Environmental geochemistry and magnetic susceptibility in the estuarine clastics sediments of Jaboatao River, Pernambuco, Brazil

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The Jaboatão river estuary is located in the southern coastal area of the Pernambuco state (Northeastern Brazil). A continuous sediment record measuring 50cm in length was collected 4 km from the river mouth. Sediments were sampled at 5cm intervals and the geochemical sub recent evolution registered from this estuary was investigated by chemical analysis and Magnetic Susceptibility.

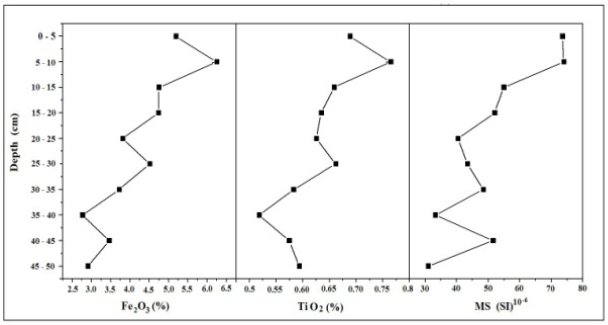

Figure 1: Evolution contents of Fe_2O_3, TiO_2 and MS in core profile.

Discussion of Results

Magnetic susceptibility measured in these samples showed relation to the Fe and Ti content and a sympathetic increase to the top of the core. Similar results have also been found in other parts of the world in industrialized areas [1].

The Enrichment Factor (EF), based in local and global reference values, showed the possible impacts in the considered ecosystem. Presented values below the USEPA´s (ERL, ERM) [2], except for As and Cr. Based on the EF found for the studied sediment core samples the estuarine sediment environment can be classified as below the geochemical contamination level.

[1] Lu *et al*. (2008) *Pedosphere* **18**, 479–485. [2] USEPA (1998) *USEPA*, EPA-**823**, 98-001.

Arsenic partition in the native and As-sorbed sediment

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Arsenic in the native and As-sorbed sediment samples was fractionized to understand how sorbed As partioned into various solid mineral phases with a selective dissolution method [1] (Fig. 1).

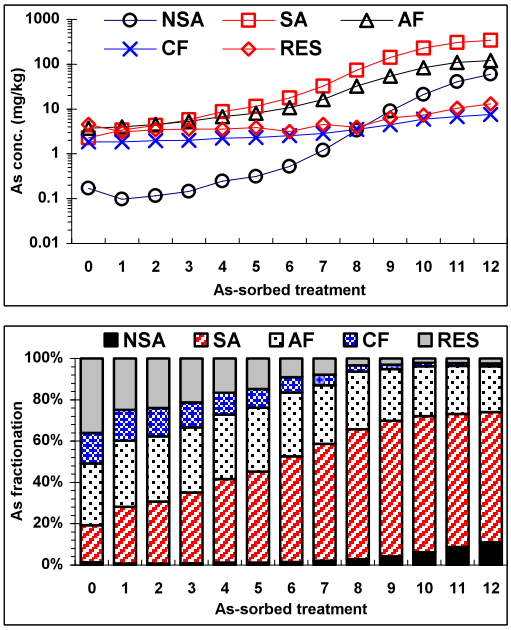

Figure 1: Contents and proportions of As in the native and As-sorbed sediment (0: native sediment, NSA: non-specific adsorption, SA: specific adsorption, AF: amorphos iron oxides, CF: crystalline iron oxides, RES: residual) .

Results showed As in the NSA, SA, AF greatly increased with gradual increasment of sorbed As, while As in CF and RES only slightly increased. On other hand, sorbed As was mostly bound to SA. Whereas Han and Banin observed that metal-added soils tend to return to the fractional quasi-equilibrium state of the non-amended soil [2], this process may take long time scale.

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[1] Wenzel *et al*. (2001) *Anal Chim Acta* **436**, 309–323. [2] Han & Banin (1999) *Water Soil Water Poll* **114**, 221–250.