

13.14 QUALITY-BASED RADAR DATA PROCESSING AND QPE AT THE SLOVAK HYDROMETEOROLOGICAL INSTITUTE

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Some long lasting radar and rain-gauge data quality issues especially in the mountainy terrain of Slovakia led to the development of the qRad radar data processing and the qPrec precipitation estimating software at the SHMÚ.

The qRad software estimates the actual quality of the radar volume data by various quality indexes and tries to correct some undesirable effect on the measurement (e.g. beam-blockage, attenuation, interference). The corrected volume data are then directly processed to composite radar product and quality maps. The resulting radar products are used by the forecasters and for QPE, and are used for validation of the EUMETSAT H-SAF precipitation products. The software was installed also at the Hungarian Meteorological Service to support the H-SAF validation efforts.

The qPrec package uses estimation theory and probabilistic approach to estimate the rainfall intensity as accurate as possible based on heterogeneous input data (rain-gauges, radars, satellites, lightning detection). The calibrated input data fields are combined according to their precision and actual quality. The resulting precipitation estimates are regularly validated by the climatological rainfall amounts and by hydrological model runs. The first results are showing dramatic improvement of the precipitation estimation compared to the methods used previously at the institute.