

Response to revision for "Wetropolis extreme rainfall and flood demonstrator: ..."  
By Bokhove et al.  
For HESS, regarding hess-2019-191

Dear Editor, dear Matjaž,

Thank you very much for your comments and decision to allow minor revisions. A response to the main points raised follows below. Changes in the revised paper have been highlighted in red, with the red and blue highlighted comments in the first revision being changed to the normal black-on-white.

(i) *"I have decided to accept the paper under the condition that you really explain how you have come to the conclusion with regard to the feedback by the users and stakeholders from different workshops. It is clear that this part was not done using formal ways of getting this positive feedback (questionnaires, statistical analysis, and so forth). A scientific paper (original paper) should have had that part based on scientific methods."*

- Per (i): In section 4 after the list of exhibitions, we have now added the following: "Most of these considerations are anecdotal except for the discussions at "Maths Foresees" meetings and the Newton Gateway to Mathematics, which were based on formal notes of the in-depth round table and workshop discussions as well as the study-group host. We stress, therefore, that the outreach component of this study is lacking a proper scientific method (from a social-science perspective). Indeed, none of these discussions concern formal questionnaires, well-balanced questions and subsequent statistical analysis, which would constitute a formal investigation of the feedback and Wetropolis' impact. There are two reasons why such a formal analysis is lacking: the authors do not have the expertise to undertake such an analysis and, more importantly, during the showcasings for at-the-time recent flood victims we did not want to further bother these victims by conducting intrusive questionnaires in a potentially unhelpful manner. However, this is something to be considered for future demonstrations, in collaboration with the necessary experts. It also implies that the conclusions suggested below are preliminary in nature."

*"Please, take into account the suggestion from the end of the Report #1 (Christopher Skinner):"*

(ii) *"A formal evaluation isn't always required, yet the authors should make it clear that the information they use is anecdotal and based on informal feedback provided to them, and that the conclusions they make are based on this. If this is done, then this manuscript will be of interest and value to the HESS readership and would recommend it to be published – I have based my recommendation on this."*

- See our answer to point (i) above.

(iii) *"Such a "relativisation" of the positive feedback in this minor revision would give a free space for possible discussion in future on the use of such demonstrators, on pros and cons and possible misunderstandings how to apply them and what is their outreach potential. I see a possible way further and that is to apply such demonstrators in practice more in the domain of risk dialogue than working on strict mathematical validation - though, this is also needed, it may be done in future in a separate (original scientific) paper? This is a must for a wider acceptance of the Wetropolis demonstrator."*

- See our answer to point (i) above but also note that we have added a slightly more formalized feedback of a recent exhibition where Wetropolis was showcased, i.e., we added the following paragraph at the end of section 4: "Finally, we recently showcased Wetropolis (a new and improved

demonstrator based on the same design principles presented here) as part of the (biannual) Mathematics of Planet Earth exhibition organised by the corresponding Centre for Doctoral Training at Imperial College in London for about 500 to 1000 visitors over nine days, from February 15<sup>th</sup> to 23<sup>rd</sup> 2020. In line with the directives of the organisers, the audience was encouraged to volunteer bespoke feedback on two post-it boards, one for the larger exhibition and one specifically for Wetropolis. We received ten feedback posts with positive feedback as well as suggestions, the latter ranging from: (a) build more of these, (b) make an exhibition set-up for tsunamis to (c) please add a full-fledged rain and river flow predictive model of Wetropolis and compare the two [footnote]{This feedback and the feedback of all exhibitions listed above are found at <https://github.com/obokhove/wetropolis20162020/tree/master/feedback> .} While this feedback is still lacking an in-depth statistical basis, given that the organisers felt that a formal questionnaire would be too intrusive, it does provide additional insights into the audience' perception of Wetropolis”.

(iv) *“I agree that the manuscript was transferred from Original Research Paper to Education and communication paper, this decision is from my point of view correct and opens a possibility for the manuscript to be accepted and published. You have done a great job by revising the manuscript. What stays open and is a problem is the judgment/impression that you gave at the end of the paper about the stakeholders' acceptance of the demonstrator. Putting aside the need for a strict validation of the mathematical model used for putting together the demonstrator, there is a need in a journal like HESS, that the whole research work is published in such a way that anyone can repeat it.”*

- Note that given the GitHub site and the article combined, construction of Wetropolis is fully repeatable and adaptations are straightforward. In fact, Wetropolis II demonstrates this.

(v) *“Since for the outreach component no proper scientific method was presented, this is definitely a weak point, even in the category Education and communication papers. Please, state clear how you evaluate these positive feedback from different workshops and (general public). Definitely, I agree that manuscript is of interest and will generate some debate about the use of such demonstrators to raise public awareness and generally society resilience. It is only that HESS is maybe not the best journal for this more "social" part of your manuscript, even though the journals seeks for interdisciplinary papers.”*

- We hope and believe that the answers to points (i)-(iv) above and the corresponding changes in the manuscript have now addressed your concerns. Please let us know if further adaptations are required.

(vi) In addition, we have made some small tuning corrections to the text, also highlighted in red, and also added the remark Chris Skinner liked in our response pertaining to our motivation (i.e., the part about the 1953 floods) in section 1. We have also added some remarks on Wetropolis II. All of these minor changes have been clearly marked in red throughout the text.

We hope that the above sufficiently addresses all concerns raised.

Kind regards and, most importantly, stay healthy,

Onno Bokhove pp. the co-authors.