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Anomalous Seafloor Morphologies: Insights from the CORSUB Project (Tyrrhenian Sea, Italy)

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The CORSUB project aims to explore and investigate unidentified morphological features located between 75 and 100 meters depth off the Punta Licosa Promontory (Tyrrhenian Sea, Campania, Italy), on submerged terraces. These features were firstly observed during a survey in 2004,where a biogenic origin was hypothesized, but no further research had been conducted. The CORSUB project adopts an interdisciplinary, integrated approach that combines geophysical, stratigraphical, sedimentological and palaeontological analyses to investigate the formation, evolution, and ecological significance of these submerged morphologies.

As part of the "TREMOR" oceanographic cruise, organized by the Italian National Research Council (CNR) aboard the CNR research vessel *Gaia Blu* in December 2024, the CORSUB team collected high-resolution multibeam bathymetry data, chirp profiles, and box-corer sediment samples (n=4) from the project areas.

The preliminary results indicate that the anomalous morphologies are located between 75 and 85 meters depth and consist of clusters of subcircular features, with sub-metric diameters. Interestingly, the edge is sunken, while the central area is gently raised. Chirp profiles revealed that the sedimentary cover over these features is relatively thin, with a rocky substrate likely corresponding to the Cilento Flysch Unit identified beneath.

Box-corer samples revealed a composition of coarse detrital sand and gravel at the top, predominantly biogenic in origin, transitioning to muddy-sandy sediment at the base. Notably, all samples contained dead, centimeter-sized boxwork rhodoliths, ranging from 8 to 20 cm above the top of the box-corer. Live rhodoliths were found in only one sample, and these showed clear evidence of ongoing mudding.

These preliminary findings suggest several potential interpretations. The observed structures may have a biogenic origin, possibly linked to the development of rhodolith beds in the past.

Alternatively, their location on the flanks of the submerged terraces may indicate a strong correlation with glacial and post-glacial sea-level changes. The morphologies could have originated as erosional features during the Last Glacial Maximum, when sea levels were as much as 120 meters lower than today, subsequently providing a substrate for biological colonization as sea levels rose during the deglaciation and into the Holocene.

The ongoing analyses of both remote sensing data and collected samples, which also include dating, will allow for a more accurate determination of the nature and evolutionary history of these structures.

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