

Surface Soil Moisture behaviors in the Mongolian plateau for the Last Six Years

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To grasp the real condition of surface soil moisture behaviors in time and space in east-central Asia is very important for making clear mechanisms of drought and water cycle change in Asia. A long-term monitoring of soil moisture and water cycle elements by ground-based water cycle stations and AMSR-E/PALSAR observations have been successfully carrying out in the Mongolian plateau as the framework of CEOP (Coordinated Enhanced Observing Period) and the validation plans (AMPEX/MAVEX) of earth observation satellites (ADEOS II, AQUA, ALOS, SMOS, and GCOM) since 2000. The fundamental elements by four AWS (Automatic Weather Stations) and twelve ASSHs (Automatic Stations of Soil Hydrology) in the CEOP/AMPEX/MAVEX study area of 160 km by 120 km of the flat grass land have been monitoring since summer in 2000 and June in 2001, respectively. The monitoring results represented that the area-averaged soil moisture at the 3 cm and 10 cm depths of all available water cycle stations has been slightly decreasing for the last six years from 2002 to 2007 with the increase of air and soil surface temperatures and net radiation of all AWS, but with the decline of area precipitation. Rainfall events more than 5 mm/day were seen only several times in each late spring and summer and the amount of the rainfall events accounted for 60-80% of the annual precipitation. The soil moisture can be estimated to be mostly affected by the rainfall events. According to AMSR-E observations, although AMSR-E soil moisture measurement overestimated a little, the soil moisture estimation in Mongolia showed statically that there is a slightly drying tendency in the surface soil moisture as well as the ground-based monitoring results for the last six years.