

Impact of Redox Dynamics on Biogeochemical Cycling of Elements in a Changing Environment

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Environmental change, particularly the impact of climate change, is having a profound impact on humankind. Rising seas and temperatures, as well as other extreme events, will increasingly impact the biogeochemical cycling of metal(loid)s, nutrients and carbon in terrestrial and aquatic environments. Dynamic redox reactions involving elements such as As, C, Cr, Fe, Mn, S, and others play a significant role in controlling biogeochemical cycling and speciation in the environment. How these processes will be impacted in our changing climate is not well understood. For example, how do rising seas, which cause inundation with saline water, affect cycling of redox active elements, carbon, and nutrients? Complexation of carbon with iron-bearing minerals is a major mechanism for carbon retention. Under changing climatic conditions, how will carbon cycling be impacted? This presentation will explore these questions, and others, over a range of spatial and temporal scales using advanced analytical tools.