

Trace metal dynamics in the water column along a shelf-to-basin transect in the Black Sea

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Iron (Fe), manganese (Mn) and cobalt (Co) are key micronutrients for marine phytoplankton. Continental shelf sediments act as a source of these trace metals to marine waters. At present, the dynamics of these trace metals on continental shelves and their transport beyond the shelf break are still incompletely understood.

Here, we present water column profiles of dissolved and particulate Fe, Mn and Co, in addition to porewater and sediment profiles, along a shelf-to-basin transect in the north-western Black Sea. Samples were collected at 12 stations, during a cruise with RV Pelagia in 2015 as part of a GEOTRACES process study.

Our results suggest significant lateral transport of Fe, Mn and Co from coastal areas to the deep basin. Sediment-water exchange is shown to be a potential source of trace metals to the water column on the shelf. Here, we specifically address what processes contribute to mobilization of Mn and Co from the sediment. We find that, upon transport to the anoxic deep basin, Fe, Mn and Co actively cycle between dissolved and particulate Fe forms around the redox cline, as also reported in previous work [1]. Finally, we discuss the impact of changes in bottom water oxygenation for the dynamics of Fe, Mn and Co on the shelf. This is relevant in view of occurrences of coastal hypoxia and variations in the position of the redox cline at the shelf break.

[1] Tankéré *et al.* (2001) *Cont Shelf Res* **21**, 1501-1532.