

Expedition M149 with FS Meteor

1. Weekly report

The goal of Expedition M149 is to study tectonic activity and flow flow associated with the plate boundary between Eurasia and Africa. The expedition goals will be implemented through a comprehensive sampling program that includes drilling into mud volcanos and fault zones using the seafloor drill rig (Meeresboden-Bohrgerät) MeBo, insitu heat flow measurements and installation of long-term observatories into the sub-seafloor in the Gulf of Cadiz and the Alboran sea (e.g. Carboneras and Al-Idrise faults). Mud volcanos are edifices build-up by material originating from several kilometers depth and thus allow insight into processes occurring deeply along the plate boundary fault. The long-term observatories are designed to record pore water pressure and temperature over years to study the activity of mud volcanos and faults in relation to the regional tectonics.

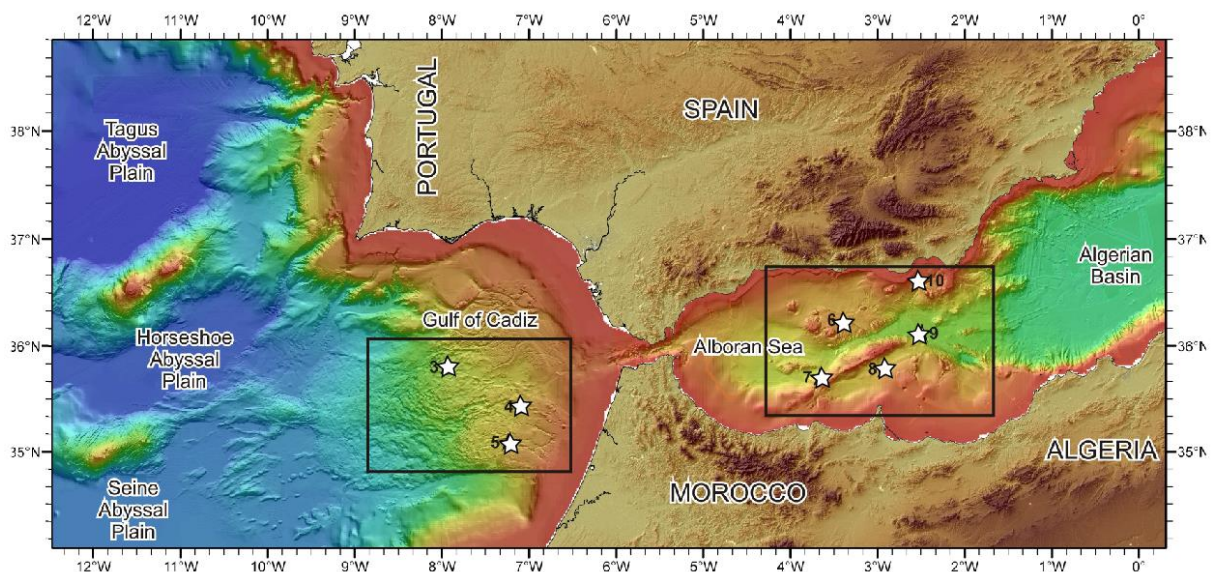


Fig. 1 Planned study areas of METEOR Expedition M149. Stars show anticipated MeBo-drilling locations.

After extensive operations in the port of Las Palmas (Gran Canaria), well into the evening of July 24, Expedition M149 with research vessel Meteor started on July 25. After leaving port the vessel steamed to the Gulf of Cadiz and arrived in the study area in the evening of July 27. During the night the seafloor was mapped using the ship intern multibeam and

parasound systems, which was continued the following nights. On Saturday two mud volcanos and the surrounding seafloor were sampled using a gravity corer. For gas and fluid analysis the scientists collected sediment and fluid samples immediately after the gravity corer was retrieved onboard. In addition detailed sedimentological descriptions and biostratigraphic and physical properties analyses are performed onboard.

On Sunday morning the seafloor drill rig MeBo was deployed but was retrieved shortly after due to technical issues. Aim of the MeBo campaign was an extensive drilling program that included sampling, temperature measurements and the installation of an observatory into the summit of a mud volcano. Instead, heat flow measurements were conducted throughout the day to detect areas of active fluid flow.



Abb. 2: Test of the seafloor drill rig MeBo in the port of Las Palmas. During the test import function were checked without deployment.

Andre Hüpers (Chief Scientist) on behalf of the entire M149-Team