



Evaluation of TRMM-3B42 product in southwest Mexico

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The aim of this study is to compare a high-resolution satellite precipitation product (TRMM-3B42) in southwest Mexico (Lerma-Santiago-Pacific Basin, LSP), a basin that supplies water to more than a third of the total population of the country. Precipitation measurements from 70 rain gauge stations (RGS), for the period 2000-2014 were compared to satellite-based data over daily to monthly timescales. To evaluate the performance of TRMM-3B42 relative to RGS, error metrics such as the RMSE, the correlation coefficient and bias were obtained. Also some categorical statistics (POD, FAR, etc. . .) were applied in order to evaluate the detection skill of the satellite product. According to the bias results, during the wet season (June to November) the TRMM-3B42 product underestimated the RGS records but an opposite behavior (overestimation) was found during the dry season (December to May). A strong positive linear relationship was found between TRMM-3B42 and RGS at a monthly timescale (0.83) but such relationship steadily declined (0.33) as time series were disaggregated. The TRMM-3B42 ability to detect rainfall was overall good (Probability of detection(POD) = 0.8) and False Alarm Ratio (FAR) showed good results (0.3). We preliminary conclude that the use of TRMM-3B42 to expand monthly rainfall data to ungauged regions at LSP basin is a viable alternative for water balance estimates in southwest Mexico.