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## **Plant-soil-water interactions in the tropics: using isotopes to explore environmental change implications for agriculture**

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Understanding of plant water uptake and ecohydrological interactions between plants and soil water is crucial for developing effective and sustainable water use strategies, in particular for agricultural areas. To explore these questions, isotopic analyses of plant and source water provide useful tools alongside traditional techniques. Although such studies in tropical regions are less abundant, recent meta-analyses have revealed that vegetation water generally resembles that of deeper soil water sources than in temperate and cold climate regions. However, water uptake patterns from different sources can also vary in time, especially in the tropics where seasonality in precipitation and associated water availability is strong. As the distinct wet and dry seasons are expected to become more intense, this can have important implications for ecosystems and agriculture.

This presentation will bring together results from recent isotope studies on plant-soil-water interactions in tropical climate regions across the world. In particular, it will focus on system changes at the extreme ends of hydroclimatological conditions. It will also explore the implications this might have for agriculture, e.g. in terms of the sustainability of agroforestry where competition for water between co-existing vegetation might increase during dry periods, and how additional irrigation or flooding from extreme rainfall can change runoff dynamics and recharge leading to enhanced leaching of pollutants.