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Contents in Context
Environmental Chemistry, Vol. 5(2), 2008

Macro and micro nutrient limitation of microbial productivity in oligotrophic subtropical Atlantic waters
Joanna L. Dixon *Environ. Chem*. **2008**, *5*, 135

The subtropical oceans comprise ~70% of the world's ocean surface and profoundly affect global biogeochemistry and climate. They are characteristically low-nutrient regions, but, owing to their large extent and often rapid nutrient turnover, may contribute to greater than 30% of the total marine primary production. However, there remains long-standing uncertainty as to what individual or combination of resources, e.g. macro (N, P) and micro (trace metals) nutrients, limit or co-limit marine productivity and thus total carbon fixation in these spatially dominant gyre systems.

High-resolution two-dimensional quantitative analysis of phosphorus, vanadium and arsenic, and qualitative analysis of sulfide, in a freshwater sediment
Anthony Stockdale, William Davison and Hao Zhang *Environ. Chem.* **2008**, *5*, 143

Chemical characterisation of sediment microniches can reveal diagenetic processes that may not be detected by larger-scale analysis. With the development of a new preparation method for a binding phase gel, the technique of diffusive gradients in thin films has been used to demonstrate links between the diagenesis of sulfide, phosphorus, vanadium and arsenic at microniches. Knowledge of these processes may improve predictions of past deposition climates where trace elements are considered as paleoredox proxies.

Evaluation of affinity constants of Cu, Cd, Ca and H for active soil surfaces for a solid phase-controlled soil ligand model
Julien Rachou and Sébastien Sauvé *Environ. Chem*. **2008**, *5*, 150

The speciation of metals in soils is controlled by the equilibrium between the solid and aqueous phases and by several parameters such as pH and total metal concentrations. The integration of affinity constants between several cations and active soil surfaces of different soils in the chemical equilibrium modelling software *MINEQL+* allows a good evaluation of the chemical speciation of the metals.

Adsorption and desorption of phosphate on Fe_2O_3: effect of fulvic acid and pH
Tsanangurayi Tongesayi, Eric J. Byam, Sarah B. Keysper and Michael J. Crounce *Environ. Chem*. **2008**, *5*, 161

Adsorption controls the mobility of chemical species like nutrients in the soil and water environments and forms the basis for some of the methods of treating contaminated waters. Nutrients are introduced into environments where there are large quantities of humic substances adsorbed onto mineral oxides in the soil and sediments but no work has specifically focussed on the effect of adsorbed and free humic substances on the mobility of nutrients, and their adsorption and desorption mechanism on surface sites covered with adsorbed humic substances is still obscure. We believe that our findings and the proposed adsorption mechanism will help advance the technologies and methodologies for the removal of nutrients from wastewater.