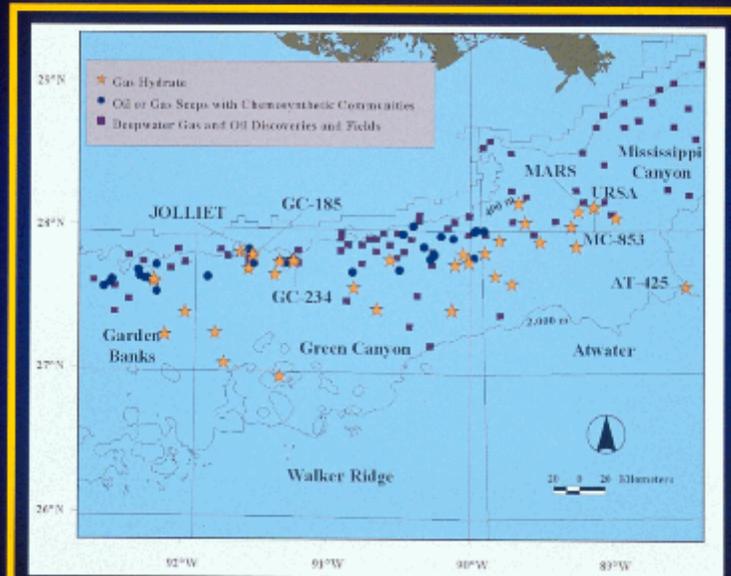


Thermogenic Gas Hydrates

Gas Hydrate Study Areas



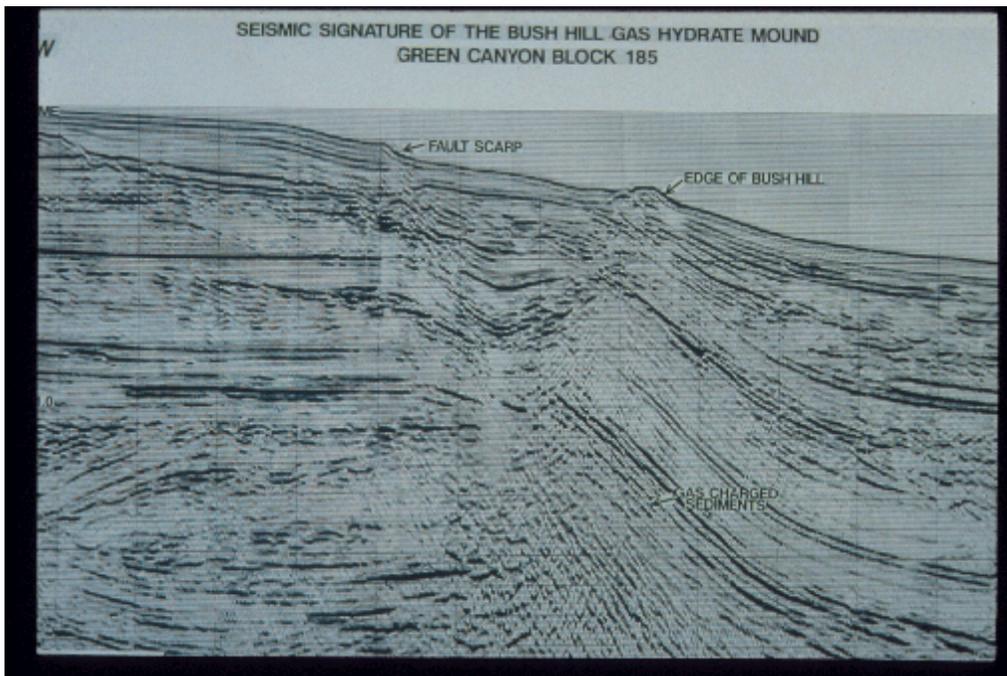
**Green Canyon Block 185
Gas Hydrate Site
(Bush Hill)**

**Fault Migration Conduit
Exposed Vein-Filling S. II Gas Hydrate
Oil Staining, Hydrogen Sulfide
Complex Chemosynthetic Community
Water Depth = 541 meters**

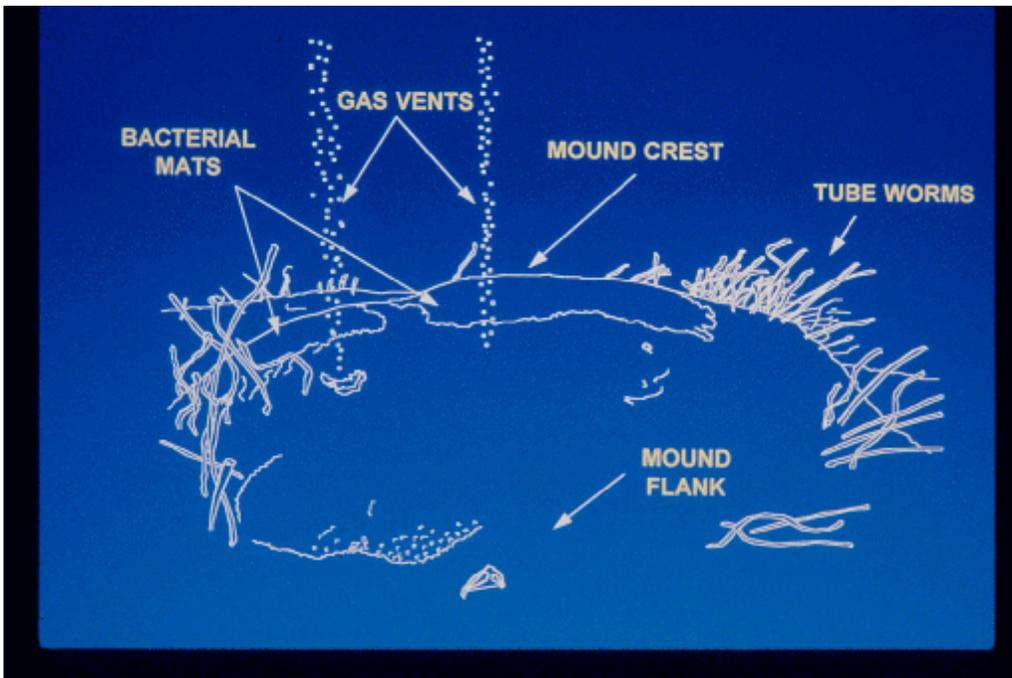
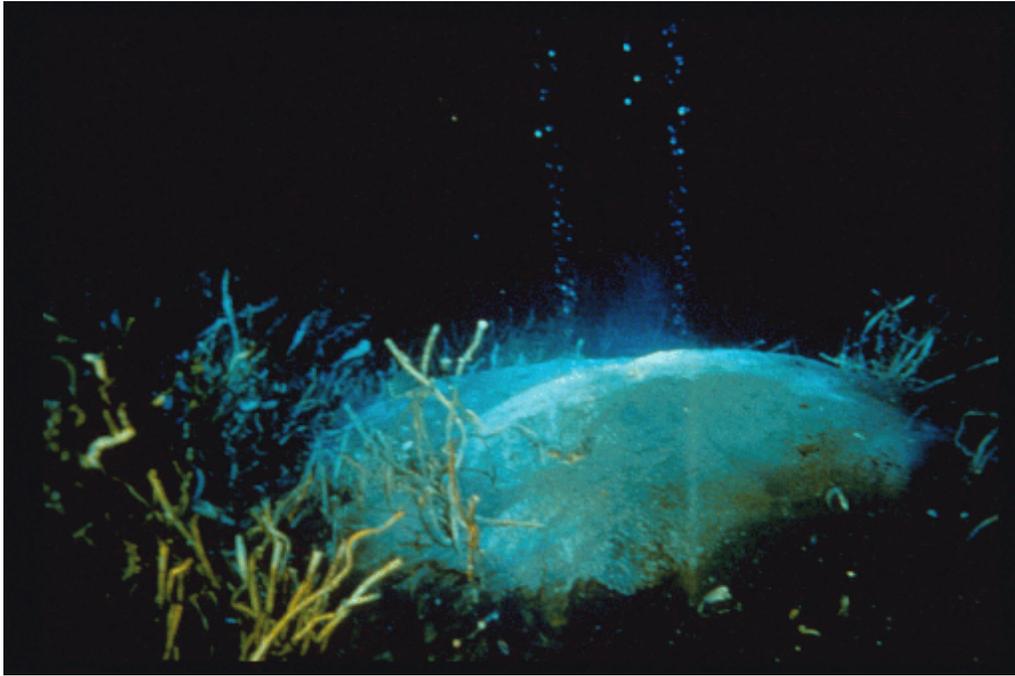
**Green Canyon Block 185
Gas Hydrate Site
(Bush Hill)**

**MAXIMUM PRESERVATION DEPTHS
BELOW SEAFLOOR AT 540 METERS
WATER DEPTH**

**Structure I: Not Stable
Structure II: 310-490 meters**



Gas Hydrate Mounds



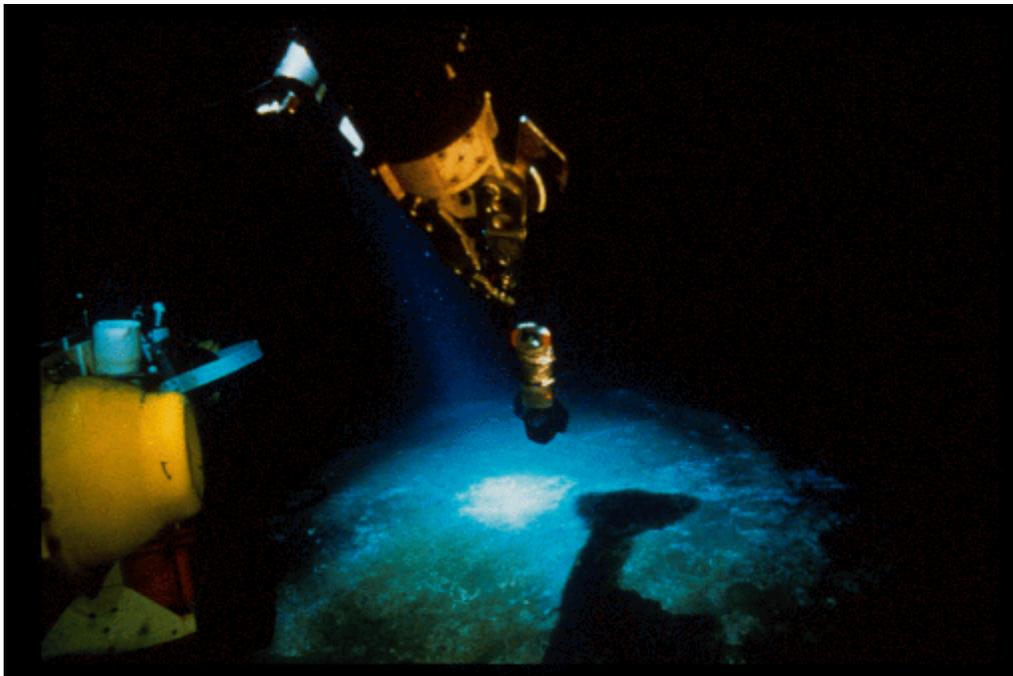
Research Submarine Gas Hydrate Experiments

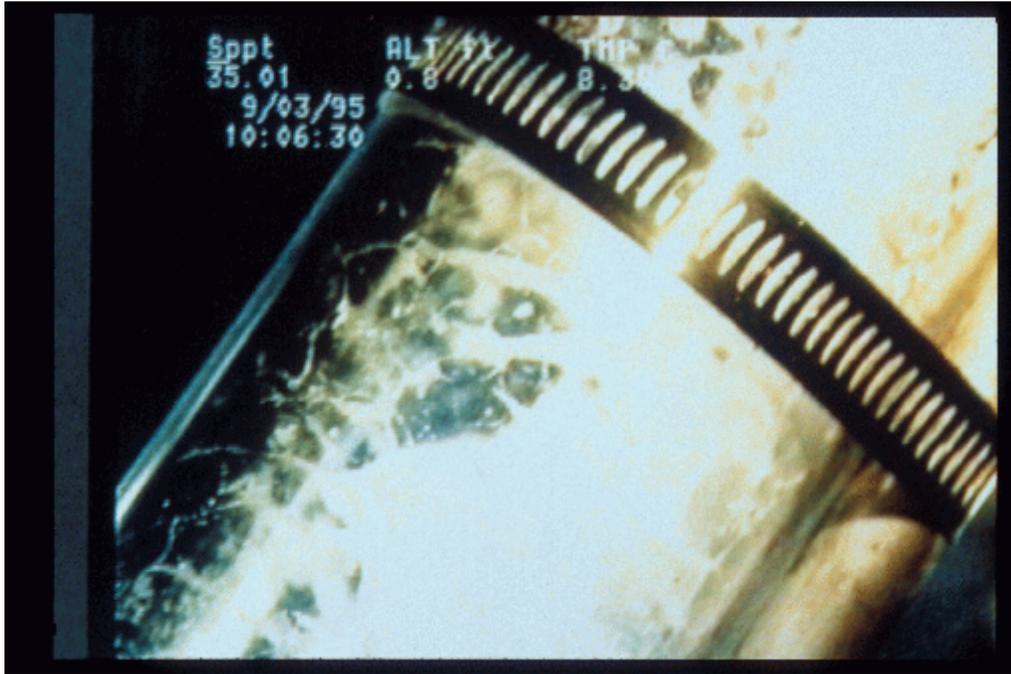
Green Canyon 185

Starting Material: Vent Gas

Temperature = 9.2°C

Water Depth = 540 meters

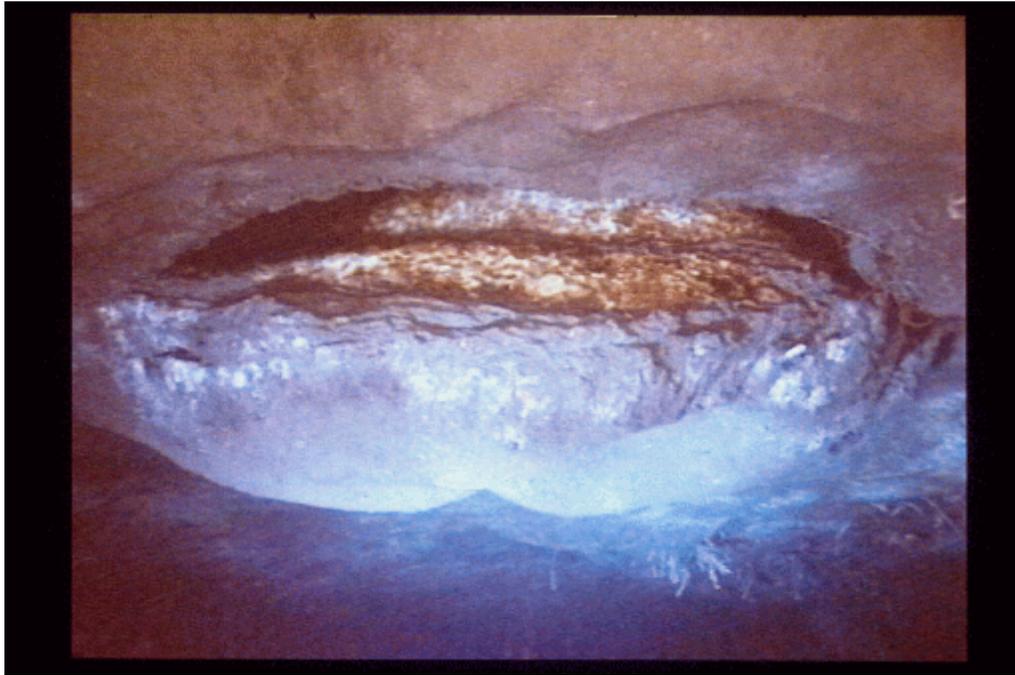




**Vein-Filling by Gas Hydrates
in Hemipelagic Mud
“Fracture Porosity”**



**Soft Sediment Deformation
During Hydrate
Crystallization and
Decomposition**



Mississippi Canyon Block 852 and 853 Gas Hydrate Sites

**Major fluid flow release point from Ursa
salt basin**

Salt-related sea floor salt feature > 1 km

High amplitudes

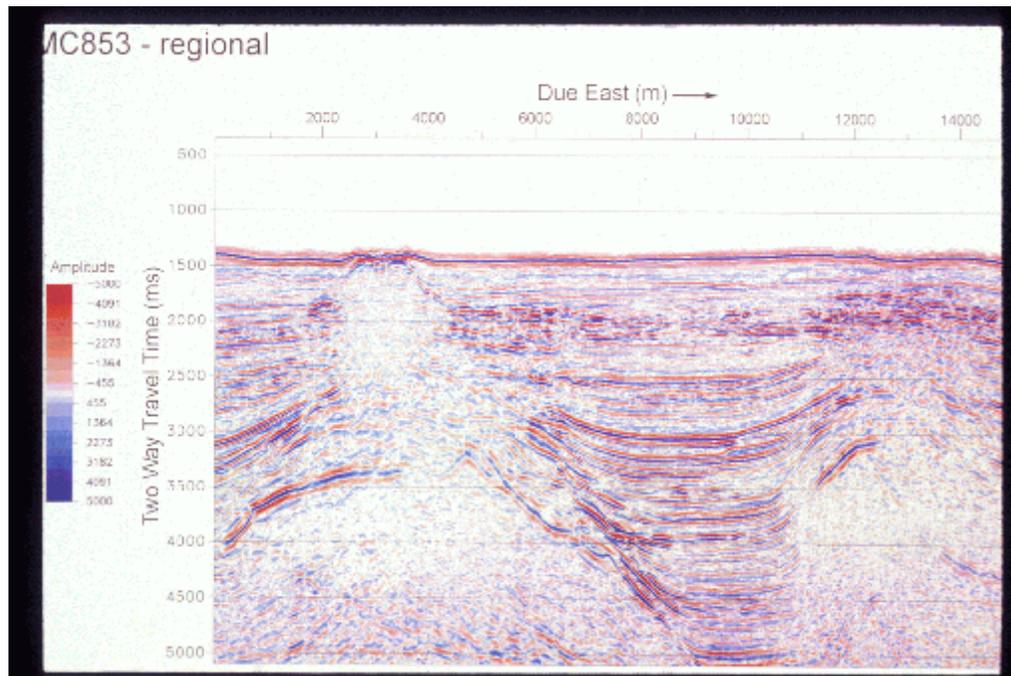
Water Depth = ~ 1060 meters

Mississippi Canyon Blocks 852 and 853 Gas Hydrate Site

**MAXIMUM PRESERVATION DEPTHS
BELOW SEAFLOOR AT 1060 METERS
WATER DEPTH**

Structure I: 310 meters

Structure II: 610-750 meters



Atwater Valley Block 425 Gas Hydrate Site

**Major fluid flow release point in Mississippi
Fan Fold Belt**

Fault-related sea floor feature

High Amplitudes

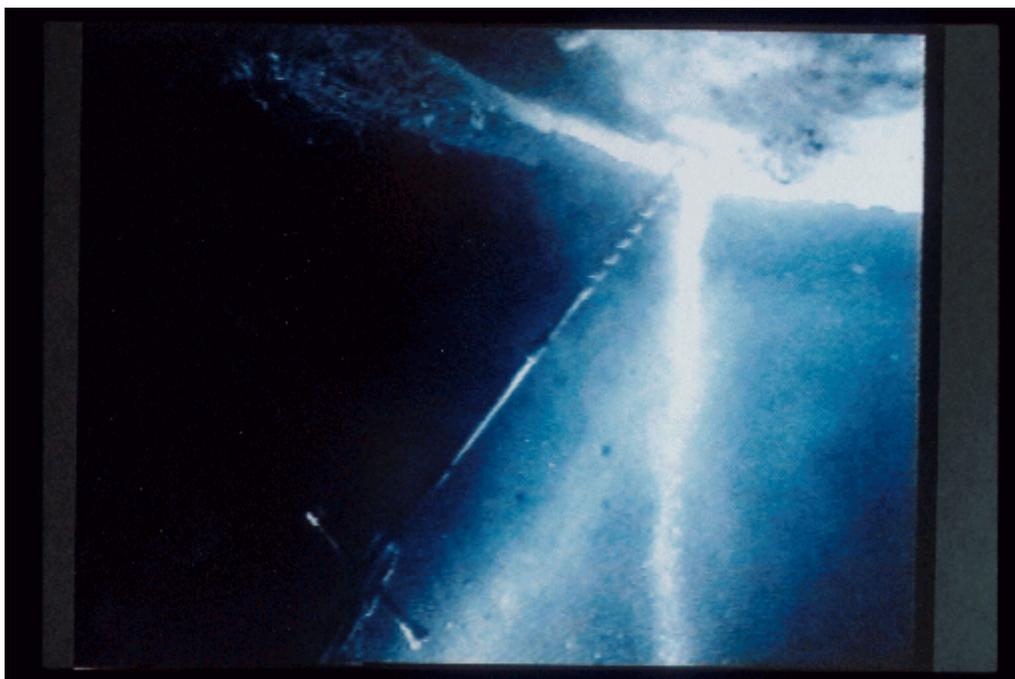
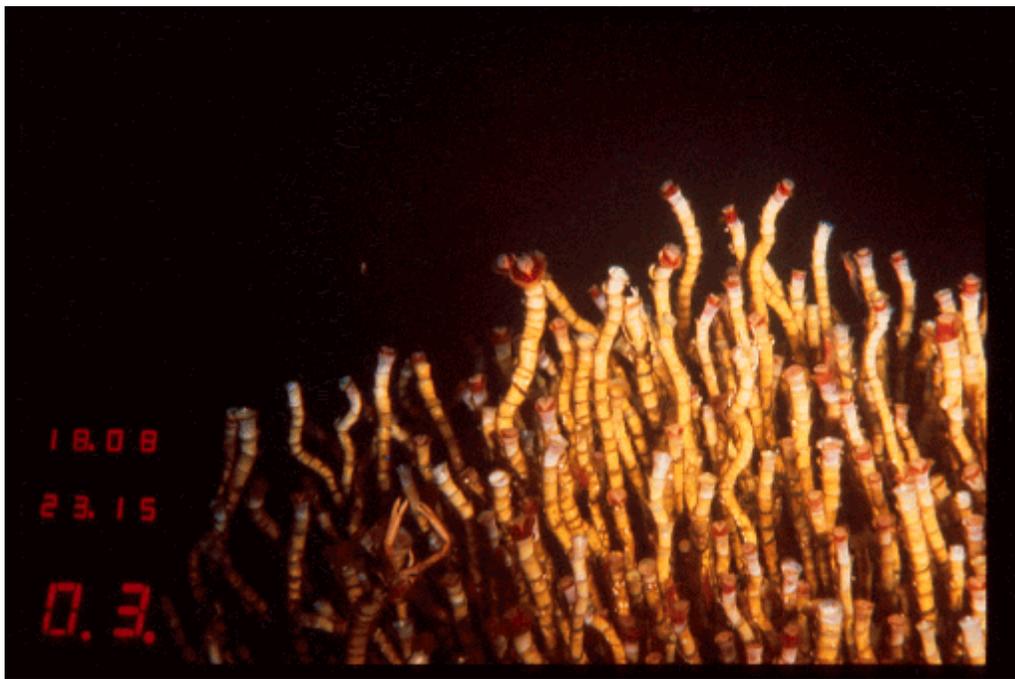
Water Depth = ~ 1935 meters

**Atwater Valley Block 425
Gas Hydrate Site**

**MAXIMUM PRESERVATION DEPTHS
BELOW SEAFLOOR AT 1930 METERS
WATER DEPTH**

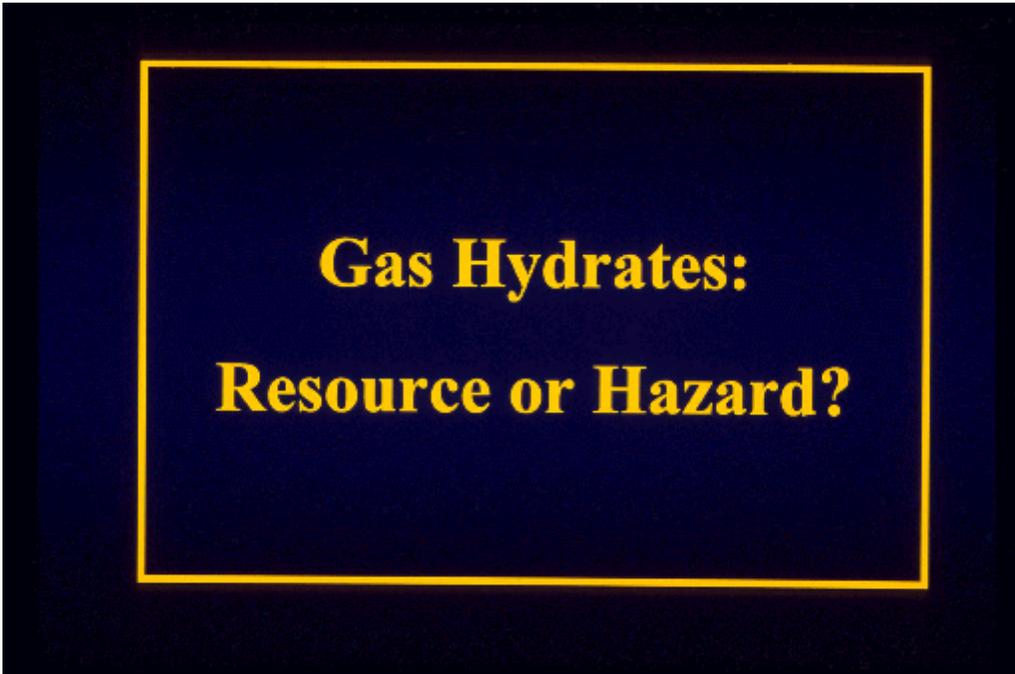
**Structure I: 650 meters
Structure II: 740-890 meters**

**Gas Hydrates in
Chemosynthetic
Communities**





**Bacterial Methane
Gas Hydrates**



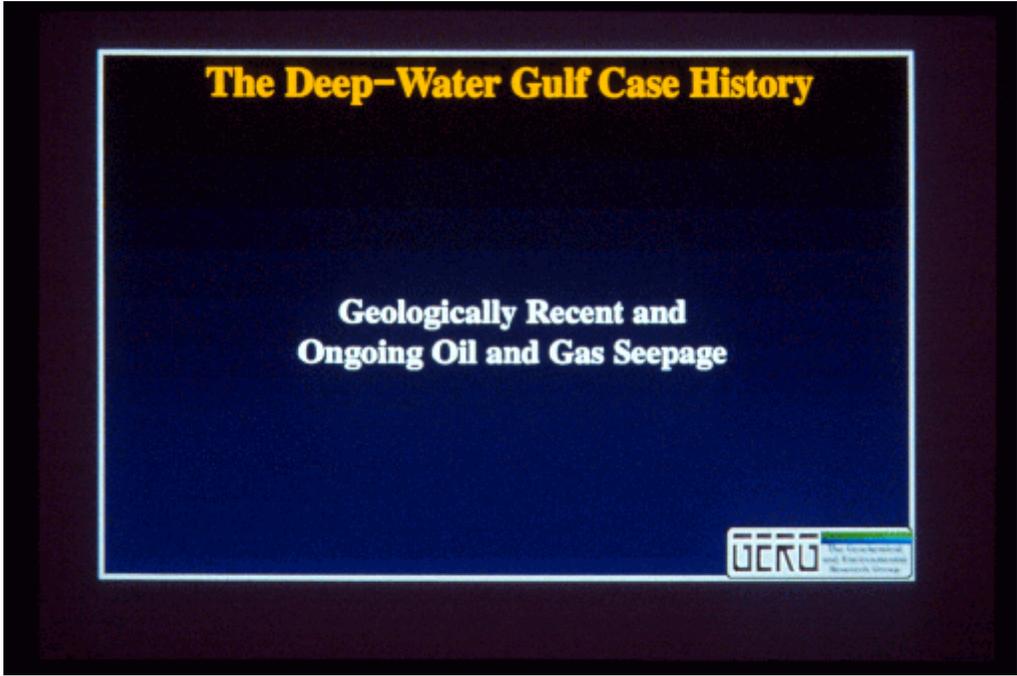
**Gas Hydrates:
Resource or Hazard?**

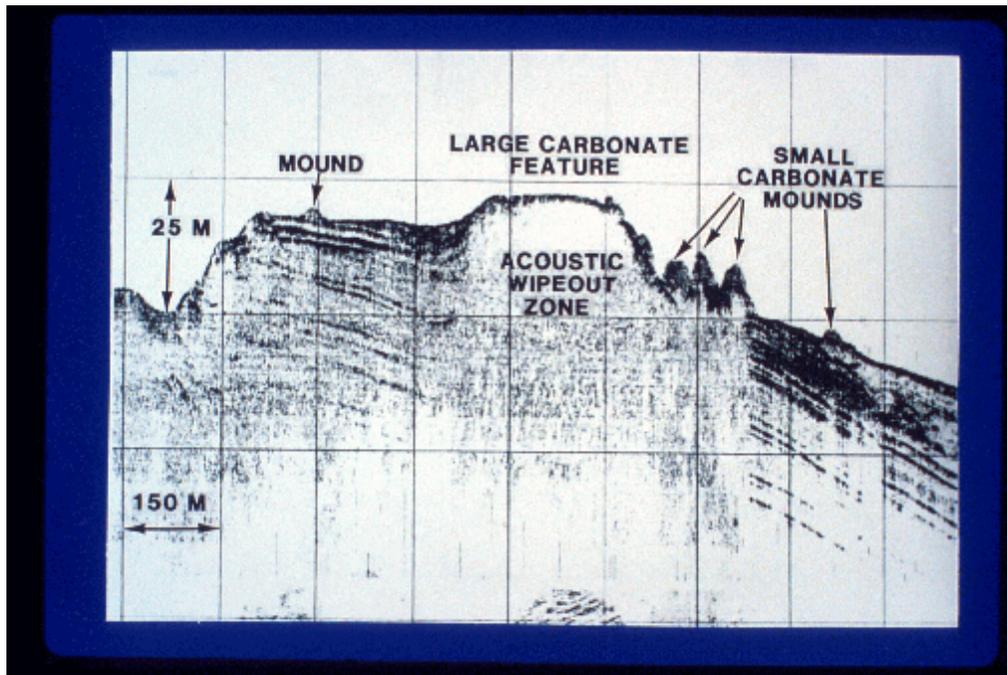
Gas Hydrates of the Northern Gulf of Mexico Continental Slope

Cage Structures of Hydrates

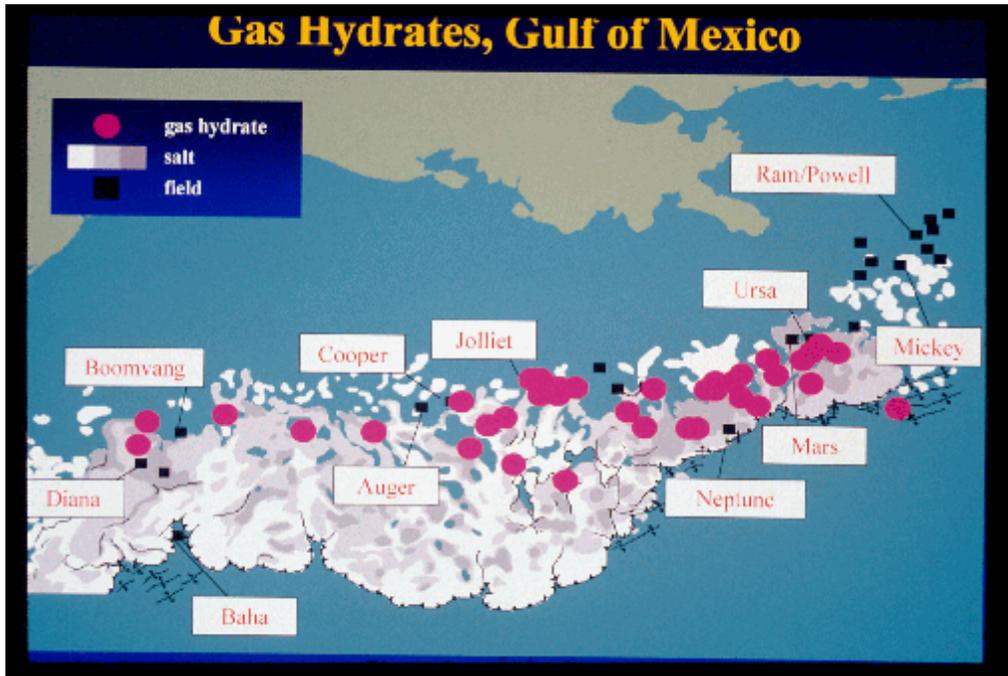
	Small Cages	Large Cages
Structure I Pm3n	 5^{12}	 $5^{12} 6^2$
Structure II Fd3m	 5^{12}	 $5^{12} 6^4$
Structure H P6/mmm	 5^{12}	 $4^2 5^6 6^3$
		 $5^{12} 6^8$

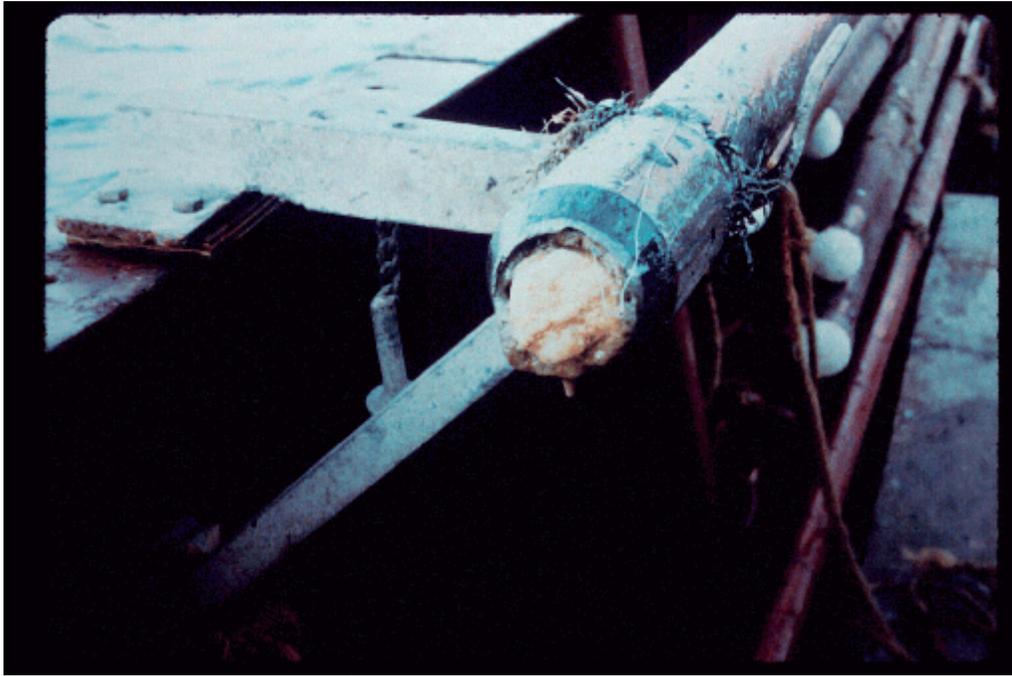
after Ripmeester and Ratcliffe (1990)



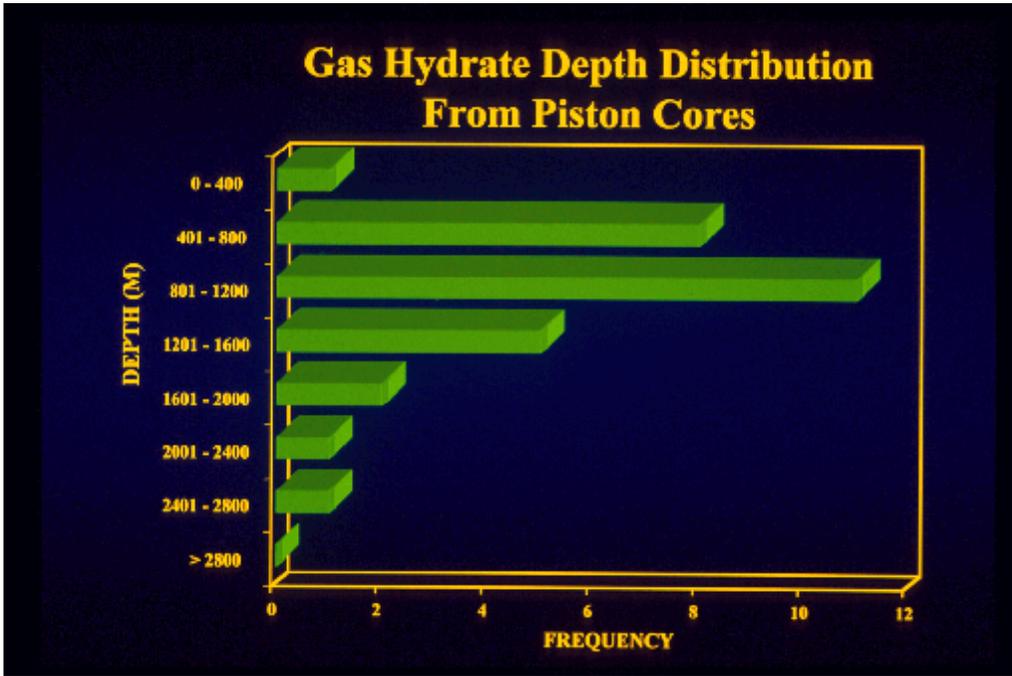


PISTON CORE SAMPLING

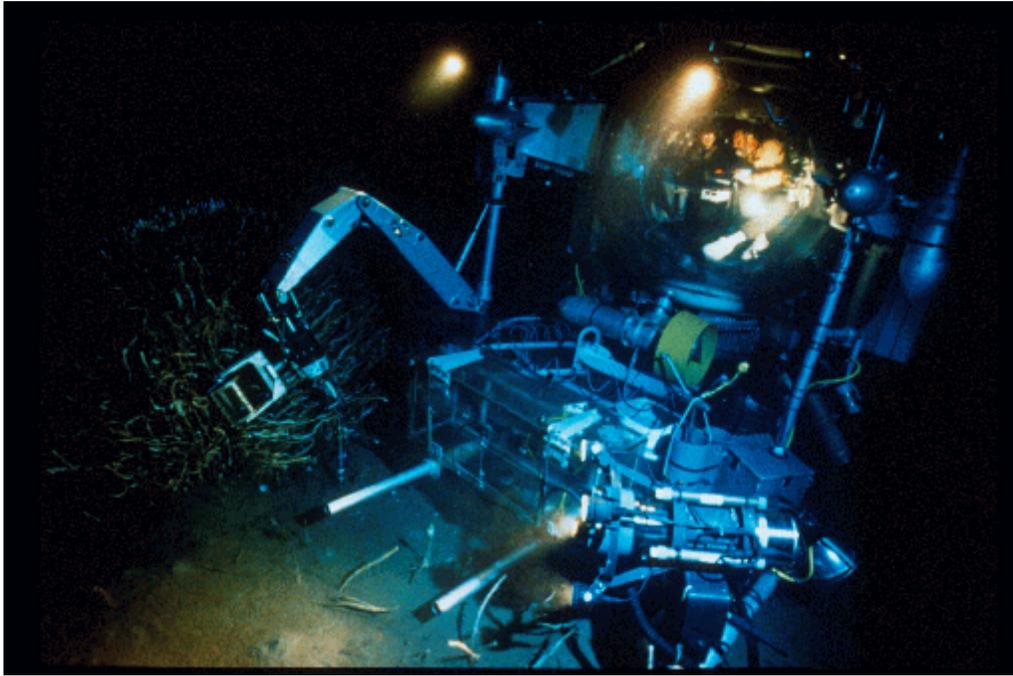




**Water Depth Distribution of
Gas Hydrates From Piston
Core Data**



**Research Submarine
Sampling**



Structural Focusing of Thermogenic Gas Hydrates

Rims of intrasalt basins

Salt ridges

Deep active faults

Sigsbee Escarpment