

MINERAL/WATER INTERFACIAL REACTIVITY IN A CHANGING ENVIRONMENT

Donald L. Sparks*

Department of Plant and Soil Sciences, University of Delaware, Newark, DE 19716, USA

*dlsparks@udel.edu

Major environmental challenges, due to climate change, are having a profound impact on humankind. Rising seas and temperatures are causing increasing flooding and melting of ice and permafrost soils. The impact of these processes on interfacial processes and reactivity in natural systems such as minerals and soils is not well understood. For example, how do rising seas, that cause inundation of soils with saline water, followed by retrenchment, affect cycling of redox active elements such as arsenic (As) and chromium (Cr)? What will be the effect of redox changes and sorption process on the sequestration of carbon (C) on mineral surfaces of iron (Fe) and manganese (Mn) minerals in soils, a major mechanism for preventing loss of C from soils to the atmosphere. This presentation will explore these questions over a range of spatial and temporal scales.