

## ***Interactive comment on “Dome instability at Merapi volcano identified by drone photogrammetry and numerical modeling” by Herlan Darmawan et al.***

**S. Charbonnier (Referee)**

sylvain@usf.edu

Received and published: 12 June 2018

This paper investigates dome instability at Merapi after the 2010 eruption. Although I agree that this kind of study is of primary importance to better assess the related hazards associated with the future occurrence of dome-collapse events at Merapi, I would only recommend this manuscript for publication in NHES journal after major revisions.

Firstly, the language used by the authors in the text is sometimes limited and confusing. Many paragraphs are not readable and/or comprehensible, too long and repetitive, and some even lack of meaning. I have outlined some of the main issues in the attached

C1

PDF but could not pay attention to every typo, grammar, repetitions, waffles and sentence structure problems. I would invite the authors to entirely revise some parts of the manuscript by taking into account the comments included in the attached PDF. Secondly, the scientific part of the manuscript is somehow incomplete in some aspects. Although some of the issues related to dome stability are correctly described and discussed, some of the concepts presented in this paper lack of new innovative ideas. The authors should rather focus on the recent structural features that developed in the entire summit area, including the crater rim and upper part of the cone, and not only the post-2010 lava dome. I think the recent 2018 explosive events should be taken into account, especially for the results presented in figure 5 and 6 showing the link between water percolation and slope failure as well as the deep structure of the summit area; but also for the discussion about flow hazard assessment, given the high potential of larger hazard associated with a larger scale event! The authors also completely misunderstood the use of varying basal friction angles associated with different flow volumes, as explained in details in Charbonnier and Gertisser (2012). I suggest them to read carefully the paper and change the basal friction angles accordingly. An explanation about why Titan2D cannot model surges is also lacking...

Finally, the discussion section is badly written and should focus more about the results shown in section 3, particularly the structural and geomorphological data obtained, rather than just conversing on dome collapse hazards at Merapi. This could considerably straighten some of the interesting results obtained in this study by justifying the use of some new innovative techniques (TLS, SfM) to solve the issues outlined in the previous sections.

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2018-120/nhess-2018-120-RC2-supplement.pdf>

2018-120, 2018.

C3