

Contribution of mineralogical and geochemical studies of Fe-Mn crusts to palaeogeographic and paleoceanographic reconstructions of the Mozambique Channel.

The Mozambique Channel is a key sector for understanding the global thermohaline circulation as it corresponds to a mixing zone between the water masses of the Indian and Atlantic Oceans. Recent hydrographic studies have shown that the North Atlantic Deep Water (NADW) flows to the Comoran Basin leading to the conclusion that the Davie Ridge does not constitute a topographic barrier to deep circulation. However, the Cenozoic geodynamic history and its consequences on the topography of the Mozambique Channel probably induced a strong modification of the hydrodynamic conditions during the last 50 million years. Ferromanganese deposits are an archive of the chemistry of water masses. Isotopic studies show that Fe-Mn hydrogeneous crusts can be used to reconstruct major modifications of the deep currents in connection with paleogeographic changes. During the PAMELA-MOZ1 and PAMELA-MOZ5 cruises, many ferromanganese crusts were sampled along a NE-SW profile (2000km) from the glorious islands (Comoros Basin) to the Mozambican margin. With growth rates estimated at less than 5 mm/Ma and thicknesses up to 14 cm, these samples could therefore be used to reconstruct the paleoceanographic and paleogeographic history of the Mozambique Channel during the last 15 to 30 Ma.

Keywords: geochemistry, radiogenic isotopes, paleoceanography, paleogeography, mineralogy, ferromanganese crusts, Mozambique Channel.

Location:

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Skills

The candidate must hold a Master II in geoscience research. He will present solid skills in Marine Geology, petrology, geochemistry, mineralogy and metallogeny. He will be familiar with the ICP-MS analytical techniques (traces and isotopes). The student must also show an interest in teamwork and interdisciplinary research

Collaborations

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