1. weekly report SO226-2 CHRIMP

Following some long travel for some of us 22 scientists from New Zealand, the United States and Germany took over R/V SONNE from our colleagues of the first leg on February 8, 2013. Our goal is to continue the investigations of large seafloor depressions on the Chatham Rise with deep-towed sidescan sonar, OFOS (Ocean Floor Observations System) and to sample the already known structures with piston and multicorer. In addition we have brought along a portable multibeam echosounder with the capability of water column imaging and several methane sensors in order to search for indications of methane release into the water column.

Prior to the cruise, on February 7, we exchanged our ideas with the participants of the previous leg in order to focus on specific targets that we will tackle within the next three weeks. February 9 was largely dedicated to unpacking the equipment and to setting up the laboratories. During the day the transducers of the ELAC multibeam also had to be fixed under the moon pool. Unfortunately, these transducers are slightly too big to fit through the moon pool and had to be mounted under the ship by divers. On February 9, R/V SONNE briefly changed berth for refueling and finally, at 17:00, we left for a 24 hours transit to our easternmost working area.

Station work in the area started with a CTD cast in order to have the latest sound velocity profile for both the multibeam data and for the calibration of the Posidonia USBL antenna. A 48 hours deep-towed sidescan survey was then designed to further constrain possible fluid emission sites or so-called „cold seeps“. However, to our surprise, the sidescan data did not show indications for recent fluid venting activity and even a fluid-flow related origin of the structures might be questionable. However, exposed sediment layers at the rim of the depressions are well shown (Fig. 1). Subsequent sampling of the south-westernmost large seafloor depression revealed massive layers of chalk in just a few decimeters of subbottom depth (Fig. 2). These chalk layers are fairly cohesive and difficult to sample. On one 6 meters long piston core that eventually recovered 4.5 meters of sediment, the pull had to exceed 90 kN in order to get the corer out of the seafloor. We subsequently changed our sampling strategy and concentrated on seafloor depressions slightly further north and in shallower water depth in order to avoid the chalk. Sampling of one of these seafloor depressions with multicorer and piston corer is still continuing. However, first analyses of the pore waters in the working area show the presence of higher hydrocarbons and therefore an indication for a thermogenic origin of the gases in the sediment.

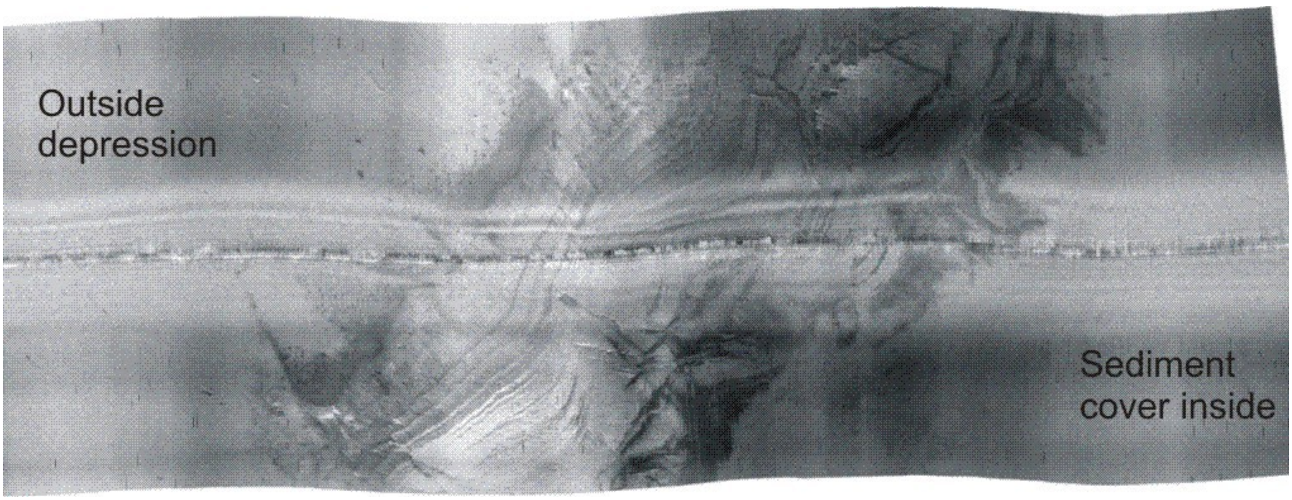

Figure 1: The bounding escarpment of one of the large seafloor depressions.

Figure 2: The transition from glauconitic sandy-mud to chalk in 70 cm subbottom depth. The indurated part forms a depositional hiatus.

Everyone on board is doing well despite some significant swell.
Best regards on behalf of all cruise participants,

Ingo Klaucke
Chief Scientist