



Characterization of temporal and spatial variations in the hyporheic zone using diurnal temperature signals

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This study evaluated temporal and spatial variability of groundwater and stream water fluxes using multiple temperature time series. The study area is located in Inbuk stream, Gangwon Province, Republic of Korea. Total annual precipitation was 698.5 mm in 2014 (1210.5 mm, over the last 30 years). For the study, temperature loggers were installed at depths of 0.1, 0.2, 0.3, 0.4, and 0.5 m at five points with at 10 m intervals (IST1, IST2, IST5, and IST6) in the streambed. Temperature data was continuously measured every two-hours from June 1 to November 30, 2014. Vertical fluid flow (seepage flux) were calculated using the VFLUX program, which uses temperature time series data measured at different depths by temperature loggers in the hyporheic zone. The results of flux calculations Inbuk stream show that vertical flux rates at four locations are generally upwelling condition in the dry season and downwelling condition in the wet season. This research was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. NRF-2015R1A4A1041105).