Reddish multiphase infillings in the megalodontid bivalves and solution voids in Julian Alps – NW Slovenia

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At a nature-preserve protected site in the Julian Alps (NW Slovenia), in the Pod Peski valley, red fillings of megalodontid bivalves occur within the Upper Triassic Dachstein limestone. Based on optical and cathodoluminescent microscopy and X-ray fluorescence (XRF) analysis, four generations of shell fillings were recognized, some of which contain both cement and sediment subgenerations. Logging and sampling of the limestone sequence a few meters below and above the "main" layer containing the megalodontids mentioned above revealed that the limestone is characterized by solution voids similar to the megalodontids. Namely, these voids are also filled with reddish multigeneration sediment with alternating calcite cement. Adjacent neptunian dykes were studied to clarify their influence on the last generation fillings. Two of them, located directly on the "main" layer with red-filled megalodontids, contain planktonic foraminifera, indicating Middle Jurassic or younger age. The next two neptunian dykes are located directly above the "main" layer, and one contains clasts with calpionellids characteristic of the Late Jurassic/Early Cretaceous. The last dyke explored is located a few tens of meters from the "main" layer and is several hundred meters long. In a few sample from this dyke Early Cretaceous planktonic foraminifera were identified. Microscopic analysis revealed that the reddish sedimentary fillings are part of a complex palaeokarst system that produced the first three generations of fillings, and in the last (fourth) generation we noted similarities between the megalodontid fillings and neptunian dykes on the "main" bedding plane. In addition, a Santonian–Maastrichtian sedimentary fill with globotruncanid foraminifers were discovered in the upper part of the succession in one of the solution voids.

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