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Seafloor volcanogenic deposits and diapirism on Nisyros margin: imprint of the largest insular East Mediterranean Quaternary eruption and its epilogue.

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Seismic reflection and multibeam bathymetry, around the island of Nisyros, reveal the submarine advance of products from a mega-eruption and subsequent paroxysmal volcanicity. Nisyros volcanic island belongs to the Aegean Volcanic Arc and has been largely constructed after the ultra-Plinian Kos Plateau Tuff (KPT) eruption at 161 ka. The submarine occurrence of KPT around Nisyros has not been reported up to date. In this study we demonstrate that the entire seabed in-between the neighboring basins of East Kos and Tilos is underlain by a ∼7 km3 volcaniclastic unit that defines a ubiquitous basal unconformity at average depth of 30 m below the seafloor. By use of sequence stratigraphic markers, the unit is seismically traced, on the shelf of Tilos, at the level of lowstand clinoform wedge of MIS 6, suggesting it is concomitant to KPT eruption. Two groups of avalanche deposits that belong to the same unit are identified to the southwest of Nisyros on the slopes of the northernmost Karpathos basin apron. This submarine expansion of the KPT, when added to the volume of this massive unit verified on Nisyros surroundings, incl. Kalymnos and Kos islands, classifies this event as a volcanic explosivity index (VEI) greater than 6. Subsequent Nisyros effusive activity produced large pyroclastic units around the northeast as well as debris avalanches and debris flows south of the island. These have been correlated to known onshore volcanic formations. Several small-scale diapiric domes and seafloor mounds are uniquely identified east of Nisyros. They are attributed to depositional loading by the KPT gravity flow in combination with regional faulting.