## Diagnosis of pollution state of the coasts in the vicinity of an oil terminal : Bioremediation effect

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Coastal marine environments near the oil harbour installations can be the object of a chronic oil pollution coming from purging water of the storage tanks of oil, as well as water coming from ballast operations of tankers. In the oil terminal of the south of Tunisia, this water is collected in tanks before their discharge in a natural lagoon which communicates with the Mediterranean Sea. This lagoon is periodically flooded by sea water (tide phenomena). The objective of this work is the diagnosis of the pollution state of the lagoon. This study is based on the analysis of the COT and the technics of liquid and gas chromatography.

Analysis of TOC and TH (total hydrocarbon) in surface sediments of the lagoon permit to note that:

-TH varies between 200 and 4020 ppm.

positive correlation calculated between the TOC and TH, attest of the homogeneity of the organic matter contained in the sediments

-% of saturated hydrocarbons vary between 6 and 12% and are classic of an organic matter inherited from original biomass;

-The organic matter presents a mixed origin terrestrial and marine. N-alkane distribution is bimodal: first mode characterized by n-alkanes from C21 to C33 with a CPI of 2,1 characterising organic matter from waxe plants, the second mode is centred on n-alkanes from C17 to C20 without odd to even prevalence and characterizes a marine organic matter. Presence of UCM with a hump developed under all the range of n-alkanes attest of an important microbial activity in sediments.

Surface sediments of the lagoon seems not to be contaminated by water coming from the systems of water treatment of oil residues. These results show the role of these lagunar systems to manage and eliminate pollution :bioremediation effect.

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# Weathering processes in karst river, southwest China: Implication from riverine sulphur and strontium isotope

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Geochemistry of river waters draining karst terrain in SW China has been studied in order to characterize the hydrogeochemistry of the rivers, to determine natural chemical and physical weathering rates in typical areas and anthropogenic contaminants. The studied area is impacted by serious sulphuric acid rain because of coal-mining and combustion and coal-formation strata in Guizhou Province. Another aim of the work is to study the effect of sulphuric acid on the carbonate weathering.

## **Results and Discussions**

Water samples of karst river water from the Guizhou province (Wujiang River and Yuanjiang River) in karstdominated regions were analyzed for dissolved major element concentrations (HCO<sub>3</sub><sup>-</sup>, NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, Cl<sup>-</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, K<sup>2+</sup>, Na<sup>+</sup>), Sr<sup>2+</sup> and <sup>87</sup>Sr/<sup>86</sup>Sr and  $\delta^{34}$ S of dissolved sulfate ( $\delta^{34}$ S<sub>SO4</sub>) in summer. The waters of the Wujiang River have high Sr<sup>2+</sup> concentrations and lower <sup>87</sup>Sr/<sup>86</sup>Sr ratios (0.7074-0.7115), while those of Qingshuijiang River, one of two major tributaries of the Yuanjiang River system, show higher Sr isotopic ratios (0.7088-0.7155) and low Sr concentrations. Weathering rates of silicates and carbonates were determined from major element mass balance with Sr isotope.

The sulfur isotopic compositions ( $\delta^{34}$ S) in Wujiang River catchments range from -7.70‰ to 13.06‰ and have higher SO<sub>4</sub><sup>2-</sup> concentrations, which are inferred to be mainly derived from anthropogenic emissions and/or the oxidation of sulfide minerals in the coal-containing strata in the studied area. Samples from Yuanjiang River, which is dominated by clastic rocks, have relative enrich  $\delta^{34}$ S (-4.81‰ to 4.13‰) and lower SO<sub>4</sub><sup>2-</sup> concentrations, which appears to result from solution of gypsum and rainwater SO<sub>4</sub><sup>2-</sup>. The carbonate weathering of sulfuric acid may become an important CO<sub>2</sub> source to atmosphere and can counteract the CO<sub>2</sub> consumption by silicate weathering, so the presence of sulfuric acid should be seriously considered to calculated CO<sub>2</sub> budget in this kind of area.

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