

**FEDERAL RESEARCH OPPORTUNITIES RELATING TO THE GULF COAST OIL SPILL
UPDATED: JUNE 11, 2010**

The following pages provide information on the ways in which the various federal research agencies are responding to the Deepwater Horizon Oil Spill in the Gulf of Mexico. This information will be updated as needed to reflect new activities and potential funding opportunities for the academic research community to assist in responding to the crisis in the Gulf.

This document will address the following federal agencies and departments:

- National Science Foundation
- National Oceanic and Atmospheric Administration
- U.S. Geological Survey
- Department of Health and Human Services (including the National Institutes of Health)
- Department of Energy
- Environmental Protection Agency

Information about BP funding is also included in this document. For ongoing information on the federal government's unified response to the spill, you are encouraged to visit www.deepwaterhorizonresponse.com.

NATIONAL SCIENCE FOUNDATION (NSF)

Near-term Funding: Rapid Response Research (RAPID) awards are the mechanism through which NSF is allocating its funding in response to the oil spill in the near-term. While the directorates for Biological Sciences (BIO) and Geosciences (GEO) are taking the NSF lead, NSF programs all have some money to spend on RAPID grants. Faculty should contact the appropriate program officer with their idea. The idea (while connected to the emergent situation) must still be tied to a specific research question – not just monitoring/collecting information. If the program officer thinks the idea is merit based and on budget (maximum \$200,000), they will recommend faculty submit the proposal. NSF can turn around a response in one to two weeks with no outside approval needed. (Please see Appendix A for a complete list of RAPID awards.)

Near-term Research Interests: NSF is currently getting significant interest from the geochemistry community (especially for research related to the water column), but, as the oil interacts with the coast/beach, they also expect there to be research proposed in sediment geochemistry and geology. They also expect the Earth sciences funding divisions and others to become involved as hurricanes and other phenomenon bring the oil effects much further inland.

Additional Research Topics: Modeling has also been identified as an important focus topic (e.g. sediment transport, mixing of oil/gas plume with seawater).

Long-term Research Interests: In addition, long-term impacts to sediment transport is mentioned as an area of interest to explore through the fall 2010 solicitations.

Ongoing Funding Opportunities: The [Dynamics of Coupled Natural and Human Systems](#) and [Water Sustainability and Climate](#) programs are both grant mechanisms which are well suited to research questions tied to the impact of the oil spill. NSF has also suggested faculty look at the [Macrosystems Biology](#) solicitation which is growing to take some existing research up to the next scale.

Possible Larger Funding Opportunities: NSF is working with the White House on a possible near-term investment (unclear if it would require Congressional approval) for \$50-60 million to study the longer-term effects of the oil spill. The announcement of this funding (if approved) is expected to be this summer.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

NOAA has been identified by the President along with the Department of Energy (DOE) and the U.S. Geological Survey (USGS) as part of the “science team” to help respond to and deal with the aftermath of the spill. Actions at NOAA relating to the Deepwater Horizon Oil Spill have primarily focused on daily forecasts, including weather and tracking the path of the oil, and real-time natural resources damage assessment, including issuing fishery closures. At this point, NOAA is utilizing existing capabilities, centers, and programs to help in response efforts; this includes NOAA’s fleet of research vessels and NOAA-supported research centers, like the [Southeast Fisheries Science Center](#) (SEFSC) and the [Coastal Response Research Center](#) (CRRC) at the University of New Hampshire.

New funding opportunities are not currently expected from NOAA; however, NOAA is providing supplemental funding to some existing NOAA partners, such as the CRRC, to help with immediate response efforts. If you have existing relationships with a [NOAA center in your region](#), you are encouraged to reach out to them about ways your institution can be helpful.

All of NOAA is engaged in responding to the current environmental crisis in the Gulf. Below is a breakdown of the various responsibilities within the agency:

Office of Response and Restoration (OR&R) – Most of the work falls within [OR&R](#), which is a trans-NOAA office responsible for providing scientific information in response to major environmental crises, such as oil spills. In the current case, OR&R is responsible for providing scientific information to the Coast Guard, who has primary immediate response jurisdiction over the spill. Within OR&R there are two divisions:

- Emergency Response Divisions (ERD), which is responsible for predicting where the oil is going and its effects, overflight observations and mapping, recommending cleanup methods, and managing data and information.
- Assessment and Restoration Division, which is responsible for planning for assessment of injuries to natural resources, coordinating with stakeholders like state and federal trustees, and implementing sampling plans.

National Weather Services (NWS) – NWS is responsible for providing incident forecasts, including marine and aviation forecasts.

National Environmental Satellite, Data, and Information Services (NESDIS) – NESDIS is providing experimental imagery data to assist in forecasting the spill's trajectory.

National Marine Fisheries Service (NMFS) – NMFS is responsible for determining fishery closures and other issues affecting marine mammals, sea turtles, and other fishery resources.

National Ocean Services (NOS) – NOS is providing oceanographic modeling support (through the use of NOAA's fleet), nautical charts, aerial imagery, as well as support for the National Estuarine Research Reserves and coastal managers.

U.S. GEOLOGICAL SURVEY (USGS)

USGS Director Marcia McNutt is the Department of Interior (DOI) Science Advisor and as such USGS will play a role in the response to the oil spill. USGS is mostly intramural with extramural funding (though very little) for earthquake research, mapping, and water. Some of this funding is funneled directly toward specific consortia of universities and other entities.

Expect USGS to be part of a larger DOI effort. Currently USGS scientists will be:

- Collecting satellite imagery to assess the impact on wetlands and coasts.
- Developing maps showing NOAA projections of spill trajectory with respect to DOI Lands.
- Collecting samples to ascertain source and levels of toxicity to soils and water systems.
- Conducting tests to determine cause of mortality of wildlife.
- Developing models that depict how local tidal and current conditions will interact with seafloor bathymetry to carry oil over barrier islands.
- Providing decision support tools to help DOI land managers mitigate the effects of the oil spill and assist in restoration efforts.

Institutions first should work with any existing local USGS contacts to discuss how they might work with the Survey in response to the oil spill.

For additional information on USGS's response to the Gulf oil spill response effort, please see: http://www.usgs.gov/deepwater_horizon/.

DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

Within HHS, the Assistant Secretary of Bioterrorism Preparedness and Emergency Response is overseeing all HHS responses and activities related to the oil spill.

HHS contact: Stacy Elmer, Special Assistant to the Assistant Secretary of Bioterrorism Preparedness and Emergency Response, email: stacy.elmer@hhs.gov.

Below is a summary of major activities within HHS agencies related to the spill. At this time, the National Institutes of Health (NIH) is the only agency with plans to issue grant announcements specifically geared toward spill research and response.

Centers for Disease Control and Prevention (CDC)

CDC recommends using existing mechanisms for surveillance of acute health conditions. However, if existing mechanisms do not exist within an affected gulf coast state, targeted drop-in health care surveillance is recommended. CDC has developed a surveillance tool to be used for drop-in surveillance to monitor health complaints. Complaints captured by the tool include upper respiratory conditions; cardiovascular conditions; eye conditions; and stomach complaints such as nausea.

According to the White House, the CDC is conducting surveillance in Louisiana, Mississippi, Texas, Alabama, and Florida to detect any potential health effects related to the oil spill using established national surveillance systems, including the National Poison Data System (NPDS) and BioSense to track respiratory, vascular, and dermal issues. CDC is also coordinating and clarifying procedures and case definitions for the Food and Drug Administration and states to use with surveillance systems in detecting illnesses associated with consumption of oil contaminated products.

National Institute for Occupational Safety and Health (NIOSH)

Currently NIOSH is protecting workers and volunteers responding to the oil spill in the Gulf of Mexico with the following efforts:

- Providing information to BP, the Occupational Safety and Health Administration (OSHA), the U.S. Coast Guard, and other federal and state partners about protecting workers and volunteers from potential safety and health hazards.
- Assisting OSHA and the National Institute of Environmental Health Sciences (NIEHS) with information about tools for training workers including health hazard risk assessment and personal protective equipment selection.
- Conducting a voluntary survey of workers to obtain a record of those who have participated and a mechanism to contact them about possible spill-related symptoms of illness or injury, as needed.

National Institutes of Health (NIH)

Sally Rockey, NIH Acting Deputy Director of Extramural Research, confirmed that NIEHS has been identified as the lead institute on research related to oil spill effects and clean up.

Patrick Mastin, NIEHS Deputy Director of Extramural Research, confirmed there are ongoing time-sensitive R21 grants that can be applied for in the short-term and said there would be additional guidance released soon. These grants are \$285,000 for two years, will be reviewed and awarded within a month, and there is \$2 million total currently available. Dr. Mastin expects other opportunities to be announced in the near future and believes there may be money added to the pot as the disaster continues.

While he was unable to speculate on the focus areas of these announcements, the NIEHS Worker Education and Training Program highlighted the following research concerns with exposure to crude oil:

- Identify health conditions and populations for medical surveillance and health assessment
- Dermal
- Respiratory
- Heat-related issues
- Non-exposure-related injuries
- Long-term health effects, such as respiratory, neurological, carcinogenic
- Multiple substances and chemical mixtures including raw and weathered crude oil, dispersants and combustion by-products.

NIEHS Contacts: Gwen Collman, Ph.D., interim director, and Patrick Mastin, Ph.D., acting deputy director, NIEHS Division of Extramural Research and Training. Emails: collman@niehs.nih.gov and mastin@niehs.nih.gov

DEPARTMENT OF ENERGY (DOE)

On May 10, President Obama dispatched Secretary of Energy Steven Chu to Louisiana to assist BP officials and the Federal Incident Response Leader, Coast Guard Admiral Thad Allen, in tackling the most immediate challenges from the oil spill in the Gulf of Mexico – develop an approach to secure the damaged wellhead; stop the oil leak; and devise methods to minimize the impact of the oil spill.

The Administration has tapped the full scientific, engineering, and technical expertise of DOE national laboratories to analyze and assist BP response efforts to the spill. More than 200 laboratory personnel are engaged in this support effort. There does not appear to be any near-term funding opportunity through DOE given the agency's early enlistment in tackling the oil spill and the engagement of significant laboratory experts in addressing the immediate impacts of the spill.

Secretary Chu has also assembled a team of top scientific experts to join discussions with BP about possible solutions. These experts include the Director of Sandia National Laboratories, an IBM Fellow Emeritus, and academics from University of California Berkeley, Washington University, and Massachusetts Institute of Technology.

DOE Response Activities. The Administration tapped DOE lab experts to review BP plans for the top kill strategy. They have run diagnostics on the blow-out prevention equipment using radiography and are assisting in structural analysis of the remnants of the oil rig.

DOE lab personnel have recommended options for stopping the leaking oil such as the use of high-energy gamma rays to image parts of the internal state of the Blow-Out Preventer (BOP). Lab personnel have also independently analyzed the two-dimensional gamma ray images which are crucial to helping the response team understand what is occurring inside the BOP as BP attempts to stop the flow of oil.

DOE is assisting the Flow Rate Team of the Minerals Management Service (MMS), NOAA, and the Coast Guard. DOE modeling and simulation capabilities were used to track the smoke plume from the original fire on the oil rig and are now being used to understand the surface and subsurface dispersal of the oil plume working with other federal agency experts.

DOE scientists are supporting the Department of Homeland Security in modeling the economic costs and the societal impacts of the oil spill on energy and other industries at the National Infrastructure Simulation and Analysis Center (NISAC) developed by DOE laboratory experts. DOE's Office of Electricity is monitoring the impact of the spill on the power generation and energy infrastructure in the Gulf.

The Energy Information Administration will analyze the impact of the spill on the energy industry, and on energy supply, price, and consumption.

For additional information on DOE's role in the Gulf oil spill response effort, please see: http://www.energy.gov/open/oil_spill_updates.htm.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA is responsible for providing science expertise for the protection of public health and the environment. It is important to note that EPA has primary jurisdiction over inland environmental emergencies, while the Coast Guard takes the lead when emergencies occur in coastal or deep water areas. Although EPA is ramping up its efforts to assess the environmental impacts of the spill, they are not responsible for the federal response to the underwater leak itself.

EPA's main focus at the moment is on daily sampling and monitoring of air, water, sediment, and underwater use of dispersants. The issue of dispersants is a primary focus for the agency and they are partnering with NOAA centers and labs to assess the potential impact of these chemicals to ocean and environmental health (see <http://www.epa.gov/bpspill/dispersants.html>).

EPA has created a [Web portal](#) for gathering ideas on technological solutions to assist with the response and clean up. EPA is looking for ideas to address surface water contaminants and cleanup, air monitoring and detection, landfall cleanup, and wildlife protection and clean up.

Contact information for the Regional Emergency Management Program for your state can be found here: <http://www.epa.gov/swercepp/web/content/regional.htm>.

BP FUNDING

BP has developed a list of questions related to the spill for which it would like assistance in answering. The key questions to be addressed by the 10-year research program (up to \$500 million) reflect discussions with the U.S. government and academic scientists in Washington DC the week of May 17, 2010. An independent panel will decide which institutions will receive the rest of the money.

BP will fund research to examine topics including:

- Where are the oil, the dispersed oil, and the dispersant going under the action of ocean currents?
- How do oil, the dispersed oil and the dispersant behave on the seabed, in the water column, on the surface, and on the shoreline?
- What are the impacts of the oil, the dispersed oil, and the dispersant on the biota of the seabed, the water column, the surface, and the shoreline?
- How do accidental releases of oil compare to natural seepage from the seabed?
- What is the impact of dispersant on the oil? Does it help or hinder biodegradation?
- How will the oil, the dispersed oil, and the dispersant interact with tropical storms, and will this interaction impact the seabed, the water column and the shoreline?
- What can be done to improve technology:
 - To detect oil, dispersed oil, and dispersant on the seabed, in the water column, and on the surface?
 - For remediating the impact of oil accidentally released to the ocean?

Potential partners to pursue or discuss relationships with BP include: the Scripps Institution of Oceanography (working with BP since 2004 in a program aimed at gaining a better understanding of the environment and hazards in oceans, including marine electromagnetic research. The focus of oceanography efforts has been loop currents in the Gulf of Mexico.); Texas A&M in Galveston and the Monterey Bay Aquarium Research Institute (working with BP since 2008, as part of the Deepwater Environmental Long-term Observatory System (DELOS), to monitor deep-sea marine life).

Appendix A

NSF RAPID Awards Related to the Oil Spill from NSF Database Search as of 6/11/2010

<u>Award Number</u>	<u>Title</u>	<u>NSF Organization</u>	<u>Program(s)</u>	<u>Start Date</u>	<u>Principal Investigator</u>	<u>State</u>	<u>Organization</u>	<u>Awarded Amount to Date</u>
1043248	RAPID Collaborative Proposal: Spatially-explicit, High-resolution Mapping and Modeling to Quantify Hypoxia and Oil Effects on the Living Resources of the Northern Gulf of Mexico	OCE	BIOLOGICAL OCEANOGRAPHY	08/01/2010	Roman, Michael	MD	University of Maryland Center for Environmental Sciences	\$107,961.00
1043249	RAPID Collaborative Proposal: Spatially-explicit, High-resolution Mapping and Modeling to Quantify Hypoxia and Oil Effects on the Living Resources of the Northern Gulf of Mexico	OCE	BIOLOGICAL OCEANOGRAPHY	08/01/2010	Kimmel, David	NC	East Carolina University	\$44,284.00
1043261	RAPID Collaborative Proposal: Spatially-explicit, High-resolution Mapping and Modeling to Quantify Hypoxia and Oil Effects on the Living Resources of the Northern Gulf of Mexico	OCE	BIOLOGICAL OCEANOGRAPHY	08/01/2010	Brandt, Stephen	OR	Oregon State University	\$46,981.00
1043126	RAPID on Gulf Oil Spill: Phytoplankton and environmental stressors as determinants of Vibrio ecology	OCE	BE-UF: ECOL OF INFECTIOUS DISE	07/01/2010	Johnson, Crystal	LA	Louisiana State University & Agricultural and Mechanical College	\$150,000.00
1045115	RAPID: The Microbial Response to the Deepwater Horizon Oil	OCE	BIOLOGICAL OCEANOGRAPHY	07/01/2010	Teske, Andreas	NC	University of North Carolina at Chapel Hill	\$199,953.00

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	Spill							
1044704	RAPID: Sub-Mesoscale Dynamics of Buoyant Plumes	OCE	PHYSICAL OCEANOGRAPHY	06/15/2010	Ozgokmen, Tamay	FL	University of Miami Rosenstiel School of Marine&Atmospheric Sci	\$86,216.00
1044573	RAPID: 3-D Model Forecast of the Vertical and Horizontal Distributions of the Oil Plumes Arising From the DeepWater Horizon Spill	OCE	PHYSICAL OCEANOGRAPHY	06/15/2010	He, Ruoying	NC	North Carolina State University	\$80,646.00
1045044	RAPID: Glider Observations in the Gulf of Mexico in Response to the Oil Spill	OCE	PHYSICAL OCEANOGRAPHY	06/15/2010	Rudnick, Daniel	CA	University of California-San Diego Scripps Inst of Oceanography	\$43,868.00
1044939	RAPID: Rates and mechanisms controlling the microbial degradation of crude oil from the MC252 spill in Gulf of Mexico beach sands	OCE	CHEMICAL OCEANOGRAPHY	06/15/2010	Huettel, Markus	FL	Florida State University	\$169,653.00
1045025	RAPID: Mapping Subsurface Hydrocarbon Plume Distribution and Structure near MC Block 252	OCE	CHEMICAL OCEANOGRAPHY	06/15/2010	Camilli, Richard	MA	Woods Hole Oceanographic Institution	\$131,040.00
1045252	RAPID: Trophic interactions in floating Sargassum communities of the Gulf of Mexico: potential consequences of habitat degradation.	OCE	BIOLOGICAL OCEANOGRAPHY	06/15/2010	Powers, Sean	AL	University of South Alabama	\$157,664.00
1045670	RAPID: Impact of Nutrient Limitation on Microbial Degradation of	OCE	CHEMICAL OCEANOGRAPHY	06/15/2010	Van Mooy, Benjamin	MA	Woods Hole Oceanographic Institution	\$39,437.00

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1042097	Deepwater Horizon Oil in the Gulf of Mexico RAPID: Assessing the impact of chemical dispersants on the microbial biodegradation of oil immediately following a massive spill	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Valentine, David	CA	University of California-Santa Barbara	\$119,964.00
1042743	RAPID: Accelerating biodegradation of hydrocarbons from the Deepwater Horizon Oil Spill in the Gulf of Mexico with Naturally Occurring Marine Substrates	CBET	ENVIRONMENTAL SUSTAINABILITY	06/01/2010	Mortazavi, Behzad	AL	University of Alabama Tuscaloosa	\$124,999.00
1042296	RAPID: Collaborative Research: Extension of the ADCIRC Coastal Circulation Model for Predicting Near Shore and Inner Shore Transport of Oil from the Horizon Oil Spill	OCI	CYBERINFRASTRUCTURE	06/01/2010	Twilley, Robert	LA	Louisiana State University & Agricultural and Mechanical College	\$40,157.00
1042304	RAPID: Collaborative Research: Extension of the ADCIRC Coastal Circulation Model for Predicting Near Shore and Inner Shore Transport of Oil from the Horizon Oil Spill	OCI	CYBERINFRASTRUCTURE	06/01/2010	Westerink, Joannes	IN	University of Notre Dame	\$59,863.00
1042314	RAPID: Collaborative Research: Extension of the ADCIRC Coastal Circulation Model for	OCI	CYBERINFRASTRUCTURE	06/01/2010	Luettich, Richard	NC	University of North Carolina at Chapel Hill	\$58,180.00

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	Predicting Near Shore and Inner Shore Transport of Oil from the Horizon Oil Spill							
1042318	RAPID: Collaborative Research: Extension of the ADCIRC Coastal Circulation Model for Predicting Near Shore and Inner Shore Transport of Oil from the Horizon Oil Spill	OCI	CYBERINFRASTRUCTURE	06/01/2010	Dawson, Clinton	TX	University of Texas at Austin	\$41,800.00
1042934	RAPID: Deepwater Horizon Oil Spill Effects on Metal, Nutrient, and Organic Matter Distributions in the Water	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Shiller, Alan	MS	University of Southern Mississippi	\$39,354.00
1010769	A rapid Assessment of Post-fire Changes in Biophysical Variables, Carbon Stocks, and Soil Microbial Processes in the Tallest Angiosperm Forest	IOS	ORGANISM-ENVIRO INTERACTIONS	06/01/2010	Koch, George	AZ	Northern Arizona University	\$76,656.00
1042790	RAPID: Effect of Oil Spill on Organic Carbon Partitioning and Transformation in the Water Column in the Northern Gulf	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Guo, Laodong	MS	University of Southern Mississippi	\$60,000.00
1042786	RAPID: Social Context and Emotional Response to Disaster	SES	POLITICAL SCIENCE	06/01/2010	Kenny, Christopher	LA	Louisiana State University & Agricultural and Mechanical College	\$89,948.00
1042650	RAPID: The effect of methane laden oil on climate and dissolved	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Kessler, John	TX	Texas A&M Research Foundation	\$156,081.00

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	oxygen: using the Deepwater Horizon oil spill as an analog for clathrate decomposition and seeping methane							
1042887	RAPID - Collaborative Research: Impact of the New Horizon Oil Spill on Ecosystem Metabolism and Gas Exchange in the Northern Gulf of Mexico Hypoxic Region	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Ostrom, Nathaniel	MI	Michigan State University	\$44,758.00
1042908	RAPID - Collaborative Research: Impact of the New Horizon Oil Spill on Ecosystem Metabolism and Gas Exchange in the Northern Gulf of Mexico Hypoxic Region	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Liu, Zhanfei	TX	University of Texas at Austin	\$44,612.00
1043180	RAPID Deep water Horizon Oil spill: Trophic organization of sandy beach ecosystems across gradients of development and oiling	OCE	BIOLOGICAL OCEANOGRAPHY	06/01/2010	Bell, Susan	FL	University of South Florida	\$127,693.00
1043413	RAPID: Resolving higher trophic-level change within the northern Gulf of Mexico ecosystem as a consequence of the Deepwater Horizon oil spill	OCE	BIOLOGICAL OCEANOGRAPHY	06/01/2010	Graham, William	AL	Marine Environmental Sciences Consortium	\$199,867.00
1042792	RAPID Deepwater Horizon oil spill: Impacts on Blue Crab population dynamics and	OCE	BIOLOGICAL OCEANOGRAPHY	06/01/2010	Taylor, Caroline	LA	Tulane University	\$199,863.00

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	connectivity.							
1043976	RAPID: Hydrocarbon Dissolution Fluxes from the Deepwater Horizon Oil Plume: GCxGC Chemical Analysis and Mass Transfer Modeling	OCE	CHEMICAL OCEANOGRAPHY	06/01/2010	Reddy, Christopher	MA	Woods Hole Oceanographic Institution	\$149,989.00
1043225	RAPID Deepwater Horizon Oil Spill: Deep pelagic and benthic impacts of the oil spill	OCE	CHEMICAL OCEANOGRAPHY, BIOLOGICAL OCEANOGRAPHY	06/01/2010	Joye, Samantha	GA	University of Georgia Research Foundation Inc	\$199,581.00
1042907	RAPID Deepwater Horizon Oil Spill: Responses of Benthic Communities and Sedimentary Dynamics to Hydrocarbon Exposure in Coastal Ecosystems of the northern Gulf of Mexico	OCE	SEDIMENTARY GEO & PALEOBIOLOGY, BIOLOGICAL OCEANOGRAPHY, MARINE GEOLOGY AND GEOPHYSICS	06/01/2010	Yeager, Kevin	MS	University of Southern Mississippi	\$139,999.00