

Interactive comment on “Towards harmonization of image velocimetry techniques for river surface velocity observations” by Matthew T. Perks et al.

Georgy Ayzel (Referee)

hydrogo@yandex.ru

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General comments

The present manuscript is aimed to introduce the new dataset, which will help to systematize and benchmark the emerging techniques for image-based river surface velocity estimation. The corresponding dataset consists of pre-processed videos from 12 research sites located in six different countries and covered a wide range of fluvial settings.

In my opinion, the introduced dataset has sound potential and of high interest in the research community. However, I recommend authors to provide major revisions which may help to increase the dataset value for the target community and make it the

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first benchmark dataset for image-based velocimetry techniques (e.g., as the MNIST database for image classification).

Specific comments

1. Abstract (Page 1, Ln 10): It is mentioned that 13 case studies have been presented in the dataset, but Section 2 describes only 12.
2. Section 2.7 St-Julien torrent, France (Page 8, Ln 24-31): As for this particular case study, the validation data is unavailable, the explicit description is needed to clarify the reasons behind the inclusion of the corresponding data to the introduced dataset. At least, it is not clear how this data will help to pursue one of the dataset objectives as “testing specific image velocimetry techniques.”
3. Section 2.9 River Tiber, Italy (Page 10, Ln 13-24): In my opinion, the single measurement of average velocity, which is provided as validation data for this site has limited value for the comprehensive analysis of different image velocimetry techniques reliability and efficiency. Please, provide explicit reasoning why this data will also help to meet the declared dataset objectives.
4. Dataset: I have realized that for some sites (e.g., Arrow River, Bradano River), scenes are not aligned with each other, i.e., ground (river banks) is not stable. In my opinion, key point alignment is needed to simplify the use of the dataset. This way, if the ground is stable for all the scenes, optical flow techniques can be easily implemented out-of-the-box for velocity field estimation.
5. Dataset: I recommend authors to consider the change of format for the provided images to GeoTIFF (or similar) to provide explicit georeferencing capabilities. It will substantially simplify the validation procedure by providing a solid basis for validation data georeferencing.
6. Dataset: I did not find any validation data mentioned in the manuscript (Section 2) in the provided dataset archive.

7. Dataset: In my opinion, the additional section which will confirm the introduced dataset validity, and its corresponding value for the target community is needed. The potential reader has to be sure that the dataset is consistent with the declared objectives and therefore serves the reader's needs the best (e.g., benchmarking the new technique/software). I recommend authors to provide a brief analysis of the single case study showing the extracted velocities and comparing them to the validation data. Authors also may consider supporting the corresponding analysis with a code example – this may significantly increase the reader's interest to the dataset and manuscript itself.

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