

# The message of the geochemical proxies in upper Quaternary sediments of the northwestern Indian Ocean and the Gulf of Aden: a heterogeneous record

H. Jacot des Combes  
N. Tribovillard

Laboratoire de Sédimentologie et Géodynamique, URA 719, UFR  
des Sciences de la terre, Université de Lille 1, 59655 Villeneuve  
d'Ascq, France

J. P. Caulet

Laboratoire de Géologie, Muséum National d'Histoire Naturelle,  
43 rue buffon, 75005 Paris, France

The inorganic geochemical proxies are a very useful tool to reconstruct the variations of palaeoceanographic conditions, especially the changes in the surface palaeoproductivity, or the changes in the redox conditions. Many of the trace metals are, however, related to different processes. Barium, for example, can have a terrigenous and a biogenic origin, and, as baryte, is sensible to the variations in the redox conditions.

The behaviour of a wide range of trace metals (Ba, Cu, Ni, Ti, Mn, V...) was studied upon the sediment of seven cores located in the northwestern Indian Ocean and the Gulf of Aden (Fig. 1). These cores are very different following the depth where they were recovered (from 774 m to 4020 m), the importance of the terrigenous input (from less than 1% to more than

8% of Al), and the oceanic domain they belong to: pelagic realm, coastal area, and upwelling system.

In this region of the Indian Ocean, the trace elements exhibit a heterogeneous behaviour with strong differences. These differences occur between the different subdomains, but also within a specific domain, e.g. the pelagic realm or the upwelling system. The data do not permit to distinguish one subdomain from the others, and limit the establishment of a model of the trace metal behaviour in the northwestern Indian Ocean. Preliminary results show that the variations of the contents of the trace elements partly originate from the terrigenous fraction, and are strongly influenced by the variations of this fraction, so that their variations related to the other possible sources of the elements are overwhelmed.

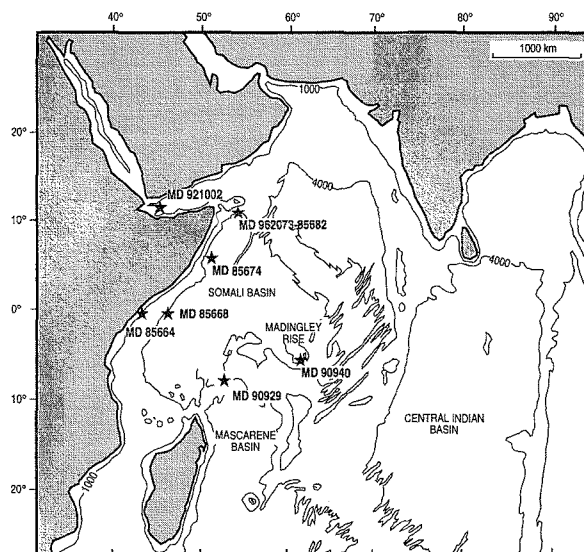


FIG. 1.