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From "Rainscapes" to River Basins – Elucidating Rainfall Controls of Hydrological Variability and Change

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The focus of this presentation is on the relationship between the space-time organization of precipitation and the spatial variability of soils, vegetation, and landform, and how this in turn is reflected on the hydrological function of river basins from extreme events to the availability and sustainability of water resource stocks. End-to-end modeling studies of the hydroclimatological regimes of selected rivers basins in the tropics and at mid-latitudes will be used to demonstrate the fundamental linkages between rainfall and hydrological non-stationarity in space and time including soil-water-vegetation interactions, water storage and runoff production. Through numerical simulations using satellite-based precipitation products, we investigate the implications of uncertainty in rainfall measurement to understand and quantify uncertainty in the water cycle at the river–basin scale, and to predict terrestrial environmental change.