GULF OF MEXICO RESEARCH INITIATIVE
WINTER ISSUE 2018
NEWSLETTER

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/

Upcoming Events

ASLO 2018 Summer Meeting

June 10-15, 2018

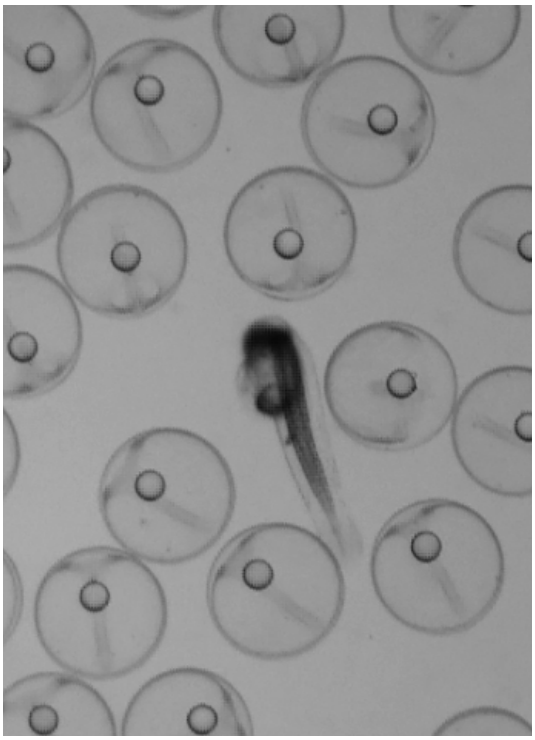
Vancouver, British Columbia

If you are attending, be sure to check out the special session SS01: Oil and Water Do Mix! organized by DROPPS Consortium Director Ed Buskey and Kenneth Lee

2018 Clean Gulf Conference

November 13-15, 2018

New Orleans, Louisiana



Mahi mahi embryos beginning to hatch. GoMRI researchers developed a transcriptomic database of mahi embryos and larvae that had been exposed to oil. They discovered that many genes were altered due to oil exposure, indicating that some genes could act as biomarkers to predict toxicity and recovery post-oil exposure. Read more here and in the Science Corner section of this issue. Photo Credit: RECOVER.

Gulf of Mexico Oil Spill & Ecosystem Science Conference 2018

Oil Spill Scientists, Responders, and GoMRI Community Gather in New Orleans for 2018 Gulf of Mexico Oil Spill and Ecosystem Science Conference

The 2018 Gulf of Mexico Oil Spill and Ecosystem Science (GoMOSES) conference was held from February 5-8, 2018 at the Hyatt Regency in New Orleans, Louisiana. This year's conference theme was *Response, Restoration, and Resilience in the Gulf*, and the goal was to continue efforts to bring together members of academia, industry, government agencies, and the response community to "explore how fundamental science can help restore and maintain Gulf ecosystem integrity, inform response strategies, and strengthen resilience." In order to more fully address the conference theme and better facilitate interdisciplinary discussions, conference organizers built the program around six topical tracks and mini sessions. More than 850 people from 11 countries participated in 24 scientific sessions and 7 mini-sessions, including 308 oral presentations (88 from students) and 135 posters (67 from students). This year's conference was sponsored by 14 partners, including major support from the Gulf of Mexico Research Initiative (GoMRI) and the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine.

The opening plenary, called *The Three R's of Gulf Research: Response, Restoration, and Resilience*, focused on the current state of oil spill science and how the GoMOSES conference can serve as a forum for understanding and addressing the knowledge gaps that remain. Geraldine Richmond, Presidential Chair in Science at the University of Oregon, gave a keynote address, *Mulling Over Emulsions: Interfacial Molecular Structure and Absorption at Oil-Water Interfaces*. Following the keynote, Ann Hayward-Walker from the SEA Consulting Group, Robert Twilley from Louisiana State University, and Larry McKinney from the Harte Research Institute for Gulf of Mexico Studies each presented on the current state of science in their respective fields and what challenges still need

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to be addressed. Speaker biographies are available here.

Several workshops, poster sessions, and other events took place throughout the week. The Center for the Integrated Modeling and Analysis of the Gulf Ecosystem (C-IMAGE) partnered with the Marine Technology Society on a TechSurge event, featuring technological advances generated by GoMRI researchers. More information on the TechSurge event can be found on page 3 of this issue. The Consortium for Ocean Leadership and the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine supported the James D. Watkins Student Award for Excellence in Research for best student oral presentations. This year's awardees were Smruthi Karthikeyan from Georgia Institute of Technology, Rebekka Larson from the University of South Florida, Jesse Ross from the University of New Hampshire, Samantha Setta from Texas A&M University at Galveston, and Nicholas Turner from Nova Southeastern University. GoMRI congratulates the winners on receiving this award. The National Oceanographic Partnership Program (NOPP) also presented its Excellence in Partnering Award to the Gulf of Mexico Shipwreck Corrosion, Hydrocarbon Exposure, Microbiology, and Archaeology Project (GOM-SCHEMA) led by Dr. Leila Hamdan from the University of Southern Mississippi and Melanie Damour from the Bureau of Ocean Energy Management. Finally, Screenscope Films screened *Dispatches from the Gulf 2* twice during the week, and the Ecosystem Impacts of Oil and Gas Inputs to the Gulf (ECOGIG) consortium presented their 16-minute documentary, created as a part of their *Jewels from the Gulf* expedition.

The conference concluded with the closing plenary, which featured a panel discussion on *The Future of GoMOSES: Maintaining Momentum and Seeking Synergy*. The panel was moderated by Laura Bowie from the Gulf of Mexico Alliance and included Chuck Wilson from GoMRI, Libby Fetherston-Resch from the Florida RESTORE Center of Excellence, Larry McKinney from Harte Research Institute for Gulf of Mexico Studies, Evonne Tang from the Gulf Research Program, and Chris D'Elia from the Gulf of Mexico University Research Collaborative. Throughout the plenary, panelists took questions and received comments from attendees on what role the GoMOSES conference can play in the community beyond the end of the GoMRI program in 2020.

More information on this year's conference can be found here. An official report will also be posted to the website soon.

GoMRI Newsmakers

Coastal Waters Consortium (CWC) doctoral candidate and GoMRI Scholar Yu Mo received the grand prize in the American Geophysical Union's (AGU) 2017 Data Visualization and Storytelling Competition. The goal of the contest, which is open to undergraduate and graduate students at U.S.-based institutions, is to inspire "innovation and creativity [for] presenting data in new ways." Applicants are judged on how clearly they present their data, the perceived level of engagement by their audience, and how well their presentation is organized. Six grand prize winners were selected in the 2017 competition, include Yu. Their prizes included a travel grant and registration to attend the 2017 AGU Fall Meeting, a travel grant to attend another Earth and space science meeting in 2018, and the opportunity to share their data story at the NASA HyperWall (either at AGU or at another meeting). Yu's presentation can be read here. Congratulations, Yu!

GoMRI Research Board member Dr. Peter Brewer recently received the Award for International Scientific Cooperation of the Chinese Academy of Sciences (IOCAS), given to honor "eminent foreign experts who have made outstanding contributions to facilitating cooperation with CAS in science and technology," in an effort to "strengthen CAS's science and technology innovation capacity and lead to improvement in its research performance, education and training, management, and reputation in the international scientific community." Dr. Brewer accepted the award in Beijing in January. For more information on Dr. Brewer's recognition, including an inspiring story on how he became involved with CAS and a video recognizing his many accomplishments, please visit the GoMRI website here. The GoMRI community congratulates Dr. Brewer on this distinguished honor!

Photo Caption: Dr. Brewer accepts the Award for International Scientific Cooperation of the Chinese Academy of Sciences. (L-R) Deputy Head of the Chinese Academy of Sciences, Dr. Brewer's wife Hilary, Dr. Brewer. Photo Credit: Peter Brewer.

C-IMAGE Partners with Marine Technology Society on TechSurge

Contributing Author: Sherryl Gilbert, C-IMAGE Assistant Director

The Center for the Integrated Modeling and Analysis of the Gulf Ecosystem (C-IMAGE) partnered with the Marine Technology Society (MTS) to host a TechSurge event on February 5, 2018 in New Orleans, Louisiana. The goal of the *MTS TechSurge: Advancing Oil Spill Technology, Beyond the Horizon* program was to host sessions focused on key technological advancements that have pushed boundaries on how scientists observe and study the marine environment.

The workshop began with brief remarks from Steve Murawski, Director of C-IMAGE at the University of South Florida, and Richard Spinrad from Oregon State University and President-Elect of MTS. The workshop was composed of four panels focused on different aspects of marine oil spills: Modeling and Predication, Technology for Detection, Mitigation, and Ecosystem Health. Each panel featured a moderator and four to five panelists, including members from the GoMRI community and other leaders in oil spill science, who spoke briefly about their work and took questions from the audience. Several additional presenters were highlighted during a lunch poster session. The workshop concluded with closing remarks from Steve Murawski and Richard Shaw, a GoMRI Research Board member from Louisiana State University.

"GoMRI has developed many new technologies for laboratory and field studies related to oil spills and oceanography in general. TechSurge, a collaborative endeavor between MTS and GoMRI, provided an excellent opportunity to share those results with the larger marine technology community." Dana Yoerger, Senior Scientist at the Woods Hole Oceanographic Institution and member of the GoMRI Research Board

Photo Caption: GoMRI and MTS communities gather for MTS TechSurge: Advancing Oil Spill Technology, Beyond the Horizon. Photo Credit: Sherryl Gilbert, C-IMAGE.

In addition to providing a forum for the GoMRI and MTS communities to share their work and discuss opportunities for collaboration and development, workshop organizers plan to publish a special issue of the Marine Technology Society Journal highlighting these technological advances. Manuscripts are due on June 20, 2018, and the journal will be released in December 2018. For more information on the MTS TechSurge series, please visit their website here, and for more information on C-IMAGE, please visit their website here.

"This TechSurge reflects the value that the Marine Technology Society can bring to topical and challenging problems. By convening scientists, technologists, decision-makers, and educators for a meaningful discussion, we can identify the best ways forward and most impactful solutions. Given the daunting challenges associated with understanding the science of oil spills, this TechSurge is both timely and relevant. Many of us look forward to the outcomes and recommendations that will ensue." Richard Spinrad, Oregon State University and MTS President-Elect

GoMRI-funded consortia Deep Pelagic Nekton Dynamics of the Gulf of Mexico (DEEPEND) and Ecosystem Impacts of Oil and Gas Inputs to the Gulf (ECOGIG) participated in the BBC-produced documentary series *Planet Earth: Blue Planet II*. The series, which is narrated by David Attenborough, includes seven episodes focused on exploring the world's ocean. DEEPEND researchers are featured in Episode Two called The Deep, which explores the unique ecosystems in the deep ocean. While filming for the series, ECOGIG's Director Dr. Mandy Joye dove in a submersible with Dr. Sylvia Earle to explore brine pools at the bottom of the ocean. See a clip here! Be sure to check out *Blue Planet II's* website for more information on both the documentary series and their digital project, *Our Blue Planet*, which is working to get people talking about the importance of the ocean.

Don't forget to check out GoMRI's YouTube Channel here.

Sea Grant
Texas • Louisiana • Florida
Mississippi-Alabama

Image Credits: Gulf of Mexico Sea Grant Oil Spill Science Outreach Program.

The Sea Grant Oil Spill Science Outreach Team hosted the final seminar in their series *Responding to Oil Spills* on January 9, 2018, in Lacombe, Louisiana on *Offshore and Deep Sea Habitats*. The seminar, hosted by the U.S. Fish and Wildlife Service at the Southeast Louisiana National Wildlife Refuges Complex, brought together scientists, responders, and natural resource managers to discuss oil spill preparedness in offshore environments. The team also hosted a workshop at the 2018 Gulf of Mexico Oil Spill and Ecosystem Science conference on February 5, 2018 in New Orleans, Louisiana called *Sharing Science Effectively: Know Your Audience and Speak Their Language.* The goals of the workshop were to discuss common challenges scientists face when presenting their research and to provide tips on how to reach different audiences and refine presentation slides. The workshop was instructed by Dennis Meredith, a science journalist and communicator who has worked at research universities and with media outlets. The next seminar will take place on March 29, 2018 in Galveston, Texas, called *Oil Spill Response, Assessment, and Restoration: Marine Mammals.* The seminar will feature marine mammal research and discussions on how to best integrate research with response, restoration, and recovery of their populations in the event of future oil spill events. More information on these seminars, including summaries and recordings of past seminars, are available on the Gulf Sea Grant website here.

The Sea Grant Oil Spill Science Outreach Team has also released a new publication and one-page fact sheet. The publication *Corals and Oil Spills* discusses deep sea coral communities in the Gulf, how they were impacted by the Deepwater Horizon Oil Spill, and how the communities are recovering. The one-page fact sheet *Creating Healthy Communities to Overcome Oil Spill Disasters* shares how communities are impacted by disasters and what resources are available to help promote resiliency and restoration following traumatic events. More information on these publications is available on the Gulf Sea Grant website here.

GoMRI Scholars in Action

GoMRI recognizes 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 research 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!


Photo Credit: Brian Jones


Photo Credit: Anna Perez-Umphrey

Grad Student Hoover Examines How Freshwater Discharge Affects Gulf Larval Fish (Pictured at Left)

Grad Student Snider Examines Seaside Sparrows Diet for Food Web Impacts from Oiling (Pictured at Right)

Grad Student Leftwich Unites Dolphin Research and Secondary Education

Education Spotlight

The Deep Pelagic Nekton Dynamics of the Gulf of Mexico (DEEPEND) consortium recently published a timeline featuring images of the incredible biodiversity they encountered during their five research cruises in the Gulf of Mexico from May 2015 to May 2017. It lists the date the species was encountered with an image of the animal. Dante Fenolio from DEEPEND captured the spectacular images and created the timeline to serve as a visual representation of the amazing diversity that exists in the deep Gulf of Mexico. Check it out here.

DEEPEND also recently released their sixth teaching and learning module, *Nature of Science*. The goal of the module is to help teachers integrate the scientific method into their curriculum, using DEEPEND research as examples. The module is designed for students in grades 6-12 and is available here. Be sure to check out all of DEEPEND's lessons plans and teacher resources here.

GoMRI researchers and outreach coordinators from 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 RFP-V researcher Dr. Villy Kourafalou's Coastal Modeling group collaborated on a booth at the 2018 ArtSea Festival on March 3 in Miami, Florida. The goal of the ArtSea Festival is to bring the community together to learn about and celebrate the ocean by sharing and creating ocean conservation-themed art. The shared booth, called "Go with the Flow," focused on ocean currents, why scientists study them, how drifters work, and the impacts of oil on marine organisms. Visitors to the booth viewed larval mahi mahi under the microscope and painted wooden drifter plates. For more information on the festival and GoMRI's participation, please visit RECOVER's website here and CARTHE's Facebook page here.

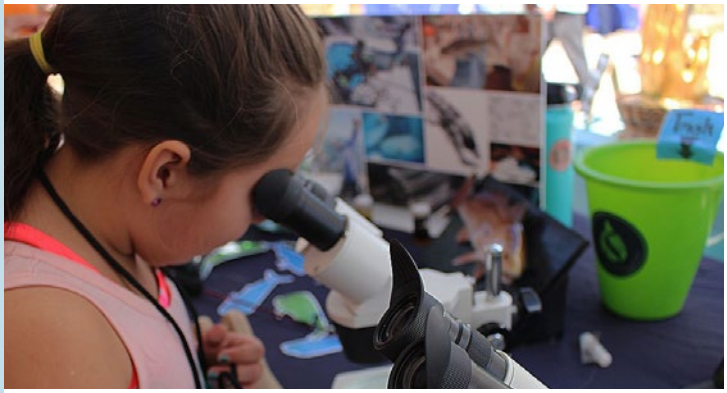

Photo Captions: (Top) Visitors to the CARTHE table at the ArtSea Festival learned about the Bay Drift Project and painted drifter plates. (Middle and Bottom) Visitors to the RECOVER table viewed mahi larvae under the microscope and could stage virtual experiments using RECOVER's Virtual Lab application. Photo Credits: CARTHE and RECOVER.

Photo Credit: Screenscope.

DISPATCHES *From the Gulf*

Screenscope Film's *Dispatches from the Gulf 2* premiered at the 2018 Environmental Film Festival in Washington, D.C. on March 20. The film was also shown twice at the 2018 Gulf of Mexico Oil Spill and Ecosystem Science (GoMOSES) conference. For more information on upcoming screenings, including how to request one in your area, visit the *Dispatches from the Gulf* website here.

Screenscope is also releasing new short videos, created to supplement the second documentary, on their YouTube Channel here. GoMRI has launched a social media campaign in partnership with Screenscope to highlight the new shorts; follow along on the GoMRI Twitter page here, using the hashtag #50shorts! Finally, if you are an educator, librarian, homeschooler, or community activist, you can request a free copy of *Dispatches from the Gulf 2* here.

GoMRI Researcher Interview with Dr. Tim Slack

Dr. Tim Slack from Louisiana State University answered a few questions about his RFP-V project, *Understanding Resilience Attributes for Children, Youth, and Communities in the Wake of the Deepwater Horizon Oil Spill*, and his work with the Consortium for Resilient Gulf Communities (CRGC).

1. Thank you for talking with us! Tell us a bit about your RFP-V research project. What are the goals of your project?

We call our RFP-V project RCYC: the Resilient Children, Youth, and Communities project. It was established by a grant from GoMRI in 2016 and is a collaboration between researchers in Louisiana State University's (LSU) Department of Sociology and Columbia University's National Center for Disaster Preparedness. The project poses the following research questions: 1) What are the social and public health impacts associated with the 2010 Deepwater Horizon oil spill (DHOS)? 2) What attributes of households are related to greater resilience to negative disaster impacts? 3) What role do online networks play in facilitating resilience? and 4) How do all of the above change over time? We are engaging a three-pronged research design to help us meet these objectives. First, we are creating a three wave longitudinal survey dataset with roughly 500 respondents collected in 2014, 2016, and 2018. A multi-stage sampling design using spill and claims data was originally used to select zip codes, census blocks, and households with children in spill affected areas of South Louisiana in 2014. We then followed up with this same cohort in 2016 and are preparing to do so again now in 2018. Second, in 2017, we drew a purposive subsample of survey respondents to conduct six focus groups in different communities in South Louisiana. Our aim was to capture in-depth qualitative data about participants' experiences with the DHOS to triangulate with our quantitative survey data. We ultimately had 46 participants take part in our focus groups. Last, we are using a geospatial query tool to access and analyze social media data from Twitter. We are in the process of examining over 500,000 Twitter records from 2010-2016 relating to the DHOS. Our survey instrument and focus groups also ask about social media use during the DHOS. All of this work is still very much in motion.

2. You are also a co-principal investigator with the Consortium for Resilient Gulf Communities (CRGC). Could you tell us a bit more about your work with CRGC?

The Consortium for Resilient Gulf Communities (CRGC) is a transdisciplinary, multi-institutional consortium led by Dr. Melissa Finucane at the RAND Corporation in partnership with researchers in the Department of Sociology at LSU; the ByWater Institute, the Disaster Resilience Leadership Academy, and the Department of Computer Science at Tulane University; the Coastal Resource and Resilience Center at the University of South Alabama; and the Louisiana Public Health Institute. It was established by a grant from GoMRI in 2015 to assess and address the social, economic, and public health impacts of the DHOS in the Gulf of Mexico region. CRGC's research, outreach, and education goals are aimed at helping communities across the Gulf Coast to more effectively understand, withstand, and overcome the multiple stressors brought on by such disasters. My role with CRGC is twofold. One is that I lead the Education Subteam, which oversees our mentoring efforts with undergraduate and graduate students (we have close to 50 students involved in the project). I am also a member of the Health and Wellbeing Subteam, whose major role was fielding the Survey of Trauma, Resilience, and Opportunity in Neighborhoods in the Gulf (STRONG), a random digit dial landline and cell phone survey of households in the 56 coastal counties and parishes in Texas, Louisiana, Mississippi, Alabama, and Florida.

3. What is your background and how did you get involved with this kind of work?

I am a sociologist by training. My research agenda coalesces around the areas of social stratification, social demography, community, and environment. I am also interested in understanding aspects of human geography and space, like the rural-urban continuum, as axes of inequality in society. I became interested in issues related to the Gulf's "human coast" by virtue of being a sociologist at LSU, Louisiana's public flagship and Land Grant University. The coastal region of Louisiana is absolutely vital to our state's culture and economy, and it is under tremendous threat from both natural and man-made forces. Land Grant Universities exist to serve their state and so working on these issues is one way I can honor that mission.

4. Can you share a bit more about the types of questions or information that are collected in the surveys you indicate above, as a part of your RFP-V project and STRONG, and from the social media records?

Both the RCYC survey and STRONG ask questions related to DHOS exposure, physical and mental/behavioral health, networks and social capital, perceptions of risk and resilience, and economic status. The RCYC sample is drawn from a smaller, more targeted geography in South Louisiana, while

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the STRONG sample is drawn from Gulf Coast counties and parishes spanning from Florida to Texas.

The kinds of information we are assessing from the social media data include how the content and meanings of tweets change over time, as well as how the actions of highly retweeted users change.

5. What are some of the most significant or exciting findings so far in your GoMRI-funded work, both through your work with CRGC and your RFP-V project?

In both cases our research is still very much ongoing and findings are preliminary, so I'm hesitant to stake firm claims at this point. But suffice it to say that despite the DHOS being out of the major national news cycle for seven years now, many people in the most affected region of the Gulf are still reckoning with it in terms of their lives and livelihoods.

6. We look forward to seeing the results of your projects! How do you anticipate the results of these studies will inform community resiliency and preparedness in the future?

I think there are a few broad ways to anticipate the results of these studies informing community resilience and preparedness in the future.

The first is that the RCYC survey data will give us longitudinal data among households in a targeted geography. Most data on human disaster impacts provides a snapshot of things at a single point in time. But because disasters are processes of social disruption, getting at changes within households over time will provide unique information. Also, focusing on a targeted geography is helpful because big population surveys have the potential to wash-out geographically localized impacts.

Second, one thing that is often lacking in resilience research is having baseline data. Most of the time data collection is funded after the disaster catalyst has occurred. The STRONG data now provide that regional baseline for future disasters. In fact, CRGC has recently secured funding from GoMRI and the National Science Foundation—the latter under the direction of Dr. Rajeev Ramchand at RAND—to follow-up with the original STRONG sample, which will allow a before and after picture following Hurricanes Harvey and Irma in 2018.

These are just some of the ways we'll be able to better inform the community resilience and preparedness discussion.

7. If funding were not an issue, what would you add to your GoMRI-funded projects?

This is easy to answer! First, I would want to have solid baseline data, in this case prior to the DHOS. Second, I would want larger and more representative samples to allow for better population generalizations and group comparisons. Third, I would want all of the data collection I've been involved with to be supported longitudinally over the long term. Really understanding the impacts of social system shocks like disasters requires the ability to treat them as a process subject to change over time; it is not something you can adequately capture with a few snapshots. Having really good baseline data and being able to follow large numbers of people over many years would put us in the best position to really understand these issues.

Keep up with the Consortia Blog Roll and Social Media

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

CRGC: News

DEEPEND: Blog

DROPPS: A Day in the Life of a DROPPSTER

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: Facebook, Twitter, Instagram

LADC-GEMM: Facebook

RECOVER: Facebook, Twitter

GRIIDC continues to share data-related stories on their website. Check out some of their recent posts.

GRIIDC Participates in Meetings Hosted by DataONE and ESIP

GoMRI Research Board Member Writes Data Sharing Article for Eos

What a Difference a Year Makes: GRIIDC 2017 Year in Review

Smithsonian Institution Ocean portal ocean.si.edu

Smithsonian Ocean Portal has recently released two new articles featuring GoMRI-funded science. *Seeing with Sound: Acoustic Monitoring of Beaked Whales Can Help Determine Oil Spill Impacts* shares how scientists are using sound to better understand marine mammal populations in the Gulf of Mexico, particularly species that live deep in the Gulf and are hard to track visually. By using sonar to listen in on the whales communicating via echolocation, scientists can gain insight into how many animals there are, when and how they feed, and ultimately how they have been impacted and are recovering from the Deepwater Horizon oil spill. The article features scientists from the Center for the Integrated Modeling and Analysis of the Gulf Ecosystem (C-IMAGE), funded by GoMRI, the Scripps Whale Acoustics Lab, and the Centre for Research into Ecological and Environmental Modelling at St. Andrews University. Read more here.

The Gulf of Mexico: A Deep-Sea Treasure Trove of Fishes shares how scientists are learning that the mesopelagic region of the Gulf of Mexico, the area between 650 and 3,300 feet below the sea surface, is one of the most diverse mesopelagic regions in the world with more than 800 species. Researchers believe that diversity is the result of the Gulf's unique location, variable temperatures, and interaction with the Mississippi River. Scientists have discovered nearly 200 new species in the Gulf since the Deepwater Horizon oil spill, and they are certain there are many more places across the globe with as much or more diversity waiting to be explored. The article features images and research from the GoMRI-funded Deep Pelagic Nekton Dynamics of the Gulf of Mexico (DEEPEND) consortium. Check it out here.

Science Corner

Published Science Highlights from the GoMRI Program

Study Investigates Species-Specific Differences in Fish Metabolism of Deepwater Horizon Oil

E.L. Pulster, K. Main, D. Wetzel, S. Murawski

Environmental Toxicology and Chemistry, 2017, Vol. 36(11), pgs. 3168-3176

Study Improves Disaster Resilience Training for Community Health Workers

K. Nicholls, S.J. Picou, S.C. McCord

Journal of Public Health Management and Practice, 2017, 28961657

Study Explores Complex Dispersant Effects on Marine Oil Snow Formation

U. Passow, J. Sweet, A. Quigg

Marine Pollution Bulletin, 2017, Vol. 125(1-2), pgs. 139-145

Study Quantifies Deep Ocean Degradation Rates for Individual Crude Oil Compounds

A.E. Thessen, E.W. North

Marine Pollution Bulletin, 2017, Vol. 122(1-2), pgs. 77-84

Modeling Study Characterizes Droplet and Bubble Formation in Subsea Oil Spills

L. Zhao, M.C. Boufadel, T. King, B. Robinson, F. Gao, S.A. Socolofsky, K. Lee

Marine Pollution Bulletin, 2017, Vol. 120(1-2), pgs. 203-216

Modeling Study Develops Approach to Compare Oil Slick Dispersion Scenarios

M. Zeinstra-Helfrich, W. Koops, A.J. Murk

Journal of Geophysical Research: Oceans, 2017, Vol. 122(9), pgs. 7312-7324

Study Develops Fish Genetic Database for Oil Toxicity Analysis

E.G. Xu, E.M. Mager, M. Grosell, E.S. Hazard, G. Hardiman, D. Schlenk

Scientific Reports, 2017, Vol. 7, Article Number: 44546

Study Estimates Reduced Nitrogen Removal Capacity in Marshes with Vegetation Loss

S.E. Hinshaw, C. Tatariw, N. Flournoy, A. Kleinhuizen, C. Taylor, P.A. Sobecky, B. Mortazavi

Environmental Science and Technology, 2017, Vol. 51(15), pgs. 8245-8253

Study Uses Fiddler Crabs and Periwinkle Snails to Monitor Long-Term Marsh Health After Oil Spill

D.R. Deis, F.W. Fleeger, S.M. Bourgoin, I.A. Mendelssohn, Q. Lin, A. Hou

PeerJ, 2017, 5:e3680

Study Uses Radioisotopes to Trace Marine Oil Snow Associate with Deepwater Horizon

P.T. Schwing, G.R. Brooks, R.A. Larson, C.W. Holmes, B.J. O'Malley, D.J. Hollander

Environmental Science and Technology, 2017, Vol. 51(11), pgs. 5962-5968

Study Finds Clay Nanotubes Yield More Efficient Oil-Water Emulsions than Spherical Particles

R. von Klitzing, D. Stehl, T. Pogrzeba, R. Schomacker, R. Minullina, A. Panchal, S. Konnova, R. Fakhrullin, J. Koetz, H. Mohwald, Y. Lvov

Advanced Materials Interfaces, 2017, Vol. 4(1)

To see all GoMRI publications, please visit the GoMRI Publication Database.

Note from the Research Board Chair

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

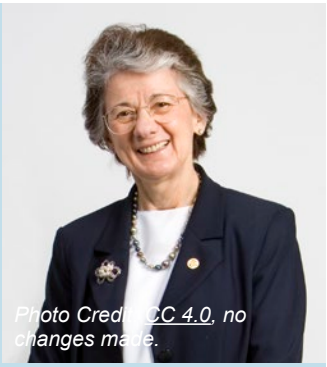

Photo Credit: CC 4.0, no changes made.

The 2018 Gulf of Mexico Oil Spill and Ecosystem Science (GoMOSES) conference in New Orleans, Louisiana was a splendid event and provided an opportunity for me to make opening plenary remarks on behalf of the Gulf of Mexico Research Initiative (GoMRI) Research Board. During the conference this year, it was clear that it has come a long way since the inaugural GoMRI meeting in 2011, that was also held in New Orleans. An important question for the GoMRI Research Board back in 2011 was how to share GoMRI science with the at-large community in an annual meeting. Government and non-governmental organizations would be needed as partners for meaningful exchange of research findings. The annual meeting quickly morphed into GoMOSES by 2013. In the five years since GoMOSES was initiated, the conference has evolved into a major forum where scientists from the academic community can interact and share ideas with industry, government, and the response and restoration communities with an interest in the science and resiliency of the Gulf. It is now clear that active and productive collaboration is occurring across sectors and research disciplines in the many workshops and side meetings. Sharing of information occurs in conference sessions and among the attendees, and these interactions make GoMOSES unique and exemplary. The GoMOSES conference provides an opportunity for our GoMRI-funded consortia and individual investigators, including graduate students, many of whom have participated in every conference since 2013, to convene and share results of their research.

GoMOSES would not be as effective and stimulating without participation of those agencies and research teams that comprise the GoMOSES Executive Committee, which includes contributing scientists, but also sponsors. The GoMRI Research Board is grateful for the contributions of the co-sponsors who make the GoMOSES conference the unparalleled success it has become.

The closing plenary of the most recent GoMOSES conference included discussion of its future, that is, when GoMRI funding ends. From that plenary, it was clear the community is convinced that GoMOSES provides a critical intersection for the scientific, response, restoration, and resource management communities. I sincerely wish GoMOSES will continue to serve as a vital forum after GoMRI concludes its work in 2020, making it one of the lasting legacies of the program.

Frequently Asked Questions

Principal Investigator Dr. Eric Chassignet and Scientific Director Dr. Steve Moray from the Consortium for Simulation of Oil-Microbial Interactions in the Ocean (CSOMIO) and Principal Investigator Dr. Lori Schwacke from the Consortium for Advanced Research on Marine Mammal Health Assessment (CARMMHA) answered a few questions about their newly funded RFP-VI consortia.

CSOMIO: Dr. Eric Chassignet and Dr. Steve Moray

Question: Please tell us a bit about your consortium! What are the goals of CSOMIO's research?

Answer: The Consortium for Simulation of Oil-Microbial Interactions in the Ocean (CSOMIO, pronounced see-so-me-o) is working to synthesize recently developed technology, tools, and scientific knowledge into a comprehensive framework for simulating and understanding the role that microbes play in mitigating the impacts of oil spills. The consortium's overarching goal is to combine recent model developments and results from field- and laboratory-based microbial studies in order to fundamentally advance understanding of how microbial biodegradation influences accumulation of petroleum in the water column and in marine sediments of the deep ocean and the shelf and to investigate the impacts of potential future oil spills under different temperatures, oxygen levels, suspended

CSOMIO
Consortium for Simulation of Oil-Microbial Interactions in the Ocean

Logo courtesy of CSOMIO.

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particulate matter, transport, and bathymetric regimes, all of which would influence biodegradation. The CSOMIO Earth System Model will be an open source product for application in scenario planning, scientific studies, and oil spill response.

Question: What is something you are looking forward to or most excited about regarding CSOMIO's work?

Answer: The Deepwater Horizon oil spill resulted in an unprecedented commitment to study and better understand different aspects of the fate of oil released in the northeast region of the Gulf of Mexico in 2010. Countless research teams supported by GoMRI have spent considerable resources developing modeling tools, collecting and analyzing measurements, and performing scientific studies to understand different aspects governing the eventual fate of the oil. Together, these efforts have provided the basis for development of vastly improved modeling tools for tracking the distribution and chemical evolution of oil. But one area where our understanding remains quite limited is the role that microbes play in determining the eventual fate of oil, its impact on ecosystems, and how these processes depend on environmental conditions (hydrographic and biogeochemical properties of the water and circulation), hindering predictive capability. CSOMIO's integrated modeling system will simulate and thus help us better understand the role that microbes play in mitigating the impacts of oil spills. Other expected outcomes include the ability to predict the impact of oil spills occurring under different temperature, hydrodynamic, and biogeochemical regimes, a consistently annotated synthesis of genomic and transcriptomic data for the Gulf of Mexico, and the elucidation of mechanisms relating hydrocarbon degradation to microbial community dynamics, flocculation, and sediment transport processes.

Question: Where can we go to learn more and follow along with CSOMIO?

Answer: You can learn more about CSOMIO at the consortium's website www.csomio.org. We can also be followed on Facebook at www.facebook.com/CSOMIO and on Twitter at twitter.com/C_SOMIO.

CARMMHA: Dr. Lori Schwacke

Question: Please tell us a bit about your consortium! What are the goals of CARMMHA's research?

Answer: After the Deepwater Horizon (DWH) oil spill, a number of studies were conducted to understand the potential effects on cetaceans (dolphins and whales) in the Gulf of Mexico. The DWH studies were a significant step forward in our understanding of oil-associated toxic endpoints in cetaceans, but many questions still remain unanswered. Specifically, questions still linger regarding the persistent effects on cetacean cardiac and immune systems and how these and other adverse effects may affect population health into the future.

Logo courtesy of CARMMHA.

CARMMHA is focused on answering these lingering questions and brings together internationally renowned experts from multiple disciplines, including marine mammal medicine, cardiology, immunology, toxicology, ecology, and mathematical modeling. Over the next two years, CARMMHA's goal is to develop a thorough and comprehensive understanding of long-term adverse health effects from oil exposure in cetaceans and to produce a suite of mathematical models using the best-available data from before, during, and the eight years after the spill to predict population recovery trajectories for the injured cetacean stocks.

Question: What is something you are looking forward to or most excited about regarding CARMMHA's work?

Answer: Over the eight years following the DWH spill, an immense amount of data has been collected. I'm really looking forward to integrating and synthesizing all the knowledge and information that we have acquired in the near decade after the DWH spill, to understand the long-term impact that the spill has had on Gulf cetacean populations. One of the primary challenges in assessing effects of the DWH spill was the lack of information on the health of dolphin populations before the spill. One thing that I am particularly excited about is getting the chance to assess the health of a dolphin population that inhabits the deeper coastal waters. Previous marine mammal health work in the Gulf of Mexico has been limited to inshore populations where they are more easily sampled. CARMMHA will, for the first time, attempt to evaluate the health of the northern coastal stock of bottlenose dolphins.

Question: Where can we go to learn more and follow along with CARMMHA?

Answer: For more information visit www.carmmha.org and follow us on our Facebook page. As the project progresses, we will be introducing a video series on YouTube highlighting the many ways which oil affects dolphins and also featuring updates from our research and fieldwork. Additionally, we are developing presentations and hands-on activities for kids which will be available to download on the website this summer.