

Clim. Past Discuss., referee comment RC1  
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## Comment on cp-2020-161

Anonymous Referee #1

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Referee comment on "Hydroclimatic variability of opposing Late Pleistocene climates in the Levant revealed by deep Dead Sea sediments" by Yoav Ben Dor et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2020-161-RC1>, 2021

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### General comments

The preprint by Yoav Ben Dor and colleagues presents an interesting, and potentially important data set from two sections of the Dead Sea cores.

The data are worthy of publication, and are analysed in appropriate ways. Time series of this resolution remain rare, especially for the time periods discussed here and offer an important insight into subdecadal variability, important from a palaeoclimate point of view, but also for understanding the rich archaeological record from the Levant.

I wonder here if the story is more about how the lake record responds, or doesn't, to climate rather than the climate itself. The system is clearly more sensitive to recording changes in climate in periods of higher rainfall, which are actually quite rare in the 1400 years presented here, and in the  $\delta^{18}\text{O}$  records from previous work re-analysed here for comparison.

Is there an even more nuanced story about where this rainfall is falling in the catchment as well as from where the rainfall is originating, and are there ways of ever picking that apart – I'm not suggesting this should be done in this paper, just that it may be worth considering and acknowledging here.

I would have liked to see a bit more discussion about the varve deposition story, which the authors are very well positioned to tell, in this paper, rather than trying to focus on a climate story that may not be there, at least not in large parts of these records. Or the climate story is that for large parts of these time windows there was no cyclic climate system driving rainfall input to the lake.

In summary, I think the authors need to be a bit more cautious about their conclusions, which in no way detracts from the interesting data presented.

### **Specific comments**

This maybe in the other papers by the author team, but can you distinguish between a detrital laminae with sub-layers and a period with no aragonite laminae deposition? From this paper it appears the assumption is that you will always have an aragonite sub-layer?

Please make it clear throughout which data are new here and which are from Ben Dor et al., 2018 e.g. Figure 1 looks very similar to figure panels from that paper.

Is it possible to be more precise with the ages? This may be discussed in the other paper in more detail, but a bit more detail of the chronology would be useful for readers who approach your work through this paper.

As I suggest above, I'm not convinced by the wavelet analysis presented in Figure 7 as a strong support for your hypotheses of persistent cycles, even in wetter periods.

### **Technical corrections**

Line 11 relying not relaying

Line 26 time-scales

Line 69 'a series of waterbodies' or 'a waterbody series'

Line 101 during episodes of rising lake level

Line 114 please list Ben Dor et al in the reference list, and remove if not accepted before this one.

Figure 1 is too small, I suggest splitting into 2 figures so the maps and plates of the thin sections can be viewed clearly – space is not as big a premium in this journal compared to where these images first appeared.

Line 228 thicknesses range or thickness ranges