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Natural Hazards and Earth System Sciences
Discussions

# *Interactive comment on* "Structural and climate drivers of the historic Masiere di Vedana rock avalanche (Belluno Dolomites, NE Italy)" *by* Sandro Rossato et al.

**Anonymous Referee #2**

Received and published: 7 April 2020

General comment:

The paper by Rossato et al. investigates the Masiere di Vedana rock avalanche, located in NE Italy. The authors apply a geologic, morphotectonic and structural approach to characterize the deposit materials and the emplacement process. 36Cl exposure and archaeological findings are used to date the rock avalanche, which results historical in age. The overall quality of the paper is good: the manuscript is well-written, figures are highly informative and results are generally supported by the data (but see the comments below, especially at lines 209 and 257). Methods are widely adopted and properly applied. The significance of the contribution lies in the new data and



chronological constraints, which allow to shed light on a debated and long-standing issue – the dating of the deposit. The quality of the presentation is good; the text is sufficiently clear, even if at some places it can be shortened and more to the point.

Specific comments:

Lines 6-9: detailed names of the geologic formations are out of place in the abstract; better to stress that the stratigraphic sequence of the crown area is mimicked in the deposit area.

Line 38: add the position of the Masiere with respect to the area analyzed by Di Giusto and included in the IFFI catalogue

Lines 128-130: is the thickness estimation from literature or an original analysis? Provide references, or explain how you reach that figures.

Lines 209-213: identifying if the Masiere di Vedana rock avalanche is related to a single or multiple failure has huge consequences for hazard assessment purposes. The authors claim that "a singe rock avalanche occurred in historical time" I think that such a strong statement is not fully supported by available data, because the occurrence of multiple failures during – geologically speaking – short time (e.g., several decades) cannot be ruled out. Please better support your statement or consider to leave open the possibility for multiple failures.

Line 257 – Section 5.3. I acknowledge the authors' effort in looking for driving factors. As they point out, this is a challenging issue, and rock avalanches may not need a triggering event at all. The discussion on a possible seismic trigger looks a weak point of the manuscript: several Mw > 5 earthquakes are documented in times more recent than the avalanche. None of those events triggered rock avalanches with size comparable to the Masiere di Vedana one. This fact may be read as an element against the seismic trigger.

Lines 295-303: this paragraph is not connected t the rest of the text.

Line 316: “a single event” see comment above at line 209.

Technical corrections:

Line 3: change correspondings to corresponding.

Line 70: is bounded

Line 125: change “at high elevations” to “in the upper part of the release area”

Line 191: VB3c

Line 274: change “event” to “period”

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