

## 5. Weekly Report SO271 (INDEX 2019)

25. Nov. - 01. Dec. 2019



01.12.2019

The first half of last week's program focused on the exploration of the area east of the southernmost CIR spreading axis in license cluster #05. Cluster #05 is the largest cluster in the German license area and holds 17 sulfide blocks, each 10x10 km in size. The program included the exploration of prospective cross-cutting ridge-graben structures, associated with young volcanic edifices, the wider area of the KAIREI vent site, and young CIR crust within the area of an overlapping spreading center. No indications for inactive and/or active vent sites, however, were identified. We finished up our workings in cluster #05 East with the recovery and redeployment of an ADCP mooring (05-03) close to the KAIREI field and with a gravity core station in a deep basin in the southeasternmost sulfide block including a subsequent heat flow station. The sediment core shows an interlayering of clay-silty and sandy material, composed of volcanic glass from the ridges nearby. The heat flow measurement shows the anticipated regional gradients. Wax corer stations retrieved only small amounts of volcanic glass even from young axial volcanic cones.

The work in cluster #06 started with a plume sled survey of the NW half (~20 km) of the cluster along the younger volcanic ridges on the western SEIR graben flank. No anomalies were identified in the water column. A subsequent HOMESIDE high-resolution bathymetry tow along the older western graben faults brought evidence for the first new vent site during cruise INDEX2019 and the first one in cluster #06. The site is associated with a series of younger pillow volcanoes and hosted by a normal graben fault. A subsequent ROPOS dive identified low-temperature, diffuse venting from an area about 40x40m in size. Piles of chimney fragments and copper mineralization indicate former high-temperature venting at this site, which is currently in the waning stage. Sampling indicated a mineralized stockwork zone in volcanic talus and pillow flows below the inactive chimneys. The biodiversity was sampled during the dive and is composed of the characteristic fauna identified at KAIREI to the North. The new site was named SURYA, after the Hindi and Sanskrit word for SONNE.

Following surveys explored the southern sulfide claim blocks but did not identify any other significant anomaly in the water column or on the seafloor. After a first water

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and zooplankton survey in cluster #06, we continued with rock sampling both, along the western flank and the central axial spreading graben. Today, we moved on to cluster #07 for the scheduled recovery of sediment trap/current meter mooring 07-02.

We just passed a major front system and the weather conditions were not favorable for some stations. The forecast, however, indicates that the conditions are calming down again, so that we can continue with the program as scheduled.

Very best regards from R/V SONNE,

Dr. Ulrich Schwarz-Schampera, Chief Scientist

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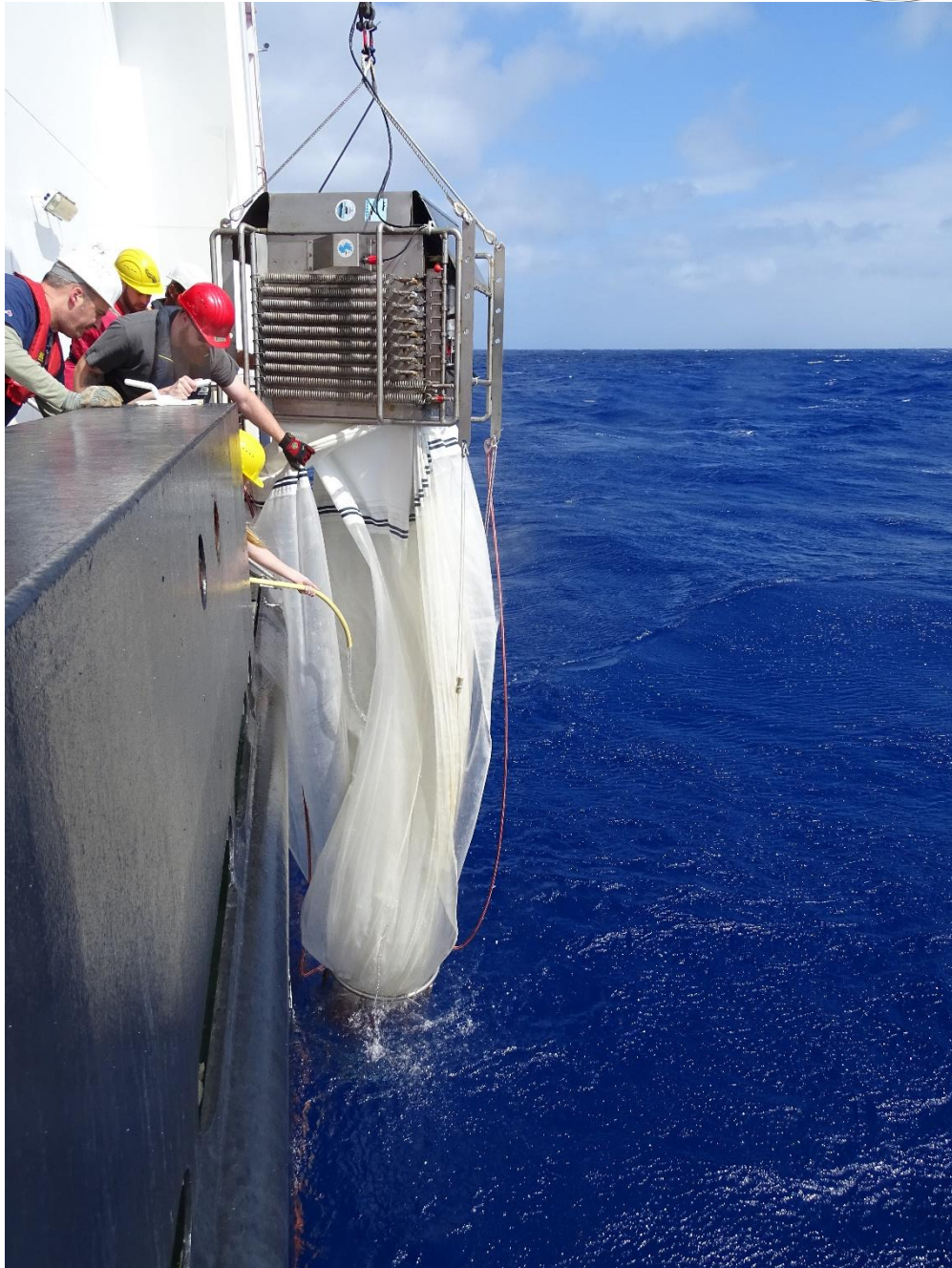
More information about SO271 (INDEX2019) at

[https://www.bgr.bund.de/DE/Themen/MarineRohstoffforschung/Meeresforschung/INDEX2019-Logbuch/aktuelles\\_node.html](https://www.bgr.bund.de/DE/Themen/MarineRohstoffforschung/Meeresforschung/INDEX2019-Logbuch/aktuelles_node.html)

<https://www.planeterde.de/logbuecher/fs-sonne-port-louis/metallsulfid-und-schwarze-raucher>

<https://www.youtube.com/watch?v=JFVe-1NqOMI&feature=youtu.be>

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*Recovery of a multinet for the sampling of zooplankton from different water depths.*