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**Comparisons of remote sensing and reanalysis soil moisture products over the Tibetan Plateau, China**

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**Abstract:** The availability of reliable long-term and large scale soil moisture observation datasets over the Tibetan Plateau has been of more concern in recent years. It is therefore necessary to verify any such data to have a better guide to their usage. In this study, we have compared satellite soil moisture retrievals of the Special Sensor Microwave Imager (SSM/I), with ERA-Interim/Land and Global Land Data Assimilation System (GLDAS-1) soil moisture products over the Tibetan Plateau. They are found to be largely different from each other regarding the soil moisture magnitudes in spring, summer and autumn, with those of the ERA-Interim/Land particularly higher than the other datasets in the eastern plateau. The SSM/I and the ERA-Interim/Land data are in good agreement considering their seasonal dynamics, which are however considerably different from the GLDAS-1 models (CLM, Noah, Mosaic and VIC). For interannual variations, it is striking to find strong negative correlations ( $R < -0.6$ ) between the SSM/I and the ERA-Interim/Land data in spring and autumn, especially over the central plateau. The SSM/I data is found to have also strong negative correlations ( $R < -0.4$ ) with data of the four GLDAS-1 models in the eastern plateau in spring; and such negative correlations appear in central and western plateau in autumn. In summer, the SSM/I data appears to be positively

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