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Evaluation of the analog-based method for the operational implementation in Croatia

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Even the state-of-the-art mesoscale models exhibit noteworthy errors, especially in the complex terrain. Therefore, it is useful to include post-processing methods in the forecasting system to further reduce starting model errors at locations where measurements are available.

The analog-based method (ABM) is a point-based post-processing approach which consists of two steps. The first step is to find the most similar past numerical weather predictions (analogs) over several variables (predictors) and the second is to form an analog ensemble (AnEn) out of the corresponding observations.

The ABM is thoroughly tested using the wind speed NWP input, focusing on the complex terrain. Since August 2019 it is used in a test operational mode at Croatian Meteorological and Hydrological Service. The setup includes 15 members wind speed, wind gusts and temperature ensemble predictions for approximately 50 stations using the 2-year training dataset. The preliminary results show that the ABM implementation is successful, reducing the error and improving the skill of the raw model. Additionally, it is found that the ABM predictions of wind speed and gusts optimally need more predictors than the temperature predictions. Finally, the forecasting system shows the best result in the coastal region for the temperature predictions, while the best results for the wind speed are achieved in the nearly flat continental terrain situated more inland.