

Oil Spills Science Gaps and Priorities

February 5, 2018

*OSR 201: Oil Spill Preparedness and Response
for Scientists and Responders
GOMOSEs*

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Center for Spills and Environmental Hazards (CSE)



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1

CRRC

- Partnership between NOAA's Office of Response and Restoration and the University of New Hampshire
 - Emergency Response Division (ERD)
 - Assessment and Restoration Division (ARD)
 - Marine Debris
- Since 2004
- Co-Directors:
 - UNH - Nancy Kinner
 - NOAA - Ben Shorr



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2

Center for Spills and Environmental Hazards (CSE)

- Parallel center for non-NOAA funding
- Also established in 2004



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3

**Coastal Response
Research Center
(NOAA \$)**

**Center for Spills and
Environmental Hazards
(All Other \$)**

- Conduct and Oversee **Basic** and **Applied** Research and Outreach on Spill Response and Restoration
- Transform Research **Results into Practice**
- Serve as **Hub for Oil Spill R&D**
- **Facilitate Interaction** Among Oil Spill Community (all stakeholders)
- **Educate/Train Students** Who Are Equipped to Pursue Careers in Spill Response and Restoration



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4

CRRC & NOAA ORR

2003 - 2009:

- Host workshops on R&D gaps in oil spill response & restoration
- Fund research on topics of interest to NOAA ORR
 - R&D needs workshops on dispersants, submerged oil, human dimensions, etc.
- Develop ERMA - common operating picture



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5

CRRC & NOAA ORR

2010 to present:

2010:

- Alaska Natural Resource Damage Assessment discussions
- Focus on dispersant use during DWH

2011:

- Focus on dispersant uses in DWH
- Fund research on dispersant science for ORR



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CRRC & NOAA ORR (cont'd)

2012 - present:

- Workshops on R&D needs
- Subsequent discussion during talk

2014 to present:

- State-of-the-science of dispersants and dispersed oil in Arctic waters



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7

CRRC/CSE Website

University of New Hampshire
Coastal Response Research Center and Center for Spills and Environmental Hazards

Home UNH Home

Search this site Search

Home About Us Dispersant Science Workshops Outreach Working Groups Projects Publications Related Links

The Center wishes to Congratulate three recent graduate students on successfully defending their thesis.

ZACH ANSEMI - THESIS ON THE EFFECTS OF DISPERSANTS ON MARINE DEEP-HYPEROXYGENATION

Whitney Hooper - Warm Water Environment Impacts and Environmental Risk Assessment of a Regional Oil Cycle Assessment Conference Panel Ocean Thermal Energy Conversion Panel Offshore Geology Panel

JACOB

The Coastal Response Research Center (CRRC) was established as a partnership between the National Oceanic Atmospheric Administration (NOAA), through the Office of Response and Restoration (OR&R) and the University of New Hampshire (UNH) in 2004.

The Center for Spills and Environmental Hazards (CSE) is a University center that expands the scope of interaction and cooperation with the private sector, other government agencies and universities.

The Centers are administered by, and located at, the UNH campus in Durham, NH. Both centers are affiliated with the UNH School of Marine Science and Ocean Engineering (SMSOE). Center one-pager [here](#)

News Features Workshop Reports

NOAA is issuing Storm QuickLooks for Hurricane In response to Hurricanes Harvey and Irma, DWH Long Term Data Management Coordination

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8

Key R&D Gaps from CRRC Perspective



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Oil Observing Tools

- How to interpret images collected by satellites
 - Human observers during overflight vs. remote sensors?
 - Difference between sensors (e.g., visual, multi-spectral, radar)?
 - Satellites vs. manned/unmanned aircraft?
 - Data interpretation?



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10

Key R&D Gaps from CRRC/CSE Perspective

- Understand strength / weaknesses of each sensor
- Develop new/smaller deployment packages for most effective sensors
- Need synoptic sampling to quantify performance of individual sensors for qualitative thickness of surface oil
 - BSEE / NOAA field and OHMSETT experiments ongoing



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11

Key R&D Gaps from CRRC/CSE Perspective

- Develop better methods to ID false positives
- Include data delivery in drills & exercises
- Continue recurring discussions between responders, damage assessors and data managers and developers to generate appropriate products
- Continue joint agency and industry demonstrations of oil observing tools



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12

SCAT

Shoreline Cleanup Assessment Technique Workshop



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SCAT Uses

- 1989 *Exxon Valdez* responders used this technique to assess oiling of shoreline during spills
- Where is oil? (habitats, extent, type)
- Assists in where to concentrate efforts and effectiveness of response
- Crossroads with electronic data collection, data coordination, data sharing, interoperability



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SCAT R&D Needs

- NOAA has drafted Data Standards for SCAT
- QA / QC and Data Flow need explicit list of products & delivery timetable, scalable to different oil spills; products may change through time



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SCAT R&D Needs

- CRRC / NOAA ORR working groups to address R&D needs on SCAT
 - Data Standard
 - Data Sharing Agreements
 - Drills and Exercises



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State-of-the-Science of Dispersants & Dispersed Oil in Arctic Waters



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State-of-the-Science of DDO

- Five teams of experts representing stakeholders
- Topics
 - Efficacy & Effectiveness
 - Physical Transport & Chemical Behavior
 - Degradation & Fate
 - Ecotoxicity & Sublethal Impacts
 - Public Health & Food Safety



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State-of-the-Science of DDO

- Knowns and uncertainties
 - Up to December 31, 2015
- First 3 are complete and on-line
- Ecotoxicity: sign-off on final document
- Public Health: Initial draft out soon for public input



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19

State-of-the-Science of DDO

- Report Out
- Tonight:
 - Feb 5
 - 6:30 - 7:30 PM
 - Hyatt Celestin H



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20

Data Management

- Environmental Disasters (EDDM)
- DWH Long-Term (DWH LTDM)



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Integrating Data Access to Address an Environmental Disaster

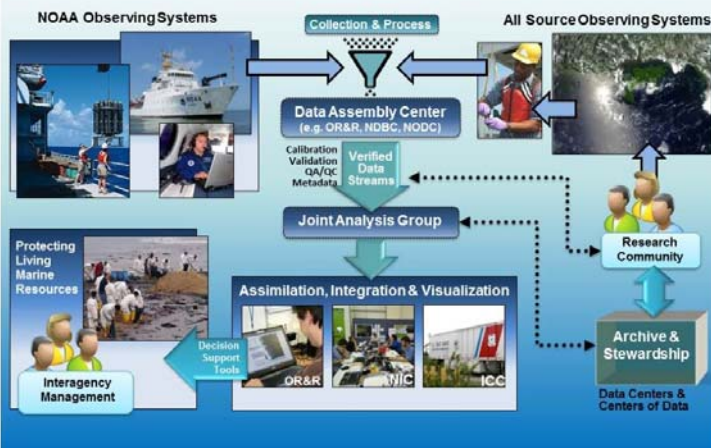
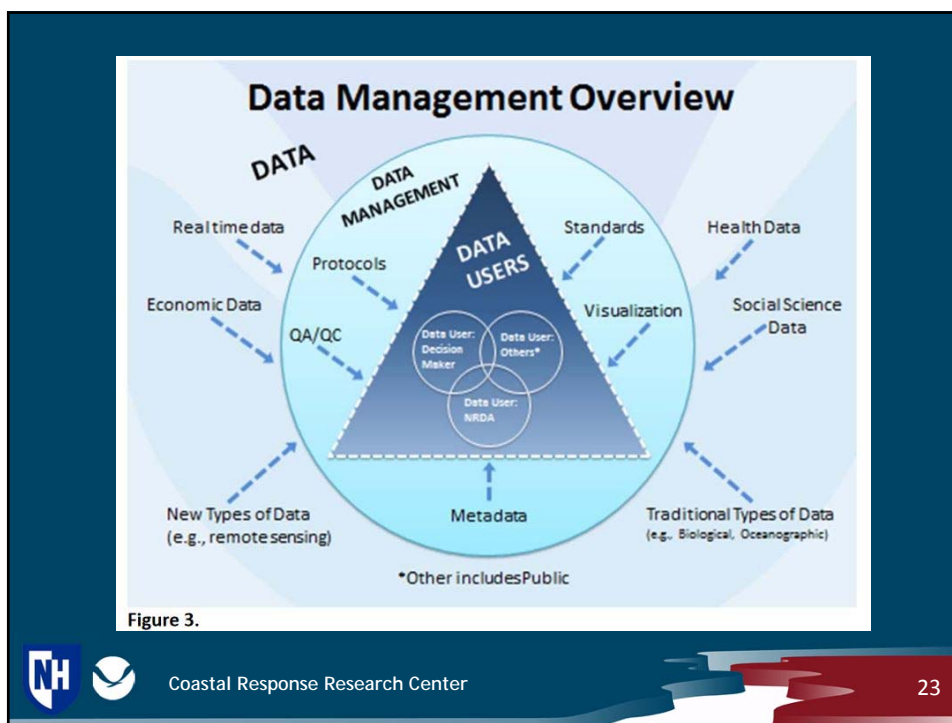


Figure 1. Courtesy of Russ Beard, NOAA, National Coastal Data Development Center



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EDDM

- Working Groups on:
 - Field Protocols & Training
 - Natural Libraries of Medicine Hurricane Environmental Sampling Tools
 - Common Data Model
 - Crosswalk existing Common Data Models (e.g., EPA Scribe & NOAA DIVER)
 - Gold Standard
 - Data dictionaries, criteria for: baseline data, QA / QC, security
 - Consistent vocabularies
 - Interoperability



DWH Long-Term Data

(100, 000 environmental samples, 15M publically available records)



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25

DWH Long-Term Data

Objectives

- Collaboration among GOM partners for data management & integration for planning, restoration, implementation & monitoring
- Best practices for public distribution & public access to data
- Lots of data models (e.g., GOMA Portal, NOAA NCEI, DIVER, GRIIDC, GCOOS, LA CIMS)



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DWH Long-Term Data

Working Groups

- Data Management Standards
- Interoperability
- Discovery / Searchability

Thursday 7:30 AM in Celestin B



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GOM Regional Preparedness

- Flower Garden Banks NMS Spill Response
- Natural Disaster Causing Technological Disasters
 - Stafford Disaster Relief & Emergency Assistance Act & Oil Pollution Act
 - How do the two diverse groups interact?
- Public concerns during spill response
 - What will people want to know?
 - Public Health (e.g., beaches, seafood safety)
 - Tourism
 - Wildlife



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Academic Engagement

- Interaction between Science & Response Communities
- Academic or Science Coordination in spill response and preparedness

Wednesday 4:30 PM in Imperial 11



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29

Thank you for listening

Questions?

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<http://crrc.unh.edu/>



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30