



Numerical Weather Prediction for Arctic Region

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The study is based on the numerical experiments with different configurations of the COSMO model of the same name meteorological consortium. The experiments used the COSMO-RuENA configuration (13.2 km grid spacing) included in the COSMO-Ru operational weather forecast system, and specially configurations for the Arctic Region with grid cells 6.6 and 2.2 km. The studies were focused on the Polar Lows (intensive mesocyclones of a scale of 50-800 km, located above the sea surface closer to the pole from the main baroclinic zone, with a near-surface wind exceeding 15 m/s). The prediction of generation, evolution and paths of the Polar Lows was studied in dependence on various model grid steps, as well on the ice boundaries and its cohesion over areas, which cyclone moves and inter-diurnal changes of sea-surface temperature (T_{sea}). In particular, it was shown that model with grid spacing about 2 km simulates more successful the evaluation and paths of the Polar Lows than the same model with more coarse grids; in same time T_{sea} and its evaluation during simulation (setting the time-dependent temperature of T_{sea}) can play a decisive role for generation of small vortices.

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