The measured coral oxygen isotopes result of the superimposition of two fractionations.

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Coral oxygen isotopes are regarded as a robust proxy of environmental variables. Despite the apparent isotopic desequilibrium of aragonite skeleton, there is a strong temperature dependence, the isotopic curve versus temperature being almost parallel to the "paleotemperature" of $CaCO_3$ deposited in isotopic equilibrium When the slope, around –0.23‰/°C is used to assess the sea surface temperature (SST) increase recorded from the beginning of the last century, the calculated range of 1°C exceeds the instrumental observations, 0.3 to 0.4°C at the tropical latitudes.

Very often, the oxygen and carbon isotopic signals from corals show a positive correlation which cannot be explained by the thermodynamical law. By performing a principal component analysis (EOF) on these data we identify a first component which explains more than 80% of the variance. This variability governed by a kinetic process, is controlled by SST which drives an isotopic variability around -1‰ per 1°C. This slope is likely dependent on the growth characteristics of each coral colony.

The signal obtained by removing pc1 from the measured oxygen isotopes corresponds with the paleothermometer, depending upon temperature and water isotopic composition. Since water isotopic composition and salinity obey to the same processes, O and C isotopic records allow accurate SST and SSS reconstruction.

In Pacific Ocean, interannual SST variations are governed by the zonal mode El Niño whereas interdecadal SSS fluctuations are influenced by the meridional mode Pacific Decadal Oscillation (PDO).

Zinc trapping in Layered Double Hydroxydes (LDHs) and phyllosilicates in contaminated soils from Western Europe.

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The FAMEST (Fundamental Aspects of MEtal Speciation and Transport in metal-contaminated soils and aquifers) program is aimed at assessing zinc speciation in european soils impacted by industrial activities. We will present results obtained in three soils (France, Switzerland and England) contaminated by pyrometallurgical activities or sewage sludge adding and differing in mineralogical composition (silty, carbonaceous clayey and sandy).

After conventional methods (XRD, SEM-EDS) failed at assessing zinc speciation in these soils, X-ray Absorption Spectroscopy (XAS) was successfully combined with selective chemical extractions to evidence the incorporation of Zn^{2+} in Zn/Al-layered double hydroxides (Zn/Al-LDHs) and/or Zn-bearing phyllosilicates, as well as its sorption onto hydrous iron oxides and humic substances. In the silty French soil and in the clayey carbonaceous Swiss one (pH ranging from 5.5 to 8.0), Zn/Al-LDHs and Zn-bearing phyllosilicates were the most abundant Zn-bearing components and their relative proportions were related to pH conditions. In the sandy English soil (pH 6.5), Zn-bearing phyllosilicates were found together with zinc sorption complexes on hydrous iron oxides, the latter dominating in surface horizons.

The ubiquity of LDHs and/or metal-bearing phyllosilicates in impacted soils studied, and the possible incorporation of a large range of transition elements (Cr, Mn, Co, Ni, Cu) in these structures, emphasizes their potential for *in situ* remediation techniques.