

Dendroclimatic potential of juniper trees from Kola Peninsula (North West Russia)

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Tree ring records play an important role in reconstructing climate change in the past. High-latitude regions in the Northern Hemisphere are of greatest interest for assessing natural and anthropogenic variations of climate change because the polar ecosystems have the highest sensibility to the expected global climate warming. The northernmost juniper (*Juniperus Siberica* Burgsd) trees in the world, growing well above the Arctic Circle in the central part of Kola Peninsula (North West Russia), are living monitors of the surrounding Arctic climatic environment. Regional tree ring chronology with extension 676 years (from 1328 A.D. till 2004 A.D.) was built for the central part of Kola Peninsula (Keivy region: 67.77N; 36.52E) according to wood of living trees and well-preserved remains of dead trees. These juniper trees seem to be the oldest ones (one tree was 556 years old) found in Europe up to date. In spite of very hard processing procedure on account of a large amount of very thin, missing and false rings, it was possible to make a chronology and get some conclusions on past climatic variations at Kola Peninsula mainly caused, as we assume, by extraterrestrial agents (solar activity and galactic cosmic ray variations). It was obtained a rather good agreement between long-term climatic variation in Europe and at Kola Peninsula. The minima of solar activity Sporer (1416-1534 AD), Maunder (1645-1715 AD) and Dalton (1801-1816 AD) were accompanied by temperature decreases. The coldest conditions of the last 676 years were in the seventeenth century during the 'Little Ice Age' period. It should be noted that the Kola Peninsula tree-ring chronologies did not show any great warming at the end of the XX century. Spectral and wavelet analysis of juniper tree-ring records showed pronounced 22- and 80-100-year periodicities.

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