Geophysical Research Abstracts
Vol. 18, EGU2016-4270, 2016
EGU General Assembly 2016

Extreme wind speed regime and weather patterns in the Barents Sea

Galina Surkova and Aleksey Krylov

Lomonosov Moscow State University, Dept.Meteorology and Climatology, Moscow, Russian Federation (galina_surkova@mail.ru)

The synoptic patterns of extreme wind events over the Barents Sea during 1981-2010 are studied on the base of ERA-Interim reanalysis data (6-hours, 0.75x0.75 degrees of latitude and longitude). Frequency of events was defined after analysis of 50, 95, 99, 99.9 percentiles (V(0.50), V(0.95), V(0.99), V(0.999)) of wind speed probability distribution function over the central part of the sea where wind speed is the highest. First part of the study was devoted to the features of seasonal and interannual variability of the surface (10 m) wind speed. Results showed very slow and statistically almost insignificant decreasing of wind speed for all percentile speed values during 1981-2010. The highest standard deviation for annual percentile speed values were derived for the most seldom events, V(0.999). Mean values for the central part of the Barents Sea are V(0.95)=14.3 m/s, V(0.99)=17.2 m/s, V(0.999)=20.3 m/s. At the next stage the calendar of extreme events with wind speed more the threshold value V(0.99) was extracted. Sea level pressure (SLP) fields for these extreme events were classified by cluster analysis. Formal detection of typical SLP fields accompanying by storm winds allows to evaluate their frequency in different time periods. It is more reliable then use of wind speed data because the accuracy of SLP simulation in re-analysis and climate models is higher than that for the wind speed. The progress of the work is seen as further development of climate projection of extreme events on the base of CMIP5 scenarios through the projection of synoptic situations that create these events as it was shown in our previous works. Developed methodology allows to assess the frequency of synoptic events accompanying by hazards, not only in the past, but in the future. The study was supported by the Russian Science Foundation (project no. 14-37-00038).