Accuracy assessment of TRMM 3B42 V6 and V7 products over regions with varying hydro-climatology and topography using station data over Turkey

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From water resources point of view, precipitation is arguably the most important water cycle element over watersheds with complex topography and/or arid/semi-arid climatology where the ground water contribution to runoff is limited. Remote sensing-based precipitation estimates offer tremendous advantage in estimation of this parameter over remote locations. However, it is crucial that these observations should be validated to assess their error structure before its further use in hydrological studies. In this study, Tropical Rainfall Measurement Mission (TRMM) 3B42 V6 and V7 products are assessed for their accuracy using ground observations obtained from network of rain gauges in Western Turkey. Both station and satellite (V6 and V7 separately), and satellite and satellite (V6 and V7) comparisons were performed to assess the uncertainty in satellite products. Accuracy assessments include statistics of false alarm ratio, probability of detection, bias, monthly difference, etc. Overall, results showed TRMM 3B42 V7 has favorable (i.e. more accurate) statistics when compared to V6 over most of the study area, while there are regions where V6 has higher accuracy.