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Are hardwood species sensitive for reconstructing landslide movements?

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The kinetic energy of landslides highly influences the growth structure of tree stems and thus causes the development of reaction wood in the xylem. Most studies focus on assessing the reaction wood development in conifers. However, the response of hardwood species (e.g. beech - *Fagus sylvatica L.* and birch - *Betula pendula L.*) on external mechanical stresses caused by landslides were rarely addressed so far. In this study, we intend to assess the reaction wood development in (i) soft- and hardwood species and (ii) depending on the location and the specific mechanical influence causing deformation of the tree stems.

Therefore, 103 trees, consisting of beeches, birches , and Norway spruce (*Picea abies L. Karst.*) were sampled with an increment corer on 3 different positions in a landslide-prone area in the Walgau valley (Vorarlberg, Austria). Two positions were located on the area of a shallow landslide, whereas the third position is on a stable slope, where the mechanical stresses are most likely caused by snow pressure. Cross-referencing was performed with 50 trees in *CDendro*-software. To identify reaction wood, thin sectioning and staining of the samples was conducted. The reaction wood found in the samples was recorded and compared to the reference chronology of all sampled tree species, also used for dating purposes.

Further analyses will focus on the structural differences of the reaction wood between the sampled conifers and deciduous trees and their distribution within the investigated area. Therefore, it is expected that reaction wood development is comparable throughout the observed species and might be used to date the occurrence of mechanical stresses.