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En-INCA: Towards an integrated probabilistic nowcasting system

B. Stuhl and A. Kann

Central Institute for Meteorology and Geodynamics, Numerical Weather Prediction, Vienna, Austria
(alexander.kann@zamg.ac.at)

The analysis and nowcasting system INCA (Integrated Nowcasting through Comprehensive Analysis) which is operated by ZAMG, is based on blending observations and NWP data. Although the performance of INCA is extremely high in the nowcasting range, forecast uncertainties can be large and limit its practical use. Especially in case of severe weather conditions, the quantification of these uncertainties and determining probabilities of event occurrences are adding value for various applications.
The Ensemble Nowcasting System En-INCA is coupled with ALADIN-LAEF, the EPS of the limited area model ALADIN, which is operated successfully for years at ZAMG. The nowcasting approach of INCA is combined with the different EPS members to derive an ensemble of forecasts in the nowcasting range. In addition to the NWP-based uncertainties, specific perturbations with respect to observations, the analysis and nowcasting techniques, respectively, are discussed.
En-INCA is a link between INCA and ALADIN-LAEF by merging the advantages of both systems: the observation-based nowcasting on very high resolution and the uncertainty estimation of a state-of-the-art LAM-EPS. Probabilistic nowcasting products are able to support different users, e.g. civil protection agencies or power industry, to optimize their decision making processes.