We thank very much the reviewer for his constructive comments. A point-by-point reply to the reviewer's comments can be found below, as well as the marked-up manuscript version. Our response to the review comments is marked in yellow. In addition, we have indicated all changes in the annotated version of the revised manuscript in yellow.

Response to the main comment

My main comment concerns the structure and reasoning in sections 5.1.2. and 5.1.3., and Figs 7 (and 8). Currently the GB-III, HB and MSB deposits are linked to "strong" and/or close" earthquakes (lines 282-283) in section 5.1.2.. This seems to be rather subjective. In section 5.1.3. the 'distance vs epicentral intensity' diagram (Fig 8A) is introduced, after which the authors conclude that the (subjectively) chosen earthquakes all plot above a certain threshold line. I believe the correct/objective way to do this, would be turning this reasoning around:
1) Firstly estimate for each historical earthquake MSK intensity at the lake (this could for example be the intercept of a line 'with the MSK intensity at 10 km from the lake' that runs through the earthquake and is parallel to the blue line (see also comment with Fig 7), or some other parameter that is linked to both epicentral intensity and distance.
2) Then plot those estimations on the time axis of Fig 7 (see also comments on Fig 7) and use that data to link deposits to a certain earthquake by projecting deposit ages on the time axis.
In principle I think that in order to do this, sections 5.1.2. and 5.1.3. should be swapped and therefore (partly) rewritten.

As the proposed approach seems indeed a good way to make our choices more 'objective', we follow the reviewer's recommendations and modify the manuscript and the figure accordingly. See sections 5.1.2. and 5.1.3. and Fig. 7.

Response to the minor comments:
Line 41: delete "been"
This has been changed as proposed.

Line 50: THE magnitude (twice)
This has been changed as proposed.

Line 53: "Reconstruction of past earthquake magnitudes AND EXTENT is .."? (or AND LOCATION or RUPTURE AREA)
This has been changed as proposed.

Line 55: I suggest to add the example from New Zealand by Howarth et al. (2014), as this is an excellent study and example.
The reference has been added as proposed.

Line 63: "great earthquakes" are defined as M8-8.9, so I would avoid using "great" to describe an earthquake of unknown magnitude. Other defined descriptive words are: giant: M>9; major: M7-7.9; strong: M6-6.9; moderate: M5-5.9.
Lines 64-65: Hence, use "strong earthquakes" in Line 63?
This has been changed as proposed.

Line 80: BEDrock? (twice)
This has been changed as proposed.

Line 85: ": : :all the upper part of the catchment BARELY contributeS to the detrital: : :".
I find "not" rather strong, as one cannot exclude that some of the very fine faction will

not be trapped.
This has been changed as proposed.

Line 87: delete “by”
This has been changed as proposed.

Line 120: was this bath at room temperature or higher temp? How much was it diluted?
Requested information have been added: “in a temperate bath of diluted (30%) hydrogen peroxide”

Line 140: delete “the” before titanium
This has been changed as proposed.

Line 148: remaining track changes
Lines 153-155: the 77 beds are a bit confusing, as there are actually only 76 horizons. The deformed layer is coeval with GB-IIIb, so these 2 beds correspond to only 1 event. This is a bit confusing, and should perhaps be clarified? It’s also confusing in the abstract and the conclusions.
We clarified this point by indicating 76 event layers in the abstract and conclusions. In the main text, we kept the description of 77 beds (as observed) and add a sentence in the discussion part (section 5.1.1.) to highlight that 2 beds actually correspond to 1 event layer (l. 266-268).

Line 173: GB-II beds seem to be intermediate between GB-I and HB. That’s maybe worth mentioning in their description?
This is now mentioned.

Line 187: “with MUCH LESS VARIATION OF THE median (D50).” There is definitely a noticeable variation in the D50
This has been changed as proposed.

Lines 191-192: This correlation is not clear from Fig 3. The thick layer in INF13P4 is correlated to a layer below GB-IIIb in INF13P3.
This has been nuanced as the graded bed becomes actually much thicker only in core INF13P3.

Line 196: Too bad that 241 Am was not measured, as in the other papers the nuclear weapon tests are best represented by a peak in this isotope.
Line 206: refer to the original papers where the data was presented. Hence delete references to Wilhelm et al (2015, 2016), and add Wilhelm et al (2012) and Etienne et al (2013)
This has been changed as proposed.

Line 215: “these distinct steps well mirror historical: : :”
This has been changed as proposed.

Lines 220-221 and 227-228: repetition of nearly the same sentence
The first sentence has been removed.

Lines 262-263: Keep as one paragraph. A new paragraph should not be started here
This has been changed as proposed.

Line 266: “: : :as the result of strong earthquake shaking”
This has been changed as proposed.

Line 283: I assume “1755” should be changed by “1767
This has been corrected.

Line 282-283: While there are only 9 estimated years between the deposits from 1780 and 1771, there are as much as 18 years between the correlated earthquakes from 1785 and 1767. Hence, the sedimentation rate in this interval should be half of that in the rest of the core. Is this plausible? If not, could it be that event GB-IIIe is erosional? As this the thickest graded bed in the record.
Indeed, such an abrupt change in the sedimentation rate seems to be unlikely. An erosional base for GB-IIIe is possible, also because it’s the coarsest deposit (higher current energy). However, the stratigraphic correlation between cores INF13P3 and INF13P4 does not reveal clear evidence of erosion.

Lines 287-288: This statement should be supported by references: Monecke et al (2004) needs intensities of VI-VII for in situ deformation, while Moernaut et al (2004) already has lacustrine turbidites from intensities of V3/4 on (at least when they originate from a deltaic slope, which might be similar here), for turbidites from hemipelagic slopes intensities of VI1/2 are required. Van Daele et al (2015) finds turbidites (also from hemipelagic slopes) from intensities of VI on, while in-situ deformation is only found at an intensity of VII1/2. So these papers do indeed support this statement.
As this sentence was not necessary, it has been removed.

Lines 300-301: see main comment, but it would be good to actually estimate these ground motions in the lake area in some way.
Line 315: According to Fig 8 the ESTI is about 0.19 instead of 1.9
This has been corrected.

Lines 332-333: and similar to HB!
This has been changed as proposed.

Line 343: Could you add a reference supporting this hypothesis?

Line 350: Mercalli et al (2003)
This has been changed.

Lines 350-351: which year did this event occur? Could it anyway be indicated on Fig 9?
The year (AD 1926) was added in the manuscript and this event was indicated in Fig. 9.

Line 357: “: : :frequently shows a more pronounced decrease over the: : :”
This has been changed as proposed.

Line 360: “: : :sediments are a good recorder of flood variability.”
This has been changed as proposed.

Lines 373-374: “Hence, the variability of floods that impacted communities in Valle d’Aosta is well represented by the flood activity recorded in the Lago Inferiore sediment sequence.”
This has been changed as proposed.

Line 375- “: : :affected A localized area: : :”
This has been changed as proposed.

Lines 374-377: Could these different types of flood events be indicated in Fig 9? This is important as it could explain the recent discrepancy (1980-1990) between the Lago Inferiore and Lago Ledro record, as the authors state in Line 395 that these discrepancies

may be related to localized events such as thunderstorms (just as the 5 events from line 374). If the 1980-1990 discrepancy can indeed be explained by such events, than this will support the statement of the authors in Line 395.
The different types of floods have been indicated in Fig. 9. However, this does not allow explaining the 1980-1990 discrepancy because localized events may be recorded in Lago Inferiore but not in the historical data (e.g. if they do not affect the populations). In this sense, they are much more (30) events recorded over the last century in Lago Inferiore than (20) in the historical data.

Lien 383: ": : :north OF the Po Plain."
This has been changed.

Line 392: ": : :periods of HIGH flood frequency: : :"
This has been changed.

Lines 401-402: again confusing with the 77 layers for 76 events
This has been changed (see previous comment on this point).

Line 402 and 407: call it "8 mass-movement EVENTS". Because 1 mass-movement events might include several synchronous mass movements (especially when they are triggered by earthquakes".
This has been changed as proposed.

Lines 412 and 417: some journals do not want references in the conclusions, as this should be the conclusions of this study, not any other. I personally do not have a big problem with it, but on the other had I also do not think it is crucial here.
These references have been removed.

Figures Fig 1: "HistoricAL earthquakes"
This has been changed.

Fig 4: Both Q50 and D50 used. Keep it at D50 for each scale?
This has been changed.

Fig 7: The correlation of the event beds to the historical earthquakes in this figure should be done in a more objective way, as currently it is hard for the reader to review the correlation. I propose the following: - Make a vertical projection from all GB-IIIs, HB and MSB from the age model onto the time axis. This way the reader can see the estimated age of each bed. - Add above the (horizontal) time axis a new axis with ALL significant earthquakes and their age. Instead of simply mentioning each earthquake (which is rather subjective), earthquakes could be represented by a bar of which the height/length is determined by "the estimated MSK intensity of this earthquake in Lake Inferiore" (this MSK intensity could be estimated for each of these earthquakes, by pulling a line that (i) is parallel to the blue line in Fig 8, and (ii) crosses the red dot that represents that earthquake. The intercept of this line with the intensity axis at 10 km from the lake could represent the estimated MSK intensity). By doing this, a few earthquakes (at least 2, i.e. the black dots that are on or above the blue line in Fig 8) that are currently not shown on this figure, will also show up, even though they do not correlate to any of the graded beds. Alternatively (and I would personally prefer this option) the authors could even add some more earthquakes that are just below the blue line in Fig 8. These would have a shorter bar, and thereby it becomes clear that only earthquakes with the longest bar are represented by graded beds.
The figure was modified as proposed by the reviewer, so that a chronicle of earthquakes expected to have triggered the largest ground motions in the lake area was added to make

easier the comparison between ages of mass-movement deposits and dates of the ‘strongest’ historical earthquakes. See also answer to the main comment of the reviewer.

Fig 8: The black dots on and above the blue line should also have a date (or should at least be presented on the time axis in Fig 7). I assume one of them is the 1905 earthquake that is indicated on Fig 1?
The date of the earthquake corresponding to the black dot above the blue line has been added because this event is now discussed in the manuscript.

Fig 9: indicate the one May flood and the different types of floods (limited vs large spatial extent) on the historical record.
Everything has been added as proposed.