The Gulf of Mexico Hydrates Research Consortium

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GULF OF MEXICO HYDRATES RESEARCH CONSORTIUM

In 1999, the Gulf of Mexico Hydrates Research Consortium (GoMHRC) was organized to consolidate both laboratory and field efforts in gas hydrates research in the Gulf of Mexico. The GoMHRC was established at and is administered by the University of Mississippi, through the Center for Marine Resources and Environmental Technology (CMRET). The primary objective of the GoMHRC is the design and emplacement of a seafloor observatory in the northern Gulf of Mexico to characterize and monitor activity in an area where gas hydrates are known to be present at, or just below, the seafloor. Members of the GoMHRC include researchers, engineers, and technicians from universities, federal government agencies, and private companies (Figure 1).

The consortium has developed and assembled station components that monitor physical and chemical parameters of the sea water, seafloor sediments, and shallow sub-seafloor sediments. Of particular interest to the consortium are hydrate formation and dissociation, fluid venting to the water column, and associated microbial and/or chemosynthetic and benthic communities. Models developed from these studies provide researchers with an improved understanding of gas hydrates and associated free gas as a:

- geo-hazard to conventional deep oil and gas activities;
- significant future energy resource; and
- a source of greenhouse gases, venting to the water column and eventually the atmosphere.

The GoMHRC coordinates activities to promote effective and efficient communication among researchers, to avoid redundant research efforts, and to utilize research vessel time efficiently. Through the activities of the GoMHRC, complementary expertise, both scientific and technical, has been assembled to conduct collaborative and coordinated research leading to the design, testing, and construction of sensors and instrumentation for a sea-floor observatory. Initial activities of the consortium addressed how and where hydrates occur, and where the

Figure 1. Members of the GoMHRC represent academic institutions, federal agencies and private companies
A seafloor observatory could be established. Early projects focused on laboratory and field studies of properties of hydrates, geophysical arrays and a variety of geochemical sensors suitable for seafloor installation at a site to be determined by the site-selection team.

**GoMHRC Research at MC118**

In 2004, following evaluations of different sites, sensor design, fabrication, testing and data collection and analysis, Mississippi Canyon 118 (MC118) was selected by the GoMHRC as the location for the observatory (Figure 2). The Minerals Management Service (MMS) (now Bureau of Ocean Energy Management BOEM) placed a research restriction on the leased block - the only one in the Gulf - so that the consortium's research might continue even if the block was leased, as is now the case. Characterization and baseline data collection at MC118 commenced in 2005. Geophysical, geological, geochemical and biological investigations of seafloor, sub-seafloor and water-column systems continue to the present day.

![Figure 2. MC118 is located ~30 miles from mouth of the Mississippi River on the edge of a large slump on the Continental Slope.](image)

Consortium synergistic relationships maximize results through:

- Establishing and coordinating project priorities and research efforts,
- Planning, scheduling, and coordination of scientific cruises; providing access by consortium members to cruises,
- Providing pre-cruise shop support, instrument/lander construction, transportation, sensor integration
- Providing cruise support: navigation, positioning, coordination, deployment, and recovery,
- Hosting semiannual meetings to provide a venue for reporting research; encouraging cooperation; determining next stages/needs,
- Facilitating as-needed meetings of cooperating subgroups,
- Maintaining contact with PIs and other interested or potentially interested parties,
- Providing research support – maps, sample locations, figures, etc.,
- Interacting with funding agencies/Program Managers,
- Compiling/Composing and distributing semiannual reports, cruise reports, meeting proceedings, periodic technical and informal reports for funding agencies.

Funding for the Gulf of Mexico Hydrates Research Consortium has been provided by the Minerals Management Service (MMS) (now Bureau of Ocean Energy Management BOEM) of the Department of the Interior, the National Energy Technology Laboratory (NETL) of the Department of Energy and the National Institute for Undersea Science and Technology (NIUST) of the National Oceanographic and Atmospheric Administration (NOAA) of the Department of Commerce.

**Collaborators**

- National Institute for Undersea Science and Technology (NIUST)
- NOAA Ocean Exploration and Research
- Bureau of Ocean Energy Management (BOEM)
- National Energy Technical Laboratory (NETL)

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