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**Palaeokarst and Diagenetic Alteration in Cretaceous Carbonate Reservoirs of Northeast Arabia**

Dissolution associated with subaerial exposure is thought to be responsible for much of the secondary porosity in the Lower- mid-Cretaceous carbonates of the Arabian Platform. However, the presence of subaerial exposure surfaces in much of the succession has not been well recognised. Outcrops in the Central Oman Mountains provide an excellent opportunity to detect the existence of palaeokarst and understand the potential influence of palaeokarst on reservoir development.

A well-preserved karst profile is recognised at the top of the Natih Formation in northern Jebel Madar, characterized by the occurrence of solution hollows, fissures, and breccias. The top of the Shu'aiba Formation is commonly iron-stained and pitted, locally showing scalloped and nodular features, which probably relate to subaerial exposure. In southern Jebel Madar, a breccia unit tops the Shu'aiba, with clasts formed by either in situ brecciation or erosion of an exposed carbonate terrain adjacent to it. Irregular down-cuttings and solution hollows, associated with lithoclasts and pinkish matrix, truncate tops of the metre-scale parasequences in the Kharaib Formation. Some of the features are original hardgrounds modified by diagenesis, and others are likely to be created by desiccation, dissolution and replacement during subaerial exposure.

The palaeokarsts at the top of the Natih and Shu'aiba Formations may have played a crucial role in enhancing reservoir quality due to their prolonged subaerial exposure and regional scale. The possible subaerial exposure surfaces in the Kharaib Formation have potential for developing reservoir-grade matrix porosity.