

Dear editor,

Please find our replies to your comments directly under each comment.

Best regards,

Inken Heidke

Dear authors,

Your revised manuscript has been sent out to the original two reviewers, whose feedback was invaluable in the improvement of your manuscript. One of the reviewers provided the following comment: "The authors' replies to my previous comments are mostly adequate. However, a caveat on the resin method should be added into the text: although comparative differences may be used to indicate the relative abundance of organic matter captured by the same method and procedure, overloading (if present) may obscure actual (presumably larger) variations between samples. Hence, the authors should at least provide considerations or rationale to rule out this possibility." Can you please address this?

To address this, we included the following paragraph in the introduction of the paper:

"The vast majority of procedures for the determination of organic analytes in aqueous solutions such as drip water rely on the collection of discrete samples of the water at a specific time. Subsequent laboratory analysis of the sample then provides a snapshot of the concentration of the target analytes at the time of sampling. In the presence of fluctuating concentrations, this method also has drawbacks, such as allowing episodic concentration fluctuations to be missed. One solution to this problem is to increase the frequency of sampling or to install automated sampling systems that can collect numerous drip water samples over a period of time. However, this is costly and in many cases impractical. But alternatives exist to overcome some of these difficulties. Of these, passive sampling methods have shown to be promising tools for measuring aqueous concentrations of a wide range of organic substances. Passive samplers avoid many of the problems described above because they enrich target analytes in situ, can be used for extended periods of time, and can be applied without continuously accessing the sampled caves. The goal is to determine the mass of target components accumulated by a sampler, thereby obtaining time-averaged concentrations. Of course, passive samplers also have their disadvantages (Vrana et al., 2005), which is why they are used here as one method in combination with other objects of investigation (leaf litter, soil as well as flowstone samples) and are primarily used to compare the different sampled sites with each other."

As an Editor, I also found several suggestions for improvements:

Section 2.1.: Please include specific lat/long for each cave.

Done, in both the manuscript and the supplement.

Table 1: the dft in the table is quite confusing. Please indicate with a dot (or a relevant shape) in your supplementary figure, where exactly the trenches were drilled.

Since the dating samples were drilled from a different slab of the flowstones than the lignin samples, we have included photographs of the slabs with the drilled trenches in the supplementary information. Both slabs have a scale to their site for comparison. In addition, the table with the dft of the lignin samples was revised to make it clearer.

Also, in the supplementary, remove the text “ S3 Photographs of the flowstone samples”, it is confusing as it represents neither a caption nor a sentence.

This is the heading of section S3 “Photographs of the flowstone samples”, analogous to section S1 “Analytical methods”, section S2 “Description of the cave sites”, and section S4 “²³⁰Th/U-dating of flowstone cores”. The layout is the default layout of Copernicus. Do you want me to remove all section headings or change just this heading?

Figure 4: Please use a real arrow rather than < and > to indicate the end-members.

Done.

On p.10 of your revised manuscript, please rephrase the newly added text: The S/V and C/V ratios of all sample types normalized to the respective ratios of Hodges Creek Cave (HC) are presented in Figures 6a and 6b, respectively.

Done.

Finally, I'd like the authors also to carefully consider and revise the content of the supplementary materials. There are a lot of missing information, marked with "?". In fact, some of these information can be easily found in the manuscript, and putting them in the supplementary is redundant.

The question marks were placeholders for references in the LaTeX code, I am sorry for having overseen these. They have now been removed and replaced by the appropriate references.

The authors made a statement about the data availability that "All relevant data is included in the manuscript and the supplement." However, only the U-Th data and the vegetation/soil above the cave are presented. Please include also the table data used to make Figures 3–7. These are the core of the manuscript, however, these data are missing. Please fix these.

Done.

Thank you for addressing these comments/suggestions. Looking forward to your revision,

Best wishes,

Dr. Ny Riavo G. Voarintsoa