

# ***Interactive comment on “Morphological analysis of hummocks in debris avalanche deposits around Mt Erciyes, central Turkey” by Yuichi S. Hayakawa et al.***

## **Anonymous Referee #1**

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### General Comments

The paper is organized and easy to follow. It starts with a brief description of sector collapses and how hummocks have been used to understand the emplacement kinematics and dynamics of avalanches. Within the introduction is a discussion on the lack of high resolution images to be used for studying hummocks and how RPAS, SfM-MVS photogrammetry can be used to fill this gap. A detailed methodology for image acquisition, description of hummocks and source area reconstruction for volume estimation follows. Results giving a detailed description of the morphology and spatial distribution of hummocks and volume estimate then follow. While the description of hummocks and volume were used as main evidence for the extremely long runout of this avalanche. A

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more in-depth discussion on the effect of structural constraints (caldera wall and pre-collapse faults/lineaments) on the emplacement and flow during avalanche would be interesting. This paper has a potential to make an important contribution on the effects of confinements on the debris avalanche emplacement and flow processes, which are less described in existing works.

Title imply a focus on hummock morphology but the manuscript has a lot of important informatios and discussion on the avalanche itself, such as volume and possible extent of deposition.

Specific Comments It is not clear why is there no hummock less than 11 km from the source?

Is it possible that the hummocky area is an area of accumulation, where sliding materials are confined and movement downstream slowed down as the avalanche materials go through a neck by the narrow valleys downstream?

Is there any evidence that the confining caldera has decreased the flow of the material as it flows east to north? Is there run-ups or accumulation zones observed that could be evidence of confinement as the flow direction shifted from east to north?

How did the flow dynamics change throughout the DAD? How does the confinement by the caldera wall affect this change in flow dynamics? Can it be reflected by the size and distribution of hummocks?

Technical Corrections Please see supplement pdf file

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2017-110/nhess-2017-110-RC1-supplement.pdf>

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