Validation and Intercomparison of Satellite Rainfall Products over Peru

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Abstract

Three different satellite rainfall estimates are evaluated at daily and ten-daily time scales and spatial resolution of 0.25◦ latitude/longitude. The reference data come from a relatively dense station network of about 413 raingauges over Peru. This region of South America has a very complex terrain (the Andes Mountains), that form three drainage's basin: Pacific through Ocean Pacific, Titicaca through Titicaca endorheic lake and Amazonas through the Amazon basin. The climate is very diverse existing different rainfall regimes in these drainages and inside them. The evaluated satellite rainfall products are TRMM 3B42, CMORPH and PERSIANN. The validation and intercomparison of these products is done for each one of the three drainages. The best results were obtained for the Amazonas drainage while the performance of the products was relatively poor over highlighted zones in the Pacific coast. Comparing the time series of the different satellite products, TRMM 3B42 is the best in the Pacific and Titicaca Lake while CMORPH shows good performance in the Amazonas among the products evaluated here. However, considering the capability of detection rate of rainfall is PERSIANN who shows better performance in the three drainages.

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