

Evapotranspiration From Two Vegetative Covers in a Humid Shallow Water Table Environment

Mahmood Nachabe, PhD, PE Fellow ASCE

Department of Civil and Environmental Engineering, University of South Florida, Tampa, FL. Tel: (813) 974-5837. Email: nachabe@eng.usf.edu

Abstract. A new method is introduced to estimate evapotranspiration using continuous soil moisture monitoring. The method involves measuring the diurnal fluctuation in total soil moisture above the shallow water table to estimate (1) the net lateral and vertical regional flux and (2) evapotranspiration of the vegetative cover. In a discharge zone, the net discharge flux in the shallow water table aquifer was calculated from the recovery of soil moisture between 12 pm and 4 am. The evapotranspiration is then estimated from a simple water balance in a soil column above the water table. The method was tested on two vegetation covers, a pasture land in a recharge zone, and a wooded area situated downstream in a discharge zone. Two moisture probes, each carrying eight moisture sensors were used to monitor the total soil moisture in a shallow, sandy soil (*hyperthermic Aeric Alaquods*). The water table in both zones fluctuated between land surface and a depth of 1.5 m