5.20 COMPARISON OF EXTREME PRECIPITATION EVENTS SIMULATED BY THE NWP MODEL COSMO WITH ADJUSTED WEATHER RADAR DATA IN A HIGH TEMPORAL RESOLUTION

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Extreme precipitation events (EPEs) belong to the most studied natural hazards because of their extra high impacts on the human society. However, quantitative precipitation estimates based on weather radar data with a high temporal and spatial resolution along with a sufficient level of accuracy is available for the last several years only and is completely missing for historical EPEs. On the other hand, quantitative precipitation forecast produced by high-resolution numerical weather prediction (NWP) models can be considered as a competitive tool to obtain information about temporal course of historical EPEs. Nevertheless, their main disadvantage is a limited accuracy of generated forecasts coming from initial and boundary conditions as well as due to the large spatial and temporal variability of precipitation systems. The contribution will present a new correction procedure that improves an accuracy of raw NWP model forecasts in a 10-min temporal step. The procedure first adjusts model precipitation sum by daily rain gauge measurements and then correct a localization of 10-min precipitation totals based on the highest correlation coefficient between the model and observed precipitation sums. The selected EPEs that occurred over the Czech Republic between 2002 and 2013 will be simulated by the non-hydrostatic NWP model COSMO with a spatial resolution of 2.8 km and temporal step of 10-minutes. A corrected and raw precipitation forecasts will be compared and objectively verified with adjusted weather radar data. The adjustment procedure combines radar reflectivity at 2 km (CAPPI 2 km) interpolated from two adjacent radar beams and daily rain gauge measurements collected from the whole territory of the Czech Republic. The verification will be performed using classical (e.g., correlation coefficient) as well as spatial (e.g., Fractions Skill Score) verification scores.