

M67/2b – 1. Weekly Report 2.4 - 9.4.2006 (Continuation of M67/2a)

After most new cruise participants for M67/2b had boarded *Meteor* in Tampico on Saturday, April 1st, scientists from Mexico and the United States arrived during Sunday. On board, installation of the Quest ROV system continued and a number of analytical instruments were set up in the laboratories. Numerous guests from the Tampico area, as well as from the German embassy in Mexico City participated in a reception on board *Meteor* on Sunday as well. Tours of the ship followed and from conversations with our guests it became obvious that there was a great deal of interest in the German research vessel and in our research activities in the Gulf of Mexico. Local media reported in great detail about the visit of *R/V Meteor* to Tampico.

Meteor's scheduled departure for leg M67/2b from Tampico on Monday, April 3rd was delayed to 4:00 p.m. due to the late arrival of airfreight. In addition to cruise participants from Germany, Mexico, and the United States, seven engineers and technicians for bow thruster, dynamic positioning system, PARASOUND, and the multibeam system had joined us on board to conduct much needed repairs. These repairs and upgrades had become necessary after the many changes to the ship's systems during its time in the shipyard and will probably continue to affect subsequent legs as well.

Maintenance tasks to the vessel were completed late on Monday afternoon and, after the technicians had disembarked at the pilot's station in Tampico at midnight, the vessel continued its transit to our study area in the northern Bay of Campeche. Underway collection of Parasound and multibeam bathymetry data continued until the morning of April 5th. Sediments from an approximately 40 km long ridge characterized by numerous sea surface oil slicks were recovered at our first multi-corer station from a water depth of 2200 m. A first series of ROV dives with *Quest* was scheduled for the two following days. However, strong winds (6 to 7 Beaufort) in combination with a still nonfunctional bow thruster forced us to conduct alternative sampling activities. In addition, the program was curtailed by a failure of the video telemetry system, which led to a fairly extensive use of the gravity corer on Thursday, April 6. Excitement grew with recovery of the final sediment core, which contained patches and stringers of heavy oil in its core catcher. Pore water and gas analyses revealed geochemical gradients typical for anaerobic methane oxidation in the lower portion of the core.

Detailed multibeam mapping of the Chapopote deep-sea mound with a reduced beam width of 2 km and overlapping tracks followed during the night. The result, a much more detailed morphological map of Chapopote, convinced us to survey a second deep-sea mound similar to Chapopote and another potential dive target during the following day. However, a ROV dive scheduled for Saturday had to be cancelled due to technical problems with the vehicle. Excellent weather and calm seas allowed us instead to survey a natural sea-surface oil slick covering an area of 1.5-4 km² in the northeastern section above Chapopote. The slick is caused by rising droplets of oil originating from a water depth of almost 3000 m. We took advantage of the calm seas for documenting rising drops of oil and areas of increased occurrences of gas bubbles on the sea surface. Below the sea surface, we were able to document acoustic anomalies caused by ascending oil and gas bubbles in the water column using the new Parasound system. During the night, we finally succeeded in deploying the repaired TV-sled and received the first video images from the seafloor of knoll 2139. Previous side-scan sonar surveys had indicated the presence of asphalt deposits at this knoll, which was confirmed by the TV-sled. We have now documented asphalt deposits on four of the Campeche Knolls, which is an important step towards our goal of documenting the presumably large regional extent of asphalt volcanism. Gravity coring and deployments of the multi-corer completed our program for the weekend.

Technical problems with the ROV once again prevented a dive on Sunday, but were overcome by the end of the day thanks to a dedicated, all-day repair effort of the entire ROV team. We are now optimistic that *Quest* will finally reach the seafloor of Chapopote sometime tomorrow.

All cruise participants are well and in good spirits.

With best regards from all participants

Gerhard Bohrmann, April 9, 2006



Sediment and pore water sampling in the geology lab of R/V Meteor