



Evaluation of the TRMM gridded precipitation estimates over Greece

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The goal of this study is the assessment of the reliability of the TRMM (Tropical Rainfall Measuring Mission) 3B-43 gridded precipitation estimates over Greece. The evaluation was made using gridded precipitation data based on data from meteorological stations for the wider region of Greece.

The TRMM gridded estimates are on a calendar month temporal resolution and $0.25^\circ \times 0.25^\circ$ spatial resolution concerning the 11-year period 1998-2008. In order to compare directly the TRMM with the observational data, the data from the meteorological stations (~ 70 stations) were upscaled exactly to the same resolution as the TRMM data, using Kriging spatial interpolation method, taking into account the altitude of the meteorological stations.

The annual and seasonal spatial distribution of the differences between the two datasets along with the spatial distribution of the correlation coefficients are presented and analyzed. The TRMM gridded data due to their high spatial resolution, perform quite well the spatial distribution of precipitation in Greece and especially the orographic precipitation over the Pindus mountainous area. The spatial distribution of correlations between the two different gridded bases is quite high (correlation coefficient > 0.8) for the entire Greek territory with minor exceptions over mountainous continental areas, which is very likely due to the lack of data from high altitude stations. The TRMM gridded data overestimate the precipitation ($> 50\text{mm}$) mostly during the winter, spring and autumn, especially in the region of the Aegean Sea and the coasts of Asia Minor, and underestimate the precipitation over central highlands (Pindus Mt.) and northern areas (all seasons), over southern Ionian Sea and the Crete Island (winter). Additionally, high positive anomalies ($> 50\text{mm}$) appear during autumn over Ionian Sea and Peloponnese, while the summer is generally characterized by small anomalies.