



Climatic extremes in North Eurasia: frequency and distribution under contemporary warming

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The daily meteorological data obtained at regular observational network of the former USSR are analyzed. For the analysis, characteristics of meteorological extremes (number of days with strong precipitation, biggest pentad precipitation sum, number of drought days, number of days with extreme values of air temperature and wind velocity, length of frost-free season) are used. The listed characteristics are calculated as average for the reference period of 1951-1980, as well as for the period of contemporary global warming (1989-2006). The periods were chosen according to the variations of annual air temperature, averaged over Russia, which increased by about 1.5°C, and its rise is statistically significant. The 10% probability limit for minimum and maximum 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 and beginning of 21st centuries. 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 does not 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 become 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. On general sub-continental scale, the changes in weather-related extremes frequency in North Eurasia are not very significant up to date. The study is supported by the Russian Foundation

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