9.24 COMBINATION OF OBJECT-BASED PROBABILISTIC NOWCASTING AND OBJECT-BASED NWP ENSEMBLE

R. POSADA[1], R. FEGER[1], M. SCHULTZE[1], K. WAPLER[1], M. WERNER[1]

[1] Deutscher Wetterdienst, Germany

rafael.posada-navia-osorio@dwd.de

A pilot project has been set up at Deutscher Wetterdienst (DWD) to develop a Seamless INtegrated FOrecastiNg sYstem (SINFONY) that aims to integrate nowcasting techniques with numerical weather prediction (NWP) to create a seamless forecast from observation time up to, at least, +6 h. The pilot project focuses on severe summertime convective events.

Currently, for the first 1-2 h, the storm-scale forecasting relies mostly on observation-based nowcasting products, whereas convection-allowing ensemble NWP (COSMO-DE-EPS) is only able to reach/outperform the quality of nowcasting at later times. Furthermore, nowcasting and NWP have been treated as two separate and independent methods, which lead to a limited number of combined products that are available for the forecasters. The goal of SINFONY is to fill this gap by enhancing both nowcasting and NWP separately and by exchanging information between both techniques to later provide more reliable combined products.

The current nowcasting system used at DWD a deterministic 2h-forecast based on radar observations that are updated every 5 minutes will be extended to provide a probabilistic forecast. The current NWP-Ensemble will be replaced by a Rapid Update Cycle (RUC) ensemble with hourly updates.

Regarding the combined products, SINFONY will provide a probabilistic forecast of convective events based on the combination of cells detected in probabilistic nowcasting and NWP-Ensemble. The detection of these cells in nowcasting is carried out with KONRAD3D, a method developed at DWD as part of the nowcasting system to detect, trace and forecast the trajectory and evolution of convective cells based on observed radar reflectivity. The NWP provides simulated radar data with the same structure and time resolution as the actual radar observations (each 5 minutes) thanks to an efficient Modular VOlume scanning RADar Operator (EMVORADO) that is coupled to the COSMO model framework. This allows the use of KONRAD3D also to detect the cells simulated by the NWP-Ensemble. The use of the same method for object identification facilitates the comparison and further analysis of the identified objects in both nowcasting and NWP.

As a first approach, a comparison of the cells identified in both datasets during the selected summertime events has been carried out. The first results of this comparison are presented here.