

INFORMATION ABOUT THE PERSON FILLING THE FORM	
Name and family name	<i>Pilar Llorens</i>
Research organization	<i>CSIC – Institute of Environmental Assessment and Water Research (IDAEA)</i>
Position in the organization	<i>Researcher</i>
Country	<i>Spain</i>
E-mail	<i>pilar.llorens@idaea.csic.es</i>
EXPERIMENTAL SITE ¹	
Name of the site	<i>Cuencas de Investigación de Vallcebre</i> <i>Vallcebre Research Catchments</i> https://sites.google.com/site/surfacehydrologyerosioncsic/home
Location of the site	<i>Spain</i> <i>Vallcebre</i> <i>42°12'N, 1°49'E</i>
Start date	<i>1989</i>
Characteristics of the forest ecosystem where it is located	<i>Altitude of 1100–1700 ma.s.l.</i> <u>Climate:</u> <i>Sub-Mediterranean climate, with a mean annual precipitation of 862 mm, showing a high inter-annual variability. The mean annual temperature is 9 °C, and the annual potential evapotranspiration of 823 mm.</i> <u>Vegetation:</u> <i>Potential vegetation in the area corresponds to the Buxosempervirentis – Quercetum pubescentis association, although most of the land was terraced and deforested for cultivation in the past, and then progressively abandoned during the second half of the 20th century. The present landscape is mainly a mosaic of mesophilous grasslands of the Aphyllantion type and patches of P. sylvestris L., which colonized old agricultural terraces after their abandonment and now covers 60% of the area.</i> <u>Soil characteristics</u> <i>Silt loam and silty clay loam soils.</i> <i>As a consequence of terracing, soil depth varies greatly, ranging from 0.5 to 3m, being thinner in the inner part of the terraces.</i>
Keywords	<i>Mediterranean Mountain, Surface Hydrology, Forest Hydrology, Water balance.</i>
Scientific characteristics	<i>The main scientific objectives are: 1) the study of hydrological processes, in terms of the paths and exchanges suffered by precipitation since it arrives at the land surface until it goes out from the study area (hydrographic basin) and 2) the study of associated erosion processes. The main scientific target is the study of biophysical, hydrological and sediment processes in relationship with environmental changes.</i> <i>The subtopics objectives are:</i> <i>1. Rainfall interception and evapotranspiration: The main objective of this sub-line is to improve the understanding of processes at the interface between hydrology and terrestrial ecology, in particular the spatial and temporal interactions between vegetation and the hydrological cycle.</i> <i>2. Runoff processes and hydrological modelling: The main objective of this sub-line is to improve the current knowledge about rainfall-runoff dynamics and runoff generation processes in Mediterranean</i>

¹ Note: This information could be published in the webpage of FORESTERRA.

environments. Through a multi-disciplinary and multi scale approach, research is focused on the characterisation and understanding of hydrological responses and processes, as well as on their modelling.

3. Erosion and sediment dynamics: This sub-line is primarily committed with the study of erosion processes in badland (intensely eroded) landscapes as well as the spatial and temporal patterns of suspended sediment transfer in small and mid-sized basins.

4. Hydrology and water management: The purpose of this sub-line is to investigate the aspects of the surface hydrology necessary for improving the scientific soundness of water management.

Interest for users:

The Vallcebre research catchments operate since 1989. There is a continuous and complete data base of meteorological and hydrometrical data available, as well as forest hydrological data in representative plots (see technical characteristics).

A 20-years continuous data base of meteorological and hydrometrical data capturing the high inter/intra annual variability of the Mediterranean climate.

The last research projects in the frame of which the experimental site is used are 2 projects funding by the Spanish authorities:

- MONTES: Los montes españoles y el cambio global: amenazas y oportunidades. Consolider-Ingenio (CSD2008-00040). http://www.creaf.uab.es/montes_eng/

- RespHiMed. Aproximaciones combinadas para el estudio de la estacionalidad de la respuesta hidrológica en un ambiente mediterráneo en un contexto de cambio global (CGL2010-18374).

<https://sites.google.com/site/resphimedprojectwebsite/RespHiMed-Project-Website>

And a EU project :

- MIRAGE. Mediterranean Intermittent River Management (FP7-ENV-211732)

http://cordis.europa.eu/projects/rcn/89399_en.html

Technical characteristics

Infrastructure and equipment at the Vallcebre Research catchments	
Plot Scale	
2	Plots, one in a <i>Pinus sylvestris</i> Stand and the other in a <i>Quercus pubescens</i> Stand, with automatic monitoring of rainfall partitioning that consists on: 1 automatic rain recorder (Bulk rainfall) 20 automatic rain recorders for measuring throughfall 7 Stemflow rings connected to tipping buckets.
2	Meteorological towers (15 and 18m) above the forest plots measuring Net radiation, air temperature and relative humidity and wind speed and direction
2	Automatic TDR100-Campbell systems for measuring soil moisture (with 64 probes each one).
Catchment scale (0.6- 4.2km ²)	
3	Gauging stations with automatic recording of discharge and sediment transport (ultrasonic and infrared sensors), equipped with 5 automatic water samplers.
1	Automatic Weather Station (Global and Net radiation, Air temperature and relative humidity, wind speed and direction, precipitation).
7	Rain recorders spatially distributed.
1	Rain recorder equipped with an automatic rain sampler.
15	Automatic piezometers spatially distributed.
10	Suction lysimeters spatially distributed.
3	Soil profiles (0-90cm deep), spatially distributed, equipped with TDR sensors for measuring automatically soil moisture.
6	Soil profiles (0-80 cm depth), spatially distributed, equipped with TDR sensors for measuring manually soil moisture.
1	Tektronix TDR device for measuring soil moisture.

Measured parameter at the Vallcebre Research catchments	
2 forest plots (<i>P. sylvestris</i> and <i>Q. pubescens</i>)	
<ul style="list-style-type: none"> - Bulk rainfall - Throughfall - Stemflow - Trees transpiration - Soil moisture - Litterfall - Forest parameters (DBH, height, age, ...) - Net radiation (above the canopy) - Air temperature (above the canopy) - Relative humidity (above the canopy) - Wind speed (above the canopy) - Wind direction (Above the canopy) 	
Catchment scale (0.6- 4.2km ²)	
<ul style="list-style-type: none"> - Bulk rainfall - Weather variables (Global and Net radiation, Air temperature and relative humidity, wind speed and direction) - Soil moisture (spatially distributed) - Piezometric levels (spatially distributed) - Water discharge (nested catchments) 	
<p><u>Sampling:</u></p> <ul style="list-style-type: none"> - Rainfall chemical and isotopic composition - Suspended sediment at the gauging stations - Dissolved sediment at the gauging stations - Water isotopic composition of runoff, soil water and phreatic water 	

Fig 1. Map of the Vallcebre research catchments, showing locations of the main instruments and the localisation of the experimental forest plots (Vallcebre Map.jpg).

Fig 2. Pictures showing a general view of the Vallcebre Research catchments, a gauging station and examples of the instrumentation in the experimental forest plots. Photos: J. Latron. (Vallcebre Photos.jpg)

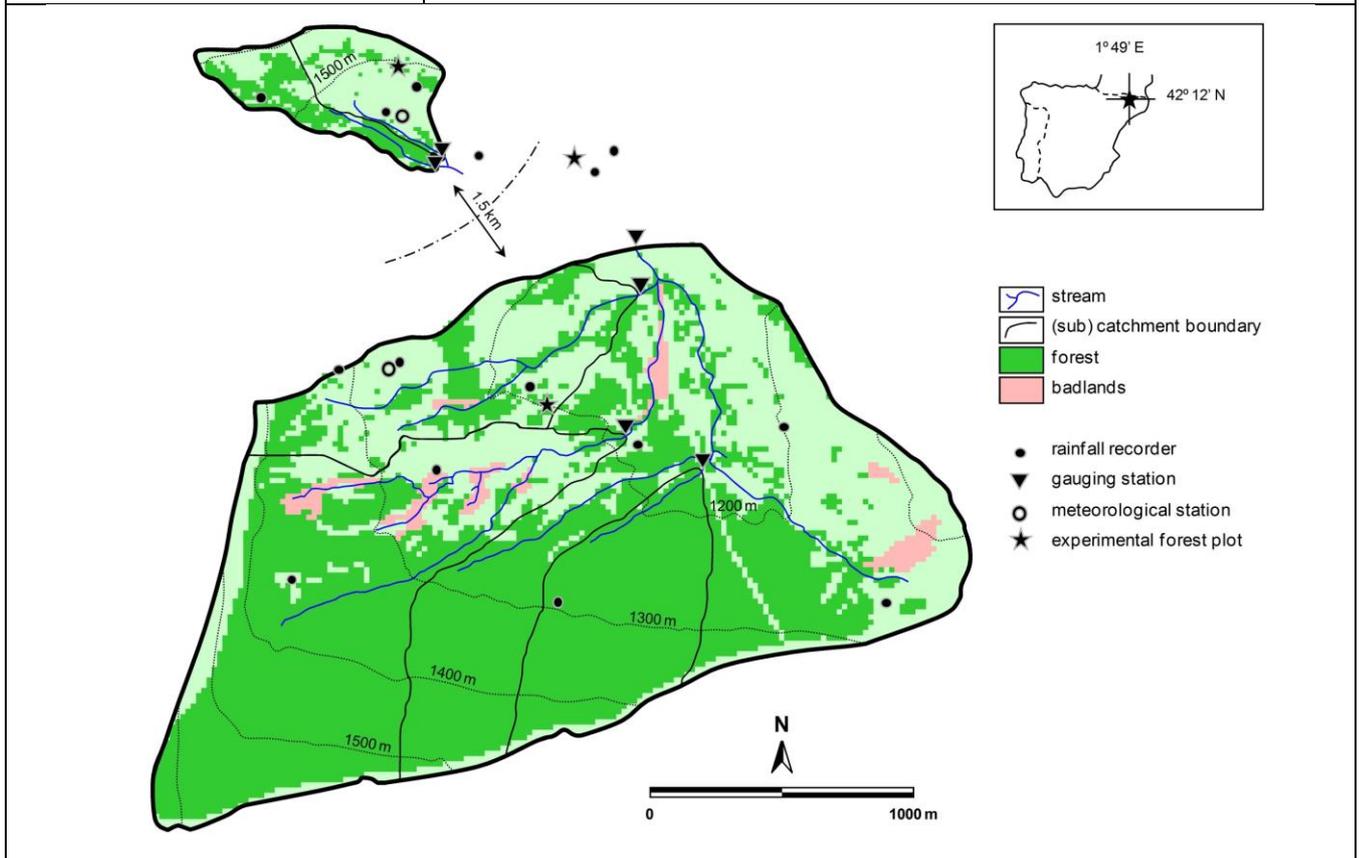
SCIENTISTS AND/OR TECHNICIANS IN CHARGE OF THE INFRASTRUCTURE

Principal investigator	<i>Pilar Llorens</i>
One additional line per person	

ADMINISTRATIVE INFORMATION

Availability for participating in mutual measurements	<i>Yes, the Research catchments and forest plots are available for external participants' research. Contact: pilar.llorens@idaea.csic.es</i>
	<i>The conditions of use will be determined in each specific case.</i>
Availability for accessing the data collected	<i>Yes, the data collected are available. Contact: pilar.llorens@idaea.csic.es</i>
	<i>The conditions of use will be determined in each specific case.</i>

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Institution that manages the site	<p>Institut de Diagnosi Ambiental i Estudis de l'Aigua (IDAEA) - CSIC Institute of Environmental Assessment and Water Research (IDAEA) - CSIC http://www.idaea.csic.es/</p>
Institution that manages the data	<p>Institut de Diagnosi Ambiental i Estudis de l'Aigua (IDAEA) - CSIC Institute of Environmental Assessment and Water Research (IDAEA) - CSIC http://www.idaea.csic.es/</p>
Is the site participating in a national or international Network?	<p>- Euromediterranean Network of Experimental and Representative Basins (ERB) - Red de Estaciones Experimentales de Seguimiento y Evaluación de la Erosión y la Desertificación (RESEL) del Ministerio de Agricultura, Alimentación y Medio Ambiente. (Network of Experimental Stations for Monitoring and Assessment of Erosion and Desertification (RESEL) from the Ministry of Agriculture, Food and Environment).</p> <p>- http://www.ih.savba.sk/ihp/friend5/erb7.htm - http://www.magrama.gob.es/ca/biodiversidad/temas/desertificacion-y-restauracion-forestal/lucha-contra-la-desertificacion/lch_resel.aspx</p>
Is the site open for transnational collaboration?	<p>Yes. The conditions of use will be determined in each specific case.</p>





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