Comments from web viewers

Organic complexes of Th

Jim Moffett – In 1990's compiled published stability constants for complexes of Fe and Th and found a tight relationship.

Fe regeneration

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Remineralization of upper ocean particles: Implications for iron biogeochemistry

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Abstract

The role of heterotrophic bacteria in iron recycling, the influence of complexation on iron remineralization, and iron mobilization rates from lithogenic vs. biogenic particulate iron (PFe) were examined using field experiments and modeling simulations. During summer, we measured the mobilization rate of algal iron by heterotrophic bacteria in the mixed layer at a polar and a subpolar site south of Australia, and conducted shipboard incubations to track the release of dissolved iron (DFe) and iron-binding ligands from subsurface settling particles sampled from 120-m depth. Bacteria mobilized $> 25\%$ PFe d^{-1} in surface waters relative to mobilization at depth ($< 2\%$ d^{-1}). Our incubations provide the first evidence of the concurrent release of weak iron-binding ligands and DFe from sinking particles. Simulated profiles of PFe remineralization, based on proxies, point to greater dissolution from biogenic PFe than from lithogenic PFe. Together our findings point to different biogeochemical functions for lithogenic vs. biogenic PFe: biogenic PFe is probably the main source of both DFe and ligands, whereas lithogenic PFe may contribute most to DFe scavenging and ballasting of biogenic PFe. The relative proportions of lithogenic vs. biogenic PFe flux vary regionally and set the contribution of scavenging and ballasting vs. dissolution and ligand release, and hence the fate of iron in the water column.

Covers some topics discussed in workshop