



In-stream phosphorus dynamics from high temporal sampling in the River Leith, Cumbria, UK

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The hydrological controls on the transport of phosphorus are an important part of the overall understanding of nutrient transport processes under changing environmental conditions. The particle reactive nature of phosphorus species means that large scale transport is often associated with sediment transport caused by hydrological disturbances and events. At the catchment scale, high resolution in-situ monitoring may allow us to better understand phosphorus export and retention.

We present from the results from high temporal resolution (hourly) in situ monitoring of total and reactive phosphorus fractions and water quality parameters (DO, pH, conductivity & turbidity) for the c.50 km² River Leith catchment, Cumbria, UK. The Leith catchment is of mixed solid geology, with an upper catchment dominated by Carboniferous Limestone and a lower catchment of Permo-Triassic Sandstone, predominantly overlain by glacial till.

The time series data for total and reactive phosphorus fractions are used to examine the role of sequential hydrological events on phosphorus fraction hysteresis and the impact of events on phosphorus loads at this catchment scale. Understanding these responses is necessary to predict the effects of future hydrological regimes on phosphorus transport.