



Contribution and limitations of the MMR50 meteorological radar (X-band) regarding the crisis management of the Zlín Region

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The main objective of this article is the information analysis of the MMR50 mobile meteorological radar by Microstep-MIS.com, and its contribution and limitations to the field of radar meteorology. MMR50 meteorological radar (X-band) will be implemented in the communications and information infrastructure of Project “The Information, Notifying and Warning System of the Zlín Region” (IVVS ZK) in June 2014. The important objective of the implementation is to obtain detailed data from radar products about the current situation in the region including nowcasting forecast. Another objective is to provide data in case of failure of the radar Skalky from CZRAD network.

The radar data of selected meteorological situations will be provided in the practical part of the article. The radar measurements will be made on the three radars, namely: MMR50 meteorological radar, radar Skalky (CZRAD network) and radar Small Javorník (Slovakia). The meteorological radar Small Javorník was also supplied by Microstep-MIS, a manufacturer of MMR50 meteorological radar. Radar reflectivity will be converted to rainfall intensity according to the following formula (1):

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where Z is the radar reflectivity in dBZ, I is the rainfall intensity in mm / hour, a and b are experimentally determined constants ($a = 200$, $b = 1.6$).

As for the radar measurements of MMR50 meteorological radar will be discussed all the output of the measurements obtained from radar products, which namely: PPI, CAPPI, ColumnMax, RHI, Echo Top, MAX Z, VIL by the formula (2), including TITAN nowcasting system:

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Selected radar products from MMR50 meteorological radar will be compared with available radar products of the radar Skalky (CZRAD network) and the radar Small Javorník (Slovakia).

The all outcomes of radar measurement of meteorological radar MMR50 will be shown. Solutions will be proposed for the specified limitations of the implementation of the Project IVVS ZK.