



Climate projection of extreme wind speed regime in the Arctic

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Extreme surface wind events over the Arctic (60-90N, 0-360 E) are studied for the modern climate and for its future possible changes on the base of ERA-Interim reanalysis data and CMIP5 scenario RCP8.5. Horizontal surface wind speed (10 m) probability distribution functions in every grid point of reanalysis and models data over the Arctic were evaluated as well as wind speed for 50, 95, 99, 99.9 percentiles ($V_{0.50}$, $V_{0.95}$, $V_{0.99}$, $V_{0.999}$). At first, changes of $V_{0.50}$, $V_{0.95}$, $V_{0.99}$, $V_{0.999}$ were studied on the base of ERA-Interim reanalysis for 1981-2010. Results showed regional inhomogeneity of wind speed trend intensity. Also, analysis was made for zonal means and separate sectors of the Arctic. To study climate projection of high wind speed there were taken u, v values from CMIP5 numerical experiments for 1961-1990 (Historical) and 2081-2100 (RCP8.5). RCP8.5 scenario was chosen as having the most pronounced response in the climate system, which gave more statistical significance to the calculated trends. Modeled extreme wind speeds for the total Arctic and zonal means show rather good agreement with reanalysis data (compared for decades 1981-1990, 1991-2000). At the same time regional intermodel variability of wind speed is revealed. Trend of extreme surface wind speed in 21 century and for 2081-2100 over the Arctic are analyzed for each model. The study was supported by the Russian Science Foundation (project no. 14-37-00038).