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# The Alborán Sea (Mediterranean) during the Messinian and Pliocene : environmental condition changes recorded in marine landslides deposits

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## Résumé

The Alborán Basin, located between the Atlantic and the Mediterranean, is an important witness to the geological and environmental dynamics that occurred from the Messinian to the Pliocene. This exploratory work is based on the analysis of numerous debrites collected from Site U1611, drilled during IODP Expedition 401, with the aim of better understanding the Messinian to Pliocene paleoenvironments. Debrites are deposits of highly mobile and cohesive flows which preserve their components, especially biogenic particles, potentially transported from the edges of the basin.

The methodological approach combines grain size measurements, identification of coarse particles with thin sections, clay assemblages, and paleontological and micropaleontological analyses including benthic foraminifera assemblages. Grain size, thin section and clay assemblage data enabled us to characterize the nature and source of the sediments, and identify textural variations between clasts and matrix. Analysis of fossil and microfossil assemblages enabled us to estimate the depth, oxygenation and origin of sediments forming the debrites.

The results reveal that the Messinian debrites in the Alborán Sea, meter-thick, record a confined and stratified marine environment, fed by significant fluvial sedimentary input. Failure areas of these debrites are located on the shelf, a well-oxygenated zone in contrast to the bottom and slopes of the basin. In contrast, the Pliocene debrites record a better oxygenated, non-stratified marine environment, with reduced terrigenous input and gravity processes, related to the basin marine reconnection after the Messinian Salinity Crisis (MSC). No data suggest that the Alborán Basin dried out during the MSC.

These preliminary results underline the value of studying debrites as reliable sedimentary recorders for reconstructing the evolution of the Alborán Basin.

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