Gulf of Mexico Oil Spill & Ecosystem Science Conference

2017

Table of Contents

Welcome to the 5th Annual

Gulf of Mexico Oil Spill & Ecosystem Science Conference (GoMOSES)

February 6-9, 2017

Hyatt Regency New Orleans, 601 Loyola Avenue, New Orleans, LA

The unprecedented amount of research following the Deepwater Horizon (DWH) event has resulted in a broad range of scientific findings, including insights about how oil breaks down in marine habitats, where currents might take it, and how it affects ecosystems and communities. As the Gulf of Mexico research community continues to answer questions posed since 2010, we shift the focus of this conference to the application of these findings and discoveries to spill response and restoration. Effective applications of resultant science will better position the national and international response communities to respond to and mitigate future disasters and their impacts. The 2017 Conference theme, "Ecosystem Approaches to Gulf Response and Restoration," also provides an opportunity to reflect on the current state of the Gulf and to determine which questions remain unanswered while considering the practical application of those that have been addressed. How do responders and resource managers use new scientific discoveries to ensure that impacts are understood and that the ecosystem is properly restored? What have we learned about oil spills and their impacts that can reduce uncertainty; mitigate ecological, social, and health impacts of a future spill; advance response strategies; and improve how we approach restoration?

The 2017 Conference includes a broad range of findings across numerous disciplines. Workshops on February 6th will focus on topics such as international research in the Gulf, marine protected species assessments, development of decision support tools, and the challenges of oil spill science informing response. On February 7th, Dave Westerholm, keynote speaker and Director of National Oceanic and Atmospheric Administration (NOAA)'s Office of Response and Restoration, will lead an expert panel addressing how this information fits into the continuum of planning, preparedness, response, and restoration. The panel will engage the attending scientific community in a discussion about how science and scientists influence and participate in the response process. Twenty-three scientific sessions featuring over 330 oral and 250 poster presentations will take place February 7th, 8th, and the morning of the 9th. In closing, a panel of restoration practitioners will discuss the challenges of integrating science into restoration, as well as best practices and approaches to restoration, connecting restoration projects at a landscape-scale, and guarding against unintended consequences. This will be followed by an overview of each session, with particular emphasis on how the research presented informs response, management, and restoration activities.

We are excited to return to New Orleans, Louisiana – location of the first Conference and a city with much history, culture, and cuisine. We thank New Orleans for hosting us again and hope you will explore the city during your free time. Finally, we would like to thank our sponsors, the Executive Committee, and the conference staff for all of their time and dedication for again making this event so successful.

Thank you for your participation. We hope you have a fantastic meeting and look forward to seeing you again at future events!

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Stay Connected!

In order to keep paper usage at a minimum, the Gulf of Mexico Oil Spill and Ecosystem Science Conference is offering most of its content digitally. All the information you need can be found on the conference webpage: *http://gulfofmexicoconference.org/*.
In addition, there are many other ways to stay connected:

1. Mobile Application

Download the official mobile application for the conference to:

- Get immediate conference updates and schedule changes;
- Browse the conference schedule and abstracts;
- Create your own schedule
- Use the maps feature to locate your talks and sessions;
- Connect with Social Media and view a live stream of #gulfscienceconference and #OneGulf tweets;
- Make notes and comments on scientific session you attend;
- Find sponsor and exhibitor information
- Upload pictures;
- Much more!

Scan the QR code or simply search for Gulf Science Conference in your app store to download the app on your mobile device. You can also visit *https://events.crowdcompass.com/gulfconference* for download links and to view the app in your mobile browser.

2. Visit our online searchable abstracts database at: *https://crowd.cc/gomoses2017*

3. Social Networking:

www.facebook.com/gulfscienceconference

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Check-in and On-site Registration:

Check-in and on-site Registration will take place in the *Elite Foyer* (first floor). The Registration Desk will be open at the following times:

Monday, February 6- 12:00p - 6:00p
Tuesday, February 7- 7:30a – 5:30p
Wednesday, February 8- 7:30a - 5:30p
Thursday, February 9- 7:30a -12:00p

Meals:

The following meals are provided as part of your registration fees for conference attendees.

Continental Breakfast in the *Strand* and *Elite Foyers*:

Tuesday, February 7- starting at 7:30a
Wednesday, February 8- starting at 7:30a
Thursday, February 9- starting at 7:30a

Lunch is not provided. There are many options for lunch in the Hyatt Regency Hotel, including a "grab & go" counter on the third floor next to Vitascope restaurant. Tables are available in *Elite Hall*. You can also explore options in nearby downtown New Orleans and the French Quarter.

Breaks will take place in the *Strand* and *Elite Foyers*.

Wi-Fi/Internet:

Complimentary Wi-Fi and Internet are available in the Hyatt guest rooms. Wi-Fi is also provided in the conference meeting space and accessible by a passcode.

Network: **gulfconference**

Passcode: **gomoses17**

Exhibits:

Exhibits are located in the *Elite Hall* for the duration of the conference. A list of exhibitors is on page 99. We encourage you to stop by during breaks!

Information for Oral Presenters

- Each session you present in will have a laptop with your presentation pre-loaded, and a laser pointer.
- Presentation upload will take place in Bolden 2 on the second floor.
- You must upload your presentation in the Speaker Ready Room at least one hour before your session is scheduled to begin. We advise that you upload your presentation the day before your session to avoid lines and ensure it is uploaded in time.
- The Speaker Ready Room will be open:

  February 6: 12:00p -6:00p
  February 7: 7:30a - 6:00p
  February 8: 7:30a - 6:00p
  February 9: 7:30a - 8:30a

- Presentations should be no more than 12 minutes in length (unless you have been designated a 30 minute time slot). This allows for the transition of speakers and keeps the session running on time.
- Please make sure your presentation is in PowerPoint format that is PC-compatible and set at a 4:3 ratio. Please use standard fonts, and if you include videos, provide the original files to the technical staff. This will minimize technical disruptions during the meeting. You will be able to test your presentation ahead of time in the Speaker Ready Room.

Information for Poster Presenters

- All Poster Sessions will take place in Elite Hall, on the first floor of the Hyatt Regency New Orleans Hotel, and the space will be available for you to hang your poster in advance.
- Set up for posters begins at 1:00p on Monday, February 6. Conference staff will be available for assisted poster set up between 1:00p and 6:00p on Monday, February 6. Posters will hang in Elite Hall at the Hotel from Monday afternoon through the duration of the conference.
- Posters must be removed by noon on Thursday, February 9. Any posters not removed by their presenters at this time will be discarded.

Media Policy

Media representatives are welcome to attend the 2017 Gulf of Mexico Oil Spill & Ecosystem Science Conference. The Media Room is located on the second floor of the hotel in Strand 1 and will be open during the following hours:

February 7: 8:00a– 9:00a; Noon – 5:30p
February 8: 8:00a – 5:30p
February 9: 8:00a – 1:00p

The Conference's media policy is designed to ensure a professional forum in which presenters and other meeting registrants can discuss science-based issues freely and in which their concerns about proprietary research data and other information is acknowledged and respected. It is also designed to ensure a forum in which journalists and other media representatives can gather the information they need to deliver factual reporting.

The Conference intends to assist media representatives by keeping them updated through press releases, news updates, and social media. The Conference will also help journalists by arranging interviews with Conference speakers and attendees.

In return, the Conference would like all media representatives to:

- Wear the designated media badge given to them by Conference organizers and identify themselves as a member of the press when attending Conference events or talking with any Conference participants.
- Obtain permission from Conference Communications and Media Staff before filming, taping, or otherwise recording any activity or interview at the Conference. Broadcast journalists can record the Plenary Session but audio and video taping of any scientific session is not permitted.
- Any media representative, who sells, markets, or represents a company for purposes of obtaining advertising or subscriptions from any registrant will immediately forfeit press credentials.

Photo Policy

Attendees are permitted to take photos during the conference.

Official Conference photographs will be taken at the Gulf of Mexico Oil Spill & Ecosystem Science Conference. By registering for this Meeting, you agree to allow the Conference to use your photo in any subsequent Conference-related publication or website.

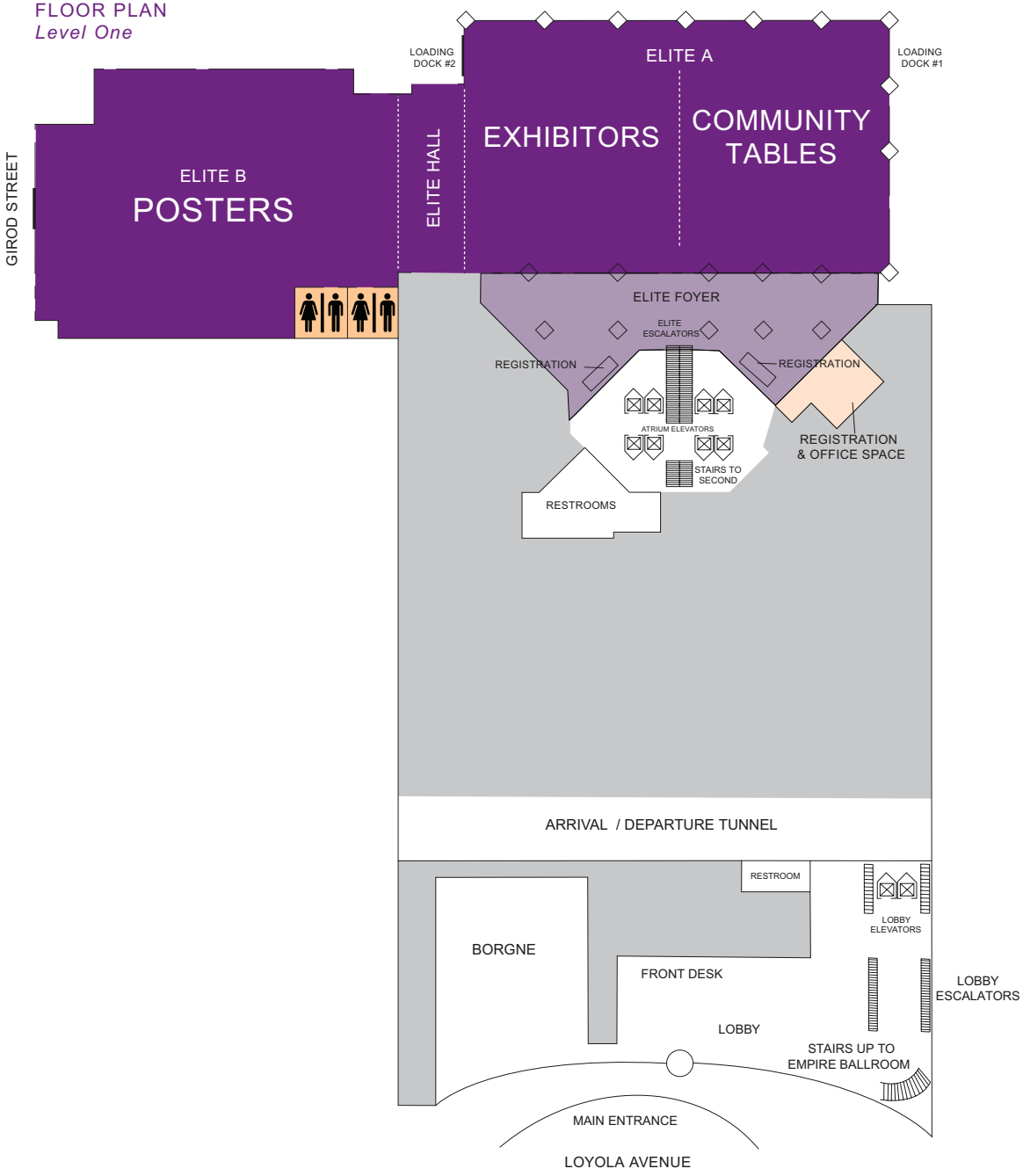
Audio & Video Policy

Attendees of the Gulf of Mexico Oil Spill & Ecosystem Science Conference are not permitted to record, film, or tape any scientific session.

Cell Phone Policy

Out of courtesy to our speakers and attendees, we request that all cell phones be turned off during sessions and meetings.

FLOOR PLAN
Level One



FLOOR PLAN
Level Two

2017 Conference Schedule At-A-Glance

Monday, February 6

7:30a		
8:00a		
8:30a		
9:00a		Workshops and Meetings
9:30a		
10:00a		
10:30a		
11:00a		
11:30a		
12:00p	On-site registration, Presentation upload, Exhibit and Poster Set Up	
12:30p		
1:00p		
1:30p		
2:00p		
2:30p		
3:00p		
3:30p		
4:00p		
4:30p		
5:00p		
5:30p		
6:00p		
6:30p		
7:00p		
7:30p		
8:00p		

Tuesday, February 7

Onsite Registration, Presentation Upload

Opening Plenary
Keynote Address

BREAK (15 mins)

Opening Plenary (continued)
Panel: "The Role of Science in Oil Spill Response and Management Decisions"

LUNCH

Scientific Sessions

BREAK (30 mins)

Scientific Sessions

Poster Session, Data Tools Café & Reception

Exhibits open all day
Poster Hall open all day

Wednesday, February 8

7:30a	Onsite Registration, Presentation Upload
8:00a	
8:30a	
9:00a	Scientific Sessions
9:30a	
10:00a	
10:30a	BREAK (30 mins)
11:00a	Scientific Sessions
11:30a	
12:00p	
12:30p	LUNCH
1:00p	
1:30p	
2:00p	Scientific Sessions
2:30p	
3:00p	
3:30p	BREAK (30 mins)
4:00p	Scientific Sessions
4:30p	
5:00p	
5:30p	
6:00p	Poster Session & Reception *Exhibits open all day* *Poster Hall open all day*
6:30p	
7:00p	
7:30p	
8:00p	

Thursday, February 9

Onsite Registration, Presentation Upload	
Scientific Sessions	
BREAK (30 mins)	
Scientific Sessions	
LUNCH	
Closing Plenary Panel: “Linking Science & Restoration: Now and in the Future” Session Summaries	
Exhibits open until 12:00p	

Monday, February 6

Time	Event	Location
12:00p-6:00p	Registration & Check-in Open	Elite Foyer
12:00p-6:00p	Exhibit Set Up	Elite Hall
12:00p-6:00p	Speaker Ready Room Open	Bolden 2
1:00p-6:00p	Poster Hang-Up	Elite Hall

Associated Meetings and Events

9:00a-12:00p	Assessing the State of Gulf of Mexico Benthic Habitat Maps	Strand 13
9:00a-12:00p	Gulf of Mexico Oil Spill Research: International Collaborations Involving Science, Policy and Response	Strand 12
9:00a-1:00p (Open)	Hypoxia Effects on Fish and Fisheries: Kick-Off Meeting of Decision Support Tool Development	Bolden 1
1:00p-5:00p (By invitation)	Hypoxia Effects on Fish and Fisheries: Kick-Off Meeting of Decision Support Tool Development	Bolden 1
9:00a-5:00p	MOSSFA Workshop	Empire B
1:00p-4:00p	Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) - Informational Meeting, Year 2	Strand 13
1:00p-4:00p	Physical Methods of Oil Spill Remediation: Research Needs and Lessons Learned in Remediating Oil Spills in the Gulf of Mexico and Michigan	Bolden 5
1:00p-5:00p	Exploring the Intersection between Oil Spill Science and Response	Bolden 6

Tuesday, February 7

Time	Event	Location
7:30a-5:30p	Registration & Check-in Open	Elite Foyer
7:30a-6:00p	Speaker Ready Room Open	Bolden 2
7:30a-8:00p	Exhibits Open	Elite Hall
	Poster Hall Open	Elite Hall

Opening Plenary Program Schedule

Starting at 7:30a	BREAKFAST	Strand & Elite Foyers
9:00a-10:00a	Welcome and Introduction Dr. Rita Colwell, Gulf of Mexico Research Initiative Research Board Keynote Address Dave Westerholm, NOAA	Empire A/B
10:00a-10:15a	BREAK	Strand & Elite Foyers
10:15a-12:30p	Panel and Discussion	Empire A/B
12:30p - 2:00p	LUNCH	Strand & Elite Foyers

Scientific Program Schedule

2:00p-3:30p	Session 001	Strand 11
	Session 002	Empire A
	Session 003	Bolden 1
	Session 004	Bolden 5
	Session 005	Strand 12
	Session 006	Bolden 6
	Session 007	Strand 13
	Session 008	Empire B
3:30p-4:00p	BREAK	Strand & Elite Foyers
4:00p - 5:30p	Session 001	Strand 11
	Session 002	Empire A
	Session 003	Bolden 1
	Session 004	Bolden 5
	Session 005	Strand 12
	Session 006	Bolden 6
	Session 008	Empire B
6:00p-8:00p	Poster Session & Reception (featuring Sessions 001 - 008)	Elite Hall

Associated Meetings and Events

3:30p-4:00p	Dataset Management Planning via the GRIIDC Dataset Information Form (DIF)	Bolden 4
6:00p-8:00p	Gulf of Mexico Data Tools Café	Elite Hall

2017 Opening Plenary

The Role of Science in Oil Spill Response and Management Decisions

Tuesday, February 7 • 9:00a - 12:30p • Empire A/B

Welcome and Introduction

Rita Colwell, *GoMRI Research Board*

Keynote Address

Oil Spill Science and Response: Putting the Puzzle Pieces Together

Dave Westerholm, *NOAA*

Panel Discussion

Following the Deepwater Horizon event, there has been an unprecedented amount of oil spill research, with more discoveries yet to come. In the event of another spill, how might responders handle new science on the ground? How does oil spill research influence policy, planning, preparedness, and response? What efforts are being made to bring academics into the oil spill world? Our expert panel will provide an in-depth discussion on issues, such as how planning and response decisions are made by federal, state, and industry responders with a focus on the opportunities and challenges of using academic research.

Panelists:

Captain Joe Loring

Chief, Office of Marine Environmental Response Policy, U.S. Coast Guard

Greg DeMarco

Emergency Preparedness & Response Operations Support Manager, ExxonMobil

Steve Buschang

Director of R&D, State Scientific Coordinator, Texas General Land Office

Nancy Kinner

UNH Director, Coastal Response Research Center

John Caplis

Emergency Oil Spill Response Coordinator, Bureau of Safety and Environmental Enforcement

Scott Lundgren

Chief, Emergency Response Division, NOAA

Rita Colwell, *GoMRI Research Board*

Dr. Rita Colwell is a Distinguished University Professor at the University of Maryland at College Park and The Johns Hopkins University Bloomberg School of Public Health. Dr. Colwell chairs the Research Board of the Gulf of Mexico Research Initiative.

Dave Westerholm, *NOAA*

Dave Westerholm currently serves as the Director of NOAA's Office of Response and Restoration. His Emergency Response Program includes Scientific Support Coordinators who directly assist Federal On Scene Coordinators with environmental data, modeling, preparedness aids and training. He oversees NOAA's Disaster Response Center and as the primary federal trustee, his Damage Assessment and Restoration Program is responsible for protecting coastal and marine resources, mitigating threats, reducing harm, assessing damage, and restoring ecological function under the Clean Water Act, Comprehensive Environmental Response, Compensation, and Liability Act, and the Oil Pollution Act. In addition, he manages NOAA's Marine Debris Program, a multi-agency effort devoted to prevention, education, and mitigation of the hazards of persistent marine debris. Prior to NOAA, Mr. Westerholm had five years of corporate experience as both Senior Operations Director and Vice President for Anteon Corporation and then General Dynamics. He is a retired Coast Guard Captain with experience in a variety of assignments including engineering, search and rescue, marine safety, security, emergency management, and environmental protection.

Session 001

Oil Spill Response and Mitigation Agents

Tuesday, February 7, 2:00p - 5:30p, Strand 11

Michael Fulton, NOAA
Scott Lundgren, NOAA
Marie Delorenzo, NOAA
Gary Shigenaka, NOAA

During an oil spill the Federal On Scene Coordinator (FOSC) must make decisions as to whether chemical countermeasures should be employed. Possible countermeasures include dispersants, surface washing agents (SWAs), and bioremediation products. The EPA maintains both subpart J of the National Contingency Plan (NCP) defining the approval process and the NCP Product Schedule that identifies products that may be used to reduce the impacts of spilled oil. In many cases, there is relatively little information available on the efficacy and potential bioeffects associated with the use of listed or proposed response countermeasures. This session includes presentations on diverse topics related to chemical countermeasure decisions, use, effectiveness, and potential environmental impacts.

Time	Title	Presenter
2:00p - 2:15p	Evaluation of Chemical Countermeasures as Potential Response Options	Paige Doelling, NOAA*
2:15p - 2:30p	Direct Numerical Simulation of Raindrop Impacting Oil Slicks: Splash Behavior and Aerosol Formation	Mohamed Ghandour, Arts et Métiers ParisTech
2:30p - 2:45p	Emissions from Crude Oil- and Crude Oil-Dispersant Contaminated Seawaters due to Breaking Waves	Nima Afshar-Mohajer, Johns Hopkins University
2:45p - 3:00p	Analysis of the Community Structure of Planktonic Protozoa Following Exposure to Physically and Chemically Dispersed Crude Oil	Sarah Cosgrove, University of Texas Marine Science Institute
3:00p - 3:15p	Effects of Salinity on the Toxicity of Oil Dispersants in Eastern Mud Snails	Brittany Evans, Eckerd College
3:15p - 3:30p	Efficacy and Ecotoxicological Effects of Shoreline Cleaners in Salt Marsh Ecosystems	Marie DeLorenzo, NOAA
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Efficient Dispersion of Crude Oil by Blends of Food-Grade Surfactants: Toward Greener Oil Spill Treatments	Alon McCormick, University of Minnesota
4:15p - 4:30p	Comparative Toxicity of Chemical Dispersants and Weathered Oil in Saltmarsh Mesocosm Systems	Peter Key, NOAA
4:30p - 4:45p	Natural Clay Nanotubes for Emulsification and Bioremediation of Spilled Crude Oil	Yuri Lvov, Louisiana Tech University
4:45p - 5:00p	Dispersion Effectiveness of Buoyant Gel Dispersants in Oil Spill Treatment	Vijay John, Tulane University
5:00p - 5:15p	Oil Spill Fate and Exposure Modeling of a Deep Sea Blowout - Effects of Including Subsea Dispersant Injection Treatment	Deborah French-McCay, RPS ASA
5:15p - 5:30p	State-of-Science of Dispersants and Dispersed Oil in U.S. Arctic Waters	Nancy Kinner, Coastal Response Research Center*

**Invited Speaker*

Session 002

Decision Support and Integration Tools for Response and Restoration

Tuesday, February 7, 2:00p - 5:30p, Empire A

Lauren Showalter, Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine
Dave Reed, Florida Fish and Wildlife Conservation Commission Fish and Wildlife Research Institute
Amy Merten, NOAA

This year's conference encourages a common theme: putting science to practical use. In the data management realm, this includes the development of tools and applications, which make information available in desired forms through convenient platforms and portals for a various communities. For the past several years, a great deal of effort has been placed on the development of data and information related to oil spill science, post-spill assessments and environmental restoration activities. We have obtained large amounts of data and are now in a position to explore how to incorporate this information to inform future events. How is this information used to inform response, restoration, and planning as well as to connect these data to decision-makers and response personnel at the time of an event? Research data and results are not just to serve scientists; rather the scientific community has an obligation to provide this information in a format that is readily consumable to allow responders and resource managers the ability to make decisions. This session's goals are to provide tool demonstrations that will assist in getting data and information to the end-user, as well as highlighting data integration efforts for synoptic data collections using remote sensing, water column sampling, and working with large volumes of data from sensors.

Time	Title	Presenter
2:00p - 2:15p	Using Mechanistic Models to Maximize Ecosystem Service Benefits for Coastal Ecosystem Restoration Projects	Eldon Blancher, Moffatt & Nichol
2:15p - 2:30p	A Spatial Decision-Support Tool for Marine Biodiversity and Petrochemical Vulnerability in the Gulf of Mexico Large Marine Ecosystem	Beth Polidoro, Arizona State University
2:30p - 2:45p	Numerical Study on Louisiana Coastal Marsh under Hurricane Induced Wave and Current	Minhaz Shahriar, Louisiana Tech University
2:45p - 3:00p	Novel Spatio-Temporal Tools for Simulating Oil Spills, Measuring Impacts, and Understanding Response Needs	Lucy Romeo, National Energy Technology Laboratory
3:00p - 3:15p	Synthesizing Ocean Observing and Modeling to Guide Estimates of Human Exposure and Risk	Helena Solo-Gabriele, University of Miami
3:15p - 3:30p	Can Social Media Inform Disaster Response?	Maura Allaire, Columbia University
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Proactively Planning for Extreme Oil Spill Events and Optimizing Response Efforts	Tony Grubesic, Arizona State University
4:15p - 4:30p	Improving Environmental Information Sharing Through A Collaborative Environmental and Project Data Platform	Ben Shorr, NOAA
4:30p - 4:45p	Tools for Managing the Wealth of DWH Monitoring Data Associated With Early and Ongoing Restoration	Ann Jones, Industrial Economics
4:45p - 5:00p	Satellite-Based Decision-Support Tools to Monitor Algal Blooms and Assess Water Quality in Near Real-Time	Chuanmin Hu, University of South Florida
5:00p - 5:15p	The Gulf of Mexico Coastal Ocean Observing System: Data and Product Portals	Matthew Howard, Texas A&M University
5:15p - 5:30p	Tools for Understanding Large Marine Vertebrate Population Status, Trends and Connectivity in the Gulf of Mexico and Beyond	Felimon Gayanilo, Texas A&M University

Session 003

Understanding Ocean Surface Currents in Relation to Oil Spill Response

Tuesday, February 7, 2:00p - 5:30p, Bolden 1

Tamay Ozgokmen, University of Miami
Eric D'Asaro, University of Washington

Material transport in the upper ocean boundary layer is driven by winds, waves, and ocean currents. Buoyant pollutants such as oil collect near the surface of the ocean, which is a challenging region not only because of the high gradients between the atmosphere and the ocean but also the multitude of processes, such as Stoke's drift, Ekman layer, convection, Langmuir turbulence, frontal features created by riverine dischanges, and submesoscale and mesoscale flows, among others. We welcome recent observational results (such as those from the LAgrangian Submesoscale Experiment, LASER) as well as leading-edge modeling studies focusing on an accurate estimation of the ocean's surface currents. The presenters are encouraged to make a connection about how their results would relate to oil spill response in application.

Time	Title	Presenter
2:00p - 2:15p	Concentration of Floating Material by Frontal Convergence	Eric D'Asaro, University of Washington
2:15p - 2:30p	Diagnosing the Surface Dynamical Balance from Massive Drifter Release	Andrey Shcherbina, University of Washington
2:30p - 2:45p	Aerial Observations of Submesoscale Flows	Jeroen Molemaker, University of California, Los Angeles*
2:45p - 3:00p	Near Surface and Mixed Layer Turbulence Measurements in LASER 2016 Experiment	Darek Bogucki, Texas A&M University - Corpus Christi
3:00p - 3:15p	Small-scale Structure and Dynamics of Surface Oil Spills in the Presence of Dispersants: Laboratory Experiment and Numerical Simulation	Alexander Soloviev, Nova Southeastern University
3:15p - 3:30p	Observations and Simulations of Thermohaline Stratification and Surface Currents on the Central Louisiana Continental Shelf (LCS)	Jason Jolliff, Naval Research Laboratory
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Observing the Air-Sea Interface in Gulf of Mexico Frontal Zones	Brian Haus, University of Miami*
4:15p - 4:30p	Weather Conditions and Sea States during LASER	Shuyi Chen, University of Miami
4:30p - 4:45p	Open Ocean Observations of Small-Scale Near-Surface Dispersion using the Ship-Tethered Aerostat Remote Sensing System (STARRS)	Daniel Carlson, Florida State University
4:45p - 5:00p	Clustering and Dispersion at the Ocean Surface in the Presence of Langmuir Circulation	Henry Chang, University of Delaware
5:00p - 5:15p	How Do Surface Floats and Drift Cards Move Compared to Oil?	Guillaume Novelli, University of Miami
5:15p - 5:30p	A Laboratory Study on the Impact of Breaking Waves on Near-Surface Processes	William Drennan, University of Miami

**Invited Speaker*

Session 004

Understanding Population Status, Trends and Connectivity of Gulf of Mexico Large Marine Vertebrates as Sentinels for Ecosystem Health in the Context of Restoration

Tuesday, February 7, 2:00p - 5:30p, Bolden 5

Natalia Sidorovskaia, University of Louisiana at Lafayette
Alexis Baldera, Ocean Conservancy
Elizabeth Fetherston-Resch, Florida Institute of Oceanography
David Mellinger, Oregon State University
Lori Schwacke, National Marine Mammal Foundation

A growing body of research following the Deepwater Horizon (DWH) oil spill demonstrates injury, impaired health, reproductive failure, and/or loss of important life-history stages in many large marine vertebrates (e.g., marine mammals, birds, and sea turtles). Because these animals are often top predators, their patterns of abundance and habitat use can serve as indicators of the health of Gulf of Mexico ecosystems. The region is faced with an unprecedented opportunity to monitor and understand long-term ocean ecosystem recovery, which factors are affecting change, and how this information can be used to inform restoration. Emerging research is now focusing on understanding recovery trajectories for many large marine vertebrate species and identifying the environmental variables and anthropogenic stressors that may contribute to or impede their recovery. New analyses and interdisciplinary models of data generated after the DWH oil spill are important tools in understanding these connections and adaptively managing recovery strategies. This session will examine next steps in restoring large marine vertebrates by exploring what we know about oil spill impacts, investigating other environmental variables, ecosystem conditions, and anthropogenic stressors that influence population status and trends. The session aims to foster a dialogue about the necessary combination of these disciplines to inform more effective restoration strategies.

Time	Title	Presenter
2:00p - 2:15p	Sea Turtle Habitat Use in the Northern Gulf of Mexico	Kristen Hart, U.S. Geological Survey
2:15p - 2:30p	Analysis of Leatherback Turtle Movement in the Gulf of Mexico	Katrina Aleksa, University of Southern Mississippi
2:30p - 2:45p	Cooperative Monitoring Program for Spawning Aggregations in the Gulf of Mexico: Vulnerability Assessment of 28 Fish Species to Aggregation Fishing	Brad Erisman, University of Texas Marine Science Institute
2:45p - 3:00p	Determining Life History Parameters of Deepwater Sharks: Can We Detect Organismal-Level Effects of Hydrocarbon Exposure from Deepwater Horizon Oil?	Charles Cotton, Florida State University
3:00p - 3:15p	Impacts of the Deepwater Horizon Oil Spill on Genetic Diversity of a Demersal, Sedentary, Deepwater-Burrowing Fish	Shannon O'Leary, Texas A&M University - Corpus Christi
3:15p - 3:30p	Evidence for a Top-Down Ecosystem Effect of Seabird and Marine Mammal Mortalities Caused by the Deepwater Horizon Blowout	Jeffrey Short, JWS Consulting LLC
3:30p - 4:00p	BREAK	
4:00p - 4:30p	Investigating Mechanisms for Reproductive Failure among Bottlenose Dolphins in the Aftermath of the Deepwater Horizon Oil Spill	Cynthia Smith, National Marine Mammal Foundation*
4:30p - 4:45p	Analysis of Lethal and Sublethal Impacts of Environmental Disasters on Sperm Whales Using Stochastic Modeling	Azmy Ackleh, University of Louisiana at Lafayette
4:45p - 5:00p	Long Term Impact Assessment of the 2010 Oil Spill Impact on Deep Diving Marine Mammals: Beaked Whales	Tingting Tang, University of Louisiana at Lafayette
5:00p - 5:15p	Evaluating the Current Approach for Imposing Limits to Human-caused Mortality of Marine Mammals using Management Strategy Evaluation	Paula Moreno, University of Southern Mississippi
5:15p - 5:30p	Marine Mammal Institute	Bruce Mate, Oregon State University

**Invited Speaker*

Session 005

Recovery from the Bottom Up: Rates, Processes, and Connectivity in the Deep Gulf of Mexico

Tuesday, February 7, 2:00p - 5:30p, Strand 12

Tracey Sutton, Nova Southeastern University
Ian MacDonald, Florida State University
Iliana Baums, Pennsylvania State University
Erik Cordes, Temple University
Amanda Demopoulos, U.S. Geological Survey
Gilbert Rowe, Texas A&M University at Galveston

The vulnerability of different ecosystem components to a pollution event is largely a function of process rates (e.g., advection/residence, growth, production, mortality, trophic mediation, migration). Understanding impact in the deep sea is particularly complex due to both large data gaps and the extremely wide range of biophysical rates of its ecosystem components. Although the northern Gulf of Mexico has become one of the most intensely studied deep-sea ecoregions in oceanographic history as a result of the DWH oil spill, developing a science-based strategy for recovery is a work in progress.

Recovery from the impacts of the DWH oil spill will be a complex and slow process, one that will be facilitated by the mandated restoration efforts. The complexity of this issue is most prominent in the deep Gulf waters where the release of oil and gas and application of dispersants occurred. The deep Gulf hosts a highly diverse fauna with numerous connections to the broader Gulf-wide ecosystem. Injuries to sessile, slow-growing corals and other benthic invertebrates have been well-documented after DWH oil spill, but impact assessment of many habitats is incomplete. It is crucial to improve understanding of the deep Gulf in order to quantify recovery and ecosystem health in coming decades.

This session features presentations on deep benthic, demersal and pelagic assemblages, with emphasis on exposure/toxicity, recovery, active and passive flux, habitat characterization, population connectivity and food web structure.

Time	Title	Presenter
2:00p - 2:15p	Shifts in the Abundance of Pelagic Fishes in the Gulf of Mexico: Natural Variability or a Consequence of the Deepwater Horizon Oil Spill?	Jay Rooker, Texas A&M University at Galveston*
2:15p - 2:30p	DEEPEND: Characterizing Pelagic Habitats in the Gulf of Mexico Using Model, Empirical, and Remotely-Sensed Data	Matthew Johnston, Nova Southeastern University
2:30p - 2:45p	PAH Biomarker Levels in Deepwater Sharks Impacted by the Deepwater Horizon Oil Spill From 2011-2016: Evidence of Recovery?	Jim Gelsleichter, University of North Florida
2:45p - 3:00p	Toxicity of 1-methylnaphthalene to *Americamysis bahia* and Comparison with an Established Critical Body Burden Using the Target Lipid Model	Nicholas Turner, Nova Southeastern University
3:00p - 3:15p	DEEPEND: Comparative Population Genomics of Mesopelagic Shrimp to Diagnose Long-Term Changes to Ecosystem Health and Resilience in the Gulf of Mexico	Laura Timm, Florida International University
3:15p - 3:30p	DEEPEND: First Evidence for Vertical Migration by the Gulf Bathypelagic Fauna and its Relationship to the DWH oil spill Deep Hydrocarbon-Dispersant Plume	Tracey Sutton, Nova Southeastern University
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Trophic Structure of Mesopelagic and Bathypelagic Micronekton in Relation to Mesoscale Oceanographic Features in the Northern Gulf of Mexico	Travis Richards, Texas A&M University at Galveston
4:15p - 4:30p	DEEPEND: Complex Vertical Movements of Mesopelagic Scattering Layers: From Taxonomic-Based Migration Decisions to Global Biological Fluxes	Guillaume Rieucau, Florida International University
4:30p - 4:45p	Response to Oil and Dispersant Exposure of *Lophelia pertusa*	Alexis Weinnig, Temple University
4:45p - 5:00p	Horizontal & Vertical Transport of Marine Snow in the Gulf of Mexico	Guangpeng Liu, Georgia Institute of Technology
5:00p - 5:15p	Drivers of Pelagic Microbial Community Dynamics in the Northern Gulf of Mexico	Cole Easson, Nova Southeastern University
5:15p - 5:30p	Vertical Abundance of Marine Snow in Response to MS River Plume Water	Arne Diercks, University of Southern Mississippi

**Invited Speaker*

Session 006

Processes in the Near Field of a Blowout

Tuesday, February 7, 2:00p - 5:30p, Bolden 6

Michael Schlüter, Hamburg University of Technology
Michel Boufadel, New Jersey Institute of Technology
Claire Paris, University of Miami
Zachary Aman, University of Western Australia

This session will provide a forum to present and discuss recent results by measuring and modeling the dispersion and dissolution of gas and oil released under deep ocean conditions. The following influences on bubble and droplet formation, size distribution, rising behavior and dissolution will be addressed: high pressure and low temperature conditions, addition of surfactants (dispersants), gas saturation of “live oil” on dispersion and rising behavior, as well as hydrate formation. The results from experiments and numerical simulations presented in this session are critical to the further modeling and prediction of oil-fate processes in the near field and far field and to enable a quantifiable understanding of dispersant addition. This session focuses on experimental, multi-physics computational fluid dynamics, multi-phase hydrocarbon modeling based studies and their coupling to near- and far-field models that are necessary to predict the distribution of crude oil under high-pressure and low-temperature conditions and to enhance the accuracy and extend the applicability of Lagrangian simulators under these extreme conditions. This session will join researchers and their results from different disciplines for a deeper understanding of oil spills and their impacts to reduce uncertainties and enable a better prediction and preparation of further spills.

Time	Title	Presenter
2:00p - 2:15p	Experimental Studies of Gas Hydrate Dissociation in a Deep Sea Water Simulator	Jose Agudo, University of Erlangen-Nuremberg*
2:15p - 2:30p	Experimental Simulation of Effect of Dispersants on Oil-Water Partitioning of Low-Molecular Weight Compounds during a Deep Submarine Oil Spill	Aprami Jaggi, University of Calgary
2:30p - 2:45p	Refractive Index-matched Turbulent Immiscible Buoyant Oil Jet Breakup in Water	Xinzhi Xue, Johns Hopkins University
2:45p - 3:00p	High-Pressure Measurement of Oil Droplet Sizes in a Sapphire Autoclave	Zachary Aman, University of Western Australia
3:00p - 3:15p	Rapid Decompression - Influence of Dissolved Gases and Pressure Drop on Drop Size Distributions during a Deep-Sea Blowout	Karen Malone, Hamburg University of Technology
3:15p - 3:30p	Gas Saturation Effects on the Rise Behavior of Oil Droplets under Deep-Sea Conditions	Simeon Pesch, Hamburg University of Technology
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Investigating the Impact of the Release on the Oil Droplet Size Distribution from a Blowout: A Review and a Numerical Investigation	Michel Boufadel, New Jersey Institute of Technology
4:15p - 4:30p	Evolution of Gas Bubbles and Oil Droplets in Subsea Oil and Gas Blowouts	Lin Zhao, New Jersey Institute of Technology
4:30p - 4:45p	Dynamic Coupling of Near Field and Far Field Models Hones Predictions of Oil Dispersion from Deep Sea Blowout	Claire Paris, University of Miami
4:45p - 5:00p	Large-eddy Simulation of Nearfield Oil/Gas Plume in Stratified Flow with Cross Current	Di Yang, University of Houston
5:00p - 5:15p	Up-Scaling Oil Droplet Sizes from the Laboratory to the Field	Zachary Aman, University of Western Australia
5:15p - 5:30p	Discussion	

**Invited Speaker*

Session 007

Use of Ecological and Socioeconomic Indicators to Demonstrate Ecosystem Recovery

Tuesday, February 7, 2:00p - 3:30p, Strand 13

Rebecca Allee, NOAA
Julien Lartigue, NOAA
Frank Parker, NOAA

Ecological and socioeconomic indicators can serve as a proxy for the status of an ecosystem and its components. They can help describe the ecosystem in simpler terms that can be understood and used by scientists and non-scientists alike. As a result, indicators help scientists assess the health of an ecosystem, and are often used to enlighten the public about the environment in which they live. Indicators have traditionally focused on non-human components of an ecosystem. However, today, scientists are interested in providing information to managers that encompasses the entire ecosystem including humans. Once a comprehensive suite of indicators has been developed that reflects the entire ecosystem, the services it provides, and the level of human well-being associated with that ecosystem, the information can be turned over to resource managers for use in ecosystem-based management. Ideally, the integration of ecological and socioeconomic indicators into management practices will improve management decisions and allow managers and the public to monitor the recovery of an ecosystem. Given the scope and scale of planned restoration in the Gulf of Mexico, the development, testing, and effective use of indicators to support resource management decisions and assess their outcomes is more important than ever.

Time	Title	Presenter
2:00p - 2:30p	Identification of Gulf of Mexico Ecosystem Indicators using an Ecological Resilience Framework	Kathleen Goodin, NatureServe*
2:30p - 2:45p	Indicators and Assessment Framework for Ecological Health and Ecosystem Services	Mark Harwell, Harwell Gentile and Associates LC
2:45p - 3:00p	Mission-Aransas Pilot Study: A Proof-of-Concept Demonstration of the Gulf EcoHealth Metrics Decision-Support Framework	John Gentile, Harwell Gentile and Associates LC
3:00p - 3:15p	Evaluations of NRCS's Migratory Bird Habitat Initiative (MBHI)	Brian Davis, Mississippi State University
3:15p - 3:30p	Ocean Weather Laboratory - Identifying Events and Abnormal Bio-optical and Physical Properties in the Gulf of Mexico	Robert Arnone, University of Southern Mississippi

**Invited Speaker*

Session 008

Ecosystem Structure, Function, and Services: Legacies of the Deepwater Horizon Oil Spill

Tuesday, February 7, 2:00p - 5:30p, Empire B

Will Patterson, University of Florida
Dave Portnoy Texas A&M University - Corpus Christi
Steve Murawski, University of South Florida

Acute and chronic impacts of the Deepwater Horizon Oil Spill (DWH) on Gulf of Mexico (GOM) ecosystems are an important legacy of the spill. These impacts have not only affected ecosystem form and function, but myriad ecosystem services also were impacted following the spill. Considerable research effort has been focused on discerning and quantifying ecosystem impacts, and presentations on the scientific evidence of DWH impacts have been prominently featured in past GoMOSES Conferences. However, other important legacies of the spill are novel discoveries and new understanding of GOM ecosystem structure and function which have resulted from post-spill research conducted among terrestrial, estuarine, shelf, and deep sea systems. This session will focus on recent findings and further quantification of acute and chronic DWH impacts, as well as novel information on ecosystem structure and function. Restoration activities should be based on a clear understanding of DWH impacts, but new information on ecosystem structure and function also will be key to ensuring the efficacy of restoration activities. Furthermore, this new information constitutes important baseline data that were lacking for many systems prior to the DWH and also is shaping our understanding of ecosystem dynamics, resistance to perturbation, and prospects for resiliency when faced with future large-scale disturbances.

Time	Title	Presenter
2:00p - 2:30p	Synthesis Modelling of the DWH Oil Spill	Cameron Ainsworth, University of South Florida*
2:30p - 2:45p	NanoSIMS Characterization of Methane Assimilation and N2-fixation in Response to Oil and Gas Release in Offshore Waters	Joseph Montoya, Georgia Institute of Technology
2:45p - 3:00p	Compound Specific Stable Isotope Analysis Reveals Terrestrial-Aquatic Linkages in a Northern Gulf of Mexico Salt Marsh	Jessica Johnson, Louisiana State University
3:00p - 3:15p	Plant Diversity Impacts *Spartina alterniflora* Resilience to Deepwater Horizon Oil Pollution	Robyn Zerebecki, Northeastern University
3:15p - 3:30p	Coupled Effects of Oil Spill and Hurricane on Saltmarsh Terrestrial Arthropods	Wokil Bam, Louisiana State University
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Diel Vertical Migration of Zooplankton: Numerical Modeling of the Effect of Oil Emulsions and Freshwater Lenses	Cayla Dean, Nova Southeastern University
4:15p - 4:30p	Impacts of Oil Exposure on Mahi-Mahi: From the Subcellular and Molecular Level through Populations and Ecosystems	Martin Grosell, University of Miami
4:30p - 4:45p	Eco-physiological Implications of Acute Embryonic and Juvenile Oil Exposure in Marine Fish	Andrew Esbaugh, University of Texas Marine Science Institute
4:45p - 5:00p	Toxicological Testing with an Estuarine Icon, the Bay Anchovy, *Anchoa mitchilli*	Ed Chesney, Louisiana Universities Marine Consortium
5:00p - 5:15p	Impact of PAH at Fish Sub-individual Level and Resiliency Consequences	Adolfo Gracia, Instituto de Ciencias del Mar y Limnología
5:15p - 5:30p	What Can Bile Tell Us about the Environmental Health of the Gulf of Mexico	Erin Pulster, University of South Florida

**Invited Speaker*

Tuesday, February 7, 6:00p – 8:00p

Elite Hall

#	Title	Presenter
Session 001		
41	Capture and Densification of Floating Crude Oil by Granular Materials	Daria Boglaienko, Florida International University
42	Wicking of Floating Crude Oil by Waste Tires	Daria Boglaienko, Florida International University
43	Screening and Isolation of Novel Biodemulsifier Producers from Petroleum Hydrocarbon Contaminated Sources in North Atlantic Canada	Qinhong Cai, Memorial University of Newfoundland
44	Toxic Effects of Oil and Dispersant on Growth of the Toxic Dinoflagellate *Karenia brevis*	Maud Moison, University of Texas Marine Science Institute
45	Sublethal Effects of Crude Oil Dispersants on a Tidal Creek Crustacean	Catherine Nguyen, University of Maryland, College Park
46	Oil Emulsification in Seawater Using Aqueous Lecithin/Tween 80 Self-Assemblies	Joseph Rocchio, University of Rhode Island
47	Water Oil Spills Cleanup Using Oleophilized Peanut Hulls as Sorbent	Horacio Solis, Envigeo
48	Pipe Cutting and Plugging Device	Horacio Solis, Envigeo
49	Evaluation of the Oil Removal Efficiency of Three Shoreline Cleaner Products	Ed Wirth, NOAA
50	Synthesis, Characterization and Bacterial Compatibility of Polypeptoid Functionalized Halloysite Nanotubes	Tianyi Yu, Louisiana State University
Session 002		
81	VulnToolkit:An R Package for Accessing Public Tide Data	Troy Hill, Louisiana Universities Marine Consortium
82	Investigations of Assessment Methods for Restoration Projects in Louisiana's Coast	Paulina Kolic, Louisiana Coastal Protection and Restoration Authority
Session 003		
122	Available Potential Energy in the Northern Gulf of Mexico in the LASER January 2016 Experiment	Mohammad Barzegar, Texas A&M University - Corpus Christi
123	A Coupled Nearfield and Farfield Large-eddy Simulation for Oil Transport From Deep-water Blowouts - A Study of the Effects of Dispersant on Oil Plume Transport	Marcelo Chamecki, University of California, Los Angeles
124	Shipboard Imaging of Mean Square Slope in Gulf of Mexico Frontal Zones	Hanjing Dai, University of Miami
125	Lagrangian Simulation of Oil Trajectories in the Florida Straits	Kimberley Drouin, University of Miami
126	A New, Generalized Approach to Risk Maps for the Gulf of Mexico	Rodrigo Duran, Oregon State University
127	Retrieving Velocity Field from Lagrangian Observations Using Gaussian Process Regression	Rafael Gonçalves, University of Miami
128	Transport and Dispersion of Buoyant Tracers by Mixed Layer Turbulence	Ramsey Harcourt, University of Washington

#	Title	Presenter
129	An Algorithm for Drogue-Loss Detection during LASER	Angelique Haza, University of Miami
130	Long Range Ensemble Forecasting in the Gulf of Mexico	Patrick Hogan, Naval Research Laboratory
131	Qualifying the Summer NIWs Effect and Its Impact on the Oil Spill Events	Chuan-Yuan Hsu, Texas A&M University
132	Dispersion Versus Clustering: Evolution of Drifter Distributions at the Ocean Surface	Helga Huntley, University of Delaware
133	An Improved Surface Velocity Climatology for the Global Ocean from Drifter Observations	Lucas Laurindo, University of Miami
134	Physical Conditions Associated with the Coral Mortality Event of Summer 2016 at the Flower Garden Banks National Marine Sanctuary in the Gulf of Mexico	Matthieu Le Henaff, University of Miami
135	Surface Velocity Fields in the Gulf of Mexico Obtained Through LAVA Blending of Altimetry and LASER Drifter Data	John Lodise, University of Miami
136	Observations of the Ocean Waves Directional Spectra and Stokes Drift across the Frontal Features Identified during LASER in the Gulf of Mexico using drifting Wave Buoys	Sanchit Mehta, University of Miami
137	A Biodegradable Surface Drifter For Ocean Sampling On A Massive Scale: Design, Calibration and Application	Guillaume Novelli, University of Miami
138	Lagrangian Coherence of Loop Current Rings as Represented by Ocean Models	Maria Olascoaga, University of Miami
139	Flux Variability Observed Across Gulf of Mexico Frontal Boundaries	Mingming Shao, University of Miami
140	Differences of Langmuir Circulations in Open and Coastal Zones	Kalyan Shrestha, University of Texas Dallas
141	Non-local Transport in LES of Langmuir Supercells under Tidal Forcing	Andres Tejada-Martinez, University of South Florida
142	Modeling of Turbulence Underneath Non-Breaking Waves	Andres Tejada-Martinez, University of South Florida
143	Ocean Fronts as an Energy Sink in the Gulf of Mexico	Larijai Francis, Texas A&M University - Corpus Christi
Session 004		
144	Localization and Tracking of Sperm Whales Observed near the BP Oil Spill	Kirk Bienvenu, University of New Orleans
145	Influence of Oceanographic Conditions on Distribution and Abundance of Blackfin Tuna (*Thunnus atlanticus*) Larvae in the Gulf of Mexico	Maelle Cornic, Texas A&M University at Galveston
146	Sea Turtle Monitoring During a Seismic Survey by the R/V Maurice Ewing off the Northern Yucatan Peninsula, Mexico	Eduardo Cuevas, CINVESTAV-IPN, Merida
147	Sperm Whale Sizes near the BP Oil Spill	George Drouant, University of New Orleans
148	The Nursery Role of Seagrass Meadows for Snapper and Grouper in the Northern GOM	F. Joel Fodrie, University of North Carolina at Chapel Hill

#	Title	Presenter
149	Preliminary Isotopic Analyses of Coastal Seabirds Collected from Louisiana in 2010 during the Deepwater Horizon Natural Resource Damage Assessment	Katelyn Lamb, Louisiana State University
150	Manatees, Sea Turtles, and Gulf Sturgeons: Comparative Analyses of Habitat-Specific Vital Rates in the Northern Gulf of Mexico	Catherine Langtimm, U.S. Geological Survey
151	Development of Detection and Classification Algorithm Based on the Feature Extraction for Beaked Whales in the Northern Gulf of Mexico	Kun Li, University of Louisiana at Lafayette
152	Comparing Performance of Bottom-Moored, Glider, and Unmanned Surface Vehicle Towed PAM Platforms for Marine Mammal Detection	Sakib Mahmud, University of Louisiana at Lafayette
153	Abundance, Distribution and Dynamics of Shark Populations in the Gulf of Mexico	Steven Murawski, University of South Florida
154	Foraging Movement Patterns of Breeding Royal Terns (*Thalasseus maximus*) on the Isles Dernieres Barrier Islands Refuge in Southern Louisiana	Megan Nepshinsky, Nicholls State University
155	Impact of an Oil Spill and Emergency Response on Thick-billed Murre Feathers	Caitlyn Pratt, Holy Heart of Mary High School
156	Assessing Beaked and Sperm Whale Movement Patterns Using Acoustics and Environmental Characteristics in the Northern Gulf of Mexico	Jared Risbourg, University of Louisiana at Lafayette
Session 005		
59	Larger Predatory Fishes of the Meso- and Bathypelagic Domains: Linking the Planktivores and Top Predators	April Cook, Nova Southeastern University
60	Ecological and Geophysical Signatures of Natural Hydrocarbon Seep Sites in the Gulf of Mexico: A Descriptive Overview of Sites GC600, GC574, GC857, and GC767	Alexandra Cory, Florida State University
61	DEEPEND: Relating Pelagic Habitat to Ocean Stratification	Sergio deRada, Naval Research Laboratory
62	DEEPEND: Once Bitten, Twice Shy: A Cryptic Species of Sloane's Viperfish (*Chauliodus sloani*) Discovered in the Mesopelagic Waters of the Gulf of Mexico	Ron Eytan, Texas A&M University at Galveston
63	Geographic Distributions and Reproductive Seasonality of Oplophorid and Euphausiid Crustaceans in the Vicinity of the Deepwater Horizon Oil Spill	Tamara Frank, Nova Southeastern University
64	Controls on Sediment Redox Depth in the GoM Following the 2010 DWH Event	Alexander Holderness, Eckerd College
65	DEEPEND: Preliminary Results of Cephalopod Vertical Migration Patterns in the Northern Gulf of Mexico	Heather Judkins, University of South Florida
66	Interactions Between Bacterial Breakdown of Oil, Oxygen Consumption, and Macronutrient Availability in the Offshore Gulf of Mexico	Andrew Juhl, Lamont-Doherty Earth Observatory
67	Monitoring Methane Transport and Sediment Total Oxygen Utilization in the Friction Layer at GC185, GC600 and GC767 in the Northern Gulf of Mexico	Christopher Martens, University of North Carolina - Chapel Hill
68	Quantifying Pelagic Habitat Use by Myctophid Fishes in the Northern Gulf of Mexico	Rosanna Milligan, Nova Southeastern University
69	DEEPEND: Matching Unidentified Larvae to Adults Using Molecular Methods	Jon Moore, Florida Atlantic University
70	Faunal Composition and Spatiotemporal Dynamics of Tuna (Family: Scombridae) Early Life Stages in the Oceanic Gulf of Mexico	Nina Pruzinsky, Nova Southeastern University

#	Title	Presenter
71	Organic Carbon Remineralization Rates in the Deep Gulf of Mexico Estimated from Oxygen and Dissolved Inorganic Carbon and Its Isotopic Composition	Jose Quintanilla-Terminel, Centro de Investigación Científica y de Educación Superior de Ensenada
72	Sensitivity of Deep-Water Column Micronekton to 1-methylnaphthalene	D. Abigail Renegar, Nova Southeastern University
73	The DEEPEND Pelagic Fauna Project: Contributions and Considerations for Science and Outreach	Nicole Sandoval, San Antonio Zoo
74	DEEPEND: Genetic Identification and Population Characteristics of Deep-sea Cephalopod Species in the Gulf of Mexico and Northwestern Atlantic Ocean	Amanda Sosnowski, University of South Florida
75	LADCP Observations During ECOGIG Cruise EN586	Andreas Thurnherr, Lamont-Doherty Earth Observatory
76	Juvenile Assemblages of Families Lutjanidae and Serranidae in the Gulf of Mexico, with Respect to the Loop Current and other Hydrographic Features	Sebastian Velez, Florida Atlantic University
78	DEEPEND: DNA Barcoding of Deep-Sea Crustaceans in the Gulf of Mexico	Blake Wilkins, Florida International University
79	Variations in the Parasite Fauna and Gut Contents of Vertically Migrating and Non-Migrating Mesopelagic Fishes of the Northern Gulf of Mexico	Matthew Woodstock, Nova Southeastern University
80	Benthic Diatom Population Response to the Oiling of Coastal Waters	Jeffrey Zingre, Florida Gulf Coast University
Session 006		
51	Effects of Bubble and Drop Dissolution on the Plume Dynamics in a Stratified Ambient Ocean	Shigan Chu, Johns Hopkins University/University of Houston
52	Shedding from Chemically-treated Oil Droplets Rising in Seawater	Emlyn Davies, SINTEF Materials and Chemistry
53	Effects of Rotation on the Dynamics of Single-phase and Multi-phase Point Plumes	Daria Frank, University of Cambridge
54	Hydrodynamics of Subsurface Oil Release without and with Dispersant: An Experimental and Numerical Study	Feng Gao, New Jersey Institute of Technology
55	Aerosolization of Oil Spill Matter: Experiments and Molecular Simulation	Francisco Hung, Northeastern University
56	Numerical Studies of Pure Methane Hydrate Dissociation	Giovanni Luzi, University of Erlangen-Nuremberg
57	Hydrocarbon Biodegradation in Deepsea Sediments Exposed to High Pressure	Xiaoxu Sun, Georgia Institute of Technology
58	Simulating Deep Intrusion Layers in BLOSOM	Patrick Wingo, National Energy Technology Laboratory
Session 007		
157	Determining Bioindicators for Coastal Tidal Marsh Health using the FoodWeb of Larvae of the Greenhead Horse Fly (*Tabanus nigrovittatus*)	Devika Bhalerao, Louisiana State University Agricultural Center
158	Enhanced Monitoring Products of Dynamic Environmental Conditions in the Gulf of Mexico to Enable Optimal Sample Collection	Erin Jones, University of Southern Mississippi
159	Using a Comprehensive Indicator Suite to Measure the Ecosystem Effect of the Deepwater Horizon Oil Spill	Christopher Kelble, NOAA
160	Age and Growth of a Subtropical Marsh Fish: The Gulf Killifish, *Fundulus grandis*	Anthony Vastano, Rutgers University

#	Title	Presenter
Session 008		
201	Uptake, Depuration and Residence Time of Polycyclic Aromatic Hydrocarbons in Red Drum (*Sciaenops ocellatus*) Exposed to South Louisiana Crude Oil	Christelle Abadia, Mote Marine Laboratory
202	Effect of Oil Exposure on Predator-Prey Interactions in Northern Gulf of Mexico Nekton	Scott Alford, Dauphin Island Sea Lab
203	Effects of Macondo 252 Crude Oil WAF on Microplankton	Stephanie Andrews, Bangor University
204	Trophic Ecology and Growth of Short Bigeye, *Pristigenys alta*, a Model Small Demersal Reef Fish in the Northern Gulf of Mexico	Gracie Barnes, Dauphin Island Sea Lab
205	Evidence in Otoliths for Food Web Impacts from the Deepwater Horizon Oil Spill	Beverly Barnett, National Marine Fisheries Service
206	Epigenetic Inheritance of PAH Resistance in Larval Zebrafish (*Danio rerio*)	Warren Burggren, University of North Texas
207	Oil Spills and Dispersants Can Cause the Initiation of Red Tides	Edward Buskey, University of Texas Marine Science Institute
208	The Effects of Planting and Fertilization on Native Soil Microbial Community In Louisiana Coastal Marshes Affected by the Deep Water Horizon Oil Spill	Grace Cagle, Louisiana State University
209	Magnitude and Spatial Variability of Large Siliceous Particles on the Mississippi-Alabama Shelf during Spring	Ansley Chaplin, Davidson High School
210	Estimating Surface Salinity in the Northern Gulf of Mexico from Satellite Ocean Color Measurements	Shuangling Chen, University of South Florida
211	Contribution of Petrocarbon to Pelagic Food Webs in the Gulf of Mexico	Ana Clavere-Graciette, Georgia Institute of Technology
212	A Temporal Study of Nitrogen Cycling in a Deepwater Horizon Impacted Coastal Marsh System	Patrice Crawford, University of Alabama
213	Around the Gulf in Seven Biomarkers: A Multivariate Analysis of Golden Tilefish Health, 2015-2016	Kristina Deak, University of South Florida
214	Net Production of Diatom Silica on the Louisiana Shelf	William Dobbins, Dauphin Island Sea Lab
215	Sediment Oxygen Demand in Shallow Seagrass Beds in the Chandeleur Islands	Kelly Dorgan, Dauphin Island Sea Lab
216	Shrimp Stock Reproductive Potential as a Conservation Tool	Adolfo Gracia, Instituto de Ciencias del Mar y Limnología
217	Spatial Distribution, Abundance and Life History Characteristics of Golden Tilefish and Deep-Water Grouper Species in the Gulf of Mexico	Greta Helmueller, University of South Florida
218	Ecosystem Services of the Food Web along a Salinity Gradient in Louisiana Marshes	Linda Hooper-Bui, Louisiana State University
219	From Marsh to Mangrove: How do Vegetation Shifts in Coastal LA Affect Species Composition, Trophic Dynamics and Carbon Flow in Estuarine Food Webs	Christina Powell, Louisiana State University
220	Depth Strata Partitioning by Mesopelagic Alepisauroid Fishes in the Northern Gulf of Mexico	Richard Jones, Florida Atlantic University
221	Photo-induced Toxicity of Deepwater Horizon Oil: Applications and Future Directions	Jeffrey Morris, Abt Associates
222	Comparison of Select Monohydroxylated PAH Metabolites in Red Drum, *Sciaenops ocellatus*, following Intraperitoneal and Aqueous Exposures	Erin Pulster, University of South Florida

#	Title	Presenter
223	The Modeled Effect of the Deepwater Horizon Oil Spill on Ecosystem Services	Melissa Rohal, Texas A&M University
224	Effects of Plant Species and Genetic Diversity on Wetland Functional Responses to Oiling	Whitney Scheffel, Dauphin Island Sea Lab
225	Species and Functional Diversity of Apex and Mesopredators in the Northern Gulf of Mexico	Emily Seubert, University of South Alabama
226	Characterization of the Sediment Microbial Community in the Chandeleur Islands: Five Years After the Deepwater Horizon Oil Spill	Rachel Smolinski, Florida Gulf Coast University
227	Six Years After Deepwater Horizon: Diet Analysis of the Seaside Sparrow (*Ammodramus maritiums*) Using DNA Barcoding	Allison Snider, Louisiana State University
228	Remote Sensing Phytoplankton Functional Types in the Northern Gulf of Mexico	Ajit Subramaniam, Lamont Doherty Earth Observatory
229	Crude Oil and Dispersant Impair the Grazing Impact of Heterotrophic Dinoflagellates on Phytoplankton	Chi Hung Tang, University of Texas Marine Science Institute
230	Spatiotemporal Dynamics in Sediment Nitrogen Cycling in Salt Marshes Impacted by the Deepwater Horizon Oil Spill	Corianne Tatariw, Dauphin Island Sea Lab
231	DEEPEND: Determinants of Genetic Diversity and Historical Demography in Deep-sea Fishes	Max Weber, Texas A&M University at Galveston
232	Sub-lethal Responses Linked with Reproduction as Predictive Tools for Understanding the Long-term Effects of Oil on Marine Teleosts	Dana Wetzel, Mote Marine Laboratory
233	Effect of Surface Oil Plumes on Upper-ocean Light Field - A Numerical Study	Shuolin Xiao, University of Houston

Wednesday, February 8

Time	Event	Location
7:30a-5:30p	Registration & Check-in Open	Elite Foyer
7:30a-6:00p	Speaker Ready Room Open	Bolden 2
7:30a-8:00p	Exhibits Open	Elite Hall
	Poster Hall Open	Elite Hall

Scientific Program Schedule

Starting at 7:30a	BREAKFAST	Strand & Elite Foyers
9:00a-10:30a	Session 003	Bolden 1
	Session 004	Bolden 5
	Session 005	Strand 12
	Session 008	Empire B
	Session 009	Empire A
	Session 010	Strand 11
	Session 011	Bolden 6
	Session 012	Strand 13
10:30a-11:00a	BREAK	Strand & Elite Foyers
11:00a-12:30p	Session 003	Bolden 1
	Session 009	Empire A
	Session 010	Strand 11
	Session 011	Bolden 6
	Session 012	Strand 13
	Session 013	Bolden 5
12:30p - 2:00p	LUNCH	Strand & Elite Foyers
2:00p-3:30p	Session 009	Empire A
	Session 010	Strand 11
	Session 011	Bolden 6
	Session 013	Bolden 5
	Session 014	Strand 13
	Session 015	Bolden 1
	Session 016	Empire B
	Session 017	Strand 12
3:30p-4:00p	BREAK	Strand & Elite Foyers
4:00p - 5:30p	Session 009	Empire A
	Session 010	Strand 11
	Session 011	Bolden 6
	Session 013	Bolden 5
	Session 014	Strand 13
	Session 015	Bolden 1
	Session 016	Empire B
	Session 017	Strand 12
6:00p-8:00p	Poster Session & Reception (featuring Sessions 010 - 023)	Elite Hall

Associated Meetings and Events

10:30a-11:00a	Organizing Your Data - Best Practices and GRIIDC Submissions	Bolden 4
3:30p-4:00p	Submitting Your Data to GRIIDC	Bolden 4
5:45p - 7:15p	Town Hall: Ocean Research in the Coming Decade	Empire A

Session 003

Understanding Ocean Surface Currents in Relation to Oil Spill Response

Wednesday, February 8, 9:00a - 12:30p, Bolden 1

Tamay Özgökmen, University of Miami
Eric D'Asaro, University of Washington

Material transport in the upper ocean boundary layer is driven by winds, waves, and ocean currents. Buoyant pollutants such as oil collect near the surface of the ocean, which is a challenging region not only because of the high gradients between the atmosphere and the ocean but also the multitude of processes, such as Stoke's drift, Ekman layer, convection, Langmuir turbulence, frontal features created by riverine dischanges, and submesoscale and mesoscale flows, among others. We welcome recent observational results (such as those from the LAgrangian Submesoscale Experiment, LASER) as well as leading-edge modeling studies focusing on an accurate estimation of the ocean's surface currents. The presenters are encouraged to make a connection about how their results would relate to oil spill response in application.

Time	Title	Presenter
9:00a - 9:15a	The Mississippi River Void	Gregg Jacobs, Naval Research Laboratory
9:15a - 9:30a	Impacts of Mississippi Riverine Input on Submesoscale Features in the Northern Gulf of Mexico: Lagrangian Perspective	Jun Choi, Georgia Institute of Technology
9:30a - 9:45a	River Induced Fronts and Influence of Shelf and Mesoscale Circulation on Offshore Removal of Riverine Waters: Implications for Hydrocarbon Transport	Villy Kourafalou, University of Miami
9:45a - 10:00a	A Navy Coastal Ocean Model of the Gulf of Mexico with Observed River Transport	Brent Bartels, Vencore, Inc.
10:00a - 10:15a	The Dynamical Coupling Between 3D Turbulence and 9D Eddies and Its Effects on Oil Transport in the Upper Ocean	Bicheng Chen, Pennsylvania State University
10:15a - 10:30a	Large Eddy Simulations of Buoyant Tracers at Submesoscale Fronts	John Taylor, University of Cambridge
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Submesoscale Surface Dispersion in the De Soto Canyon in Summer and Winter	Andrew Poje, City University of New York - College of Staten Island
11:15a - 11:30a	Velocity Gradients from LASER Drifters	A. Kirwan, Jr., University of Delaware
11:30a - 11:45a	Submesoscale Shape Evolution of Surface Drifter Triplets in the Gulf of Mexico	Maristella Berta, Consiglio Nazionale delle Ricerche - Istituto di Scienze Marine
11:45a - 12:00p	The Relationship of Near Surface Flow, Stokes Drift and Wind Stress	Allan Clarke, Florida State University
12:00p - 12:15p	Observed Air-Sea Interactions in Tropical Cyclone Isaac over Loop Current Mesoscale Eddy Features	Benjamin Jaimes de la Cruz, University of Miami
12:15p - 12:30p	Submesoscale Statistics in the Northern Gulf of Mexico: The Role of River Outflow	Roy Barkan, University of California, Los Angeles

Session 004

Understanding Population Status, Trends and Connectivity of Gulf of Mexico Large Marine Vertebrates as Sentinels for Ecosystem Health in the Context of Restoration

Wednesday, February 8, 9:00a - 10:30a, Bolden 5

Natalia Sidorovskaia, University of Louisiana at Lafayette
Alexis Baldera, Ocean Conservancy
Elizabeth Fetherston-Resch, Florida Institute of Oceanography
David Mellinger, Oregon State University
Lori Schwacke, National Marine Mammal Foundation

A growing body of research following the Deepwater Horizon oil spill demonstrates injury, impaired health, reproductive failure, and/or loss of important life-history stages in many large marine vertebrates (e.g., marine mammals, birds, and sea turtles). Because these animals are often top predators, their patterns of abundance and habitat use can serve as indicators of the health of Gulf of Mexico ecosystems. The region is faced with an unprecedented opportunity to monitor and understand long-term ocean ecosystem recovery, which factors are affecting change, and how this information can be used to inform restoration. Emerging research is now focusing on understanding recovery trajectories for many large marine vertebrate species and identifying the environmental variables and anthropogenic stressors that may contribute to or impede their recovery. New analyses and interdisciplinary models of data generated after the DWH oil spill are important tools in understanding these connections and adaptively managing recovery strategies. This session will examine next steps in restoring large marine vertebrates by exploring what we know about oil spill impacts, investigating other environmental variables, ecosystem conditions, and anthropogenic stressors that influence population status and trends. The session aims to foster a dialogue about the necessary combination of these disciplines to inform more effective restoration strategies.

Time	Title	Presenter
9:00a - 9:30a	Monitoring Marine Mammals via Passive Acoustic Monitoring from Long-Endurance Autonomous Vehicles	Mark Baumgartner, Woods Hole Oceanographic Institution*
9:30a - 9:45a	Passive Acoustic Monitoring of Cetaceans in the Northern Gulf of Mexico using Ocean Gliders	David Mellinger, Oregon State University
9:45a - 10:00a	Declining Pelagic Dolphin Detection Rates in the Gulf of Mexico: 2010 to 2015	Kaitlin Frasier, Scripps Institution of Oceanography
10:00a - 10:15a	Spatial Exposure of Sea Turtle Critical Habitats to Seismic Surveys for Oil Exploration in Mexican Waters of the Gulf of Mexico	Eduardo Cuevas, CINVESTAV-IPN, Merida
10:15a - 10:30a	Trends in Deep-Diving Whale Populations in the Gulf of Mexico: 2010 to 2015	John Hildebrand, Scripps Institution of Oceanography

**Invited speaker*

Session 005

Recovery from the Bottom Up: Rates, Processes, and Connectivity in the Deep Gulf of Mexico

Wednesday, February 8, 9:00a - 10:30a, Strand 12

Tracey Sutton, Nova Southeastern University
Ian MacDonald, Florida State University
Iliana Baums, Pennsylvania State University
Erik Cordes, Temple University
Amanda Demopoulos, U.S. Geological Survey
Gilbert Rowe, Texas A&M University at Galveston

The vulnerability of different ecosystem components to a pollution event is largely a function of process rates (e.g., advection/residence, growth, production, mortality, trophic mediation, migration). Understanding impact in the deep sea is particularly complex due to both large data gaps and the extremely wide range of biophysical rates of its ecosystem components. Although the northern Gulf of Mexico has become one of the most intensely studied deep-sea ecoregions in oceanographic history as a result of the DWH oil spill, developing a science-based strategy for recovery is a work in progress.

Recovery from the impacts of the DWH oil spill will be a complex and slow process, one that will be facilitated by the mandated restoration efforts. The complexity of this issue is most prominent in the deep Gulf waters where the release of oil and gas and application of dispersants occurred. The deep Gulf hosts a highly diverse fauna with numerous connections to the broader Gulf-wide ecosystem. Injuries to sessile, slow-growing corals and other benthic invertebrates have been well-documented after DWH oil spill, but impact assessment of many habitats is incomplete. It is crucial to improve understanding of the deep Gulf in order to quantify recovery and ecosystem health in coming decades.

This session features presentations on deep benthic, demersal and pelagic assemblages, with emphasis on exposure/toxicity, recovery, active and passive flux, habitat characterization, population connectivity and food web structure.

Time	Title	Presenter
9:00a - 9:15a	Using Image-Based Long-Term Monitoring to Determine the Fate of Impacted Deep-Sea Coral Communities after the Deepwater Horizon Oil Spill	Fanny Girard, Pennsylvania State University*
9:15a - 9:30a	Recovery Watch for Mesophotic Corals of the Pinnacle Trend	Ian MacDonald, Florida State University
9:30a - 9:45a	Temporal Variability of Deep-sea Coral-associated Polychaete Communities in Gulf of Mexico Sediment after the Deepwater Horizon Oil Spill	Amanda Demopoulos, U.S. Geological Survey
9:45a - 10:00a	Deep-sea Fish Species Diversity in the Northern Gulf of Mexico - A DNA Barcode View	Andrea Bernard, Nova Southeastern University
10:00a - 10:15a	Community and Population Level Effects of the DWH Oil Spill on Deep Demersal Fishes: Six Years Monitoring Recovery in Sharks, Teleosts and Hagfishes	Dean Grubbs, Florida State University
10:15a - 10:30a	Simulating the Biological Dynamics of Spilled Oil in the Deep Gulf of Mexico	Gilbert Rowe, Texas A&M University at Galveston

**Invited speaker*

Session 008

Ecosystem Structure, Function, and Services: Legacies of the Deepwater Horizon Oil Spill

Wednesday, February 8, 9:00a - 10:30a, Empire B

Will Patterson, University of Florida
Dave Portnoy, Texas A&M University - Corpus Christi
Steve Murawski, University of South Florida

Acute and chronic impacts of the Deepwater Horizon Oil Spill (DWH) on Gulf of Mexico (GOM) ecosystems are an important legacy of the spill. These impacts have not only affected ecosystem form and function, but myriad ecosystem services also were impacted following the spill. Considerable research effort has been focused on discerning and quantifying ecosystem impacts, and presentations on the scientific evidence of DWH impacts have been prominently featured in past GoMOSES Conferences. However, other important legacies of the spill are novel discoveries and new understanding of GOM ecosystem structure and function which have resulted from post-spill research conducted among terrestrial, estuarine, shelf, and deep sea systems. This session will focus on recent findings and further quantification of acute and chronic DWH impacts, as well as novel information on ecosystem structure and function. Restoration activities should be based on a clear understanding of DWH impacts, but new information on ecosystem structure and function also will be key to ensuring the efficacy of restoration activities. Furthermore, this new information constitutes important baseline data that were lacking for many systems prior to the DWH, and also is shaping our understanding of ecosystem dynamics, resistance to perturbation, and prospects for resiliency when faced with future large-scale disturbances.

Time	Title	Presenter
9:00a - 9:15a	Taxonomic and Distributional Appraisal of Deep-Sea Sergestid Crustaceans in the Northern Gulf of Mexico after Deepwater Horizon	Richard Hartland, Nova Southeastern University
9:15a - 9:30a	Disturbance of Northern Gulf of Mexico Reef Fish Communities: The Deepwater Horizon Oil Spill and the Lionfish Invasion	Kristen Dahl, University of South Alabama
9:30a - 9:45a	Fish Community Structure and Resilience to Large-Scale Perturbations: Comparisons of Gulf Ecosystems	Steven Murawski, University of South Florida
9:45a - 10:00a	Association between Habitat Quantity and Quality and Exploited Reef Fishes: Implications for Retrospective Analyses and Future Survey Improvements	Theodore Switzer, Florida Fish and Wildlife Conservation Commission - Fish and Wildlife Research Institute
10:00a - 10:15a	Could We Resolve the Effect of a Future Oil Spill Event on Primary Production in the Mississippi Bight Ecosystem?	Jeffrey Krause, Dauphin Island Sea Lab
10:15a - 10:30a	Deep-Sea Ecosystem Services: Out of Sight but Still Invaluable	Travis Washburn, Texas A&M University - Corpus Christi

Session 009

Deepwater Horizon Natural Resource Damage Assessment: What Have We Learned?

Wednesday, February 8, 9:00a - 5:30p, Empire A

Lisa DiPinto, NOAA
Tom Brosnan, NOAA

The Deepwater Horizon Natural Resource Damage Assessment (NRDA) Settlement is final. The nearly six years of assessment studies have been concluded and are summarized in the Final Programmatic Damage Assessment and Restoration Plan. Some of the assessment work conducted in support of the NRDA has been presented at GoMOSES and other conferences but generally in an individual study by study format. While assessment overviews have been presented at several venues in timeslots ranging from 15 minutes to 60 minutes, never before has a comprehensive overview of the assessment methods and findings been presented in a full, day-long integrated fashion, and especially with an integrated panel of NRDA and non-NRDA resource specialists.

The overarching goals of this session are to 1) provide a brief overview of our key assessment findings, based on an integrated evaluation of a large number of scientific studies and literature based findings. This will be presented briefly by each of the resource/habitat managers; 2) hear from our mixed panel of NRDA experts and non-NRDA researchers about their considerations for NRDA moving forward; and 3) a moderated question and answer session with the panelist and session chairs, seeking input from the audience. The full day special session will be broken out into four main components: nearshore (early AM), water column and benthic (late AM), marine mammals and sea turtles (early PM), and birds and human use (late PM).

Time	Title	Presenter
9:00a - 9:30a	Nearshore Overview of the Deepwater Horizon Natural Resource Damage Assessment	Marla Steinhoff, NOAA Mary Baker, NOAA
9:30a - 10:30a	Nearshore Injury Assessment Panel	Scott Zengel, RPI Sean Powers, Dauphin Island Sea Lab Mark Hester, University of Louisiana at Lafayette R. Eugene Turner, Louisiana State University Jeffrey Short, Independent Consultant
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Overview of the Approach and Quantification of Injuries to Water Column Resources through NRDA	Daniel Hahn, NOAA
11:15a - 11:30a	Overview of Deepwater Horizon Oil Spill Benthic Resource NRDA Injuries	Christopher Lewis, Industrial Economics, Incorporated
11:30a - 12:30p	Water Column and Benthic Injury Assessment Panel	Steven Murawski, University of South Florida Samantha Joye, University of Georgia Paul Montagna, Texas A&M University - Corpus Christi John Quinlan, NOAA
12:30p - 2:00p	LUNCH	
2:00p - 2:15p	Overview of DWH NRDA Exposure and Injury Assessment for Marine Mammals	Laurie Sullivan, NOAA
2:15p - 2:30p	Injury Assessment and Sea Turtles following the Deepwater Horizon Oil Spill	Brian Stacy, NOAA
2:30p - 3:30p	Marine Mammal and Sea Turtle Injury Assessment Panel	Michael Hooper, U.S. Geological Survey Lori Schwacke, National Marine Mammal Foundation Donald Tillitt, U.S. Geological Survey Tracy Collier, Independent Consultant Michael Ziccardi, University of California, Davis
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Economic Valuation of the DWH Natural Resource Injury	Adam Domanski, NOAA
4:15p - 4:30p	Deepwater Horizon Total Value Losses	Norman Meade, NOAA
4:30p - 5:30p	Socioeconomic Impact Assessment Panel	W. Shaw, Texas A&M University Christopher Lewis, Industrial Economics, Incorporated Ray Kopp, Resources for the Future Mary Baker, NOAA Roger Tourangeau, Westat

Session 010

Impacts and Recovery of Benthic Marine Environments in the Aftermath of the DWH Event

Wednesday, February 8, 9:00a - 5:30p, Strand 11

Patrick Schwing, University of South Florida
David Hollander, University of South Florida
Paul Montagna, Texas A&M University - Corpus Christi
Peter Santschi, Texas A&M University at Galveston

During the Deepwater Horizon (DWH) event, the impingement of the sub-surface hydrocarbon plume and a region-wide marine-oil snow sedimentation and flocculent accumulation (MOSSFA) event provided transport pathways for a large volume of contaminants causing physical, chemical, and biological impacts to marine benthic ecosystems. Since the DWH event, researchers have documented profound changes to the physical sedimentological regimes; the distribution, concentrations, and persistence of sedimentary hydrocarbons; sediment redox conditions and impacts to benthic biological communities, including but not limited to microbial communities, meiofauna, macrofauna, reef and benthic-dependent fish, and deep-sea corals. Now, six years later, evaluation and integration of time series studies of environmental conditions and benthic biotic communities are needed to develop a comprehensive understanding of the spatial and temporal impacts and recovery rates. The goal of this session is to synthesize time-series and laboratory studies detailing abiotic and biotic MOSSFA formation, MOSSFA characterization and deposition, benthic environmental (e.g. chemical, physical) and ecological (biological) assessments of impact and long-term recovery into meaningful baseline data products to be utilized in the event of a future marine petrochemical release.

Time	Title	Presenter
9:00a - 9:30a	MOS Formation in Contrasting Atlantic Waters: What, Where and Why	Tony Gutierrez, Heriot-Watt University*
9:30a - 9:45a	Effects of Water-Accommodated Fraction of Macondo Oil and Corexit on Sinking Marine Snow Formation and Oil Transport in Three Mesocosm Experiments	Peter Santschi, Texas A&M University at Galveston
9:45a - 10:00a	Formation of Microbial Exopolymers in Mesocosm Experiments using Coastal and Open Ocean Waters Dosed with BP Surrogate Oil and Corexit 9500A	Maya Morales-McDevitt, Texas A&M University
10:00a - 10:15a	Microbially-mediated Exopolymeric Substances Production, Composition and Regulation of Macondo Oil Transport in Two Contrasting Environments	Chen Xu, Texas A&M University at Galveston
10:15a - 10:30a	Surface Tension and Chemical Composition of Exopolymeric Substances, EPS: Insights into Mechanisms of Aggregate Formation and Carbon Removal	Kathleen Schwehr, Texas A&M University
10:30a - 11:00a	BREAK	

Time	Title	Presenter
11:00a - 11:15a	Identifying Oil/Marine Snow Associations and Oil Transformations in Mesocosm Simulations of the Deep Water Horizon Oil Spill Event	Andrew Wozniak, Old Dominion University
11:15a - 11:30a	Effect of Oil Spill on Marine Microbe Exopolymeric Substances Release	Meng-Hsuen Chiu, University of California, Merced
11:30a - 11:45a	The Influence of Pressure on Hydrocarbon Biodegradation in Shallow and Deep Gulf of Mexico Sediments	Uyen Nguyen, Pennsylvania State University
11:45a - 12:00p	Multi-parameter Assessment of Fast Repetition Rate (FRR) Fluorescence Signals in Natural Phytoplankton Communities Exposed to the Water Accommodated Fraction of Oil and the Chemical Dispersant Corexit	Laura Bretherton, Texas A&M University at Galveston
12:00p - 12:15p	Marine Snow Enhances the Adverse Effects of Oil on Benthic Invertebrates	Justine van Eenennaam, Wageningen University
12:15p - 12:30p	New Insights in the Fate of Oil Could Lead to Reconsidering Alternative Response Strategies during Algal Blooms	Albertinka Murk, Wageningen University
12:30p - 2:00p	LUNCH	
2:00p - 2:15p	Post DWH sedimentation in the Northeastern Gulf of Mexico: A 6-year Overview	Rebekka Larson, Eckerd College/USF
2:15p - 2:30p	Multiproxy Approach to Reconstruct the Response of Marine Environment to Major Oil Spills Using the Geochemical Stratigraphy of Deep-Water Sediments	Jagos Radovic, University of Calgary
2:30p - 2:45p	Trace Elements Fluxes in Sediment Cores from the Gulf of Mexico and Their Relationship with the IXTOC Oil Spill	Ana Carolina Ruiz Fernandez, Unidad Académica Mazatlán del Instituto de Ciencias del Mar y Limnología
2:45p - 3:00p	Changing Sedimentary Redox Conditions Following Deepwater Horizon Blowout and IXTOC-I events: Geochemical and Ecological Implications	David Hastings, Eckerd College
3:00p - 3:15p	System Recovery and Organic Source Variability: Sinking Particulate Organic Carbon Stable and Radioisotope Time Series at 3 Sites in the Northern Gulf 2010-2014	Jeff Chanton, Florida State University
3:15p - 3:30p	Poster Introductions	
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Microbial Oil Degradation in Gulf Of Mexico Sediment Measured In Situ Using Long-Term Benthic Lander Enrichment Experiments	Beth Orcutt, Bigelow Laboratory for Ocean Sciences
4:15p - 4:30p	Assessing the Role of Benthic Foraminifera as Indicators of the Benthic Ecosystem Health and Evolution after the IXTOC-I Oil Spill	Maria Machain-Castillo, Universidad Nacional Autónoma de México
4:30p - 4:45p	Benthic Foraminiferal Community Structure is a Sensitive Indicator of Benthic Impacts and Recovery Following the Deepwater Horizon Oil Spill	Patrick Schwing, University of South Florida
4:45p - 5:00p	Persistent Impacts to the Deep Soft Bottom Benthos and Potential for Recovery after the Deepwater Horizon Event	Paul Montagna, Texas A&M University - Corpus Christi
5:00p - 5:15p	Forming a Gulf-wide Dataset of PAH Exposure and Accumulation in Benthic-Dependent Teleosts	Susan Snyder, University of South Florida
5:15p - 5:30p	Discussion	

**Invited speaker*

Session 011

Human Dimensions and Activity of Oil Spill Response, Restoration, and Future Preparedness: Interdisciplinary Communications and Community Resilience from a Social Ecological and Systems Approach

Wednesday, February 8, 9:00a - 5:30p, Bolden 6

Howard Osofsky, Louisiana State University Health Sciences Center
Ann Hayward Walker, SEA Consulting Group
Lisanne Brown, Louisiana Public Health Institute
Alesia Ferguson, University of Arkansas for Medical Sciences
Helena Solo-Gabriele, University of Miami
Melissa Finucane, RAND Gulf States Policy Institute
George Hobor, Louisiana Public Health Institute

Population groups that are largely dependent on the stability and quality of their local environment for sustaining a traditional marine-based economy are repeatedly threatened by hurricanes and technological disasters. In addition, coastal human activity patterns such as beach and recreational activities provide many with entertainment, which is important to health and well-being. Destruction or contamination of the coastal area can impact how we use and interact in these areas along with chemical and changing microbial exposures that can have a profound influence on ecosystems along coastal areas. Past response and restoration experiences have provided opportunities to improve preparedness activities; however, these lessons learned often do not receive the collaboration among community stakeholders, industry, and differing scientific disciplines necessary for multi-systemic (micro, meso-, and macro) application. This session will examine multiple aspects of recovery and preparedness and the human dimensions that strengthen current efforts. Specifically the session aims to explore how health, social well-being, demographics, and economics intersect to support community resilience. Opportunities will be explored for innovative approaches and development of models to understand how abrupt and unexpected events lead to exposure, risk, social-ecological transitions or changes in human activity patterns. Finally we will examine lessons learned from Deepwater Horizon and other oil spills, identifying gaps in knowledge and practice and formulating priorities for research, outreach, and education activities.

Time	Title	Presenter
9:00a - 9:15a	Welcome and Introduction	
9:15a - 9:45a	Decision Science and Environmental Stressors	Baruch Fischhoff, Carnegie Mellon University*
9:45a - 10:00a	Mental and Behavioral Health in the Gulf States 5 Years After the Deepwater Horizon Oil Spill	Rajeev Ramchand, RAND Gulf States Policy Institute
10:00a - 10:15a	Persistent Perceived Vulnerability as a Function of Exposure to the Deepwater Horizon Oil Spill	Andrew Parker, RAND Gulf States Policy Institute

Time	Title	Presenter
10:15a - 10:30a	Local Ties, Natural Resource Employment, and Oil Spill Exposure: Effects on Mental Health Outcomes in Gulf Coast Communities	Vanessa Parks, Louisiana State University
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Addressing the Need for Expanding Knowledge of Occupational & Environmental Human Health Issues in the Gulf Coast Region	Katherine Kirkland, Association of Occupational and Environmental Clinics
11:15a - 11:30a	Estimating the Effects of the Deepwater Horizon Oil Spill on Fisheries Landings and Revenues	Jacqueline Fiore, Tulane University
11:30a - 11:45a	Assessing the Effects of Religion and Disruption on Mental Health in Vulnerable Gulf Communities	Leah Drakeford, Louisiana State University
11:45a - 12:00p	Property Values and the Risk from an Oil Spill: the Effect of the Deepwater Horizon Oil Spill in Hillsborough and Lee County, Florida	Kelly Hellman, University of Massachusetts Amherst
12:00p - 12:15p	U.S. Coast Guard Incident Management and Preparedness—Community Interactions During Recent Crises in the Gulf of Mexico	Captain William Carter, U.S. Coast Guard
12:15p - 12:30p	Discussion	
12:30p - 2:00p	LUNCH	
2:00p - 2:15p	Supporting Child and Adolescent Resilience Following Disasters	Joy Osofsky, Louisiana State University Health Sciences Center
2:15p - 2:30p	Correlation of Biomarkers and Self-Reported Seafood Consumption among Pregnant and Non-Pregnant Women in Southeastern Louisiana, the GROWH Study	Leah Zilversmit, Tulane University School of Public Health and Tropical Medicine
2:30p - 2:45p	In Media We Trust? Reaching Special Populations in the Gulf of Mexico	Elizabeth Petrun Sayers, RAND Corporation
2:45p - 3:00p	Coalitions and Conversations: Translating Lessons Learned from Past Disaster Recovery for Preparedness and Response Efforts	Anthony Speier, Louisiana State University Health Sciences Center
3:00p - 3:15p	Social Networking Sites as a Method for Disaster Relief, Public Communication and Health Advocacy	Timothy Craft, Louisiana State University Health Sciences Center
3:15p - 3:30p	Socio-Spatial and Experiential Variations in Perceptions of Risk and Resilience on the Mississippi Gulf Coast	David Cochran, University of Southern Mississippi
3:30p - 4:00p	BREAK	
4:00p - 4:15p	The Role of Community Resilience and Its Impact on Depression After Multiple Disasters: An Examination of the Mississippi Gulf Coast	Joohee Lee, University of Southern Mississippi
4:15p - 4:30p	Fostering a Resilient Community: Utilizing Community Training to Restore and Strengthen Disaster-Prone Areas	Jennifer Langhinrichsen-Rohling, University of South Alabama
4:30p - 4:45p	Utilizing Lay Health Workers to Increase Community Resilience by Expanding Social Networks and Building Social Capital	Brandi Gilliam, University of South Alabama
4:45p - 5:00p	Developing Community Resilience through Mental and Behavioral Health Service Delivery in Integrated Settings	John Friend, University of South Alabama
5:00p - 5:15p	Resilience Research in the Real World: Building Community Resilience with an Integrated Approach	Melissa Finucane, RAND Gulf States Policy Institute
5:15p - 5:30p	Discussion	

**Invited speaker*

Session 012

Deepwater Horizon Oil in Coastal Environments: Observations, Experiments, and Predictive Modeling

Wednesday, February 8, 9:00a - 12:30p, Strand 13

Michel Boufadel, New Jersey Institute of Technology
Charles Greer, National Research Council, Canada
Markus Huettel, Florida State University
Kostas Konstantinidis, Georgia Institute of Technology
Joel Kostka, Georgia Institute of Technology
Christoph Aeppli, Bigelow Laboratory for Ocean Sciences

The coastal zone, with the transition from the marine to the terrestrial environment, exposes oil deposited during the Deepwater Horizon spill to a broad spectrum of environmental influences. To evaluate the effects of the numerous factors controlling the oil degradation in the coastal zone, modeling of the oil degradation process is key. The modeling of petroleum hydrocarbon biodegradation so far has followed two main approaches: 1) An empirical approach, fitting simple models, such as first-order models, to experimental data, and 2) An approach that relies on capturing major environmental pathways for oil biodegradation, such as colonization of the low solubility oil components by microorganisms, dissolution by biosurfactant, and Monod kinetics. The second approach may be more promising for prediction and exploration of various remediation scenarios, but it suffers from the lack of observational and experimental data. The session attempts to synthesize data collected in the field and through experimental work and knowledge gained from the modeling of the fate and effects of petroleum hydrocarbons with the aim of guiding future experiments. The goal is to highlight data collection and modeling approaches that would allow long-term prediction of the pathways and influences of oil and effective bioremediation.

Time	Title	Presenter
9:00a - 9:15a	Degradation of Deepwater Horizon Oil Buried in a Florida Sandy Beach	Markus Huettel, Florida State University*
9:15a - 9:30a	Assessing the Increases in Background Oil Contamination Levels along Alabama Beaches Six Years after the DWH Oil Spill	T. Prabhakar Clement, Auburn University
9:30a - 9:45a	Biodegradation of Deepwater Horizon Oil in the Gulf of Mexico Beaches	Michel Boufadel, New Jersey Institute of Technology
9:45a - 10:00a	Microbial Processes in Submerged Coastal Sands Impacted with Weathered Oil	Will Overholt, Georgia Institute of Technology
10:00a - 10:15a	Spatial Biodegradation of MC252 Crude Oil across a Coastal Headland Beach Profile	Zachary Romaine, Louisiana State University
10:15a - 10:30a	Am I Wrong or Should More Work Be Done on the Formation of Oxygenated Hydrocarbons?	Christopher Reddy, Woods Hole Oceanographic Institution
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Identification of Oxygenated Transformation Products in Weathered Deepwater Horizon Oil Samples and Assessment of Their Bioaccumulation and Toxicity Potential	Deedar Nabi, Bigelow Laboratory for Ocean Sciences
11:15a - 11:30a	Molecular-level Insights into the Increased Toxicity of Macondo Well Oil Transformation Products	Ryan Rodgers, NHMFL Florida State University
11:30a - 11:45a	Assessing the Contribution of Photochemical Processes to the Formation of Oxidized Hydrocarbons following the Deepwater Horizon Oil Spill: Insights from Preliminary Laboratory Experiments	Collin Ward, Woods Hole Oceanographic Institution
11:45a - 12:00p	Effects of Tropical Storms in Distribution and Redistribution of Deepwater Horizon Oil Residues in the Coastal Louisiana Marshes	Puspa Adhikari, Louisiana State University
12:00p - 12:15p	Presence of Marine Snow Hampers Oil Biodegradation and Prolongs the Presence of Toxic Compounds in Marine Sediment	Shokouh Rahsepar, Wageningen University
12:15p - 12:30p	Succession of Microbial Populations Linked to Surface Residual Ball Degradation in Pensacola Beach Sands Impacted by the Deepwater Horizon Oil Spill	Boryoung Shin, Georgia Institute of Technology

**Invited speaker*

Session 013

Multi-year Signatures of the DWH Oil Spill in Coastal Systems

Wednesday, February 8, 11:00a - 5:30p, Bolden 5

R. Eugene Turner, Louisiana State University
Sabrina Taylor, Louisiana State University
Nancy Rabalais, Louisiana Universities Marine Consortium

This session examines the multi-year signatures of the Deepwater Horizon oil spill on coastal ecosystems. Some effects on communities were immediate, but others took longer periods of time for the effects to appear and cascade up food webs. The time scales over which impacts persisted differed by populations/communities of the impacted ecosystems, as well as for the ecological and biogeochemical process rates regulating these systems. This session examines how coastal marshes and nearshore water ecosystems were affected over many years after oil exposure; comparisons with baseline conditions are encouraged. This will be one symposium with two parts: in Part I, talks will cover marsh erosion, stability, microbes, and vegetation. Part II will cover food web studies and specific community responses of terrestrial and shallow water fauna. The scale and temporal consequences of these observations affect how we prepare to avoid, minimize, and mitigate activities on the coast.

Time	Title	Presenter
11:00a - 11:15a	Shoreline Recession in Barataria Bay from the Deepwater Horizon Oil Spill	Cathleen Jones, California Institute of Technology
11:15a - 11:30a	Six-Year Response and Recovery of Coastal Salt Marsh Vegetation to the Deepwater Horizon Oil Spill	Qianxin Lin, Louisiana State University
11:30a - 11:45a	Salt Marsh Resiliency Shifts After the Deepwater Horizon Oil Spill	Giovanna McClenachan, Coalition to Restore Coastal Louisiana
11:45a - 12:00p	Assessing the Long-Term Effects of Macondo Oil Spill on Salt Marshes Using Spaceborne Multispectral and Airborne Hyperspectral Remote Sensing	Yu Mo, University of Maryland
12:00p - 12:15p	Sustained Impacts on Louisiana Salt Marsh Soil Greenhouse Gas Fluxes Following the Deepwater Horizon Oil Spill	Brian Roberts, Louisiana Universities Marine Consortium
12:15p - 12:30p	Greenhead Horse Fly Populations as Bioindicators of the Impact of the Deepwater Horizon Oil Spill on Marsh Health and Recovery	Lane Foil, Louisiana State University
12:30p - 2:00p	LUNCH	
2:00p - 2:30p	Meta-analyses of Oil Spill Impacts to Marsh Periwinkles and Fiddler Crabs	Scott Zengel, Research Planning, Inc.*
2:30p - 2:45p	The Effects of Oil on Blue Crab (*Callinectes sapidus*) and Periwinkle Snail (*Littoraria irrorata*) Predator-Prey Interactions	Elizabeth Robinson, Louisiana State University
2:45p - 3:00p	Analysis of Long-term Datasets Indicates Heterogeneous Impacts Resulting from the Deepwater Horizon Accident on Nekton in the Northern Gulf of Mexico	Charles Martin, University of Florida
3:00p - 3:15p	Quantifying Trophic Interactions in Louisiana Salt Marshes by Combining Stomach Content, Stable Isotope, and Fatty Acid Approaches	Paola Lopez-Duarte, Rutgers University Marine Field Station
3:15p - 3:30p	Reconciling the Disconnect between Individual- and Population-level Responses to Contamination in Seaside Sparrows	Philip Stouffer, Louisiana State University Agricultural Center
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Multi-year Metagenomic Assessment of Coastal Marsh Microbial Communities Impacted by the Deepwater Horizon Oil Spill	Xiaoben Jiang, University of Tennessee
4:15p - 4:30p	Multi-year Patterns in Community Composition of Ammonia-Oxidizers in Louisiana Salt Marshes Following the Deepwater Horizon Oil Spill	Anne Bernhard, Connecticut College
4:30p - 4:45p	Specificity of Bacterial Communities to Dominant Standing Vegetation in Coastal Salt Marshes, Bay Sansbois and Bay Batiste, Louisiana	Annette Engel, University of Tennessee - Knoxville
4:45p - 5:00p	Weathering of the Macondo Oil during Six Years in Louisiana's Coastal Marshes	Edward Overton, Louisiana State University
5:00p - 5:15p	A Computationally-Efficient Spatially-Distributed Model for Wave-Driven Marsh Edge Retreat	Giulio Mariotti, Louisiana State University
5:15p - 5:30p	Effects of Mississippi River Diversions on Hydrodynamics and Surface Oil Transport in the Northcentral Gulf of Mexico	Dubravko Justic, Louisiana State University

**Invited speaker*

Session 014

Circulation, Mixing, and Ecosystem Responses to River Discharge Patterns

Wednesday, February 8, 2:00p - 5:30p, Strand 13

Jeffrey Book, Naval Research Laboratory
Zhankun Wang, NOAA
Brian Dzwonkowski, University of South Alabama

The Northern Gulf of Mexico is an area particularly influenced by river discharge plumes due to the large outflow of the Mississippi River and numerous other rivers that outflow all along the coast. These plumes have a dramatic impact on the coastal shelf but can also influence the continental shelf and offshore regions as the waters can be entrained and advected by slope currents, eddies, and even the Loop Current. A major concentration of oil and gas rigs occur directly in the main pathways of the flow patterns of these plumes; thus it is important to improve our understanding on how variations in discharge change circulation and biological patterns and how these patterns might influence some of the risks of oil release into the environment.

This session aims to improve the understanding of the physical processes associated with river plumes as well as their coupled relationship with ecosystem processes, both in the coastal and offshore environments. The physical and biogeochemical processes associated with river plumes can be challenging to observe and model because of complex flow features and fronts that require observations over a wide range of temporal and spatial scales. As a result, the session will focus on better characterizing the physical properties and advection of plumes, mixing of these plumes with surrounding waters, and the overall ecosystem response.

Time	Title	Presenter
2:00p - 2:15p	Observed Surface Circulation and Pathways over the Mississippi Bight with High Frequency Radars Compared with *in situ* Measurements, Model Output and Remote Sensing	Stephan Howden, University of Southern Mississippi
2:15p - 2:30p	Observed Cross-shelf Transport and Flow Structure to the East of the Mississippi River Delta	Jeffrey Book, Naval Research Laboratory
2:30p - 2:45p	Cross-Shelf Exchange and Transport in Northern Gulf of Mexico studied with Navy Coastal Ocean Model, NCOM	Mustafa Cambazoglu, University of Southern Mississippi
2:45p - 3:00p	Circulation, Transport, and Exchange Variability in the Northern Gulf of Mexico Continental Shelf	Jerry Wiggert, University of Southern Mississippi
3:00p - 3:15p	Remote Estimation of Surface pCO2 on the West Florida Shelf	Shuangling Chen, University of South Florida
3:15p - 3:30p	Bio-optical Water Mass Classification of the Mississippi Bight Region: Coupling High Resolution Satellite Data, Circulation Models and *in situ* Optics	Inia Soto, University of Southern Mississippi
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Boundary Mixing along the Northern DeepWater Gulf	Kurt Polzin, Woods Hole Oceanographic Institution
4:15p - 4:30p	Evaluating Turbulence Measurements around the Deepwater Horizon Spill Site from a MicroRider Mounted on Different Platforms (Glider, Tethered VMP and CTD Rosette)	Zhankun Wang, NOAA
4:30p - 4:45p	Influence of Estuarine-exchange on the Coupled Bio-physical Water Column Structure during the Fall Season on the Alabama Shelf	Brian Dzwonkowski, University of South Alabama
4:45p - 5:00p	The Impact of River Plumes and Variable Winds on Cross-Isopycnal Transport in the Northern Gulf of Mexico	Sally Warner, Oregon State University
5:00p - 5:15p	Turbulence Microstructure in Coastal River Plumes: Measuring the *in situ* Effects on Plankton	Christian Briseño-Avena, Oregon State University
5:15p - 5:30p	Films of Bacteria at Interfaces (FBI) as Protective Layers against Interfacial Stress	Tagbo Niepa, University of Pennsylvania

Session 015

Monitoring and Modeling Responses to Oil Spill Injury and Restoration: Integrating Tools for Adaptive Management

Wednesday, February 8, 2:00p - 5:30p, Bolden 1

Cameron Ainsworth, University of South Florida
Michelle Meyers, U.S. Geological Survey
Deborah French-McCay, RPS ASA
Claire Paris, University of Miami
Michael Lee, U.S. Geological Survey
Stephanie Romañach, U.S. Geological Survey

Monitoring and modeling combine to help us understand DWH ecological impacts and restoration possibilities. Integration of these components is essential for successful decision making under adaptive management. The development of a cohesive Gulf-wide observation network of existing and new monitoring programs across funding sources and geographic and political boundaries supports ecosystem modeling and ultimately restoration decisions. Ecosystem restoration programs should integrate an observational network with modeling to support site selection, project design, and post-project evaluation of restoration programs. This session will present how various monitoring programs can contribute to injury and recovery modeling and how modeling at the species, community, or ecosystem-level adds value to monitoring data in an adaptive management framework.

Time	Title	Presenter
2:00p - 2:15p	Conducting Restoration through the Lens of Adaptive Management	Gregory Steyer, U.S. Geological Survey*
2:15p - 2:30p	The National Academies Report, Effective Monitoring to Evaluate Ecological Restoration in the Gulf of Mexico	Pamela Plotkin, Texas A&M University
2:30p - 2:45p	Resource-level Monitoring and Analysis to Support Restoration for the Deepwater Horizon Programmatic Damage Assessment Restoration Plan (PDARP)	Melissa Carle, ERT/ NOAA
2:45p - 3:00p	Evaluation of Population Biomass and Production Using Long-Term Monitoring Data from the Gulf of Mexico	Deborah French-McCay, RPS ASA
3:00p - 3:15p	GoMexSI: It's Potential Role in Monitoring, Modeling, and Adaptive Management in the Gulf of Mexico	James Simons, Texas A&M University - Corpus Christi*
3:15p - 3:30p	Quantifying Resilience of Species Populations through Top Down Parametrization of an Age Structured Population Model to Support Oil Spill Response	Sophie Vonk, University of Wageningen
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Ecosystem Impacts of the DWH Oil Spill	Cameron Ainsworth, University of South Florida
4:15p - 4:30p	Analyzing Changes in Ecosystem Structure and Function after Ixtoc Oil Spill with an Atlantis Model	Joel Ortega-Ortiz, University of South Florida
4:30p - 4:45p	Simulating the Potential Impacts of Petroleum and Fisheries Activities in the Nursery Grounds of the Barents Sea Cod Fishery	JoLynn Carroll, Akvaplan-niva
4:45p - 5:00p	Developing a Framework for Applying Adaptive Management at a Programmatic Scale	Stephanie Romañach, U.S. Geological Survey*
5:00p - 5:30p	Discussion	

**Invited speaker*

Session 016

Fate and Transport of Oil in the Open Ocean: Water-Sediment Connectivity

Wednesday, February 8, 2:00p - 5:30p, Empire B

Isabel Romero, University of South Florida
Thomas Oldenburg, University of Calgary
Beizhan Yan, Lamont-Doherty Earth Observatory of Columbia University
Jeff Chanton, Florida State University
Sara Lincoln, Pennsylvania State University

Ongoing research in the Gulf of Mexico for the last six years has contributed to a much better understanding of the transport mechanisms, fate and impact of the oil spilled in 2010. Using an array of analytical techniques, studies that have focused on different geographic areas in the Gulf and environments have demonstrated that sustained deposition of Deepwater Horizon contaminants to the seafloor of the Gulf occurred during and after the spill. During transport and deposition, many petroleum constituents underwent multiple transformations and chemical partitioning driven by both biotic and abiotic factors that impacted a wide range of water-column and benthic organisms. Comprehensive tracking of these partially complex and bioactive transformation products requires the use of new technologies, modifications of standard techniques, and novel applications of existing analytical techniques from beyond the traditional toolboxes of petroleum and environmental geochemistry. The ultimate goal of these studies is to generate models that can be used before an oil spill to provide risk assessment and planning opportunities; during a spill to deliver guidance to first responders, including evaluating tradeoffs between different response options; and after a spill to assess injury.

Time	Title	Presenter
2:00p - 2:15p	Numerical Modeling Study of the Deepwater Horizon Blowout under Different Scenarios: Major Findings on the Oil Plume Transport	Natalie Perlin, University of Miami
2:15p - 2:30p	Evolution of the Chemical Signature of Macondo Oil in the Waters of the Northern Gulf of Mexico	Marcia Trillo, University of Miami
2:30p - 2:45p	The Role of Corexit for the Formation of Sinking Marine Oil Snow	Uta Passow, University of California, Santa Barbara
2:45p - 3:00p	Stress Induced Variation in Transparent Exopolymer Particle Size Frequency Distribution	Liesl Cole, Dauphin Island Sea Lab
3:00p - 3:15p	Variability in Sedimentation Dynamics in the Northern Gulf of Mexico Reflect Ecosystem and Foodweb Structure	Sarah Giering, University of California, Santa Barbara
3:15p - 3:30p	Mechanisms and Models of Aggregation and Sinking of Oil and Marine Particles	Adrian Burd, University of Georgia
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Where Does All the Oil Go - Transformation and Fate of Spilled Oil in Marine Environments	Thomas Oldenburg, University of Calgary
4:15p - 4:30p	Distribution of Deposited Petroleum Hydrocarbons after the Deepwater Horizon Oil Spill	Isabel Romero, University of South Florida
4:30p - 4:45p	The Temporal Evolution of Sediments and Suspended Particulate Carbon Following a Massive Oil Spill in the Northern Gulf of Mexico: 2010-2015	Kelsey Rogers, Florida State University
4:45p - 5:00p	13C and 14C Isotopic Distributions in Sediment and Suspended Particulates in the Southern Gulf of Mexico	Samantha Bosman, Florida State University
5:00p - 5:15p	From Spill to Sink: Using Bacterial Lipid Biomarkers to Trace and Predict the Fate of Deepwater Horizon Hydrocarbons in Gulf of Mexico Sediments	Sara Lincoln, Pennsylvania State University
5:15p - 5:30p	Potential for Iron-Driven Degradation of Hydrocarbon in Sediments near the Macondo Blowout	Jordon Beckler, Mote Marine Laboratory

Session 017

Genomics and Modeling of Biological Communities to Improve Predictions of Ecosystem Response to and Mitigation of Spilled Oil

Wednesday, February 8, 2:00p - 5:30p, Strand 12

Joel Kostka, Georgia Institute of Technology
Kostas Konstantinidis, Georgia Institute of Technology
David Portnoy, Texas A&M University - Corpus Christi

Advances in next generation DNA sequencing and omics approaches have the potential to greatly improve the ability to interrogate mechanisms of petroleum hydrocarbon degradation as well as impacts of oil exposure on ecosystem health and functioning. In particular, the rapid development and application of omics approaches has led to characterization of the metabolic pathways and controls of microbially-mediated hydrocarbon degradation. In higher organisms, novel biochemical pathways of immune response and metabolism of hydrocarbon compounds have also been revealed. The availability of next generation sequence data has enabled rapid determination of shifts in microbial communities in response to oil exposure and identification in higher organisms (vertebrates and invertebrates) of genomic regions associated with local adaptation and immune response. Although much progress has been made, the application of omics research in oil spills remains challenging. Omics data must be parameterized for linkage to models of ecosystem impacts as well as biogeochemical models to predict the attenuation of petroleum hydrocarbons. One exciting opportunity is to couple environmental metabolomics or petroleomics with metagenomics to construct metabolic models of hydrocarbon metabolism.

Time	Title	Presenter
2:00p - 2:30p	Using Omics Approaches to Track the Response of Microbial Hydrocarbon Degraders to Natural and Anthropogenic Hydrocarbon Inputs	Samantha Joye, University of Georgia*
2:30p - 2:45p	Mimicking the Deepwater Horizon Blowout in the Laboratory Reveals a Diverse Microbial Population Responsible for the Sequential Degradation of Oil in Deep Ocean Plumes	Gary Andersen, Lawrence Berkeley Lab
2:45p - 3:00p	Assembly, Succession and Activity of Marine Microbial Hydrocarbon-Degrading Communities at Low Temperatures	Leendert Vergeynst, Aarhus University
3:00p - 3:15p	Deep Sea in a Can: Selective Evaluation of Crude Oil Biodegradation under High Pressure Conditions	Juan Viamonte, Hamburg University of Technology
3:15p - 3:30p	Assessing Microbial Bioremediation Potential for Marine Oil and Transportation Fuel Spill Scenarios across the Canadian Arctic	Casey Hubert, University of Calgary
3:30p - 4:00p	BREAK	
4:00p - 4:15p	Predicting Benthic Microbial Communities Throughout the Gulf of Mexico and Hindcasting Impacts from the DWH	Will Overholt, Georgia Institute of Technology
4:15p - 4:30p	Storm-driven Transport of Crude Oil Aggregates and Associated Microbial Populations across a Coastal Headland Beach	Vijaikrishnah Elango, Louisiana State University
4:30p - 4:45p	Aerobic Biostimulation of Buried MC252 Oil: Metagenomic and Biogeochemical Assessment of a New Response Approach	LeeAnn Fitch, Louisiana State University
4:45p - 5:00p	Monitoring Degradation of Pico-liter Oil Droplets by Physical and Biological Processes	Maryam Jalali-Mousavi, Texas A&M University - Corpus Christi
5:00p - 5:15p	Dynamics of 3 Phytoplankton Species and their Attached and Free-Living Bacteria in Response to Dispersed and Undispersed Crude Oil	Tatiana Severin, University of Texas Marine Science Institute
5:15p - 5:30p	Oil and Corexit Alter Planktonic Microbial Eukaryotic Community Structure in Mesocosm Experiments	Zoe Finkel, Mount Allison University

**Invited speaker*

Wednesday, February 8, 6:00p – 8:00p

Elite Hall

#	Title	Presenter
Session 010		
183	From Lab to Sea Floor: Aquarium Experiments to Assess the Impacts of Marine Snow on Fate and Effect of Benthic Oil	Justine van Eenennaam, Wageningen University
184	Sedimentary Signatures and Preservation Potential of the Post-DWH Depositional Pulse	Savannah Carter, Eckerd College
185	Investigation of Petroleum Contaminants in Blue Crab (*Callinectes sapidus*) Megalopae in the Northern Gulf of Mexico using GC/MS	Susan Chiasson, Tulane University
186	Abundance of Stained Benthic Foraminifera and Its Response to the Environmental Variability of the Gulf of Mexico	Aidee Egremy Valdez, Centro de Investigación Científica y de Educación Superior de Ensenada
187	Planktic Foraminiferal Records of MOSSFA and Petrocarbon Incorporation Following the Ixtoc-1 and DWH Blowouts	Erika Fridrik, University of South Florida
188	Effect of Crude Oil and Chemical Dispersant Exposure on Clearance Rates of Eastern Oyster	Sara Garcia, University of South Florida
189	The Effects of Removing Carbon Limitation on Diatom Aggregation and Physiological Responses When Exposed to Macondo Surrogate Oil	Jennifer Genzer, Texas A&M University at Galveston
190	Chlorophyll a Levels in Dichloromethane Extracts from Mesocosm Exposed to WAF, DCEWAF and CEWAF	Gerardo Gold Bouchot, Texas A&M University
191	Rapid Macromolecular Characterization and Prediction of Phytoplankton and Marine Aggregate's Exposed to Chemically Enhanced (COREXIT) Water Accommodated Fraction (WAF) of Oil using Fourier Transform Infrared (FTIR) Spectroscopy	Manoj Kamalanathan, Texas A&M University at Galveston
192	Utilizing the Foraminiferal Index of Environmental Impact to Assess Benthic Impacts and Recovery Following the Deepwater Horizon Oil Spill	Bryan O'Malley, University of South Florida
193	A Comparison of Sedimentary Redox Sensitive Metals following the Deepwater Horizon and Ixtoc Events in the Gulf of Mexico	Daniel Razionale, Eckerd College
194	Assessment of Oiling on the Biodiversity and Resilience of the Benthic Microbial Assemblages in Coastal Sediments of the Chandeleur Islands	Alison Robertson, University of South Alabama & Dauphin Island Sea Lab
195	A Comparison and Validation of 210Pb Chronologies of Deep Sediment Cores from the Southern Gulf of Mexico	Joan-Albert Sanchez-Cabeza, Universidad Nacional Autonoma de México
196	Polycyclic Aromatic Hydrocarbons (PAH) Distributions of WAF, DCEWAF and CEWAF Treatments in Mesocosm Experiments	Dawei Shi, Texas A&M University
197	Response of the Louisiana Marsh Subtidal Macroinfaunal Communities to the Deepwater Horizon Oil Spill	Shivakumar Shivarudrappa, Louisiana Universities Marine Consortium
198	PAH Concentrations in the Hepatobiliary Systems of Gulf of Mexico Demersal Fishes Following the Deepwater Horizon Oil Spill	Rachel Struch, University of California, Davis
199	Light-induced Aggregation of Bacterial Exopolymeric Substances	Luni Sun, Texas A&M University
200	Making Oil and Water Mix for ADDOMEx Mesocosms Marine Oil Snow Impact Experiments: a Tale of WAF and CEWAF	Terry Wade, Texas A&M University

#	Title	Presenter
Session 011		
234	An Interdisciplinary Framework for Analysis of Multiple Gulf and Deep South Disasters: Synthesizing Ecological Systems & Social Network Perspectives	Candace Bright, University of Southern Mississippi
237	Lardner's Point Park, Ecological Restoration of a Living Shoreline - An Athos Oil Spill Trust Fund Supported Project	Ed Morgereth, Biohabitats, Inc.
238	Use of Chemometrics to Identify Active Constituents of Select Hepatic Toxic Responses to Crude Oils	Josh Salley, University at Louisiana at Monroe
239	Web-content Personalization for Resilience and Risk Communication	Kristen Venable, Tulane University
240	Working Together to Facilitate Healing: How Lay Health Workers Can Aid Counselors and Social Workers Following a Disaster	Alyssa Wood, University of South Alabama
Session 012		
97	Crude Oil Concentration Affects Bacterial Community Structure and Hydrocarbon Degradation Rates in Surface Water of the Northern Gulf of Mexico	Hernando Bacosa, University of Texas Marine Science Institute
98	Growth of *Alcanivorax borkumensis* using Oil Dispersed by Food Grade Amphiphiles	Geoff Bothun, University of Rhode Island
99	Copepods (Crustacea: Copepoda: Poecilostomatoida and Siphonostomatoida) associated with Marine Invertebrates in the Gulf of Mexico and Caribbean Sea	Heather Bracken-Grissom, Florida International University
100	Comparison of Resilience in Native *Ruppia maritima* (Florida) versus Pre-conditioned *Ruppia maritima* (Louisiana) in Exposure to the Water Associated Fraction (WAF) of Crude Oil in Laboratory Mesocosms	Allison Bury, Florida Gulf Coast University
101	Multibeam Water Column Data Processing Techniques to Facilitate Bio-Acoustic Interpretation	Ian Church, University of New Brunswick
102	The Marsh Periwinkle, *Littoraria irrorata*, as an Indicator of Deepwater Horizon Oil Spill Effects	Donald Deis, Atkins
103	Mississippi River Plume Interaction with Surface Oil in the Northern Gulf of Mexico	Catherine Edwards, Skidaway Institute of Oceanography
104	Diversity of Salt Marsh Soil Microbial Communities after Oil Exposure	Stephen Formel, Tulane University
105	Effects of Petroleum Hydrocarbon Exposure on Burrowing Activity and Oxidative Stress in Two Species of Fiddler Crabs from the Northern Gulf of Mexico	Marco Franco, University of Louisiana at Lafayette
106	Linking Chemical Composition to Toxicity of Fresh and Weathered Oil Samples Collected from the 2010 Gulf of Mexico Oil Spill	Amanda Herzog, Wheaton College
107	Seasonal Variability of Microbial Response to Crude Oil Water Accommodated Fractions	Wade Jeffrey, University of West Florida
108	Effect of Photodegradation Weathering Process on Biomarker Diagnostic Ratios Used for Source Oil Identification	Gerald John, Auburn University

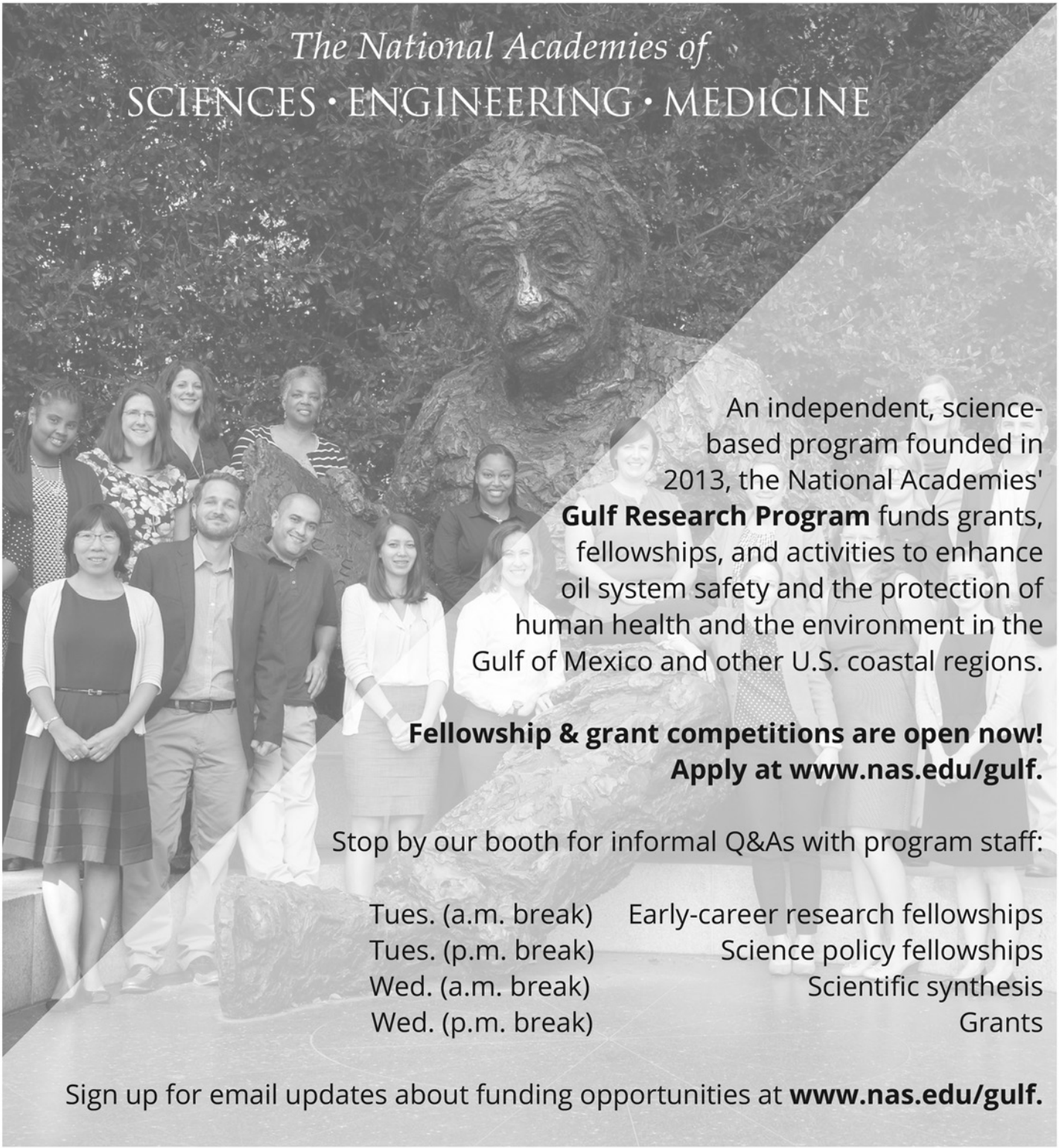
#	Title	Presenter
109	Mineralogical (XRD) Signature Of SWGoM Volcanic Ash Layers: Alternative Methods for Constraining the Ixtoc-I Event	Rachael Kalin, Eckerd College
110	Dynamics of Carboxylic Acids Produced in Weathered Deepwater Horizon Oil Samples and their Water Solubility	Sam Katz, Bigelow Laboratory for Ocean Sciences
111	The Effects of Oil Additions and Salt Marsh Vegetation Diversity on the Cycling and Removal of Nitrogen	Alice Kleinhuizen, University of Alabama
112	Measurements of Droplet Size Distribution Generated by Breaking Waves Acting on an Oil Slick	Cheng Li, Johns Hopkins University
113	Chlorophyll-a Variations in the Gulf of Mexico in Response to Deepwater Horizon Oil Spill	Yao Li, Texas A&M University
114	Incipient Motion of Sand and Oil Agglomerates	Timothy Nelson, U.S. Geological Survey
115	Impact of Dispersant on Hydrocarbon Biodegradation in Coastal Waters	Xiaoxu Sun, Georgia Institute of Technology
116	Biological Toxicity of Extracts from Photochemically Degraded Water Accommodated Fractions	Pamela Vaughan, University of West Florida
117	Buried Crude Oil Alters the Microbial Nitrogen Cycle in Submerged Coastal Sands	Kaitlyn Wagner, Florida Gulf Coast University
118	Numerical Investigation of Chaotic Behavior of Breaking Waves	Zhangping Wei, Johns Hopkins University
119	Effect of Deposited DWH Oil and Phytoplankton on Oxygen Consumption and Dissolved Inorganic Carbon Production in Gulf of Mexico Shallow Shelf and Shelf Slope Sediments	William Wells, Florida State University
120	A Novel Approach for Screening Crude Oil Degrading Bacteria Consortia in Porous Media	Mengyuan Zheng, Tulane University
Session 013		
178	Marsh Canopy Structure Changes and the Deepwater Horizon Oil Spill	Elijah Ramsey, III, U.S. Geological Survey
179	Characterization of the Sediment Archaeal Community in the Chandeleur Islands, Louisiana: Five Years after the Deepwater Horizon Oil Disaster	Hidetoshi Urakawa, Florida Gulf Coast University
180	Shoreline Mapping with High Spatial Resolution Radar and Geographic Processing	Amina Rangoonwala, U.S. Geological Survey
Session 014		
83	Accumulation of Petrogenic PAHs on Leaves of Black Mangrove (*Avicennia germinans*)	Matt Decell, Louisiana State University
84	Observations of Internal Waves in the Coastal Waters of Alabama	Brian Dzwonkowski, University of South Alabama
85	Satellite-derived Variability of the Mississippi River Plume	Carolina Ernani da Silva, University of Georgia
86	Contributions to Hypoxia Development in Mississippi Bight Waters as Revealed by Tracer Distributions during a 4-Year Time Series	Peng Ho, University of Southern Mississippi
87	*Spartina alterniflora* Cuticle Accumulation of PAHs 6 Years Post-Spill	Joyce Kassenga, Louisiana State University
88	Turbulence and Dispersion Associated with Near-surface Coherent Structures in Laboratory-scale Langmuir Circulation	Sylvia Matt, Naval Research Laboratory
89	Semidiurnal Surface and Internal Tides in the Gulf of Mexico in 4-km Global HYCOM Simulations	Heather McCain, University of Southern Mississippi
90	Physical Dynamics on the Shelf/Slope around the Mississippi River Delta during the OI16 Experiment	Ana Rice, Naval Research Laboratory

#	Title	Presenter
Session 015		
91	Implementing Benthic Impacts of the DWH Blowout in an Atlantis Model	Lindsey Dornberger, University of South Florida
Session 016		
1	Chemotaxis by Methanotrophic Bacteria in the Presence of a Rising Swarm of Oil Droplets - Numerical Modeling of Subsurface Methane Bio-remediation	Arezoo Ardekani, Purdue University
2	Hydrocarbon Sources in Sedimentary Environments Impacted by Oil Spills at Depth: Chemical Signature of the Ixtoc-1 Spill	Thea Bartlett, University of South Florida
3	Aldehyde and Ketone Photoproducts from Solar Irradiated Crude Oil-Seawater Systems Determined by MS/MS	Xian Cao, University of New Orleans
4	Potential Impact of Corexit on Marine Microgels	Meng-Hsuen Chiu, University of California
5	Using Microfluidic Emulsions to Study Adhesion of Bacteria to Oil/Water Interfaces	Jacinta Conrad, University of Houston
6	Mesoporous Silica Aerogel for Hydrocarbon Adsorption and Its Regeneration: Implications for Oil Spill Clean-up	Chong Dai, University of Houston
7	Investigating the Microbial Response to Oil and Dispersants in Surface Water Marine Environments	Shawn Doyle, Texas A&M University
8	Chemotactic Response of Bacteria to Multiple Chemical Stimuli	Roseanne Ford, University of Virginia
9	Effects of Crude Oil Weathering on Oil-Mineral Aggregation, and Implications for Marine Oil Spill Remediation	Sarah Gustitus, Auburn University
10	A Case Study for Demonstrating a Novel Protocol for Identifying Deepwater Horizon Oil Spill Residues Using Combined Physical and Chemical Characterization Methods	Yuling Han, Auburn University
11	Modulating the Fate of Oil in Near-shore Environments	Vijay John, Tulane University
12	Where the Oil from Surface and Subsurface Plumes Deposited during/after Deepwater Horizon Oil Spill?	Kelsey Markey, Lamont-Doherty Earth Observatory
13	New Insights into the Chemical Weathering Processes of Crude Oil after the Deepwater Horizon Oil Spill Using Ramped Pyrolysis Gas Chromatography-Mass Spectrometry	Zhanfei Liu, University of Texas Marine Science Institute
14	Deep Sea in a Can: Aerobic Methane Oxidation Under High Pressure	Nuttapol Noirungsee, Hamburg University of Technology
15	Correlation of Benthic Sediment Grain-Size Distributions to High-Resolution Multibeam Sonar Backscatter in the Mississippi Bight	Lauren Quas, University of Southern Mississippi
16	Fate of Polycyclic Aromatic Sulfur-containing Hydrocarbons after Crude Oil Spills in Shallow Aquatic Ecosystems	Parichehr Saranjampour, Louisiana State University
17	Bacteria and Transport of Colloids at Fluid Interfaces	Liana Vaccari, University of Pennsylvania
19	Exoenzymatic Response of Coastal and Offshore Surface Ocean Microbial Communities to Exposure to Oil and an Oil/Dispersant Mixture	Emily Whitaker, Texas A&M University
20	Continuous-flow Microfluidic Experiments for Long-Term Observations of Microbes at Oil-Water Interfaces	Andrew White, Texas A&M University
21	Bacterial Chemotaxis to Aliphatic and Aromatic Hydrocarbons at High Hydrostatic Pressures	Heena Joo, Scripps Institution of Oceanography

#	Title	Presenter
22	The Impacts of Pressure on the Motility of Hydrocarbon-Degrading Microorganisms	Kelli Mullane, Scripps Institution of Oceanography
23	An Updated Simulation of the 2010 Oil Spill	Jorge Zavala-Hidalgo, Universidad Nacional Autonoma de México
24	Oil Particle Interactions: Theory, Experiments, and Numerical Modeling	Lin Zhao, New Jersey Institute of Technology
Session 017		
161	Diversity of Zooplankton and Ichthyoplankton in the Gulf of Mexico: A Taxonomic and Metagenomic Approach	Paola Batta Lona, Centro de Investigación Científica y de Educación Superior de Ensenada
162	Biotransformation of Soluble Oil and Gas Compounds in Natural Seawater at Low Temperature	Odd Gunnar Brakstad, SINTEF Materials and Chemistry
164	Microbial Community Response to the Deepwater Horizon oil spill: Metagenomic Insights into Northern Gulf of Mexico Saltmarsh Ecosystems	Nikaela Flournoy, University of Alabama
165	Anglerfish Bacterial Symbionts and Seawater from the Northern Gulf of Mexico	Lindsay Freed, Nova Southeastern University
166	Deep Sea in a Can: Finding Culprits - Bacterial Community Fingerprints under Pressure	Steffen Hackbusch, Technical University Hamburg Harburg
167	Alterations to the Sheepshead Minnow (*Cyprinodon variegatus*) Transcriptome after Corexit and Oil Exposure	Elizabeth Jones, University of Southern Mississippi
168	DNA Methyltransferase Gene Expression in Larval Sheepshead Minnows (*Cyprinodon variegatus*) Following Oil Exposure	Elizabeth Jones, University of Southern Mississippi
169	Assessing the Impact of Phytoplankton Community Diversity on the Ecosystem Response to Oil Perturbation	Jason Latham, Rutgers University
170	De novo Transcriptome Assembly of The Eastern Oyster (*Crassostrea virginica*) Exposed to Hydrocarbons	Edgar Lopez-Landavery, Centro de Investigación Científica y de Educación Superior de Ensenada
171	Immediate and Delayed Changes to Gene Expression in *Sciaenops ocellatus* and *Oncorhynchus kisutch* after Sublethal Exposure to Oil and Dispersant	Rebecca Medvecky, Mote Marine Laboratory
172	Enrichment of Marine Microbial Mats associated with Salt Marsh Plants Exposed to Oil Amendments	Heidi Michael, University of Alabama
173	DNA Damage in Fish Collected from Offshore and Nearshore Locations in the Deepwater Horizon Oil Spill Area during 2012 and 2013	Carys Mitchelmore, University of Maryland Center for Environmental Science
174	New Methods for the Identification of Benthic Infauna Communities Using Next Generation Sequencing	Michael Reuscher, Texas A&M University - Corpus Christi
175	Transcriptomics Reveal Responses of Deep-Water Microbial Communities to Oil and Dispersant Exposure	Matthew Saxton, University of Georgia
176	The Effects of Oil and Corexit on the Interaction between Bacteria and Phytoplankton in Mesocosm Experiments	Samantha Setta, Texas A&M University at Galveston
177	The Effect of Natural Seep Exposure on the Microbial Community and Metabolome of the Deepwater Coral *Callogorgia delta*	Samuel Vohsen, Pennsylvania State University
Session 018		
31	A Review of Biodegradation Models for Oil in the Open Water	Michel Boufadel, New Jersey Institute of Technology
32	Measurement and Modeling of Oil Slick Transport	Knut-Frode Dagestad, Norwegian Meteorological Institute
33	MFOIL - the MIT/FSU Oil Model	William Dewar, Florida State University

#	Title	Presenter
34	Numerical Simulation of Turbulent Live Oil and Gas Plumes in Stratified Environments	Alexandre Fabregat, College of Staten Island, City University of New York
35	Hindcasting and Forecasting the Dynamics of Deep Hydrocarbon Plumes: Results from a Data-assimilative Model	Katja Fennel, Dalhousie University
36	Assessing Oil Spill Contact Probabilities in the Gulf of Mexico	Zhen-Gang Ji, Bureau of Ocean Energy Management
37	Connectivity in the Gulf of Mexico	Philippe Miron, University of Miami
38	A Comprehensive System for Simulating Oil Spill Trajectory and Behaviour in Subsurface and Surface Water Environments	Haibo Niu, Dalhousie University
39	Direct Numerical Simulations of Primary Atomization Physics in Turbulent Oil Plumes	Andrew Poje, College of Staten Island, City University of New York
40	A Review of Biodegradation Models for Oil: Model Parametrizations and a Sensitivity Study	Scott Socolofsky, Texas A&M University
Session 019		
27	Oil Spill Governance in China after the 2010 Gulf of Mexico Oil Spill	Zijian Huang, Xiamen University
28	Characterizing Dioctyl Sodium Sulfosuccinate as an Obesogen *in vivo*	Alexis Temkin, Medical University of South Carolina
29	Crude Responses: A Comparative Analysis of the 2015 Santa Barbara and 2010 BP Gulf Oil Spills & Implications for Coastal Cities	Christian Thomas, Dillard University
30	Influencing Federal Oil Pollution Research Efforts: Overview of the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR) Oil Pollution and Technology Plan (OPRTP)	Kirsten Trego, Interagency Coordinating Committee on Oil Pollution Research
Session 020		
92	Mini AUVs: Engaging Hands-on Activities for STEM and Marine Education or Outreach	Sara Heimlich, Oregon State University
93	DEEPEND: Diving into Education at All Depths	Heather Judkins, University of South Florida
94	Getting the Science out of the Lab: From Fact Sheets to Multimedia Blogging	Tina Miller-Way, Dauphin Island Sea Lab
95	The Role of Eastern Oyster Genetic Diversity in Response to Oil Spills and Associated Clean-Up Activities	Sean Powers, Dauphin Island Sea Lab
96	Microfluidic Device, Toxicity of Crude Oil and Nanoparticles on *Caenorhabditis elegans* to Engage Underrepresented Minorities in Oil Spill Research	Diamanika Moss, Southern University at New Orleans
Session 021		
241	Aerosol Emission from Crude Oil and Crude Oil-Dispersant Contaminated Seawaters due to Bubble Bursting	Nima Afshar-Mohajer, Johns Hopkins Bloomberg School of Public Health
242	High-Resolution Spectroscopy for the Isomeric Determination of Polycyclic Aromatic Hydrocarbons with Molecular Weight 302 in the Gulf of Mexico	Maha Al-Tameemi, University of Central Florida
243	Temperature and Salinity Effects on Partitioning Co-efficient (KPDMS-water) of Selected Hydrophobic Organic Carbons (HOCs): Their Use for Passive Dosing	Gopal Bera, Texas A&M University
244	Examining How DOSS Alters Eicosanoid Biosynthesis in Stem Cells through Targeted Lipidomics	Theresa Cantu, Medical University of South Carolina

#	Title	Presenter
245	Comparison of Two Methods for Extracting PAHs from Fish Liver and Muscle	Brigid Carr, University of South Florida
246	A Method for *in situ* Measurement of Individual Oil Droplet Interfacial Tension	Emlyn Davies, SINTEF Materials and Chemistry
247	Evaluation of Benchtop and *in situ* Fluorometers using Water Accommodated Fractions Prepared with Fresh and Weathered Deepwater Horizon Oils	Heather Forth, Abt Associates
248	Developmental Cardiotoxicity in Red Drum is Not Influenced by WAF Preparation Method	Michel Gielazyn, NOAA
249	Incidence of Foraminifera Deformity as an Indication of Chronic Hydrocarbon Contamination of Parts of the Iranian Coastline of the Persian Gulf	Seyed Abbas Haghshenas, University of Tehran
250	Coupling Line Narrowing Spectroscopy to Liquid Chromatography for the Determination of Polycyclic Aromatic Compounds in the Gulf of Mexico	Hugh Hayes, University of Central Florida
251	Acoustic Measurements of Slick Thickness, Oil Droplet Size, and Dispersant Effectiveness in the Presence of Gas	Paul Panetta, Applied Research Associates, Inc.
252	A User-Friendly High-Resolution Photoluminescence Approach to the Low-Temperature Analysis of Polycyclic Aromatic Compounds in the Gulf of Mexico	Luciano Violante, University of Central Florida
253	Remote-sensing Instrument for Detection and Localization of Micro-scale Scattering Centers	Anni Vuorenkoski, Harbor Branch Oceanographic Institute at Florida Atlantic University
254	Visualizing the Structure of Freshwater Plumes in the Coastal Gulf of Mexico Using High Frequency Multibeam Sonar Water Column Backscatter	Maxwell Williamson, University of Southern Mississippi
255	Fate and Transport of Particulates below the Sea Surface: Testing a New Method for the Quantification of Exopolymeric Substances	Kai Ziervogel, University of New Hampshire
Session 022		
25	Valuating Marine Ecological Loss Caused By Oil Spills: Framework and Case Studies	Shang Chen, First Institute of Oceanography
26	Reduction of Post-release Mortality in Red Snapper (*Lutjanus campechanus*) and Other Recreationally Caught Reef Fish in the Gulf of Mexico Using Fish Descender Devices	Jennifer Weaver, Research Planning, Inc.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Thursday, February 9

Time	Event	Location
7:30a - 12:00p	Registration & Check-in Open	Elite Foyer
7:30a - 8:30a	Speaker Ready Room Open	Bolden 2
7:30a - 12:00p	Exhibits Open	Elite Hall
	Poster Hall Open	Elite Hall

Scientific Program Schedule

Starting at 7:30a	BREAKFAST	Strand & Elite Foyers
9:00a - 10:30a	Session 014	Strand 13
	Session 017	Strand 12
	Session 018	Bolden 6
	Session 019	Bolden 5
	Session 020	Empire A
	Session 021	Bolden 1
	Session 022	Strand 11
10:30a - 11:00a	BREAK	Strand & Elite Foyers
11:00a - 12:30p	Session 014	Strand 13
	Session 017	Strand 12
	Session 018	Bolden 6
	Session 020	Empire A
	Session 021	Bolden 1
	Session 022	Strand 11
	Session 023	Empire B
12:30p - 2:00p	LUNCH	Strand & Elite Foyers

Plenary Program Schedule

2:00p - 4:00p	Linking Science & Restoration: Now and in the Future Moderated by Dr. Monty Graham Session Summaries and Discussion Moderated by Michael A. Celata Conference Wrap-Up	Empire A/B

Associated Meetings and Events

8:15a - 8:45a	Organizing Your Data – Best Practices and GRIIDC Submissions	Bolden 4
10:30a - 11:00a	Submitting Your Data to GRIIDC	Bolden 4

Session 014

Circulation, Mixing, and Ecosystem Responses to River Discharge Patterns

Thursday, February 9, 9:00a - 12:30p, Strand 13

Jeffrey Book, Naval Research Laboratory
Zhankun Wang, NOAA
Brian Dzwonkowski, University of South Alabama

The Northern Gulf of Mexico is an area particularly influenced by river discharge plumes due to the large outflow of the Mississippi River and numerous other rivers that outflow all along the coast. These plumes have a dramatic impact on the coastal shelf but can also influence the continental shelf and offshore regions as the waters can be entrained and advected by slope currents, eddies, and even the Loop Current. A major concentration of oil and gas rigs occur directly in the main pathways of the flow patterns of these plumes; thus it is important to improve our understanding on how variations in discharge change circulation and biological patterns and how these patterns might influence some of the risks of oil release into the environment.

This session aims to improve the understanding of the physical processes associated with river plumes as well as their coupled relationship with ecosystem processes, both in the coastal and offshore environments. The physical and biogeochemical processes associated with river plumes can be challenging to observe and model because of complex flow features and fronts that require observations over a wide range of temporal and spatial scales. As a result, the session will focus on better characterizing the physical properties and advection of plumes, mixing of these plumes with surrounding waters, and the overall ecosystem response.

Time	Title	Presenter
9:00a - 9:15a	Seasonal Variability in Ebb Tidal Plumes	Steven Dykstra, Dauphin Island Sea Lab
9:15a - 9:30a	Assessing the Effects of River Riversions on Oil Transport in Barataria Bay	Haosheng Huang, Louisiana State University
9:30a - 9:45a	Seasonal Dynamics of Trace Elements and Ra Isotopes in Mississippi Coastal Waters	DongJoo Joung, University of Southern Mississippi
9:45a - 10:00a	Characterization of Stratified Coastal Waters in Response to a Winter Mississippi River Flood and the Opening of the Bonnet Carré Spillway, LA	Adam Boyette, University of Southern Mississippi
10:00a - 10:15a	Spatial Variation in Zooplankton and Ichthyoplankton Dynamics during an Atypical Freshwater Discharge Event in the Northern Gulf of Mexico	Angie Hoover, University of Southern Mississippi
10:15a - 10:30a	Highly-Resolved Temporal in Situ Variability of Zooplankton Diel Vertical Migrations in the Mississippi Bight	Sabrina Parra, Naval Research Laboratory
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Characterizing Spatial and Temporal Changes of the Suspended Particulate Matter in the Mississippi Sound and Mississippi Bight	Stephan O'Brien, University of Southern Mississippi
11:15a - 11:30a	Impact of High Resolution Atmospheric Forcing on Circulation Variability Within a Regional Model of the Mississippi Sound and Bight	Chudong Pan, University of Southern Mississippi
11:30a - 11:45a	Differential Responses of Soil Greenhouse Gas Production and Denitrification to Salinity Alterations along a Wetland Salinity Gradient in Barataria Bay	Natalie Ceresnak, Louisiana State University
11:45a - 12:00p	Long-term Patterns in Nitrification Rates and Ammonia Oxidizer Abundance in Louisiana Salt Marshes Post-spill	Ariella Chelsky, Louisiana Universities Marine Consortium
12:00p - 12:15p	A Multi-Year Record of Biomass, Primary Production, and Allometry of Four Dominant Vegetation Types in Coastal Louisiana Salt Marshes	Anthony Rietl, Louisiana Universities Marine Consortium
12:15p - 12:30p	Leaf Tissues and Semi-permeable Membrane Devices as Passive Samplers for Dynamic Re-oiling Events in Marshes	John Pardue, Louisiana State University

Session 017

Genomics and Modeling of Biological Communities to Improve Predictions of Ecosystem Response to and Mitigation of Spilled Oil

Thursday, February 9, 9:00a - 12:30p, Strand 12

Joel Kostka, Georgia Institute of Technology
Kostas Konstantinidis, Georgia Institute of Technology
David Portnoy, Texas A&M University - Corpus Christi

Advances in next generation DNA sequencing and omics approaches have the potential to greatly improve the ability to interrogate mechanisms of petroleum hydrocarbon degradation as well as impacts of oil exposure on ecosystem health and functioning. In particular, the rapid development and application of omics approaches has led to characterization of the metabolic pathways and controls of microbially-mediated hydrocarbon degradation. In higher organisms, novel biochemical pathways of immune response and metabolism of hydrocarbon compounds have also been revealed. The availability of next generation sequence data has enabled rapid determination of shifts in microbial communities in response to oil exposure and identification in higher organisms (vertebrates and invertebrates) of genomic regions associated with local adaptation and immune response. Although much progress has been made, the application of omics research in oil spills remains challenging. Omics data must be parameterized for linkage to models of ecosystem impacts as well as biogeochemical models to predict the attenuation of petroleum hydrocarbons. One exciting opportunity is to couple environmental metabolomics or petroleomics with metagenomics to construct metabolic models of hydrocarbon metabolism.

Time	Title	Presenter
9:00a - 9:30a	Using Genomics to Understand Impacts of the Deep Water Horizon Oil Spill on Macroorganisms	David Portnoy, Texas A&M University - Corpus Christi*
9:30a - 9:45a	Comparative Transcriptomic Analysis of Mahi-mahi (Coryphaena hippurus) and Red Drum (*Sciaenops ocellatus*) Embryos and Larvae Reveals Key Toxicity Pathways in Response to Deepwater Horizon Oil	Daniel Schlenk, University of California, Riverside
9:45a - 10:00a	Enhanced Developmental PAH Toxicity under Adverse Environmental Conditions in Sheepshead Minnow (*Cyprinodon variegatus*)	Danielle Simning, University of Southern Mississippi
10:00a - 10:15a	Differential Gene Expression in the Hepatic Tissue of CEWAF Exposed Red Drum (*Sciaenops ocellatus*) Using RNA-seq	Tracy Sherwood, Mote Marine Laboratory
10:15a - 10:30a	The Effects of Time, Space and the Deepwater Horizon Oil Spill on the Genomes of Red Snapper (*Lutjanus campechanus*)	Andrew Fields, Texas A&M University - Corpus Christi
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Investigating the Response of Cold-Water Corals to Oil and Dispersant Exposure Using Transcriptomics	Danielle DeLeo, Temple University
11:15a - 11:30a	Ecology and Evolution of Deep Sea Coral Associated Bacterial Communities	Iliana Baums, Pennsylvania State University
11:30a - 11:45a	Genomic Responses to the Deepwater Horizon Event and Development of High-throughput Biological Assays for Oil Spills	Joseph Sevigny, University of New Hampshire
11:45a - 12:00p	Transcriptomic Response to Oil Contamination in Louisiana Seaside Sparrows	Andrea Bonisoli Alquati, California State Polytechnic University, Pomona
12:00p - 12:15p	Development of a Marine BioAssay for Mutagenic Environmental Contamination	Lauren McDaniel, University of South Florida
12:15p - 12:30p	Carcinogenic Effects of Oil Dispersants: A KEGG Pathway-Based RNA-Seq Study of Human Airway Epithelial Cells	Yaozhong Liu, Tulane University

**Invited speaker*

Session 018

Oil Spill Modeling: Source to Sink

Thursday, February 9, 9:00a - 12:30p, Bolden 6

Christopher Barker, NOAA
CJ Beegle-Krause, SINTEF Materials and Chemistry
Juan Restrepo, Oregon State University
Louis Thibodeaux, Louisiana State University
William Dewar, Florida State University
Clint Dawson, University of Texas at Austin

Oil spill models are integrated computer systems that simulate the transport, fate, and effects of oil spills. This requires simulation of many physical, chemical and biological processes. Models can be used to help understand such processes and the interplay between processes, as well as being critical to decision makers. Before an oil spill, these models provide risk assessment and planning opportunities, during a spill these models provide guidance to the response, and after a spill, these models are used to assess injury. This session aims to bring forward research that targets improving the ability to model these complex systems as well as applications to decision support.

Time	Title	Presenter
9:00a - 9:15a	State of the Practice for Oil spill Modeling: What Research is Most Needed	Christopher Barker, NOAA
9:15a - 9:30a	Two Dimensional, Rotating Plume Models with Application to Deep Water Horizon	William Dewar, Florida State University
9:30a - 9:45a	Detailed Modeling of the Dynamic Behavior of Petroleum in the Sea During the Deepwater Horizon Accident	Jonas Gros, Texas A&M University
9:45a - 10:00a	An Aggregation Model to Estimate Oil Removal Rate by Sinking Marine Snow: A Decision Support Tool	Simone Francis, University of California, Santa Barbara
10:00a - 10:15a	Oil Slick Elongation as a Result of Dispersion	Marieke Zeinstra-Helfrich, NHL University of Applied Sciences
10:15a - 10:30a	Simulation of Wind-Wave-Current Interactions for Oil Spill Applications	Lian Shen, University of Minnesota
10:30a - 11:00a	BREAK	
11:00a - 11:15a	An Oil Fate Model for Shallow Waters	Juan Restrepo, Oregon State University
11:15a - 11:30a	Models for Barotropic and Baroclinic Circulation in the Choctawhatchee Bay and River System	Rosemary Cyriac, North Carolina State University
11:30a - 11:45a	Modeling the Drift and Spread of Oil Slicks in the Northern Gulf of Mexico Using SAR Imagery and Forcing from a High-Resolution Hydrodynamic Model	Cecilie Wettre, Norwegian Meteorological Institute
11:45a - 12:00p	Dynamical Geography of the Gulf of Mexico Inferred Using Satellite-Tracked Drifters	Francisco Beron-Vera, University of Miami
12:00p - 12:15p	Comparing Trajectory Outputs at the Historic Pt. Wells Oil Spill	Jonathan Whiting, Pacific Northwest National Laboratory
12:15p - 12:30p	Prediction of the Transport of Surface Oil-Slicks in the Northern Gulf of Mexico Using a Cross-Scale Unstructured Finite Element Baroclinic Model	Arash Fathi, University of Texas at Austin

Session 019

Policy-Relevant Implications of Science Emerging from the Deepwater Horizon Disaster

Thursday, February 9, 9:00a - 10:30a, Bolden 5

Steven Murawski, University of South Florida
David Hollander, University of South Florida

This session will consider a range of public policy implications in light of new research stemming from the DWH disaster. At the time of the Deepwater Horizon (DWH) spill, technologies and procedures for dealing with an ultra-deep blowout were not well developed, and few planning scenarios considered such a spill. As DWH unfolded, the lack of pre-spill preparation necessitated decision making without the benefit of conclusive proof of the efficacy of some strategy options. As well, numerous scientific papers reporting on DWH-related impacts have emphasized the dearth of pre-spill information as a potential impediment to a contextual understanding of DWH-related effects. If a similar spill occurred tomorrow, would the same tactical choices be made and would we have sufficient baseline data? What data would help resolve unanswered questions regarding policy choices? Should policies and laws governing oil drilling and spill response be strengthened across interconnected domestic regions and across national boundaries? Does the Oil Pollution Act of 1990 (OPA-90), passed in the wake of the Exxon Valdez spill, need to be revisited in light of the advent of ultra-deep drilling? This session will consider these and other policy-related questions.

Time	Title	Presenter
9:00a - 9:15a	Approaches to Understanding Oil Spill Phenomena and Effects: Evidence, Scientific Inference and Implications for Public Policy	Steven Murawski, University of South Florida
9:15a - 9:30a	Environmental Impacts of the Deep-Water Oil and Gas Industry: A Review to Guide Management Strategies	Erik Cordes, Temple University
9:30a - 9:45a	Informing Decision Making, Reducing Risks, and Driving Technology Innovations in the Gulf of Mexico Using Novel Spatio-temporal Tools and Big Data	Kelly Rose, U.S. Department of Energy
9:45a - 10:00a	Decommissioning and Rigs-to-Reefs Programs in the Gulf of Mexico – Current Status and Strategies, and a Review of Decommissioning Cost Estimation	Elena Kobrinski, Texas A&M University - Corpus Christi
10:00a - 10:15a	Reappraisal of the Use of Traditional Response Strategies for Surfacing Oil in Light of the MOSSFA Phenomena – Implication for Policy Change	David Hollander, University of South Florida
10:15a - 10:30a	Discussion	

Session 020

Bridging Research and Response: Science Discoveries from DWH to Inform Future Oil Spill Response Decision Making and Engage Stakeholders

Thursday, February 9, 9:00a - 12:30p, Empire A

Ann Hayward Walker, SEA Consulting Group
Laura Bracken Chaibongsai, University of Miami
Charlie Henry, NOAA
Christopher Reddy, Woods Hole Oceanographic Institution
Daniel DiNicola, University of Miami
Jessica Kastler, University of Southern Mississippi

During the Deepwater Horizon oil spill, operational choices about response strategies, informed by agency, industry, and consultant practitioner scientists, were made to contain, redirect, remove, and disperse (both surface and subsea applications) the oil to mitigate damage. Decisions were made by Unified Command and remotely advised by academic experts at the national level on some strategic issues (e.g., well capping). However, limited opportunities existed for academic researchers to share relevant knowledge about the affected areas. The US National Oil and Hazardous Substances Pollution Contingency Plan (NCP) describes the US preparedness and response framework. This session aims to bridge the gaps among research and practitioner scientists by clarifying the post-DWH science discoveries to inform future operational decisions that could enhance the recovery and restoration of affected resources, ecosystems, and communities. This session also aims to explore ways researchers can collaborate with outreach professionals to use the capabilities and tools they have developed to frame or communicate research messages to responders, decision makers, and a variety of public audiences (e.g. from fishing and tourism industries).

Time	Title	Presenter
9:00a - 9:15a	“Real Time” Science: What Decision Makers Need in the Heat of Battle	Rear Admiral Meredith Austin, U.S. Coast Guard*
9:15a - 9:30a	The Use of NEBA and Associated Comparative Risk Frameworks to Integrate Oil Spill Science for Spill Response and Preparedness Planning	William Gardiner, RAMBOLL
9:30a - 9:45a	The Role of Science and Real-Time Response Decisions: Examples with the General NOAA Operational Modeling Environment	Adriana Bejarano, Research Planning Inc.
9:45a - 10:00a	Engaging Local Stakeholders Through Citizen Science Projects Using GoMRI-Funded Oil Spill Research Tools	Laura Bracken Chaibongsai, University of Miami
10:00a - 10:15a	When a Naval Officer Emails for Help on How to Sink a Ship	Christopher Reddy, Woods Hole Oceanographic Institution
10:15a - 10:30a	Stakeholder Participation in the 2016 Comparative Risk Assessment (CRA) of Response Options for an Uncontrolled Subsea Oil Well Blowout	Ann Hayward Walker, SEA Consulting Group
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Understanding What Happens to the Composition of Crude Oils Spilled in Marine Environments	Edward Overton, Louisiana State University
11:15a - 11:30a	Engaging Multi-Ethnic Fisher Folks in Oil Spill Research	Jessie Kastler, University of Southern Mississippi
11:30a - 11:45a	The DWH Oil-Associated Marine Snow Sedimentation Event and Future Oil Spill Response	Kendra Daly, University of South Florida
11:45a - 12:00p	Engaging High School Students in Studying Marine Mammals Observed near the BP Oil Spill	Kendal Leftwich, University of New Orleans
12:00p - 12:15p	Development of a Web-based Virtual Lab Application to Disseminate and Communicate GoMRI Science	Dan DiNicola, University of Miami
12:15p - 12:30p	Two Years Later: An Evaluation of Oil Spill Science Communication in the Gulf	Chris Ellis, NOAA

**Invited speaker*

Session 021

Marine Oil Pollution Monitoring Methods: New and Emerging Techniques for Obtaining and Analysing in-situ Observations and Laboratory Data

Thursday, February 9, 9:00a - 12:30p, Bolden 1

Emlyn Davies, SINTEF Materials and Chemistry
Ian MacDonald, Florida State University
Robyn Conmy, U.S. EPA

The Deepwater Horizon oil spill blowout has spurred scientific debate surrounding the oil droplet size distribution and the resulting environmental impact of the dispersed oil. This debate remains ongoing because direct measurements can be difficult to obtain during spill events, and appropriate / comprehensive basal ecological monitoring rarely exists prior to oil releases. Coincident spatial and temporal measurements of oil droplet size and concentration, gas bubbles, plankton, and marine snow, are but a few examples of what is required for better understanding the transport and fate of particulates below the sea surface. And on the sea surface, aerial and satellite remote sensing techniques offer mechanisms for quantifying the coverage and spreading of oil. Since the Deepwater Horizon spill, a large array of novel measurement techniques have been developed in order to design laboratory experiments, assess long-term ecological responses, characterise changes to seabed sediments, and accurately quantify surface slick properties, to list only a few. This session will bring together all aspects of measurement techniques used in oil spill research. Discussion at the end of the session will focus on highlighting the potential for new monitoring methods and identify remaining technology gaps that should be filled to progress our observational understanding of marine oil pollution.

Time	Title	Presenter
9:00a - 9:30a	Tactical Oil Spill Observations: Recent Developments in Remote Sensing of Oil Spills	Oscar Garcia Pineda, Water Mapping, LLC*
9:30a - 9:45a	Ground-truth Monitoring and Aerial Surveillance of Light Crude Oil Slicks Behaviour and Effect of Response Options during Full-scale Field Experiments	Per Daling, SINTEF Materials and Chemistry
9:45a - 10:00a	Hydrostatic Pressure Increases the Toxicity to Metals in *Daphnia magna*	Jeremy Rubio, University of Wisconsin-Milwaukee
10:00a - 10:15a	Assessment of Oil Spill from the Former Taylor Platform in the Gulf of Mexico	Shaojie Sun, University of South Florida
10:15a - 10:30a	An Inventory of Natural Seeps using Archived Acoustic Backscatter Data	Daniela Di Iorio, University of Georgia
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Large-scale Experimental Observations of Subsea Gas Blowouts	Emlyn Davies, SINTEF Materials and Chemistry
11:15a - 11:30a	*In situ* Focused Shadowgraph System for the Study of Oil Droplets	Cedric Guigand, University of Miami
11:30a - 11:45a	Combining Multibeam Acoustics and *in situ* Imaging to Resolve Patch Structure of Shrimp Aggregations and Gelatinous Zooplankton in Relation to Hypoxia	Adam Greer, University of Southern Mississippi
11:45a - 12:00p	A Water Tank Study of Oil-on-Sediment by Acoustic Backscattering and Reflecting Measurements	Zhiqu Lu, University of Mississippi
12:00p - 12:15p	Bacterial Community Composition in the Sea Surface Microlayer with a Focus on Surfactant-Associated Bacteria in Application to Satellite Oceanography	Kathryn Howe, Nova Southeastern University
12:15p - 12:30p	Exploring the Multidimensionality of Luminescence Spectroscopy to Face Analytical Challenges in the Gulf of Mexico	Andres Campiglia, University of Central Florida

**Invited speaker*

Session 022

Deepwater Horizon Oil Spill Natural Resource Damage Assessment: Comprehensive Integrated Ecosystem Restoration

Thursday, February 9, 9:00a - 12:30p, Strand 11

Melissa Carle, Earth Resources Technology, Inc.
Mike Peccini, NOAA

The Deepwater Horizon (DWH) settlement of $8.8 billion for the Natural Resource Damage Assessment (NRDA) portion was finalized on April 4, 2016. The Trustees determined that injuries to natural resources caused by the DWH oil spill constituted an ecosystem-level injury due to the effects on such a wide array of linked resources over such an enormous area. Just as the injuries to individual resources cannot be understood in isolation, restoration efforts must also be considered and implemented from a broader perspective. Consequently, the Trustees developed and will implement a comprehensive integrated restoration portfolio.

This session will focus on:

- The comprehensive, integrated restoration portfolio and how it addresses the diverse suite of injuries that occurred at both regional and local scales;
- Restoration planning within specific restoration areas and how it supports the integrated comprehensive restoration portfolio;
- Restoration planning for the open ocean, including pelagic and deep ocean resources;
- Tools available to help ensure ecosystem recovery;
- Efforts to encourage consistency in restoration monitoring, manage and integrate data associated with NRDA restoration, and evaluate restoration outcomes across multiple scales; and
- Efforts to coordinate restoration across the NRDA, Gulf Environmental Benefit Fund, and RESTORE Council.

Time	Title	Presenter
9:00a - 9:15a	Session Introduction: Comprehensive Integrated Ecosystem Restoration	Aileen Smith, NOAA
9:15a - 9:30a	Monitoring and Adaptive Management to Support Restoration of Resources Impacted by the Deepwater Horizon Oil Spill	Melissa Carle, Earth Resources Technology, Inc.
9:30a - 9:45a	The Mississippi Restoration Landscape: Connecting the Dots across Funding Streams	Robert Kroger, Covington Civil and Environmental
9:45a - 10:00a	Restoring Marine Life Comprehensively across Political Boundaries	Matt Love, Ocean Conservancy
10:00a - 10:15a	Managing and Sharing Data Using the Deepwater Horizon DIVER (Data Integration, Visualization, Exploration, and Reporting) Tool	Mike Peccini, NOAA
10:15a - 10:30a	Discussion	
10:30a - 11:00a	BREAK	
11:00a - 11:15a	Open Ocean Restoration Planning	Kristopher Benson, NOAA
11:15a - 11:30a	Estimating the Benefits of Crab Trap Removal Programs to Restore Fish and Water Column Invertebrates in the Gulf of Mexico	Courtney Arthur, Industrial Economics, Inc.
11:30a - 11:45a	A Meta-analysis to Evaluate Catch Rate and At-vessel Mortality of Circle Hooks in Pelagic Longline Fisheries: Management and Conservation Benefits	Jennifer Weaver, Research Planning, Inc.
11:45a - 12:00p	Compensatory Restoration Concepts for Offshore (Deepwater) Benthic and Aquatic Resources	Nicholas Gard, Exponent
12:00p - 12:15p	Deepwater Horizon Oceanic Fish Restoration Project - Applying Natural Resource Damage Assessment in Offshore Environments	James Reinhardt, Earth Resources Technology, Inc.
12:15p - 12:30p	Discussion	

Session 023

Environmental Baseline and Oil Spill Impacts: Utilizing Big Data and Synthesis to Support Decision Making

Thursday, February 9, 11:00a - 12:30p, Empire B

Kimberly Bittler, BOEM
Chris DuFore, BOEM
Jennifer Bucatari, BOEM

Quantifying the impact of oil spills and establishing environmental baselines are critical to informed decision making through the National Environmental Policy Act. A massive amount of new information is being generated by ongoing research through GoMRI, the National Academy of Science's Gulf Research Program, the Natural Resource Damage Assessment, and other efforts. To effectively inform decision making, this substantial body of knowledge could be consolidated and analyzed with "big data" approaches, meta-analysis, modeling, reviews, and synthesis. This session will focus on studies that draw conclusions from a large body of information that inform new environmental baselines and quantify the impact of oil spills on aspects of the ocean environment such as water quality, fisheries, benthic communities, socioeconomic factors, protected species, and human health.

Time	Title	Presenter
11:00a - 11:15a	Assessing Broad-Scale Abundance and Distribution of Marine Mammals, Sea Turtles, and Seabirds in the Gulf of Mexico - The New GoMMAPPS Field Program	Rebecca Green, BOEM
11:15a - 11:30a	Establishing Baselines for Benthic Habitat and Reef Fish Populations on the West Florida Shelf Using Ultra-High Resolution Multibeam Sonar and Towed Video	Sarah Grasty, University of South Florida
11:30a - 11:45a	Gulf of Mexico Zooplankton Synthesis and Data Portal	Klaus Huebert, UMCES Horn Point Laboratory
11:45a - 12:00p	Coming into Focus: Improved Understanding of the Spatial Dynamics of Reef Habitat in the Eastern Gulf of Mexico	Sean Keenan, Florida Fish & Wildlife Research Institute
12:00p - 12:15p	Adding to the Baseline: Integrating Spatio-Temporal Big Data Analytics into Decision-Support Tools for Offshore Spill Prevention	Jennifer Bauer, National Energy Technology Laboratory
12:15p - 12:30p	Regional Monitoring of Indicators to Assess Ecosystem Restoration	Angelina Freeman, Coastal Restoration and Protection Authority

Linking Science & Restoration: Now and in the Future

Thursday, February 9 • 2:00p – 4:00p • Empire A/B

Because restoration occurs in – and perhaps in response to – a changing world, restoration projects also serve as real-world, real-time science experiments. Who is responsible for documenting the success of projects over time? Restoration practitioners from Gulf states provide insight into novel techniques and approaches to restoration, connecting restoration projects on a larger landscape, and guarding against unintended consequences. Moderated by Monty Graham, this session will also discuss accountability for project success in a future ocean scenario.

Session Summaries

The 2017 conference theme, Ecosystem Approaches to Gulf Response and Restoration, explores the application of Gulf research to oil spill response and ecosystem restoration. Michael Celata moderates as each session provides a "big picture" look at its presentations and identifies:

- How the research presented might be used by responders and policy-makers to plan, prepare, and respond to oil spills and/or inform future restoration;
- Research and data gaps; and
- Challenges to linking research to management and policy.

Closing Remarks

Alyssa Dausman, *Gulf Coast Ecosystem Restoration Council*

Panelists:

Amy Hunter

Science Coordinator, Alabama Department of Conservation and Natural Resources

Jim Pahl

Senior Coastal Resources Scientist, Louisiana Coastal Protection and Restoration Authority

Becky Prado

Deputy Director, Florida Department of Environmental Protection

George Ramseur

Director, Office of Coastal Restoration and Resiliency, Mississippi Department of Marine Resources

Robin Riechers

Director of Coastal Fisheries, Texas Parks and Wildlife Department

Monty Graham, *University of Southern Mississippi*

Dr. Monty Graham is the Director of the School of Ocean Science & Technology at The University of Southern Mississippi, where he is also a Professor of Marine Science. Dr. Graham is a biological oceanographer with a specialization in gelatinous plankton. Though his interest in 'jellies' is broad, his primary research explores the causes and consequences of jellyfish variability in heavily fished ecosystems. Dr. Graham serves as an Advisory Board member for the National Academy of Sciences' Gulf Research Program, is a Board representative for the Gulf of Mexico University Research Collaborative, serves on the Board of Trustees for the Consortium for Ocean Leadership, and is a member representative for Southeastern Universities Research Association and the Northern Gulf Institute. He received his undergraduate degree in marine biology from the University of North Carolina at Wilmington. His Master's and Doctorate degrees were granted from the University of California-Santa Cruz. His post-doctoral work was conducted at UC-Santa Barbara.

Michael A. Celata, *Bureau of Ocean Energy Management*

Michael A. Celata, Regional Director in the U.S. Department of the Interior's Bureau of Ocean Energy Management, Gulf of Mexico Region, received a B.A. in geology and physics from Bowdoin College and attended the Boston College Master of Science Program. He began his career as a geophysicist with Exxon. Since 1988 he has held varying duties of increased responsibility with BOEM. Responsibilities have included enhancing the development, acquisition and implementation of geoscience and petroleum engineering software; providing guidance and expertise for the effective use and management of geological and geophysical data; oversight for geological play assessments, petrophysical analysis, and G&G permitting for the Gulf of Mexico and Atlantic OCS. He is a member of the Society of Exploration Geophysicists where he was a District 3 Representative for the Executive Committee from 2006 – 2009.

Alyssa Dausman, *Gulf Coast Ecosystem Restoration Council*

Dr. Alyssa Dausman is the Science Director for the Gulf Coast Ecosystem Restoration Council (Council), an independent federal agency created by the RESTORE Act in 2012. She is located in Bay Saint Louis, Mississippi focusing on Gulf restoration and science for the Council, comprised of the Governors of the five Gulf states and Cabinet-level officials from six federal agencies. She began her career with the USGS in Fort Lauderdale, FL in 2000 after completing her B.S. at Tulane University and her M.S. at the University of New Orleans. She received her Ph.D. from Florida International University in 2008 while working with the USGS. In 2011 she moved back to her "roots" in Mississippi (born and raised) to work on Gulf restoration. She was staffed to the Gulf Coast Ecosystem Restoration Task Force and supported the Department of Interior advising on science and monitoring related to Early Restoration for NRDA as well as on the RESTORE Act. In January of 2015 she went on detail to the Council to help draft the Initial Funded Priorities List of projects and programs the Council intended to fund. She subsequently took a permanent job with the Council in May of 2015.

United States Department of the Interior
Bureau of Ocean Energy Management

BOEM promotes energy independence, environmental protection and economic development through responsible, science-based management of offshore conventional and renewable energy and marine mineral resources to its stakeholders.

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Associated Workshops & Meetings

Descriptions are available on the conference website, online program planner and mobile app.

MOSSFA Workshop

Monday, February 6, 9a - 5p
Empire B

Assessing the State of Gulf of Mexico Benthic Habitat Maps

Monday, February 6, 9a - 12p
Strand 13

Gulf of Mexico Oil Spill Research: International Collaborations Involving Science, Policy and Response

Monday, February 6, 9a - 12p
Strand 12

Hypoxia effects on fish and fisheries: kick-off meeting of decision support tool development

Monday, February 6, 9:00a - 1:00p
Bolden 1

Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) – Informational Meeting, Year 2

Monday, February 6, 1p - 4:30p
Strand 13

Physical Methods of Oil Spill Remediation: Research Needs and Lessons Learned in Remediating Oil Spills in the Gulf of Mexico and Michigan

Monday, February 6, 1p - 4p
Bolden 5

Exploring the Intersection between Oil Spill Science and Response

Monday, February 6, 1p - 5p
Bolden 6

Organizing Your Data – Best Practices and GRIIDC Submissions

Wednesday February 8, 10:30a
Thursday February 9, 8:15a
Bolden 4

Gulf of Mexico Tools Café

Tuesday, February 7, 6p - 8p
Elite Hall (1st Floor)

Submitting your Data to GRIIDC

Wednesday February 8, 3:30p
Thursday February 9, 10:30p
Bolden 4

Dataset Management Planning via the GRIIDC Dataset Information Form (DIF)

Tuesday February 7, 3:30p
Bolden 4

Special Town Hall: Ocean Research in the Coming Decade

Wednesday, February 8, 5:45p - 7:15p
Empire A

Student Awards & Activities

James D Watkins Student Award for Excellence in Research

The James D. Watkins Student Award for Excellence in Research is given out annually to exceptional student presentations at the conference. The Watkins Award strives to recognize outstanding research in order to cultivate the next generation of scientists and encourage excitement for presenting their work. Thank you to the award judges for their assistance in evaluating student presentations and to the Consortium for Ocean Leadership and the Gulf Research Program for sponsoring the 2017 awards!

Thank you to our sponsors for their generous support of student participation at the conference!

The Gulf of Mexico University Research Collaborative (GOMURC)
and NAS Gulf Research Program provided Student Presenter Awards,
which covered registration fees for student presenters.
Congratulations to the student awardees and thank you for presenting your research
at the 2017 Gulf of Mexico Oil Spill and Ecosystem Science Conference!

GOMURC
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GULF RESEARCH PROGRAM
National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

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Thank You!

We would like to thank the Executive Committee for its time and direction in planning the Conference.

Dave Westerholm (Chair)
National Oceanic and Atmospheric Administration

Laura Bowie
Gulf of Mexico Alliance

Alyssa Dausman
Gulf Coast Ecosystem Restoration Council

Stacey DeGrasse
U.S. Food and Drug Administration

Chris Elfring
Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine

Elizabeth Fetherston-Resch
Gulf of Mexico RESTORE Centers of Excellence

Larry McKinney
Gulf of Mexico University Research Collaborative

Jonathan Porthouse
National Fish & Wildlife Foundation

David Shaw
Gulf of Mexico Research Initiative

Gregory Steyer
U.S. Geological Survey

LaDon Swann
Sea Grant in the Gulf of Mexico

Suzanne van Drunick
Environmental Protection Agency

Denis Wiesenburg
Gulf of Mexico Research Initiative

Charles Wilson
Gulf of Mexico Research Initiative

We also thank the staff of the Gulf of Mexico Research Initiative Management Team and our many volunteers, who have been working so diligently behind the scenes to ensure everything runs smoothly.

Exhibitors List

BOEM
Bureau of Ocean Energy Management

GCOOS
Gulf of Mexico Coastal Ocean Observing System

GOMURC
Gulf of Mexico University Research Collaborative

Gulf of Mexico Research Initiative

Gulf of Mexico Research Initiative Information & Data Cooperative
GRIIDC

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An Oil Spill is No Day at the Beach.

The public can lose access to beaches, fishing, boating, and other recreational activities. Working with our partners, NOAA responds to these spills; measures the impacts to wildlife, habitats, and humans; and helps ensure that those responsible provide restoration to compensate for what was lost.

NOAA's National Ocean Service

Office of Response and Restoration | National Centers for Coastal Ocean Science | Office of National Marine Sanctuaries