

Photo:
NOAA

NOAA's National Ocean Service Office of Response & Restoration

Aaron T. Parker, Division Chief for Emergency Response
Office of Response and Restoration
NOAA National Ocean Service

March 2023
Oil Spill Response Technology Workshop
Tiburon, CA

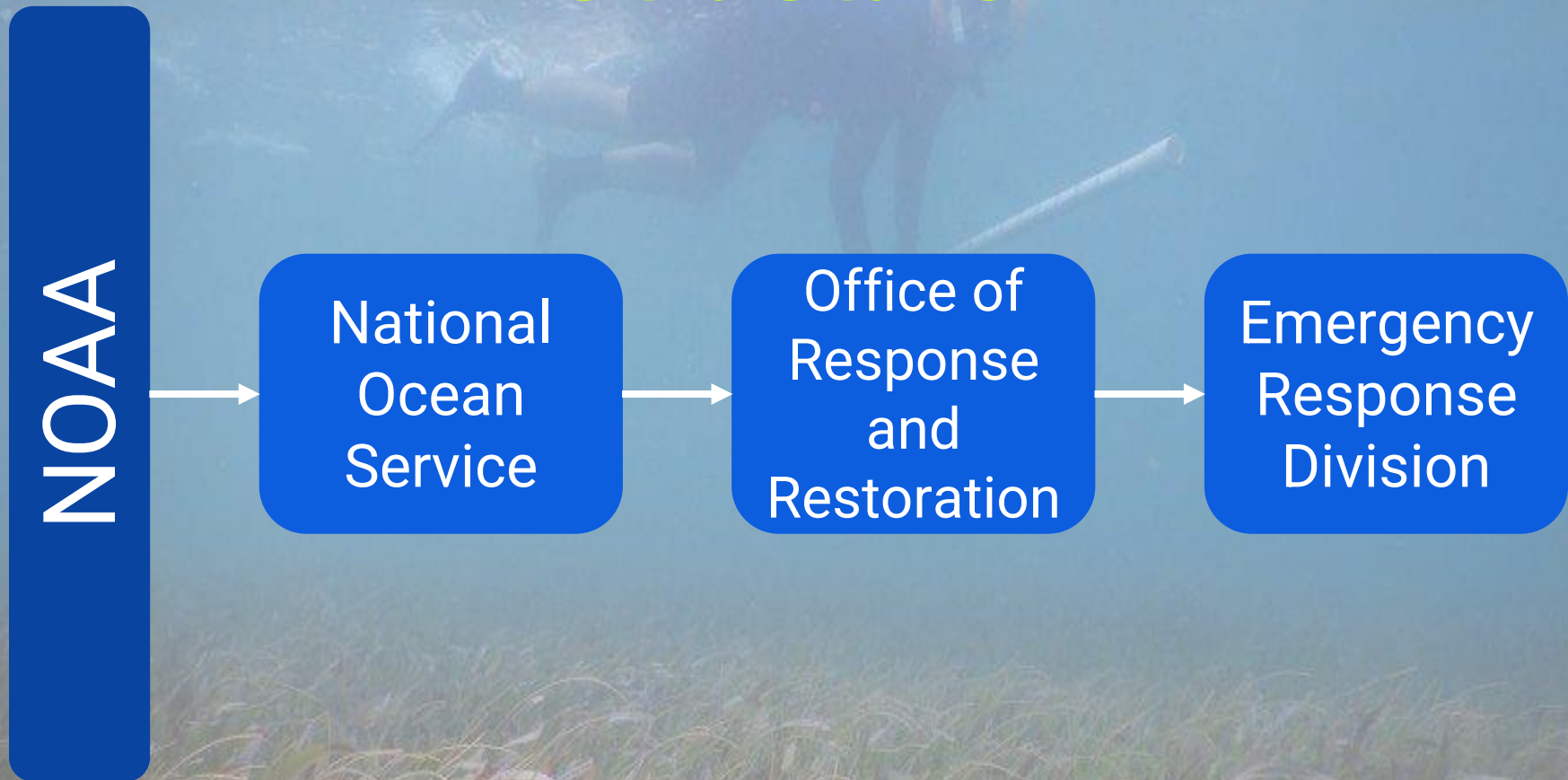


Objectives

- Overview of our Office
- NOAA-supported Incidents
- Advances in Observations
- Trainings & Tools
- Research & Methods Development



NOAA Organizational Structure





NOAA's Office of Response & Restoration

Mission

To protect and restore ocean and coastal resources from the impacts of threats such as oil, chemicals, marine debris, and disasters to benefit the environment, public, and economy.

- **Oil and chemical spill response**
- Damage assessment and restoration
- Marine debris prevention, removal, and research
- Disaster preparedness

Legislative Mandates

- **Clean Water Act/Oil Pollution Act of 1990**
- **CERCLA/Superfund**
- **PPD-8/NRF (NRRF*)**
- **Great Lakes Environmental Sensitivity Index Act of 2020**
- **National Marine Sanctuaries Act**
- **Marine Debris Act, Save Our Seas Act, Save Our Seas 2.0 Act**





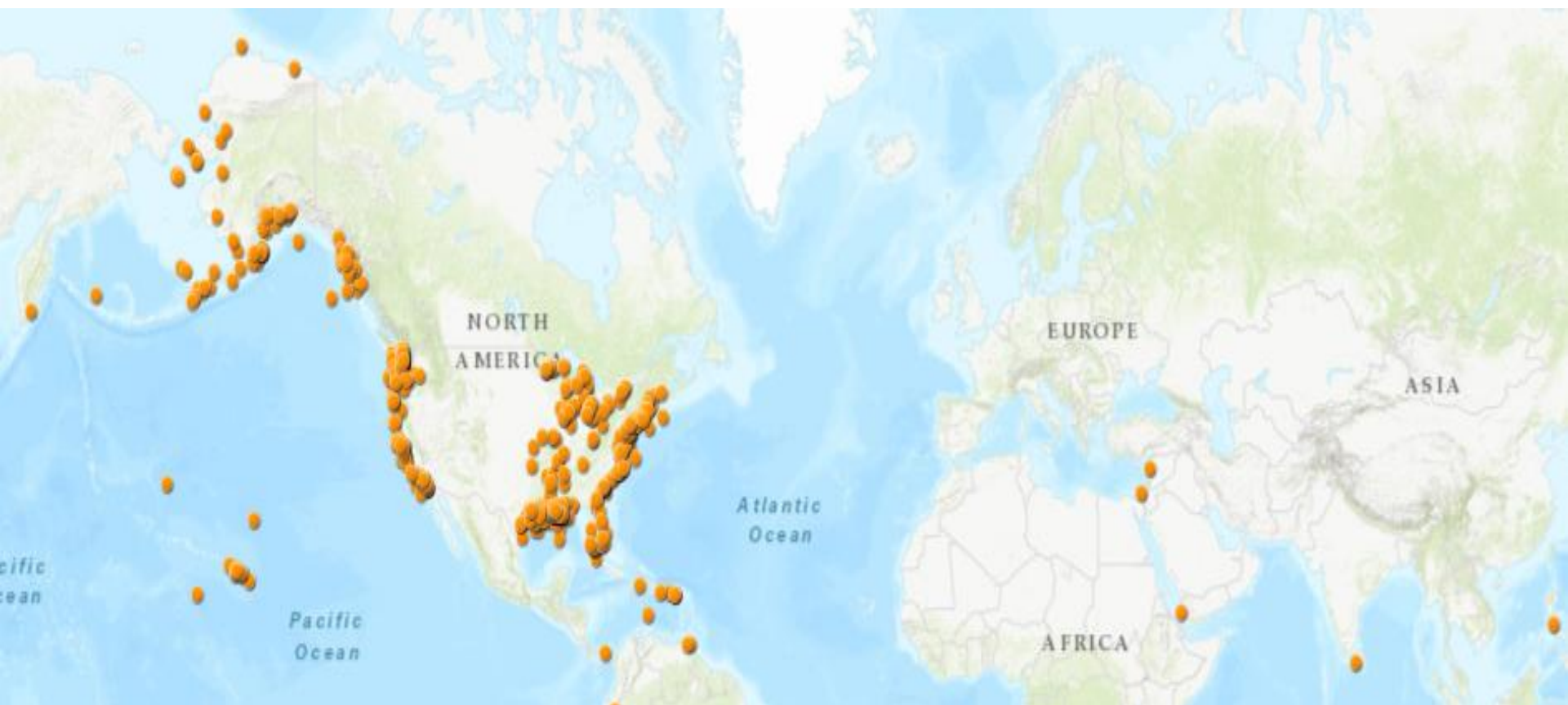
Working Across the Nation



[Field contacts link](#)

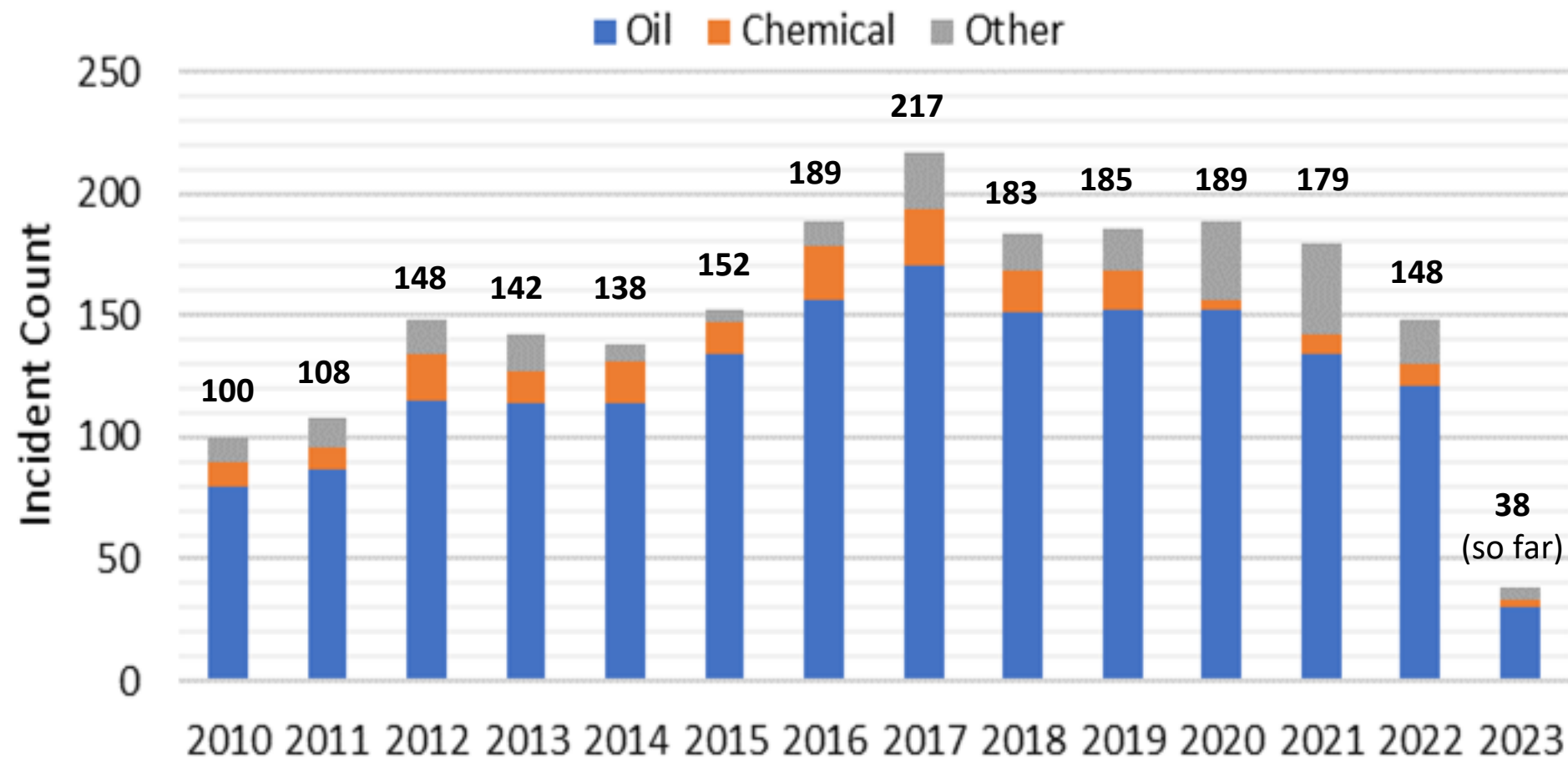
NOAA Supported Incidents

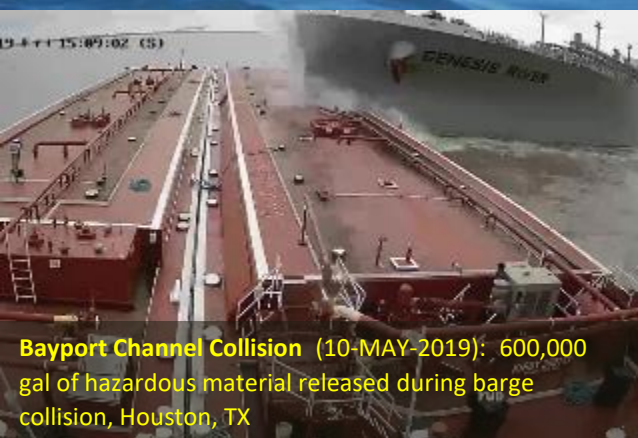
(2019-present)





NOAA Supported Incidents (2019-present)





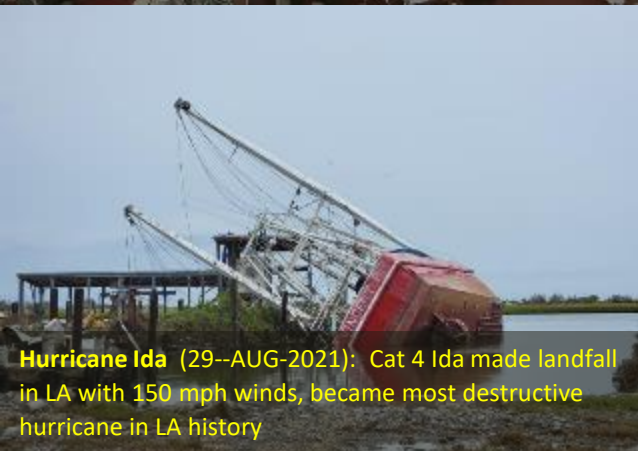
Bayport Channel Collision (10-MAY-2019): 600,000 gal of hazardous material released during barge collision, Houston, TX



M/V Golden Ray Capsized (08-SEPT-2019) Car carrier capsized in St. Simmons Sound, GA



M/V Wakashio Aground (25-JUL-2020): 300,000 gallons of heavy fuel released after grounding on reef in Mauritius



Hurricane Ida (29--AUG-2021): Cat 4 Ida made landfall in LA with 150 mph winds, became most destructive hurricane in LA history



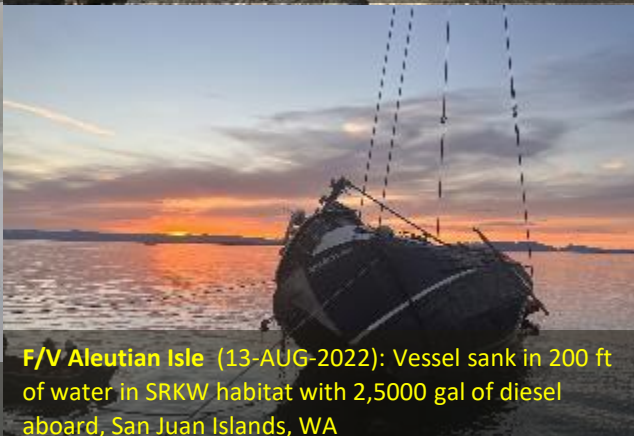
Lima Oil Spill (15-JAN --20122)): Release of 11,900 barrels of crude released from the La Pampilla Refinery, Lima, Peru



Huntington Beach Spill I (01-OCT-2021):558 barrels of crude oil released from pipeline near Huntington Beach, CA



Western Mariner (21-MAR-2022): 5,300 gals of diesel released near Sitka, AK



F/V Aleutian Isle (13-AUG-2022): Vessel sank in 200 ft of water in SRKW habitat with 2,5000 gal of diesel aboard, San Juan Islands, WA



Hurricane Ian (19-SEP-2022): Cat 4 Ian made landfall in Punta Gorda, FL. 7,500 pollution sources identified



NOAA Training in 2023

Aerial Observation

- On-line - Dates TBD

Shoreline Cleanup & Assessment Technique (SCAT)

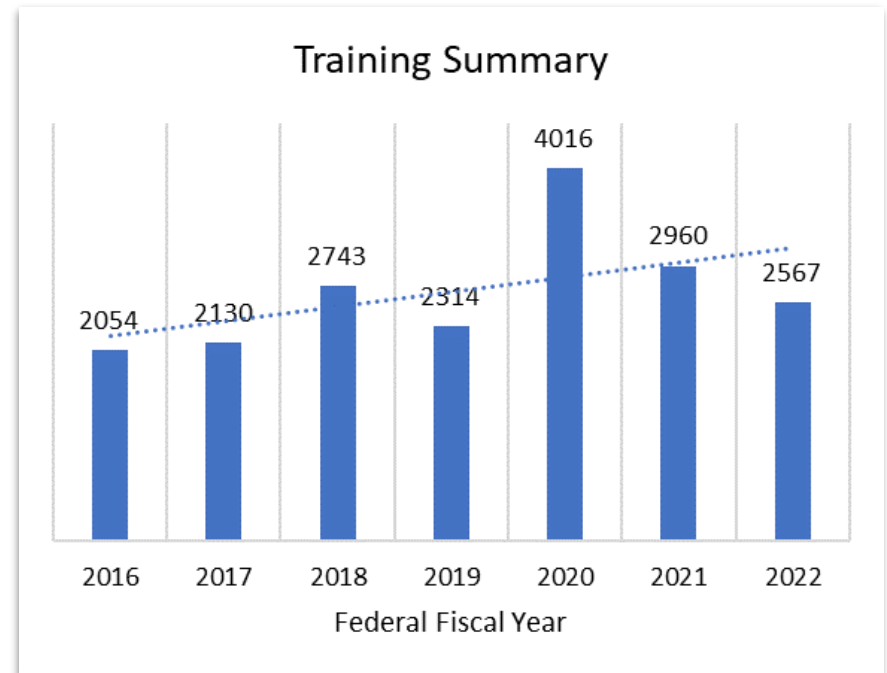
- April 4-6 - Chincoteague, VA
- April 11-13 - Galveston, TX
- May 1-4 - Virtual West Coast

Science of Oil Spills (SOS)

- Mobile, AL week of 20-MAR
- Portland, OR week of 10-JUL
- Gloucester, MA in week of 11-SEP

Science of Chemical Releases (SOCR)

- Virtual week of Feb 13
- Jacksonville, FL week of May 27th



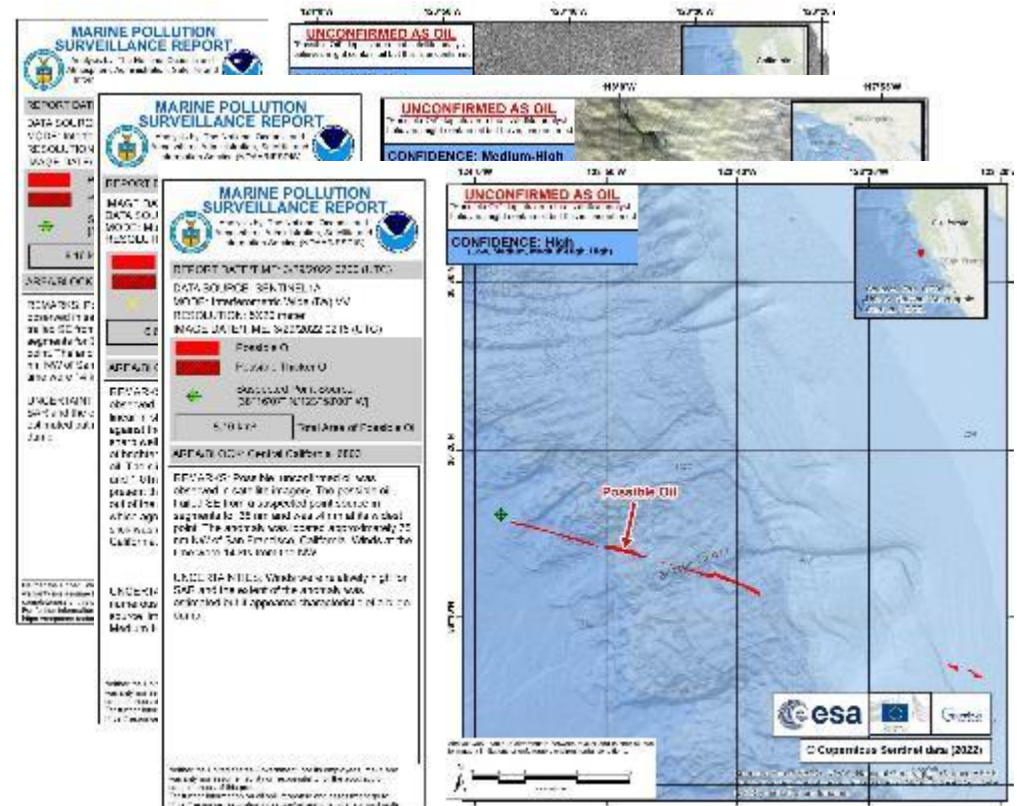
<https://response.restoration.noaa.gov/upcoming-training-opportunities-orr>

Ocean Observations

NESDIS Marine Pollution Surveillance Reports

- 03-MAR-2022
- 19-SEP-2022
- 06-JAN-2023*

* Natural seeps?



Available at: <https://www.ospo.noaa.gov/Products/ocean/marinepollution>



NOAA Tools

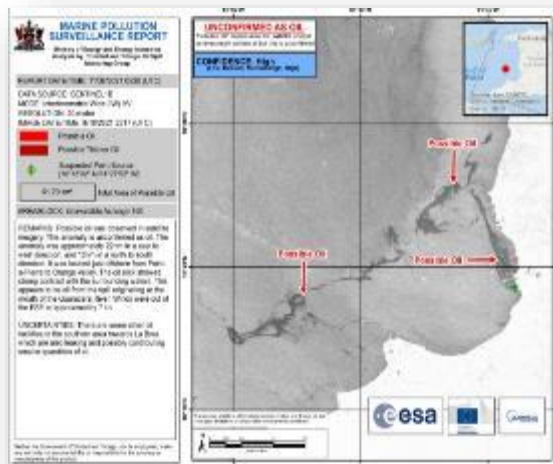
WebGNOME

Ingesting Remote Sensing Data for Trajectory Modeling

NESDIS Marine Pollution Surveillance Reports

<https://www.ospo.noaa.gov/Products/ocean/marinepollution>

Modelers can ingest other types of remotely sensed data



NOAA/NESDIS Spatial Release ⓘ

Name:

Time of Release:

Amount Released: barrels

Number of Particles:

File: 20210115_1626_LANDSAT8_OIL (3).zip

Oil Classification	Area(km ²)	Thickness (μm)	Volume (bbls)
Thin	3.92	5	123.3
Thick	0.33	200	417.5

Substance/Oil

Location

Name: SOUTH LOUISIANA

API: 37

Pour Point: 15.5 °F | (-9.1 °C)

Flash Point: 204.0 °F | (95.5 °C)

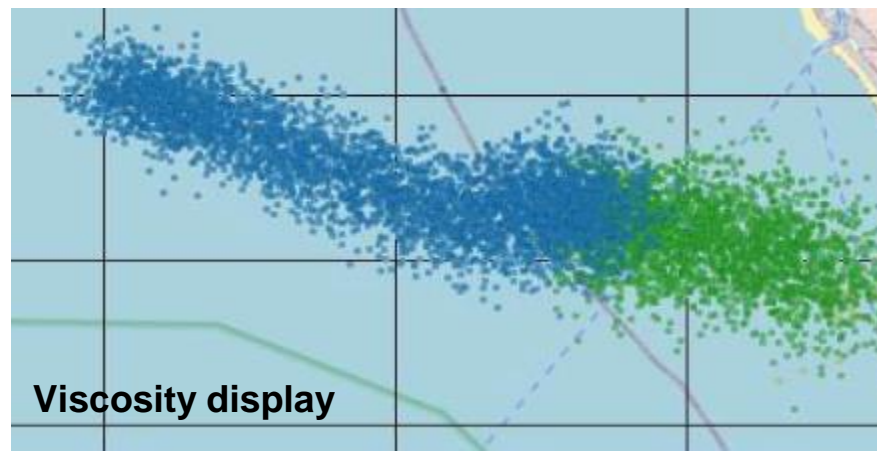
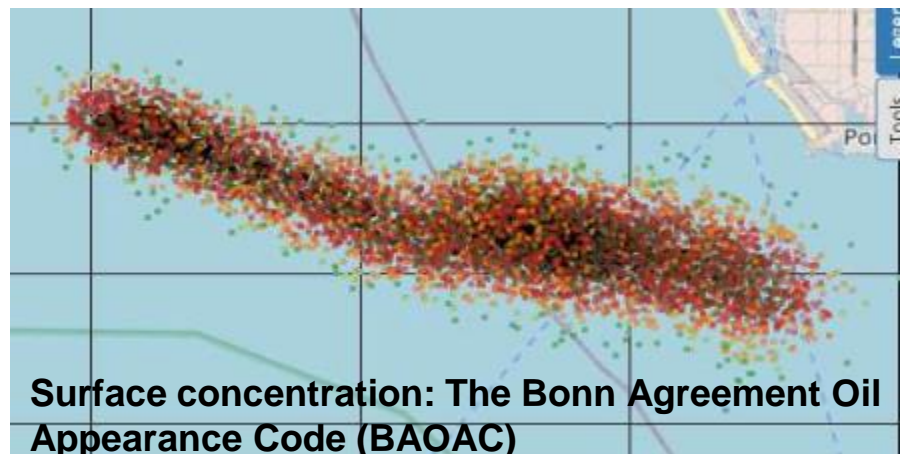
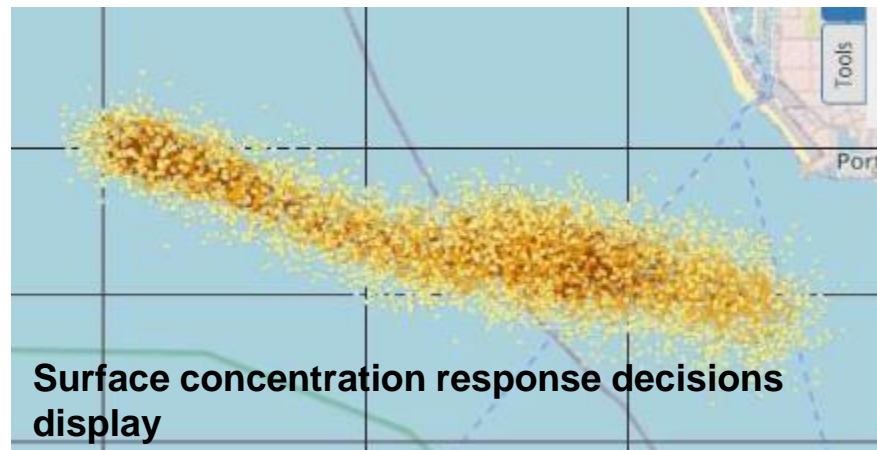
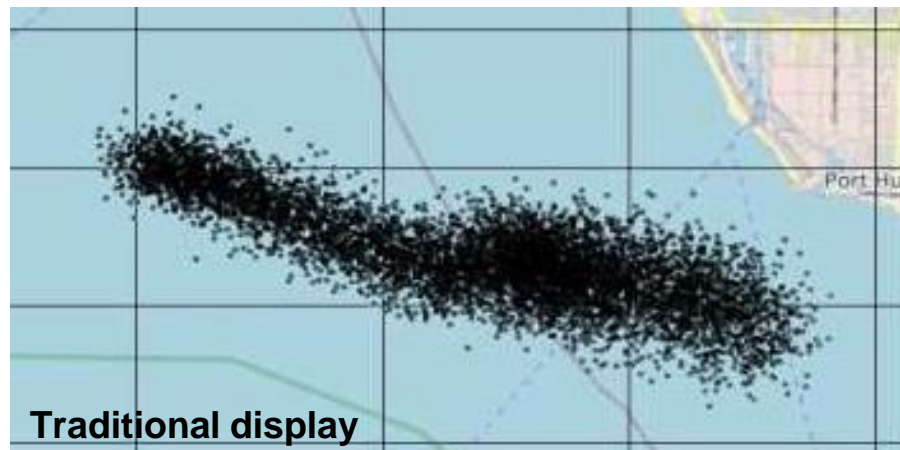
Emulsification Onset After:

<https://gnome.orr.noaa.gov/>



NOAA Tools

WebGNOME

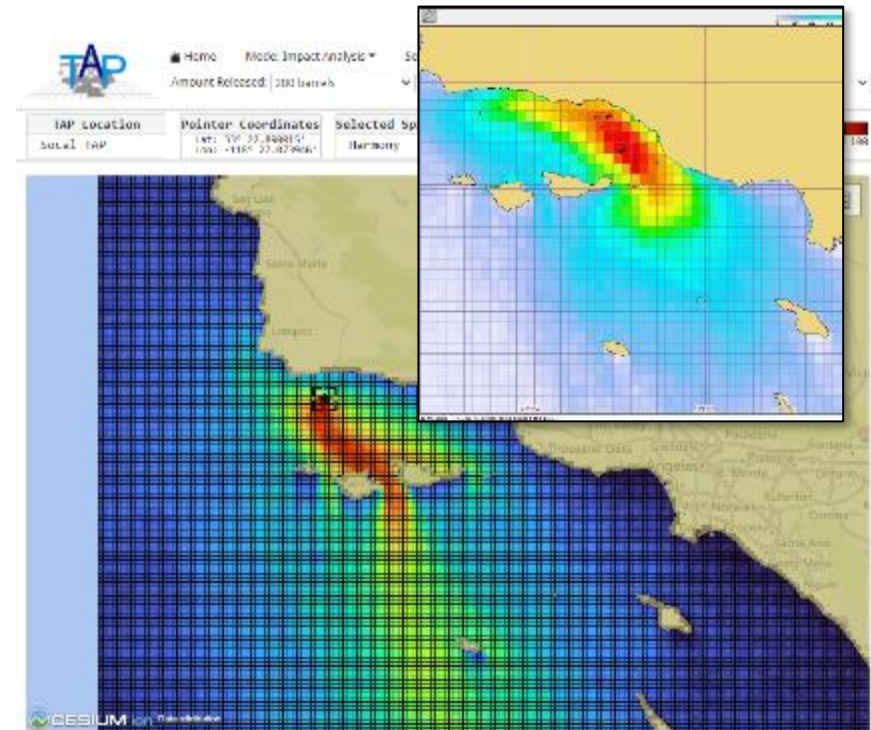


<https://gnome.orr.noaa.gov/>

NOAA Tools

Trajectory Analysis Planner (TAP)

- A probabilistic analysis from an ensemble solution
- For selected spill sites, GNOME is run hundreds of times using a long time-series of environmental input (winds/currents) with randomly chosen start times
- Statistics are compiled to inform:
 - What locations might be impacted above a specific Level of Concern? Which locations are most likely to be impacted?
 - What is the shortest response time for a specific location?



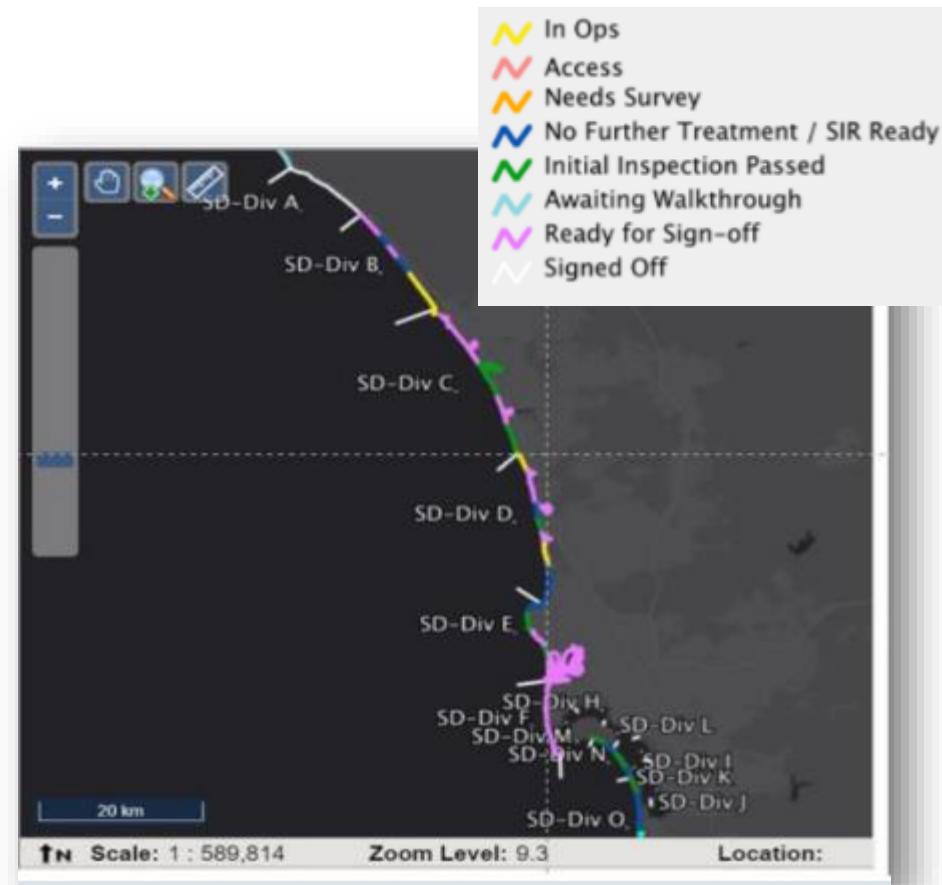
Available at:

<http://response.restoration.noaa.gov/tap>

NOAA Tools

SCAT Dashboard

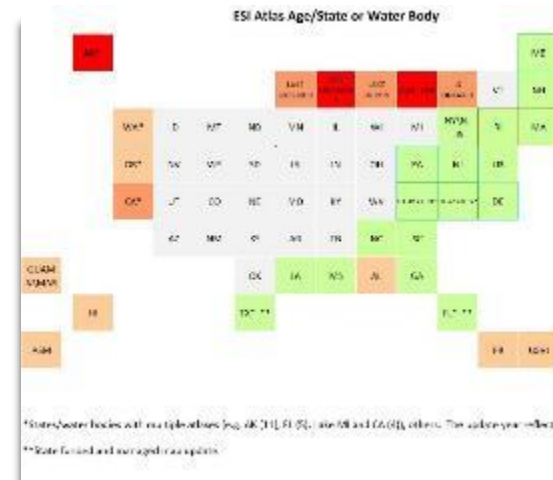
- **CA Pipeline spill used ERMA Dashboards to report SCAT workflows**
 - Daily and Most Recent Oiling
 - Assessment through Signoff process
- **Builds on routine Dashboard use in Hurricane Response**



NOAA Tools

Environmental Sensitivity Indices (ESIs)

- Great Lakes ESI Act of 2020
- Great Lakes ESIs Updates
 - St. Clair/Detroit R.
 - St. Mary's/St. Lawrence
 - Lake Erie
- Next Gen ESI Workshop and Report
- ERMA/Geospatial integration enhancements



Next Generation ESI Workshop:
Looking Back One Year Later
(December 11, 2021)





NOAA Tools

ADIOS Database

[ADIOS oil database is live](#)

ADIOS Oil Database

[About](#) [User Guide](#) [Contact](#)

Browse through the list of oils, or query for a particular oil.

API

0

100

Type

unspecified

GNOME Compatible
☐

Labels

unspecified

Total results: 1805

Status	ID	Name	Location	Product Type	API	Score	Date
✓	EC00501	158 RGN Mistura	Unknown	Crude Oil NOS	29.47	14	2004
✓	AD02545	15W40 MOTOR OIL, SHELL		Lube Oil	29.34	20	
✓	NO00108	AASGARD A 2003	NORWAY	Crude Oil NOS	42.2	32	
✓	EX00001	Aasgard Blend		Crude Oil NOS	52.5	68	
✓	AD02552	AASGARD BLEND, STATOIL	NORTH SEA, NORWAY	Crude Oil NOS	53.7	42	
✓	AD01582	ABOOZAR	IRAN	Crude Oil NOS	26.9	20	
✓	AD01963	ABOOZAR (1999)	IRAN	Crude Oil NOS	26.9	20	
✓	AD01304	ABOOZAR, OIL & GAS	IRAN	Crude Oil NOS	26.9	20	
✓	AD00005	ABSORPTION OIL		Refinery Intermediate		15	
✓	AD01583	ABU AL BU KHOOSH	UAE	Crude Oil NOS	31.6	15	
✓	AD01964	ABU AL BU KHOOSH	UNITED ARAB EMIRATES	Crude Oil NOS	31.6	15	
✓	AD00009	ABU SAFAH	SAUDI ARABIA	Crude Oil NOS	28	19	
✓	AD00010	ABU SAFAH, ARAMCO	RAS TANURA, SAUDI ARABIA	Crude Oil NOS	28.4	24	
✓	EC02234	Access West Blend Winter	Alberta, Canada	Bitumen Blend	21.36	94	2013
✓	AD00017	ADGO	BEAUFORT SEA, CANADA	Crude Oil NOS	16.8	64	
✓	AD01965	ADGO (1999)	BEAUFORT SEA, CANADA	Crude Oil NOS	16.8	72	
✓	AD02548	AGBAMI, STATOIL	NIGERIA	Crude Oil NOS	47.9	43	
✓	AD01853	AIRILE, BP	AUSTRALIA	Crude Oil NOS	43.2	39	
✓	AD01866	AL RAYYAN, BP	QATAR	Crude Oil NOS	24.5	29	
✓	EC00506	Alaminos Canyon Block 25	Gulf of Mexico, USA	Crude Oil NOS	30.87	66	2002
✓	EX00002	Alaska North Slope		Crude Oil NOS	32.1	68	
✓	AD00020	ALASKA NORTH SLOPE	ALASKA	Crude Oil NOS	24.87	55	
✓	AD01986	ALASKA NORTH SLOPE	ALASKA, USA	Crude Oil NOS	26.8	59	

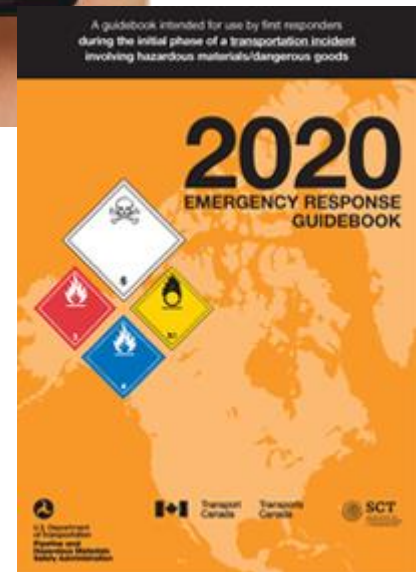
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NOAA Tools

CAMEO Chemical Suite

- Hazardous chemicals response data updated to match ERG 2020
- Mobile application available on Apple Store and Android



Available at:

<http://response.restoration.noaa.gov/cameochemicals>



NOAA Guides

UAS Job Aids

Used in Pipeline P00547 spill



Online at [Job Aids for Spill Response](#)



NOAA Guides

Oil Spill Fact Sheets

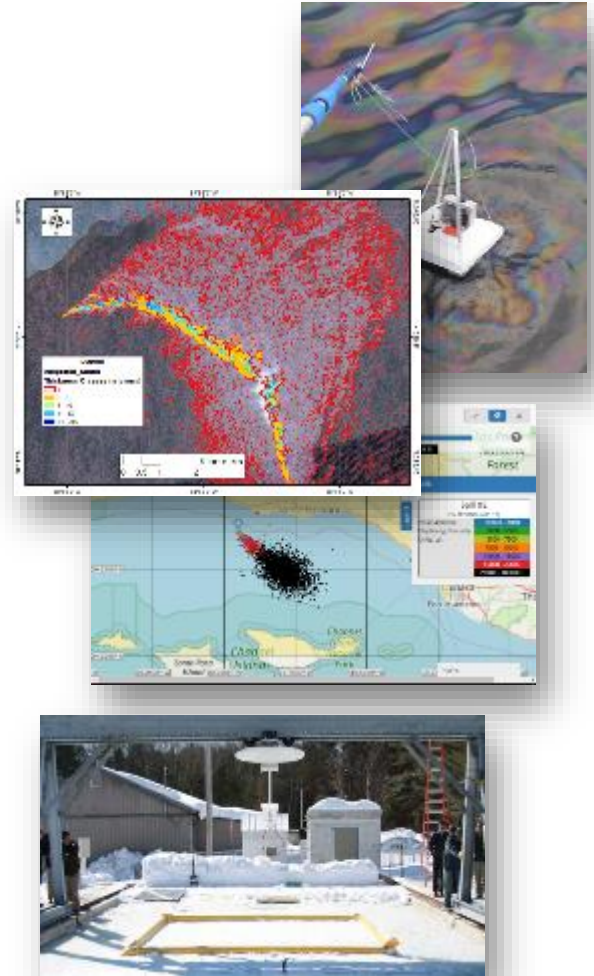
- Biodiesel Spills
- Denatured Ethanol Spills
- Dielectric Fluids Spills (non-PCB fluids)
- Small Diesel Spills (500-5,000 gallons) revised 4/28/20
- Diluted Bitumen (Dilbit) Spills
- Heavy Fuel Oil (HFO) Spills
- Kerosene and Jet Fuel Spills
- Non-Petroleum Oil Spills
- Light Shale (Tight) Oil Spills
- Synthetic-Based Drilling Mud Spills

Available at: <https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-fact-sheets-spill-responders>

NOAA Research

Current Priorities

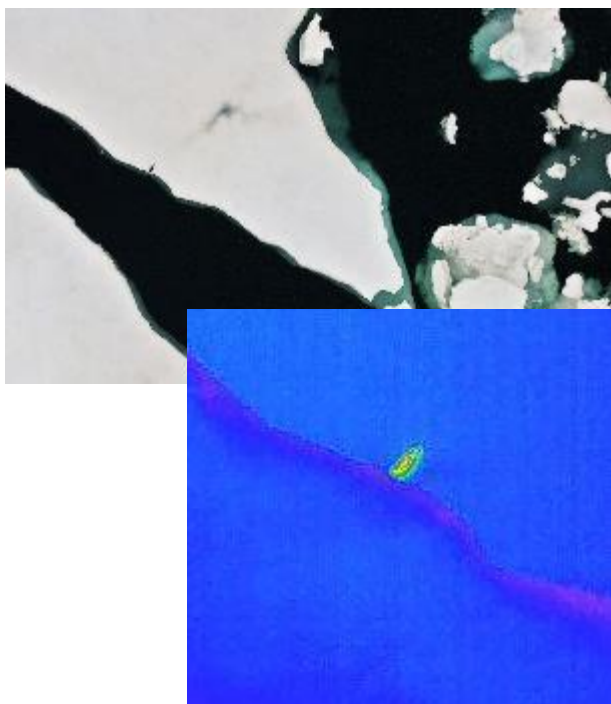
- Remote Sensing
 - Sensors and samplers
 - AUVs and ROVs, UAS, fixed wing, satellite, etc.
- Advancing modeling tools
- Oil exposure & toxicity science
- Rapid data processing & display



NOAA Research

Detection of Oil in Ice

USCG, CRRC, Water Mapping Consulting Services, ASA, EPA,
OSRI, USACE





NOAA Research

Interagency Coordinating Committee on Oil Pollution Research (ICCOPR)

- Permanent Vice Chair
- NASEM Review of ICCOPR's 2022-2027 Oil Pollution Research and Technology Plan





NOAA Research Partnerships

Great Lakes Center of Expertise (GLCOE)

- Operationalizing the use of uncrewed systems (UAS and ROV)
- Environmental Response Management Application (ERMA) enhancements
- Advancing detection capabilities for monitoring oils spills in ice environments



Coastal Response Research
Center (CRRC)



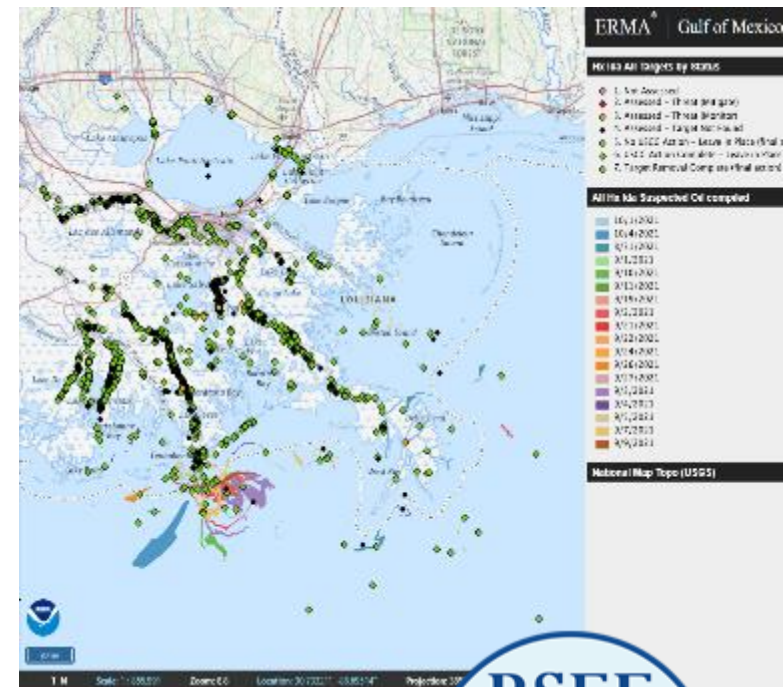
Great Lakes Environmental
Research Laboratory



NOAA Research Partnerships

Bureau of Safety and Environmental Enforcement

- WebGNOME enhancements
- HYSPLIT modeling of emissions from oil fires
- Offshore Area Contingency Plan (ACP) & environmental sensitivity indices (ESI) development and integration into ERMA
- Update to dispersant and in situ burn monitoring protocols (SMART)
- UxS collaborations and tests
- Remote sensing from offshore infrastructure (platforms and pipelines)





NOAA Research Partnerships

Coastal Response Research Center (CRRC)

- Comparing Recent Advances in Estimating and Measuring Oil Slick Thickness: MPRI Technical Report (released January 2023)
- Sunken Oil Transport Tool (SOTT) (released December 2022)
- Greater Houston Area Bottlenose Dolphin Data Gaps - A Workshop Report (released November 2022)
- 2022 NOAA Hurricane Preparedness Summit - final report (released August 2022)
- UAS Characterization of Oil in Ice Volume 1: Laboratory Results (CRREL/RDC/WaterMapping) (February 2022)
- UAS Characterization of Oil in Ice Volume 2: Supplemental Laboratory Data (CRREL/RDC/WaterMapping) (February 2022)



Questions?

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