



Distribution of temperature and precipitation extremes in Northern Eurasia in the 20th century

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The daily air temperature and precipitation data obtained at about 150 regular meteorological stations of the former USSR are analyzed from the viewpoint of extreme values and their combinations. For the analysis, the following characteristics of temperature and precipitation extremes are used: - monthly number of days with precipitation sum larger than 30 mm; - the biggest pentad sum of precipitation in each month; - number of days in a month, corresponding to the drought criteria by precipitation and maximum air temperature (not counting its continuous length); - number of days in a month with minimum air temperature below the 10% probability limit; - monthly sum of minimum air temperature below the 10% probability limit; - number of days in a month with decreasing of average daily temperature since the previous day for 7°C and more; - length of frost-free season. The listed characteristics are calculated as average for the reference period of 1951-1980, as well as for the period of contemporary global warming (1989-2001). The periods were chosen according to the variations of average annual air temperature in Russia, which increased by about 1°C, and its rise is statistically significant. The 10% probability limit for minimum air temperature for the reference period was used also for the global warming period. The spatial fields of the extreme characteristics for the mentioned time periods are plotted. Regions with different trends of the characteristics during the contemporary warming are revealed. In general, the winter weather has become less extreme in the end of 20th century. The number of days with extremely strong frosts in winter decreases significantly in a large part of Eurasia. The frequency of the strongest winter precipitation doesn't change so much, except for few regions in Western Siberia and in the Far East. Under the climate warming, the number of summer drought days increases in Western Siberia, in Aral region and in Kazakhstan, and decreases in some parts of Eastern Siberia and Ukraine. The most intensive precipitation in July has be-

come heavier on the Black Sea coast of Caucasus and in the south of Far East, while decreasing in a small part of Ural mountains. The frost-free season increases in some parts of Siberia and near Baltic Sea, but in spite of the warming, decreases in the north and east of European Russia.