Understanding Terrestrial Ecosystems in the Context of Global Change Across Multiple Scales: A Data-Model Integration Approach

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Changes in climate system have become a severe threat to terrestrial ecosystems as well as our society; terrestrial ecosystems have been serving as a key regulator for the climate system dynamics and will continue to do so in the future. Therefore, understanding terrestrial ecosystems in the context of global change is one of urgent tasks for global change community as well as entire human society. My research has been concentrating on examining biogeochemical mechanisms that regulate the land-atmosphere interactions, particularly the carbon cycling, greenhouse gas fluxes, and soil microbial processes. I will review some of my recent work for understanding terrestrial ecosystems in response to global change across multiple scales by using a data-model integration approach. Specifically my talk will cover three topics: (1) a data-model integration approach; (2) compilation of field observational data and integration with empirical/theoretical models for regional and/or global understanding of the terrestrial ecosystems; (3) improvements and applications of process-based models to understanding global change impacts on primary terrestrial functions. A number of case studies will be presented within each topic and some ongoing research will be discussed.

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For more information, please contact the Colloquium Chair, Dr. Chuan “River” Xiao, at cxiao@utep.edu or 915.747.8657.