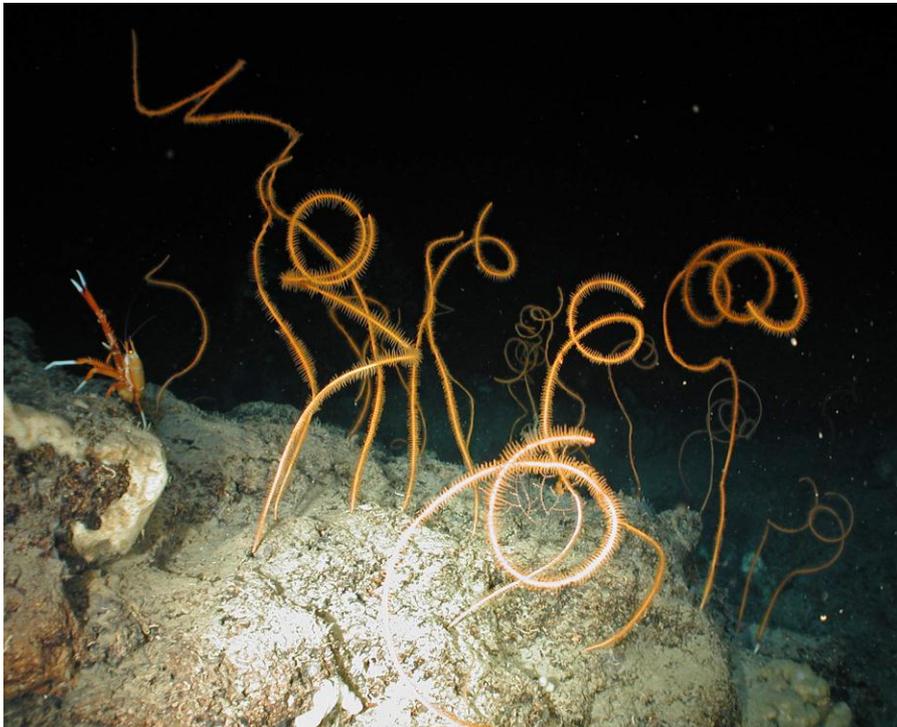




Environmental Research Gulf of Mexico Region Bureau of Ocean Energy Management



Pasquale Roscigno, PhD

**Studies Chief
Office of Environmental Studies
Environmental Studies Program
Gulf of Mexico Region**



Environmental protection

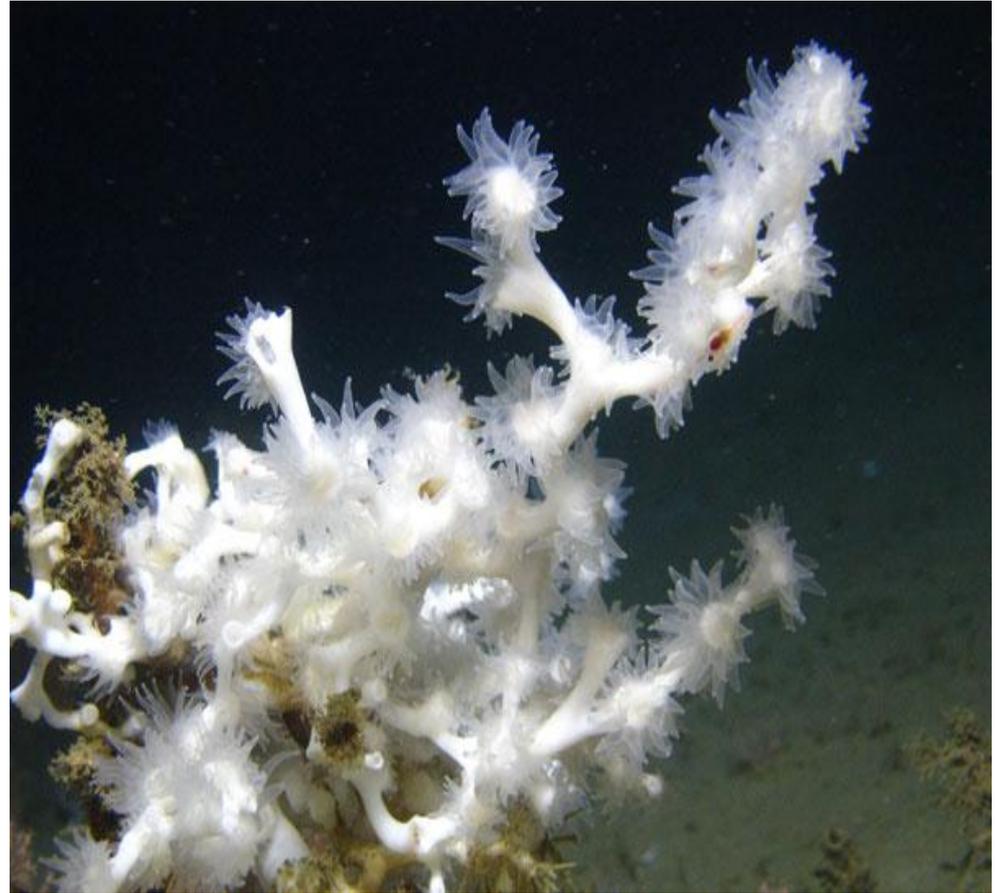
- Lease stipulations - terms and conditions
- National Environmental Policy Act (NEPA)
- Reviews of operator's plans for impacts
- Mitigations terms and conditions of plan approval

Environmental research

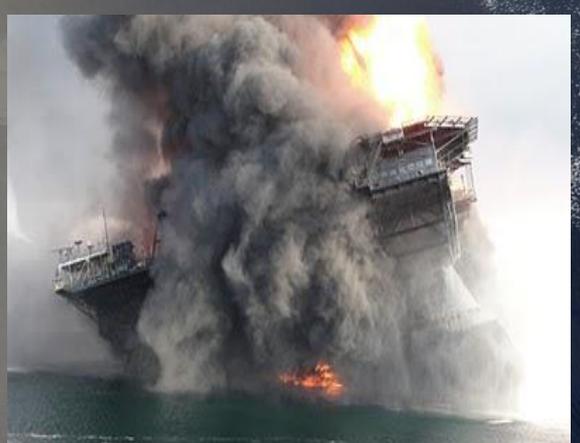
- Environmental Studies Program
- In-house Monitoring & Research Studies



**Provides information
needed to predict, assess,
and manage impacts from
offshore exploration,
development , and
production activities
on human, marine, and
coastal environments**



Macondo



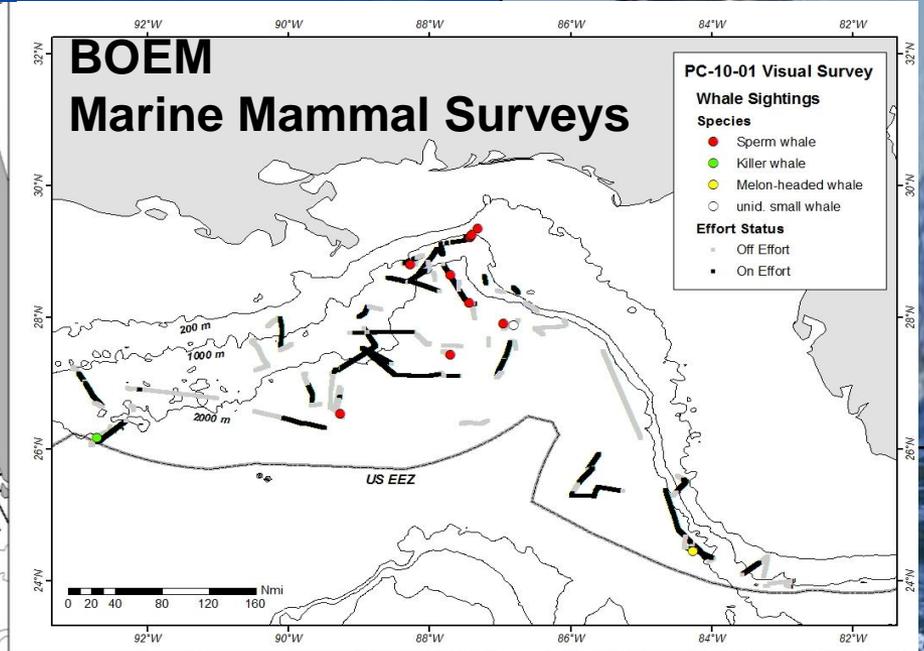
Gulf of Mexico Region

ESP Studies Complements NRDA Marine Mammal Efforts

Seasonal NRDA Aerial Surveys



BOEM Marine Mammal Surveys

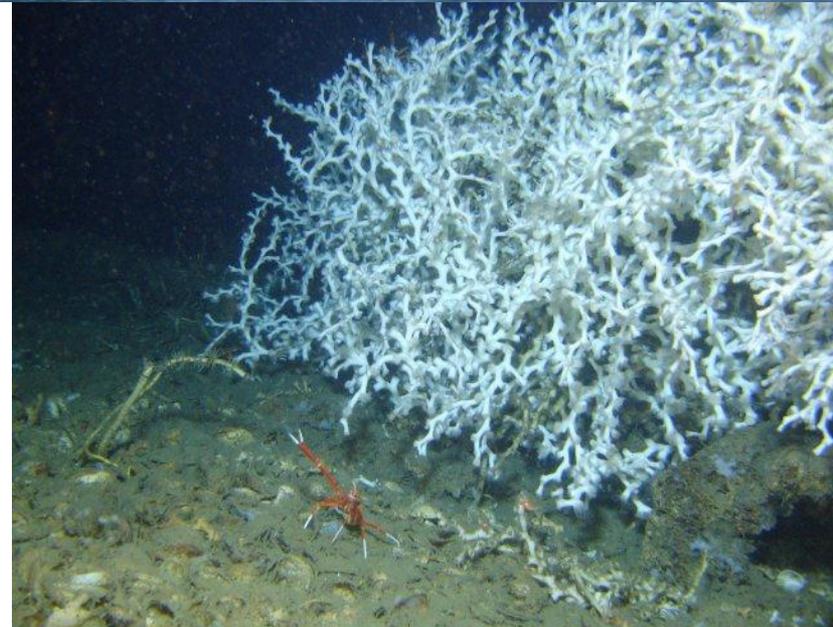


Gulf of Mexico Research Initiative

- **The Gulf of Mexico Research Initiative (GOMRI) Research Board recently announced the release of a Request for Proposals (RFP) to select research activities involving Research Consortia.**
- **The GOMRI is an independent scientific research program and is separate from the Natural Resources Damages Assessment process.**
- **The objectives of the GOMRI are to investigate the impacts of the oil, dispersed oil, and dispersant on the ecosystems of the Gulf of Mexico and affected coastal States.**
- **The ultimate goal of the GOMRI is to improve society's ability to understand, respond to, and mitigate the impacts of petroleum pollution and related stressors of the marine and coastal ecosystems, with an emphasis on conditions found in the Gulf of Mexico. Knowledge accrued will be applied to restoration and to improvement of the long-term environmental health of the Gulf of Mexico.**

- **Over 94 active studies worth \$45,800,000**
- **Over 350 completed studies worth \$252,000,000**
- **Information available on the BOEM website**

<http://www.boem.gov/Environmental-Stewardship/Environmental-Studies/Environmental-Studies.aspx>



Past Collaborative Awards



Sperm Whale Seismic Study

2004 DOI Cooperative Conservation Award

WWII Shipwrecks and the Artificial Reef Effect

2006 DOI Cooperative Conservation Award

2007 NOPP Excellence in Partnering Award

Investigations of Chemosynthetic Communities on the Lower Continental Slope of the Gulf of Mexico
NOAA OE Signature Expeditions, *Expeditions to the Deep Slope 2006 & 2007*
2007 DOI Cooperative Conservation Award

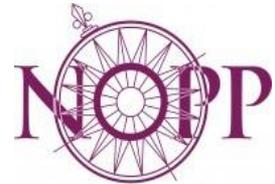


Flower Garden Banks Long-Term Monitoring

2009 DOI Partners in Conservation Award

Battle of the Atlantic Expedition

2009 DOI Partners in Conservation Award



History of the Offshore Oil & Gas Industry in Southern Louisiana
2010 DOI Partners in Conservation Award



Archaeological Analysis of Submerged Sites on the Gulf of Mexico Outer Continental Shelf

2011 DOI Partners in Conservation Award

Ocean, Coastal and Great Lakes Activities Team

2011 DOI Partners in Conservation Award



Environmental Research In-house Monitoring & Research Studies



SS Josephine



Mardi Gras Wreck

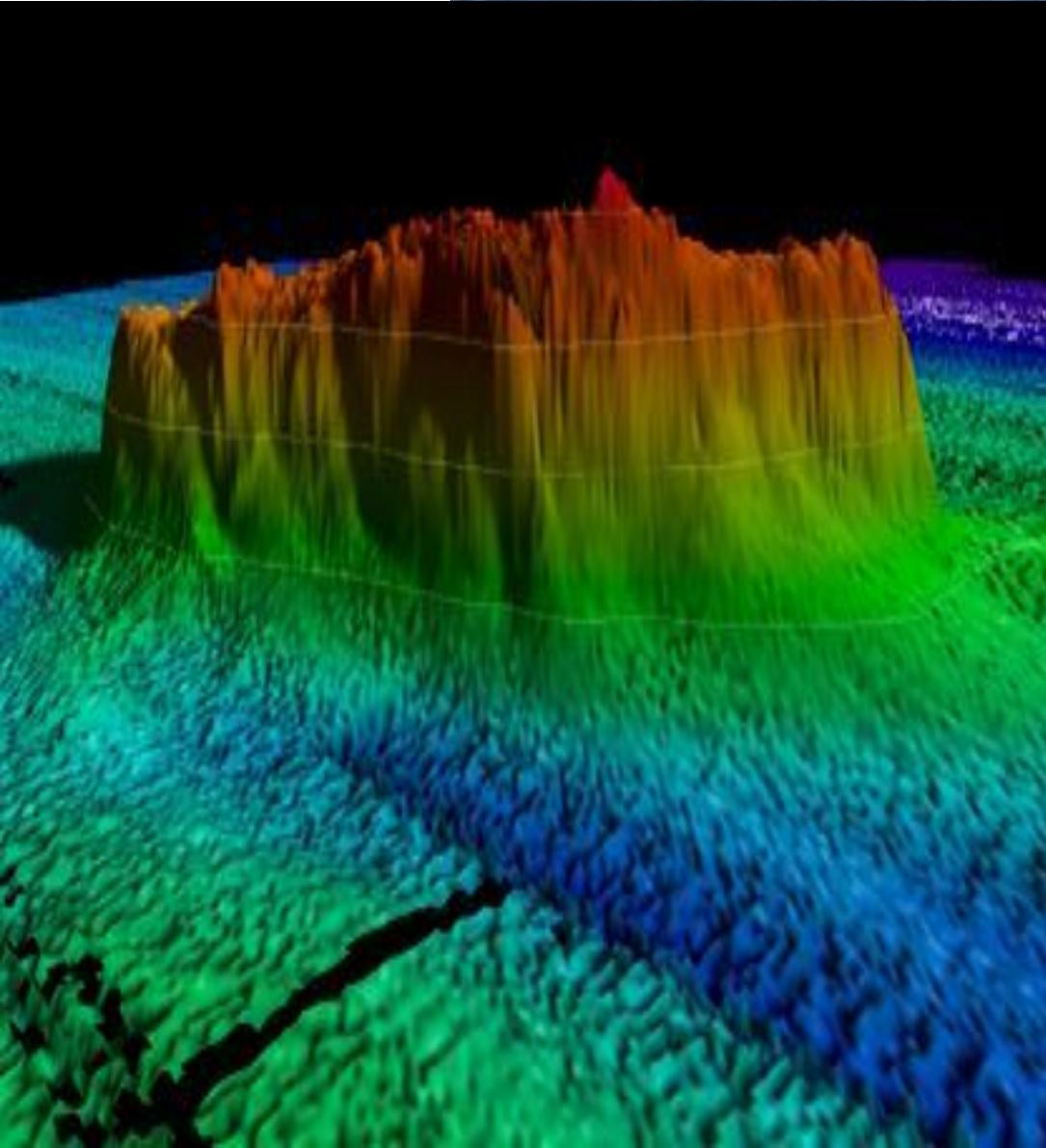


German Submarine U-166

Seafloor Monitoring and Dive Team

- Supports Environmental Compliance Monitoring
- Supports Environmental Studies Program
- Supports Operational Activities

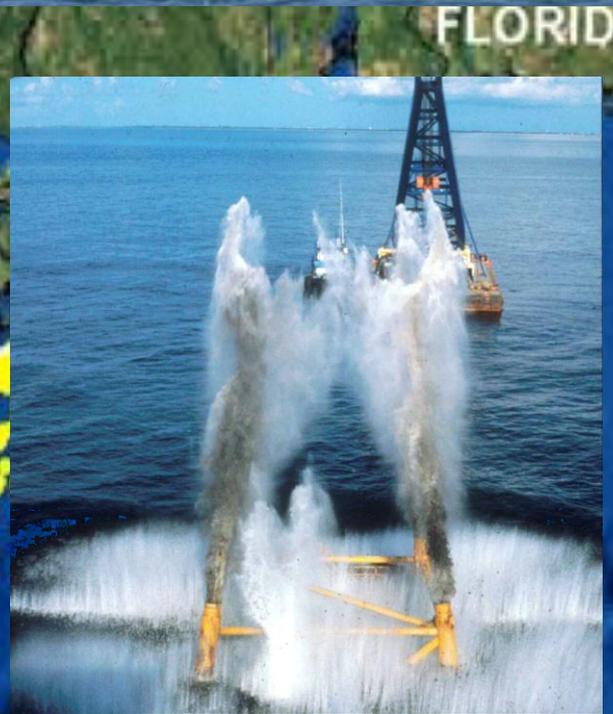




- Platform Removals
- Rigs to Reef
- Deepwater Corals
- Protected Habitats
- Endangered Species



Platform Removal and Rigs to Reef

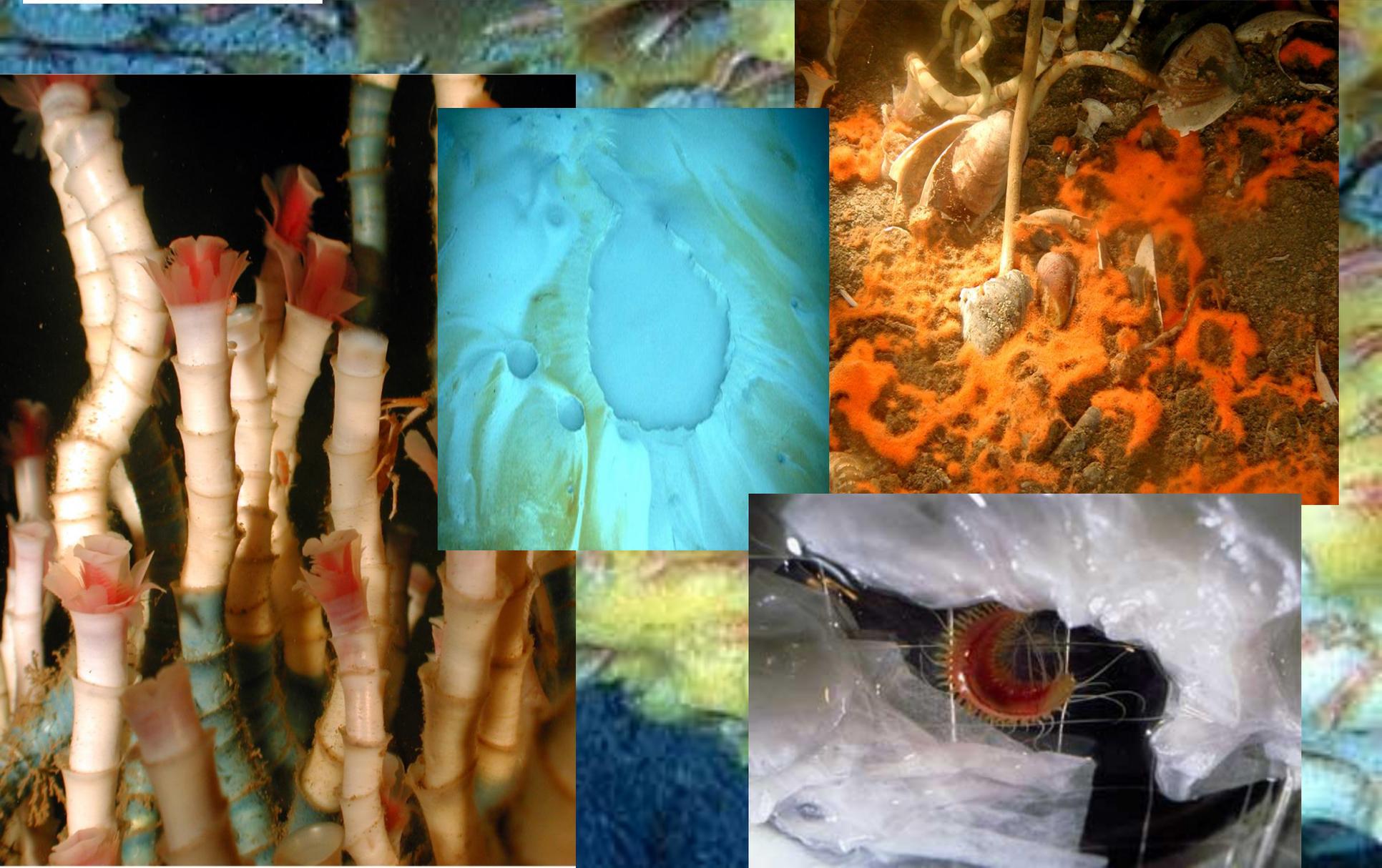


FLORIDA

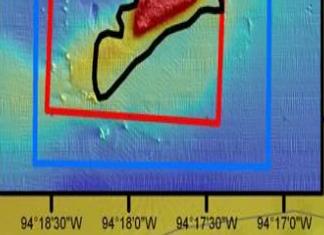
LOUISIANA

Cent
3,3

Chemosynthetic Communities and Corals in Deepwater of the Gulf



Flower Garden Banks

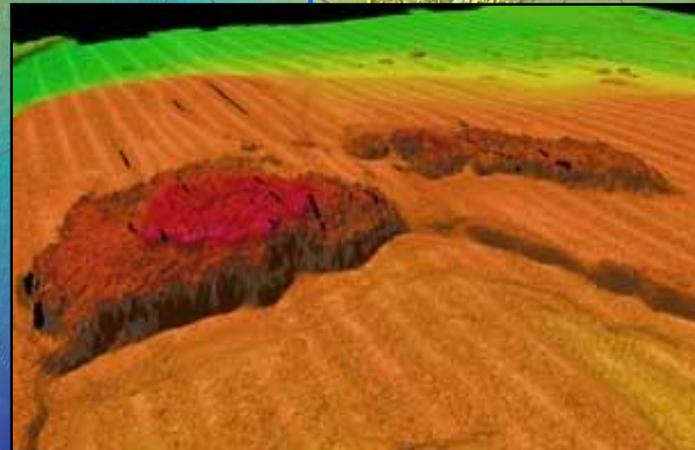


West Flower Garden Bank

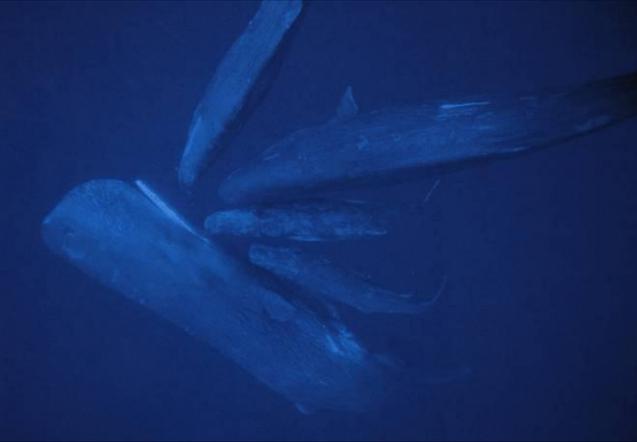
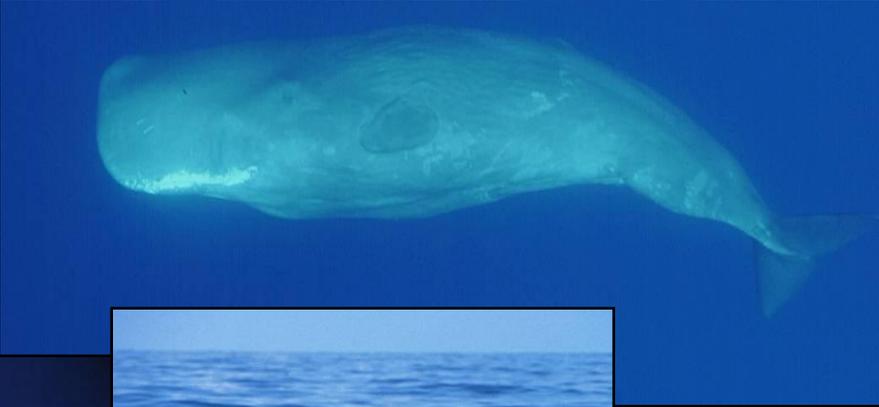
Rankin Bank

Bright Bank

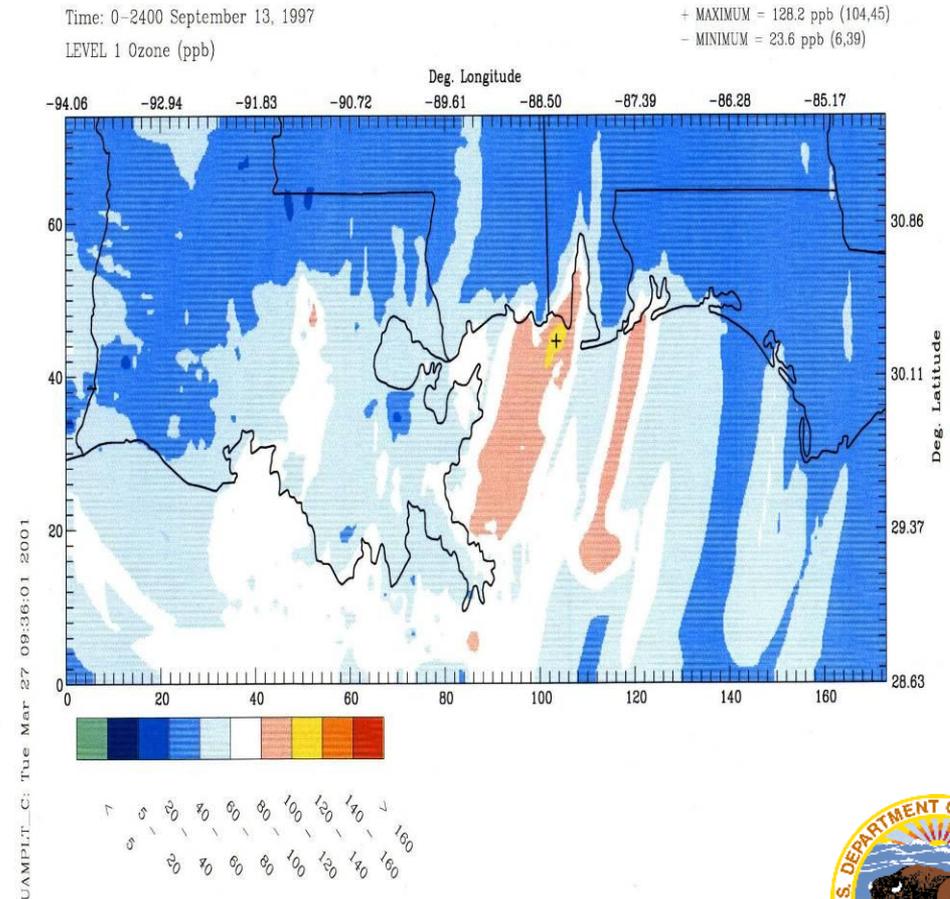
28 Fathom Bank

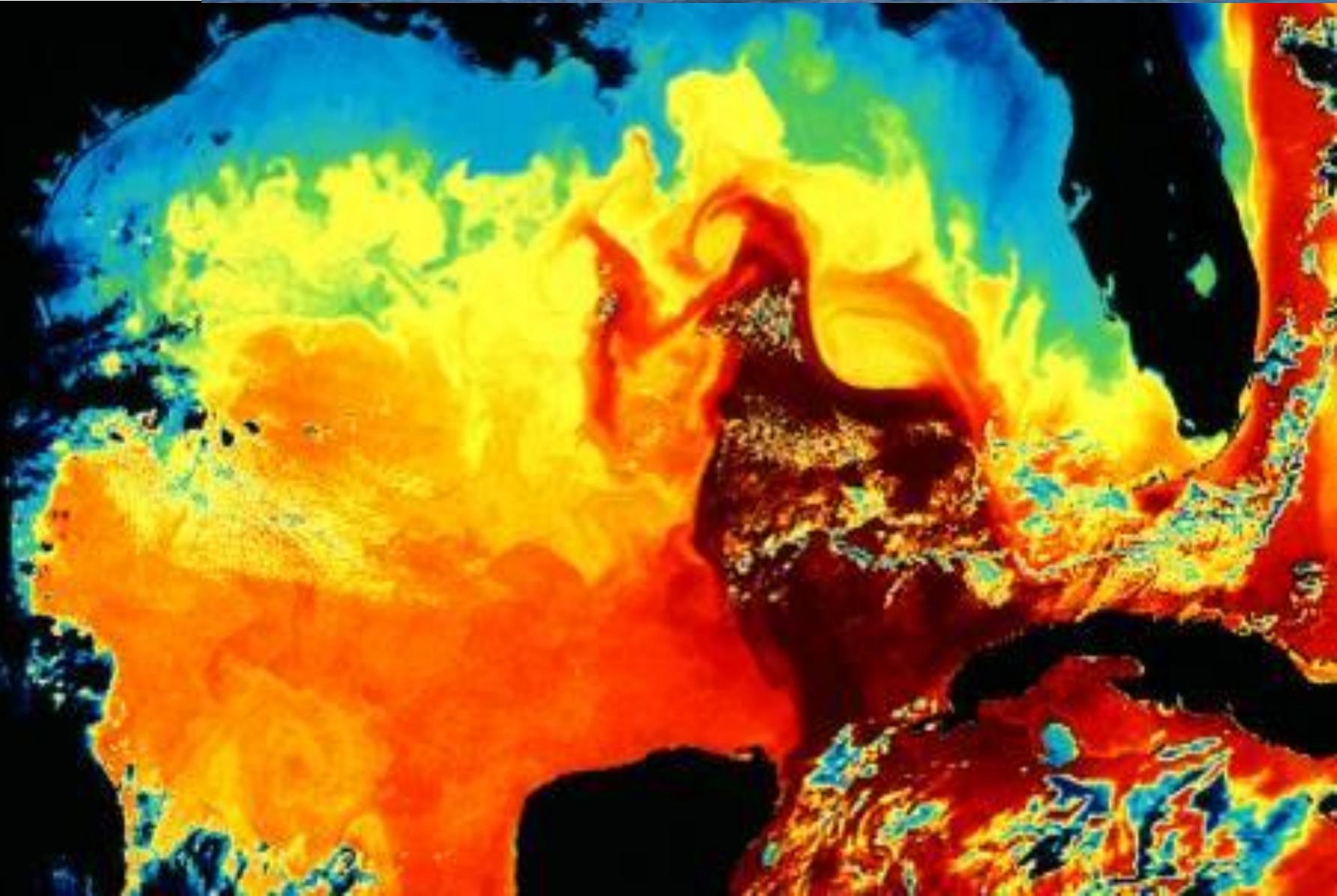


Acoustics and Sperm Whales



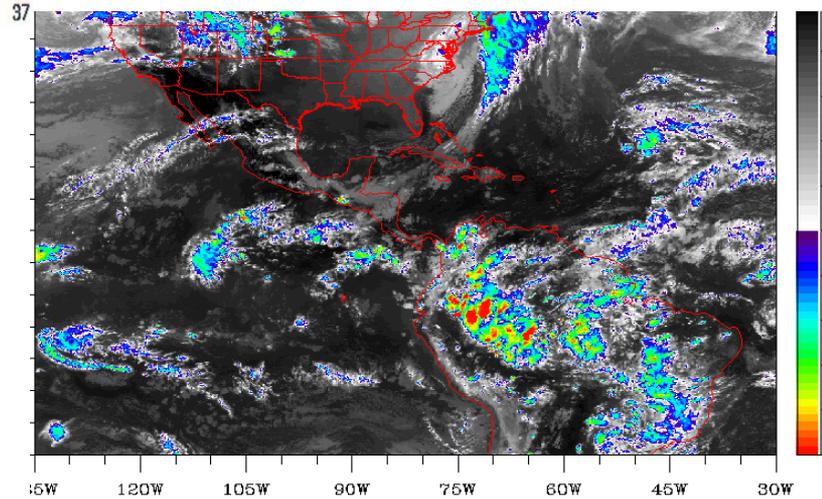
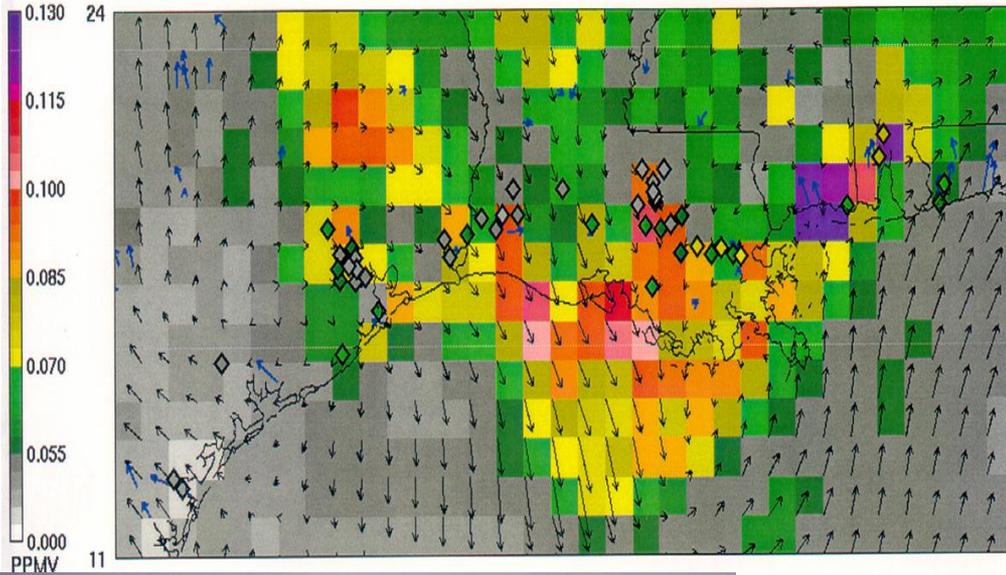
- Physical Oceanography
- Oil Spill
- Water Quality
- Air Quality





Daily Max 8-hr O3

15-22Z avg winds



Typical OCS socioeconomic study topics:

- Migration patterns
- Environmental justice
- Individuals and families
- Capitol investment
- Crime
- Crude Oil Price Movements
- Ports
- Employment
- Infrastructure
- Economic Change



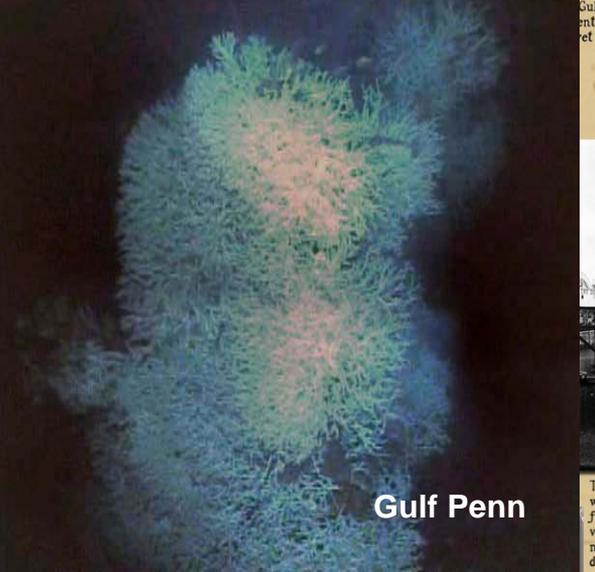
Archeological Research

MMS Shipwrecks in the Gulf of Mexico

U-166



Viosca Knoll Wreck

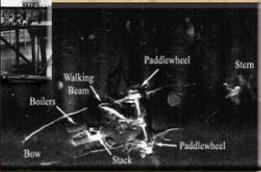


Gulf Penn

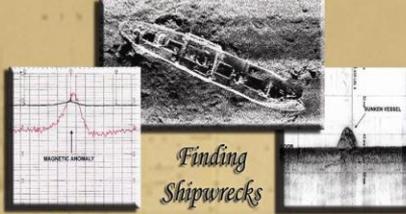


Medina was the first European east of the northern Gulf of Mexico regularly sailed through the silver to Mexico back to the 1554 fleet. The *Santa Maria San Esteban*, wrecked on Padre Island in the 1600s French exploration area that is now Louisiana. The Spanish regained control of the Gulf Coast. Several shipwrecks were identified in the MMS Shipwreck Survey.

19th Century Shipwrecks



The earliest example of a 19th century wooden-hulled sailing ship in the Gulf was found in 2001. This is a small copper-sheathed vessel that was found in 2,650 feet of water near the mouth of the Mississippi River during pipeline construction. Steamships



Finding Shipwrecks

When MMS tells the oil and gas companies they must conduct surveys to ensure that they avoid harming potential shipwrecks in an area they want to develop, they use sophisticated electronic instruments towed from a ship to tell them what is buried in the seafloor. These instruments include a magnetometer that detects iron (like cannons or anchors), a sidescan sonar that uses sound waves to make a picture of the seafloor, and a subbottom profiler that shows the layers in the soil beneath the seafloor. Other instruments used for deepwater surveys include an autonomous underwater vehicle (AUV) and a remotely operated vehicle (ROV). The data collected by these instruments are studied by marine archaeologists looking for clues that a shipwreck might lie hidden under the sea.



World War II Shipwrecks



During the years 1942 and 1943 a fleet of over 20 German submarines, known as U-boats, cruised the Gulf seeking to stop the vital flow of oil carried by tankers from ports in Texas and Louisiana. They succeeded in sending 56 vessels to the bottom. As a result of remote-sensing surveys required of the oil and gas industry by MMS, several U-boat casualties, such as the passenger ship *Robert E. Lee*, have been discovered on the seafloor. In addition, the only German U-boat lost in the Gulf during the war, the U-166, was discovered in 5,000 feet of water during a pipeline survey.

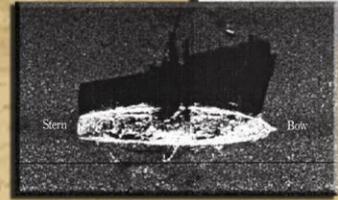


Civil War Shipwrecks

The only U.S. warship sunk in the Gulf of Mexico by the Confederacy during the Civil War was the U.S.S. *Hatteras*. Assigned to the Gulf Blockading Squadron in January 1862, the *Hatteras* captured seven Confederate blockade runners before she was sunk by the C.S.S. *Alabama* on January 11, 1863 off the coast of Texas. Today the vessel rests in 38 feet of water about 20 miles from Galveston. Her 210-foot long iron hull is completely buried under about three feet of sand. Only the remains of her 500-horsepower walking-beam steam engine and her two iron paddlewheels remain exposed above the seafloor.



Early 20th Century Shipwrecks



For thousands of years ships had been built of wood and powered by sails. In the 19th and early 20th century, hulls of wood began to be replaced by hulls of iron and steel, and sails gradually gave way to steam. The steam yacht *Anona*, built in 1904 for a wealthy Detroit



BUREAU OF OCEAN ENERGY MANAGEMENT

Environmental Studies Program Scientific Publications

Information Transfer Meeting

January 9

Long-Term Monitoring West Flower Garden Marine Sanctuary

OCEAN SCIENCE

VOLUME 8 ISSUE 3
JULY/AUGUST/SEPTEMBER 2011

THE SCIENCE & TECHNOLOGY JOURNAL OF THE
BUREAU OF OCEAN ENERGY MANAGEMENT,
REGULATION AND ENFORCEMENT



The Raven:
A Stealthy Research Tool

Seeps in the Deep

Evaluating Offshore Structure
Design Standards

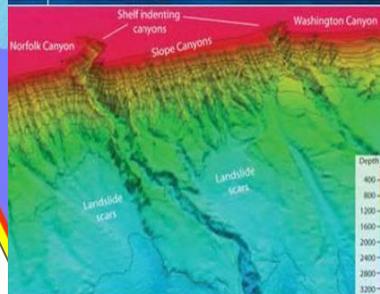
Comparing Offshore Structural
Standards

The Bottlenose Dolphin

Insights:
Migrant Shorebirds and
Atlantic Outer Continental
Shelf Wind Energy

Update:
Tracking Long-Distance
Migrating Red Knots

Exploring the Atlantic Canyons:
First Expedition



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Catalog of Publications
2000-2002

TEACHER'S COMPANION

STORY IN THE MEXICO



Opportunities: Past and Future



Subcommittee on
Ocean Science and Technology
Interagency Working Group on
Ocean Partnerships