

***Interactive comment on “Technical Note:
Demonstrating a 24/7 solution for monitoring
water quality loads in rivers” by P. Jordan and
R. Cassidy***

Anonymous Referee #2

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The manuscript addresses an important and challenging topic in environmental monitoring. I enjoyed reading the paper and I think it might be interesting for many readers of HESS. I agree that the presented sampling design is easily implemented and cost effective. Nevertheless, I wonder how the results would change in catchments with different size, storm hydrology characteristics, land use, soil characteristics and/or geology. The presented ‘24/7 solution for monitoring water quality’ seems to be catchment-specific, since the different sampling strategies have only been tested in a 5-km² catchment. As the authors discussed, all metrics (annual load,...) are likely to improve as catchment increases. But, this might not be true in catchments with contrasting phys-

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iographic characteristics or smaller catchments.

In a previous work, Cassidy et al. (2011) found that only sampling equivalent to hourly or sub-hourly frequencies were sufficient to accurately capture the scaling of the TP concentration and runoff-related discharge time series. Did you estimate the error associated with flux estimates using samples collected every 6 or 5 hours or even less? This sampling strategy might then be more expensive to implement, but in any case I would find it interesting to know how the errors decrease when planning a sampling design.

As cited by Kirchner et al (2004), Robson (1993) noted that at Plynlimon, additional pH and conductivity measurements became redundant at about the same sampling frequency as additional discharge measurements did. Concluding then that measurement frequency is likely to be higher in smaller catchment. Do you think the same happens in the Monaghan catchment for phosphorous loads estimations? Considering the nonlinearity of discharge-suspended sediment relationships.

The authors discuss about the fact that extreme event sampling can be integrated into the 24/7 datasets (line 25, page 5042). Why did not you include the error estimation for this sampling strategy?

I agree with most of the comments made by C. Duvert & T. Grangeon (LTHE, Grenoble, France). What makes the authors assume that 20-min frequency sampling can be assimilated to continuous records?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 5035, 2011.