



## Deuterium in tree rings: a low frequency climate proxy? - Hope for deuterium in tree rings?

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We measured stable hydrogen isotope ratios in  $\alpha$ -cellulose from a millennial European larch (*Larix decidua*) chronology from a subalpine valley in Valais, Switzerland. The online equilibration method described in [1] was applied to measure the Deuterium/Hydrogen ratio ( $\delta D$ ) of the non-exchangeable hydrogen. We compared the  $\delta D$  chronology to the results from  $\delta^{18}O$  measurements of the same cellulose samples [2]. Although both hydrogen and oxygen share a highly similar long term trend, high frequency signals show low coherence. This results are in contrast to the mechanistic model by [3] who assumes a similar pathway for hydrogen and oxygen in woody plants from source water to cellulose synthesis. The comparison of our  $\delta D$  chronology to high resolution instrumental meteo data also leads to conflicting results. In this work we thus focused on low frequencies in  $\delta D$  to investigate the question whether deuterium in tree rings is a worthwhile climate proxy.

## References

- [1] Filot, M. (2006), *Rapid Commun. Mass Spectrom.*
- [2] Kress, A. et al. (2009, in press), *Oecologia*.
- [3] Roden, J.S. (2000), *Geochimica et Cosmochimica Acta*.