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The last week started with the deployment of another sediment trap in Cluster 7, representing the first particle trap mooring at the Southeast Indian Ridge. Two adjoining water CTD stations will provide important information on the conditions within the different water masses south of the Rodrigues Triple Junction. It is still possible to distinguish the weaker and fading oxygen-poor Arabian Sea Water from the increasingly dominant Antarctic Intermediate Water. The stations allow us not at least to model potential transportation processes. On our way to the southernmost cluster of the license area we carried out magnetic, gravity and bathymetric measurements for control purposes. We continued the measurements in cluster 12 as we only collected ship-borne bathymetry, magnetic and gravity data in 2012. The exploration work started on Wednesday with the second deployment of our sensor sled, which is towed in a tow-yo mode for the search and identification of hydrothermal particles as well as redox and temperature anomalies along the graben axis of the Southeast Indian Ridge. Unfortunately, we could not detect either local or regional anomalies. Therefore, we can exclude largely the existence of active hydrothermal vent fields in the license cluster 12. During a deep-towed bathymetry station with HOMESIDE with a total length of 60 km we gained information on the activity of the faults at the eastern graben wall through high resolution bathymetric data. Most of the listric normal faults are volcanically active and are pierced by pillow mounds. The northern part is characterized by sheet flows in between the fault planes giving evidence for high volcanic production and local volcanic centers. The latter should be characterized by strongly elevated heat flow – an important prerequisite for former hydrothermal activity.

In cluster 12 we also sampled volcanic glass from a series of axial volcanoes by the wax corer of the University of Erlangen. At the southernmost end of cluster 12 we deployed another sediment trap and subsequently sampled volcanic glass on Friday and early Saturday. From noon on, we had to finish our work due to heavy seas with 7m waves and up to 10 Bft wind for security reasons. After the wind and waves decreased today noon, we resumed our program with a couple more wax corer stations.

Petrographic characterization of dredge samples

Despite the in part rather cold and stormy weather, the attitude on board is still very good. All participants wait for the first indications for sulfide mineralization or even hydrothermal activity. In the coming week, we will continue our search and exploration in cluster 11.

With best regards from vessel SONNE

Dr. Ulrich Schwarz-Schampera, Chief Scientist

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