Geophysical Research Abstracts, Vol. 9, 03447, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03447

Characterization of trace metals contents in river suspended matter entering the Gulf of Lion (France)

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The fate of trace metals transiting from the rivers to the open ocean is of importance since marine ecosystems can be largely impacted by significant toxic elemental amounts, even far away from the coasts through sediment remobilisation and exportation (flood events, storms, cascading…).

Regarding this and in order to determine the seasonal variations of trace metal elements contents (Cr, Co, Ni, Cu, Zn, As, Mo, Cd, Sb, Pb and U) in the particulate load carried by rivers, we initiated in 2006 a monthly survey of the six major rivers (Rhône, Hérault, Orb, Aude, Agly and Têt) flowing into the Gulf of Lion (NW Mediterranean Sea).

Even though no French or European norm exist concerning metal contents in sediments or suspended matter, the preliminary results obtained during the winter-spring period (January to April 2006) show that no serious polymetallic contamination can be recognized during this short period. However, according to the guidelines for contaminated freshwater sediments (US and Canadian recommendation, Batts and Cubbage, 1995), Cr, Ni, As and mostly Cu sometimes exceed the recommendation. The relatively high Cu concentration measured in the particulate material from the Agly River for example is supposed to derive from the use of Cu-fungicide in the vineyards that cover a large part of its catchment area. For the other elements, more investigations are requested to determine if they originate mainly from anthropic activities or from the geological background.

Reference

Batts D., Cubbage J. (1995) Summary of guidelines for contaminated freshwater sed-

iments. Environmental Investigations and Laboratory Services Program, Olympia, Washington, 8504-7710, Publication No. 95-308, 22 p.