Coastal Response Research Center (CRRC)

Center for Spills & Environmental Hazards (CSE)

Nancy E. Kinner
University of New Hampshire

ME/NH Area Committee
October 21, 2021

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Coastal Response Research Center (CRRC)

- Partnership between NOAA's Office of Response and Restoration and the University of New Hampshire
- Since 2004
- Co-Directed
  - UNH co-director - Nancy Kinner
  - NOAA co-director - Troy Baker

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Center for Spills and Environmental Hazards (CSE)

- "Sister" Center to CRRC
- Receives non-NOAA funding
  - e.g., US DHS Arctic Doman Awareness Center funding for Arctic oil spill modeling path forward
- Since 2004
- Director – Nancy Kinner

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Mission of CRRC and CSE

- Conduct and oversee Basic and Applied research and outreach on spill response and restoration
- Transform research results into practice
- Serve has hub for oil & environmental spill R&D
  - All stakeholders: federal, state, NGOs, Academia, Industry
- Facilitate collaboration on R&D among stakeholders
- Application to All Hazards
- Educate new generation regarding oil spill/disaster response

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ICCOPR S&T Plan 2022- 2027

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ICCOPR S&T Plan 2022-2028

- Interagency Coordinating Committee on Oil Pollution Research (ICCOPR)

  https://www.dco.uscg.mil/ICCOPR/
- Membership representation includes:

USCG	USACE
BSEE	PHMSA
EPA	DOE
BOEM	NOAA

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ICCOPR S&T Plan 2022-2027 Overview

- Define common research themes related to oil pollution research
- Identify knowledge gaps for common research themes and recommend research priorities
- Link with strategic Federal research plans and reports
- Document process developed to conduct interagency research coordination
- Transfer research information between government, the public and other stakeholders

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ICCOPR S&T Plan 2022-2027 TASKS

- Review relevant documents published since FY 2015-2021 R&T Plan Done
- Public Listening Sessions Done
- Determine status of research needs in FY 2015-2021 R&T Plan Done
- Updating Part One and Two of R&T Plan Done
  - e.g., Discuss major spill cases
- Research Needs Survey (2/17 - 3/19) Done
- Finalize Research Needs (post survey results)Done
  - Steering Committee uses survey data to determine research needs
- Undergoing Final ICCOPR Review

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Arctic Maritime Spill Modeling (AMSM)

UNH Students: Megan Verfaillie and Jessica Manning, Tori Sweet

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ADAC Funded Project

- Oil Spill Modeling for Improved Response to Arctic Maritime Spills: The Path Forward
- Project Champion: Kirsten Trego (HQ USCG MER)
- NOAA ORR: Chris Barker and Amy McFadden
- Objective is to create a knowledge product that will detail:
  - Needs/questions for Arctic oil spill response models
  - Current state-of-the-art Arctic oil spill and sea ice models
  - Assess their usefulness in response modeling
  - Research efforts to improve current models

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ADAC Funded Project

- Workshop in Anchorage – Dec 3-5, 2019
- 4 Working Groups have been meeting since then
  - Oil and Ice Interactions (meter scale)
  - Oil and Ice Interactions (kilometer + scale)
  - New and Existing Technologies for Monitoring Ice and Environment
  - Visualization and Uncertainty
- Second workshop (virtual) 3 parts on November 16, 23, 30
- Final Report Under Review by Steering Committee
- Additional funding to create interface to allow input of ice info directly into oil spill models (e.g., GNOME)

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Response Oil Assay

NOAA POCs: Chris Barker and Dalina Thrift-Viveros (ORR)

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Response Oil Assay (Funded by Canada's Ocean Protection Program)

- Over Project Goal:
  - Develop software and collect data for new database of oil physio-chemical properties to support oil spill response decision-making
- Cooperation across labs including CA ECCC

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Response Oil Assay

- Builds on NOAA's Adios Oil Database
- Oil information (analyses) needed for response
- Available analyses and applications
- responder's datasheet to provide info quickly, especially at beginning of spill
  - Oil types
  - Specific oils
- Underlying data model so information can be easily shared among labs

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NRDA for Emerging Oil Workshop
NOAA POC: Marla Steinhoff

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West Coast JAT – NRDA for Emerging Oil Workshop

- October 5 – plenary informational session
- October 12 & 14 scenario-based breakout group
- Informational workshop to educate the west coast oil spill community on the state of the science of emerging oils.
- Virtual sessions to address
  - How oils are transported across the west coast
  - Which transport mechanisms are of concern
  - Fate and behavior
  - Chemistry and toxicity
  - Bakken, Dilbit, Low Sulfur Crudes, Renewable Fuels

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NOAA OR&R Projects
NOAA PI: Lisa DiPinto

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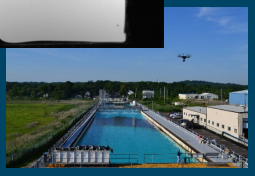
Comparing Advances in Estimating and Measuring Oil Slick Thickness

Canada Multipartner Research Initiative with CRRC

- Workshop (November 2019)
- Controlled laboratory experiments underway with uniform slicks (UNH)
- Side-by-side testing at Ohmsett facility planned for FY22



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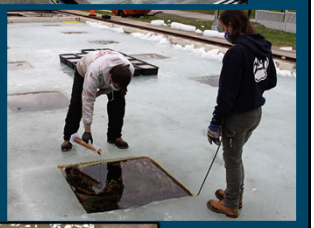
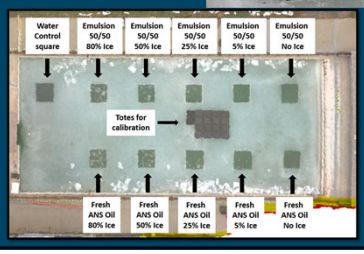
Remote Sensing Oil in Ice Infested Waters

NOAA, USCG R&D Center, CRRC

- Determine ability of thermal and multispectral airborne sensors to detect oil in icy waters
  - Locations:
    - CRREL, Hanover, NH
    - Great Lakes
    - Alaska





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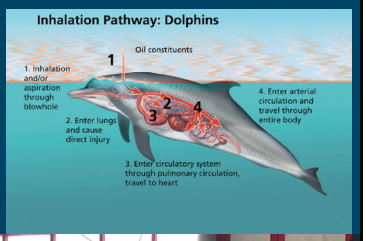
Cetacean Surface Oil Risk Characterization from Inhalation and Aspiration

- **Project Goal:** Advance understanding of surface oil exposure to cetaceans during and following an oil spill, including dispersant application



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Cetacean Aspiration: Phases

Phases:

1a) **Aquarium:** characterize bottlenose dolphin droplet formation, size, and behavior during surface breathing events (exhalation and inhalation)

1b) Laboratory: mechanically replicating breathing events with variety of surface oil and dispersant scenarios to better quantify exposure to cetaceans

2) **Field:** characterize gradient of contaminant concentrations above oil slick at air water interface to better characterize exposure to surface breathing animals.

-characterization includes volatiles, droplets, microdroplets and aerosolized particles

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Marine Mammal NRDA Exercises
NOAA POC: Laurie Sullivan

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Marine Mammal NRDA Exercises

- Marine Mammal NRDA Tabletop Exercise
  - 4 regions (Gulf Coast, Alaska, Northeast Coast, West Coast)
  - Review of marine mammal assessment guidelines, small working groups will use a spill scenario(s) to develop skeleton NRDA plan/budget
  - Outcome of this exercise will be a skeleton NRDA workplan to assist in future planning focused on each region's particular need

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Marine Mammal NRDA Exercises

- Alaska - virtual April 6, 14 & 22, 2021
- Gulf of Mexico - virtual June 7-9, 2021
- West Coast - ~virtual to be held March 2022
- Northeast - planning committee will begin soon

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ORR Disaster Preparedness Program (DPP) Activities

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Harmful Algal Blooms
NOAA POC: Charles Grisafi

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Harmful Algal Bloom

- HABs preparedness & response workshop
- April 27 – 29 virtually
- Enhance preparedness across IWG-HABHRCA and NOAA line offices
- Outcome is summary report to include lessons learned and AAR from a tabletop exercise
- Recommendations for actions to improve interagency coordination during a response (emphasizing HAB preparedness)

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Disaster Recovery

NOAA POC: Autumn Lotze

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Disaster Recovery Workshop

- Goals
  - Familiarize with recovery landscape
  - Identify key interest/opportunity areas for recover
  - Refine internal coordination processes
  - Determine key planning needs – next steps
- June 28 – 30, 2021 (virtual)

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Disaster Recovery Workshop

- Topics addressed
  - Recovery Support Capabilities
  - Recovery Funding
  - Recovery Coordination
  - Recovery Planning

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Other CRRC Graduate Student Research

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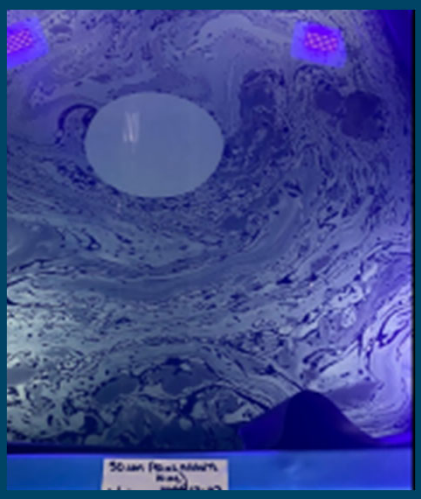
Other CRRC/CSE Flume Projects



- Sunken Oil Transport
  - Submerged oil transport tool
  - Melissa Gloekler (RPS)
- Marine Oil Snow
  - Jesse Ross, Quinn Wilkins
  - Sinking rates

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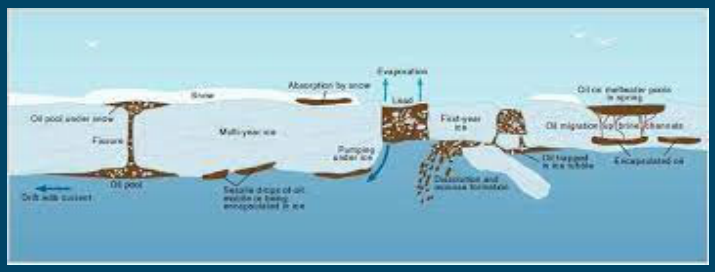
Other CRRC/CSE Flume Projects

- Oil movement under ice
  - Advisory Committee
  - Outgrowth of AMSM Project



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Thank You for Listening

Questions???

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