

Interactive comment on “Understanding shallow landslides in Campos do Jordão Municipality – Brazil: disentangle the anthropic effects from natural causes in the disaster of 2000” by Rodolfo Moreda Mendes et al.

Anonymous Referee #3

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The manuscript describes the application of physically based modelling for the analysis of the effect of anthropic factors to slope stability in in the Campos do Jordao Municipality (Brazil). In order to perform the analysis a detailed geotechnical characterization has been carried out. The manuscript reports an interesting issue that is surely of interest for the readers, anyway some parts of the manuscript are quite superficial and some parts have to be described better to make the general methodology more sound and rigorous. Here below a list of my major comments: a) The introduction should be rewritten in order to focus better on your objectives and the methodology you use. In

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my understanding the objective of this work is to assess the stability of slopes considering the effect of the anthropic factors. I would avoid (at least reducing) in the introduction the description of rainfall thresholds since this is not the focus of the paper. I would instead describe state of the art of physically based modelling, moving here the first part of section 2.4. b) The description of state of the art models in section 2.4 is not up-to-date. The references are old. Please have a look to this reference for more recent literature: Rossi, G., Catani, F., Leoni, L., Segoni, S., and Tofani, V.: HIRESSS: a physically based slope stability simulator for HPC applications, Nat. Hazards Earth Syst. Sci., 13, 151-166. c) Please clarify better in the text that SHALSTAB, TRIGERS and so on, are distributed models while the Geostudio Package (SEEP/W and SLOPE/W) makes an analysis at slope scale. d) Which type of method do you use in your stability analysis? e) Concerning the stability analysis you should add a figure with the location of the cuts and loads along your profiles. This is a very important point to be better addressed since it makes your work weak. You know that the loading and unloading of a slope can have different effect on the slope stability depending on the location of the works (J. N. Hutchinson An influence line approach to the stabilization of slopes by cuts and fills Canadian Geotechnical Journal, 1984, Vol. 21, No. 2 : pp. 363-370). Another important issue relates to the shape of landslide surface in the SLOPE/W analysis. Have you drawn your sliding surfaces (the ones in figure 2)? Or have let the software to identify the most critical sliding surfaces? In both cases a figure with the sliding surfaces and their location along the slopes should be added. If possible also a description of the landslides; planar or rotational shape? f) In Table 2 both the effective cohesion and effective friction angles are very high. Please comment on this. g) In table 3 matric suction must have positive values otherwise you should call it pore water pressure

Other minor comments: a) you should explain what is CEMADEN the first time you mention it (Page 2, line 45) b) the sentence at page 5, lines 132-133 is already been written above, please delete it. c) labels in figure 1 are not readable, please modify the figure. d) in caption of Figure 3 you mention deposits of landslide events (blue

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cross-hatched areas) but they are not visible in the figure. Please modify the figure.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-242>, 2017.