Validation of satellite-based soil moisture retrievals from SMAP with in situ observation in the Simineh-Zarrineh (Bokan) Catchment, NW of Iran

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Abstract

Soil moisture is an influential parameter in land surface hydrology and precise soil moisture data that can help researcher to realize the climate changes and land-atmosphere interactions. A initial struggle for the utilize of soil moisture data from satellite sensors is their reliability. It is important to appraise the dependability of those data before they can be regularly used at a global or local scale. In this study, the satellite soil moisture data was evaluated from the Soil Moisture Active/Passive (SMAP) over Simineh-Zarrineh Catchment in Bokan region, NW of Iran. A total of 287 soil samples as ground-based observations in the time period of 03 April to 03 December 2017 were taken for SMAP data validation. Results showed that the satellite data and in situ observation has a good correlation, with a mean correlation (r) value of 0.63 in total. This correlation level showed that, commonly, the SMAP soil moisture products over Simineh-Zarrineh Catchment (Bokan) have great quality, and it would be valuable for versatile utilization, including monitoring of land surface, weather prediction, modeling of hydrological process, soil loess monitoring, and climate studies. The results reveal that the remotely sensed data demonstrate the good correlation with in situ observation across the dry land with mean correlation (r) values of 0.67 throughout the time period. Particularly, SMAP soil moisture reveal a constant structure for obtain the spatial distribution of surface soil moisture. Additional researches are necessary for well realizing the SMAP data.

Keywords: Dry land, NDVI, RMSE, Soil water.

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Urmia Lake Restoration National Committee. 2015. Necessity of Lake Urmia Resuscitation, Causes of Drought and Threats; Report No: ULRP-6-4-3-Rep 1; Urmia Lake Restoration National Committee: Tehran, Iran.


