

This manuscript developed a new index in terms of the ratio of heavy and light-weight organic compounds to illustrate the transit time in karst systems. The science questions and approach would appeal to the HESS journal audience and make a nice contribution to understanding the transit time in karst system with complex hydrological processes.

However, I had some major concerns that need to be addressed prior to publication:

1) The main goal of this work is to link the humification index and transit time in karst systems. However, the authors do not provide strong evidence about their linkage. Transit time in this work is inferred from time series of discharge and biogeochemical data (e.g., Mg) rather than being really quantified. Particularly, the authors stated that humification index can be a good candidate for karst systems with short transit times (0-6 months). I think this is a big missing if transit time is not quantified and therefore conclusions are not that convincing.

2) This work is trying to illustrate the advantage of humification index for karst systems where other existing tracers fail. However, I don't see the authors provide this kind of comparison in terms of data in the part of results and discussions. Therefore, it is hard to believe the authors' statements. Besides, in-depth discussion about the advantage and limitation of humification index is needed.

3) Since this is a karst system, how about the time series of typical species such as Ca and HCO₃ look like? And how they are correlated with the principal components of PCA? I don't understand why the authors chose SiO₂, Cl, and NO₃ as the representative species here. Please also clarify.

4) The method part is too brief. Please provide more descriptions about PARAFAC modelling and PCA. For example, what is the principle and purposes? This may help the readers better understand the results.

5) There are lots of typos through the whole manuscript. Just to name a few: Line 31, "9,2%"; Line 84, "23,3"; Line 227, "10,6%".

6) Lots of texts repeat again and again with no changes at all. For example, the texts of the abstract are basically the same with those in the introduction and conclusion.