

Hydrol. Earth Syst. Sci. Discuss., referee comment RC3
<https://doi.org/10.5194/hess-2022-132-RC3>, 2022
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Comment on hess-2022-132

Anonymous Referee #3

Referee comment on "Seasonal $\delta^2\text{H}$ and $\delta^{18}\text{O}$ changes in river water from a high-altitude humid plain of the southern Alps (Cervières, France): tracking the transit time through a watershed" by Christoph Lécuyer et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-132-RC3>, 2022

The authors present novel isotope data from the Cerveyrette river and its catchment area located in the French Southern Alps. One site, situated river upstream of the Cervières village, was sampled for a period of two years, between 2011 and 2013, the other seven sites were sampled once. The aims of the paper are to estimate the average time between snowfall and melt discharged at the catchment situated at northern entry of the small town of Cervières, to give a best fit function to the measured data, to explore the meaning of the deuterium excess variations. The measured $d^{18}\text{O}$ values and local temperature distribution from a meteorological station are implemented in order to approximate a function $f(t)$, where t is representing the independent variable in $\hat{\square}\square$. Then, the calculated isotopic compositions by using $f(t)$ are compared with the measured ones, discussing differences.

The aims of investigation are well expressed; the amount of data sufficient in order to design the function and the presented novel method. The paragraphs are following in a logical manner and the text has also an educational value.

Minor changes should be done before the manuscript can be published. Some of the suggestions are included below, all comments being inserted with specific location on the attached PDF.

Page 3:

- On the maps the locations of the mentioned mountain peaks are not visible
- Relationship with the end of the Younger Dryas event?

Page 5:

- Tabor et al., 2020. Stable isotope geochemistry of the modern Shinfa River, northwestern Ethiopian lowlands: a potential model for interpreting ancient environments of the Middle Stone Age. *GSL Special Publication 507*, doi.org/10.1144/SP507-2020-219.

The slope is even 4 for this case.

Page 8:

- High d-excess values for the winter time were put in evidence at several circum Mediterranean sites. For discussion and references see Bojar, A.-V., Halas, S., Bojar, H.P. and Chmiel, S. 2017.

Stable isotope hydrology of precipitation and groundwater of a region with high continentality, South Carpathians, Romania. *Carpathian Journal of Earth and Environmental Sciences*, 12, 513–524.

A paragraph relating the potential of the method and study to monitor the effects of ongoing climatic changes would be of benefit.

Figures

Suggestions for Figures are given directly on the PDF.

A delimitation of the catchment area would be of help for the reader.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2022-132/hess-2022-132-RC3-supplement.pdf>