

GC31B-0453 Climate Extreme Events over Northern Eurasia in Changing Climate

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Wednesday, December 17, 2014 08:00 AM - 12:20 PM

Moscone West

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During the period of widespread instrumental observations in Northern Eurasia, the annual surface air temperature has increased by 1.5°C. Close to the north in the Arctic Ocean, the late summer sea ice extent has decreased by 40% providing a near-infinite source of water vapor for the dry Arctic atmosphere in the early cold season months. The contemporary sea ice changes are especially visible in the Eastern Hemisphere. All these factors affect the change extreme events.

Daily and sub-daily data of 940 stations to analyze variations in the space time distribution of extreme temperatures, precipitation, and wind over Russia were used. Changing in number of days with thaw over Russia was described. The total seasonal numbers of days, when daily surface air temperatures (wind, precipitation) were found to be above (below) selected thresholds, were used as indices of climate extremes. Changing in difference between maximum and minimum temperature (DTR) may produce a variety of effects on biological systems. All values falling within the intervals ranged from the lowest percentile to the 5th percentile and from the 95th percentile to the highest percentile for the time period of interest were considered as daily extremes. The number of days, N, when daily temperatures (wind, precipitation, DTR) were within the above mentioned intervals, was determined for the seasons of each year. Linear trends in the number of days were calculated for each station and for quasi-homogeneous climatic regions. Regional analysis of extreme events was carried out using quasi-homogeneous climatic regions. Maps (climatology, trends) are presented mostly for visualization purposes.

Differences in regional characteristics of extreme events are accounted for over a large extent of the Russian territory and variety of its physical and geographical conditions. The number of days with maximum temperatures higher than the 95% percentile has increased in most of Russia and decreased in Siberia in spring and autumn. Reducing the number of days with extremely low air temperatures dominated in all seasons. At the same time, the number of days with abnormally low air temperatures has increased in Middle Volga region and south of Western Siberia. In most parts of European Russia observed increase in the number of days with heavy snowfalls.

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