation
World Transportation

Weather Radar Mosaic (NOAA)

Weather Radar Mosaic (NOAA)



Esri World Imagery

Esri World Imagery

↑N Scale: 1 : 786,304 Zoom Level: 9 Location: 24.7693°, -80.1255°



Irma Imagery

ERMA® Environmental Response Management Application
Gulf of Mexico

ERMA® Environmental Response Management Application
Gulf of Mexico



Aerial Imagery 2017-0912a
Aerial Imagery 2017-0912a

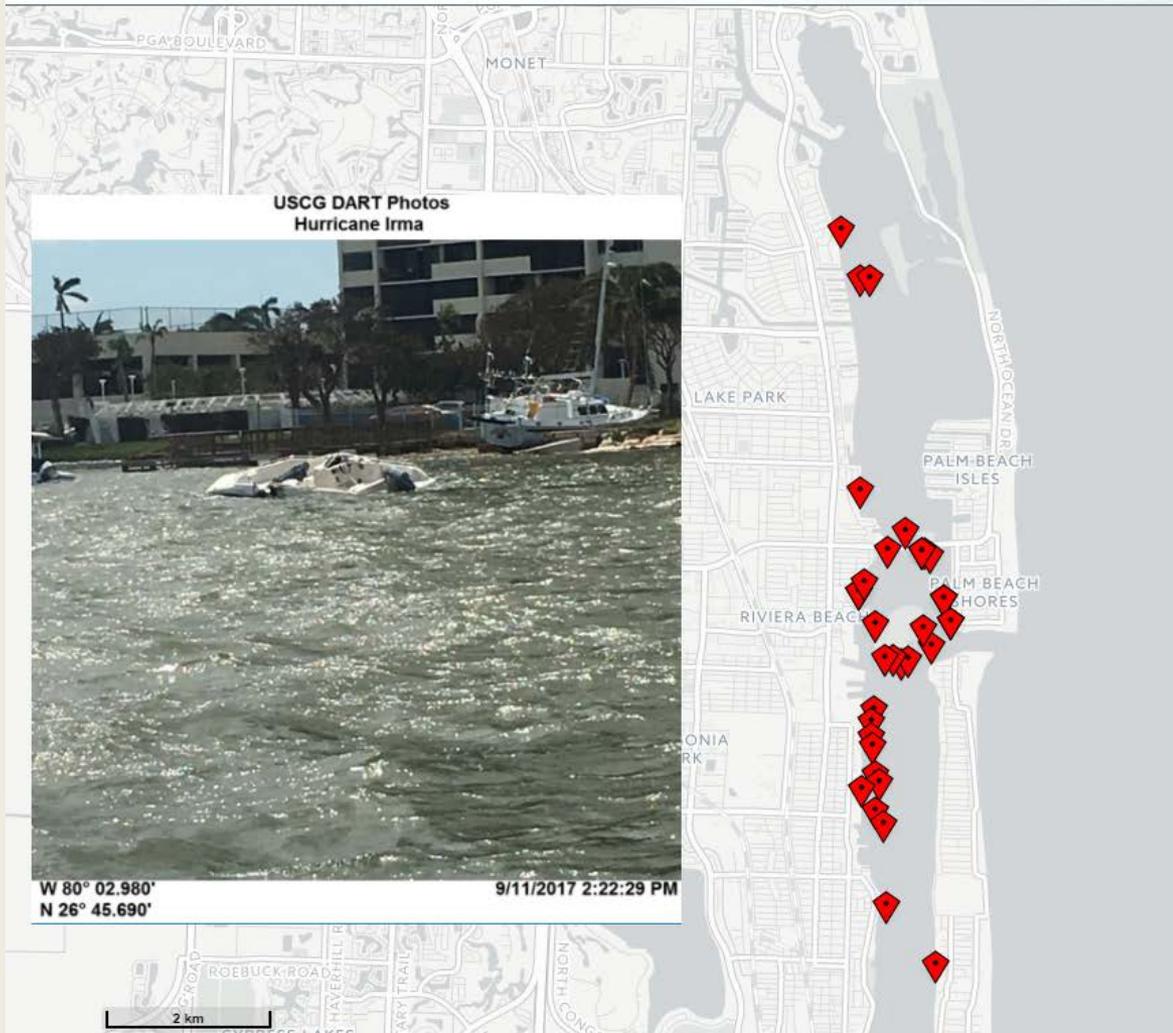


Esri World Imagery
Esri World Imagery

Scale: 1 : 768 Zoom Level: 19 Location: 24.7161°, -81 Scale: 1 : 768 Zoom Level: 19 Location: 24.7161°, -81.0699°

Irma USCG Marine Patrol Photos

ERMA® Environmental Response Management Application
Gulf of Mexico



USCG Sector Miami Harbor Patrol

USCG Sector Miami Harbor Patrol



OpenStreetMap Light Gray (CARTO)

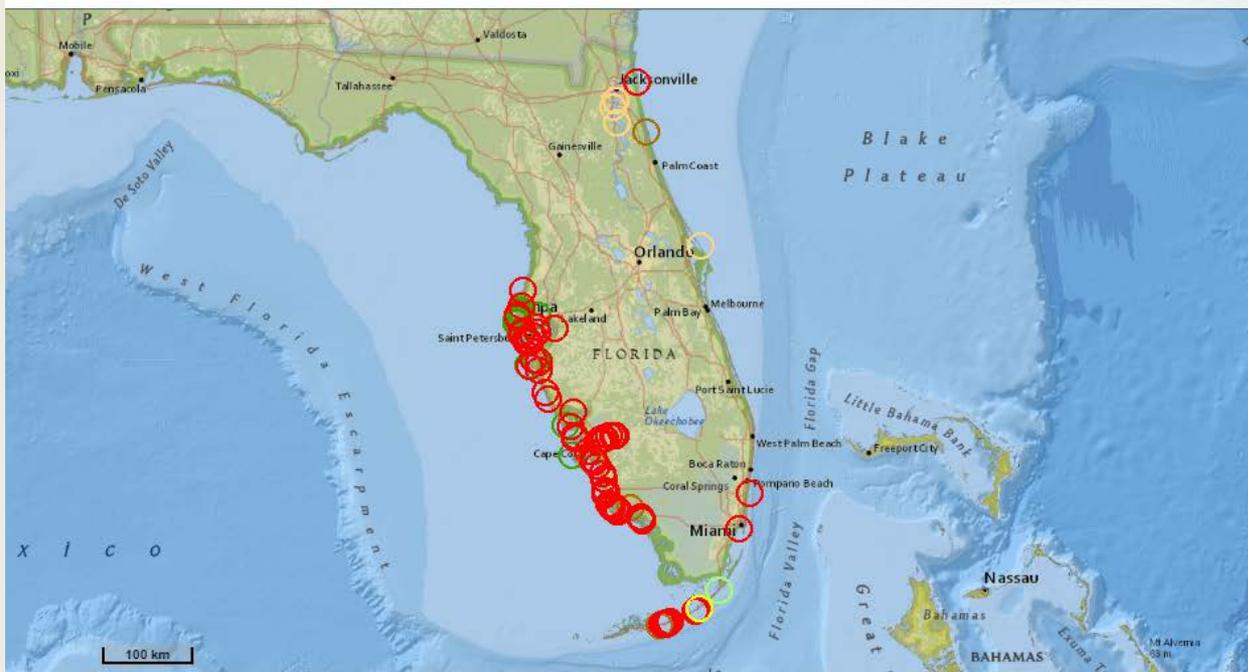
OpenStreetMap Light Gray (CARTO)

Scale: 1 : 48,312 Zoom Level: 12.9996973387910 Location: 26.8003°, -80.1143°



Irma EPA & USCG Targets 09-28-17

ERMA® | Environmental Response Management Application
Gulf of Mexico



USCG Target Status

- Assessed
- Recovery Complete
- Removal Complete
- Recovery in Progress
- Removal in Progress
- Unknown
- Not Found
- Transfer Complete
- Transfer in Progress

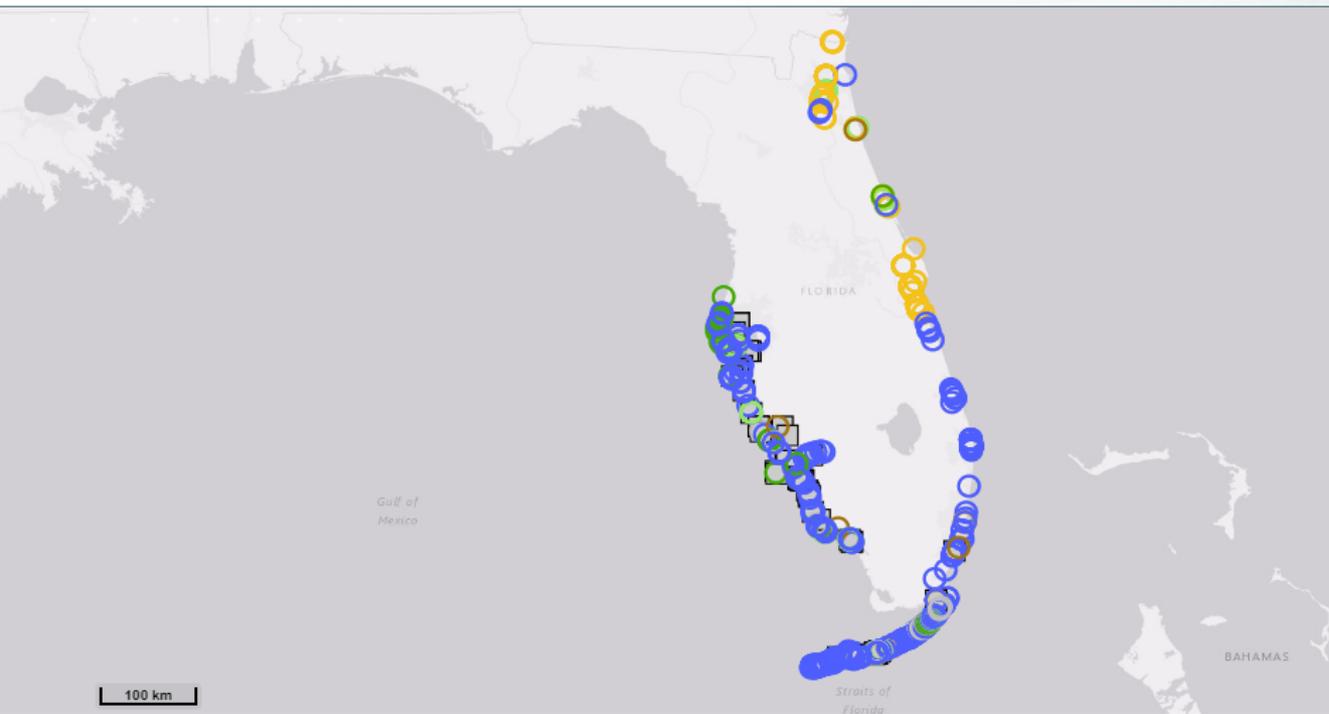
Esri National Geographic

Esri National Geographic

Scale: 1 : 4,335,602 Zoom Level: 6.5 Location: 30.9132°, -75.1161°

Florida ESF-10 Assessments by Status (10-3-2017)

ERMA® Environmental Response Management Application
Gulf of Mexico



ESF-10 Field Assessment by Status (EPA Survey123)

ESF-10 Field Assessment by Status (EPA Survey123)

- Assessed
- Recovery Complete
- Removal Complete
- Recovery in Progress
- Removal in Progress
- Transfer Complete
- Transfer in Progress
- Unknown (Not Prev. Assessed)
- Not Found (Prev. Assessed)

Esri Light Gray Canvas

Esri Light Gray Canvas

Scale: 1 : 4,339,357 Zoom Level: 6.5 Location: 30.9415°, -76.3806°

Identified Debris from Imagery 09-28-17

ERMA® | Environmental Response Management Application
Gulf of Mexico



Identified Debris, Florida - Post Hurricane Irma 9-26-17 (RPI)

Identified Debris, Florida - Post Hurricane Irma 9-26-17 (RPI)

- Automotive
- Construction
- Debris Pile
- Trailer
- Unknown
- Vessel
- Oil Hazmat Container

Esri National Geographic

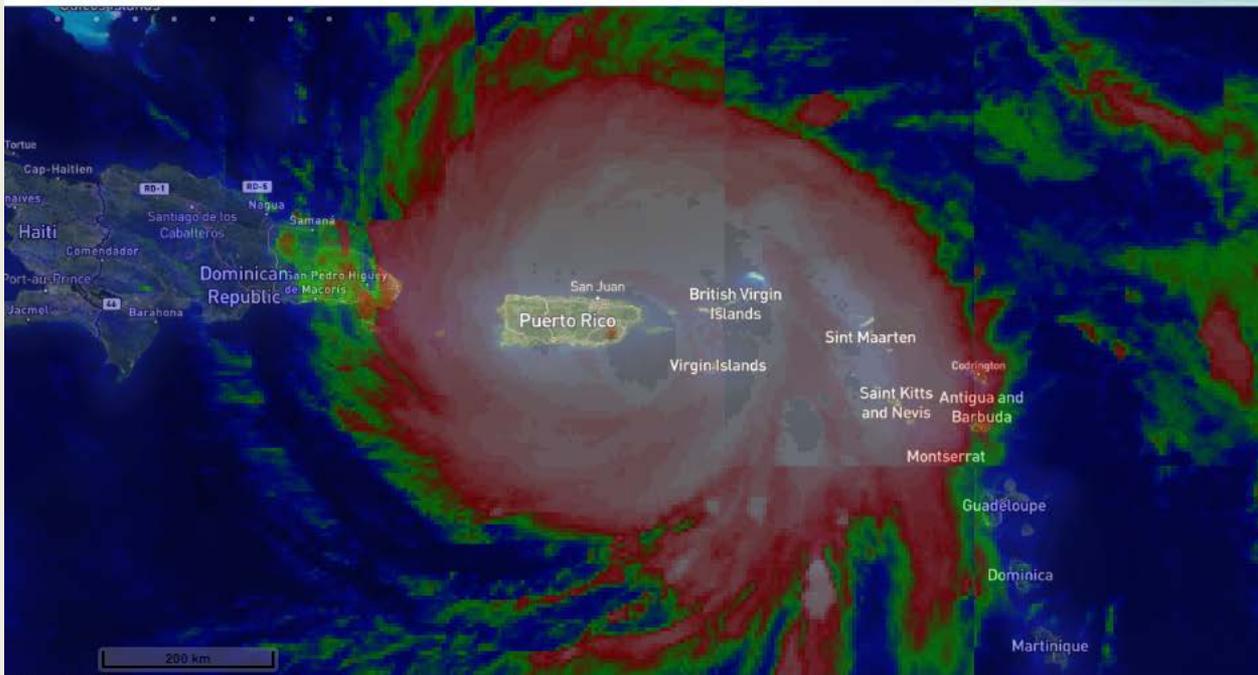
Esri National Geographic

Scale: 1 : 2,195,465 Zoom Level: 7.5

Location: 28.0153°, -77.8039°

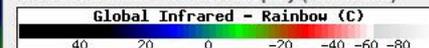
Maria Landfall, 9/20 @ 8:00 am

ERMA® | Environmental Response Management Application
Caribbean



Global GOES IR Rainbow display (RealEarth)

Global GOES IR Rainbow display (RealEarth)



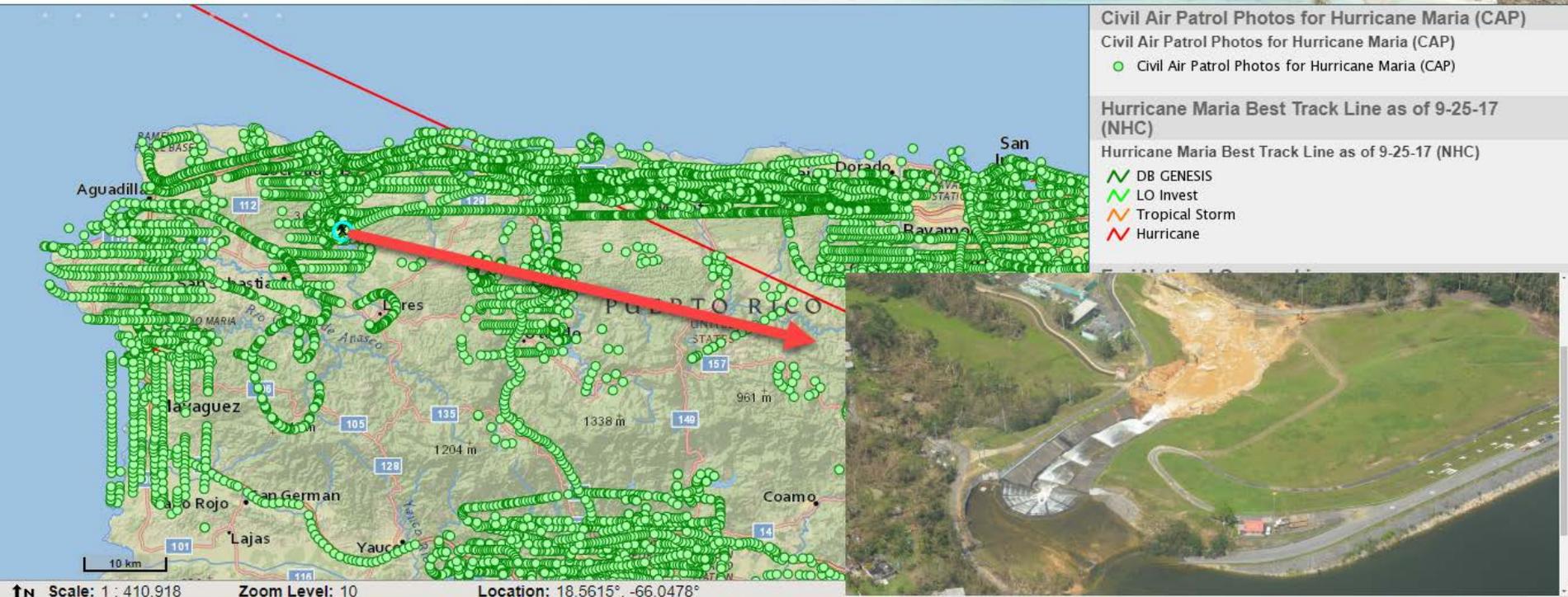
MapBox Hybrid Imagery

MapBox Hybrid Imagery

Scale: 1: 4,521,310 Zoom Level: 6.54290167916289 Location: 14.8748°, -67.1668°

Civil Air Patrol Photos Post Maria, Guajataca Dam

ERMA® Environmental Response Management Application
Caribbean



EPA Region 2 Response Manager Feeds 09-29-17

ERMA® | Environmental Response Management Application
Caribbean



Pesticide Facility Assessments (zoom dependent) (EPA RM)

- Assessed: Follow-up
- Assessed: Follow-up
- Not Yet Assessed

SPCC Facilities (zoom dependent) (EPA RM)

SPCC Facilities (zoom dependent) (EPA RM)

- Assessed: Follow-Up
- Assessed: No Follow-Up
- Not Yet Assessed

RMP Facility Assessments (zoom dependent) (EPA RM)

RMP Facility Assessments (zoom dependent) (EPA RM)

- Assessed: Follow-Up
- Assessed: No Follow-Up
- Not Yet Assessed

Drinking Water Facility Assessments (zoom dependent) (EPA RM)

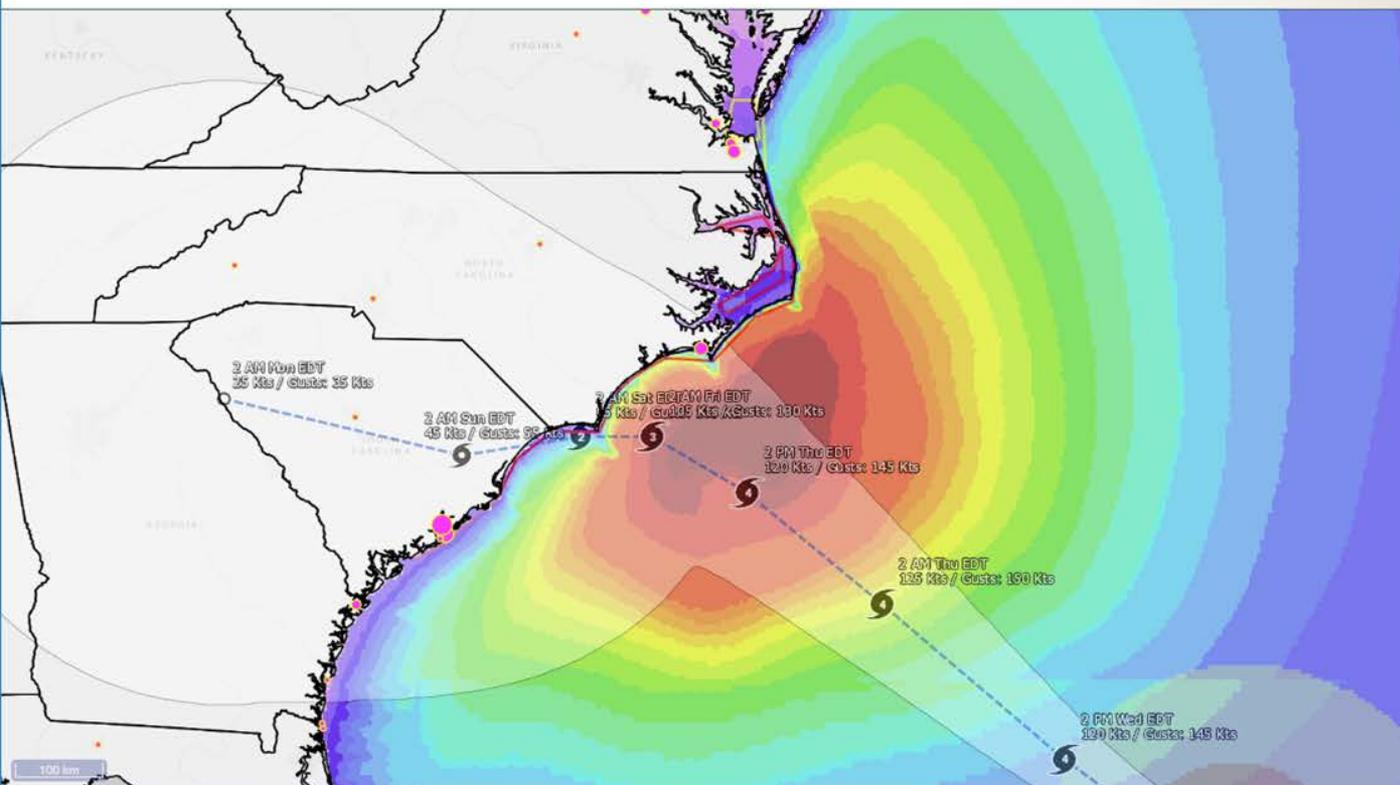
Drinking Water Facility Assessments (zoom dependent) (EPA RM)

- Fully Operational
- Operational w/ Restrictions
- Non-Operational
- Not Yet Assessed

Scale: 1 : 882,296 Zoom Level: 8.9000000000000000 Location: 17.8151°, -64.8155°

Hurricane Florence with NOS Locations and Significant Wave Height, 72-hrs from : 9/12/18

ERMA® Environmental Response Management Application
Atlantic



NOAA Locations with Staff Counts - NOS
NOAA Locations with Staff Counts - NOS

- 1-5
- 6-15
- 16-50
- 51-100
- 101-2075

U.S. States and Provinces Boundaries

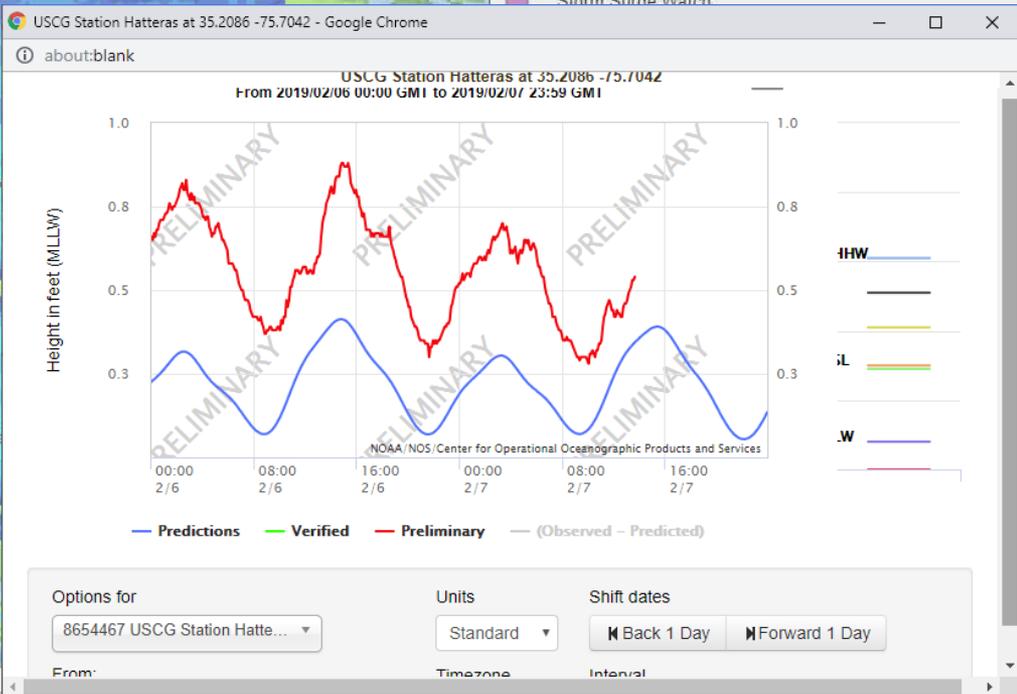
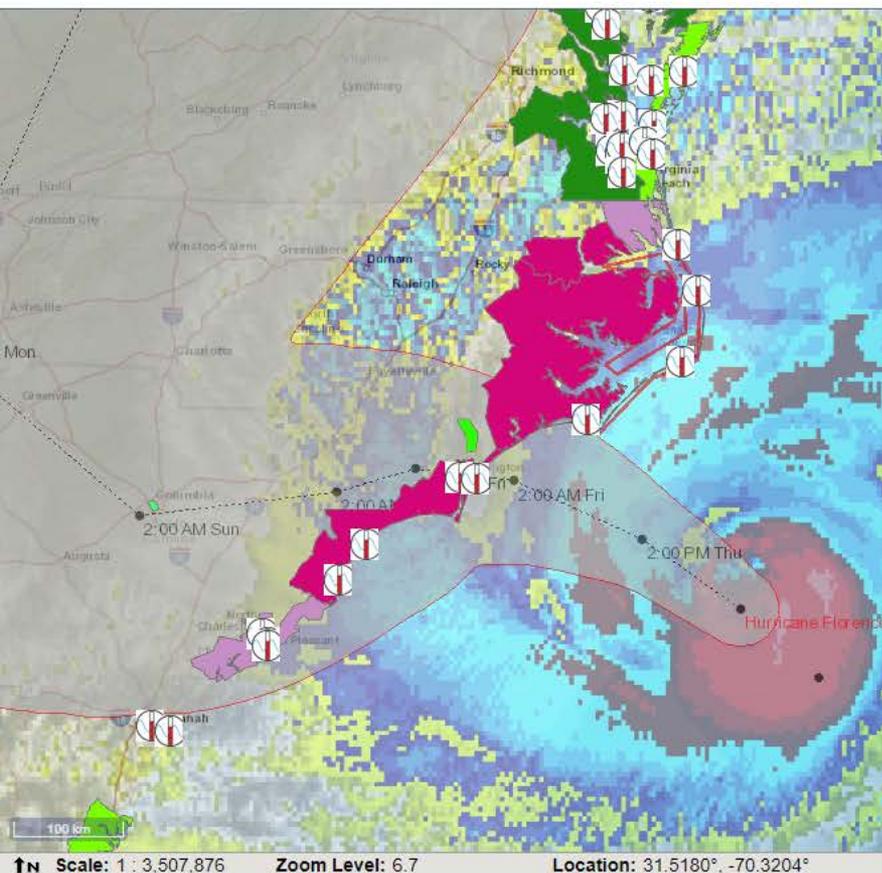
✓ U.S. States and Provinces Boundaries

Tropical Cyclone & Hurricane Location and Forecast (NOAA)

- Atlantic, Central Pacific and Eastern Pacific Ocean Regions
- Tropical Cyclone Watches and Warnings for Coast
- Hurricane Watch
 - Hurricane Warning
 - Tropical Storm Watch
 - Tropical Storm Warning
- Tropical Cyclone Center Position Forecasts
- Major Hurricane (Category 3 - 5)
 - Hurricane (Category 1 - 2)
 - Tropical Storm
 - Tropical Depression
 - ⊗ Potential Tropical Cyclone, Subtropical Depression, Subtropical Storm, Post-Tropical Cyclone, or Remnants
- Tropical Cyclone Track Line Forecasts
- 120-hr Forecast Track Line
- Tropical Cyclone Cone of Uncertainty for Track Forecasts
- 120-hr Forecast Cone of Uncertainty

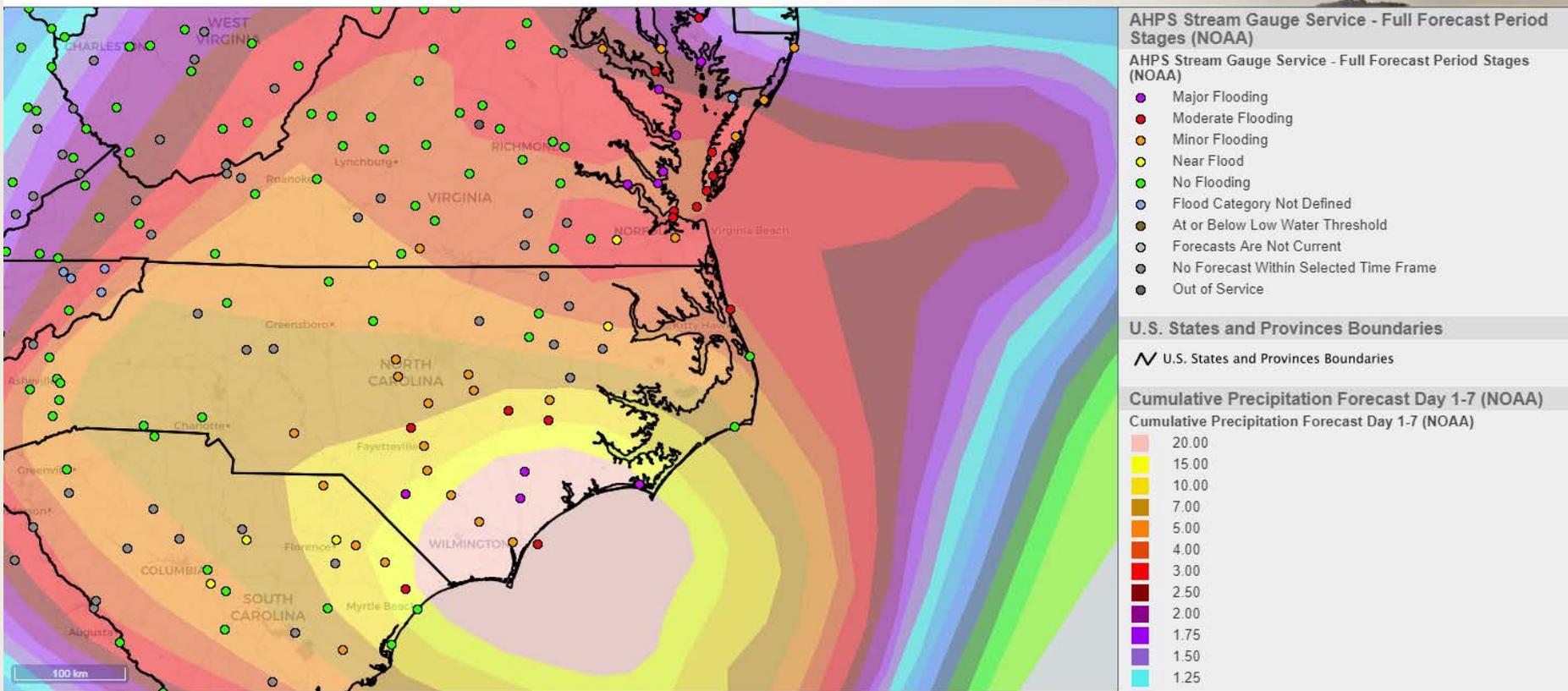
Flooding/Storm Surge Warnings/Watches and Water Level Stations : 9/13/18, 10:00

ERMA® | Environmental Response Management Application
Atlantic



Florence, Stream Gauge Flooding Forecast and 7-day Cumulative Precipitation Forecast : 9/13/18

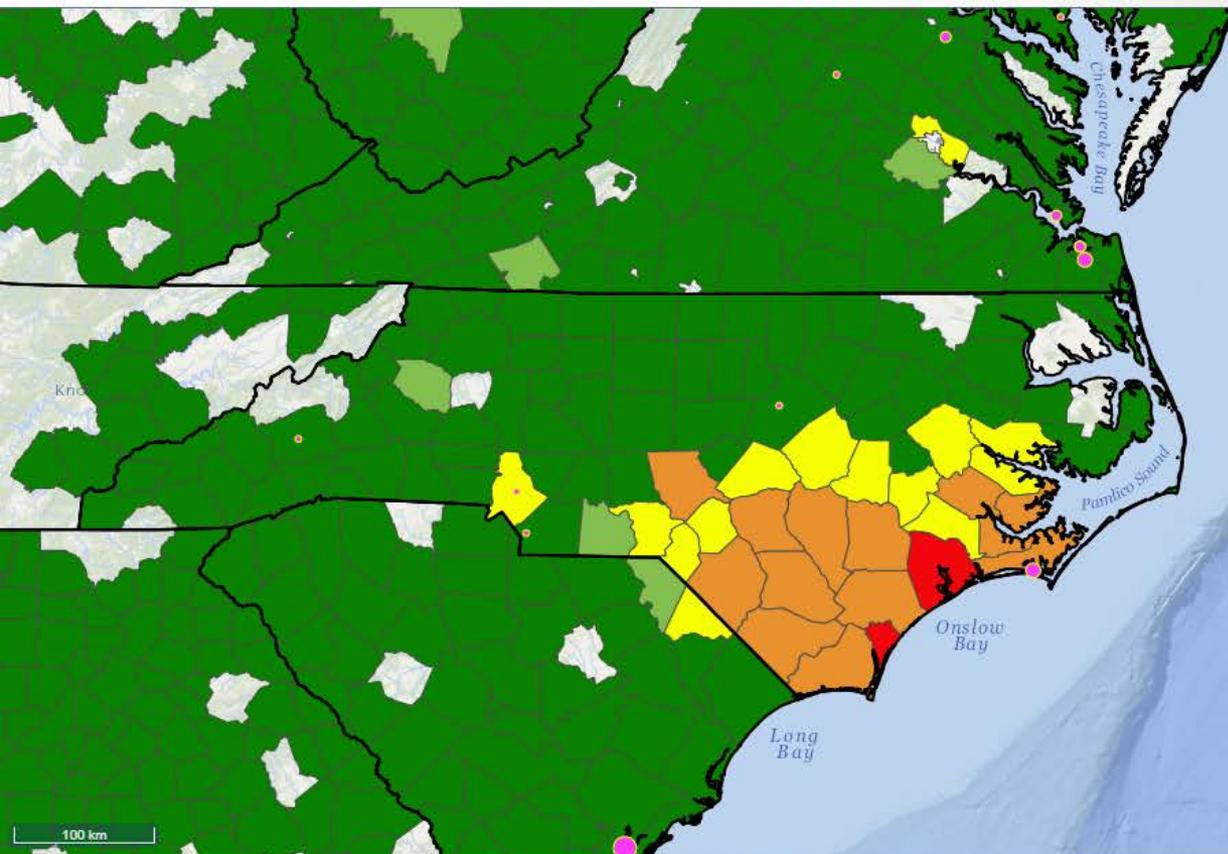
ERMA® Environmental Response Management Application
Atlantic



Scale: 1 : 2,806,787 Zoom Level: 7.0 Location: 38.6469°, -77.7063°

Current Electrical Outages : 9/18/18, 07:00

ERMA® | Environmental Response Management Application
Atlantic



NOAA Locations with Staff Counts - NOS

NOAA Locations with Staff Counts - NOS

- 1-5
- 6-15
- 16-50
- 51-100
- 101-2075

U.S. States and Provinces Boundaries

✓ U.S. States and Provinces Boundaries

Current Electrical Outages (# customers) (ORNL)

Current Electrical Outages (# customers) (ORNL)

- 0 - 500
- 501 - 1500
- 1501 - 5000
- 5001 - 25000
- > 25001

Esri Ocean

Esri Ocean

↑N Scale: 1 : 2,814,460 Zoom Level: 7.0 Location: 35.5501°, -74.2731°

Florence, NRT-5 transit : 9/17/18, 08:00-16:00

ERMA® | Environmental Response Management Application
Atlantic



NAIS - NOAA Navigation Response Teams (NRT)

NAIS - NOAA Navigation Response Teams (NRT)

▮ Vessel Group

NAIS - NOAA NRT Tracklines (last 8 hours)

NAIS - NOAA NRT Tracklines (last 8 hours)

∞ Vessel Group

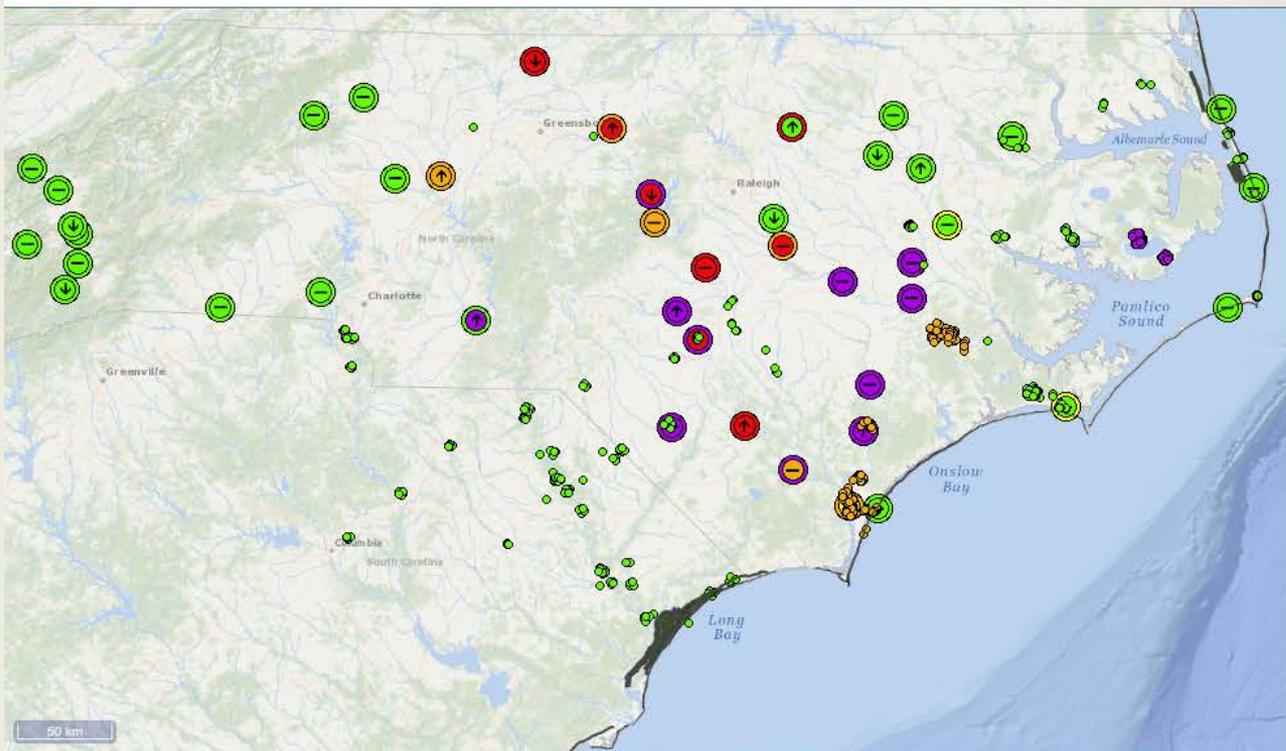
MapBox Hybrid Imagery

MapBox Hybrid Imagery

↑ Scale: 1 : 22,238 Zoom Level: 14.0 Location: 34.7125°, -76.6472°

Florence, NOAA NGS Photography, CAP Photography and NC Stream Gauge Status, 9/18/18

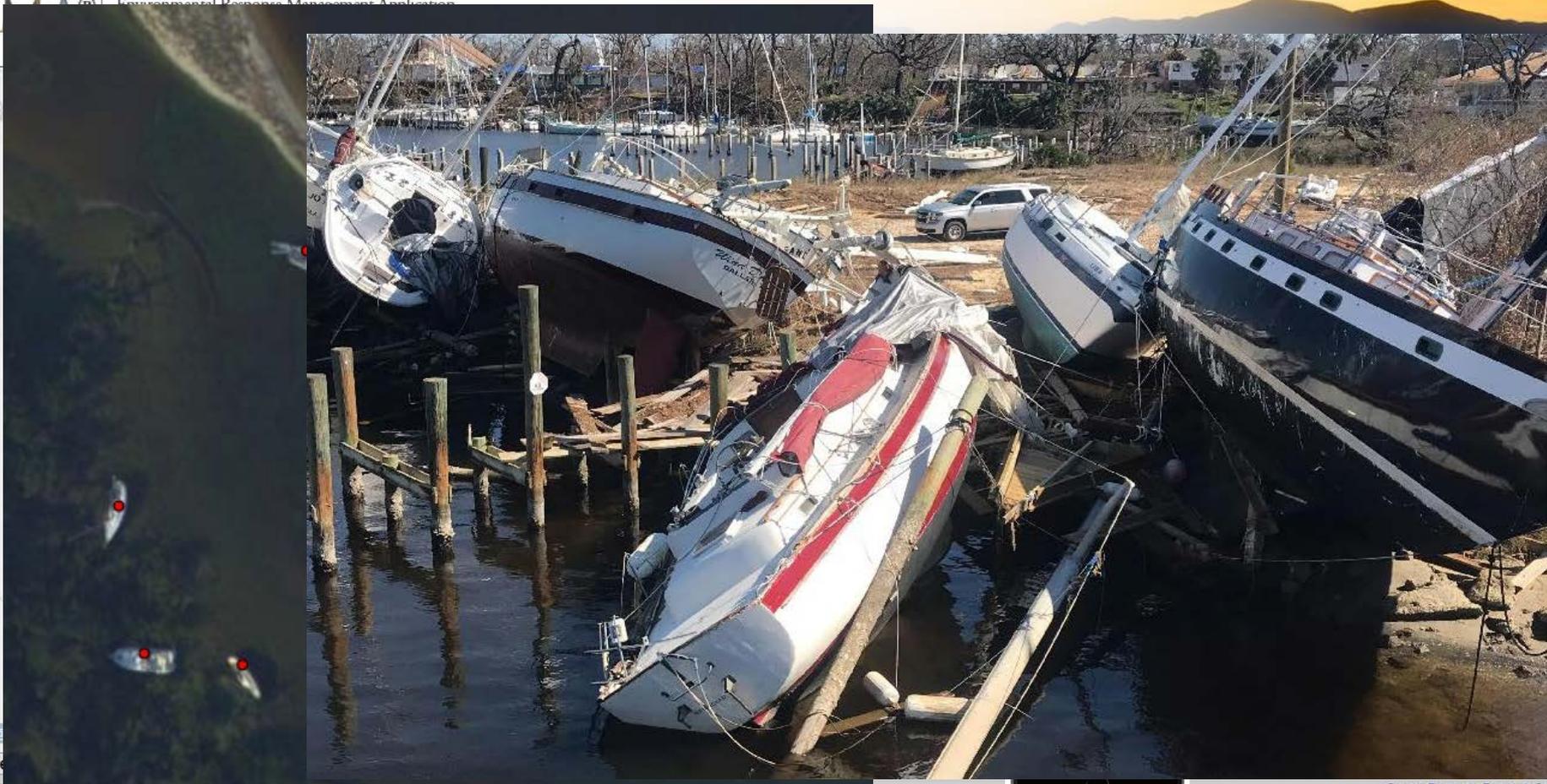
ERMA® | Environmental Response Management Application
Atlantic



↑N Scale: 1 : 2,009,598 Zoom Level: 7.5 Location: 35.6943°, -76.0809°

Emergency Support Function 10 Target Status (ESF-10, Oil and Hazardous Materials), with status grid: 10/12/18

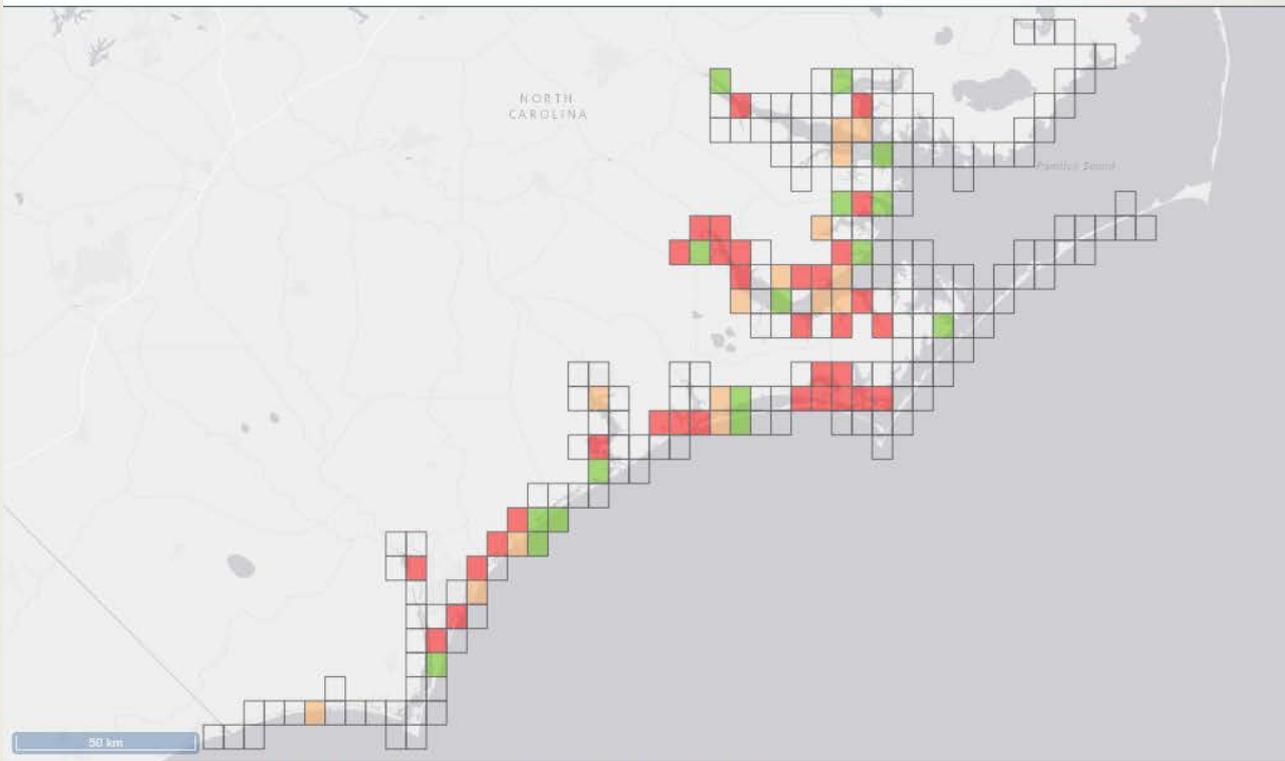
ERMA @ Environmental Response Management Application



↑N Scale

Florence, ESF-10 Sensitive Site status grid: 10/12/18

ERMA® Environmental Response Management Application
Atlantic



USCG Sensitive Site Grid Status

USCG Sensitive Site Grid Status

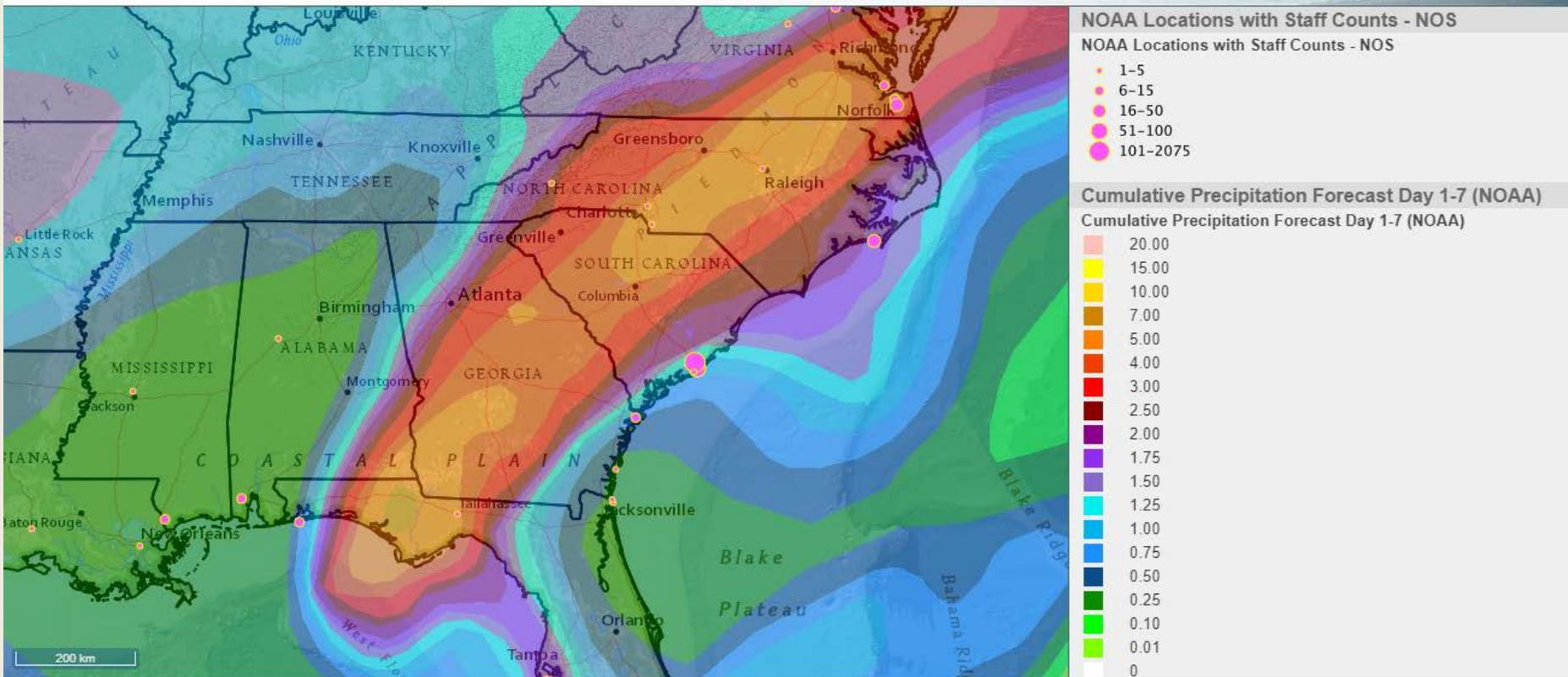
- ✓ No Sites
- No Sensitive Sites
- Has Potentially Sensitive Sites
- Has Sensitive Sites

Esri Light Gray Canvas

Scale: 1 : 1,005,917 Zoom Level: 8.5 Location: 34.4962°, -75.3448°

Hurricane Michael

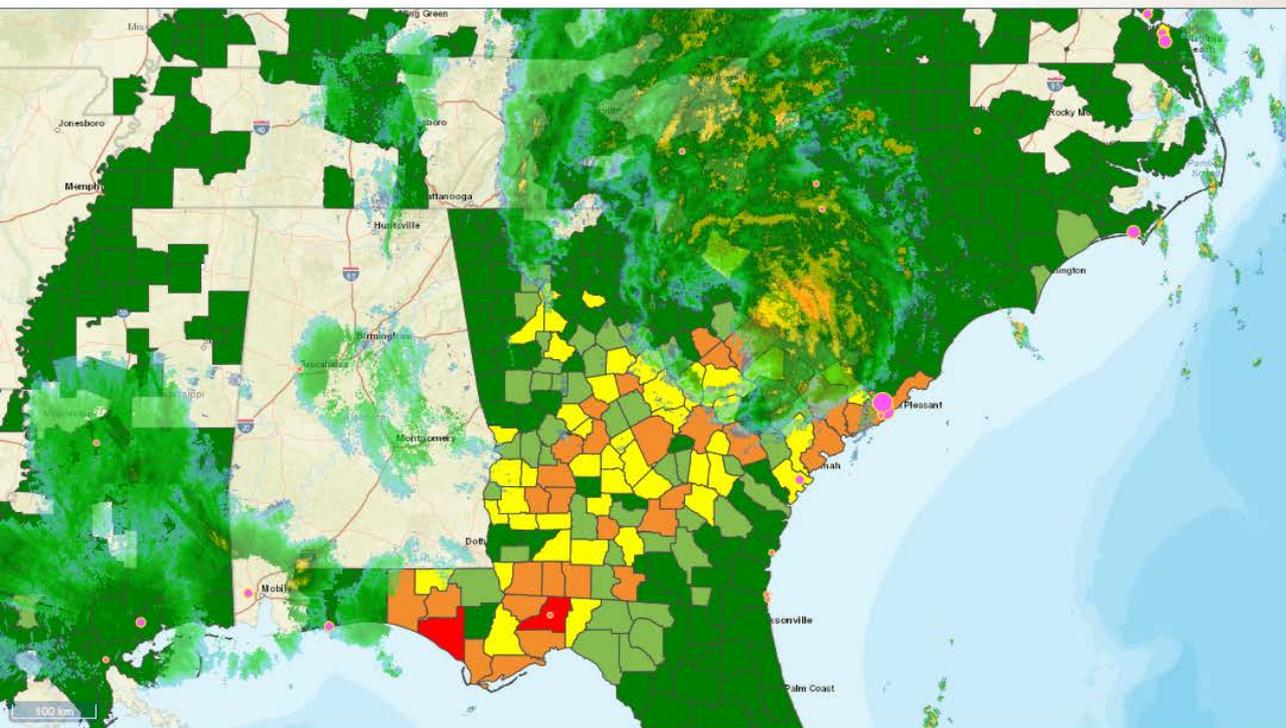
ERMA® Environmental Response Management Application
Gulf of Mexico



Scale: 1 : 5,798,189 Zoom Level: 6.0 Location: 38.0221°, -73.4875°

Hurricane Michael

ERMA® Environmental Response Management Application
Atlantic



NOAA Locations with Staff Counts - NOS

NOAA Locations with Staff Counts - NOS

- 1-5
- 6-15
- 16-50
- 51-100
- 101-2075

NEXRAD Radar Current Base Reflectivity (IA State)

NEXRAD Radar Current Base Reflectivity (IA State)



Eagle-I Current Electrical Outages (# customers) (ORNL)

Eagle-I Current Electrical Outages (# customers) (ORNL)

- 0 - 500
- 501 - 1500
- 1501 - 5000
- 5001 - 25000
- > 25001

Esri Street Maps

Scale: 1 : 4,097,071 Zoom Level: 6.5 Location: 36.0625°, -74.9972°

Hurricane Michael

ERMA® Environmental Response Management Application
Gulf of Mexico



Civil Air Patrol Photos for Hurricane Michael (CAP)

Civil Air Patrol Photos for Hurricane Michael (CAP)

- Heading + Offset
- No Heading
- Aerial Nadir
- Heading + Offset
- No Heading

Hurricane Michael NICB Aerial Imagery (NICB)

Hurricane Michael NICB Aerial Imagery (NICB)



Hurricane Michael NOAA Imagery 2018-10-14a

Hurricane Michael NOAA Imagery 2018-10-14a

Hurricane Michael NOAA Imagery 2018-10-11

Hurricane Michael NOAA Imagery 2018-10-11



Esri National Geographic

Hurricane Michael NOAA Imagery 2018-10-12b

Hurricane Michael NOAA Imagery 2018-10-12b

Hurricane Michael NOAA Imagery 2018-10-11

Hurricane Michael NOAA Imagery 2018-10-11

Scale: 1 : 1,718,529 Zoom Level: 7.8 Location: 31.6042°, -82.8804°