

AMSR-E soil moisture evaluation over Shanxi Province of China and spatio-temporal characteristics of soil moisture distribution in East Asia

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Soil moisture is a crucial hydrological element that is closely connected to the earth's surface heat budget and climate change in semi-arid and arid regions. Recently, satellite remote sensing has been shown to be an effective way to determine soil moisture in large areas for long periods of time. AMSR-E soil moisture derived from passive microwave of time series data are available. In this study, one of the objective is to validate AMSR-E soil moisture using in situ soil moisture in Shanxi Province of China. The other is to clear the spatio-temporal distribution of soil moisture in East Asia. The results show that 64 of 108 in situ stations have good correspondences between AMSR-E soil moisture and in situ soil moisture. High correlation coefficients are confirmed during the following 3 conditions. 1) Sufficient density of in situ observations area. 2) Uniform land use type region and 3) relatively flat terrain area. AMSR-E soil moisture can be estimated more accurately over large regions according to these factors. In addition, characteristics of soil moisture distribution and variation are different depend on various environmental conditions in East Asia from 2003 to 2009. In Middle and lower Yangtze River plain, rainy season is suggested as a key factor that affects soil moisture changes. AMSR-E soil moisture can capture flood records at Bengbu near Huaihe River in 2003. In Sichuan basin, soil moisture obviously represents high value through a whole year due to flat terrain, and it is influenced by human activity when compared with farming calendar of paddy.

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