



The influences on radar-based rainfall estimation due to complex terrain

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One of the concerns regarding radar-based quantitative precipitation estimation (QPE) is the level of reliability of radar data, on which the forecaster should trust when he must issue warnings regarding weather phenomena that might put human lives and good in danger. The aim of the current study is to evaluate, by objective means, the difference between radar estimated and gauge measured precipitation over an area with complex terrain. Radar data supplied for the study comes from an S-band, single polarization, Doppler weather system, Weather Surveillance Radar 98 Doppler (WSR-98D), that is located in center part of Romania. Gage measurements are supplied by a net of 27 weather stations, located within the coverage area of the radar. The approach consists in a few steps. In the first one the field of reflectivity data is converted into rain rate, using the radar's native Z-R relationship, and the rain rate field is then transformed into rain accumulation over certain time intervals. In the next step were investigated the differences between radar and gauge rainfall accumulations by using four objective functions: mean bias between radar estimations and ground measurements, root mean square factor, and Spearman and Pearson correlations. The results shows that the differences and the correlations between radar-based accumulations and rain gauge amounts have rather local significance than general relevance over the studied area.