Geophysical Research Abstracts
Vol. 18, EGU2016-7184, 2016
EGU General Assembly 2016

Improving the analysis of social component of flash-floods risk assessment: Application to urban areas of Castilla y León (Spain)

Estefanía Aroca Jimenez (1), Jose Maria Bodoque del Pozo (1), Juan Antonio Garcia Martin (2), and Andres Diez Herrero (3)

(1) Castilla-La Mancha University, Dept. of Mining and Geological Engineering, Toledo, Spain, (2) Castilla-La Mancha University, Dept. of Business Management, Talavera de la Reina, Spain, (3) Geological Survey of Spain, Madrid, Spain

The increasing evidence of anthropogenic climate change, the respective intensification of extreme events as well as the increase in human exposure to natural hazards and their vulnerability show that the enhancement of strategies on how to reduce disaster risk and promote adaptation to extreme events is critical to increase resilience. Growing economic losses, high numbers of casualties and the disruption of livelihoods in various places of the world, at an even higher rate than the increase of magnitude and frequency of extreme events, underline that the vulnerability of societies exposed is a key aspect to be considered. Social vulnerability characterizes the predisposition of society to be afflicted by hazards such as floods, being flash floods one of the hazards with the greatest capacity to generate risk. Despite its importance, social vulnerability is often a neglected aspect of traditional risk assessments which mainly focus on economic and structural measures.

The aim of this research is to identify those social characteristics which render people vulnerable to flash flood hazards, and consider whether these characteristics are identifiable as local patterns at regional level. The result of this task is a Social Susceptibility Index (SSI) based on susceptibility profiles of the population per township. These profiles are obtained by Hierarchical Segmentation and Latent Class Analysis of demographic and socio-economic information provided by different public organisms. By adding exposure information to SSI, a Social and Infraestructure Flood Vulnerability Index (SIFVI) is created.

The methodology proposed here is implemented in the region of Castilla y León (94,226 km2). Townships that are included in this study meet two requirements: i) city centres are affected by an area where potential significant flash-flood risk exists (i.e. villages are crossed by rivers with a longitudinal slope higher than 0.01); ii) city centres are affected by an area with low or exceptional probability of flooding (as provided by Directive 2007/60/EC of 23 october 2007 on the assessment and management of flood risks) acording with the preliminary assessment of flood risk made by water authorities.

This analysis of social vulnerability to flash floods means an advance in relation to disaster risk reduction allowing for grouping urban areas with similar resilience. With regard to the above, strengthening of resilience is one of the most important foundation of risk mitigation.