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Hydrology and Earth System Sciences Discussions

Interactive comment on "Development of flood probability charts for urban drainage network in coastal areas through a simplified joint assessment approach" *by* R. Archetti et al.

Anonymous Referee #2

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The paper is interesting and describes an unusual approach to flood risk assessment. It is worthy of publication, but needs tidying up. I would like to see less on waves, which appear to be irrelevant to the calculations. I would like to see more comparison between model results and actual flooding, which is key to any lasting value in the paper and take-up of the assessment method. The proof-reading errors are too numerous to list here, but those I spotted are itemised in the attached annotated copy of the paper.

1.Does the paper address relevant scientific questions within the scope of HESS? Yes.

2. Does the paper present novel concepts, ideas, tools, or data? It combines commonly used types of data, models and results in a novel and interesting application.

3. Are substantial conclusions reached? Yes, if the results are compared with field data on flooding. No, if merely a demonstration calculation. See Q1 below.

4. Are the scientific methods and assumptions valid and clearly outlined? Yes.

5. Are the results sufficient to support the interpretations and conclusions? Yes, but see Point 3 above and Q1 below. The paper's phrase "confirmed the reliability of the analysis" would be wrong if there were no field data for validation.

6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Not the actual numbers which would require site-specific details of the city drainage system, but in general terms yes.

7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes.

8. Does the title clearly reflect the contents of the paper? Yes.

9. Does the abstract provide a concise and complete summary? Yes.

10. Is the overall presentation well structured and clear? Yes.

11. Is the language fluent and precise? Clear but neither fluent nor precise.

12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Not much used in the paper but yes.

13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? Anything more than a passing reference to waves appears to be irrelevant.

14. Are the number and quality of references appropriate? Yes.

15. Is the amount and quality of supplementary material appropriate? Actual flooding records would improve the paper from adequate to good, and, if the English were also improved, and the actual flood records supported the modelling results, potentially to excellent.

My particular comments are hand written in the attached annotated copy of the paper, but the main points are expanded upon here.

Q1. In places the wording suggests that actual flood records from Rimini were available, but as so little was made of them, I suspect that actual flood records were not used. Without actual flood records for validation of the modelling and results, the paper would be just an interesting demonstration calculation, of little permanent value. However, if it could be shown that model results and interpretation matched actual flood records, the approach would potentially be of lasting and wide-ranging value, an approach that others may wish to use in flood risk assessment for other cities. If actual flood records were available, then make much more of them. If not, then see what can be obtained, even if only to check that the number of actual flood events per year approximately matches the modelling results.

Q2. If there is a "traditional" approach to design of this type of city drainage system, it would be interesting to compare results. For example, if the downstream sea level is traditionally taken as present-day Mean High Water Springs, this fixed value could be used in place of the variable downstream level, and then the frequencies of flooding predicted by the two approaches could be compared.

Q3. Often in this type of assessment (and it would be obligatory in a UK flood risk assessment) a "climate change" calculation is done. For example, add 0.25m to all sea level records and re-process, showing, for example, that flooding would occur x times more frequently for that climate change assumption.

Q4. The paper has a lot to say about waves, even including some numbers in Table 1, but they appear not to be used in the calculations. Either explain how they were used

or reduce the commentary on waves.

Q5. My impression is that "sea-rainfall", "rain-sea level" and "rainfall-sea" all refer to the same thing. Either clarify the difference or use the same term throughout.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/8/C1977/2011/hessd-8-C1977-2011-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 3793, 2011.