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Method of estimating delay time for groundwater recharge through vadose zone in the Hancheon watershed in Jeju island, South Korea

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In this work, the delay time for groundwater recharge was estimated by comparing simulated groundwater recharge by means of SWAT(Soil and Water Assessment Tool) model and WTF(Water Table Fluctuation) method. SWAT model uses the delay time for groundwater recharge when the water from rainfall travelled through vadose zone just after getting out of soil zone bottom. Since measuring delay time is almost impossible, we had to choose the method of comparing the estimated values from modeling(SWAT) and analytic method(WTF). The test site is Hancheon watershed which has 8 groundwater measurement stations. The results show that the altitude has a linear relationship with the estimated delay time values. To validate these results, we conducted corelation analysis between transformed groundwater levels and observed ones. The results showed that computed groundwater levels have good correlation. The estimated delay time would be used for the groundwater behaviour characteristics in vadose zone.

keywords: Water Table Fluctuation, vadose zone, groundwater recharge, Soil and Water Assessment Tool

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