

Interactive comment on “Fluorescent particle tracers for surface flow measurements: a proof of in a semi-natural hillslope” by F. Tauro et al.

Anonymous Referee #4

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General comments

The technique presented in the paper is very interesting. In fact it is part of a group of new methodologies for evaluating surface velocities through image analysis, with the characteristic of using fluorescent seeds. It is applied for measuring surface velocity along a hillslope, which is an important issue. However I have concerns on its reliability in real situations and about the magnitude of the measurement errors. In the following, a more detailed description of the specific aspects that need to be clarified is reported. In conclusion, I believe that the paper is very interesting and well written, so I suggest that I could be published after a moderate revision.

Specific Comments

Interactive Comment

- The technique is applied to a semi-natural hill with a central rill, which represents a preferential path to rainfall. Usually a problem for flow measurement systems in hillslope is represented by the presence of many irregular micro-channels. Can the presented technique be applied in all conditions? Is it required that the rill has specific characteristics (width, depth)? It could be interesting specify the limitations of the methodology about these aspects.
- I believe that two important parameters are the inclination of the camera and its distance from the rill. It could be discuss how they should be fixed for achieving better results. How has been verified that image distortion is not important?
- Can the authors furnish a magnitude of the measurement error in estimating the velocity using the automatic procedure?
- In my opinion appendix A can be omitted.
- An advantage of using a fluorescent tracer is that small particles (70 μm) can be observed, but the velocities obtained with this class of diameter are not good. So this advantage is not useful, at least in the presented application.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 4465, 2012.

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