Development of a new seamless prediction system for very short range convective-scale forecasting at DWD

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At DWD a new internal project has been set up to develop its future seamless ensemble prediction system for convective-scale forecasting from observation time up to +6 h / +12 h forecasts. The focus is on severe summertime convective events with their associated hazards (heavy precipitation, hail, wind gusts, etc.).

Up to now, for the first 1-2 h this relies mostly on observation-bsaed nowcasting products, whereas convection-allowing ensemble NWP (COSMO-DE-EPS) is only able to reach/outperform the quality of nowcasting at later times. New NWP forecasts are started only every 3 h and after some technical time delay. Moreover, nowcasting and ensemble NWP are treated as two separate and independent methods, and there are few common products available for the forecasters.

The goal of the new project is to narrow down these gaps, on the one hand by enhancements to both nowcasting and NWP separately and on the other hand by mutual information exchange and combination, to further enhance the quality of both. High-resolution observational data (radar, satellite, GPS-derived moisture, etc.) will be exploited. We consider in particular:

- Nowcasting ensembles, ensembles of "objects", also informed by uncertainties from NWP

- Life cycle in nowcasting, informed by radar, lightning and satellite data and by informations from NWP

- Rapid Update Cycle (RUC) ensemble NWP (km-scale, LETKF, hourly update, 40 members, 2-moment microphysics including hail)

- Assimilation of radar volumne- and satellite data in ensemble NWP (native observations as well as nowcast "objects")

- New products combining nowcasting and NWP for our forecasters

This project has been started recently and the poster will give an overview on the plans. Further, results of first case studies are shown to motivate the project.