DOI: https://doi.org/10.37162/2618-9631-2020-4-6-27

Experimental technology for very-short-range numerical weather prediction based on a nonhydrostatic mesoscale meteorological model with assimilation of radar and ground-based observational data / Zhupanov V.D., Luk'yanov V.I., Vasil'ev E.V., Dmitrieva T.G., Smirnov A.V., Skomskov A.B. // Hydrometeorological Research and Forecasting, 2020, no. 4 (378), pp. 6-27.

A brief description of the very-short-range numerical weather prediction technology based on the WRF-ARW nonhydrostatic model is presented. Skill scores are provided for the short- and very-short-range forecasts of temperature, precipitation and wind of various intensity, which were calculated with this model as a result of its integration on the nested grid with a spacing of 3 km, with the direct simulation of deep convection and the assimilation of radar and ground-based weather station data. The forecasts for a location were verified for the central part of European Russia using radar and weather station data for the summer of 2020. It is demonstrated that the model adequately simulates mesoscale convective systems and the related zones of heavy precipitation, strong winds, and thunderstorms. Possible reasons for forecast biases and the ways to reduce the value of spatial and temporal errors are discussed.

Keywords: numerical very-short-range forecasting, mesoscale meteorological model, radar data assimilation, precipitation, severe weather events, active convection

Fig. 5. Tab. 6. Ref. 19.