About the Gulf of Mexico Research Initiative

The Gulf of Mexico Research Initiative is a 10-year, $500 million independent research program established by an agreement between BP and the Gulf of Mexico Alliance to study the effects of the Deepwater Horizon incident and the potential associated impact of this and similar incidents on the environment and public health.

Would you like to know more about the GoMRI-funded research?
Check out our Research page on the website:
http://research.gulfresearchinitiative.org/research-awards/

GoMRI Attends 2017 International Oil Spill Conference

The Gulf of Mexico Research Initiative (GoMRI) attended the 2017 International Oil Spill Conference (IOSC) from May 15-18 in Long Beach, California. Members of the GoMRI Management Team (GMT), the Gulf Sea Grant Oil Spill Science Outreach Team, and the Gulf of Mexico Research Initiative Information and Data Cooperative (GRIIDC) partnered on a booth in the exhibit hall, which saw many visitors.

The goal of the IOSC is to bring together representatives from all sectors, including academia, government, industry, and response, to share information and address challenges surrounding oil spills and response. The full conference program is available online here.

In addition to the booth, GoMRI hosted a Hot Topics Session on May 17 that featured four GoMRI researchers. Dr. Chris Reddy (RFP-V, C-IMAGE, Deep-C) presented An Overview on the Gulf of Mexico Research Initiative’s Hydrocarbon Intercalibration Experiment, Dr. Tamay Özgökmen (CARTHE) spoke about Advances in the CARTHE Research Program in the Gulf of Mexico, Dr. Antonietta Quigg (ADDOMEx) discussed Marine Oil Snow Sedimentation and Flocculent Accumulation (MOSSFA): Intersections Between Biology and Chemistry in the Water Column and Developing Response Strategies, and Dr. David Hollander (C-IMAGE) shared the Comparison of Sediment Records from the Ixtoc-1 (1979) and DWH (2010) Marine Oil Well Blowouts in the Gulf of Mexico. Each presentation was followed by a question and answer session with the audience. Several GoMRI scientists also presented their research at the conference through talks and posters.

Additionally, the conference included a film festival. Dispatches from the Gulf was shown four times over the course of the week and was awarded first place for best film at the festival. Dr. Chuck Wilson, GoMRI’s Chief Scientific Officer, accepted the award on behalf of Screenscope and Hal and Marilyn Weiner during the awards luncheon. Congratulations to Hal and Marilyn Weiner and the Screenscope team on this recognition!
A recent publication featuring GoMRI researchers Jonas Gros (DEEP-C), Christopher Reddy (C-IMAGE, RFP-V, DEEP-C), Robert Nelson (DEEP-C, C-IMAGE, RFP-V), Scott Socolofsky (GISR, C-IMAGE), and their co-author J. Samuel Arey was selected as first runner up in the Environmental Technology category of the Environmental Science and Technology’s Best Papers of 2016. The article, titled Simulating Gas-Liquid-Water Partitioning and Fluid Properties of Petroleum under Pressure: Implications for Deep-Sea Blowouts, can be found here. Congratulations to the team on this recognition.

GoMRI also congratulates Dr. Jeff Chanton for receiving the 2017-2018 Robert O. Lawton Distinguished Professor award. Dr. Chanton is the John W. Winchester Professor of Oceanography at Florida State University (FSU) where he has been a member of the faculty for 29 years. He has been involved in GoMRI since its inception, serving as a co-principal investigator on ECOGIG, DEEP-C, ECOGIG-2, and C-IMAGE-II. This award is the highest honor FSU bestows on one of its own. To learn more about Dr. Chanton and this award, and to listen to an interview with him, visit the FSU website here. Congratulations to Dr. Chanton.

GoMRI’s Research Board Chair, Dr. Rita Colwell, was recently awarded the National Science Board Vannevar Bush Award. The Vannevar Bush Award is presented to scientists who have served as lifelong leaders in science and technology and have made contributions to the Nation through public service. Dr. Cowell received the award on May 9, 2017, in Washington, D.C. GoMRI extends its congratulations to Dr. Colwell on this honor.

GoMRI Newsmakers

The Sea Grant Oil Spill Science Outreach Team hosted their most recent seminar on Sea Turtles and Oil Spills on March 23, 2017 at the Gladys Porter Zoo in Brownsville, Texas. The full-day workshop was attended by more than 100 people online and in person. The agenda is available here. The workshop featured presentations by Dr. Nathan Putman, a scientist with NOAA's Atlantic Oceanographic and Meteorological Laboratory; Dr. Tracy Collier speaking on behalf on the Natural Resources Damage Assessment (NRDA) process; Dr. Charles Caillouet, marine fisheries scientist, retired from the NOAA Fisheries Service; Dr. Donna Shaver, Chief of the Division of Sea Turtle Science and Recovery at the Padre Island National Sea Shore; Dr. Benny Gallaway, President of LGL Ecological Research Associates, Inc.; Dr. Patrick Burchfield, Executive Director of the Gladys Porter Zoo; Gary Graham, Texas Sea Grant Fishery Specialist and Turtle Excluder Device (TED) expert; Gonzalo Pena, Natural Resources Specialist with Texas General Land Office’s Oil Spill Prevention and Response Division; and Jeff George, Executive Director of Sea Turtle, Inc. All presentations are available on the Sea Grant website here.

Steve Sempier, Deputy Director of the Mississippi-Alabama Sea Grant Consortium and Manager of the Sea Grant Oil Spill Science Outreach Team, and Ed Levine, Regional Operations Supervisor in the Office of Response and Restoration at NOAA, presented at a seminar hosted by NOAA on April 28, 2017. The seminar was titled Disaster Needs: Sea Grant/Private Sector Partnership Serves Impacted Sectors and Prepares for Future Events. A summary of the seminar, including a link to the presentation slides, is available here.

The Sea Grant Oil Spill Science Outreach Team has also released several new publications. Emerging Surfactants, Sorbants, and Additives for Use in Oil Spill Clean-up discusses the technologies used to clean up the oil from the Deepwater Horizon oil spill and shares emerging technologies and the science behind how they work. The Deepwater Horizon Oil Spill’s Impact on Bottlenose Dolphins shares information and ongoing research on how dolphins in the Gulf were affected by the oil spill. Sea Turtles and the Deepwater Horizon Oil Spill details what has been learned so far about the oil spill’s impact on sea turtles.

Finally, the Sea Grant Oil Spill Science Outreach Team attended the 2017 International Oil Spill Conference (IOSC) in partnership with GoMRI Management Team and GRIIDC members. A full summary of that conference can be found on page 1.
### Science Corner

**Published Science Highlights from the GoMRI Program**

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<td>Studies Highlight Complexities in Connecting Larval Fish Health to Deepwater Horizon</td>
<td>F.J. Hernandez, Jr., J.E. Filburn, J. Fang, J.T. Ransom</td>
<td>Inter-Research Marine Ecology Progress Series, 2016, Vol. 558, pgs. 143-152</td>
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To see all GoMRI publications, please visit the GoMRI Publication Database.

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### C-IMAGE Launches Beneath the Horizon Interactive Website

On April 20, 2017, the seventh anniversary of the Deepwater Horizon oil spill, the Center for the Integrated Modeling and Analysis of the Gulf Ecosystem (C-IMAGE) launched a new website called Beneath the Horizon ([BeneaththeHorizon.org](http://BeneaththeHorizon.org)). The interactive site shares impacts, timelines, stories, videos, and interviews from the Ixtoc-I oil spill in 1979 and the Deepwater Horizon oil spill in 2010. The site also includes links to many of C-IMAGE’s podcast episodes from their series The Loop. The site will eventually include lesson plans and outreach materials. Learn more [here](http://BeneaththeHorizon.org).

Graphic courtesy of C-IMAGE.
GoMRI Scholars in Action

The Gulf of Mexico Research Initiative (GoMRI) is recognizing the graduate students whose vital research contributes to improving understanding about the damage, response, and recovery of the Deepwater Horizon oil spill. Candidates for this program must be graduate students who have participated in a GoMRI-funded project for at least one year, whose work is primarily funded by GoMRI, and who are working on a dissertation or thesis based on GoMRI-funded science.

Learn more about the scholars’ research and career paths on the GoMRI website!

Grad Student Novotny Searches for Oil Transport Pathways in Deep-Sea Fish Stomachs
Grad Student Girard Uses High-Definition Imagery to Assess Post-Spill Coral Recovery
Grad Student Dykstra Sees Global Applications for Local Ocean Circulation Maps
Grad Student Diamante Investigates How PAHs Affect Fish Development

Education Spotlight

The Consortium for Advanced Research on Transport of Hydrocarbon in the Environment (CARTHE), the Relationships of Effects of Cardiac Outcomes in Fish for Validation of Ecological Risk (RECOVER) Consortium, and the Deep Pelagic Nekton Dynamics of the Gulf of Mexico (DEEPEND) Consortium attended the Tortuga Music Festival from April 7-9, 2017 in Fort Lauderdale, Florida. Proceeds from the annual event go to the Rock the Ocean Foundation, whose mission is to raise awareness of ocean issues through public events, such as concerts and festivals. As a part of their participation in the Tortuga Music Festival, Rock the Ocean hosted a Conservation Village that included games, booths, and other educational activities. To see a full list of exhibitors, including RECOVER, DEEPEND, and CARTHE, visit the festival website here. For pictures and more information on the festival and GoMRI’s participation, visit CARTHE’s Facebook page here, RECOVER’s Facebook page here, and DEEPEND’s Facebook page here and website here.

GoMRI researchers Ryan Rodgers, Chris Reddy, and Christoph Aeppli, in partnership with the National High Magnetic Field Laboratory, organized an outreach project and field experience for students from Florida State University School High (FSUS High). Approximately 25 students participated in the project, which included lab tours and a field sampling expedition to Fort Morgan, Alabama in early May. Some of the students filmed the trip with plans to create a mini-documentary of the experience. The final film will be available in the fall, so stay tuned.

The RECOVER Virtual Lab is now available for download from the App Store for use on the iPad.

Photo Captions: Left: CARTHE, RECOVER, and DEEPEND attend the Tortuga Music Festival. Photo Courtesy of Laura Bracken. Middle: Students from FSUS participate in field expedition to Fort Morgan, Alabama. Photo Credit: Ryan Rodgers.
Frequently Asked Questions

GoMRI is pleased to have Brad Benggio, Scientific Support Coordinator with NOAA’s Office of Response and Restoration, answer a few Frequently Asked Questions (FAQs) about his job, what scientific knowledge gaps remain in oil spill response, and how the science community can help in filling these gaps. We thank him for taking the time to answer a few questions about this important topic.

Question: Please tell us about your job as a Scientific Support Coordinator (SSC).

Answer: The NOAA Scientific Support Coordinator (SSC) is a member of NOAA’s Office of Response and Restoration Emergency Response Division team providing support to federal on-scene coordinators (FOSC) for response to oil and chemical spills that may affect navigable waterways and marine, coastal, and ocean environments. Scientific Support Coordinators are one of the “special teams” identified by the National Contingency Plan to assist FOSCs during response by providing important special skill sets and expertise needed to accomplish the response in accordance with safety and environmental protection needs. SSCs lead a team of individuals with a broad range of expertise. This team may consist of both NOAA and non-NOAA experts depending on the incident’s specific needs. Everything from chemistry, hazard assessment, pollutant tracking and movement forecasts, resources-at-risk identification, prioritization of protection and development of response and cleanup strategies, field assessments and monitoring, sampling, addressing seafood safety issues, water level, and hydrography or photogrammetry support are some of the typical skills the SSC can provide for emergency response. Often there are new issues or problems out of the ordinary that SSCs will be asked to deal with as well. SSCs generally also act as the natural resource trustee for the U.S. Department of Commerce, providing coordination and a single point contact during response for issues related to the protection of natural resources assigned to NOAA for management and protection. The SSC typically sits on various National Response Team committees and is a member of Regional Response Teams and Areal Planning Committees to provide NOAA representation and assistance for contingency planning as well as policy and guidance development.

I have been the SSC for the Southeast and Caribbean regions since 1992. In that time, I’ve responded to several hundred incidents and helped developed local regional and national plans that help guide response.

Question: Can you share examples of how you translated science to inform decisions during spill response?

Answer: Every incident that an SSC responds to involves using the best available science, either at hand or created for that incident in the field to make better response decisions and focus on the most important priorities. We utilize a variety of resources to help with this including oil spill and oil fate models; chemical data bases; weather forecasting and observation resources; ocean currents and water level information; environmental Sensitivity Index Maps (ESIs) to identify what resources in the area are most important to protect; and direct field observations, sample analyses, and monitoring of response actions. NOAA’s years of providing scientific support for response (since 1976) have equipped us with lots of experience and expertise on a worldwide stage under a multitude of conditions that not many responders have had access to. Dr. Jaqueline Michel, one of our contract team members is known for her quote, “I’ve never been to the same spill twice.” While it’s true that each incident comes with its own specific issues, the long history and breadth of spill experience that resides in the SSC program is extremely valuable when addressing a new incident.

Question: What are the largest science-related knowledge gaps related to oil spill response?

Answer: The largest knowledge gaps that I’ve dealt with as an SSC come from a few areas. 1) There is always imperfect knowledge that must be applied to response decisions. Experience and history, scientific studies, and longer-term restoration and recovery projects have taught us many things to help guide us in the decision process, but there is always uncertainty. Identifying where uncertainty exists and where it can be reduced is a priority when talking about knowledge gaps. We must ask ourselves in this quest: what do we know, what is unknowable, and what else can we determine or where are the areas we can improve knowledge and reduce knowledge gaps? 2) Another important area where we need to improve is with human factors. We need to do a better job communicating to the public and other stakeholders the science we use to make response decisions. We need to listen carefully to their concerns and be prepared to help them understand our decisions or perhaps modify them based on their valid concerns. We want to do the best we can do for the resources affected, and we want to do that in a way that...
Note from the Research Board Chair

Dr. Rita Colwell, University of Maryland & Johns Hopkins University

April 20, 2017 marked the seventh anniversary of the Deepwater Horizon oil spill. Over the seven years since the Gulf of Mexico Research Initiative (GoMRI) was launched, extensive studies have been funded that have focused on understanding impacts of this oil spill. The work has involved more than 3,500 scientists, of which approximately 1,000 are undergraduate and graduate students. The output has been extraordinary, with more than 850 journal articles and 1,500 sets of data deposited in a data bank. All of those data are publicly available. GoMRI represents, perhaps, the largest coordinated research effort of its kind, having produced a significantly increased understanding of the Gulf of Mexico ecosystem.

Highlights of the research accomplished to date are provided in the GoMRI-sponsored special issue of Oceanography Magazine, *GoMRI: Deepwater Horizon Oil Spill and Ecosystem Science*, which was released in September, 2016. This special issue recognized the anniversary of the oil spill and honored the memory of those workers who lost their lives. A summary article is now posted on the GoMRI website, which features scientific findings reported in that special issue. I invite you to visit the website and also the special issue of Oceanography Magazine.

Without the dedication and commitment of the scientists funded by GoMRI, and the accomplishments and impact of their research, the advancement of oil spill science that has been made would not have been possible. During the spring and summer months of this year, the GoMRI Management Team and members of the Research Board will carry out site visits to all of the twelve RFP-IV funded consortia. These visits provide a unique opportunity for the research teams to share their science with the Management Team and Research Board and for GoMRI management to interact and connect with the scientists and consortia staff.

In the coming year, we anticipate additional excellent science will be accomplished by the new RFP-VI consortia and individual investigators, as well as continuing excellent science accomplished by currently funded researchers. We look forward to exciting new findings, including those of our partners, notably the second documentary being completed this summer in partnership with Screenscope. We fully expect the flow of publications, seminar presentations, and articles from both our scientists and our partners at Sea Grant and the Smithsonian Ocean Portal will continue. We also wish to acknowledge the many productive interactions with our colleagues who are involved in response and restoration efforts, especially in conferences and workshops that allow connection of science findings from GoMRI to practical application. As we approach the year 2020, marking the tenth anniversary of the spill and, notably, the conclusion of GoMRI, it is anticipated that there will be significant transition from research to application in response and restoration, reinforcing the GoMRI legacy.
The Relationships of Effects of Cardiac Outcomes in Fish for Validation of Ecological Risk (RECOVER) Consortium recently featured a short video of a two-day old mahi mahi under the microscope opening its mouth for the first time to begin eating real food. The incredible video can be found on their Facebook page here.

The Consortium for Advanced Research on Transport of Hydrocarbon in the Environment (CARTHE) released a video in partnership with Waterlust describing the process the team undertook to develop their biodegradable GPS drifters. The creative and humorous short film shares the successes and the challenges CARTHE researchers faced while engineering the units, including finding a very specific material that could float, wouldn’t absorb water, and would biodegrade safely in the ocean. Be sure to check it out here.

Smithsonian’s Ocean Portal recently released their newest article in partnership with the Relationships of Effects of Cardiac Outcomes in Fish for Validation of Ecological Risk (RECOVER) consortium called From Larvae to Adults – Finding Impacts of an Oil Spill on Mahi Mahi. The article discusses RECOVER’s efforts to study oil impacts on mahi mahi from spawning, which involves Ph.D. student Lela Schlenker staying up through the night observing them in a large tank at the University of Miami, all the way through population dynamics, which includes the team capturing wild mahi mahi and tracking them using satellite tagging (a feat in and of itself due to mahi mahi’s sensitivity to stress and handling). RECOVER’s research has been shown that oil exposure impacts the fish from the reproductive and embryonic stages, all the way through the population level.

Check out the story, more photos, and videos here!

Dr. Rita Colwell, Chair of the GoMRI Research Board, was interviewed by Joan Michelson from Green Connections Radio, and Screenscope, Inc. shared highlights of the interview in their podcast series GulfCast. In the interview, Dr. Colwell talks about her career and the challenges she has faced as a woman in the sciences. Listen to the highlights on the GulfCast podcast here and the full interview here.

Dispatches from the Gulf received first place in the film festival held at the 2017 International Oil Spill Conference in Long Beach, California from May 15-18. Congratulations to Screenscope on this recognition! For more information on GoMRI’s participation in this conference, visit page 1.
High School Senior Presents Research at 2017 Gulf of Mexico Oil Spill and Ecosystem Science Conference

Ansley Chaplin is a senior at Davidson High School in Mobile, Alabama. Last summer, she was awarded the Russell Quackenbush scholarship, offered by Dr. Jeff Krause and funded by the National Science Foundation, to participate in a summer research experience that included a marine science course and the opportunity to spend two weeks doing research in Dr. Krause’s lab at the Dauphin Island Sea Lab. Dr. Krause created the program as a way of ‘paying it forward’ after his own experience being mentored by his high school marine biology teacher Mr. Russell Quackenbush.

For her research project, Ansley studied diatoms in Mobile Bay. In particular, she investigated the interaction between silicon and geranium on the diatom community in the bay. Diatoms make their shells out of silicon; if there is not enough silicon in the surrounding environment, they will not grow or reproduce. This is important because diatoms are at the base of the food chain, and low diatom abundances could have impacts on food availability all the way up the food chain. She continued her research with Dr. Krause’s lab as a part of her senior year project.

This past February, Ansley was invited to present her research at the 2017 Gulf of Mexico Oil Spill and Ecosystem Science conference during one of the poster sessions. Her poster was titled Magnitude and Spatial Variability of Large Siliceous Particles on the Mississippi-Alabama Shelf During the Spring of 2016 and gave credit to the CONCORDE consortium. Visitors to her poster commented that she fit right in with the other scientists sharing their research and was very knowledgeable about her work; Tina Miller-Way from the Dauphin Island Sea Lab said Ansley was excited to be there and was pleased that visitors to her poster were interested in the science, too, not just her experience as a high school student participating in the conference.

Read more about Ansley’s experience here and here. Congratulations, Ansley!

Keep up with the Consortia Blog Roll and Social Media

Some of the consortia have updated their blogs. Check them out here:

CARTHE, including updates from their recent SPLASH cruise: Measure, Model, Mitigate
C-IMAGE: C-IMAGE Blog
CRGC: CRGC News
CWC: Marsh Edge-U-Cation
DEEPEND: Cruise Blogs
DROPPS: A Day in the Life of a DROPPster
RECOVER: RECOVER News

Many consortia are active on social media, including Twitter, Facebook, and Instagram. Follow along!

ACER: Facebook, Instagram
ADDOMEx: Facebook, Twitter, Instagram
CARTHE: Facebook, Twitter
C-IMAGE: Facebook, Twitter
CONCORDE: Facebook, Twitter, Instagram
CRGC: Facebook
CWC: Facebook, Instagram
DEEPEND: Facebook, Twitter, Instagram
DROPPS: Facebook, Twitter
ECOGIG: Twitter, Instagram
RECOVER: Facebook, Twitter