

M67/2A - First Weekly Report 03/15-19/2006

The R/V Meteor sailed from Pier 8 in Cristobal harbour, Panama at 6 pm. on March 15th transit through the Caribbean Sea to the Gulf of Mexico. Interdisciplinary research related to active seeps on the seafloor has been planned to take place in the Southern Gulf of Mexico during the upcoming four and half weeks by the Research Center of Ocean Margins DFG. In the same way that groundwater springs occur on land, the seepage of fluids and gas, known as Cold Seeps, is a global phenomenon that will be studied in an interdisciplinary way in the frame of the four projects by Bremen's research center. These seepage sites are linked, as in the American northern sector of the Gulf of Mexico, with natural emissions of oil and gas that have a close relationship with industrial oil production areas. We will center our work in the Southern Gulf of Mexico in Mexican waters where the first cold seep in Mexico was previously discovered onboard R/V SONNE in Fall of 2003.

On that occasion 22 mounds, known as knolls, with a diameter of 5-10 km and elevation of 450-800 m were mapped in an area of 7,000 km² in the northern Campeche Bay at depths of 3,000 m. The video observations and sampling at one of the mounds recognized the presence of spectacular flows of asphalt, similar to basaltic lava flows on the seafloor in an area of over 1 km². The presence of asphalt was recorded additionally in two knolls that with the associated presence of craterlike structures in the morphological development led to propose the term of asphalt volcanism in the last three years, without having a complete model to explain the phenomenon. In the time being more ideas were generated as models to explain the phenomenon that still remains speculative without having any other aimed research. We are quite optimistic that after two and a half years of the discovery the first asphalt volcano we will be able to carry out targeted research studies on board the R/V Meteor to better describe the phenomenon of the asphalt volcanism. For this purpose Bremen's Research Center Ocean Margins is planning to carry out this study in collaboration with the National Autonomous University of Mexico and Texas A & M University in Corpus Christi, using an ample spectrum of research tools and strategies. During the first leg (M67/2a) we will carry out geophysical measurements and in the second leg (M67/2b) we plan to use the ROV QUEST from Bremen to directly observe and carry out measurements on the seafloor at 3000 m depth.

The time required by the R/V Meteor in the port of Cristobal was short after crossing the Panama Canal through Balboa on the Pacific side; time at which 5 participants of the cruise M67/2 had boarded the ship. The crossing through

the Panama Canal started on March 14. With 3 water dams on each side of the Canal, the 26m sea-level difference between the Pacific Ocean and the Caribbean Sea is resolved, and it is in this way that the Meteor reached the Caribbean Sea after leaving the last lock at Gatun on March 15 to come alongside the port of Cristobal. A container of the previous cruise leg belonging to the research institution 574 in Kiel was unloaded and 5 new containers from Bremen were loaded. All 27 scientists and technicians from Germany, Mexico, Colombia, China, Hungary and the US arrived onboard after midday and in this way we were able to sail from the port of Cristobal on the same day as planned. The over four day transit period into the Gulf of Mexico is being used on board to set the laboratories, and in part to feel acquainted with the new techniques on the R/V Meteor and in the frame of daily thematic seminars and work meetings to introduce the upcoming research activities to all participants. We can predict that with the current research vessel's travel speed we will arrive in the morning of March 20 and start early with the first measurements and work at station from which we expect to report in the next weekly report.

All participants are well and those participants from Europe enjoy the warm Caribbean weather.

With regards and in name of all the cruise participants

Volkhard Spieß, 3/19/2006

