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NOAA Video Collection: Oil and Gas Cold Seeps in the Gulf of Mexico

Available through a partnership with NOAA's Undersea Research Program, Louisiana State Univ., Penn State Univ. and Texas A&M – Corpus Christi.

Most people are familiar now with mid-ocean ridges and hydrothermal vents (HTV). Where the earth's tectonic plates originate and spread apart, lava and hot fluids gush from the seafloor. Lush, chemosynthetic (as opposed to photosynthetic) communities of exotic deep-sea creatures live off symbiotic bacteria, which in turn feed on the chemicals and minerals in the hot venting fluids. However, these "chemo-communities" also live much closer to shore and are far more prevalent globally at cold seeps and vents (CSV).

The northern Gulf of Mexico seafloor is underlain by a massive salt sheet deposited during low sea-level millions of years ago. This salt barrier serves as a trap to oil and gas formed from underlying organic material deposits. The salt is pliable and under the weight of sediments tends to bend and fold, further concentrating pockets of oil and gas beneath. Oil companies look for these pockets. The sheet also fractures and leaks oil and gas to the seafloor, where it oozes, bubbles, and vents into the water. A tanker-full of oil seeps into the Gulf each year from these natural seeps.

Like the HTV communities, CSV chemo-communities thrive all along the continental slope of the Gulf, living off the seeping hydrocarbons (Figure 1). This video collection is the result of research submersible dives (Figure 2) to these seeps during the early 1990s by a variety of scientists working with NOAA's Undersea Research Program. The projects all had somewhat different research objectives, including studies of the ecology of the chemo-communities, geology and geochemistry of seep environments, and rates and types of oil and gas seeps (Table 1).

Each DVD in the collection corresponds to one videotape recorded during the sub dives (each dive may have 1-3 DVDs). Each DVD also has a corresponding metadata record that provides access to: general information about each project and DVD; project summaries further describing the projects; video log of the DVD content; and selected digital video clips. Copies of the DVDs may be checked out of the NOAA Central Library.



Figure 1. Spider crab scavenges on chemo-community consisting of tubeworms and mussels. Photo: H. Roberts, Louisiana State Univ.



Figure 2. *Johnson Sea Link* submersible, operated by Harbor Branch Oceanographic Institution, surveys and samples a chemosynthetic mussel bed and oily brine pool in Green Canyon. Photo: S. Blair, National Geographic Soc.

Table 1. Investigators and projects included in the Cold Seep Video Collection.

Principal Investigator	Affiliation	Project #	Project Title	DVDs
Dr. Harry Roberts	Louisiana State Univ.	UNCW-9230	Geological and Biogeochemical Investigations of Bathymetrically Stratified Cold-Seep related Carbonate Structures of the Gulf of Mexico.	8 (#s 92-S-ROBE-1,2,3,4,5,9,10,11)
Dr. Charles Fisher	Penn State Univ.	UNCW-9409	Studies of Chemosynthetic Communities, Oil Seepage and Gas Hydrates on the Upper Gulf of Mexico Slope	7 (#s 94-S-FISH-1,2,3,8, 12, 13,14)
Dr. Ian MacDonald	Texas A&M – Corpus Christi	UNCW-9520	In Situ Collection and Monitoring of Natural Gas Hydrate by use of the Johnson Sea Link	8 (#s 95-S-MACD-1,2,3,4,5,6,7,8)