

Carbonate Mounds: from Paradox to World Heritage

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Over fifteen years of investigations of giant carbonate mounds in the modern ocean have provided a wealth of information about the natural environment of such mounds and about potential controls on their development, yet some fundamental questions about their origin and significance remain conjectural. In many aspects, carbonate mounds are giant paradoxes. An interesting observation is that over one hundred fifty years of investigations of giant carbonate mounds in the fossil record have led to a similar *status questionis*, yet approached through different pathways, and viewed from different perspectives.

In a way, both science communities involved have opted for highly complementary strategies. While the study of Recent carbonate mounds builds upon an unprecedented and focused deployment of the highly sophisticated, multidisciplinary analytical approaches of modern oceanography on selected sites, within a highly confined time window in Earth's history, the visitors of the Ancient mounds largely built upon discipline-selective approaches on observational spaces limited by the availability of outcrops, however along virtually the whole evolutionary tract of Life on Earth.

The complementary nature of these approaches invites for convergence. The international network Cocarde forges opportunities for these communities to meet and confront ideas and paradoxes, in joint actions of pedagogic value on key sites of interest, to jointly breed innovating operational strategies in both domains and to spark fresh insights – for the advancement of Science and for the benefit of Industry.

A recent initiative is the development of a unique set of exceptional carbonate bio-construction settings in Morocco, which spans the whole Phanerozoic and links with active offshore natural laboratories on Recent mounds, towards a potential qualification as World Heritage route under the terms of reference of the UNESCO World Heritage convention, as this set truly represents *outstanding examples representing major stages of Earth's history, including the record of Life, significant on-going geological processes in the development of landforms, and significant geomorphic and physiographic features.*

In addition, the remarkable occurrence along this “Voie Royale des Monts Carbonatés du Maroc” of imperial cities already recognized as UNESCO World Heritage sites offers a unique opportunity to blend mound science with culture and history, thus shaping a “broadband” heritage route of high societal interest.