

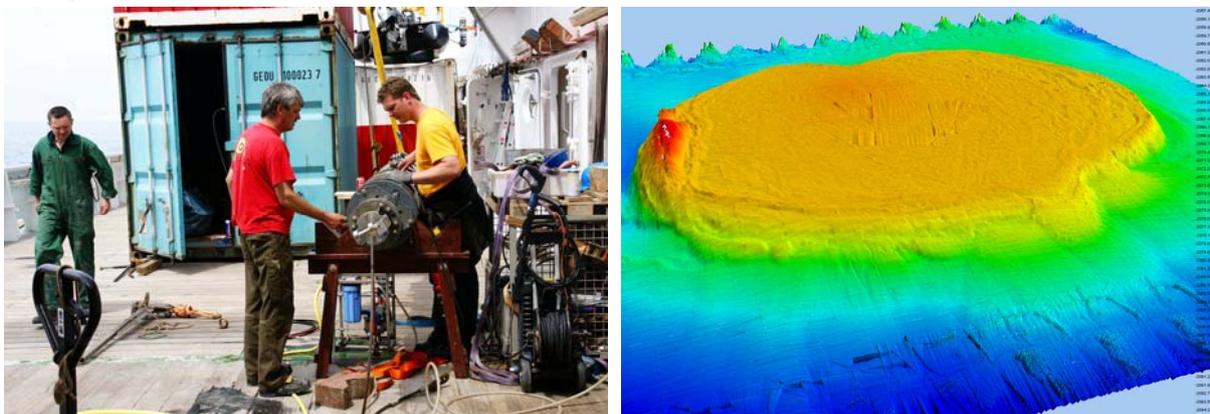
# R/V MARIA S. MERIAN Cruise MSM 15/2



## Second Weekly Report: 17 – 23 May, 2010

On Monday 17 May, two AUV mapping dives on the Dvurechenskii mud volcano were accomplished during daytime (Fig. 1 right) which took until the evening hours. Subsequently we did an ROV dive on a flare emission at a possible fault zone which had been newly detected by PARASOUND. Tuesday was characterised by recording profiles as well as sampling with the autoclave piston corer and the gravity corer. During the ROV dive in the evening we could retrieve the temperature mooring which we earlier thought had been lost on DSV. The successful recovery of the temperature logger we will allow us to analyse the data of the temperature logger about the volcanic activities during the past three years. The AUV measurements done before had enabled us to determine the exact coordinates of the temperature mooring.

On Thursday 20 May, R/V MARIA S. MERIAN punctually passed the port entrance of Sevastopol and berthed on its scheduled place at Nachimow Quay. This quay is situated in the city center and just three walking minutes from the aquarium and the cooperating O.A. Kovalevski Institute (IBSS). The visit of MARIA S. MERIAN in Ukraine was the start of the “German week at the Crimean Peninsula” which had been accomplished by the German Embassy in Kiev. The event started at 11:00 with a press conference accomplished by the German Ambassador Hans-Jürgen Heimsoeth as well as representatives from the German Ministry of Education and Science (BMBF) and from the Ukrainian Academy of Sciences, under attendance of more than 35 journalists and press representatives. In the afternoon we guided several groups of visitors across the vessel, and their enthusiasm made us very happy.



**Fig. 1:** Klaus Dehning und Daniel Hüttich preparing the autoclave piston corer (left). 3D-view on the up to now just roughly processed AUV measurement of Dvurechenskii mud volcano (right).

For the evening the Captain and the Chief Scientist had invited 120 guests and representatives of public life, including 13 Ambassadors from different EU-countries for a festive reception on board the vessel. The BMBF had also taken the opportunity of MARIA S. MERIAN's visit to invite for the workshop “Germany – Competent Partners in Marine Research” on 21 May. For this event also representatives of the most important German marine research institutions had arrived. Scientists and crew members passed the day in Sevastopol under bright sunshine and could explore the city and its surroundings. On 22 May, R/V MARIA S. MERIAN left Sevastopol and arrived already in the afternoon at the

working area of the western Sorokin Trough. The last AUV map we had compiled on the „nameless mud volcano“ was the basis for our subsequent ROV dive which during the night became one of our highlights. Contrary to the flat Dvurechenskii mud volcano (Fig. 1) the “nameless mud volcano” is characterised by its detailed morphology. A ring elevation is followed to the inside by a ring depression bordering the central active area of about 150m in diameter. This central area is characterised by a small scale morphology, too, which we could understand to the smallest detail due to the high resolution ability of our Bremen AUV SEAL 5000. Thus the biggest surprise was found in the mud volcano’s center where considerable quantities of free gas bubbled into the water column. There were a big mud pond and several smaller mud pools to be found which were filled with very liquid mud, and where the methane emissions bubbled into the water in a very spectacular manner (Fig. 2). As per our knowledge such spectacle has never been documented on a mud volcano in the depth sea of 2000m.



**Fig. 2:** The research vessel MARIA S. MERIAN was heartily welcomed in the city of Sevastopol at Nachimow Quay on 20 May (left). Mud pool of the up to now nameless seep site in 2000m water depth next to Dvurechenskii mud volcano. Escaping methane bubbles carry up liquid mud which contributes to the clouding in the water column (right).

Highly motivated by these deep sea scenes we continued the sampling program, and our fifth ROV dive ended very successfully early next morning. A gravity core sampling was accomplished in the outer central area of the volcano, and a further gravity corer fitted with temperature loggers was discharged more than 50m deep into the seafloor of the centre. The existing temperature of 30°C shows the high activity of the mud volcano. Furthermore the Whitsunday was characterised by the transit to Georgia and gave opportunity to everybody for maintenance of our labs and devices as well as for personal matters.

Greetings on behalf of the participants,

Gerhard Bohrmann,

MSM, 23 May 2010; <http://www.marum.de/Expeditions-Logbuch.html>