

MERCURY DISTRIBUTION IN DEEP-SEA SEDIMENTS OF THE MEDITERRANEAN SEA

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The Mediterranean is a semi-closed basin connected to the world oceans through the narrow and shallow Strait of Gibraltar. The sill at the Strait of Sicily divides the basin into an Eastern and Western Basin. The sediments of the Mediterranean are deposited on top of an extremely thick layer of evaporates, formed during the so-called Messinian Salinity Crisis whose origin was found to be dominantly tectonic. The sediments are characterized by a low organic content (>1 wt.%) and oxygen is present in the whole water column down to the bottom. It was found that total mercury concentrations in off-shore marine sediments of the Mediterranean Sea are, on average 0.5 nmol g⁻¹, twice as high as the supposed world-wide natural background. The observed enrichment is mainly the consequence of the world's largest cinnabar deposits and surficial and submarine volcanic and geothermal activity. It was estimated that approximately 65% of the world's Hg resources are located in the Mediterranean area. Most of the research on Mediterranean bottom sediments was performed in coastal areas, but data on mercury species in Mediterranean deep-sea cores is still lacking. This study represents a systematic research performed on Hg determination in deep-sea cores sediments. The vertical profiles of mercury in sediment were investigated in detail to elucidate the temporal behavior of this metal. Sediment samples were collected with a box corer from ten sites during an oceanographic sampling campaign aboard the Italian research vessel Urania in July 2006 in the Eastern and Western basins of the Mediterranean. The results of the study revealed that Hg concentrations ranged from not detected to 0.161 mg Kg⁻¹ d.w.. Hg concentrations in sediment profiles were not uniform. In most cores the concentrations decreased from the surface and at a depth of 10 cm the concentrations varied between not detected and 0.039 mg Kg⁻¹ d.w. and were within the range of values of the earth's crust. These results are in good agreement with the concentrations of Hg determined in the deep cores collected in the Eastern and Western Mediterranean (Ogrinc et al., 2007).

[1] Ogrinc, N., Monperrus, M., Kotnik, J., Fajon, V., Vidimova, K., Amouroux, D., Kocman, D., Tessier, E., Suzana, Z., Milena, H., 2007. Distribution of mercury and methylmercury in deep-sea surficial sediments of the Mediterranean Sea. *Mar. Chem.* 107, 31–48.

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