# CCA Science Projects

(*TROPICS, Coral Toxicity, DWH Counter-historical Study*)

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National Oceanography Centre

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# “CCA Legacy” Science Projects

- 2013 CCA-OSRL Merger
- Legacy CCA Mission/Funds
- Strategy:
  - Address highly relevant gaps, requirement-driven research
  - Focus on low/medium cost, high gain projects
  - Support other relevant work (Research Dispersant Bank)
  - Agile, continually survey for emerging issues

CLEAN CARIBBEAN & AMERICAS

Protecting the Environment for Future Generations



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# “CCA Legacy” Science Projects

- Dispersant Technical Forum, Fort Lauderdale (2014)
- TROPICS
- Coral Toxicity Studies
- Critical Review of Dispersant Toxicity
- NASEM Dispersant Study (Sponsor, Communications)
- DWH Counter-historical


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# TROPICS (1984-1994, 2001-2016)

- 32-Year NEBA Study
- Comparative Study Sites:
  - Crude Oil
  - Dispersed Crude Oil
  - Reference Site
- Highly referenced in 2019 NASEM Dispersant Study
- “Synopsis” Paper
  - Sequential Analysis of Effects/Recovery
  - Comparative analysis to other research

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# Coral Toxicity Studies
## (2014-2017 CCA, GoMRI)

- Science Gap:
  - Effect of oil on coral at individual and cellular level
  - Dispersant use near corals, NEBA
- Nova Southeastern University
- CCA: 2014-2017
- GOMRI: 2018-2019
- Advisory Committee & Collaborators (ExxonMobil, Shell, NOAA, Texas A&M, Cedre)
  - Pioneering  Aquatic Toxicity Protocols
- Results in NOAA CAFÉ
- Species Sensitivity Assessment (SSA)
  - Resilience

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# Counter-historical Analysis of DWH

- "What would have happened in DWH had dispersants not been used?"
- Requires sophisticated modeling and expertise
- Consulted with industry, regulators, academic communities
  - Transparency
- Deborah French-McCay RPS (Michael Bock)
- 6 Spill Response cases (increased from 4)


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# 6 Counter-historical Cases

1. Actual (best estimate) response utilized for DWH (baseline)

2. Actual response utilized for DWH minus use of any dispersant.

3. Actual response for DWH incident minus SSDI

4. Actual response, assuming SSDI DOR recommended to the FOSC (1:100)

5. Actual response using SSDI DOR that disperses most of the oil (1:20)

6. No response (i.e., no removal, burning or dispersants used)

3-4 months to run models



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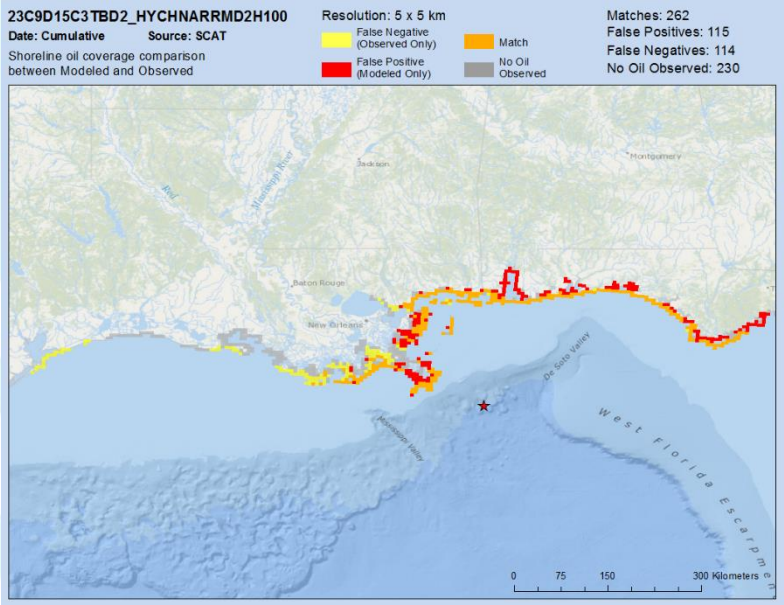
# A Counter-historical Analysis of DWH cont'd

## Physical Modeling-Mass Balance (French McCay)

- Extent of Oiling, surface areas swept by oil (shoreline thresholds per API CRA)
- Volume of oil in water column
- Nuanced changes rather than meteoric differences

## Comparative Risk Analysis (Bock)

- Multiply extent by Relative Density Flora/Fauna
- Relative recovery rates
- Trade-off: water column vs surface/shoreline
- Densities (depth vs. surface/shoreline
- Dilution potential



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# Counter-historical (Status)

- Model runs completed
- Currently compiling data
  - Mass Balance,Transport
  - Comparative Risk Analysis

- Communications
  - Science Community-Transparency
  - Validation of Models:  2 papers planned (Marine Pollution Bulletin)
  - User Community:  Key Findings

- Oral Presentations at Clean Gulf, IOSC, (GOMOSES?)


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# 2020 ITAC

- Governance Committee
- 4Q
- Past Venues (redefine post-DWH)
  - San Francisco
  - Singapore
  - London
  - Tulane University
  - CEDRE
  - Woods Hole Oceanographic Institution
  - Plymouth Marine Laboratory
  - NSU Oceanographic Center
  - National Oceanography Centre


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# 2020 Venue Nominations

- ITAC Governance Committee:  Hot Wash-up, 4Q North America rotation

- University of New Hampshire
- California Institute of Technology
- University of Rhode Island
- Johns Hopkins University
- Bedford Institute of Oceanography, Halifax
- Huntsman Marine Science Centre, New Brunswick
- UC San Diego
- UC Davis
- UC Santa Barbara
- Texas A&M
  - Galveston
  - Corpus Christi
  - College Station

- Considerations:
  - Industry-Academia-Responder/OSRO Interface, Travel, Regulatory Agencies, Oil Spill R&D Center/Studies


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