

Constraints for Carbonate Mound Formation: Sediment Architecture, Facies Patterns, and Early Diagenesis (Jurassic, Atlas Mountains, Morocco)

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Carbonate mounds are a perennial, sedimentary to early diagenetic motif of Early to Mid-Jurassic successions of the Middle and High Atlas Mountains, Morocco. Although these carbonate buildups have in common their mound-shape and a relatively fine-grained sediment composition, the mechanisms of their formation appear fundamentally different. This paper presents the results of field observations and petrographic analysis of three examples of Jurassic carbonate mounds. At localities Fom Zidet and Fom Tilicht (Early Jurassic, High Atlas) mounds are up to 20 meters thick and rich in calcified siliceous sponges. Here, primary bedding may pass through the mounds and lateral changes of facies are subtle or absent. Other sponge mounds are more massive in their core with features of a skeletal framework due to overgrowths by polychaetes and bryozoans. Thus, the major factors for mound formation are early diagenesis combined with biotic encrustation. At locality Jebel Assameur (Mid-Jurassic, High Atlas) mounds are 3 to 10 meters thick and relatively rich in corals and coral debris. The cores of the mounds develop from lateral thickening of one or two beds. Lateral changes of facies are subtle, i.e., the traditional reef mound concept does not apply, and there is no direct, textural evidence for the mechanisms of their formation.