



Compositional variations and differential diagenesis in Miocene turbidites from the western coast of Mallorca (Balearic Islands, Spain)

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Cyclic alternations of limestone and marl beds crop out along the western coast of the Island of Mallorca. This Miocene succession is traditionally interpreted to represent more weathering-resistant turbidites interlayered by softer hemipelagic background sediment. However, the cementation patterns that dominate the appearance of the outcrop do not always consistently follow sedimentary layering; locally the cemented beds are systematically oblique to the sedimentary layers. Compositional studies demonstrate that differences in non-carbonate fraction, carbonate concentration and fossil content (e.g. foraminiferal assemblages) trace sedimentary bedding, regardless the diagenetic style. Limestone versus marl lithology, in contrast, is defined by the diagenetic style, tight cementation by calcite cements in the limestones versus low porosity and compaction in the marls. The reason for this striking pattern of diagenetic bedding cross-cutting sedimentary layers is assumed to be related to tectonic fracturing, opening pathways for diagenetic fluids. This example cautions the straight-forward interpretation of limestone-marl alternations as direct witnesses of environmental or climatic variations.