



High frequency river water quality data: from fragmentary signals to scientific challenge

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The first analysis of over a year of 7-hourly monitoring for a wide range of chemical determinands is presented, building on 20 years of weekly records in the moorland headwaters of the river Severn. It shows that hydrochemical responses to major hydrological and biological drivers of short-term variability in rainfall and rivers are not captured by conventional low-frequency monitoring programmes. A wealth of flow-related, flow-independent, diurnal, seasonal, annual and other fluctuations point to a cacophony of interactions within the stream while for rainfall the integrated samples considerably damp down a huge variability. High-frequency data coupled with highly sensitive measurement techniques may well lead to a paradigm shift towards viewing catchments in terms of complexity, providing new insights into hydrogeochemical functioning and a resource for novel modelling approaches.