The Laboratory of Tree-Ring Research

presents a talk by

Jen Johnson

(University of Arizona)

A process-based approach to understanding ecosystem-scale variation in n-alkane δD

Tuesday, December 1, 2015 - 4:00pm to 5:00pm

Room: Bannister 110

Normal alkanes (n-alkanes) are long-chain fatty acids that are synthesized by terrestrial plants and then accumulate in soils and sediments. Since the hydrogen in the n-alkanes is derived from the hydrogen in plants' water sources, the stable hydrogen isotopic composition (δD) of the n-alkanes includes information about the δD of environmental water. Over the last year, we have been studying how the δD signal is translated from environmental water into n-alkanes by monitoring δD of atmospheric water vapor, precipitation, soil water, xylem water, leaf water, and n-alkanes in a diverse plant community at Tumamoc Hill, Arizona, USA. In this talk, I will present the results-to-date, which indicate that although n-alkane δD varies substantially between species that are sampled concurrently, the observed range of variation is quantitatively consistent with the predictions of a simple process-based model. These findings support the idea that n-alkane δD has exciting potential for ecological, hydrological, and climatological studies.

The University of Arizona