



## **The Holocene palaeoflood record from Spain: Evidence for changing flood magnitude and frequency related to climatic variability**

V.R. Thorndycraft, G. Benito

Institute of Natural Resources, Consejo Superior de Investigaciones Científicas, Spain

(varyl@ccma.csic.es / Phone: +34-91-7452500)

During the last decade there has been increasing interest in applying palaeoflood hydrology (the reconstruction of past flood magnitude and frequency using geomorphological evidence) to flood risk case studies in Spain. One outcome of this research is an increasing amount of information concerning the variability of flood magnitude and frequency during the Holocene. Holocene palaeofloods provide both a proxy record of climatic variability and discharge data regarding individual floods that occurred in the past. The palaeoflood chronology has been determined from 48 radiocarbon dates of samples taken from individual flood units from rivers across Spain. From these dates a number of periods of increased flood frequency and magnitude can be identified, namely: 10,855-10,230; 9530-8780; 2880-2430; 975-790; and 520-265 cal. yr BP. These phases can be compared with other proxy palaeoclimate records, for example, Bond's North Atlantic drift ice record. This indicates that major Holocene flooding coincided with cold climate phases during 9530-9280, 2880-2430 and 520-265 cal. yr BP; a cooling phase at 10,855-10,230 cal. BP; and warming phases at 9030-8780 and 975-790 cal. yr BP. Over the last millennium the palaeoflood chronology can also be compared to the documentary flood record, including information allowing meteorological reconstructions of individual past flood events. The potential for this type of data to be used in calibrating GCMs modelling extreme events will be discussed.