

Numbered comments keyed to the manuscript

- 1 “little or no flood record” This statement is made without elaboration or reference, but has an important bearing later in the paper. It needs to be substantiated somewhere.
- 2 Provide the lengths of the recovered core sediments.
- 3 This statement is incorrect. Supplementary material SM1 shows a summary and the log for only AIG17III. For a paper focused on core sediments as the primary data source, you need to show all of the cores in the body of the paper. Also, see comment 16.
- 4 Make it clear that these statements are inferred based on studies of other lakes in the region, not this specific paper.
- 5 Lines 181-185 are out of place. This should be presented in section 4.2.
- 6 Lines 205-218 are too detailed and difficult to follow. Simplify and focus on the key points.
- 7 The reviewer is not experienced with magnetic susceptibility foliation data. However, the difference between background and the exemplified event layer seems very slight (between 1.005-1.01 and 1.02-1.025, respectively). Can one range really be considered as ‘high’ relative to the other? Also, showing the numbers as ≤ 1.01 and ≥ 1.02 is deceptive because each range is very narrow! You need to say more about the significance of these differences in foliation data to make this more convincing.
- 8 There is no comment 8.
- 9 Ok, there might be a common depositional mechanism, but is it representative of a common triggering mechanism that puts the sediment into the water column? Can this be determined objectively?
- 10 This caption does not say this explicitly, but I believe that the thickest event layer in the deep basin is 83.6 cm thick (SM1 and SM6). In either case, the layer may have been interpreted by Banjan et al. (2023) as seismically induced, but neither the presence of this thick event layer nor the Bajan et al. interpretation are proof that every event layer between 0.5-2 cm thick was seismically induced.
- 11 The core-to-core correlations are fundamental to the paper, but are not presented in any detail. These correlations also need to be presented after the age-depth model,

- since the chronology is critical to the correlating process. The new locaton should be after 4.4.3. Fig. 6 only shows correlations based on the IRM data. No chronology data has been presented for AIG17III at this point in the paper, yet it is being drawn upon for these correlations. In other words, the order of the presented materials is incorrect and needs to be modified.
- 12 “To improve the count of the event layers”? What do you mean and how does this work?
- 13 Fig. 6 shows chronology in years CE, but the ages in SM-2 (Correlations between cores from Lake Aiguebelette deep basin) are in yr BP. For your purposes, using yr CE seems to make the most sense to use. Be consistent in the chronology format between the paper and the supplementary materials.
- 14 Are these laminae composed of the triplet of layers that represent a varve? If yes, then consider referring to varve ‘layers’ that are composed of triplets of ‘laminae’.
- 15 This paragraph is an inadequate summary of the chronology of event layers. The varves were presented in section 4.1 and the radioisotopic data in section 4.4.1. Why are these themes being introduced here as something new? Modify/reorganize as necessary.
- 16 The “SM-2 Correlations between cores from Lake Aiguebelette deep basin”, which is in Supplementary material, absolutely needs to appear in the paper.
- 17 There is no Table 2.
- 18 No information in the body of the manuscript is given on whether the event layers are common to every core, several cores, or only one core. This is key information that the authors are ignoring and which needs to be used in assessing the interpretations of the various event layers.
- 19 Cores AIG16-05 and AIG16-06 are about 100 m from AIG17III yet have different stratigraphies from the latter. See Fig. 2. Are you sure each event layer has a seismic origin?
- 20 This statement is based on circumstantial evidence and, as the authors indicate, is a *suggestion*. The ‘good confidence level’ of a seismic origin is not supported by data.
- 21 Again, this is another suggestion. The ‘moderate confidence level’ of a seismic origin also is not supported by data.
- 22 This is a reasonable decision.

- 23 The font size on this chart is far too small to read.
- 24 Does this mean that one of the events is not recorded in the lake, but would be expected? What does this say about the event layer methodology? You need to comment on this.
- 25 What is the chance that this event layer does not represent a seismic event at all? This also needs to be considered and mentioned. You also need to make the case for this specific event layer being seismically-triggered if the hypothesis that it represents an unrecorded earthquake is being be stated.
- 26 This only works if the triplet laminations within varves are present within the overlying sediments, but you do not say they are before making this interpretation. If the varves are not present, then I don't follow how you are able to make this interpretation.
- 27 You need to explain this in more detail.
- 28 Not clear. What "situation" are you talking about?
- 29 Make a more definitive interpretation/statement about the 1327-1372 yr cal CE event layer. Reword lines 490-492.
- 30 The seismically-triggered layers have been defined to be 0.5-2cm and >2 cm, as presented on lines 344-351. On what basis can it now be decided to consider that all of the event layers ≤ 0.5 cm thick were also seismically triggered? It is not defensible to do so late into the paper. Rethink? Reword?
- 31 The text here summarizes three stages that are shown on Fig. 12D, which implies that the stages are defined based on shifts in the sedimentation rate. Stage 1 spans about 8000 yr, which is about twice that of stages 2 and 3. Stage 1 also consists of two obvious sub-stages between -9500 to -6000 and -6000 to -2000 CE. Why are there not four stages? The text needs to clearly indicate how these stages are defined.
- 32 Be clear that you are talking about event layers between 0.5-2 cm thick, which I think you are. However, there are four event layers <0.5 cm between -2000-0 CE. Couldn't these be from floods? I am not sure that the absence of event layers that could be floods really helps support the inference that the layers between 0.5-2 cm were in fact formed by seismic events.
- 33 How the mean sedimentation rates were determined needs to be explained briefly somewhere. Also, lacustrine sediments are subject to compaction over time, which is not apparent from an age-depth model. The determination of these rates need to

consider this or at least it needs to be acknowledge that these are apparent rates that do not consider sediment compaction over time.

- 34 The utility of the modelled curves fitted to histogram distributions of the number of seismic occurrences versus time gap between depositional events (see lines 582-614) is outside of the expertise of the reviewer. Nevertheless, the reviewer is not sure that anything meaningful is represented by these curves. Delete?