S, Fe and Mn fractionation in sediments of San Simón Bay (NW, Spain)

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San Simón is a shallow bay located at innermost part of the Ría de Vigo –a large submerged incised valley sited in the northwest of the Iberian Peninsula–. In this area, the high biological productivity combined with high sedimentation rates favor the development of anoxic conditions in the sediment, determining the speciation and distribution of S, Fe and Mn. In order to study the chemical forms of S, Fe and Mn in these complex environments a gravity core was colleted in the subtidal area of San Simón Bay.

A five-step sequential procedure Campanella *et al.* [1] was used to separate: metals present in ion-exchange forms and bound to the carbonates (F1), metals present in the reductive phase bound to manganese-iron oxides (F2), metals weakly bound to the organic matter (F3), metals strongly bound to the organic matter (F4), metals bound to the sulfide phase (F5). In each fraction, the concentrations of S, Fe and Mn, were determined by ICP-OES.

The most abundant fraction of S was S bound to organic matter (F3 + F4) with average contents of 6.12 g kg^{-1}. S present in the reductive phase bound to manganese-iron oxides (F2) and the residual fraction (F5) were minority (1.23 and 1.39 g kg^{-1} in average, respectively).

Instead for Fe and Mn, the fraction bound to the sulfide phase (F5) predominated (18.33 g kg^{-1} and 110.75 mg kg^{-1} in average, respectively). Fe and Mn in the reductive phase (F2) constituted the second fraction in order of abundance (average values of 5.09 g kg^{-1} and 9.74 mg kg^{-1} respectively). The lowest contents were found for Fe and Mn bound to organic matter (F3 + F4) with average values of 1.94 g kg^{-1} and 11.48 mg kg^{-1}, respectively.

[1] Campanella *et al.* (1995) *Anal. Chim. Acta.* **309**, 387-393.