Iron, phosphorus and manganese interactions in a seasonally-stratified lake system

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This study addresses the coupled biogeochemical cycling of phosphorous (P), iron (Fe) and manganese (Mn), as influenced by redox processes and colloidal interactions, in seasonally-stratified lakes. Redox processes play a key role in chemical speciation, formation and destruction of colloidal phases in lake systems, including Mn and Fe oxides and natural organic matter [1]. The bioavailable pool of these elements was determined by using diffusive gradients in thin films (DGT) and related to changes in primary productivity within the water column. Our results demonstrate profound influence of biological activity on the recycling of P, the distinct tendencies of Fe and Mn to form colloids. The interaction of Fe and Mn oxides with P through the water column is discussed.

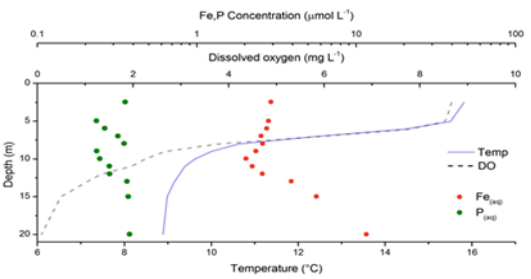

Figure 1: Distribution of P and Iron in Lake Ngapouri

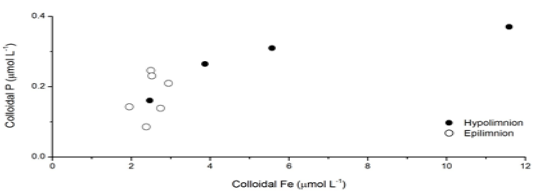

Figure 2: Relationship between colloidal Fe and colloidal P

Hartland *et al*. (2015), *Environmnetal chemistry*, **12**, 708-722.