



## Decadal resolved leaf wax $\delta D$ records of the Younger Dryas in central and eastern Europe

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Annually laminated (varved) sediments with defined event-based age anchor points such as tephra layers enable the establishment of precise chronologies in lacustrine climate archives. This is especially useful to study subtle temporal differences in the consequences of mechanisms and feedbacks during abrupt climatic changes such as the Younger Dryas over larger spatial areas. To decipher the drivers of ecological changes across the Allerød/Younger Dryas transition in central Europe, we analyzed leaf wax biomarkers from Trzechowskie paleolake in northern Poland. Samples were taken in 10 years intervals across the onset of the Younger Dryas, with the Laacher See Tephra (12,880 yrs BP) as anchor point for age-calibration. Further, we applied compound specific hydrogen isotope analysis to infer past hydrological changes, in comparison to results from the well-dated Meerfelder Maar record located up 900 km to the southwest [1]. Between 12,750 and 12,600 yrs BP, ratios of terrestrial n-alkanes show a transition from a tree-dominated lake catchment (Pinus, Betula) to an environment mainly covered by Juniperus and grasses, which is in agreement with palynological data.  $\delta D$  values of n-alkanes indicate a rapid cooling and/or a change of moisture source together with a slight aridification between 12,680 and 12,600 yrs BP. This is synchronous to a rapid and strong aridification inferred for the beginning of the Younger Dryas at Meerfelder Maar (western Germany) [1] but ca. 170 yrs after the inferred onset of cooling at both Meerfelder Maar and the NGRIP ice core at 12,850 yrs BP. This highlights a different temporal succession and impact of hydrological and climatic changes in eastern compared to western Europe which could potentially be related to the stronger influence of the Fennoscandian icesheets and/or the Siberian High on atmospheric circulation patterns in the more continental climate influenced parts of eastern Europe.

[1] Rach O, Brauer A, Wilkes H, Sachse D. Delayed hydrological response to Greenland cooling at the onset of the Younger Dryas in western Europe. *Nat Geosci.* Nature Publishing Group; 2014;7:109–112.