



TESTING A QUICK CALIBRATION USING IN SITU MOISTURE MEASUREMENTS FOR MODELING GROUNDWATER RECHARGE

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A simple method to calibrate the dual-porosity MACRO model is proposed with the aim of locally estimating groundwater recharge (GR) in a deltaic basin via *in situ* TDR measurements during a brief infiltration run (2.8 h).

The recharge was modeled firstly by considering the entire 3 m of unsaturated soil, and secondly by considering only the 0.7 m of topsoil above the zero-flux plane. The modeled recharge was compared against GR obtained from field measurements. Measured GR was 313 mm during a one-year period (15 October 1990 – 15 October 1991). The best simulation results were obtained when considering the entire unsaturated soil under equilibrium conditions excluding the macropore flow effect (330 mm), whereas under non-equilibrium conditions GR was overestimated (378 mm).

Sensitivity analyses showed that the investigation of the topsoil is sufficient to estimate local GR in this case since the water stored below this depth is not used for evapotranspiration and appears to be below the typical rooting depth of the vegetation. The modeled recharge under equilibrium conditions for the 0.7 m topsoil layer was found to be 364 mm, which is in acceptable agreement with measurements.