



## **Use of Radar Rainfall Measurement to Increase Quality of Runoff Hydrological modeling in Slovakia**

D. Ivanyi, J. Kanak and D. Kyselova

Slovak Hydrometeorological Institute, Bratislava, Slovakia (daniela.kyselova@shmu.sk /  
Phone: +421484139283)

Radar measurements in Slovakia are performed since 1972 and methodology of precipitation estimation from radars have therefore a long history. From the beginning measurements were made in manned form only and the horizontal resolution and a precision of data was too rough. During last decade an automation of radars was applied and a resolution, time frequency and accuracy arised significantly. Simultaneously the raingauge network was spread and its density arised. Occurrence of wasting floods in last years motivated us to start with common use of raingauge and radar precipitation estimation as an input to hydrological modeling with the aim to increase accuracy of the simulation of the river flow. The main aim of our work was to find out added value of radar rainfall combined with raingauge data in the hydrological model HRON for the Myjava river basin. Standard Marshall-Palmer relationship was used to calculate rainfall from radar reflectivity and 15-minutes data were integrated over the time and the river basin 24-hours interval. Average values of radar rainfall per day and a daily raingauge data have been used as the input to the hydrological model HRON. The results of this study indicate better accuracy in flow simulation for the correct combination of both rainfall time lines than for a single rainfall time line. It is planned to continue in our investigation with application of necessary radar data correction on distance, beam blockage and attenuation with using of 1-minute automatic-gauge data of currently modernised ground network not only in a small experimental river catchments, but consequently for the whole radar network horizon of Slovakia.