

Clim. Past Discuss., referee comment RC1
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Comment on cp-2022-78

Attila Demény (Referee)

Referee comment on "A paleoprecipitation and paleotemperature reconstruction of the Last Interglacial in the southeastern Alps" by Charlotte Honiat et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2022-78-RC1>, 2022

The paper deals with stable C and O isotope compositions of speleothem calcite and H isotope compositions of inclusion-hosted water extracted from several speleothems that cover the last interglacial. Although the regional or hemispheric paleoclimate conditions, large-scale teleconnections and moisture transport processes are not discussed in detail, the paper is a really fair study, clearly and concisely written, and gives a new view on the last interglacial's conditions. As a conclusion, I suggest publishing the manuscript in Climate of the Past with minor revision.

Specific comments

Abstract and onwards

δD is an old term, the new IUPAC definition requires the use of δ^2H instead. I suggest to correct it in the entire manuscript.

Chapter titles

The expressions of „calcite stable isotope“ and „fluid inclusion isotope“ are a bit sloppy, the correct terms would be „stable isotope compositions of ...“. The short titles „oxygen isotopes“ and „carbon isotopes“ should also be corrected for more correct terms, like „Stable oxygen isotope compositions“. The reason is that although there is no radioactive oxygen isotope, this is not valid for carbon that has ^{14}C .

Fig. 2: black arrows would be more visible.

Chapter 5.1.1., first sentence. The temperature of the cave would control the oxygen isotope composition of the speleothem calcite, but would not affect the $\delta^{18}\text{O}$ value of the drip water. I think these two are mixed in the sentence.

Chapter 5.1.1., last sentence. This is called Replication Test, and the paper of Dorale and Liu (2009) should be cited.

Dorale J.A. – Liu Z. 2009: Limitations of Hendy test criteria in judging the paleoclimatic suitability of speleothems and the need for replication. – *J. Caves Karst Stud.*, 71, pp. 73–80.

Chapter 5.1.2. In order to determine if biogenic activity or kinetic fractionation is the main factor in the $\delta^{13}\text{C}$ values, these two should be compared by numbers. We saw that along-lamina $\delta^{13}\text{C}$ shifts can reach 4 ‰, which is not negligible. On the other hand, we see no information on the $\delta^{13}\text{C}$ difference between winter and summer laminae.

Chapter 5.2.1., last paragraph. I think the paper of Demény et al. (2021) could be cited here.

Line 340. There is a sudden change from the $\delta^{18}\text{O}/\text{T}$ gradients to the $\delta^2\text{H}/\text{T}$ values. I think the $\delta^2\text{H}/\text{T}$ values are calculated from the $\delta^{18}\text{O}/\text{T}$ ones using the LMWL equation, but this should be clarified in a bit more detailed discussion.

Line 357. Actually the MIS6-MIS5 glacial-interglacial $\delta^2\text{H}$ change can be observed in the ABA-1 and the BAR-II records together (see Fig. 6).