



## **Observational uncertainty in catchment science: the nature of the beast and ways to tame it**

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Uncertainty analysis in catchment science is strongly focused on characterisation of structural and parametric uncertainties in catchment modelling. In model calibration and validation processes, model output is often compared with observational data, without accounting for observational uncertainty. Here, examples are presented characterising the nature of the uncertainties associated with determination of one of the simplest and most widely used indices of catchment function: pollutant load. The extent to which observational data from traditional field and lab coupled, low frequency monitoring can be treated as 'certain' is demonstrated, and the scale of the uncertainties is estimated. Finally, examples will be presented where the development of novel technologies including the deployment of novel sensor networks is being used to elucidate the processes controlling complex systems function within the water environment, highlighting the opportunities and limitations of these new approaches for catchment science.