# Tree Rings and People

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# Carbon and oxygen isotope trends along the northern tree-line in Eurasia

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The recent climate change involves a complex spatial pattern of temperature and precipitation variations with causes often difficult to discern. For climate reconstruction in remote areas stable carbon and oxygen isotopes of tree-rings are a promising new tool. Calibration studies have shown that the isotope variations can be reliably related to climatic and physiological factors. The recent advances in continuous-flow technology make the method now feasible for large-scale mapping of past climate in a similar way as it is known from classical dendrochronology. We measured the isotope ratios for a network of old dominant trees across Eurasia from Norway to Siberia using material from three wide-distributed tree genus (*Larix, Picea, Pinus*) sampled previously for the Northern Eurasian Tree-Ring Project. The sites were selected at the northern timberline of the Eurasian boreal forest, where growth is most limited by temperature. We determined the isotope composition on composite wood samples of the period 1861–90 and 1961–90. First results for the values of 130 trees indicate a large east-to-west gradient in 18O that can be well explained by isotopic fractionations of the precipitation. The carbon isotope values show a decreasing trend with time that can be related to the decreasing isotope content of atmospheric $CO_2$ and changes in water-use-efficiency of the trees due to the enhanced greenhouse effect.

**Editorial Keywords**

climate reconstruction, oxygen isotopes, carbon isotopes, international network, boreal forest, *Larix* sp., *Picea* sp., *Pinus* sp., Eurasia

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