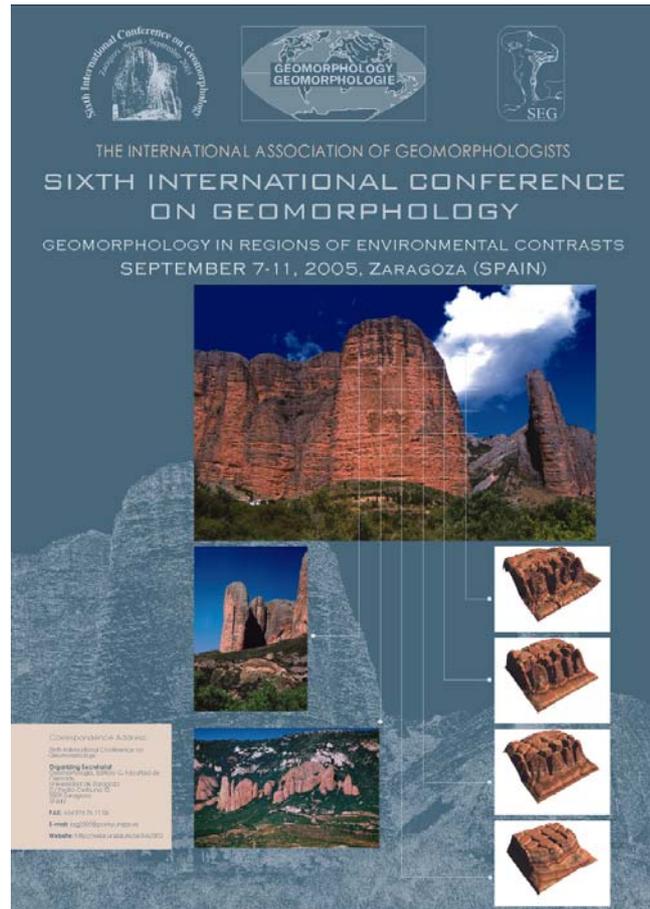


6th INTERNATIONAL CONFERENCE ON GEOMORPHOLOGY

Zaragoza, September 7-11, 2005



Abstracts volume

Editors:

Francisco Gutiérrez, Mateo Gutiérrez, Gloria Desir,
Jesús Guerrero, Pedro Lucha, Cinta Marín, José María García-Ruiz



Upper Pleistocene palaeofloods in the Duratón River gorge (Central Spain)

A. DÍEZ-HERRERO ^{(1)*}, G. BENITO ⁽²⁾, N. PORAT ⁽³⁾ and I. GUTIÉRREZ-PÉREZ ⁽⁴⁾

⁽¹⁾ Geological Hazards Unit, Spanish Geological Survey (IGME), Madrid, Spain

⁽²⁾ Centro de Ciencias Medioambientales, CSIC, Madrid, Spain

⁽³⁾ Geological Survey of Israel, Jerusalem, Israel

⁽⁴⁾ Association of Amateur Mineralogists (ASAM), Segovia, Spain

*corresponding author e-mail: andres.diez@igme.es

In the Duratón River gorge (593 km²), a detailed sedimentological analysis of an alcove filled with slackwater flood deposits (SWD) allowed the identification of eleven flood units. These sand units show parallel lamination and climbing ripples migrating upstream. The stratigraphic breaks are well marked by limestone clasts falling from the alcove roof. Two sand samples (bottom and top layers of the SWD) have been dated using the optically stimulated luminescence (OSL) method, showing minimum ages of 97±6 and 72±5 ky BP, respectively. According to our 1-D step-backwater calculations, using the present geometry, a minimum discharge of 3570 m³s⁻¹ is required to reach the base of the alcove. In contrast, the maximum discharge recorded in the Duratón River in the last 73 years is only 171.7 m³s⁻¹. Three possible interpretations can be envisioned: (1) the canyon geometry have substantially changed due to channel incision; (2) Pleistocene floods were generated in a different flood regime during the oxygen isotopic stage 5 (e.g. a combination of snowmelt and rainfall) and, (3) multiple catastrophic floods associated to natural dambreaks (proglacial lakes or landslide dam failure) were produced at its headwaters in the Sistema Central Mountains.

Keywords: Palaeofloods; OSL dating; Upper Pleistocene; Duratón River; Spain

★★★★★★★

The palaeohydrological record of historical floods at the Puerta del Vado of Toledo (Tajo River Basin, Central Spain)

A. DÍEZ-HERRERO ^{(1)*}, G. BENITO ⁽²⁾ and A. RUIZ-TABOADA ⁽³⁾

⁽¹⁾ Dep. of Geological Hazards, Spanish Geological Survey (IGME), Madrid, Spain

⁽²⁾ Centro de Ciencias Medioambientales, CSIC, Madrid, Spain

⁽³⁾ Estudio de Arqueología, Toledo, Spain

*corresponding author e-mail: andres.diez@igme.es

Recent archaeological diggings in the Toledo's historic-wall foundations have discovered an old medieval gate (12th Century), known as 'Puerta del Vado' in documentary sources, buried nine metres underneath. The geoarchaeological filling contains alternating layers of ceramic sherds (pottery wastes) and sandy-silty deposits, ranging since 11th to 19th Centuries. A detailed sedimentological analysis of these deposits allows interpreting them as slack-water palaeoflood sediments. Each depositional sequence begins with a gravel basal level overlaid by a sandy layer with flow structures (parallel lamination and ripples), and upper fine drapes of silt and clay. At least fifteen historical flood events, corresponding to the main overflowings of the Tajo River, have been identified and dated using the ceramic typologies. The palaeodischarge estimation was carried out through a 1-D hydraulic modelling, using HEC-RAS software, from a detailed present-day topography (using a kinematic differential GPS and an electronic total station) and channel bottom survey (using an echo-sound device). The minimum water surface profile for the lower palaeoflood deposit corresponds to a 1,100 m³s⁻¹ discharge. The inclusion of these non-systematic flow data has improved the flood frequency analysis for the Tajo River in Toledo.

Keywords: Historical floods; Geoarchaeology; Tajo River; Toledo; Spain

FORMAS DE REFERIR BIBLIOGRÁFICAMENTE LOS ABSTRACTS DE ESTA PÁGINA

DÍEZ-HERRERO A.; BENITO, G.; PORAT, N. & GUTIÉRREZ-PÉREZ, I. (2005). Upper Pleistocene palaeofloods in the Duratón River gorge (Central Spain). In: F. Gutiérrez, M. Gutiérrez, G. Desir, J. Guerrero, P. Lucha, C. Martín, J.M. García-Ruiz (Eds.), *Abstracts Volume, Sixth Intenational Conference on Geomorphology*. Fluvial Geomorphology and Palaeohydrology, pag. 113. Zaragoza (Spain) September 7-11, IAG-SEG-UZAR, D.L. Z-2.162/2005.

DÍEZ-HERRERO A.; BENITO & RUIZ-TABOADA, A. (2005). The paleohydrological record of historical floods at the Puerta del Vado of Toledo (Tajo River Basin, Central Spain). In: F. Gutiérrez, M. Gutiérrez, G. Desir, J. Guerrero, P. Lucha, C. Martín, J.M. García-Ruiz (Eds.), *Abstracts Volume, Sixth Intenational Conference on Geomorphology*. Fluvial Geomorphology and Palaeohydrology, pag. 113. Zaragoza (Spain) September 7-11, IAG-SEG-UZAR, D.L. Z-2.162/2005.