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Natural Hazards and Earth System Sciences
Discussions

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

**Anonymous Referee #1**

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The paper presents an analysis of claims provided from an insurance company in Rotterdam (Netherlands), for the period 2007 – October 2013, with the aim to investigate the contribution of different failure mechanisms to the occurrence of rainstorm damage.

The study is interesting because it is based on the transcripts of communication between insurer, insured and damage assessment experts. This kind of information contains a detailed description of damages whereas insurance companies usually only provide data of total number of claims, their location and global costs. Thus, claims can be classified according to damage cases being possible the analysis of the contribution of weather variables on water-related damages. This classification also could help to find significant predictors and to the analysis of probability of occurrence. In this paper, the rare events logistic regression is used to improve the results of the logistic



regression model.

In my opinion the paper could be considered for publication in NHESSD provided that the authors incorporate significant changes in the current version in the direction indicated by the following comments:

a) On Section 2.1 Case study description - Have you verified if for the period 2007 – October 2013 there weren't significant changes in population density, type of building construction or with the sewer system that could affect data information?

b) On Section 2.2 Insurance data - I suggest including the Achmea group website

c) On Section 2.2 Insurance data - You explain the data set contains information of only the 6% of the total number of households in Rotterdam. Do you know the market covered by this insurance company in Rotterdam or maybe the total number of insurance policies? I suggest including it for a further comprehension of the results and their level of significance.

d) On Section 2.2 Insurance data - You explain that the data set contains information of about 16.000 risk addresses. Are these risk addresses uniformly distributed or are located in only some neighborhoods of Rotterdam? This information may be useful for the analysis of water-related damages, especially the ones not produced by heavy rain (exposure, age of buildings, vulnerability areas to water - damages...). Thus, my suggestion is to include a map with a density distribution of claims.

e) I would like to see the annual distribution of the 3100 water-related claims during the period. It would help to verify no trends on collected data.

f) On Section 2.4 Weather variables – Why the duration of the precipitation (hours for example) was not considered as a relevant variable? Some studies state there's a relation between damage and storm duration, so it could be an interesting significant predictor.

g) On Section 2.6 Discarded data - You have explained that extremely stormy days are

classified as storm-related claims, so they are not considered on this study. You have referenced three extremely storms but at last, how many storms have been excluded of this study?

h) On Section 3 Results - One thing I expected to find in the paper is the number of cases. We have information about the number of claims and of risk addresses, but we don't have an idea of the number of cases involved or the average of claims related to one case. It would be necessary to quantify these values, so I suggest introducing this information.

i) On Section 3.1 Relative occurrence frequencies and costs of claims - I suppose economic costs related to damage cases have been adjusted for inflation, but there is no information about it. It has to be included in this section when you compare damage costs.

j) On Section 3.1 Relative occurrence frequencies and costs of claims - You explain that wall leakages and roofs usually do not involve large water volumes. On which information is this based?

k) Season is selected as a significant factor because of snow, hail and problems associated with leaf fall. Therefore, it would be interesting to have a figure or percentage value about seasonal distribution of the claims.

l) On Section 3.2 Effects of rainfall intensity on claim occurrence probability - You have obtained a low threshold for rainfall intensity compared with sewer design. On average, which is the normal rainfall intensity in Rotterdam city? What is the return period for this intensity?

m) On Section 3.2 Effects of rainfall intensity on claim occurrence probability - For this analysis, did you use all of the cases or only those ones related to precipitation? You have also explained some problems with claims dates' not corresponding to the incident day (maybe because vacation period). Have these cases been filtered? How



many cases have been analysed in this section?

n) On Section 4 Discussion – What is the return period of the events not considered in this study (the extremely stormy days)?

o) On Section 4 Discussion – page 5300 line 1, there is a typing error "observed when it it raining. . ."

p) On Table 2 - Information about the remark column has to be included.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 5287, 2014.