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Investigation of total suspended solids and turbidity measurements collected on three watershed outlets

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We investigated the amount of total suspended solids (TSS) and turbidity (FNU) of three river outlets at small catchments. All catchments have distinctive river flow characteristics, such that Tetves River (TR) has slower flow rate, but high average daily throughput (21 384 m^3/d); Csorsza River (CR) has smaller throughput, but fast flow rates due to high elevation difference from spring to outlet point; and the Esztergályi River (ER) which has two lakes connected to that helps sediment settling and deposition prior its water entering the common waterbody, Lake Balaton in Hungary. All three catchments are prone to soil erosion. Daily water samples were collected between 2015 spring and 2017 spring. Water samples were analyzed for turbidity, afterwards filtered manually and weighted. Turbidity measurements started to be collected in early 2016 using ProDSS (YSI Instruments) handheld device. The aim of this study was to determine how the measurements performed by the two methods correlate based on the obtained TSS and FNU values compared to each other. We also investigated the correlations between TSS and water levels and/or water throughput. In the case of CR catchment, we also investigated event based TSS changes to enhance our knowledge on times when TSS values are varying greatly with time. We found that TSS and FNU values were well correlated at high TSS concentrations (TR, CR, ER, R^2 = 0.698, R^2 = 0.818, R^2 = 0.255, respectively), while only weak but still positive correlations were observed below 60 mg/L values (TR, CR, R^2 = 0.201, R^2 = 0.157, respectively). The ER watershed didn't exhibited any high TSS concentrations during the investigated 2 years period, as all samples presented a value around or below 60 mg/L, most probably due to the manmade lakes' soil particle settling aspects. Neither TSS nor FNU values showed good correlation to water levels, indicating the high importance of water collection times, rather than daily average water levels.