

Dear anonymous referee #2,

thank you for your review, we very much appreciate the indications for improving our manuscript.

Response to detailed comments:

Line 69: If applicable, please change “rural” to “agricultural area”.

We will change the wording to “agricultural area”.

Line 81: Please revise the heading, possibly change to “Sampling and measurements” to illustrate the content.

Thank you for highlighting that, we will revise the heading to “Sampling setup”.

Lines 124-125: Please check that all parameters are listed correctly and use the same terms as in line 126.

We will check for consistency.

Line 103: Please revise the heading, as this section also covers the clustering of events, not just hydrograph separation. Alternatively, move the second part to a separate section.

Heading will be changed to, “hydrological event analysis”.

Line 196/ Table1 :The pre-event wetness in the catchment (API) appears to be a very important parameter for the subsequent analysis. Please add this to the table.

Thank you very much for this input, the API will be added to Table 1

Line 215-217: Please revise the sentences to avoid repetition.

Sentence will be revised.

Line 225/ Fig. 5: Add a * if the clusters are significantly different.

An asterisk will be added.

Line 265: It is mentioned here that the red events might have taken place in seasons when no crops were grown or the fields were compacted. However, based on Fig. 4b and Table 1, the red events (3,5 and 11) took place in May, June and November so I cannot see any clear pattern. Please elaborate on this reasoning in the text, and be careful not to draw conclusions based on a very limited sample size.

Also, the events in Table 1 were not equally distributed throughout the year, which may introduce a bias towards spring and summer samples. Please discuss this briefly.

Thank you very much for your observation, there is indeed a bias towards spring and summer: The measurement took place from 02/2021 till 06/2022 due to institutional restriction regarding our field setup. Unfortunately, the autumn of 2021 was very dry and did not bear any major precipitation event we could sample from. In the winter of 2021 snowfall scrambled the isotope measurement and the small stream was completely frozen, making it impossible to measure discharge. The following winter of 2022 left us with three usable events, so we get a sample bias towards spring and summer.

We will revise our reasoning regarding the influence of crops and season on the event dynamics, especially considering limitations in sample size and resulting bias of the database.

Lines 274-276: Please revise sentence.

Sentence will be revised

Line 349: Could the influence of the drainage system on nutrient export be quantified? Is there any data available indicating the percentage of the catchment area with a drainage system? Similarly, this question could be extended to the crop type in the catchment over the years. In general, more information on the catchment's specific agricultural land use would be helpful in order to understand the possible nutrient export.

Thank you for mentioning these points. Unfortunately, there are no more details about the drainage system available. While we identified 2 clearly visibly drainages, there is no information of how large the drained area is, how often those drainages are activated or which amount of discharge is contributed by the drainages at an event. More detailed knowledge about the agricultural land use in the catchment can only be derived from occasionally field observations, there is no official database containing a timeseries of crop types for every field in the catchment. However, we observed that most of the slopes in the catchment were planted with grain (mostly winter wheat and rye) and the shallower fields near the stream were planted with mostly cauliflower and kale. We aim to present the land use in greater detail for the next iteration of the manuscript, by breaking down the agricultural land into meadows and crop areas, and also possible differentiating among grain and vegetable.

Lines 375-389: Possibly add recommendations for transferring this method to other catchments and sampling campaigns.

We will add some recommendations for inferring the method to other catchments for example the increase of precision coming with a more detailed knowledge about land use and crops types, or practical experience like the cleaning interval of the devices.

Line 399: Do you mean general knowledge or is there a specific point, that you would like to highlight to decisionmakers?

We refer to general knowledge.

Line 407: "given the method's sensitivity to limited sample size": was this tested here?

This was not tested in this approach, but since the core of the NCL function is a statistical fitting technique, it will profit from a bigger sample size.