



Subdaily evapotranspiration rate calculation from streamflow summer diel signal

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Diel signal of hydrological variables (e.g., shallow groundwater level or streamflow rate) are rarely investigated in the hydrologic literature although these short-term fluctuations may incorporate useful information for the characterization of hydro-ecological systems. Riparian vegetation (especially forest) typically has a great influence on groundwater level and groundwater-sustained baseflow, therefore calculation of the correct evapotranspiration rates is very important for natural protection tasks and water resources management.

Recently a new technique was developed by us to calculate daily or even subdaily evapotranspiration rates from groundwater-level measurements, and that method now is modified to estimate evapotranspiration rates from the baseflow diel signal only. The method was successfully tested with hydro-meteorological data from the Hidegvíz Valley experimental catchment in the Sopron Hills at the western border of Hungary. The evapotranspiration rates calculated from the groundwater signal only, are typically (a magnitude) higher than those obtained with an already existing method. With the application of our new technique exploiting the baseflow diel signal of the stream, evapotranspiration rates, very similar to those gained from groundwater level readings and the Penman-Monteith equation, can be obtained.

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