



## **Long-term climate and streamflow variations in Turkey derived from stable isotopes of *Juniperus excelsa***

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Turkey is located in the eastern Mediterranean which experiences repeatedly extreme and persistent droughts, heat episodes and limited water resources. Water availability is an increasingly sensitive topic in a region which faces growing human populations and limited water supplies at the same time. A better comprehension of the natural hydrological variability is of great importance as it will help to better predict the regional climate variability and to find a sustainable management of regional water resources. Dendroclimatological studies making use of the stable isotope ratios in tree rings have not been conducted in Turkey yet. We present the first multicentennial carbon and oxygen stable isotope series from Turkey, measured in tree rings of *Juniperus excelsa* M. Bieb. from the hinterland mountain area near Antalya. We show that  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  in tree rings are useful proxies to reconstruct climate and streamflow in Turkey. Different tree-ring parameters contain separate climatic signals. While  $\delta^{13}\text{C}$  correlates best with Jan-May temperatures,  $\delta^{18}\text{O}$  correlates well with scPDSI and Euphrates river runoff which leads to the assumptions of a distinct summer drought signal. The reconstructions of the drought index (scPDSI), the Euphrates river runoff and the winter/spring temperatures (Jan-May) suggest that during the last 100 years parts of Turkey have experienced wetter summers and also that there is a long-term trend towards lower spring temperatures.