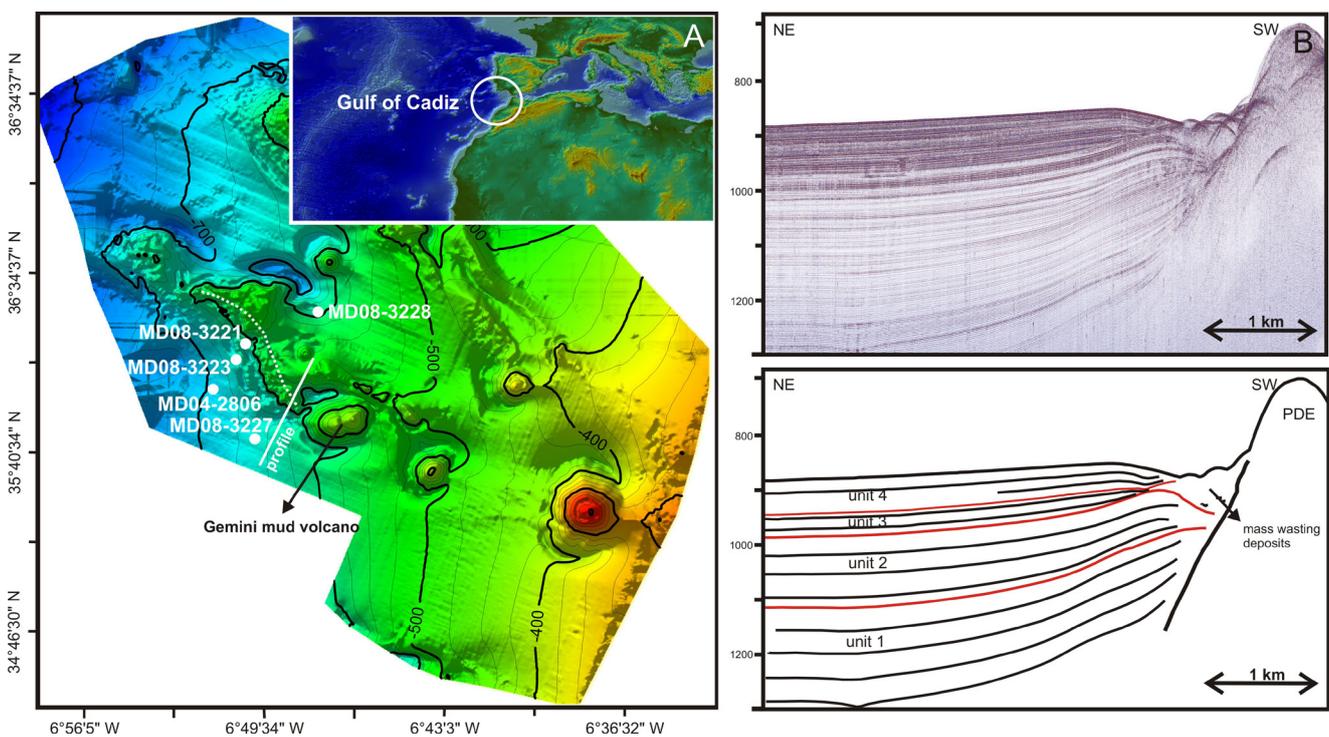


# Contourite depositional systems in the southern Gulf of Cadiz: stratigraphy and palaeoceanography of the Pen Duick area

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Contourite depositional systems (CDS), as well as water masses in the northern Gulf of Cadiz (GoC) have been extensively studied and described, leading to the IODP expedition 339 from last November to February. On the contrary, the southern part of the GoC has received little attention so far, although the temporal and lateral variability of bottom currents may have strongly influenced the “health status” of cold-water coral ecosystems. The CDS along the Pen Duick Escarpment is one of these systems. High-resolution seismic data show a 350 meters thick sedimentary sequence partially or entirely shaped by bottom currents. The lower part, with a tentative late-Pliocene age, is affected by less intense bottom currents against an uplifting PDE. The upper part, containing higher amplitudes, is affected by stronger bottom currents and mass wasting deposits, originating from this escarpment (in the northwest) or the mud volcano (in the southeast). North Atlantic Central Water (NACW) plays an important role in the higher parts of the region (above 600 meters), while Antarctic Intermediate Water (AAIW) does in the lower regions, on the foot of the escarpment. Moreover, NACW and AAIW seem to be stronger during interglacial periods, leading to more coarse-grained sedimentation in the moat.



Location map of the area. White dots represent cores. B. Seismic profile across the PDE( vertical scale in ms TWT).