Climate
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Discussions

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comment

Interactive comment on "The 4.2 ka BP event in the Central Mediterranean: New data from Corchia speleothems (Apuan Alps, central Italy)" *by* Ilaria Isola et al.

Anonymous Referee #2

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The study provides a new data-series from Corchia Cave, focusing on the period of the 4.2 ka BP event. Although Corchia cave, together with Renella Cave, have provided multiple and significant proxies until now, this addition is of great interest since it is appropriate for the description and the exact timing of the aforementioned event, as a matter of resolution and dating. The article is well structured and well written, helping the reader to follow the discussion all along the text. The figures are helpful and well presented. The authoring team has done a good job to provide another useful dataset, this time from the Holocene of the Central Mediterranean. Below my list of recommendations as improvements of the article:

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Discussion paper

Title: Why 'speleothems'? I was expecting to see more than one after reading the title. Isn't it a bit misleading?

Page 2, line 4 Gulf of Genoa, please follow the same term in whole text

Page 2, Section 2 I find it a bit difficult to follow the site description without being able to visualize the cave setting and the general location in a large scale map. There is no need for a cave description, but I think figure 1 itself cannot help the reader much. I would suggest adding a simple map of the location and the cave setting, incl. the sampling site.

Page 2, Section 3 It is necessary to provide a figure with the speleothem, the subsampling positions for all analyses and the projected growth axis (incl. length or distance from top).

Page 3, Section 2 (line 1-5) Please provide also the preparative method of the stable isotope analysis (eg. acid digestion, including either a citation or a short description with acid type, temperature and duration). Please also provide the carbon and oxygen isotope composition of the internal standard NEW1, including their uncertainties or SD.

Page 5, Section 5.1.1 It is common to use the Mg/Ca ratio in speleothem studies, as the authors did in their previous work as well. Why here only Mg is used, without considering the oscillations of the Ca in these layers? In Fig. 4, we can see Mg/Ca data from CC27 and they look milder as a matter of excursions. To my understanding, Mg/Ca provides a more reliable proxy for interpretation. Nevertheless, Mg/Ca is not discussed, although presented in Fig. 4 (see for instance Page 6, line 31).

Page 6, line 25 '. . .prominent drier interval'. Here, there is a characterization of a drier event without some supportive remarks. There should be a simple statistical analysis in order to point out the significant events along the CC27 dataset. The statistical analysis can support the interpretation regarding the prominent climatic oscillations/events (for instance, which intervals are prominent indeed and which are not) and help the authors

support their conclusions.

References Please check some citations in the text (for example page 9, line 22 and line 33), where 'et al.' is missing. Also check please the alphabetical order of the reference list (eg. page 21, line 28).

Figure 5. Proxies b, c, j and k datasets are of significantly lower resolution in comparison with the data of CC27 and the purpose of this study (4.2 ka BP event). Do they really help in this figure to make a point out of it?

Based on the recommendations-suggestions above for the improvement of the article, I would suggest the paper to be accepted for publication subject to minor revisions.

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