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Hydrology and Earth System Sciences Discussions

Interactive comment on "Technical Note: How image processing facilitates the Rising Bubble Technique for discharge measurement" *by* K. P. Hilgersom and W. M. J. Luxemburg

Anonymous Referee #1

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Hilgersom and Luxemburg present a study on an refreshingly unorthodox method for discharge measurement (rising bubble method - RBM). Although the method is not new, the authors try to mitigate its shortcomings by exploiting the possibilities of digital photography and image processing. The study includes measurements in the laboratory and at two field sites. Conventionally-measured discharge values and RBM-values are compared. The manuscript is well written, scientifically sound, uses concise language and appropriate figures. My major concerns are: 1. The manuscript has been submitted as a "Technical note". HESSD-guidelines state "Technical Notes report new developments, significant advances and novel aspects of experimental and theoreti-

cal methods and techniques which are relevant for scientific investigations within the journal scope." At most, the manuscript satisfies "novel aspects". Even this can be challenged, as the "novel aspect" boils down to the rectification of a slant-view photograph (=photogrammetry), which is definitely nothing new. In contrast to what the title suggests, no actual image processing is applied, as the bubble envelope still needs to be detected manually. The actual potential of IP is hardly tapped with Fig. 11. 2. "[...] which are relevant for scientific investigations [...]": a) Although I am in favour of exploring unconventional techniques, I currently cannot see a niche for the method - neither for spot- nor for continuous measurements because RBM cannot compete in terms of time, feasibility nor costs (see details in commented PDF). b) Even if I am wrong in this, I cannot extract much information from the manuscript that would help researchers in applying the method: crucial details on some of the steps (e.g. measurement of bubble rising velocity vz) and findings (eg variability of vz) are missing, even the source-code that might help reproducing the results is not published.

I have rated the manuscript "major revisions". However, if the authors are not certain they can at least address (or convince me) with respect to 1 and (2a or 2b), I don't recommend resubmission. Further details and minor issues are commented in the attached PDF.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/8/C4552/2011/hessd-8-C4552-2011-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 8499, 2011.