Late Pleistocene and Holocene geochemical record of the most recent turbidite lobe of the Almeria Fan (Alboran Sea)

Introduction

The present work is focused on the geochemical characterization of two sediment cores recovered from the most recent turbidite lobe of the Almeria Fan (Alboran Sea). This recent lobe is located on the base of the slope.

Geochemistry of the turbidite sequence

Three major compositional types of turbidites have been identified:
- **Type a**: rich in S, Cl and Br, corresponds to organic-matter rich turbidites
- **Type b**: rich in Ca and Sr, represents biogenic turbidite
- **Type c**: rich in Si, Ti, Zr and Rb, comprise terrigenous turbidites

Geochemical facies

Cluster analyses of 9 geochemical elements were performed and terrigenous proxies (K/Al, Fe/Al, Ti/Al, Rb/Al, Zr/Al and Si/Si+K ratios and Pb) were studied.

Distribution of sedimentological and geochemical facies

Lobe channel contains numerous centimetric-thick sand deposits with sharp or erosive basal contacts (chemofacies b and c). It was built by successive turbidite events depositing sands.

Geochronology

The late Pleistocene-Holocene geochemical records provide information about different sediment inputs to the Almeria margin.

- **Eolian and fluvial**: suggested by fluctuations of terrigenous contributions within the hemipelagite sequence.
- **Fluvial and volcanic**: suggested by the geochemistry of turbidite sands. The abundance of Ti, Zr, Rb could be related to volcanism at most lobe.
- **Anthropogenic**: suggested by the presence of Pb anomalies within the hemipelagites that could be related to mining activities in the Almeria region.

Climatic events

- **Little Ice Age** (12.6-11.5 ka)
- **Younger Dryas** (11.5-10.2 ka)
- **Holocene thermal maximum** (10.5-5.4 ka)

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