

EROS 2000 (EUROPEAN RIVER OCEAN SYSTEM) : AN OVERVIEW

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The EROS 2000 project is an attempt to understand the biogeochemical processes affecting chemical elements and compounds and their alteration by human activities in European coastal waters. During the first phase of this project, eight major cruises onboard research vessels belonging to seven countries of the European Union were carried out in the western Mediterranean. Special attention was paid to the Gulf of Lions, the Straits of Sicily and Gibraltar and the central western Mediterranean. Major rivers such as the Rhone and the Ebro have been monitored and a network of atmospheric sampling stations has been implemented.

This lecture will mainly focus on results concerning trace metals (T.M.) and artificial radionuclides. Key examples will be given so as to exemplify the following aspects :

- i. Relative importance of the various sources of T.M to the western Mediterranean. The dissolved input of atmospheric trace elements (Pu-238 excepted) is larger than the river input, however for most T.M, the fluxes at the Straits predominate.
- ii. Most T.M behave conservatively in the estuarine mixing zone, a result conflicting with most observations carried out in macrotidal estuaries.
- iii. Examples of T.M exceeding natural concentrations are given indicating some clear perturbation of man-made origin. For some elements (Zn, Pb) the system is no more at steady state.
- iv. The significance of total dissolved concentration measurements is challenged. The role of colloidal phase is highlighted.
- v. The distribution of mercury species gives some new insight in the understanding of the very high mercury levels measured in some pelagic fishes of the Mediterranean.
- vi. Some examples of input-output budgets of T.M. show a remarkably well-balance situation.

REFERENCES

- D. COSSA, J.-M. MARTIN and J. SAN JUAN (1994). Dimethyl mercury formation in the Alboran Sea. *Mar. Poll. Bull.*, 28 : 391-394.
- F. ELBAZ-POULICHET, J.-M. GARNIER, D. M. GUAN, J.-M. MARTIN and A.J. THOMAS. Riverine variability and estuarine conservativity of trace elements in the Rhone river Delta, France. *Est. Coast. Sh. Sci.*, in press.
- M.H DAI, J.-M. MARTIN and G. CAUWET. Significant role of colloids in the transport and transformation of organic carbon and trace metals in the Rhone Delta, France. *Mar. Chem.*, in press.
- C. GIUEU, J. ZHANG, A. J. THOMAS, J.-M. MARTIN and J.-C. BRUN-COTTAN, 1993. Significance of atmospheric fall-out on the upper layer water chemistry of the North western Mediterranean. *J. Atm. Chem.*, 17 : 45-60