



EGUsphere, referee comment RC2  
<https://doi.org/10.5194/egusphere-2022-205-RC2>, 2022  
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## **Comment on egusphere-2022-205**

Anonymous Referee #2

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Referee comment on "Disentangling scatter in long-term concentration–discharge relationships: the role of event types" by Felipe A. Saavedra et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-205-RC2>, 2022

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### Disentangling Scatter in Long-Term Concentration-Discharge Relationships: the Role of Event Types

The paper aims to provide explanation for deviations from long-term C-Q behaviour for different types of hydrological conditions. The authors claim that they are first in doing so, but the only novel thing in this study is a large number of catchments that are investigated. The discussion and implications are pretty much the same as in other studies by the research team, highlighting the incremental character of this study. Thus, to grant the publication of this paper, the authors need to convince the readers about novelty of their work, in light of recent publications in this field.

I understand that the authors want to show off the contributions from their own team, but there are plenty other papers, not published by your group, that you could refer to in your discussion.

Specific comments

Line 16 grammar

Line 16 how about Winter et al? This topic seems to have been already covered by your colleagues, so what is the novel aspect of this study? There have been also other paper studying how different storm event response contribute to scatter in C-Q data making this

statement untrue, please update the list of previous studies on the topic in the introduction

Line 22 'indicating low nitrate concentrations' – this does not make sense

It is not clear if you analyse high-frequency or low-frequency C-Q data, this should be clarified at the very beginning of the paper. Without this information it is difficult to judge the quality of your hypotheses.

Figure 1 should be part of methods or results but not introduction

Hypothesis 1 is not clear. Do you mean individual C-Q points?

Not clear how daily discharge data can provide information about short storm events with duration of hours?

In this sense, using a term 'event classification' is misleading. I would rather use classification of 'hydrological conditions'.

Since you have low-frequency samples they are sampled randomly over the hydrograph. So samples that belong to the same hydrological condition can have been sampled on a rising, falling limb of the hydrograph or baseflow conditions. Thus, some of your scatter in each hydrological condition group can be attributed to when on the hydrograph your samples were taken. Please clarify.

I have just noticed that Reviewer 1 expressed similar concerns regarding the role of C-Q hysteresis. This is a key weakness of your approach.