

Overview

Writer opinion is that this work is not yet ready for publication. Main deficiencies are the poor English and some confusion in presenting data, analysis and results. A more schematic approach is required, sometimes, it seems a shopping list. I encourage the authors to a careful review of their work. The help of a native English speaker or of a colleague with fluent English will improve the review.

The detailed explanations regarding these points and other spotted errors are as follows:

Abstract

Line 14 The writer does not understand if there were three single events of debris flows or each event was characterized by several debris flows in a same area. According to line 135 it seems that DF2 was not a single event but more events in the same time. Authors should clearly distinguish it.

Line 18 spikedm?? What is it?

Line 20 Triggers of periglacial debris flows are multiplied....What does it mean?

Line 21 as in the first and third debris flow is better than as in the first debris flows and third debris flows

Introduction

Line 31 that will be expelled out... what does it mean? debris material provided by glacier.....moraine collapse will be expelled out

Line 39 occurs without s and are instead of is

Line 47 for the case is rarely to be read. What does it mean?

Line 62 the small rainfall threshold which is the reference of this?

Lines 69-71 Confused text

Background

Line 125-128 Sentence a bit confused.

Line 128, 135 and 143: These debris flows or this debris flow?

Line 165 please substitute can with could

Analysis and results

Line 181 $0.033^{\circ}\text{C}/\text{y}$ instead of $0.033^{\circ}\text{C}/\text{a}$

Line 237-238 Confused sentence

Line 245 field instead of file

Line 263 confused sentence

Line 265, 272, 291 and 293 air temperature increase?

Discussion

Line 325 it should be the triggering factors of the three debris flows, were.....

Lines 340-342 Confused sentence

Line 362-364 Confused sentence

Line 365 ..there were no debris flows of large magnitude... explain why please

Line 393 retrogressive manner: please explain

Line 413-416 Please consider: Runoff can generate debris flow when a peaked flow impacts a debris deposit (Kean et al., 2013; Gregoretti et al., 2016) and entrain sediments due to the hydrodynamic forces it exerts on its surface (Tognacca et al., 2000; Gregoretti, 2008).

Line 420-426 Delete the sentence at line 420-423 and write Therefore, runoff provided by rainfall, seepage flow and melting ice or glacier collapse can initiate debris flow with the same mechanism of the runoff generated debris flows in non-glacier areas (Iverson et al., 1997, Kean et al., 2012).

Please note that the reference of Gregoretti (2008) is missing and that at line 426 it should be Gregoretti and Dalla Fontana (2008).

Line 429 could be negative...please explain

Conclusions

Lines 456-458 Confused sentence

Lines 463-464 Confused sentence

References

Line 524 the reference Gregoretti C. Fontana G.D. is not correct. It is Gregoretti, C., Dalla Fontana G., 2008.

Line 526 Please separate the reference of Gruber and Haeberli

Authors should distinguish triggering factors from the triggering mechanisms. Rainfall, air temperature and ice melting flow are triggering factors. Triggering mechanisms are seepage flow that leads to a landslide failure or runoff (water stream) that entrain sediments forming a solid-liquid current.

At Figure 2 it seems that glacial till are in a channalized path. This fact stands for runoff generated debris flows. Debris flows initiate when a glacial till failure provides sediments to the channelized path that are entrained by a water stream.

I suggest the authors a better description of triggering mechanism based on photo of the glacial tills. It could add value to the paper.