

Interactive comment on “Earthquake-induced debris flows at Popocatépetl Volcano, Mexico” by Velio Coviello et al.

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We thank the referee for his support.

Similarly to what we replied to referee#1, we agree on the fact that “mass movements” would be more appropriate to describe the entire mass wasting chain that occurred at Popocatépetl in 2017. However, in this paper we focus on the larger landslides and on their transformation into debris flows that represent an exceptional phenomenon in terms of size and runout and, thus, we would prefer to keep the original title.

We now mention in the abstract that remobilized deposits were saturated by heavy rainfall that occurred between 17th to 19th September 2017.

We also thank the reviewer for the valuable insightful references he suggested. We now

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refer to the papers describing the effect of the 2018 Hokkaido Eastern Iwate Earthquake both in the introduction and in the discussion. In the revised manuscript, we also mention the similarity in terms of liquefaction observed during this latter earthquake (see section section 5.3 Transformation into long runout debris flows and implications for hazard assessment). We do not provide a complete, global review of the earthquake-induced volcanic mass movements because we feel that it would be a bit far beyond the scope of our work which is focused on the long-runout debris flows observed at Popocatépetl in 2017. Concerning the predisposing factors of the co-seismic landslides, a GIS analysis of the predisposing factors of the earthquake-induced landslides would be definitely of interest but it is far beyond the scope of this work.

Minor specific comments and technical corrections: we clarified that the debris flows were transformed from landslides with the help of antecedent, we added the information on the grain size distribution to Figure 6, we included the effect of partial saturation to Figure 12 and we corrected the spelling of “debris flows”.

Please find the manuscript enclosed with track changes.

Best regards, Velio Coviello

Please also note the supplement to this comment:

<https://esurf.copernicus.org/preprints/esurf-2020-36/esurf-2020-36-AC3-supplement.pdf>

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