



**Euromediterranean Network of
Experimental and Representative Basins**
18th Biennial Conference ERB 2022, Portoferraio,
Elba Island (Italy), 07-10 June 2022



Book of Abstracts

Index

ERB MEDAL AWARD	2
SESSION 1: HYDROLOGICAL AND ECOYDROLOGICAL MONITORING TECHNIQUES	3
SESSION 2: HYDROLOGICAL AND ECOYDROLOGICAL MODELLING	29
SESSION 3: ENVIRONMENTAL TRACERS IN HYDROLOGICAL AND ECOHYDROLOGICAL STUDIES	47
SESSION 4: EVAPOTRANSPIRATION AND DROUGHT	63
SESSION 5: EROSION AND SEDIMENT TRANSPORT.....	77
ERB2022 ATTENDANCE	84
ORGANIZING COMMITTEE	86
PARTICIPANTS.....	87
AKNOWLEDGMENTS	91

Seasonal streamflow response in a Mediterranean catchment with abandoned agricultural terraces

Gonzalo Fernández-Olloqui², N. Lana-Renault^{1*}, J.A. Llorente¹, P. Ruiz-Flaño¹, J. Arnáez¹

¹Área de Geografía, Departamento de Ciencias Humanas, Universidad de La Rioja, Logroño, Spain

²Departamento de Geografía y Ordenación del Territorio, Universidad de Zaragoza, Zaragoza, Spain

*Corresponding author: noemi-solange.lana-renault@unirioja.es

Abstract

Agricultural terraces have been built in mountain regions worldwide in order to provide a larger surface for cultivation, improve water availability and reduce soil erosion, as they favour infiltration and reduce runoff. Their construction substantially alters the dynamics of the hillslope hydrology. In the Mediterranean region, many valleys were occupied by terrace cultivation; however, during the XXth century, rural population decline resulted in the abandonment of agricultural practices and the maintenance of the terraced fields. The aim of this study is to analyze the seasonality of the hydrological response of an environment characterized by abandoned agricultural terraces. For this purpose, a small catchment (1.9 km²) was monitored in 2012 in the north-western Iberian ranges (Spain), largely occupied by abandoned terraces, which are currently covered with sparse grass and shrubs. Annual rainfall in the area is 450±150 mm, with two clear rainy seasons, autumn and spring. The equipment installed in the catchment registers continuously meteorological data and streamflow discharge at the outlet of the catchment. Here we present the results of the hydrological response at the flood event scale of 7 hydrological years (from 2012-13 to 2018-19). Event runoff coefficient (RC) was moderate (mean RC<0.10), with higher values occurring in winter and spring, which occasionally could reach >0.30. These two seasons registered the larger number of floods. Floods were rarely recorded in autumn and summer. However, autumn could register high RC associated to large rainfall events. Summer rainfall events with high intensity were not able to produce high RC nor high peakflows. Higher peakflows were mainly registered in winter and spring and were mostly related to rainfall amount. Catchment response was on average relatively slow (mean time response >8h) and flood events presented long duration (mean duration > 2 days), except in summer when they lasted on average < 15h and response time was shorter (mean < 5h).

Keywords: streamflow response; seasonality; land abandonment, agricultural terraces, Mediterranean mountains