



Evaluation of satellite-based and reanalysis soil moisture products using ground-based measurements

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Long-term global satellite-based and reanalysis soil moisture products have been available for several years. Comprehensive evaluation of these products is significant before using them. In this study, in-situ soil moisture measurements from 2008 to 2012 over Southwest China are used to examine the reliability of four satellite-based and one reanalysis soil moisture products. This study evaluates satellite data products (AMSR-E, ASCAT, ESA-CCI, SMOS) and reanalysis data (ERA-Interim) over Southwest China using new in situ soil moisture data. Evaluation of soil moisture absolute values and anomalies shows that all the products except for AMSR-E and SMOS can capture well the temporal dynamics of in-situ soil moisture. The bias and noise in AMSR-E and SMOS are probably due to the severe effects of radio frequency interference (RFI) over this region. In general, the ERA-Interim and CCI SM perform the best compared to the in situ data. The accuracy levels are comparable to validations over other regions worldwide. Therefore, local hydrological applications and water resources managements are expected to benefit a lot from the long-term ERA-Interim and CCI SM soil moisture products.