Highly resolved spatial temperature and precipitation calibrations of ensemble forecasts for Austria with standardized anomalies

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Ensemble prediction systems are used and designed to take forecast uncertainties of e.g. initial and boundary conditions, parameterization issues, or model resolution into account. They are, however, limited due to underestimation of model. errors, lack sharpness and tend to be underdispersive. Therefore, statistical post-processing is applied to increase skill and sharpness of these ensemble forecasts.

A full-distributional spatial post-processing method, so called standardized anomaly model output statistic (SAMOS), is adjusted for temperature and precipitation forecasts over Austria. Site and grid point specific climatological mean and standard deviation are used for the calibration, enabling the fitting of one single regression model for the whole domain/set of observation sites. Therefore, computational costs can be reduced significantly for operational usage.

The spatial calibration uses the INCA (Integrated Nowcasting through Comprehensive Analysis) system as observations with a horizontal resolution of 1 km and 1 h temporal resolution. The ALADIN-LAEF and the ECMWF ensemble are the used ensemble systems.

The operational calibrations result then in probabilistic temperature and precipitation forecasts with a temporal resolution of 1km