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Comparing ALADIN CZ and ALADIN LAEF precipitation forecasts for hydrological modelling in the Czech Republic

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Precipitation forecast has great significance for hydrological forecast, particularly for issuing flood alerts. This study aims at assessment of high resolution deterministic model ALADIN-CZ (Aire Limitée, Adaptation Dynamique, Development International – Czech Republic) and ensemble model ALADIN-LAEF (Limited Area Ensemble Forecasting), which unlike the ALADIN-CZ is not currently used for hydrological predictions in the Czech Republic. For the purpose of this study the most significant rainfall events from summer seasons 2011-2015 were selected. Improvement of forecast due to the ALADIN-LAEF ensemble relative to the deterministic model was assessed. Results shows, that ALADIN-LAEF could be used as additional forecast source, because it increases the precipitation forecast value and decreases forecast error. This applies even if the ensemble forecast is reduced to ensemble mean.

For the purpose of hydrological forecast the Czech Republic is divided into 37 hydrological regions. Forecast evaluation was performed for the whole area as well as for individual regions. For the latter we also quantified rainfall predictability considering various evaluation scores. Another verification approach focuses on predictions accuracy based on typical weather situations.