



## **Geochemical data (XRF) of recent lacustrine sediments of Zoñar lake (Southern Spain)**

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Zoñar Lake is one of the deepest and longest lakes in the Mediterranean area in the south of Spain, where a detailed paleoclimate reconstruction has been made. At present the average depth is 14 m, although the level of the lake has changed depending on environmental conditions and human activities. In this study we have made a comparison between the facies analysis and the mineralogical and geochemical composition of a 6 m long core in order to see the origin and processes of the different sediments present. The sediment record show eight sedimentary units, five massive intervals and three laminated units. Geochemical data were produced by a XRF core scanner at the University of Bremen. The core sediments were measured with 5 and 2 mm resolution for Al, Si, P, S, K, Ca, Ti, Mn and Fe. In this study we show the variation in elemental concentrations (cps) down-core and the mineralogy, determined by means of XRD analyses, optical and scanning electron microscopy.

Zoñar massive sediments are based on a carbonate mud of detrital origin, composed of calcite in the form of rice-shaped crystal, quartz, clay minerals and feldspars. The Ca counts correlate well with the  $\text{CaCO}_3$  concentration along the core, having maximum values where authigenic calcite layers occur in laminated units. Fe, Ti, and K variations along the profile show a clear correlation with the percentage of detrital components as determined by XRD (feldspars and clay minerals). Fe, Mn and S counts increase in the organic layers indicating probable organic matter presence where sulphate reduction process occurs in anoxic conditions and where framboidal pyrite crystals have been detected by SEM. S maximum values (cps) are clearly re-

lated to gypsum layers at several units that correspond to low-lake levels. Si counts show no accurate correlation with terrigenous components or Al, K and Ti counts, as biogenic silica from diatoms frustules is present at some fine layers in laminated units.

Elemental profiles at Zoñar sediments compared with the facies identification and mineralogical data indicates three main types of components in the Zoñar record (i) Detrital components as calcite, quartz and feldspars mainly, from surrounding of the lake transported by rainfall, wind or spring input into the lake that account for most of the Ca, Fe, Ti, K and Al qualitative values (ii) Authigenic components (calcite precipitation in situ, gypsum and pyrite), that produce an increase in Ca, Fe, Mn and S values; (iii) Biogenic components (algae and biogenic silica from diatoms) that are recorded as Si and Mn higher values than background.