



## **Forecasting and Nowcasting Severe Weather Using the Operational Warning Decision Support System AutoWARN at DWD**

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The operational semi-automatic warning decision support system AutoWARN developed at the German Meteorological Service (DWD) is operational since 2015. It is part of DWD's strategy of modernizing the weather warning service by further automation and centralization of the warning process. One aim is to help forecasters to deal with increasing amounts of Numerical Weather Prediction (NWP) and observational/Nowcasting data using semi-automatic assistance systems.

In a first step, available NWP model and ensemble forecasts (COSMO-DE-EPS, ECMWF-EPS, ICON) are combined into a single warn forecast product (ModelMIX). This is done using an Ensemble Model Output Statistics (Ensemble-WarnMOS) approach based on logistic regression on a probabilistic basis. DWD's Nowcasting systems (KONRAD, CellMOS, RADVOR-OP, VIL derived from 3D-Radar data, Mesocyclone Detection) as well as observations and model output (COSMO-DE) are combined using a fuzzy logic approach to obtain a robust Nowcasting Warn Product (NowCastMIX), updated every 5 minutes. In a second step, both products with a spatial resolution of 1 km are used by AutoWARN in order to generate automated warn proposals for forecasters.

Using the AutoWARN Status Editor (ASE) within the meteorological workstation NinJo, these warn event-based proposals can be quality-controlled and modified manually by forecasters or they just serve as a basis for issuing individual manual warnings by forecasters. The result is a final warn status used to automatically produce the full range of individual textual and graphical warning products for customers. These automatic products include internet and mobile app visualizations for about 11,000 German municipalities with a high update frequency as well as more coarse warn products in space and time for individual client needs.

The presentation gives an overview of the entire system, illuminating individual components and their operational status.