Geoscientific Instrumentation Methods and Data Systems Discussions

Geosci. Instrum. Method. Data Syst. Discuss., referee comment RC1
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Comment on gi-2021-22

Anonymous Referee #1

Referee comment on "Evaluating low-cost topographic surveys for computations of conveyance" by Hubert T. Samboko et al., Geosci. Instrum. Method. Data Syst. Discuss., https://doi.org/10.5194/gi-2021-22-RC1, 2021

The present manuscript focuses on the accuracy of UAV photogrammetry products for river geometry reconstructions. This is a crucial point for the implementation of hydraulic models for practical engineering purposes. The work is based on a dataset of images acquired from UAV in the North Eastern part of Zambia. I found the article too weak in several points because of the lack of a complete overview of the literature and of the essential details in the descriptions of methodologies adopted. I think that the paper needs a big improvement before being reconsidered for publication. In the following, I list some major and specific comments that should be addressed carefully.

SPECIFIC COMMENTS

1) Title: The title provided is too generic. I suggest to change it focusing on the UAS technologies for surveying.
2) Abstract. The abstract is too long. It should be a very brief summary of your paper.
3) Section 1. The introduction is too generic and doesn't focus on the main questions of the paper. Some references are missed or included only in the following sections. Some main research questions (e.g. the impact of lens distortion on geometry accuracy) are introduced only in the final sections. Authors should include a complete overview of previous research on this topic (at line 108-111) in order to evidence the added value of their outcomes.
4) Section 2.
- Please move the research questions at the end of section 1 "Introduction".
- I suggest to create a new section for "Study site". To this regard, an overview of the morphological and hydraulic characteristics of the river reach can be useful.
- Respect to the third research question (line 128), please clarify that the objectives are referred to the error estimation of some variables useful for the indirect estimation of the discharge (hydraulic conveyance and slope).
5) Sub-section 2.2.1. Line 145. All the configurations used for the study it should be specified at this point.
6) Section 2.2.4. Line 185: The information relative to computer performance can be useful if a comparison between the two software on computation time is achieved.

7) Section 2.3.2. Line 230. I suggest to specify how the GCP points are spatially distributed along the river pattern especially respect to the vertical variability.
8) Sub-section 3.2: The configuration Brown-Conrady is not described in the main text.
9) Section 3. A separate discussion section should be added in the main structure of the manuscript. This section should include a comparison with other research studies and should be extended to other aspect that play a role in this analysis, i.e. the flight mission planning and the camera settings.
10) Section 3.3. Line 325. It is not clear how the slope is calculated based on photogrammetry products.
11) Section 3.3. Line 336. This step require more details for a better explanation of the procedure.
12) Conclusion and recommendations. Line 377. Please clarify this point in the section "Methods and material": the number of points used for reconstructions and those for validation.
13) Figures:
- Please improve the overall quality of the figures.
- Generally, captions are not very descriptive. Please modify accordingly.
- Some figures are not described in the main text (e.g. Figure 11, Figure 5b).
- In some figure, useful information is missing: the name of cross-sections (figure 7), the measure units (Figure 11), the flow direction.