

Research interests

I am a dryland eco-geomorphologist with a strong emphasis on applied research. My work is devoted to the integration of multidisciplinary knowledge derived from the soil, ecological, hydrological and geomorphological disciplines for the study of landscape dynamics in the context of ecosystem stability, land degradation and ecosystem restoration.

My basic scientific enquires are broadly focused on the study of the role of landform-soil-plant interactions and erosive systems in structuring Mediterranean and other dryland ecosystems. I apply a wide array of tools (ground-based field observation and experimentation, remote-sensing field monitoring, lab work, and mathematical modelling) at multiple scales (from the pedon, plot and hillslope scales to broader landscape, catchment and regional scales) for the analysis and characterization of the structure and dynamics of vegetation (e.g. structure and production, plant ecophysiology), soils (e.g. soil formation, soil physical structure, soil geochemistry and biological activity) and land surface hydrological/geomorphological processes (e.g. runoff, soil erosion, soil moisture, water and sediment redistribution).

I have participated in a broad variety of research projects and grants at different research centers (University of Alcalá, CIFOR-INIA, IDAEA-CSIC, CIDE, Spain; Texas A&M University, USA, The University of Newcastle, Australia; Durham University, UK) that have contributed to expand my experience over a broad range of landscapes, spanning woodland systems and reclaimed mining areas in the Mediterranean region, arid and semi-arid Australian landscapes, and desert ecosystems in SW USA.

Education

PhD: Environmental Sciences (*cum laude*). Department of Ecology, University of Alcalá (Spain), March 2009.

Master's Degree (Advanced Studies Diploma): Global Change and Sustainable Development. Department of Ecology, University of Alcalá (Spain), February 2005.

Undergraduate Degree: B.Sc. in Environmental Sciences, obtained *with honours* (Premio Extraordinario de Licenciatura). University of Alcalá (Spain), June 2001.

Experience

Juan de la Cierva-Incorporación Research Fellow (2017-2019). Institute of Environmental Assessment and Water Research, Spanish Research Council (IDAEA-CSIC), Barcelona, Spain. Department of Geosciences.

Visiting Research Fellow (Aug 2017). The University of Newcastle, Callaghan (NSW), Australia. School of Engineering, Discipline of Civil, Surveying and Environmental Engineering.

Marie Skłodowska-Curie (Beatriu de Pinós) Research Fellow (2015-2017). Institute of Environmental Assessment and Water Research, Spanish Research Council (IDAEA-CSIC), Barcelona, Spain. Department of Geosciences.

Marie Curie Research Fellow (2013-2015). Durham University, Durham, UK. Department of Geography, Area of Physical Geography.

Postdoctoral Fellow (2012-13). University of Alcalá, Alcalá de Henares, Spain. Department of Life Sciences, Area of Ecology.

Postdoctoral Research Associate (2010-2011). The University of Newcastle, Callaghan (NSW), Australia. School of Engineering, Discipline of Civil, Surveying and Environmental Engineering.

Postdoctoral Research Associate (2009). National Institute for Agricultural and Food Research and Technology (INIA), Madrid, Spain. Forest Research Centre (CIFOR).

Visiting PhD Fellow (Oct-Dec 2007). Texas A&M University, College Station (TX), USA. Department of Ecosystem Science and Management (Wilcox Ecohydrology Lab).

Ph.D. Fellow (2005-08). University of Alcalá, Alcalá de Henares, Spain. Department of Ecology.

M.Res. Fellow (2003-04). University of Alcalá, Alcalá de Henares, Spain. Department of Ecology

General indicators of research activity and quality of scientific production

- ✓ Total publication record: 32 per-reviewed international papers (55% and 25% as first and second/last author, respectively), 7 book chapters and over 70 conference presentations.
- ✓ SCI papers in first and second/third quartile: 25 Q1 papers, 5 Q2/Q3 papers
- ✓ H index (September 2020): 13 (WoS), 14 (Scopus), 17 (Google Scholar).
- ✓ Total citations (September 2020): 683 (WoS), 791 (Scopus), 1066 (Google Scholar).
- ✓ Citations per year in the last three years: 120 (WoS), 140 (Scopus), 170 (Google Scholar).
- ✓ Supervised MSc/PhD theses: 2 MSc/MRes finalized in 2017 and 2019, 1 MSc in progress, 1 PhD in progress.
- ✓ Research income (personal grants/fellowships): over €400,000, including the Marie Curie IEF (FP7-PEOPLE-IEF), Beatriu de Pinós (H2020-MSC-COFUND) and Juan de la Cierva Incorporación programmes.
- ✓ International research experience (total 4 years and 4 months abroad Spain): Texas A&M University, USA (2007, 3 months); The University of Newcastle, Australia (2010-12, 2 years; 2017, 1 month) and Durham University, UK (2013-15, 2 years).
- ✓ Editor of *Hydrology and Earth System Science* and evaluator of project proposals for the Czech and British research systems, and the European Commission.

Technical skills

- ✓ Field and lab methods for the analysis of vegetation dynamics, including field monitoring of seedling emergence, plant growth and production, plant physiology (water potential), as well as soil seed bank assessment and plant monitoring under controlled (greenhouse, growth chamber) conditions.
- ✓ Advanced methods for the study of the soil chemistry (e.g., organic matter, nutrient contents, pH, etc.), soil physical structure (e.g., texture, size distribution and stability of soil aggregates) and soil biological activity (soil microbial biomass, basal respiration, soil enzyme activities).
- ✓ Experimental monitoring of surface processes (i.e., water infiltration, runoff production, soil moisture, rainfall partitioning, soil erosion, sediment yield) at different scales, including the use of TDR/FDR soil profiles, small-scale rainfall simulations, runoff/erosion plots of different sizes (up to the hillslope scale), plot-scale set-up of throughfall, stemflow and rainfall interception measurements, gauging station-based catchment monitoring of runoff and sediment fluxes (e.g., pressure sensors, turbidimeters, ultrasound devices, sequential samplers of suspended sediments), and fallout radionuclide (^{137}Cs , $^{210}\text{Pb}_{\text{ex}}$) applications for the study of soil/sediment redistribution patterns.
- ✓ Advanced GIS/Remote Sensing data processing: handling LiDAR, photogrammetric and other satellite information (e.g., ASTER, SRTM, MODIS, Landsat TM/ETM/LDCM, Sentinel2, IKONOS and QuickBird platforms) for the characterization of the dynamics of vegetation, landscape hydro-geomorphological structure and soil organization along the local, catchment, landscape and regional scales, by applying specialized remote sensing and GIS software/tools (e.g., SAGA, QGIS, GRASS, ERDAS Imagine) and code programming (R environment) for massive data handling.
- ✓ Advanced statistical analysis and mathematical modelling of vegetation dynamics, surface processes (runoff, soil erosion) and their interactions using specialized software (e.g., R, Maple, Statistica, PCord).

Language skills

	Speaking	Reading	Writing
Spanish		mother tongue	
English	C1	C1	C1
Catalan	C1	C1	C1

Contact information

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