

International Conference

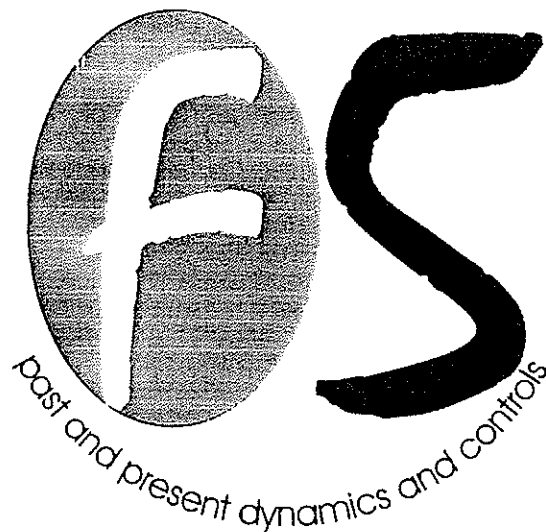
The Fluvial System
– Past and present dynamics and controls

May 16 - 22, 2005
Bonn, Germany

The Department of Geography
of the
Rheinische Friedrich-Wilhelms-University of Bonn

Abstracts

(Oral and poster presentations)



INTERNATIONAL CONFERENCE



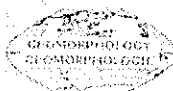
INQUA - GLOCOPH



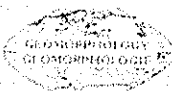
INQUA - FLAG

LUCIFS

IGBP - LUCIFS



IAG
working group on large rivers



IAG
working group on hydrology
and geomorphology of bedrock
rivers



IAHS



IAHS - ICCE



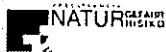
FgHW



DEUQUA



DGfG
AK Geomorphologie



DGfG
AK Naturgefahren

Deutscher Arbeitskreis für
Hydrologie im VGDH

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Joint conference of

- GLOCOPH – INQUA subcommission on Global Continental Palaeohydrology
- FLAG – INQUA subcommission Fluvial Archives Group
- LUCIFS - IGBP research activity Land Use and Climate Impacts on Fluvial Systems during the period of agriculture
- IAG – working group on large rivers
- IAG – working group on hydrology and geomorphology of bedrock rivers
- IAHS - International Association of Hydrological Sciences (German branch)
- IAHS – International Commission on Continental Erosion ICCE
- FgHW - German working group on hydrological sciences (DWA)
- DEUQUA – German union for Quaternary research.
- AK Geomorphologie - German working group on geomorphology (DGfG and IAG)
- AK Naturgefahren und Naturrisiken – German working group on natural hazards and risks (DGfG)
- AK Hydrologie - German working group on hydrology (VGDH).

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PALAEOFLOOD HYDROLOGY AND DAM SAFETY IN SPAIN

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Spanish regulations on dam safety recommend the estimation of a return period of 1000 years for the Design Flood and of 10,000 for the Safety Check Flood. The criteria used for the calculations are based on Flood Frequency Analysis (FFA) from gauge record data or on the Probable Maximum Flood (PMF) which is the hypothetical maximum of rainfall turned into runoff. The short gauge records afford little support for the FFA and for the hypothetical PMF, which in addition to the absence of an associated probability, limits the utility of these indices for risk-based dam safety decisions. Palaeoflood techniques are a means of directly assessing the probability of extreme floods and testing the validity of the PMF-based models. In this paper, a palaeoflood record was applied to a case study of the Guadalentín River, at a study reach upstream of the Valdeinfierno reservoir (372 km²), which has a spillway capacity of 550 m³ s⁻¹ (the design flood). In addition to the palaeoflood information, available historical flood data was collected. The palaeoflood, historical and gauge record data were combined for the FFA, using existing methods for the fitting of distribution functions, such as the maximum likelihood method. Palaeoflood analysis provides a discharge of 2350 m³ s⁻¹ for the design flood (1000 yr return period), and 3450 m³ s⁻¹ for the safety check flood (10,000 yr return period). The discharge estimated by the PMF is 5786 m³ s⁻¹, showing an overestimation of this empirical method.