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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Meteorological factors driven glacial till changing and the associated periglacial debris flows in Tianmo Valley, southeast Tibetan Plateau" *by* Mingfeng Deng et al.

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The ms presents an interesting study on debris flow acitivity in a poorly investigated area, where climate warming is likely affecting slope stability. The value of the ms in my opinion lies on describing how several factors relevant for debris flow initiation are at play in high elevations, periglacial areas. I am strongly convinced that the results presented here for the Tibetan Plateau are indeed valid also for other geographical regions worldwide. Nonetheless, I think the work is not ready yet fo publication, as the text requiires some ameliorations in the following points (numbers represent ms lines):

- English must be polished and ameliorated by a native speaker - Title: I suggest "mophological factors driving glacial till variations and.."

Introduction - 26: permafrost degradation instead of retreat - 34: not clear the expression "traffic/drainage" - 38-40: not only also in the Andes and elsewhere ! please organize this phrase to be more comprehensinve - 62: "lake" after glacier is probably missing - 69: not clear what is the meaning of "the perfect object". please rephrase

Background - 94-96: not clear why the river channel shading should be relevant for glaciers ? - 114-115: please remove, very poetic but non scientific sentence - 152: Since when has the station been operated ? - 159-162: not convincing. please explain better

Analysis and results

- 176: mean instead of overall ? - 179-184: in all this paragraph one wonders the role of snow vs rainfall in the measurements. Is snowfall measured ? How is it relevant ? - 184: what is normal ? - 188 and 195: I don't undestand why you say tha rainfall incresed at line 195 whereas before you said it was reduced. Please check. I am not sure about the hot-dry and hot-wet. In one case it was not so hot, you report - 208 and 211: please describe what is SPOT and TM - 217: from 2000 - 219-220: values better expressed in hectares - 225: equation is not needed, it is just a simple relative variation ratio - 246: not clear, why the increase may have contributed to glacier retreat ? Please check or rephrase - 275: how many are several ? not precise ! - 284-287: but DF1 was a much larger event compared to the others. Not sure about this interpretation. - 300: why 5 mm/hr ? not clear - 323: sediment instead of soil mass - 336: scope of soil source ? not clear - 336: periglacial - 348: gravitation ? do you mean weight ? better to talk about pressures - 358: depth instead of coverage - 360: not clear "at the junction with the slope" - 360-363: this entire phrase is not clear at all. please rewrite it. Indeed, also Figure 10 (especially C and D) is not clear, and more detailed description should be provided in the caption - 383: scope ? - 384: internal mass of what ? -

391: stepwise manner ? not clear - 406: glacier limited ? maybe till is missing - 412: rainfall related to air temperature fluxes ? this is obvious - 423: is it possible that small events (is failure meaning debris flows? if so should be changed) had cleared the entire source area from active till ? - 438: first year of what ? - 440-441: not always unlimited. not clear why its activity depends on glacier retreat - 443-445: the four phases are quite obvious and could be skipped - 455: available scientific literature Figure 5: in the caption "Mean annual air temperature"

Best wishes

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