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Paleocene microbialite-coral mounds from the Kras region (SW Slovenia)

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During the Early Thanetian shallow inner-ramp facies were deposited along the NW margin of the Adriatic Carbonate Platform (AdCP; Kras region, SW Slovenia), dominated by small foraminifera and green algae. Following a rapid sea level rise, mid-ramp sediments of Late Thanetian age, were deposited. At this time perforate foraminifera and red calcareous algae became dominant and were associated with the development of metric-sized microbialite-coral mounds. These Upper Thanetian mounds from the Kras region developed on the deep part of the ramp system, but above the storm wave base. Benthic microbial carbonates are the major framework builders in these bioconstructions, playing a prominent role in the stabilization and growth of the mound body. They represent up to 70% of the volumetric component of the bioconstructions, forming centimetric-thick crusts. These crusts are alternating and embedded with corals, mainly represented by moderately to highly diversified community of encrusting and branching forms. These corals might have been highly adapted to stressed environments and with a limited frame-building capacity.

The microbial nature of the crusts is demonstrated by their growth form, geometry and internal microfabric. At the macroscale, the crusts are largely composed of structureless micrite. Thin sections and polished slabs however expose a broad range of mesofabrics, with stromatolites and thrombolites dominant. Petrographical studies reveal multi-facetted microfabrics, which might reflect either changes in the characteristics of the microbial community or other controls that could have influenced fluctuations in the relative importance of microbial calcification. Laminated crusts and clotted mi-

critic masses occur commonly often following a first, thinner, millimetric crust of dense, structureless micrite. The crusts are composed of carbonate mud with dense to peloidal and clotted microfabrics, associated with spar and microspar. They show accretionary, binding, and encrusting growth form often with gravity-defying geometry. The processes which favored the deposition of these microbial carbonates were mostly *in situ* precipitation with minor evidences for grain agglutination and trapping processes.

The causes of the predominance of microbialites over corals and other encrusting organisms in the Kras mounds might be related to the general climatic and environmental conditions during the Early Paleogene, the warmest time of the Cenozoic. Beside more global effects, local conditions like the rapidity of the sea level rise might have been critical in explaining the distinctive evolution of these microbialite-coral mounds.

The occurrence of Kras microbial crusts provides an important analogue to interpret similar micritic carbonates from other Early Paleogene bioconstructions and suggests that microbial carbonate precipitation and bioconstruction stabilization might have played a more prominent role during the Early Cenozoic than recognized until now.