

Interactive comment on “On the occurrence of rainstorm damage based on home insurance and weather data” by M. H. Spekkers et al.

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We thank the reviewer for his/her valuable comments on the discussion paper. Our response:

RC1: *Methods: This section is well explained. Section 2.1 and 2.2 fit better in the Results chapter, considering that they are a description of the case study and the raw data taken for the work. Other sections under methods are clear.*

AC1: We prefer to describe case study and data in the method section. Section 2.3 (on the classification of claims) certainly requires an explanation of the claim data first
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(section 2.2). To make clear that chapter 2 also covers raw data description we can rename the section 2 heading to “Data and methods”.

RC2: *Conclusion/Recommendations: The authors have related their results to earlier research. They also show how the analysis of insurance data benefit the characterization of damages and the relation with different rainfall events. The recommendations are related to the statistical treatment of the data and not connected with the potential added value of the data for pluvial flood risk management.*

AC2: We would like to discuss the added value for pluvial flood risk management by adding the following paragraph after line 8 on page 5299 (Discussion section): “Results have implications for pluvial flood risk management. The return period of design storms as currently being used to design sewer systems in the Netherlands (see also section 3.2) is largely based on political consensus. Potentially the results presented here can be used to obtain an objective design criterion based on risk assessment. Furthermore, this study provides insights into contributions of urban drainage systems to flood damage at city level. Results will support urban water managers in the evaluation of urban drainage system capacity and decisions about the need for and prioritisation of investment to increase drainage capacity. Further research is needed to explain why damage related drainage capacity occurs below the level of design capacity; this will help water managers to focus efforts on ensuring that their systems reach design capacity.”

RC3: *P5289 L7-13: Rainfall events are presented in different way. In order to have a good comparison, I suggest to present the return period and/or the intensity of the events for both of the cases (if these data are available).*

AC3: Although we agree with reviewer that there is some difficulty in comparing the two examples, we prefer to stick to the statements in the original works. For a good comparison (which was not the primary goal of this introduction), many other aspects have to be taken into account too, such as the spatial extent of the rainfall cell (which is not expressed in the return period) and information about insurance market penetration and insurance coverage for both cases.

RC4: *P5295 L5-10: A validation process is mentioned as a reason to discard data corresponding to the 3 rain events; however, the validation is not mentioned in previous sections as a part of the modelling process.*

AC4: Good point. We have done some basic data checks, which we have not mentioned yet in the paper. Therefore, we would like to add the following at the end of section 2.2 (Insurance data): “The database has been checked on missing and incorrect values, such as duplicated records, inconsistencies in date formats and claim coding.”.

RC5: *P5297 L4-11: The paragraph fits better in section 4 (Discussion). In fact, similar and more explained sentence is written in L25 and following in the same page; therefore, I would suggest to remove L4-11.*

AC5: There is indeed some repetition here, which can be avoided. We can remove line 6–8 on page 5297 without losing any information. However, we like to keep the sentences “For rainfall events... occurrence probability.” and “Similar conclusions... respectively.”, because they describe results that are derived from Fig. 4, which are discussed in this section for the first time.

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RC6: *P5299 L26: It is mentioned that the hypothesis of different processes could not be tested using the available database, because there is no explanation of what characteristics the database should have to prove the hypothesis.*

AC6: To explain why the hypothesis could not be tested, we would like to slightly rewrite the paragraph (starting at line 24 on page 5299): “Claims associated with rainfall intensities of 0–5 mm h⁻¹ in Fig. 4 (60-minute window) are possibly generated by a different process than the claims related to rainfall intensities larger than 5 mm h⁻¹. It maybe the case that more specific damage processes can be distinguished within the existing cause classes. For example, the class “roof leakages” may contain two processes; one related to the presence of latent leaks that are first observed when it is raining and another one related to the exceedance of the “hydraulic capacity” of roofs. The hypothesis could not be tested based on the present database, because it lacked information to distinguish between the sub-processes.”

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