

Research Unit Forest Dynamics - colloquium

Date: 02.07.2024

Time: 10:30

Room: Engler-Saal

Duration: 25 minutes

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Title: The hydrogen story – Exploring the non-climatic signals of $\delta^2\text{H}$ in tree rings.

Abstract:

Hydrogen isotope ratios in tree-ring cellulose ($\delta^2\text{H}$) are far less studied than carbon and oxygen. We explored its non-climatic signals by using 700 years of larch budmoth outbreaks, which showed altered tree-ring isotopic signatures, and a decoupling between $\delta^2\text{H}$ and $\delta^{18}\text{O}$, as an example of “imbalanced” growth years. This OH-decoupling hypothesis was applied in a multi-proxy approach, to test the acclimation of the Pfynwald irrigation experiment. We could identify acclimated conditions for irrigated and control trees, with a coupled O-H relationship, while stop trees showed a decoupling, thus ongoing acclimation. We highlight $\delta^2\text{H}$'s potential to indicate tree physiological information.