REVIEW

The paper investigate the benefits to generate a DTM using a RPAS for engineering geology application. In particular, to use the DTM for slope stability analysis. In my opinion, the innovative contribute of this paper is quite limited in particular on RPAS point of view. DTM generation using RPSA is already a consolidated techniques, in particular nowadays is quite frequently used the use of oblique images for environmental application. This aspect could be an innovative contribute, but authors not have mentioned it.

In order to be considered for publication, it is mandatory to strongly modify several parts in the paper.

Comments:

Page 1: line9: “Low strength rhyolite tuff forms steep, hardly accessible cliffs in NE Hungary. The slope is affected by rock falls.” What is the sense of these sentences? They are very generic. Moreover, the RPAS is not used to generate the DTM!!! RPAS is used to collect images, point clouds (with ALS), that can be used to generate a DTM or DSM (with vegetation). RPAS is only a tool!

Page 1: line15: “The paper demonstrates that without RPAS…” This sentence is a little bit wrong, because it is possible to generate a digital model also with alternative method, as demonstrated in the last part of the paper.

Tachymetry is an old instrument, without EODM. Nowadays total station is used!! Please, replace tachymetry with total station at least!

Page 1 line 37-38…: this sentence is not clear.

Page 2, line 8-10: RPAS is not used to generate the hard surface, but it could help to acquire the images or point clouds. It is important to focus the attention about the planning and the data processing. To be improved.

It is necessary to define the extension of the case study: how many hectares?

Page 3: fig 2: it could be better to include the in the part a) the single index (b), c),..) close to the single box, c) is not clearly defined.

Page4: fig3 : In the paper is many times mentioned the “risky zone for tourist”, but it is not clearly where is this zone. Please, define this zone in the map. In this figure, north direction has to be included. Include a graphical scale.

Caption fig3 is wrong: it is mentioned fig4, but fig.5 is the correct one. In figure 5 models are described and not the area. In the caption is said “the areas shown” but fig 5 has the model.

Page 4 line 5: it is not clear the “engineering geology” aspect. In fig 4 is not mentioned, but only geology. What is the difference between geology and Eng. Geology? To be clarified.

It is mentioned that flowchart are explained, but it is still very “poor” . to be better explained.

Figure 4: some parts in the flowchart are not clear: connection between point cloud and cross section, or DEM and slope stability analysis.

Page 5 line4: it is not clear how the vegetation is removed. The authors declare that there are some part covered by vegetation. How the vegetation was considered? Alternatively, you have a DSM…Using TLS, it is possible to have directly a DTM.

Page 5 from line 8: "The Remotely…" is not clear. Maybe the flight was done on 21$^{st}$ … It is important to describe better the flight planning, the % of overlapping, etc. In other words, it is necessary to include a table with all information about the flight. One question: how is possible to guarantee the correct overlapping with a manual flight, with a limited vision of the UAV? What is the GSD? What is the relative height? How the camera calibration has been realized? Go pro is a very hard camera to be calibrated.

Remarks: why have you not considered to collect oblique images?
http://www.itc.nl/library/papers_2016/pres/nex_obl_ppt.pdf

The number of points in the cloud is drastically limited with respect TLS, why? You have 3 flight…In my opinion 12 million of points is very poor for your area.

Page 6 line 7: where do you have placed the GCP? Include a map.

Page 6 line 13: typos.

Page 6 line 14: a point cloud comparison is mentioned by cloud compare, but it is not shown and described. Figure 4 mentioned is related to another part. TO BE INTEGRATED. IT IS VERY IMPORTANT TO COMPARE TLS SOLUTION WITH SFM SOLUTION.

Pag7: line 2: Figure 7. In figure 7 is not shown the model. To be correct or include a new figure

Pag7: line 3: Figure57. In figure5 is not shown the CAD model, as mentioned here.

Page 7 line 8: you mention some details in figure 4, but they are not described. (as morphological index). It is necessary to define and to describe how you calculate these indexes. Equations are required

Page 7 line 12: where do you mention the engineering geology? Not clear.

Page 7 line 29: you have to define this area in the figure 3!

Page 7 line 35: …"from RPAS (DTM model figure 4)". In figure 4 is not shown a DTM…to be clarified.

Page7 line 2: " DTM and morphological…"where? It is not defined in the paper.

Caption figure 7: "…from DEM analysis (fig 4)…where?? How?...not defined in the paper.. RPAS dataset has not sense!

Page 10 line 5: figure 4 is mentioned but it is a mistake.

Page 10 line 14-15: sentence very poor. To be clarified. It is not clear the DTM analysis.

Page 11: it is not clear what is the site where the analysis is carried out.

**DISCUSSION SECTION has to be deeply reviewed.**

Page 12 line 7-11: no comparison between TLS and SFM solution is made. It is not possible to verify the conclusion here reported.

Page 12 line 15-18: to be defined better this declaration.

Page 12 line 19-26: to be defined how to realize that. SFM is a technique quite influenced by the shadow, in contrary to TLS system. Not very clear what you want to demonstrate. It is not very ease to reconstruct a correct DTM with SFM, if the data acquisition is not correctly made.

Page 13: this part is very critical. You have to better motivate how you built this table and why you have defined this index, with a literature support! The content is partially in opposite with the table 3. To be completely reviewed.

Page 13 line 21: typos tachmietry

Conclusion. This part needs a very hard review. IT could be interesting to have a comparison between the analysis made using SFM solution and using TLS dataset, just to compare the difference, accuracy and more.

The use of RPAS for photogrammetry is a consolidated technique, even in geology than ir order to be published, it is necessary to give a more innovative definition.