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Analysis of flood hazard perception in the municipality of Tavernes Blanques (Valencia, Spain). Its role in risk assessment

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ARTICLE SECTION

Analysis of flood hazard perception in the municipality of Tavernes Blanques (Valencia, Spain). Its role in risk assessment

Abstract: The Valencian Region is home to numerous small basins of torrential dynamics where floods can affect urban areas. The high occupancy of these areas and the low risk perception by the population contribute to increase vulnerability, with the hazard being a greater risk for human groups. The present study deals with the analysis of the perception of the risk of flooding by the population of Tavernes Blanques (Valencia), a municipality catalogued as having a high risk of flooding by the AVSRE. A survey was carried out on the population living in the municipality, the results of which showed a low perception of the risk and a general lack of knowledge about risk management strategies, showing little concern on the part of the population. This is related to the decrease of the current risk in the municipality of Tavernes Blanques as a result of the channeling of the final section of the Barranc del Carraixet. Based on the final results, some proposals for improvement will be made, such as: informative campaigns to raise awareness among the population and the drawing up of a Municipal Action Plan to deal with the flood risk.

Key words: Risk perception, Flood risk, Tavernes Blanques, Carraixet.

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IDEAS CLAVE / HIGHLIGHTS / IDEES CLAU

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| <ol style="list-style-type: none">1. Las acciones técnicas y los estudios científicos subestiman la importancia de la vulnerabilidad, desatendiendo el papel de los aspectos personales y sociales en la gestión del riesgo de inundación.2. La percepción real del riesgo de inundación por parte de la población es baja y no está sensibilizada respecto a las estrategias para hacer frente al peligro y reducir el riesgo,3. En Tavernes Blanques se debería tener una mayor sensibilización, ya que las obras y el paso del tiempo no eximen al municipio del riesgo ni el peligro de una inundación. | <ol style="list-style-type: none">1. Technical actions and scientific studies underestimate the importance of vulnerability, leaving unattended the role played by personal and social aspects in flood risk management.2. The actual perception of flood risk by the population is low and they are not aware of strategies to cope with the hazard and reduce the risk.3. In Tavernes Blanques there should be greater awareness, as the works and the passage of time do not exempt the municipality from the risk and danger of flooding. | <ol style="list-style-type: none">1. Les accions tècniques i els estudis científics subestimen la importància de la vulnerabilitat, deixant desatès el paper que juguen els aspectes personals i socials en la gestió de el risc d'inundació.2. La percepció real de el risc d'inundació per part de la població és baixa i no està sensibilitzada respecte a les estratègies per fer front al perill i reduir el risc.3. A Tavernes Blanques s'hauria de tenir una major sensibilització, ja que les obres i el pas de el temps no eximeixen el municipi de el risc ni de el perill d'una inundació. |
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EXTENDED ABSTRACT¹

The increasing interaction between human beings and the environment means that there is not only the danger associated with an adverse natural phenomenon, but also the risk that it may affect people. Risk differs mainly from threat or danger due to its social character (Campos-Vargas et al., 2015).

The anthropic actions are the ones that condition if a phenomenon becomes a disaster, which is why Hewitt (1983) postulates that the study of risk should focus on the analysis of the social, political and economic causes that turn a natural phenomenon into a disaster (Campos-Vargas et al., 2015).

The great increase in vulnerability in the last few years is due to an increase in urbanization and to a decreased awareness of the dangers associated with greater physical exposure to natural phenomena (Rico et al., 2010). Therefore, the study of social vulnerability must also take into account the perception of risk by the population.

The main objective of this study is the analysis of the perception of flood risk by the population of a Valencian municipality, Tavernes Blanques, located in the Carraixet hydrographic basin and categorized by the AVSRE of the Generalitat Valenciana as a municipality with High Flood Risk.

An analysis of the hazard cartography developed by official authorities has been carried out in order to determine which are the most vulnerable areas of the municipality, and a survey has been made among the population of Tavernes Blanques in order to know what the degree of knowledge is, not only on the risk of flooding, but also in order to detect possible areas of public action to improve the social response to flood episodes.

The Valencian Region is home to numerous small basins with sporadic circulation and torrential dynamics, where the occurrence of floods when there is heavy precipitation may affect anthropic constructions that are located near and on the channels. The fact that most of the time they do not harbor water in their channel is taken by the population as a possibility of occupying these areas (Camarasa and Soriano, 2008).

Among these basins is the Barranc del Carraixet, a Mediterranean riverbed that starts at an altitude of 750 meters to the west of the province of Valencia and flows north of the city of Valencia into the Mediterranean Sea. This basin forms a littoral flood plain at its river mouth (Camarasa et al., 2008).

This study is focused on the municipality of Tavernes Blanques, located in the province of Valencia, in the final sector of the Barranco del Carraixet basin, south of its channel and near its river mouth, in the flood plain (Camarasa, 2016).

An important aspect to consider the risk in the municipality are the geomorphological forms on which it is settle: the northern part is located on the dike while the southern area is located on the plain, becoming an accumulation area where the water is directed in case of overflow.

Due to this, Tavernes Blanques was declared as a municipality with a high risk of flooding in PATRICOVA (2003). Although the subsequent review in 2015 removed the risk in the municipality, despite the fact that the Generalitat Valenciana does consider Tavernes Blanques with High Risk of Flooding (Special Plan against Floods).

¹ Traducción exclusiva de los autores / Authors' exclusive translation.

An analysis of the flood hazard made by the Generalitat Valenciana and by the Ministry for the Ecological Transition and the Demographic Challenge is carried out. The hazard cartography is analyzed and the conclusions show that it is only the PATRICOVA (Generalitat Valenciana) which currently includes the risk of flooding in the southwestern part of the municipality.

According to Camarasa and Soriano (2008), Tavernes Blanques is a municipality of “low hazard and high vulnerability”. The municipality’s development linked to the city of Valencia has caused it to perform a residential function, generating an increase in vulnerability at night and on holidays, and therefore making the risk also greater during those periods. Residential areas such as Tavernes Blanques register an 18% increase in vulnerability during night hours (Camarasa et al., 2008).

One of the most common methods to accomplish perception studies is surveys. A survey was carried out for a population over 16 years of age of 7,636 people, to know the perception of the population of Tavernes Blanques on the risk of flooding.

The final sample size was 145 people, which represents a sampling error of 8 %. The survey consists of 30 questions divided into four blocks or sections - A, B, C, and D -. The respondents were both men and women, within an age range of 16 to 100, although the minimum age was 17 and the maximum was 94. The treatment of the surveys was made with the SPSS program of IBM.

The analysis of the results show a general ignorance of the risk of flooding in the municipality (71.7 % do not know the risk). However, people older than 50 years and habitual residents are more aware of the risk. The youngest citizens (under 28) and those with the most advanced ages (over 60) are the ones who are most familiar with, have heard of or remember past flood episodes.

Despite not having PAM, Tavernes does have a Municipal Territorial Plan for Emergencies, in which various risks and emergencies are considered. Moreover, only 18.6 % of the surveyed population believe that Tavernes Blanques has a Municipal Action Plan (PAM).

Regarding whether or not they know PATRICOVA, 87.6 % do not know it and 12.4 % do. In addition, it is the youngest (16 to 29 years old) who know the most about the Plan (6.9 %), although those who do not know it predominate in all age groups.

Among those surveyed, it is young people who believe the most that risk increases over time. More than half of those surveyed would be willing to participate in workshops and activities related to flood risk prevention. The results of the survey show that the main activities considered to cause increased risk are the modification of the river’s course and the increase in urban construction.

PATRICOVA and MITECO establish that Tavernes Blanques does not have flood risk, contrary to the AVSRE's categorization, which defines it as a “municipality with High Risk”. This diversity of consideration regarding risk and danger depending on the source being consulted implies a conflict, which is why coordination between sources would be necessary.

Despite the channeling in the final section of the Barranco del Carraixet, it cannot be said that the risk has been removed.

Furthermore, it can always be beneficial to carry out educational and awareness campaigns for the local population, although always in a non-alarmist way. If this was made all residents would have the opportunity to be aware of the risk, to be able to face

it in case of a flood episode, and as a consequence, avoid possible damage to a mostly uninformed population. This is intended to introduce resilience in the population, that is, adaptation to the risk situation of the municipality.

Tavernes Blanques is a municipality that is highly integrated in the Valencian Metropolitan Area, with a strong link to the city - due to the proximity between both cities and the dynamics and flows of the residence-work population -, so it would be positive to establish a consensual plan between the city of Valencia, Tavernes Blanques and other municipalities belonging to the Metropolitan Area that may also be affected by floods.