

## **Distribution of trace metals in channel sediment: a case study in South Atlantic Coast of Spain**

### **ABSTRACT**

Recently, Sancti Petri channel on the southwestern (SW) part of Iberian Peninsula has been experiencing urban, industrial, and vehicular expansion. Until recently, there have been only few published reports documenting the pattern of metal accumulation in this estuarine sediment. In the present study, trace metals such as Cu, Zn, Ni, Mn, Pb, Co, Cd, As, and Hg concentrations were analyzed from 69 sediment samples collected from 23 sampling sites of the Santi Petri channel. The magnitude of trace metal accumulation found as the following trend: Mn > Zn > Cu > Pb > Ni > Co > As > Cd > Hg. Spatial distribution pattern demonstrated overall decreasing trend of trace metal from Cadiz Bay mouth to the open ocean mouth, clearly correlative to the presence of anthropogenic inputs. Results of the principle component analysis (PCA) revealed that sediment metal chemistry of Sancti Petri channel is mainly regulated by the concentrations of Pb, Cu, Zn, and Ni; possible sources of those were from vehicular-related emissions. Pollution load index (PLI) and geo-accumulation index ( $I_{geo}$ ) indicated overall low values. The study will stimulate improvement of our understanding regarding the pattern of accumulation of metals in the coastal sediments, and the recorded values of metals in the present study can be used as suitable reference for future studies.

**Keyword:** Trace metals; Pollution load; Geo accumulation; Sediment chemistry; Sancti Petri channel; Iberian Peninsula