



Evaluation of gridded precipitation products on a semi-arid region

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The objective of this study is to compare gridded precipitation datasets, from different satellites products (TRMM 3B43, ARC2, PERSIAN, CMORPH), reanalysis (ERA-Interim) or derived from soil moisture with the SM2RAIN algorithm over a semi-arid region with measured precipitation data for the period 1998-2013. The study region concerns the Mejerda basin that is a cross-border watershed between Algeria and Tunisia. Its area is about 23 thousand square kilometers, of which 16.4 thousand square kilometers are over the Tunisian territory. This large hydro system crosses the north of Tunisia in a south-west/north-east direction, perpendicular to the main cyclonic tracks from the North West affecting the country during the winter. Observed data is available for 46 rain gauges at the daily time step. The analysis was carried for different time scales: daily, monthly and the whole humid season (November-April). Indices describing extremes were calculated. They include percentile-based indices describing very wet days and extremely wet days, absolute threshold indices for the number of days of heavy rainfall, number of days of very heavy rainfall, the simple precipitation intensity index and duration indices for consecutive dry days and consecutive wet days. As preliminary results, TRMM, PERSIAN, CMORPH and ERA-Interim daily datasets performed similarly in term of root mean square error and clearly outperform the ARC2 dataset (a mean of 3.3 mm comparing to 5.2 mm for ARC2). For monthly time scale, PERSIAN product gave the best result with RMSE= 14.9 and $R^2=0.83$. Finally, for the humid season, ARC2 dataset gave the best result in term of root mean square error comparing to other dataset products.