



The Influence of temporal sampling regime on the WFD classification of catchments within the Eden Demonstration Test Catchment Project

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A high temporal resolution data set from the Eden Demonstration Test Catchment (DTC) project is used to investigate the processes causing pollution and the influence of temporal sampling regime on the WFD classification of three catchments. This data highlights WFD standards may not be fit for purpose.

The Eden DTC project is part of a UK government-funded project designed to provide robust evidence regarding how diffuse pollution can be cost-effectively controlled to improve and maintain water quality in rural river catchments. The impact of multiple water quality parameters on ecosystems and sustainable food production are being studied at the catchment scale. Three focus catchments approximately 10 km² each, have been selected to represent the different farming practices and geophysical characteristics across the Eden catchment, Northern England. A field experimental programme has been designed to monitor the dynamics of agricultural diffuse pollution at multiple scales using state of the art sensors providing continuous real time data.

The data set, which includes Total Phosphorus and Total Reactive Phosphorus, Nitrate, Ammonium, pH, Conductivity, Turbidity and Chlorophyll a reveals the frequency and duration of nutrient concentration target exceedance which arises from the prevalence of storm events of increasing magnitude. This data set is sub-sampled at different time intervals to explore how different sampling regimes affects our understanding of nutrient dynamics and the ramification of the different regimes to WFD chemical status.

This presentation seeks to identify an optimum temporal resolution of data for effective catchment management and to question the usefulness of the WFD status metric for determining health of a system. Criteria based on high frequency short duration events needs to be accounted for.