

AAPG HEDBERG CONFERENCE
“Near-Surface Hydrocarbon Migration: Mechanisms and Seepage Rates”
SEPTEMBER 16-19, 2001, VANCOUVER, BC, CANADA

**Surface And Subsurface Manifestations Of Gas Movement Through A North-South
Transect Of The Northern Gulf Of Mexico**

Jean Whelan¹, Deet Schumacher², Harry Roberts³, Larry Cathles⁴ and Steven Losh⁴

¹Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, Woods
Hole, MA 02543, USA

²ESRI, Merrill Engineering Bldg, University of Utah, Salt Lake City, Utah 84112

³Coastal Studies Institute, Louisiana State University, Baton Rouge, LA 70703

⁴Department of Geological Sciences, Snee Hall, Cornell University, Ithaca, N.Y. 14853

Large volumes of gas appear to have vented through a north-south transect of the offshore northern Gulf of Mexico. The specific sites of venting are generally highly localized and possibly episodic making the actual hydrocarbon fluxes involved difficult to estimate. This venting gas has caused significant changes in compositions of reservoir oils, both in the past (on the continental shelf) and at the present time (in reservoirs to the south). This upward gas movement produces a number of interesting effects at the seafloor, including support of a prolific and diverse biological community, formation of seafloor gas hydrates, and sometimes massive disruption of the subsurface and surface sediments including ejection of fossils from older deeper sediments to the modern seafloor. In some cases, methane gas bubbles appear to be vented directly into the atmosphere, possibly providing a deep sea source of the greenhouse gas, methane. Natural oil slicks are formed across the sea surface which can be followed for miles. An overview will be presented focusing on the effects of this migrating gas in the subsurface and its related surface sediment manifestations.