

Abstract

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A hydro-climatological study using soil moisture estimations from ERA-Interim/Land (referred to as ERA-Land) Reanalyses has been carried out over the Jucar River Basin within the period 1980-2014.

ERA-Land product consistency has been evaluated with SMOS level-3 soil moisture retrievals (SMOS L3SM Optimal, CATDS(*) v2.6 in alignment with SMOS v6 L2 processor), previously validated at pixel scale using soil moisture measurements from the Valencia Anchor Station (VAS) network, for the period October 2011 to December 2014.

This work is the natural continuation of our previous analysis (Beneto et al., 2015) where three different periods were distinguished in accordance with the SMOS level-3 reprocessed product available earlier. Here, now, the whole dataset is coherent corresponding to the reprocessing version mentioned above.

A quality control of in-situ data has been applied using precipitation measurements, as well as the operational soil moisture analysis from the European Centre for Medium-range Weather Forecast (ECMWF).

Given the good correlations found between in-situ and SMOS L3 data, SMOS L3 can be used as a good quality observation to investigate the reliability of ERA-Land soil moisture as a proxy variable to study the soil moisture climatology over all the Jucar River Basin.

A first comparison between SMOS L3 soil moisture and ERA-Land estimations was carried out at the ERA-Land pixel scale. Correlation coefficients vary depending on the pixel characteristics, and the analysis distinguishes between SMOS ascending and descending orbits.

Statistical results were also obtained for the comparison of averaged SMOS L3 soil moisture retrievals and ERA-Land estimations over the whole Jucar River Basin. The correlation coefficients are generally high and, again, the analysis distinguishes between SMOS ascending and descending orbits.

(*) CATDS: Centre Aval de Traitement des Données SMOS

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