

Clim. Past Discuss., editor comment EC1  
<https://doi.org/10.5194/cp-2021-56-EC1>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Comment on cp-2021-56

Pierre Francus (Editor)

---

Editor comment on "Seasonal climate signals preserved in biochemical varves: insights from novel high-resolution sediment scanning techniques" by Paul D. Zander et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2021-56-EC1>, 2021

---

Dear Authors,

I have read the reviewers comments, and both seems quite positive about your manuscript. I also read your preprint, and I also found it well written, structured and presenting a very promising new way to analyze varved sediments.

You will find below a few minor comments or suggestions to improve your manuscript.

Lines 69-71: this sentence belongs to a conclusion not to an introduction.

Lines 99-100: can you provide more information about the dry bulk density sampling technique for each varve? Your thick varves are 6 mm thick, but this is still quite thin for discrete sampling.

Lines 128-129: Can you provide this information in Supplement?

Line 134: this link to data is currently not working, but I was able to access them using this link: <https://boris.unibe.ch/156383/>. Please make sure to provide a working link in the revised version.

Lines 92-93: Can you better explain what you mean by the onset of varve precipitation, and indicate that point in a Ca profile (for instance in Figure S1).

Line 139 and following: I understand that you can have the entire liberty to choose your own abbreviation for Varve Types (VT). However, VT is often used for Varve Thickness, and this may lead to some confusion. Maybe could you change VT for VTy or something else, but this is really a suggestion and you may decide to keep VT.

Line 143: You write here that "Data were detrended, log-transformed and normalized prior to classification". Were data detrended, log-transformed and normalized prior to the perform the alignment of the two sets of data ( $\mu$ XRF and HSI) or did you use raw data for that alignment? I think some clarification is required here. By the way, this is very interesting.

Lines 157-159: maybe a reference that covers the GAMs?

Line 174: You write, "The  $^{137}\text{Cs}$  activities in these two varves are indistinguishable within the measurement uncertainty". Maybe you should write, "The  $^{137}\text{Cs}$  activities in these two varves are indistinguishable from each other within the measurement uncertainty."

Line 283: Why do you add this argument, why mentioning carbon burial? You mean carbon trapped by carbonate or organic carbon?

Figure 3: on the legend of the horizontal axis,  $\mu\text{XRF}$  (counts per second), add  $\mu$ . Also, there are values less than 1 in the  $\mu\text{XRF}$  data, meaning that these counts were normalized somehow. Can you be more explicit about that?

Figure S2. What are the dots pointing to? Please specify in the caption.

So the next step for you is to reply to the comments of the reviewers and mine using the Copernicus system, maybe not in detail, but enough to allow me to get to the step of the process, i.e., authorizing you to submit a revised version.

I'm looking forward to your replies.

Best regards,

Pierre Francus