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### Mediterranean Outflow Water and contourites over two analog climate cycles in the Gulf of Cadiz

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#### Abstract

The Contourite Depositional Systems (CDSs) in the Gulf of Cadiz are unique archives of the Mediterranean Outflow Water (MOW) variability since the Gibraltar gateway opening at the end of the Miocene (5.33 Ma). The construction of these systems involves the upper (MUW) and lower (MLW) branches of the MOW. Drilling of these CDSs during IODP Expedition 339 (2011-2012) enables to investigate the MOW dynamics over an extended time period of the late Cenozoic.

This study is centered on the sedimentological and facies characteristics of contourite beds over two periods with similar astronomic configurations (MIS1-2 and MIS 11-12) in order to compare the behavior and circulation regime of the MOW over two contrasted climatic cycles and their associated deglaciation. Sedimentological and facies analysis of different CDSs in the Gulf of Cadiz are based on an extensive set of data including grain size, petrographic analyses of sandy components and clay assemblages, thin sections of contourite sequences, XRF core-scanner data, natural gamma ray data and biostratigraphy based on planktonic foraminifers.

The results show a different behavior of the MOW between MIS 1/2 and MIS 11/12. For instance, in the Faro Drift (upper MOW), MIS 11 is characterized by the presence of several fine grained contourites (silt/ fine sand) while they are rare during MIS 1. During MIS 2 and MIS 12, only one contourite bed is recorded. These time periods are also characterized by different types of contourite beds in terms of grain size and composition: some are carbonate-rich whereas others are enriched in siliciclastic/terrigenous or/and authigenic particles. We infer that changes in grain-size and sediment composition reflect variations in both MOW velocity and sediment sources.

#### Topics

- 7.8 Integrated approaches to the recognition of contourite depositional systems (M. Rebesco, E. Martorelli, D. van Rooij, J. Hernandez-Molina, G. Davoli)

#### Additional Info

indicate a secondary choice  
for session:

7.8 Integrated approaches to  
the recognition of contourite  
depositional systems

#### Other Properties

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