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Significance of paragenesis in caves of the Eastern Alps

Lukas Plan
Natural History Museum, Department for Caves and Karst, Vienna, Austria (lukas.plan@nhm-wien.ac.at)

In caves, paragenesis (also known as antigravitative erosion) is the upward dissolution of the ceiling in a water filled cave passage due to sediment cover of the underlying floor. The presentation shows that paragenesis is a widespread phenomenon in all carbonate bearing geological units of the Eastern Alps. In the Northern Calcareous Alps (NCA) detailed observations including morphometric analysis were performed in Dachstein-Mammuthöhle which is one of the major cave systems of the Eastern Alps. It hosts spectacular examples of paragenesis in most of its sections. A huge gallery, the so called Palaeotraun, has a cross section area of around 100 m^2. Wall anastomoses, solution ramps, scallop assemblies with significantly different mean lengths and the fact that the initial bedding plane is located at the bottom of the profile indicate a paragenetic genesis. Also the 25 m wide almost horizontal ceiling of Lehmhalle is of paragenetic origin. Other examples from the NCA are Burgunderschacht and nearby DÖF-Sonnenleiter-Cave-System in Totes Gebirge as well as Nixhöhle in the Prealps of the NCA where most parts show paragenetic influence. An example from the metamorphic carbonates of the Grauwackenzone is Odelsteinhöhle that hosts paragenetic canyons and bypasses. In the Central Alps, examples from the low metamorphic Lower Austro Alpine include Rettenwandhöhle and Hermannshöhle. The latter is a 4.5 km long maze cave where passage morphology is almost entirely shaped by paragenesis. The reasons for the abundance of paragenetic influence are discussed with respect to the sediment source and the geologic setting. Allogenic recharge seems an important factor, although some of the mentioned caves seem to be entirely fed by autogenic waters. Further, the study underlines the importance of the recognition of former sediment fill for the correct interpretation of speleogenesis and for the quantification of palaeo-flow.