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Towards operational postprocessing of cloud cover at MeteoSwiss

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Over the last decades ensemble approaches have become state-of-the-art for the quantification of weather forecast uncertainty. Despite ongoing improvements, ensemble forecasts issued by numerical weather prediction models (NWP) still tend to be biased and underdispersed. Statistical postprocessing has proven to be an appropriate tool to correct biases and underdispersion, and hence to improve forecast skill. Here we focus on multi-model postprocessing of cloud cover forecasts in Switzerland. In order to issue postprocessed forecasts at any point in space, ensemble model output statistics (EMOS) models are trained and verified against EUMETSAT CM SAF satellite data with a spatial resolution of around 2 km over Switzerland. Training with a minimal record length of the past 45 days of forecast and observation data already produced an EMOS model improving direct model output (DMO). Training on a 3 years record of the corresponding season further improved the performance. We evaluate how well postprocessing corrects the most severe forecast errors, like missing fog and low level stratus in winter. For such conditions, postprocessing of cloud cover benefits strongly from incorporating additional predictors into the postprocessing suite. A quasi-operational prototype has been set up and was used to explore meteogram-like visualizations of probabilistic cloud cover forecasts.