

Interactive comment on “High-quality observation of surface imperviousness for urban runoff modelling using UAV imagery” by P. Tokarczyk et al.

Anonymous Referee #1

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This is really an interesting paper about the use of UAV for the observation of surface imperviousness for urban runoff modelling. The research presented here is challenging for two main reasons: 1) the use of UAV, 2) the analysis of urban runoff that in the recent years, because of the significant urbanization of several regions in the world and because of climate change (intense thunderstorm are affecting every year densely populated areas), became one of the most critical issues for our society.

The paper is well written and clear, it absolutely merits publication. However a series of major critical issues need to be fixed before the final publication. Here a summary:

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(1) I recommend to enlarge significantly the introduction with few more references on UAV. Several papers have been published in the last few years on UAV and their applications in different contexts.

(2) UAV data specifications (related to the platform used, flights, georeferencing, errors, co-registrations of images) are missed. Several are the uncertainties behind this. If the authors check in details the literature about UAV, they can realize that this information is always showed. What about the errors? And the ground control points? The readers have to understand and feel about that. I strongly suggest to add a sub-chapter, at least half a page, about this information.

(3) Urban drainage model. This section leaves me rather puzzled. Probably I missed something in the text, but the model at my eyes is not well described. A reader should be in trouble to really understand all the components of the model used, in addition also to all the parameters (also validation and calibration). Please be clearer and improve this session. Why not using also a 2D hydraulic model (with a series of 2D maps) for modeling flow propagation? One, looking at this paper, is expecting also that. I'm not saying that the authors have to change totally their paper, however few sentences mentioning this, maybe for future challenges, should be appreciated.

(4) Figures. Fig. 2 is really rough; please use a high-quality map in GIS (I don't think it will be difficult to collect shape files). Fig. 3 leaves me rather puzzled. What is the purpose of this figure? No scale bar, very coarse details and shadow in the left image. Is this necessary? Probably not. While should be worth to show a comparison of a fine detail so the readers can feel about the effectiveness of a camera mounted on UAV. Fig. 4 is really rough; please use a high-quality map in GIS (I don't think it will be difficult to collect shape files). A scale bar is missed. Fig. 5 and 6 need to be improved with different and clearer colors and also a scale bar. Fig. 6 and 7 need to be improved with the information related to the y-axis. Also in this case the selection of the color is not appropriate: red+black+red don't show a real evident color contrast.

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