

2. Weekly Report SO271 (INDEX 2019)

04. - 10. Nov. 2019



We finished an intense first week with a general focus on the exploration of areas off the young spreading axis and towards the graben flanks. The work included high resolution petrological sampling of the Central Indian Ridge segments using a wax corer from the University of Erlangen. Models of ridge segmentation, mantle flow, melt focusing and transport potentially predict how the compositions of mantle melts should vary both off-axis and on-axis. The compositions of the basaltic lavas potentially can also be related to favorable conditions for hydrothermal processes. This week we conducted eleven wax corer station, with three stations in segment nine (cluster #01 of the claim area) and nine stations in segment three (cluster #04) of the southern Central Indian Ridge. Nine out of the eleven stations recovered volcanic glasses and fragments of pillow lavas.

Three ROPOS dives were carried out last week. The first dive basically was a test dive which was necessary because of the first installation of ROPOS on SONNE. The second dive tested a prospective area with pinnacle-shaped edifices along a shallow slope on the western graben flank of cluster #01 which was identified during a high resolution mapping station with BGR's deep-towed bathymetry sled HOMESIDE. It turned out that the pinnacles were actually calibration-induced artefacts and belong to a prominent volcanic edifice. The mound was found to be a steep sided (25-30°) pillow volcano that was likely constructed over a central vent along a fissure that fed a broad, relatively flat lava plane. The third dive on the active Edmond vent field targeted the northwestern extension of the field and a prominent collapse structure. We also deployed biological experiments (incubator, trap) and sampled a massive and very Cu-rich chimney edifice.

The program also included the recovery of two moorings, one each in cluster #01 and #04, with sediment traps, current meters and passive sampling devices. Virtually all cups of the two moorings closed as scheduled and the meters measured continuously. The mooring in cluster #04 has a length of almost 2900m and covers the three main water masses in the license area. The environmental program also included

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CTD water stations, multicorer stations and the first two multinet deployments for plankton studies in the water column.

The weather conditions improved and the participants are quite busy with carrying out the stations, documentation and analyses. The interest in the different marine observation and sampling tools and stations is consistently high, also on the sixth exploration cruise.

Very best regards from R/V SONNE,

Dr. Ulrich Schwarz-Schampera, Chief Scientist

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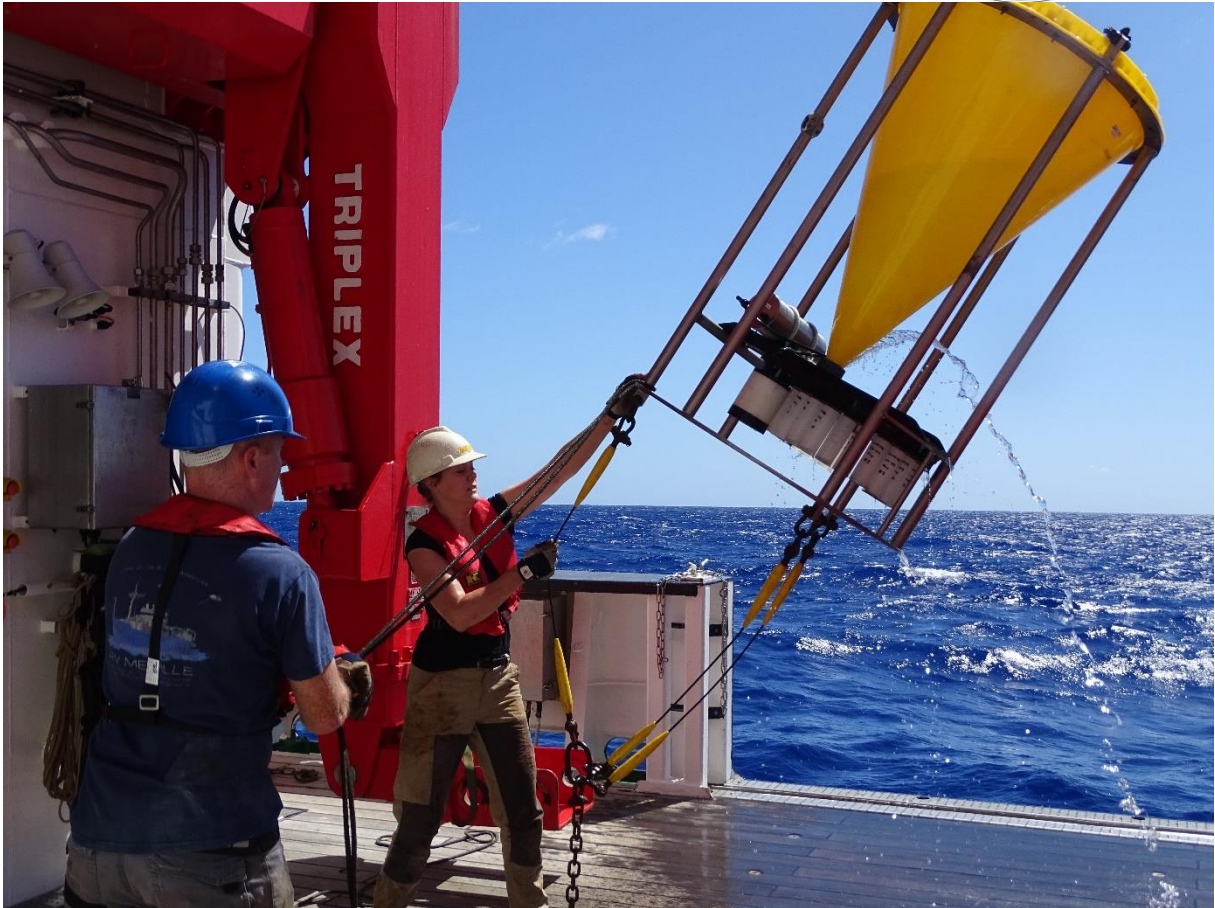
More information about SO271 (INDEX2019) at

https://www.bgr.bund.de/DE/Themen/MarineRohstoffforschung/Meeresforschung/INDEX2019-Logbuch/aktuelles_node.html

<https://www.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 sediment trap from mooring 04-04 in license cluster #04.