

Buried cold-water coral mounds and contourite deposits in the Atlantic Moroccan Coral Province

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The Atlantic Moroccan Coral Province (AMCP) is situated in the southern Gulf of Cadiz roughly between 34° 50'N to 35° 35'N and 6° 30'W to 7° 15'W. The region displays tectonic (ridges and both large transverse as well as small normal and reverse faults) as well as sedimentological features (drifts deposits and sediment waves). Eleven mud volcanoes are present in the northern part of the region as well (Vandorpe et al., in press). Besides the presence of many surfacing small cold-water coral mounds, hundreds to thousands of mounds were discovered in the subsurface through 2D seismic parasound and sparker seismic profiles. Over 90% of the mounds are situated at water depths between 600 and 1000 meters and most of them occur in clusters.

The cold-water coral mounds are rather small in this region (compared to the 100 m high mounds in the Belgica Province in the Porcupine basin (Huvenne et al., 2003)). Their widths vary between 20 and 200 m with a modus around 60 m, while their heights vary between 2 and 40 m with a modus around 10 m. Moreover, ten horizons at which mound growth initiated can be distinguished, compared to the single mound growth event observed in the Porcupine Basin (Huvenne et al., 2003). This points towards rapidly changing environmental conditions in the AMCP which were sometimes favourable for initiation and growth of cold-water coral mounds. These favourable periods rapidly switched to periods when corals were not able to settle and the mounds could get buried.

Mound growth initiates mostly at elevated places, e.g. tectonic ridges, outcropping bedrock or even previous cold-water coral mounds. Elevated places deflect bottom currents and increase the amount of food particles and sediments delivered to the corals, but also create sedimentological features such as contourites. The contourite deposits in the region greatly depend on the slope of the topography against which they are present (Vandorpe et al., in press). When mounds were able to reach a certain height at which they did not get buried by sediments during subsequent non-favourable periods, they were usually recolonized, leading to complex mound shapes clearly showing the growth phases of the mound. All of these factors indicate that the AMCP is a very promising region to further unravel the conditions (both geographically and environmentally) favourable for mound initiation and how these mounds in turn influence the local stratigraphy.

Huvenne, V.A.I., De Mol, B., Henriët, J.P., 2003. A 3D seismic study of the morphology and spatial distribution of buried coral banks in the Porcupine Basin, SW of Ireland. *Marine Geology* 198, 5-25.

Vandorpe, T., Martins, I., Vitorino, J., Hebbeln, D., García, M., Van Rooij, D., in press. Bottom currents and their influence on the sedimentation pattern in the El Arraiche Mud Volcano Province, southern Gulf of Cadiz. *Marine Geology*.