An Introduction to the C-IMAGE-II Research Consortium: Center for the Integrated Modeling and Analysis of Gulf Ecosystems

UNAM Oil Spill Seminar

4 May, 2016

Mexico City

Overview of C-IMAGE Consortium

Center for Integrated Modeling and Analysis of Gulf Ecosystems

- **Description of the Consortium and areas of emphasis**
- **Research Strategies promoting integration across traditional domains *(more than sum of parts?)***
- **Research Proposed, Completed, Underway and Planned**
- **Engagement Strategies: internal (within and across themes), cross-Consortia, industry, government, external, public**
- **Public Outreach – Podcasts, Videos, Public Lectures, etc.**

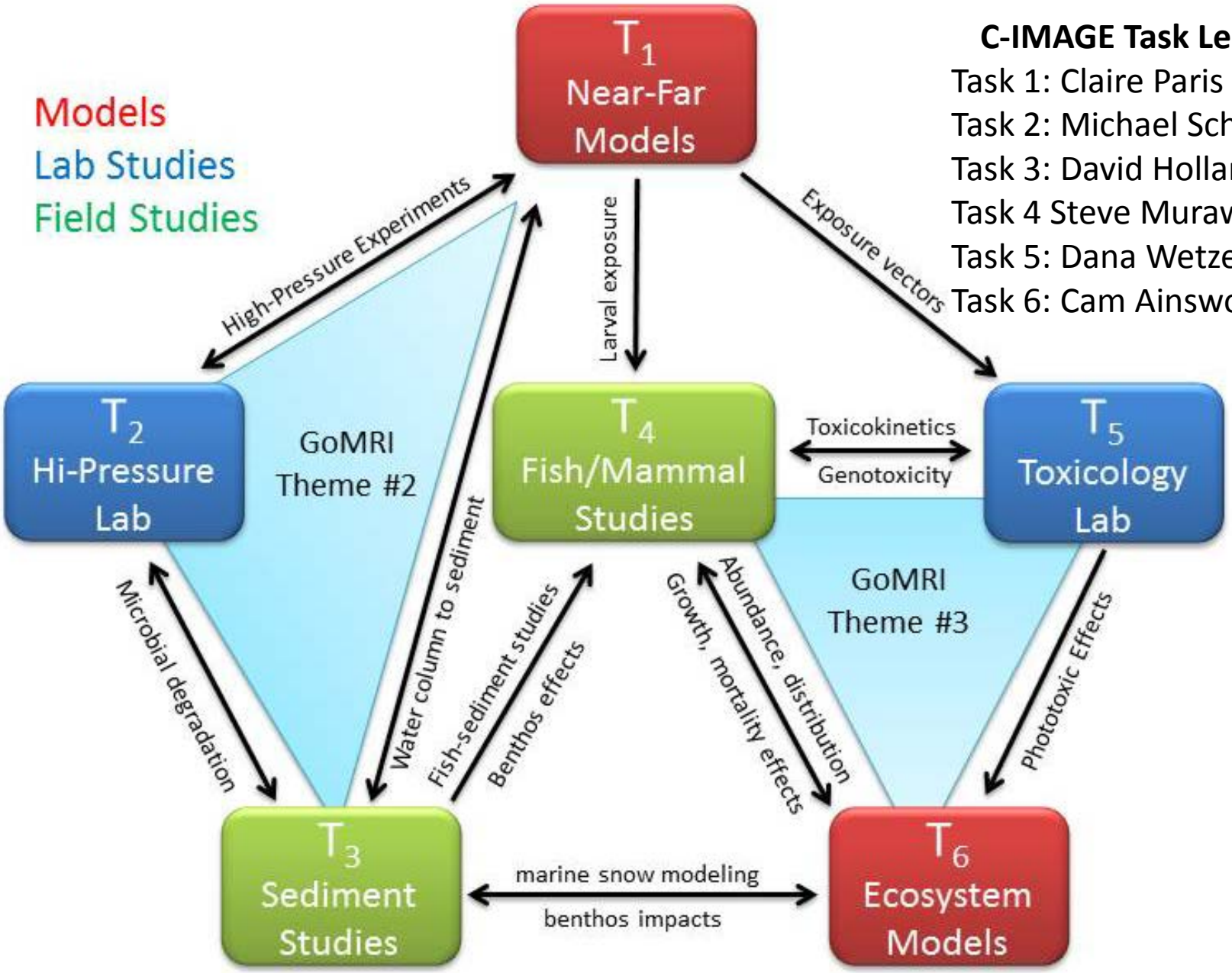
C-IMAGE Consortium Partners

- **University of South Florida** – *lead & various foci*
- **Florida Institute of Oceanography** – *Research vessels*
- **Hamburg Technical University** – High pressure lab studies, velocity
- **Texas A&M University, CS, CC** – *modeling, economics, benthos, fish*
- **University of Calgary** – HMW environmental exposure, partitioning
- **Wageningen University & NHL – Netherlands** – Degradation Studies
- **Eckerd College** - *Benthic stratographic studies*
- **University of West Florida** - *Microbial studies*
- **Pennsylvania State University** – Degrading enzymes, ^{13}C, ^{14}C studies
- **University of Miami** – far-field Modeling
- **University of South Alabama** – *Fish community analyses*
- **Mote Marine Laboratory** - *Biomarkers -vertebrate exposure*
- **Scripps Institution of Oceanography** – *Marine mammals*
- **Florida State University** – Microbial Studies
- **Georgia Tech** – *Microbial Studies*
- **UNAM University** – *Sediments, fish*

C-IMAGE's Research Themes

1. ~~Physical distribution and ultimate fate of contaminants associated with the *Deepwater Horizon* incident;~~
2. Chemical evolution and biological degradation of the contaminants;
3. Environmental effects of the contaminants on Gulf of Mexico ecosystems, and the science of ecosystem recovery;
4. ~~Technology developments for improved detection, characterization, mitigation, and remediation of offshore oil spills; and~~
5. ~~Impacts of oil spills on public health.~~

GULF OF MEXICO RESEARCH INITIATIVE



C-IMAGE Task Leads

Task 1: Claire Paris
Task 2: Michael Schlüter
Task 3: David Hollander
Task 4 Steve Murawski
Task 5: Dana Wetzel
Task 6: Cam Ainsworth

What do People Care About?

- Where is (or was) the Oil?
  - How Toxic is it?
  - How Fast is it Going Away?
- What About Dispersants?
- Is the Seafood Safe to Eat?
- Impacts on Wildlife & People?
- Are We Better Prepared for the Next Time?

Some Critical Questions to be Answered…

- Does the scenario of high pressure/low temperature fundamentally alter the dispersant-droplet size-ejection velocity relationship? (hydrates, surface tension, GOR)? Were deep-sea dispersants effective?
- How did oil get to the bottom? Oil budget? Toxicokenetics?
- How persistent are PAHs and other oil components in the environment? In biota? How does DWH relate to other sources in the pollution budget of the Gulf of Mexico?
- What are the long-term impacts of the spill on pelagic, mesotrophic and benthic ecosystems?
- Is society better prepared for future catastrophic oil spills?
- Have we trained the next generation of professionals capable of interdisciplinary work on these issues?

GULF OF MEXICO RESEARCH INITIATIVE

C-IMAGE II Plan for 2015-17 Initiatives

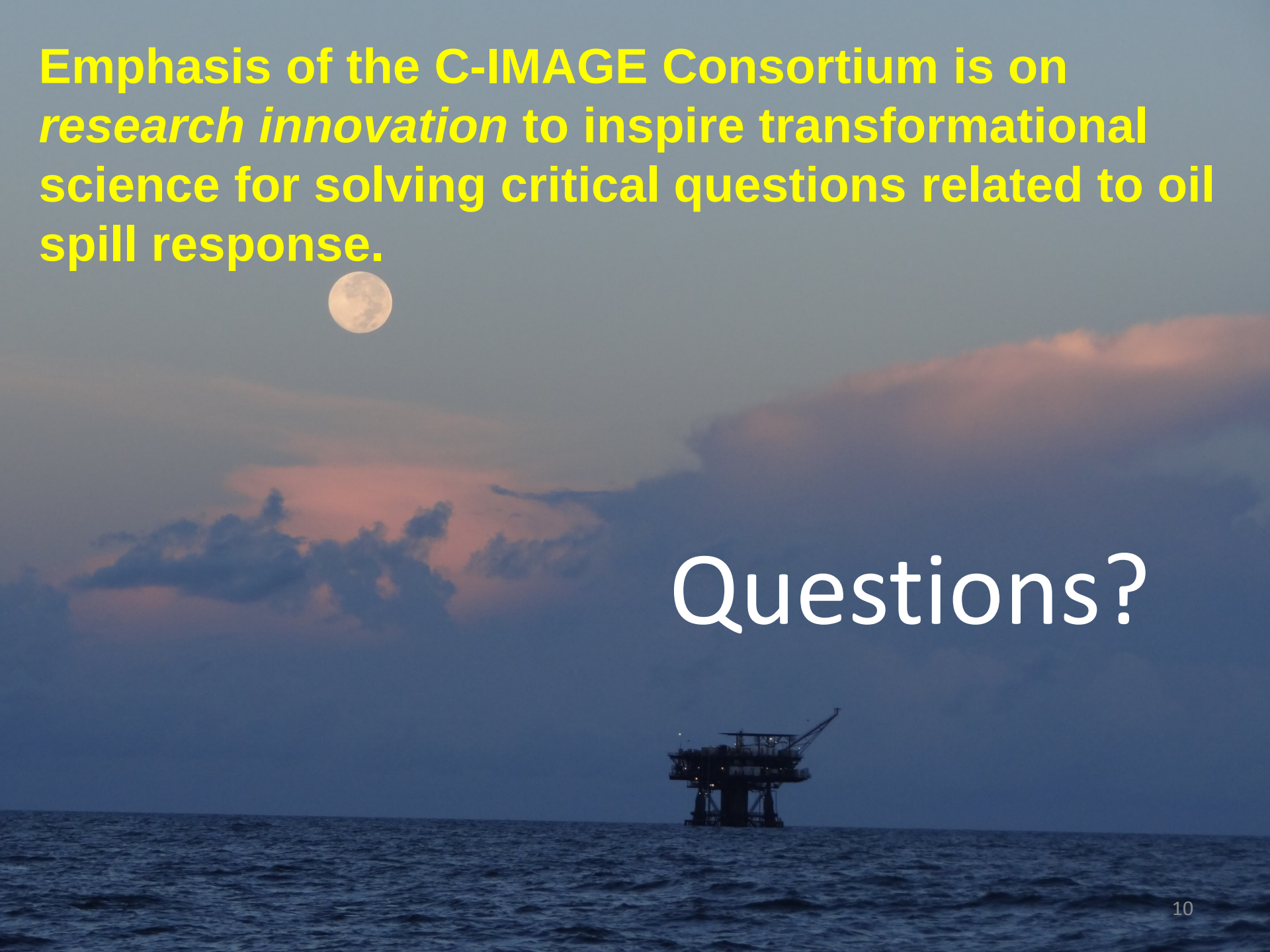
- Extend field studies to the IXTOC Spill Area – a "tale of two spills"
- Conduct a Gulf-wide fish survey to develop a broad baseline and for comparison with NGOM fishes
- Controlled exposures to calibrate sub-lethal effects interpreted from field sampling

Today's C-IMAGE Program

- 15 Posters to be viewed over extended lunch (Authors from Mexico & USA)
- Three Talks:
  - Dr. Adolfo Gracia (UNAM)
  - Dr. David Hollander (USF)
  - Dr. Steve Murawski (USF)
- Discussion of Current and Future Research Plans

GULF OF MEXICO RESEARCH INITIATIVE

Emphasis of the C-IMAGE Consortium is on *research innovation* to inspire transformational science for solving critical questions related to oil spill response.



Questions?