



Solar cycles in polar tree-ring records

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Polar tree ring records play an important role in reconstructing climate change in the past. Tree-ring chronologies collected from different parts of Arctic (Fennoscandia, Kola Peninsula and Northern Siberia) were investigated by means of spectral (MTM method) and wavelet analysis. Among them it was analyzed juniper tree ring chronology with extension more than 700 years (from about 1300 A.D. till 2004 A.D.) collected for the central part of Kola Peninsula (Keivy region: 67.77N; 36.52E). Results of spectral analysis allow us to select the main periods of solar variability (22-year, 30-33 year and 80-90-year solar cycles) in Kola and Fennoscandia tree-ring chronologies. Besides it was found that only periodicities of around 20 years are present in Siberian series. With respect to 11-year periodicity, which is the most prominent one in sunspot number spectrum (Schwabe cycle) it may be said that it hardly appeared in Arctic tree-ring records. 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 700 years in the Northern Europe were in the XVII 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. The result obtained give us information on local climate variations in the very important area influenced by Gulf Stream and Arctic ocean and located in the vicinity of the very important for whole Europe gas field at the shelf of Barents sea.

The work was partially supported by the program 'Biodiversity and dynamics of gene

pool' of the Russian Academy and by RFBR grant N 05-04-97528.