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### “Redox processes at the clay mineral-water interface”

In Earth’s Critical Zone, redox reactions contribute to the local and global cycling of elements, nutrients, metals, and contaminants. One particularly ubiquitous and important redox couple in (near) subsurface environments is the ferric/ferrous iron redox couple and much research has addressed the reactivity of iron (oxyhydr)oxides and iron sulfides. Most phyllosilicate minerals also contain iron in their structure and can thus participate in redox reactions, yet have received much less attention. Indeed, clay mineral iron can be reduced with chemical reductants and by microbial activity, but also during reaction with dissolved ferrous iron, an abundant, microbially-produced reductant in subsurface environments. This seminar will review recent advances in our understanding of redox reactions of clay mineral structural iron and focus on its dual role of major direct reductant for contaminants and redox buffer in multi-component and -mineral systems.