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ENVIRONMENTAL ANALYSIS OF FLOOD RISK IN URBAN PLANNING: A CASE STUDY IN LAS QUEMADILLAS, CÓRDOBA, SPAIN

Antonio Miguel Martínez-Graña^{*}, Celeste Gago

Geology Department. External Geodynamics Area, Science Faculty, University of Salamanca, Plaza Merced s/n. (37008)-Salamanca

Abstract

This paper presents a mapping procedure for determining the environmental impact of flooding in spatial planning. This procedure is applied to a section of the Guadalquivir River in the Quemadillas sector of Córdoba, southern Spain, where flood risks are of great importance because of improper riverside planning and the absence of prevention measures. We performed a comprehensive environmental analysis in conjunction with hydrological and hydraulic modelling using GIS techniques, allowing us to evaluate the flood hazard phenomena and the environmental impact based on the vulnerability and exposure of human activities. Hec-Ras application is implemented in GIS with GeoHecRas and we simulated flooding processes different flows for return period of 2, 100 and 500 years. Three-dimensional models are made for flood analysis and isobath and isotach maps. These low-cost maps are effective in the prevention and mitigation of flood risks, which makes them useful in the early stages of urban planning.

Key words: environmental impacts, environmental planning, flood risk, risk mapping, urban planning

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^{*}Author to whom all correspondence should be addressed: e-mail: amgranna@usal.es; Phone: +34 923294496; Fax: +34 923294514