

## ***Interactive comment on “The role of different factors related to social impact of heavy rain events: considerations about the intensity thresholds in densely populated areas” by L. Barbería et al.***

**Anonymous Referee #2**

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Comments on the manuscript “Analysis of factors in social impacts of heavy rain events: focus on rainfall in Barcelona” from L. Barbería, J. Amaro, M. Aran and M. C. Llasat.

The assessment of social impact caused by damaging rainfall events is difficult task to be performed. In this framework, the paper presents a contribution aiming at a better definition of the Cumulative Index which has already been introduced in previous works to assess the social impact. The following modifications could be carried out to further improve the paper.

C103

In order to identify the need of an improvement of the thresholds presented in previous papers, the Authors analyzed some events which occurred between 2000-2002. I suggest to state how many events have been considered in this phase and to introduce a simple table in Section 2, containing all descriptive elements used in the discussion: date of the event, length of the event, coincidence with strong wind events (yes-no), number of request, rain in 24h, rain in 1 h, rain in in half an hour, population density of the most affected sectors.

Pg 7. Line 15: “The more elements at risk and the more valuable and susceptible that those elements are, the higher vulnerability to flooding”. I think that the concept expressed by this sentence is reductive and should be enlarged. I think the paper deals with the whole of damage recorded during heavy rainfall events, not only by river flooding.

Further modifications 1. Abstract. Line 15: “A period without significant population changes has been selected for the study to minimize the effects linked to vulnerability and exposure” change as “. . .and exposure” modifications”.

2. Introduction, line 2, maybe actors instead of sectors ?

3. Pg 3 row 25: this sentence is not clear “An index is a valuable tool to foresee approximately the effects that 25 an event can have, in which variables of different nature interact”

4. Pg. 5 line 12: “14th and 15th of July 2001 event” can be changed in: “the event which occurred on 14th and 15th of July 2001”

5. Pg. 5 line 17: maximum rainfall was around 40mm/24h

6. Pg. 5 line 18: correct this “inhabitantskm–2”. The same occur on pg. 8 line 2.

7. Maybe the Authors should clearly state that on Pg 6 line 4 (The studied cases also indicate that rainfall intensity cannot be ignored) they mean hourly or sub-hourly rain intensity.

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8. Tables 2, 3 and 6: I suggest to use a different format for the date of the events  
YYYY-MM-day/days

9. Table 3: avoid to repeat max rainfall for all columns

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