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Geochemistry of Marine sediments Associated to Gas Pockets and Seeps in The Gulf of Mexico

A drilling program was carried out within the vicinity of an oil production area in the Gulf of Mexico in July, 2002. Two bore holes in a zone of natural emissions (gas seeps) were done at depths up to 400 ft. Specific goals of this geochemical study were concentrated to characterize the marine sediments and pore water samples. The upper most section of sediment cores, approximately 60 ft in length, from two sites were recovered and resample for analysis of total hydrocarbons (TH), Rock-Eval Pyrolysis, trace metals and benthic microorganisms. In addition, pore water samples in this core was also recovered by utilizing a Deepwater Gas Probe. A total of 14 sediment samples and five pore water samples were selected for specific analysis. TH varies from concentration-levels of ppm in a reference zone to concentration-levels of % in the seepage. Regarding V and Fe content in the gas seep zone, there is a higher concentration of V and Iron content is consistent with the least oxidizing zone of the core. Four species of Foraminifera were identified as typical biofacies of carbonaceous inner platform. Hydrographic conditions of the sites, seen throughout the temperature and salinity profiles, show a distinct clink in the water column structure indicating that the temperature and salinity fields are being affected by gas bubbles that pop-up from the bottom. Further analysis of dissolved gases and pore water, determination of C and N isotopic values and bacteriologic studies in sediments are still ongoing and will be completed shortly.