Review of flood alert thresholds based on the socioeconomic impact of catastrophic events in the souteastern Spain

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The southeastern coast of the Iberian Peninsula is composed of 40 municipalities with a total surface of 6,700 km2 where live 2,043,491inhabitants (Census of Population and Housing, 2011). This coastal area has experienced a huge population increase between 1960 and 2011 thanks to the boom housing sector and the tourism development model of "sun and beach". A significant evidence of this situation is the fact that during this period, the population has increased around 182%, while the number of houses about 667%. In that context, a huge increase on exposure to flooding has taken place in this area climatically characterized by a big variability in rainfalls and frequent stormy episodes upper to 330 mm in less than 24 h.

In accordance with the above mentioned, despite the expensive investments in prevention and protection against risk of flooding, economic damages caused by torrential rains still experience an increasing trend. In this research project have been identified over 150 floods events in the study area through a journalistic sources consultation between 1960 and 2013. Each event has been classified according to several criterias: economic sector affected, the impact level (low, medium or high) and the intensity of rainfall.

The final impact value of the gathered episodes is highly correlated with the intensity of rainfall (Pearson 0.75) what encourage us to propose a new thresholds alert system based on the socioeconomic impacts and not only on the commonly used weather variables.

Thus, new alert thresholds are recommended according to affected economic sector (infrastructure, agriculture, trade, etc) and the expected damage level. In this way, it would be possible to establish early warning systems better adapted to the economic, social and environmental realities of each territory.