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Verification of the NWP models operated at ICM, Poland

Malgorzata Melonek

Interdisciplinary Centre for Mathematical and Computational Modelling, University of Warsaw, Warsaw, Poland (mmelonek@icm.edu.pl)

Interdisciplinary Centre for Mathematical and Computational Modelling, University of Warsaw (ICM) started its activity in the field of NWP in May 1997. Since this time the numerical weather forecasts covering Central Europe have been routinely published on our publicly available website. First NWP model used in ICM was hydrostatic Unified Model developed by the UK Meteorological Office. It was a mesoscale version with horizontal resolution of 17 km and 31 levels in vertical.

At present two NWP non-hydrostatic models are running in quasi-operational regime. The main new UM model with 4 km horizontal resolution, 38 levels in vertical and forecats range of 48 hours is running four times a day. Second, the COAMPS model (Coupled Ocean/Atmosphere Mesoscale Prediction System) developed by the US Naval Research Laboratory, configured with the three nested grids (with coresponding resolutions of 39km, 13km and 4.3km, 30 vertical levels) are running twice a day (for 00 and 12 UTC). The second grid covers Central Europe and has forecast range of 84 hours.

Results of the both NWP models, ie. COAMPS computed on 13km mesh resolution and UM, are verified against observations from the Polish synoptic stations. Verification uses surface observations and nearest grid point forcasts.

Following meteorological elements are verified: air temperature at 2m, mean sea level pressure, wind speed and wind direction at 10 m and 12 hours accumulated precipitation. There are presented different statistical indices. For continous variables Mean Error(ME), Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE) in 6 hours intervals are computed. In case of precipitation the contingency tables for different thresholds are computed and some of the verification scores such as FBI, ETS, POD, FAR are graphically presented. The verification sample covers nearly one year.