Monitoring high resolution nutrient transfers in river catchments

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Hydrochemical model calibration and validation at the catchment scale relies on a good definition of hydrological controls on nutrient transfers. Intra and inter-storm relationships between discharge and chemistry, hysteresis patterns and continuous baseflow contributions are examples that challenge the perceptual and conceptual development of catchment models. Often there is only coarse resolution chemistry datasets to compare with continuous discharge models and this also restricts model validation. Here we show how the use of automated, bankside phosphorus analysers can be used to determine nutrient transfer patterns across all flow ranges and provide a synchronous time-series dataset with discharge records. Both total phosphorus and total reactive phosphorus concentrations are sampled on a sub-hourly basis and the archiving of data over several years can provide empirical evidence of water quality trajectories from point and diffuse phosphorus sources in addition to providing high frequency data for modelling.