

Interactive comment on “Information content of stream level class data for hydrological model calibration” by Ilja van Meerveld et al.

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This research presents an investigation concerning the information content of stream level classes, potentially observed by citizens and/or using video-cameras, for improving hydrologic modelling performances in ungauged basins. The presented methodology and results show the potential value/capacity of informal hydrologic crowd-sourced observations - as respect to the case where/when high resolution flow monitoring or other standard hydrologic data are available - for monitoring and modelling river channel flows, especially in low contributing area river basins that are nowadays still lacking of adequate monitoring networks, also in developed regions.

The manuscript is well structured, presented and written and the subject/goals of the research, considering the actual importance of the active citizenship topic in hydrology

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(and not only), is of absolute interest for HESS. Nevertheless, there are some general, yet minor, issues and further few specific comments that I'm inserting hereafter that I strongly suggest authors to consider to improve the readability and clarity of the submitted work .

General Comments

GC.1) I fully agree with the first reviewer that the description of the calibration methodology is not clear. The performance parameter (Spearman rank), the modeling parameters used while performing the simulation used in the calibration process among others (see specific comments in the attached pdf) should be explained in more detail. The methodology description relies heavily on referenced works while the reader should be guided in independently following the manuscript without accessing other papers to understand data, methods and results.

GC.2) The characterization of the conversion of stream flow data into classes and the relationship of this crucial step with the stream flow level classification should be also better explained. The modeling results are presented only in the form of performance measures and this doesn't allow the reader in understanding the real "information content" of citizen-observed hydrologic monitoring data. Together with comments already introduced by first reviewer and already partially addressed by authors regarding the temporal sampling of flow data in both the monitoring and modeling process, I'd like to add a further major concern I have that is related to the quality/accuracy of the source (informal crowdsourced) data itself within the proposed research framework. To be more clear: results show that from 4-5 classes and up the modeling performances of the citizen-derived data are or may be "good", but in minor upstream rivers 5 classes of flow levels should be hard to be observed. While I approve the general concept and idea of the presented work I'd like to invite authors to express their view on the practical applications and related issues of the proposed method with specific regard to the issues of citizens gathering 5+ classes of flow level observations in upstream, often inaccessible, vegetation-dense creeks and very minor channels. In this regard

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a sample picture from a real case study with a visual cross sections representing the potential analysis of the classes or a synthetic figure eventually associated with a flow chart to better depict the authors' view could constitute a solid improvement for this work.

GC.3) I understand authors are proposing a novel framework and testing the performances of flow level classes as calibration parameter for hydrologic models gathered from citizen science/data. And I assume the presented synthetic case study doesn't allow to dig into data, but I'd be glad to insert in the manuscript a river flow data/level plot comparing the different curves of hydrologic modeling results built upon the different monitoring datasets (highly detailed/resolution flow data vs citizen data ect). This would also help in addressing GC.1 for better describing the temporal/spatial sampling of parameters and results.

Specific/Minor comments

See attached PDF

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2017-72/hess-2017-72-RC2-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2017-72, 2017.

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