Review of the paper "Flash flood occurrence and relation to the rainfall hazard in a highly urbanized area" submitted to NHESS by K. Papagiannaki, K. Lagouvardos, V. Kotroni, and A. Bezes

General Comments

The article deals with a goal of great current interest, such as the impact of flash floods in a highly urbanized area like the Attica prefecture. The paper combines meteorological information like rainfall data from 28 stations and impact data obtained from the NOA database and the Fire Service operations. The aim of defining rainfall intensity thresholds for flood triggering at local level is one of the main objectives of the research community working on the interdisciplinary subject of the flash floods characterization and impacts. The paper merits be published after minor changes

The Introduction shows an updated state of the art in the matter. In the Data Base section it would be useful to clarify the final criteria to select the flash flood events and the final number of analysed events: in line 15 (p. 3125) you say that 48 flash flood events affected the selected area, but in line 29, you say that all the events with more than 10 daily operations have been selected. The section relative to Methodological issues should be improved, mainly the explanation concerning the division into sub-regions (why do you not use the different catchments as sub-regions?) and some readjustments in the last two paragraphs of the section. Section 4.1 could take into account that Fire Service operations are related not only with the rainfall intensity but also with the exposure and vulnerability of each sub-area: it would be interesting to see how these facts affect the correlation.

Specific comments

P. 3120, l.12-14. I would recommend a little modification of the sentence "It is shown that the quality of the produced thresholds depends on the distribution and of the rain gauges that cover each specified geographical area of the Attica region." Rainfall thresholds can depend on the previous wet conditions of the soil, or the changes in the catchment, but they cannot depend on the observation system. You could say the "estimated thresholds", and justify this dependence

P. 3121, l.18-19. You can substitute the sentence "The study of Barberia et al" by "This study"

P. 3123, l.17. I wouldn't consider topographic features as a part of the vulnerability. Attending the different criteria to define vulnerability I would recommend you to introduce the definition that you have decided to use.

P. 3123, l.23. Two paragraphs before it appears the same sentence "The target area of this study is the most urbanized and densely populated department of the prefecture of Attica". I would remove one of them.

P. 3125, l.15. You say here that 48 flash flood events affected the target area, but in the previous page you say that 91 FF affected Attica. In order to avoid any confusion I suggest to show in Figure 1, the limits of the Attica Region and the target area.

P.3127, l.8. How do you calculate maximum precipitation? Is it the average of all the raingagues in each sub-region? The absolute maximum? Which time intervals do you use: 5-min, hourly, daily? You say that you correlate it with Fire Service operations, but at which scale do you have and use this information? Daily? For the entire event? Some information about it is in lines 29-33, but it would be better to reorganize the section: a paragraph referred to data and calculation of Maximum Precipitation, another about rainfall thresholds and a third one about the correlations with Fire Service operations and their limitations.

P.3129, l. 1-4. You have already said the same in a previous paragraph.

P.3131, l. 28.- P.3132, l. 1-3. Probably it would be better if the raingauges were located in the corresponding catchment for which runoff/flash flood is estimated.

P.3132, l.22-24. As you say, it is not strange that the rainfall intensity threshold in some very urbanized areas would be above than in other regions with fewer inhabitants. Barrera-Escoda and Llasat (2015) also show how the rainfall threshold associated to flash floods in Barcelona has decreased along the time for the last two centuries due to the improvement of the drainage systems and the creation of pluvial reservoirs.

P.3133, l.27. What are the rainfall thresholds for flash flood triggering in the selected areas that you would propose to consider in an early warning system?

Figure 1. You could reduce the region presented in the figure and increase the size of the numbers and the corresponding stations. I am afraid it won't be clear for the readers

Figure 3 has not legend explaining the colours meaning.

Figure 7 is so much little and it is not possible to distinguish the legends. You should numerate each graph.