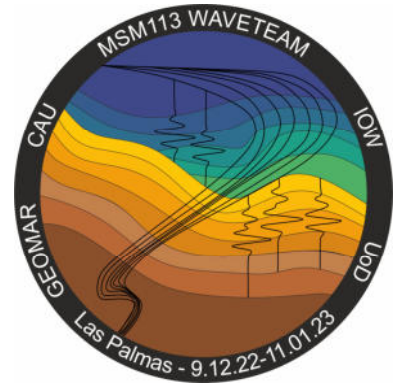


RV Maria S. Merian
Cruise MSM113 (GPF 21-/032 and 22-2/024)
09.12.22. – 12.01.23, Las Palmas – Las Palmas
Weekly Report No. 1, 09.12. – 11.12.2022



**Sediment wave generation in continental margins
(WAVETEAM)**

**Structure of the submerged mobile western flank of
Cumbre Vieja Volcano, La Palma (Sub:Palma)**

During Cruise MSM113, we realize an interdisciplinary approach, including a variety of geophysical, geological, geotechnical and oceanographic methods, to study processes that lead to the formation of large fields of sediment waves at the Northwest African margin. Sediment waves are the dominant bedform on the ocean floor. They are important for any seafloor infrastructure, such as tele-communication cables, as the flows passing over can be highly destructive. Further, sediment waves play an important role in the stability of marine slopes and are of importance because of their role in deep-water petroleum plays. The hypotheses evoked for sediment wave generation are internal waves, downslope turbidity currents, along-slope currents, and at continental slopes also sediment creep. However, the mechanisms for generating these bedforms remain poorly constrained and are the main objective of Cruise MSM113. Furthermore, the western unstable flank of the Cumbre Vieja volcano (La Palma) is to be mapped as part of a supplementary application. In late 2021, Cumbre Vieja volcano, that builds up the southern part of the island of La Palma, experienced its longest eruption in historic times. Although the eruption appears to have subsided for now, it is unclear what hazards are going forward, mainly because we do not know exactly what changed as a result of recent events, especially in the submarine portions of La Palma. There is ample evidence from geodetic and geological data onshore that the western flank of Cumbre Vieja is slowly sliding into the Atlantic Ocean. The marine continuation of the flank will be mapped in detail during the cruise



Departure from Las Palmas (Photo: S. Krastel)

We are 13 scientists from Kiel University, 3 scientists from GEOMAR Helmholtz Centre for Ocean Research Kiel, 2 scientists from the Leibniz Institute for Baltic Sea Research Warnemünde, and one scientist from Durham University (UK) on board for Cruise MSM113. Originally the departure from Las Palmas was planned for 9.12.22 in the morning. Due to extensive maintenance work on the ship in Las Palmas as well as the replacement of a broken navigation echosounder of the Maria S. Merian, the departure had to be postponed to 10.12. at noon. We started at 12:15h for research cruise MSM113 at blue skies and calm seas. After a short transit of only 8 hours we reached our main working area. The scientific program of the cruise started with a CTD and a releaser test on 10.12. at 20:15h. The night was used for initial hydroacoustic mapping. Currently (11.12) we are deploying moorings. We hope to document the passage of internal waves with two oceanographic moorings on the continental slope in 1400 and 1150 m water depth. The moorings are equipped with pressure, temperature, turbidity and acoustic Doppler flow sensors.

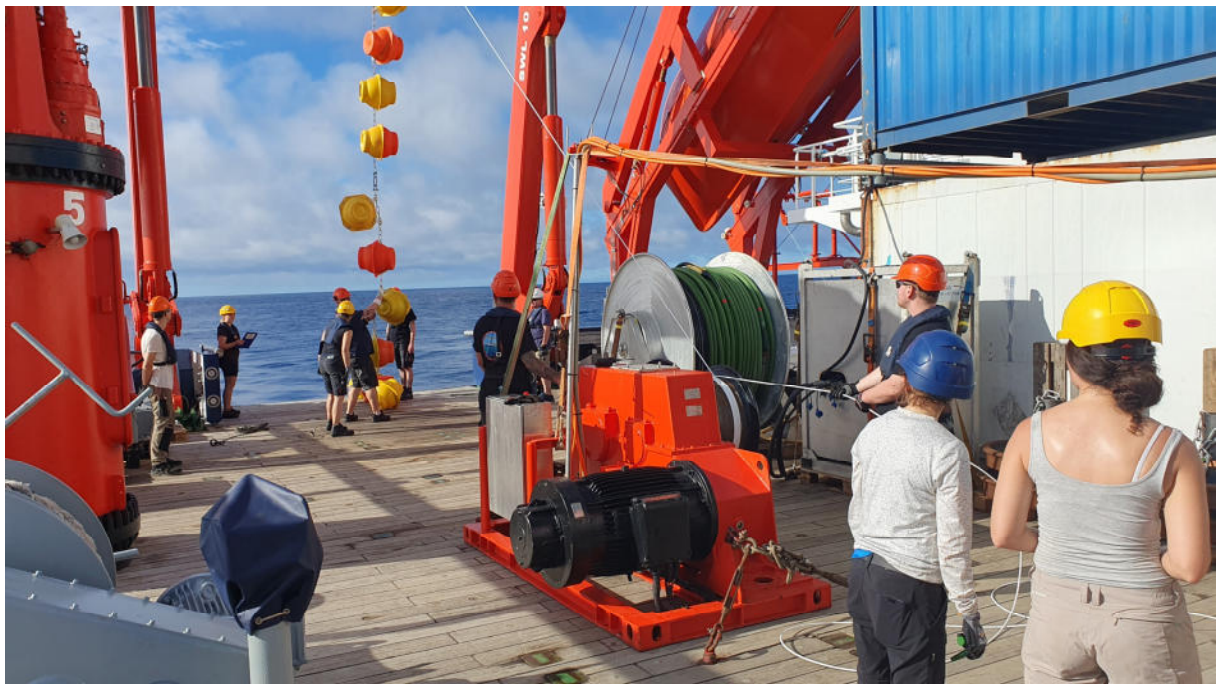
Everyone is well onboard and looking forward to the voyage on the Maria S. Merian, where we – as always - received a very warm welcome.

With best regards from RV Maria S. Merian

Sebastian Krastel

(Kiel University)

At Sea, 26°23'N, 015°08'W



Deployment of a mooring for documenting the passage of internal waves (Photo: S. Krastel)