



Cyclone activity in the Arctic from an ensemble of regional climate models (Arctic CORDEX)

Mirseid Akperov (1), Igor Mokhov (1), Annette Rinke (2), Doerthe Handorf (2), and Klaus Dethloff (2)

(1) A.M. Obukhov Institute of Atmospheric Physics, RAS, Moscow, Russia, (2) Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, AWI, Potsdam, Germany

The ability of the regional climate models (Arctic CORDEX) to simulate cyclone activity for the Arctic region is investigated. 10 regional climate models (RCMs), including models with and w/o “nudging” are considered. Comparing the characteristics of cyclone activity with the use of an ensemble of RCM’s hindcast simulations and ERA-Interim reanalysis for four seasons (winter, spring, summer, autumn) and for last decades, biases in cyclone frequency, intensity and size over the Arctic (region ca. north of 60°N) are quantified. In spite of these biases RCM’s are able to represent the characteristics of cyclone activity in the Arctic region, in particular RCM’s with “nudging”. The spread across the models are estimated. Additionally, the characteristics of extreme mesocyclones (polar lows) are investigated. The ability of RCM’s and reanalyses (ERA-Interim, Arctic system reanalysis - ASR) to represent polar lows over the Barents and Kara Seas in comparison with satellite observations is assessed. Reanalyses and RCM’s with high spatial resolution are able to represent ca. 50% of the observed polar lows.