

Research Unit Forest Dynamics - colloquium

Date: 04.02.2025

Time: 10:30

Room: Engler-Saal

Duration: 25 minutes

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Chairs: Kerstin Treydte, Yann Vitasse

Title: **Tracing isotopic imprints of precipitation, soil and xylem water in tree-ring compounds over 17 years: Implications for dendrohydrological reconstructions**

Abstract:

Since most oxygen (O) and all hydrogen (H) in plant compounds originate from water, the O and H isotope compositions of tree rings serve as valuable indicators of environmental water variations. However, the lack of long-term isotope data limits our understanding of seasonal isotopic relationships between tree-ring compounds and tree water sources, posing challenges for hydrological reconstructions. As part of the SNSF project “TreeWater,” we compiled a unique 17-year isotope dataset of measured and modeled water sources and tree-ring compounds from *Picea abies* across three Swiss sites. Our findings reveal that seasonal isotopic relationships between tree rings and water vary depending on the compound, water source, isotope, and site. We also demonstrate how tree-ring isotopes can enhance reconstructions of seasonal water origins.