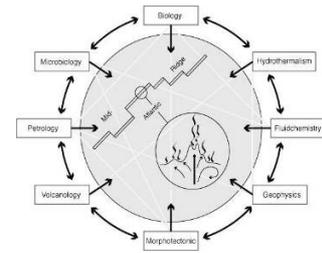




MSM 10/3

Jan. 11th – Feb. 13th, 2009

3rd weekly report



During the third week of our Hydromar VII cruise we learned a lot more about oceanography than we ever thought we would during this cruise. As the winds were consistently too strong at 6 – 7 Bft and the waves too high at 3, sometimes even 4 m, we were not able to deploy the ROV throughout the entire week. So we ran one CTD after another, using a variety of techniques including CTD casts, tow-yos, and jojos (Fig. 1). We are still hunting for the elusive source of methane and hydrogen in the water column at depths below 3000 m. We are now convinced that there must be active sites in the rift valley but have not yet been able to pinpoint them to a specific location.



Fig. 1: Our CTD Master, Fritz Karbe, preparing the CTD for a cast.



Fig. 2: Our cook, Waldemar Arndt, with the tuna fish for the barbecue

On January 29th we celebrated Hump Day (Bergfest) with an evening barbecue and enjoyed three different kinds of grilled fish: a magnificent tuna fish that Captain von Staa had fortuitously “organized” in Las Palmas, mackerel, and a fresh mahi-mahi caught by one of the ROV team members off the stern of the boat. Our cook (Figure 2) and the steward, Frank Liiders, outdid themselves in preparing and serving the delicious fish barbecue.

As in the week before, Sunday morning had a special present for us: the winds had quieted down overnight to 4 Bft and we were finally able to deploy the ROV again. This time, we could spend the whole day on the seafloor and successfully completed a number of objectives. We retrieved two instruments that had been left on the seafloor for

over a year: the “Ocean Bottom Pressuremeter” or OBP that monitors pressure changes in bottom waters to assess vertical displacements of the seafloor (Figure 3), and the SMoni (Smoker Monitoring Device), for monitoring the temperature of hot fluids from black smokers.



Fig. 3: Images from our ROV dive at the Logatchev hydrothermal vent field. On the left, the recovery of the OBP and on the right, the sampling of *Bathymodiolus* mussels near the active vent site Irina II. Copyright: IFM-Geomar

Mussels were collected for analyses of their symbiotic bacteria (Fig. 3 and 4) and hot fluids from the Irina II structure were sampled for chemical and microbiological analyses. The in situ mass spectrometer measurements of the hot smoker fluids (as high as 350°C) showed that these are highly enriched in hydrogen, methane, CO₂, sulfide and other reduced compounds.



Fig. 4: Processing of the collected *Bathymodiolus* mussels in the deck lab of the MS Merian

Last but not least, and as during the past two weeks, we are being well taken care of by the crew that continues to pamper us with their help, support and friendliness.

Nicole Dubilier and the scientific crew of MSM10/3
February 1st, 2009