



**ABSTRACTS PRESENTED DURING THE 2ND ANNUAL MEETING OF  
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## HISTORICAL RECORD OF METALS (Cu, Pb, Zn) IN VALO GRANDE CHANNEL, CANANEIA-IGUAPE ESTUARY, SAO PAULO, BRAZIL

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Cananeia-Iguape estuarine system, located in the southern of Sao Paulo State is formed by several channels linked to coastal plan. This area was subjected to transgression-regression events of Superior Quaternary, which sedimentary processes have been modified by anthropic activities during the last 150 years. Despite of it, this system is still considered a biosphere reserve by UNESCO, due to its complexity, diversity and preservation.

Thus, the objective of this work was to obtain a historical record of metals (Cu, Pb and Zn) from a core collected at the mouth of Valo Grande channel during a campaign carried out in October of 2007. This 150 cm long core was sliced in each centimeter and samples were lyophilized to analytical procedure.

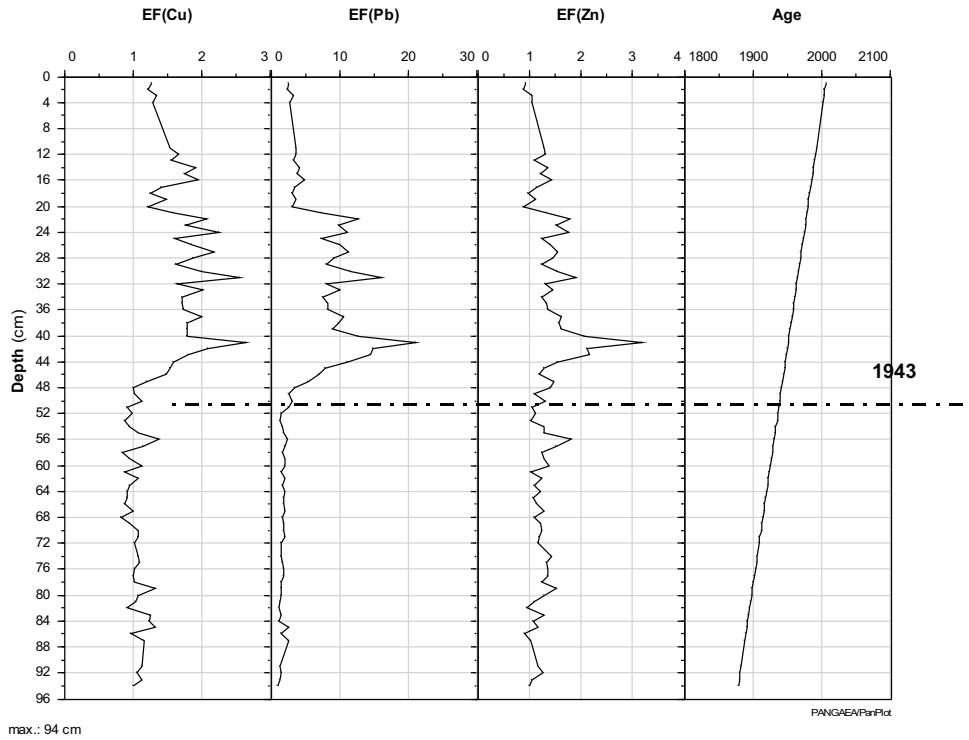
Approximately 2 g of dry sample was used for metal determination according to SW 846 US EPA 3050B method. SW846 US EPA 6010C was the method elected for determining Cu, Pb and Zn concentrations, using a Varian 719-ES ICP-OES equipment.

Chronology was determined by <sup>210</sup>Pb and <sup>226</sup>Ra analysis. Samples containing 10 to 20 g of sediment were homogenized and transferred to appropriate plastic containers for gamma analysis. Then samples were counting for 120.000 seconds in a hyperpure germanium spectrometer (HPGe 50P) of EGG&ORTEC. <sup>210</sup>Pb and <sup>226</sup>Ra were assayed by 47 keV and 609 keV photopeaks, respectively. The sedimentation rate was determined by CIC (Concentration Initial Constant) model and the result was 0.733 cm y<sup>-1</sup>.

The enrichment factor was calculated with respect to normalized value of Al using the formula (Andrews and Sutherland, 2004):

$$EF = \frac{\left(\frac{X_i}{Al_i}\right)_{\text{sample}}}{\left(\frac{X_0}{Al_0}\right)_{\text{background}}}$$

where  $X_i$  and  $X_0$  are the concentrations of the individual metals in the sample and in the background, respectively. Figure 1 shows the enrichment factors and age obtained in the core from Valo Grande Channel.



**Figure 1:** Metal enrichment and age of samples in the core collected at Valo Grande channel.

Analyzing the graph of Figure 1, it is possible to observe enrichment factor increasing from 1943. It can be related to an intensive anthropical activities carried out at that time by Plumbum Company, responsible for mining at Vale do Ribeira between the 40's and 90's decades. The company was closed in 1995.

## References

Andrews, J. E.; A. M. Greenaway G. R. Bigg; D. F. Webber; Dennis, P. F.; Guthrie, G. A. 1999. Pollution history of a tropical estuary revealed by combined hydrodynamic modelling and sediment geochemistry. *J. Mar. Syst.*, 18:333-343.