

Determination of natural desert plant root-zone soil water storage in an arid region, China

YONGHUA ZHU¹, LILIANG REN¹, HAISHEN LÜ² & XIAOLI YANG¹

¹ *State Key Laboratory of Hydrology, Water Resources and Hydraulic Engineering, Hohai University, Nanjing, 210098, China*
yonghua321@yahoo.com.cn

² *Department of Applied Mathematics, Hohai University, Nanjing, 210098, China*

Abstract The accurate estimation of the plant root-zone soil water storage (RSWS) will provide a scientific basis for estimating irrigated water needs, ecological water requirements and for regional sustainable development in arid inland river basins of China. In the lower reaches of arid inland river basins in China (such as the Heihe River basin), because of the reduction of water recharge supplied by the upper and middle river reaches, water storage in the plant root-zone declines and plants suffer and wilt, causing a series of ecological and environmental problems to appear. So, it is imperative to study how to estimate plant RSWS. The natural plant RSWS is determined from the soil moisture content of the surface layers 0–10 cm and 0–20 cm obtained by remote-sensing methods in the desert areas of China. A feasibility study on determining natural plant RSWS by using remote-sensing data in northwest China is reported here.

Keywords natural desert; Richard equation; RSWS; soil moisture content of the surface layers
