



Soils and the ecology of lowland tropical forests

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Ben Turner studies nutrient cycling in tropical forests, with an emphasis on soil phosphorus dynamics and its influence on the distribution of plant species in the environment. He leads the Smithsonian Institution-Geo/CTFS soils program, which involves detailed studies of soil taxonomy, carbon stocks, and nutrient mapping in the large forest dynamics plots in Asia, Africa, and the Americas. He uses natural and experimental gradients to understand how nutrients shape biological communities in tropical forests.



Some of the most fascinating advances in our understanding of ecosystems are taking place at the interface between ecology and biochemistry. Soil nutrients influence the productivity, diversity, and composition of biological communities, both above and below ground. The presentation will explore the extent to which phosphorus influences the productivity, diversity, and distribution of plant species in tropical forests. I will highlight the range of soils that occur in tropical forests and will argue that pedogenesis and associated phosphorus depletion is a primary driver of forest diversity over long timescales. I will draw on data from a regional-scale network of forest dynamics plots in Panama to show that tree species distributions are determined predominantly as a function of dry season intensity and soil phosphorus availability, and will suggest potential mechanistic explanations for this pattern in relation to phosphorus acquisition. A long-term field experiment in Panama demonstrates how multiple nutrients, limit plant productivity and microbial communities on strongly-weathered soils in the lowland tropics.

Time: 29.4. 11:00

Place: Raum H2.21 (Alte WU, Augasse 2-6)

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