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Water accessed differently by *Larix decidua* according to an alpine gradient

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Vegetation is the primary connection between land and atmosphere, thus the main player mediating the consequences of a changing climate on land cover and hydrology. A protected alpine catchment, with a larch grove (*Larix decidua*) at the upper limit of the forested area, the Vallon de Nant (Vaud alps, 1200 – 3050 m. a.s.l.), was chosen as a study site in parallel with ongoing hydrological observation. We analyzed the stable isotopes of water, $\delta^{18}\text{O}$ and $\delta^2\text{H}$, in the xylem extracted from samples of 10 trees in 2 transects just above and below 1500 m. a.s.l. over the course of the 2017 and 2018 growing seasons. We compared isotopic ratios with concurrent observations of isotopes in precipitation, stream, soil water, and groundwater. Isotopic content of xylem water was found to be fairly consistent, independent of the date within the season, and closely resembled shallow soil water, suggesting that recent precipitation dominated the water source. Our results support that vegetation could experience a drought due to low levels of rainfall before the streamflow is impacted. Furthermore, they affirm current discussions that water source is elevation dependent for trees in mountain ecosystems, with summer precipitation being favored by higher elevation trees, such as these. This preference has significant implications when we project current changes of quantities of rain falling as snow versus rain in the future. And more importantly, changes the view of forest from that of a water “user” to that of a store and player in complex feedback mechanisms.