PRODUCT NAME: **PR-OBS-2 v2.3**		
CASE STUDY PERIOD: 8 June 2012 20:00 UTC – 9 June 2012 02:00 UTC	METEOROLOGICAL EVENT: Night time thunderstorms over Slovakia formed on a cold front	
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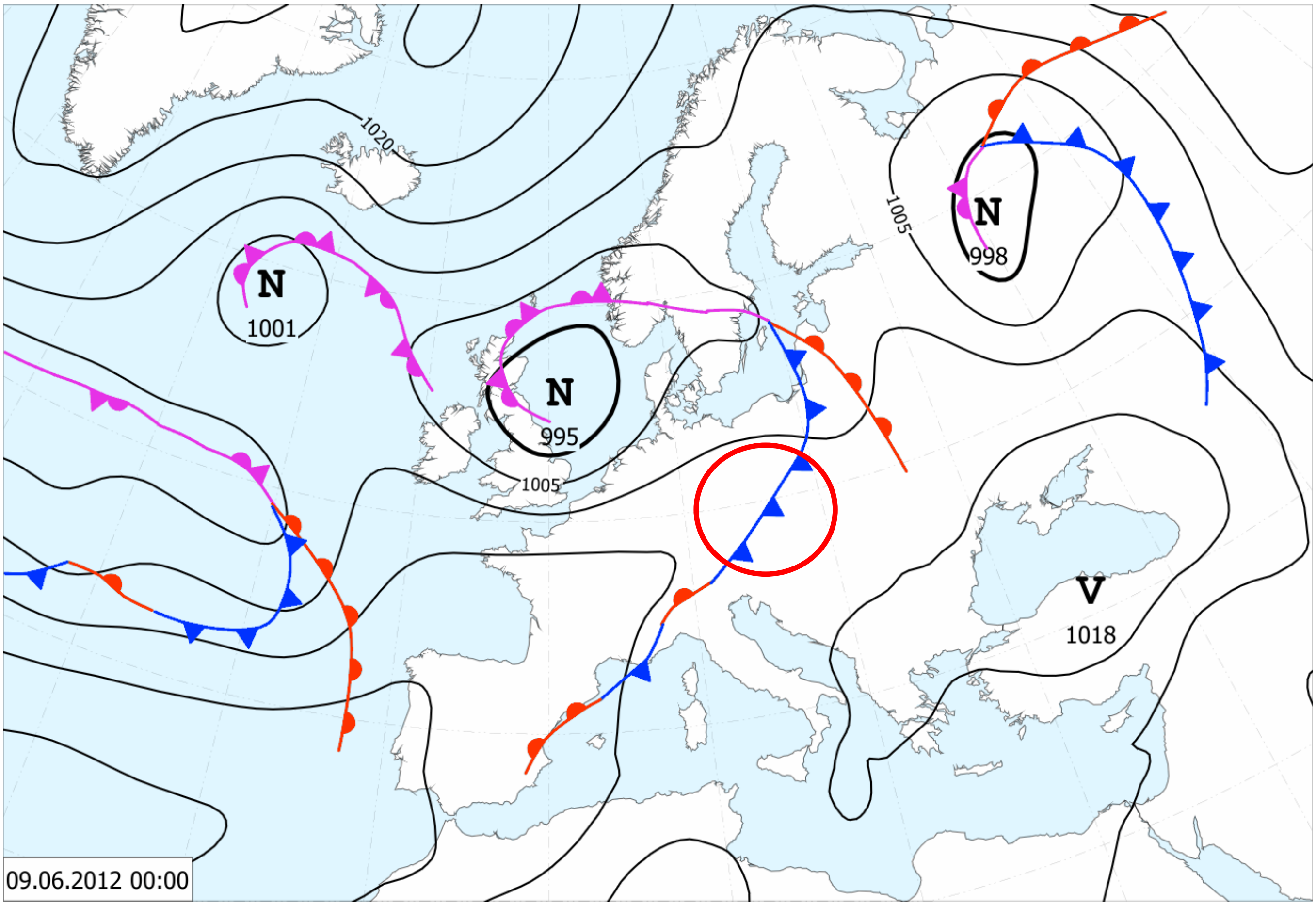
METEOROLOGICAL EVENT DESCRIPTION

Area of interest is located between high pressure with centre over Black Sea and low pressure over North Sea. Cold air flowing from the west Europe along the low depression to the central Europe produced cold front with high contrast in temperatures due to warm air over the eastern Europe. Strong convection with thunderstorms growing along the frontal line was observed during 8 June evening up to early morning hours 9 June over Slovak region. Area of interest is depicted by red circle:



DATA/PRODUCTS USED

PR-OBS-2 v2.3 precipitation intensity field from NOAA-19 overpass on 9 June 2012 00:25 UTC and NOAA-18 overpass on 9 June 2012 01:59 UTC

Precipitation intensity field from SHMI radars upscaled into satellite projection

RESULTS OF COMPARISON

By visual comparison the PR-OBS-2 precipitation pattern matched radars very well in case of both satellite overpasses (see Fig 1). All significant precipitation was detected and correctly located by PR-OBS-2 without serious cases of false detection.

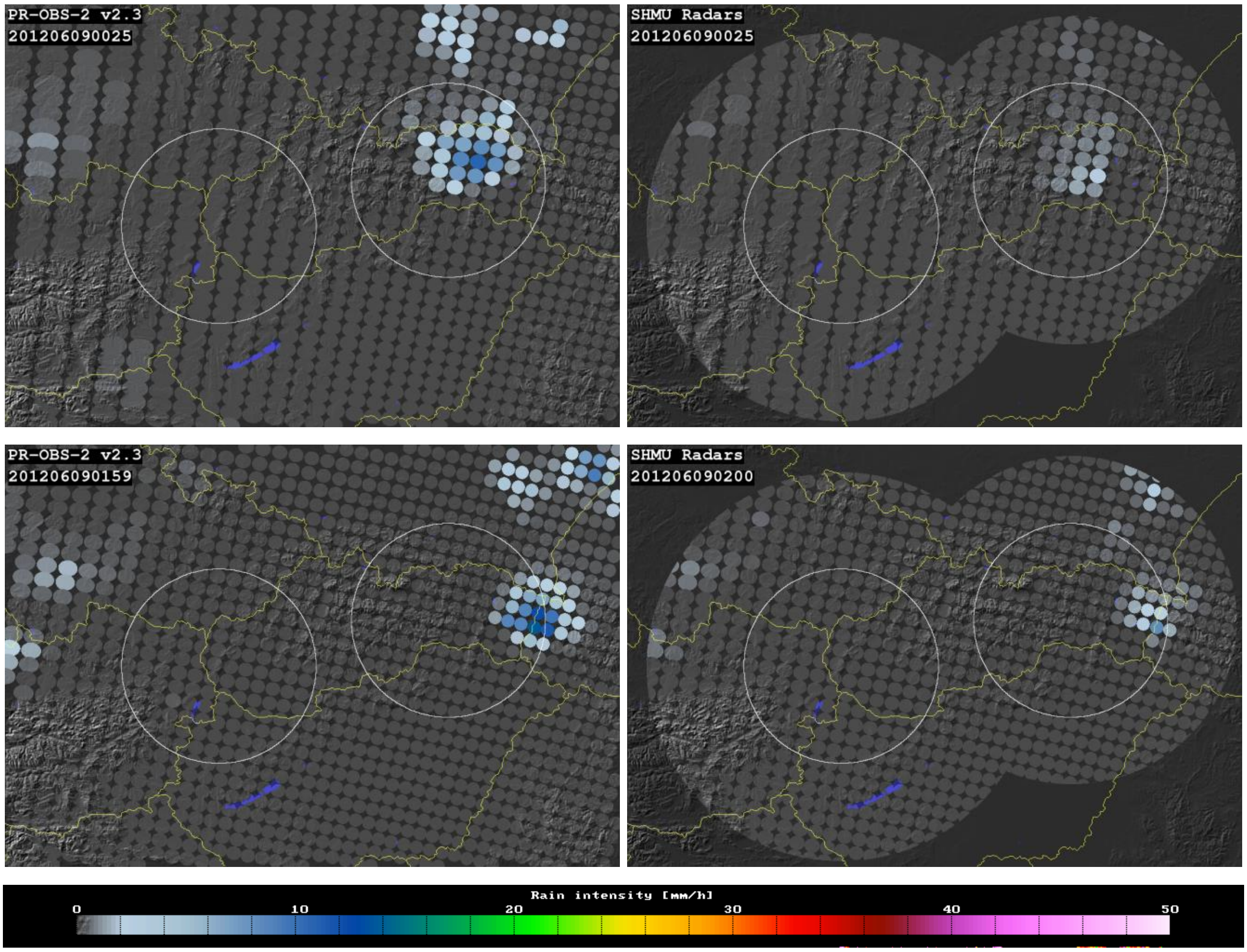


Fig 1 Instantaneous precipitation fields from 9 June 2012 observed by H02 product (left column) and SHMU radar network (right column) corresponding to NOAA19 overpass at 00:25 UTC (top row) and NOAA18 passage at 01:59 UTC (second row). The precipitation values are shown as satellite IFOVs projected over the radar composite domain. White contoured circles represent 120 km rain effective range of the radars inside which data are included in the statistical scores computation.

Good spatial consistency of satellite and radar precipitation fields was confirmed by high correlation coefficient, especially for light precipitation, reaching 0.71, and moderate CSI values (see Table 1 and 2). The POD for intensities above 1 mm/h was higher than for PR ≥ 0.25 mm/h but this holds also for FAR values with net result of lower CSI value for PR ≥ 1 mm/h.

Precipitation intensities by PR-OBS-2 were generally overestimated against radars with value of Mean error for overall precipitation reaching 2.87 mm/h and Multiplicative bias 3.84.

Table 1 Selected scores of continuous statistics

Precipitation class (mm/h)	0.25 - 1	1 - 10	≥ 10	≥ 0.25
Mean error (mm/h)	1.937	5.326	-	2.874
Multiplicative bias	4.533	3.392	-	3.839
Correlation coefficient	0.713	0.595	-	0.665
URD-RMSE (%)	466.5	404.6	-	450.3

Table 2 Selected scores of dichotomous statistics

Precipitation threshold (mm/h)	≥ 0.25	≥ 1
POD	0.872	0.923
FAR	0.349	0.692
CSI	0.594	0.300

COMMENTS

Some results of statistical comparison may not be representative due to small number of compared precipitation pixels.

INDICATIONS TO DEVELOPERS

The PR-OBS-2 showed very good spatial match of precipitation pattern with radars in this case. The satellite product however overestimated precipitation intensities compared to radars.