Progress in operational quantitative precipitation estimation in the Czech Republic

Petr Novák
Czech Hydrometeorological Institute, Czech Republic
Kyznarová, Hana (Czech Hydrometeorological Institute)

E-mail: petr.novak@chmi.cz

Both weather radars and raingauge measurements are important inputs into computation of areal quantitative precipitation estimates (QPE).Weather radar measurements provide information about spatial distribution of precipitation, their disadvantage is however insufficient accuracy. Raingauges provide more accurate point measurements but their spatial representativeness is limited.

The Czech Hydrometeorlogical Institute (CHMI) runs operational QPE algorithm for more than 10 years. It combines weather radar and raingauge measurements utilizing their advantages and reducing their disadvantages. It is used for daily as well as for hourly precipitation accumulations. The algorithm is able to provide several types of estimates (radar-only QPE, radar QPE adjusted by radar-raingauge bias field, raingauges-only QPE, radar-raingauge combined QPE). These estimates can be based on Czech-only or extended radar composites. Also several methods have been implemented for calculation of combined radar-raingauge QPE. All of these possibilities enable generation of several different QPEs for specific time, which are used for generation of probabilistic hydrological forecasts.

The operational QPE algorithm has been regularly updated. Main recent updates are

- incorporation of volume radar data from neighbouring countries into extended Czech radar composites that are used for radar QPE

- improvement into radar data quality control causing better removal of residual non-meteorological echoes

- full integration of 10 min raingauge measurements that enables calculation of floating hourly QPE every 10 minute

- improvement and optimization of radar-raingauge combining method that enable use of extended Czech radar composites and decrease computational time to fit into 10 min update of operational run

This contribution will introduce details of individual updates of the new Czech QPE algorithm and show results of its evaluation.