

A millennium-long temperature reconstruction for the Tien Shan Mountains, Kirghizia

J. Esper

*Swiss Federal Research Institute WSL, Zürcherstrasse 111, 8903 Birmensdorf, Switzerland;
e-mail: esper@wsl.ch*

A millennium-long, low frequency juniper ring width chronology is presented for the Alai Range of the western Tien Shan in Kirghizia. The new chronology averages information from seven close-to-timberline sampling sites. Besides the centennial scale, a decadal scale Alai Range chronology is built, using standard dendrochronological techniques. We discuss some qualities of this record and point to the missing low frequency trends removed in the process of individual standardization. These are long-term negative trend in the first half of the past millennium and long-term positive trend since about AD 1800. The final centennial scale Alai Range reconstruction comprising these trends is an average of two differently standardized chronologies, both of which systematically biased, in their low frequency domains. It, nevertheless, represents a best estimate of long-term summer temperature variation, reflecting the Medieval Warm Period, the Little Ice Age, and a period of warming since about the middle of the 19th century.