

Armin Freundt and Scientific Party POS 513

The scientific team boarded RV Poseidon on May 8, the scientific equipment was unloaded from the two containers and installed on board. At 9:00 on May 9 the ship left Heraklion harbor and reached the first work station in the afternoon but then wind and swell were too strong for deployment of the gravity corer. Nico Augustin, supported by Symeon Nasras from Athens University, spent the night with bathymetric mapping of a seafloor fault northwest of Santorini, and its vertical displacement was found to pinch out towards both the western and eastern ends. Fortunately, the morning of May 10 saw calm sea and sunny weather, allowing us to begin the coring campaign along a track leading from the north of Santorini to the south of Milos. However, we soon learned about the difficulties of being limited to work only close to land within the 6 nm zone, where coarse-grained sediment, cemented coral debris and similar materials on the seafloor prohibited the extraction of proper cores despite repeated attempts, either due to no or insufficient penetration or to loss of coarse-grained sediment during heaving. Therefore we followed Thorsten Schott's suggestion to fit the gravity corer with a trigger system that releases it 3 m above ground so that it hits the ground in free fall, much faster than the descend by winch. This mode of operation takes much more time and effort by the Poseidon's crew to deploy and recover (Fig. 1).



Fig. 1: As the gravity corer is deployed, the extra weight needs to be connected to the trigger lever outboard.

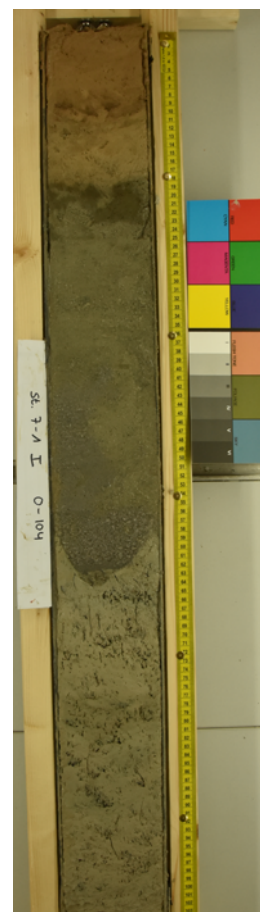


Fig. 2: A c.40 cm thick ash layer, normally graded from fine lapilli to fine ash, underneath c.20 brown top mud. This is probably Colombo tephra.

The night was again used for bathymetric mapping of a fault zone south of Milos, which turned out to be a complex graben structure with normal faults feathering out to the north, and tectonic blocks in between tilted to the west.

However, the next day, May 11, the gravity corer with release system proved its value and we obtained the first 2-m-long intact core south of Milos. This contains a c.40 cm thick coarse to medium ash layer c.20 cm below surface, which we interpret as the deposit of the AD 1650 submarine Colombo eruption (Fig. 2). For the next station, SW of Milos, we equipped the corer with a 10 m tube and did, in fact, recover a 7.5 m long core that contains several ash beds but the Minoan ash expected near the surface is strangely absent.

The night transit took us back close to Santorini on May 12. West of Christiana we recovered a 3.4 m core with 2 ash beds but again without the expected thick Minoan layer. Three stations along a line from S to E of Santorini remained unsuccessful despite the corer setup, the trouble again being too coarse sediment on the seafloor. Overnight mapping showed an interesting system of cross-cutting faults SE of Ios (Fig. 3).

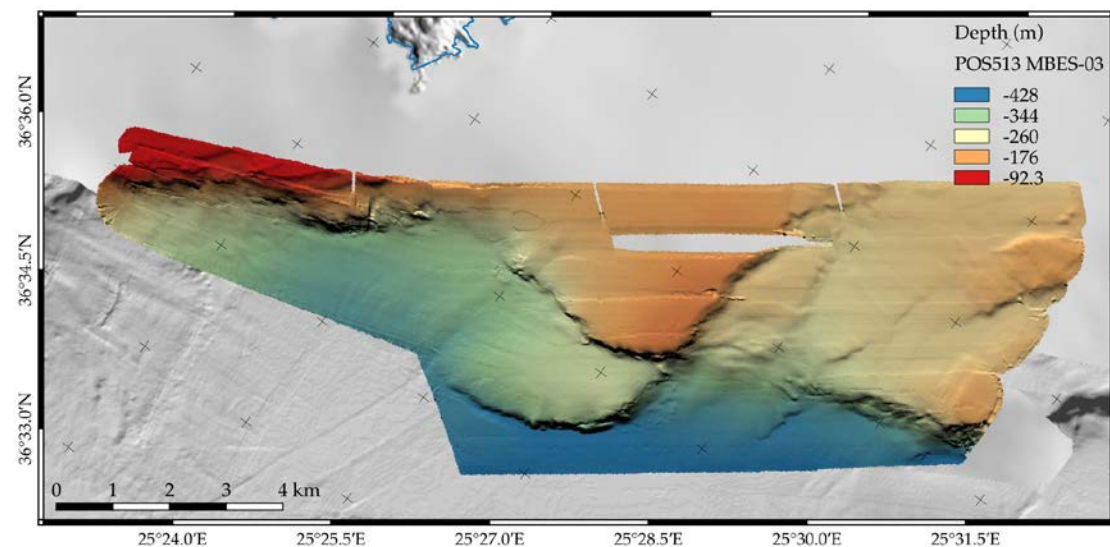


Fig. 3: The entire region is dissected by fault systems. This bathymetric map shows two sigmoidal faults, where the W-E striking fault has displaced the SW-NE striking fault.

The morning of May 13 provided us with two 4 m and 5 m long cores containing several ash beds that can be correlated between the cores. The afternoon took us to shallower locations where recovery was less satisfying.

Sunday May 14 started with two successful cores 10 and 20 km SE and E of Colombo containing a stratified package of Colombo tephra, with coarse pumice (up to 6 cm) at base and cross-bedded ash on top.

Since we were now moving to more distal stations, we mounted the giant box corer to recover near-surface profiles. Two stations southeast of Santorini yielded 20 cm and 40 cm thick profiles of surface mud with up to three thin intercalated fine-ash layers.

We get excellent support by the Poseidon's crew and by now the coring team with Steffen Kutterolf, Thor Hansteen and Armin Freundt supporting Thorsten Schott, and our Greek colleague Boris Karatsolis and students Carina Sievers, Jenny Brandstätter and Kai Fockenberg supporting us, has developed a smooth workflow of

setting up the corer, and processing, describing and sampling the cores. Hence, we are ready to receive more successful long cores in the days to come!