

Grand Challenges in Environmental Sustainability: The Water, Climate, Soil, and Food Nexus

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Soil degradation, water quality and quantity, climate change, and food security are the foremost challenges of our time. Soil provides the substrate where all of these challenges commingle and interlace. The importance of basic soil biogeochemical research to address these needs has never been more important. Combining advanced molecular-scale analytical techniques with studies at the macroscopic and landscape scale, and over an array of temporal scales, are necessary to address some of the most important scientific questions related to environmental quality and degradation. This presentation will include case studies dealing with soil, air, and water contamination and carbon cycling/sequestration to show how the application of a multi-scale, interdisciplinary approach can provide important insights into environmental degradation and restoration.