Comparison of Quaternary Travertine in Jordan: Their Compositions, Types, and Formation Mechanisms

Ikhlas Alhejoj

The University of Jordan, Amman, Jordan

Abstract:

Travertines of different types, compositions, history, and formation mechanisms are found in Jordan in the areas of Wadi Himma, Maqarin, Zarqa Ma'in-Zara, Zarqa Ma'in- Panoroma, Mashara and Siwaqa. They differ in their hydrogeological configuration of recharge- discharge regimes, origin of their mineral contents, their water rock interactions, and their water pressure and temperature conditions leading to their oversaturation states with respect to carbonates based on their depositional, fabric and composition. The results show that the travertines can be classified as follows: Travertine of Maqarin area deposited from cold high-pH water issuing from unconfined calcareous aquifer. Himma travertines deposited from calcareous-aquifer thermal groundwater confined by bituminous marls. Travertine deposited from the thermal water issuing from the heavy metals-flushed deep sandstone aquifer system in Zarqa Ma'in-Zara area. Travertine deposited from the thermal water issuing from the heavy metals un-flushed deep sandstone aquifer system also in Zarqa Ma'in-Zara area. Travertine of Ma'in- Panoroma Road of thermal mineralized water deposited in lake at the shores of Lisan Lake. Travertine deposited from cold water springs issuing from the calcareous Upper Cretaceous aquifer system. Travertines of Mashara area containing Melanopsis fossils referred to normal cold water of marsh wetland environments. Travertine with angular fragments from geyser hot spring in Siwaqa area. The study concludes that the variations in travertine composition and forms reflect a variety of environments, some of which are unique such as the travertines deposited from high-pH water.