

Decadal changes in soil moisture over East Asia in response to a decade-long warming hiatus

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East Asia has experienced long-term warming and drying in the twentieth century. However, a phenomenon known as the "warming hiatus" changed the trend of enhanced soil drying over East Asia. In contrast to the previous long-term drying in the last century, time series of soil moisture shows a shift from a downtrend to uptrend around 2005, and prominent wetting located in northeast (semi-arid and dry sub-humid regions) and southeast of China (humid areas). The results illustrated that such abrupt change of soil moisture is closely related with the change of warming during hiatus. The warming hiatus played a leading role in decadal soil wetting at semi-arid and dry sub-humid regions, with a character of 7-year delay, compared with relatively limited influence of surface atmosphere temperature (SAT) over humid regions. The weakened drying during hiatus decade proposed that the response of wetting/drying to climate in drylands relies on decadal SAT, which will favour deepen the understanding of mechanism on the role of SAT in the process of wetting/drying in drylands over different time scale.