

Dear J. Theule,

thank you for your valuable suggestions and comments that will permit to improve the paper quality. Thank you also for your generous introduction, we truly appreciate that you valued positively our work.

Below are our responses to the reviewer's comments.

Specific comments

P6456 L10-11: "Rarely igneous rocks appear. . ." change to "Igneous rocks rarely appear, mostly rhyolite and sometimes breccia and tuff."

R: Thank you for your suggestion. Paper will be amended accordingly.

P6456 L12-14: The paragraph is hard to follow. I would suggest: "Thick alluvial deposits cover the upper part of the basin. Some of the deposits originate from rock falls detached from the dolomitic and calcareous formation and others from the underlying altered strata of clayey marls."

R: thank you for your suggestion: it makes the sentence clearer.

P6456 L19: ". . .some million m3. . ." if there is an estimate of million, "some" could be better defined. . .several?

R: The area covered by the DGSD is 0.45 km². Since we don't have direct measures of the position of the slip surface we did not insert a precise estimate of the volume. However, it is possible to hypothesize the depth of the landslide on the base of analogies with similar phenomena. In this case, we could assume a mean depth of 50 m, leading to a volume of a bit less than 22.5 million m³. Since it is a rough assessment we will use "several" in text as suggested.

P6456 L23: "located more downstream" change to "located further downstream"

R: Paper will be amended accordingly.

P6457 L6-7: I suggest to reverse the sentence structure to "An automatic monitoring network (Frigerio et al., 2014) and an early-warning system (Bossi et al., 2015) have been implemented to mitigate the hazard and protect the exposed population."

R: Paper will be amended accordingly.

P6457 L8: "At the same time" is not necessary change to "It was also crucial."

R: Paper will be amended accordingly.

P6457 L17: Comment- It would also be nice to have average point to point distance if available. As people use different DTM resolutions, point spacing can be more useful than pts m-2.

R: We agree with the reviewer that point spacing is more useful than point density. Unfortunately, we do not have access to raw data: a private firm elaborated the point cloud and provided us with the DTMs and point density information only.

P6458: Comment- Were there any indications of features being cut from point filtering. Anything significant? If so, how was this managed?

R: The filtering was performed using ground classification routine implemented in Terra Scan software. We observed that only few large boulders were filtered out. These features have no influence on the analysis considering the magnitude of the event under study

P6458 L15: Comment- Are there permanent features (such as roads, buildings, bridges. . .) that could be used to estimate the DoD error? Depending on the amount of permanent features, it could also be used to correct the mean elevation error.

R: It is possible to calculate DoD errors for gentle slope areas and for permanent features. Nevertheless, we preferred to assign a typical DTM error to take into account also the increase of errors on steeper slope areas that are the main target of the analysis. See also reply to M. Mergili comment (page 6458, line 26).

Suggestion: It would be nice to see a long profile of volume change (with error), the cumulative volume, and the DAN3D results. I think it could visualize the data in Table 2 and Figure 3 better. The profile could be cross-referenced with Figure 2, 4, and 5

Thank you for your suggestion. We are working on a statistic-based automatic algorithm focusing on the reconstruction of the profile. However, in this paper we prefer to focus on the spatial distribution of volumes. Moreover, DAN3D erosion rate is an input and therefore the comparison between DoD deposits and modelled deposits would only be significant for the lower track of the channel.

Best regards

The Authors