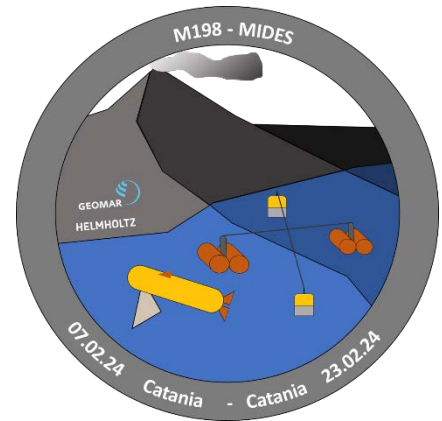


## M198

Catania (09.02.24) – Catania (22.02.24)

### MIDES - Measuring and Imaging Deformation of Etna's Submerged unstable flank



#### Weekly Report no. 2 (12.02.24-18.02.24)

With the beginning of the new week, we established somewhat of a daily routine. In the early morning, the AUV ABYSS ends its nightly dive and waits for recovery, followed by attempts to recover the seafloor geodetic stations. In the afternoon, before the next AUV deployment, the scientific program varied. On Monday, the Piezometer-Team was ready for a deployment test without sensors in one of the locations previously targeted with gravity cores. The first 6.50 m long Piezometer was then successfully deployed two days later. This instrument will measure pore pressure and temperature in the sediment for a period of up to three years. Additionally, we took three sediment cores to identify a deployment location for the second Piezometer. The sediment cores were taken from the fault zone that represents the boundary between Etna's moving southeastern flank and its stable surroundings. The cores contain a soupy silty-clay upper layer above a green-grey heavily overconsolidated mud, partly dissected with dispersed tephra layers.

We use the nights to recover broadband OBS, which are part of the FOCUS project at the University of Brest. We also conduct hydroacoustic surveys, and range the seafloor geodetic stations in order to revise their exact locations by triangulation. Dedicated hydroacoustic surveys targeted the shallow part of the continental slope offshore Etna with the EM710, and the Riposto Depression (also called 'amphitheatre'). The AUV collected high-resolution bathymetric data from an area south of the Riposto Depression, where we suspect the northern boundary of Etna's moving flank.

The MOLA (Modular Ocean Lander Architecture) Team test their sensors and acoustic communication in increasing depths for several hours every evening. The instruments dove down to 1000 m depths and proved to be functional. We are now eagerly waiting for their first deployment planned for early next week.

On Friday, we finally succeeded in recovering one of the seafloor geodetic stations. The news quickly spread during lunchtime, so that the station was brought on board under the curious eyes of a large audience. Once the instrument was safely on board, we started our first rock dredges on the Timpe Plateau and the amphitheatre. This, too, was very successful, with a yield of marine volcanic rocks of various phases of magmatism probably related to the very early stages of Etna.

Greetings from all participants

Morelia Urlaub  
Chief scientist  
*GEOMAR Helmholtz Centre for Ocean Research Kiel*



Left: AUV ABYSS waiting for its recovery after a night dive. Right: Rock samples from the Timpe Plateau recovered by the chainbag dredge.