

MOOC COURSE

Towards integrated landscape management: developing tools for adapting to change

2023-2024

Module 0. Teaching staff



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José Barquín Ortiz

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PhD in River Ecology from Massey University, New Zealand (2004), Ramón y Cajal Researcher at the University of Cantabria (2011-2016) and previously Juan de la Cierva researcher (2009-2011). I am currently a Professor at the University of Cantabria and the principal researcher of the Continental Ecology team at the Institute of Environmental Hydraulics of the University of Cantabria (2008-Present). I teach in the Master of Integrated Management of Water Systems at the University of Cantabria (2005-present). My research activity has focused on disciplines such as environmental hydraulics, eco-hydrology, environmental assessment and river ecology. This activity has focused on the production of basic knowledge on biophysical interrelationships in fluvial systems and on the development of methodologies and tools that make possible the transfer of knowledge from these scientific advances to the most common practices in water resources management. As a direct consequence of this activity, I have produced more than 75 articles in SCI journals, 3 chapters in books and participated in more than 90 oral presentations at scientific congresses. Likewise, I have participated in 7 research projects of the National Plan, in 8 European research projects and in more than 90 projects related to knowledge transfer.

During this period, I have supervised 7 doctoral theses and I am currently supervising another 5. I have also been the supervisor of 25 master theses and I have participated as a reviewer of numerous articles in 18 journals-SCI (PNAS, Journal of Ecohydraulics, River Research and Applications, Freshwater Science, Hydrobiologia, Fundamental and Applied Limnology, Water Resources Management, STOTEN, Environmental Management, Canadian Journal of Fisheries and Aquatic Sciences, among others). I am associate editor of the journal Limnetica of the Iberian Association of Limnology (IF: 1,789), Aquatic Sciences (IF: 2.744) and Frontiers in Environmental Science (IF: 4.6).

Mario Álvarez Cabria

Researcher

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Mario is graduated in Biology by the University of León (2003) and obtained his Ph.D. in the University of Cantabria in 2010 with the highest distinction, "Sobresaliente Cum Laude."

Mario is member of IHCantabria since 2006, where his work focuses on the study of river invertebrate communities and the relationships that these communities establish with the aquatic environment, applying this knowledge to improve the assessment and management of river ecosystems. Additionally, he has participated in numerous research projects and scientific publications aimed at advancing our understanding of the interactions between terrestrial and aquatic environments, as well as specific ecological patterns and dynamics in these ecosystems.

Notably, Mario has been actively involved in recent years in the Picos de Europa National Park, contributing to the development of a long-term monitoring network for aquatic ecosystems within this area. He has also played a role in establishing the LTSER-Picos de Europa node, which is part of the LTER-Europe network (Long Term Ecological Research; <https://lter-spain.csic.es/parque-nacional-de-picos-de-europa/>).

Mario has published 21 scientific articles in indexed international journals, with an average impact factor of 6.6, and has authored of various book chapters. He has participated in 9 competitive R&D projects and 37 non-competitive projects for private sector companies and public entities. Mario is the technical lead for the macroinvertebrates area at the IHCantabria. He is accredited by ENAC for the identification and semi-quantitative analysis of benthic macroinvertebrates (the 20 kicks method) and for calculating the METI and IBMWP indices.

Jose Manuel Álvarez Martínez
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Jose is a researcher in the Remote Sensing & Copernicus team of at the Environmental Hydraulics Institute 'IH Cantabria' of the University of Cantabria (Santander). He got a PhD in Ecology and Environmental Technology in the University of León (Spain), in collaboration with WUR (Wageningen University and Research Centre, Holland). Main research topics related, but not limited, to: 1] habitat (vegetation) mapping at various spatiotemporal scales with remote sensing and Copernicus services; 2] development of spatial ecology tools for the assessment of ecological niches and species/community distributions and dynamics; and 3] evaluating the effects of land use and cover (LULC) change on biodiversity patterns and ecosystem functioning across environmental gradients under the effects of Global Change.

Jose has done postdoc stages at outstanding Research Centers as the National Museum of Natural Sciences (CSIC, Madrid), the Autonomous University of Barcelona (CREAF, Spain), Doñana Biological Station (CSIC, Spain) or Centre National de la Recherche Scientifique (CNRS in Rennes, France). Teaching experience (Master's degree of Geoinformatics and Natural Risk Assessment of the University of León), coordination of technical works (PhD and MSc Thesis) and speaker at more than 50 workshops, seminars and national and international conferences related to new technologies applied to environmental studies. Participation in more than 40 research projects at the EU and national levels. Author of more than 50 book chapters, technical documents and scientific papers published and indexed in the SCI.

Amaia Angulo Rodeles

Researcher

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I am a freshwater ecologist with a PhD in Environmental Biology from the University of Navarra (2019). My thesis analyzed longitudinal river connectivity and the impact of dams in Iberian fish species with a main focus on Atlantic salmon. From 2020 I work as a postdoctoral researcher at the Instituto de Hidráulica Ambiental de la Universidad de Cantabria "IHCantabria", focusing on understanding the patterns and drivers of river ecosystem metabolism. My research at IHCantabria allowed me to investigate the interplay between physical, chemical, and biological components of rivers, providing critical insights into their functioning and resilience.

My main research interests are river ecosystem functioning and how it connects to river structure and the carbon cycle, as well as the impact of dams and other obstacles in river ecosystems and the dynamics of Atlantic salmon populations. I'm also interested in using ecological knowledge to better river ecosystem protection via integrated catchment management and Nature-based solutions. Since 2017 I have published seven peer reviewed articles in SJR-indexed journals, six of them as a first author, about river connectivity and trophic chains (h-index = 4, 53 total citations). I have worked in different national and international scientific projects related to river ecosystem function, river connectivity assessment and management in the face of global change. To communicate my work to the scientific community and society, I have attended many international scientific conferences, workshops, and stakeholder meetings.

Laura Concostrina Zubiri

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I am an ecologist focused on understanding the relationship between biodiversity and ecosystem functioning, and how this relationship is modulated by natural and human-driven environmental factors. I obtained my PhD in Natural Resource Conservation from the URJC. Later, I obtained two Postdoctoral Fellowship funded by the Marie Skłodowska-Curie Actions at the University of Lisboa (Portugal, 2014-2016) and the URJC (2018-2020) to better understand the role of functional traits as indicators of global change and as contributors to ecosystem functioning and services. Currently, I am working as a postdoctoral researcher in the Freshwater Ecosystems group at Instituto de Hidráulica Ambiental de la Universidad de Cantabria "IHCantabria" focused on evaluating the role of riparian zones in ecosystem functioning in the face of climate and land use change. My main research lines are i) Monitoring and assessment of the spatio-temporal dynamics of freshwater and riparian ecosystems, ii) Modelling ecosystem functions and processes associated to riparian zones, iii) Quantifying riparian ecosystem services and iv) Gaining scientific evidence on the effectiveness of Nature-based Solutions. Since 2008, I have authored 19 publications (13 as first author) in SJR-indexed journals (*h*-index = 11, 643 citations) in the fields of biodiversity, applied ecology and environmental sciences and in collaboration. I have participated in more than 20 research projects (5 as PI) related to biodiversity, ecosystem functioning and services, global change, habitat degradation and restoration, river ecology and Nature-Based Solutions. I have disseminated my work in more than 30 scientific congresses, workshops and national and international courses in the academic, social and industry sector.

Alejandra Goldenberg Vilar

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I am an aquatic ecologist with a strong background in the ecology of primary producers in freshwater ecosystems, specifically macrophytes and algae-diatoms. I completed my PhD at the Department of Aquatic Environmental Ecology (IBED-University of Amsterdam). My doctoral research focused on examining macro-ecological patterns within diatom communities and applying these patterns to enhance water quality assessments under the European Water Framework Directive. Following my PhD, I conducted a Postdoc at Utrecht University in the Palaeoecology – Physical Geography group. During this Postdoc, I developed diatom-based models for inferring salinity and tidal height, aiming to use these models as a tool for sea level reconstructions in the Wadden Sea (The Netherlands).

Throughout my years working with primary producers, I gained expertise as a taxonomist specializing in diatoms and macrophytes. I applied this knowledge by participating in consultancy activities for Spanish water authorities as part of routine water quality monitoring programs.

In 2018, I embarked on a research journey into environmental DNA (eDNA), a field that has been expanding over the past five years. Within this research area, I have acquired skills in molecular and bioinformatic techniques to process eDNA metabarcoding samples of aquatic organisms, ranging from microbial communities such as bacteria, protist, fungi to macrophytes, macroinvertebrates and fishes.

My research interests are primarily focused on investigating anthropogenic impacts, such as the effects of global change and river regulation, on riverine communities. Currently, I am engaged in research within the fields of limnology and hydrology, specifically in biodiversity and ecological indicators. This involves the application of molecular techniques such as metabarcoding to gain scientific insights into these research areas.

Alexia María González Ferreras
Researcher

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Alexia Maria González Ferreras is PhD in Coastal Engineering, Hydrobiology and Management of Aquatic Systems from the University of Cantabria (2019). Additionally, she holds a BSc in Environmental Sciences Environmental Sciences from the University of León (2010) and MSc in Environmental Management of Water Systems from the Universidad de Cantabria (2012). In 2014, she obtained a FPI predoctoral grant funded by the Spanish Ministry of Economy and Competitiveness to carry out her doctoral thesis at the Institute of Environmental Hydraulics of the University of Cantabria. During her predoctoral stage she was 4 months at the Laboratory of Ecohydrology (ECHO) at EPFL (Switzerland) through the pre-doctoral mobility grants for short stays in Spanish and foreign R&D centres. In 2021, she obtained a postdoctoral research grant from the FENIX Programme, financed by the Government of Cantabria (Spain) to carry out a 2-year research-stay at the University of Essex (UK). Currently she is a postdoctoral researcher in the Freshwater Ecosystems group in the Fundación Instituto de Hidráulica Ambiental de Cantabria.

Her research is focused on the study of spatial-temporal patterns of biophysical characteristics in river networks, connecting aquatic and adjacent terrestrial ecosystems, and the study of fish populations and communities. Her line of research arises from the integration of several areas of work developed by Dr. González-Ferreras throughout her professional career. Thus, her research has a multidisciplinary approach including fields as water and land management, ecology, ecohydrology or ecohydraulics. During her professional career, she has focused her activity on the production of scientific knowledge and on the transference of resources from these scientific advances to direct management and conservation practices for its contributions to society. As a direct consequence of her research activity, Dr. González-Ferreras (H-index:8; Scopus) has published 14 SCI articles (Q1=8) and 2 book chapter/scientific monographs, of which she is first author in 4 SCI articles (Q1=2). Her articles have a total of 184 citations (first author: 58 citations) by 168 documents (Scopus) and 254 citations in Google Scholar. She has participated in 42 contributions to national and international congresses and scientific dissemination events, being the first author (and speaker) in 11 oral presentations. During her career, she has also collaborated in a total of 20 research projects and 15 contracts of special relevance with private sector companies and/or public entities, both national and international. She is currently member of the British Ecological Society (BES), the Fisheries Society of the British Isles (FSBI), the Iberian Association of Limnology (AIL) and the Iberian Association of Ecology (SIBECOL).

Francisco J. Peñas Silva

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Francisco J. Peñas holds a PhD in Science and technology for the environmental management of hydrological systems (Universidad de Cantabria; 2014) and MSc in Integrated Management of Aquatic Systems (Universidad de Cantabria; 2008). Dr. Peñas had a postdoctoral position at the IHCantabria (2014-2017) and was granted a two-year postdoctoral fellowship by the national fund for the scientific and technological development of the Chilean Government (2017-2019). Currently Dr. Peñas is a postdoctoral researcher at the IHCantabria. His research focuses on key disciplines within the fields of environmental engineering, water resources and ecosystem management aiming to improve our understanding on the dynamics of river systems under natural and human-impacted conditions. Hence, he is very interested in gaining scientific knowledge needed to attain sustainable water resource management under the current context of global change, and in developing tools to transfer to common practices in the integrated catchment management.

Dr. Peñas has focused his research on how streamflow interacts with different ecosystem structural and functional elements and the ecosystems services that they provide. Within this context, he has participated in 18 competitive R&D projects funded by public entities, including four research international projects totalling >10M€ (plus one HORIZON-CLIMA to be started in 2023; 17 M€). Attending to the applied nature of the science conducted by the candidate and his interest in solving problems related to essential challenges for society, Dr. Peñas has participated in 18 non-competitive contracts with public and private entities to promote transfer of knowledge, methodologies and tools to water managers and stakeholders.

The result of this scientific activity can be summarized in the publication of 26 SCI papers (17 Q1, 12 first author; 14 open access; 359 citations; H-Index (scopus) = 12), 2 book chapters and over 40 presentations in national and international congress. In 2014 he was awarded the Outstanding Paper Award granted by the Water and Environmental Journal. He is a member of the Iberian Limnological Association and the FW BON. During his professional development, Dr. Peñas has also acquired experience lecturing and guiding new scientists. Teaching experience includes lecturing under- and postgraduates at the Faculty of Engineering of the UCSC (2017-2019) and has collaborated in several courses within the postgraduate program of the University of Cantabria. Dr. Peñas is currently supervising two doctoral theses on assessing the impacts of human-induced changes in river ecosystems (Zarauza R. and Hoang M.). He has also supervised 2 final degree projects and 4 master theses.

Ignacio Pérez Silos

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Dr. Ignacio Pérez-Silos is a dedicated postdoctoral researcher with affiliations to the Environmental Hydraulics Institute at the University of Cantabria. He earned his MSc degree in Environmental Management of Hydric Systems in 2015 and completed his PhD in Hydrobiology in 2022. His research is centre on exploring how biotic and abiotic flows between ecosystems determine the generation of ecosystem services, as well as how they could be enhanced through biodiversity management. As a freshwater ecologist, Dr. Ignacio Pérez-Silos specializes in studying the ecosystem services associated with the circulation of water through river catchments. His research adopts a comprehensive meta-ecosystem perspective, delving into the effects of diverse land cover types and landforms, with a particular emphasis on forest ecosystems and floodplains, on river ecosystems.

Since 2020 Dr. Ignacio Pérez-Silos have published eight peer reviewed articles in SJR-indexed journals (h-index = 4, 47 total citations) and one book chapter. He has worked in different national and international scientific projects related to river monitoring, ecosystem services modelling, and the development of conceptual frameworks for optimizing landscape management in the face of global change.

Cristina Prieto Sierra

Researcher

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Since 2017 I am a researcher at IHCantabria and currently collaborating with Univ. of Adelaide (UoA). My research focuses on improving streamflow predictions in gauged and ungauged catchments by generating scientific knowledge and engineering tools that will allow water agencies, policy makers and engineering companies to understand catchments behavior. These enhanced modelling capabilities provide the basis for informed decisions to address societal needs aligned with agenda 2030 via the Sustainable Development Goal (SDG) 6 and contributes to SDGs 3, 11, 12, 13 and 16.

I am an MSCE and an MSc in Integrated Water Resources and Coastal Zone Management (Univ. de Cantabria), and hold an international PhD in Hydrology (2014-2017) developed at IHCantabria, Imperial College London, and Univ. of Bristol, and partly at the National Centre of Atmospheric Research (USA). In 2020 I was awarded a FENIX grant for a 14-month postdoc at Eawag (Switzerland) where I also collaborated with UoA and ETHZürich. In 2021 I was awarded a follow up FENIX for a 10-month research collaboration at UoA.

My research led to 10 journal papers, including 6 publications in WRR (Q1,D1), 1 in the Special Issue (SI) Statistics in Hydrology in Water (Q1), 1 HSJ (Q1), 1 NHES (Q1), and 1 AGU's Eos Transactions report. WoS metrics indicate that my papers have on average more citations than 97% of papers of the same age in the same field. According to Scopus, I have 773 citations and my h-index is 7. This reflects my general emphasis on quality over quantity.

I engage actively in knowledge transfer projects at IHCantabria since 2008 in the fields of hydrology, flood modeling and analysis risks, in collaboration with water authorities (e.g. Basque Water Agency), nonprofit organizations (e.g. IDB), and industry (e.g. IDOM). These opportunities allow me to identify engineering gaps and societal needs, set directions for research and find additional collaborations. E.g., this motivated me to contribute as editor of 2 SI on pluvial and fluvial flood predictions, risk assessment and management in NHES journal (Q1) - 1 SI is finished, which led to 1 editorial paper in NHES (Q1) and 1 SI is ongoing; to take the role as IHCantabria coordinator of a MoU leading to collaboration on 2 book chapters in Wiley and 2 Lecture Notes in Networks and Systems (Springer); and to contribute together with many distinguished hydrologists on the paper "Twenty-three unsolved problems in hydrology" which was published in HSJ (Q1) and summarized contemporary challenges in my field of research. I am also co-leading the history of hydrological modeling working group in the history of hydrology IAHS initiative and I am guest editor of the Special Issue "History of Hydrology" in IAHS.

I also regularly present my work at major scientific conferences, 20 as lead author (9 EGU; 1 AGU, 4 JIA; 1 EWRA; 1 Frontiers of Uncertainty Quantification; 1 STAHY; 1 Zhydro, Zurich; 2 Information Theory workshops); and have been an invited speaker at several seminars (e.g., at

ICL, NCAR, Architectural Association in London, Univ. of Zürich and Eawag). I also co-organized, led and was lecture in 5 international schools/workshops on hydrological model calibration, uncertainty estimation and prediction, information theory and artificial intelligence.

I am active in several outreach and dissemination activities in the international hydrological community, e.g., I have co-convened 17 EGU sessions on (i) Advances in diagnostics, sensitivity and uncertainty analysis of EES models, (ii) Advances in pluvial and fluvial flood forecasting, assessment and flood risk management (iii) Bridging physical, analytical and information-theoretic approaches to system dynamics and predictability in Hydrology and EES.

I have chaired and being scientific committee at international conferences (EWRA, STAHY and IAHR) and I am member of the AGU technical committee on Hydrological Uncertainty. I am reviewer for leading scientific journals in hydrology (e.g., WRR, JoH, HESS, NHSS, EMS, NH, JHM, Ingeniería del Agua) revised Chilean National Research Projects, and was external reviewer of 2 PhD theses. I have also co-directed 2MSc theses. I led a 3-year project for the Basque Water Agency (2019-2022) which implemented ideas from my research line.

I initiated and am leading the research line “streamflow model predictions in gauged and ungauged catchments” at IHCantabria. One focus is improving streamflow predictions at hourly time scale. As part of this research line, I am collaborating with UoA in quantifying and reducing uncertainty in hourly predictions, and codirecting a PhD student on using deep learning models for improving hourly predictions in flashy catchments.

My broad research, consultancy, outreach and dissemination experience make me pursue the advance of scientific knowledge in hydrology and flow prediction, as well as strengthen collaborations with top international institutions and experts. These advances will in turn contribute strongly to tackling societal challenges associated with water resources.

Tamara Rodríguez Castillo

Researcher

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Tamara Rodríguez Castillo has a BSc in Environmental Sciences from Universidad de Alcalá (Spain) and a MSc in Environmental management of hydrological systems and a PhD in Sciences and Technologies for Environmental Management of Water Systems from Universidad de Cantabria (Spain). Her PhD thesis was based on the understanding of the temporal and spatial patterns of the ecosystem metabolism and carbon balances in freshwater ecosystems, doing a predoctoral stage at The University of Waikato (New Zealand). Currently, she works as a technologist in the Oceanography, Estuaries and Water Quality group at Instituto de Hidráulica Ambiental de la Universidad de Cantabria, known as "IHCantabria". Her primary focus involves the development and implementation of numerical tools and advanced statistics. These are used in conjunction with field and laboratory experiments to create innovative methodologies and solutions for addressing the impacts of both human activities and natural disturbances on aquatic environments (rivers, lakes, reservoirs, estuaries). She divides her work in internal research lines, the participation of different competitive R+D+i projects, and the development of private contracts with the administration and companies. Her main tasks are field campaigns development, laboratory samples analysis, statistical modelling, hydraulic and water quality numerical modelling (e.g., HEC-RAS, Delft3D, WASP) and numerical analysis of environmental data (e.g., R, Python, MATLAB, ArcGIS). She has published 8 indexed articles and one book chapter, and participated in 5 international congresses. She is member of the Iberian Association of Limnology (AIL), developing together with other young researchers several collaborative science projects.

Ana Silió Calzada

Researcher

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Ana Silió-Calzada holds a PhD in Environmental Sciences from the Pierre et Marie Curie University (Paris-VI, France). Specialist in remote sensing applied to aquatic systems, she is part of the Remote Sensing and Copernicus group of the Environmental Hydraulics Institute (IHCantabria), being the IHCantabria representative at Copernicus Academy and Relay forums.

After graduating in 1998 in Marine Sciences from Vigo University (Spain), she was admitted at the M.Sc. Earth and Space Sciences program from the York University (Canada), where she specialized in marine optics and airborne remote sensing, under the direction of Prof. John R. Miller and Prof. Robert Bukata. In 2002, she was recruited by the European Space Agency in the Earth Observation Department (ESA / ESRIN), first as a "Young Graduate Trainee" (2002-2003), and later within the "Staff Training program" (2003-2004). In 2004, the National Center for Space Studies (CNES, France) and ACRI-st awarded her a co-funded scholarship to carry out her doctoral studies in the Marine Optics and Remote Sensing department of the CNRS-Labóatoire d'Océanographie de Villefranche(LOV, France), under Dr. Annick Bricaud supervision. In 2008 she obtained her PhD with a thesis entitled "Estimation of new primary production in upwelling areas from multi-sensor satellite data: application to the Benguela system, and study of its seasonal and interannual variability". In 2009, she joined the Institute of Environmental Hydraulics (IHCantabria), where she has been working on the integration of remote sensing techniques in some of the main lines of research that are being developed within the Institute of Environmental Hydraulics. Her activity has mainly been focused on the monitoring of coastal morphodynamic evolution, as well as on the study of large freshwater ecosystems, expanding her field of research to optically complex ecosystems, addressing issues of water quality, resilience of the ecosystem and morphodynamics of bodies of water. In turn, she has also contributed to the design of the IHCantabria Spectral Laboratory, in which spectral signatures of different substrates are obtained under a controlled environment.

She has also directed 5 master's theses, being since 2013 a member of the Sentinel-3 Satellite Validation Group, and project reviewer of the NASA Postdoctoral Program (NPP).

Alberto Vélez Martín
Researcher

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I am an environmental scientist, passionate about the knowledge and conservation of nature. I have developed most of my professional career as a researcher in ecology and have gained extensive experience in the study of degraded and threatened ecosystems by human activity, their restoration and the conservation of biodiversity. Although I have worked several years in wetlands, I also have a special predilection for forest, river and mountain ecosystems.

I have a B.S. in Environmental Sciences (2001-2005) from Universidad de Huelva (Spain). Since then, I have received both predoctoral and postdoctoral fellowships and contracts funded by the Universidad de Huelva and other institutions for complementing my studies with 4 international research stays at the University of East Anglia (UK). I was awarded the European Doctor mention (2015) with the thesis titled “Study of the plant community after the ecological restoration of a transformed marsh in Doñana National Park”. I have also been involved in a project about the study of the ecological implications of the invasive alien grass *Spartina densiflora* in the Doñana tidal saltmarshes. In both projects, I carried out tasks such as experiment design (sowing, transplanting...), field monitoring and sampling (soil, plants), lab experiments (germination, seed bank), environmental characterisations (physicochemical parameters, elevation, hydroperiod...), GIS mapping (photointerpretation, analytical tools...), remote sensing use (Modis, Landsat images), LiDAR data processing and advanced multivariate analysis (species distribution models...). Ecological succession processes, especially those related to restoration pathways of native communities, and the definition of reference conditions in spatially and temporally heterogeneous landscapes have been widely covered in these studies.

Throughout my career I have continued training with advanced courses on ecology, statistics, GIS and other up-to-date analytical tools, gaining quite experience specially with ArcGIS, R language and state-of-the-art multivariate analysis techniques.

Recently (2022), I participated as a surveyor for the EMBAL project (European Monitoring of Biodiversity in Agricultural Landscapes) in France by carrying out vegetation and landscape elements characterisation and post-processing with QGIS.

Currently, (since 2022) I am working as a postdoctoral researcher in the Freshwater Ecosystems group at Environmental Hydraulics Institute (IHCantabria) from the Universidad de Cantabria focused on the use of GIS tools for the characterisation of vegetation diversity and ecosystem service modelling associated with terrestrial-aquatic in order to assess the delivery of benefits from investments in blue-green infrastructure networks (BGINs).

I have participated with 25 contributions in scientific conferences and published 13 articles, 5 of which are JCR indexed. I have also participated in university teaching in subjects related to ecology. I also worked as a science teacher in a secondary school (2015-2021), being involved in the development of environmental awareness tasks with young people.

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Edna Cabecinha

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Edna Cabecinha is an Assistant Professor at the University of Trás-os-Montes and Alto Douro (UTAD) in the Department of Biology and Environment. She completed her Ph.D. in Environmental Sciences in 2008 (UTAD), MSc in Environmental Technology in 2002 at the University of Minho (School of Engineering), and BSc in Biophysical Engineering in 1998 at the University of Évora. She is the Vice-director of the Doctoral College of UTAD, Course Director, and Member of the Academic and Executive Committee of the International Doctoral Program in Marine Science, Technology, and Management (Do*Mar). She was also Course Director of the MSc in Environmental Engineering (2013-2021), and BCs in Environmental Sciences at UTAD (2013-2021). Member of the Pedagogical Council of the School of Life and Environmental Sciences in UTAD (2013-2021). She is also Co-lead of the Nature-based Solutions Thematic Group of the Commission on Ecosystem Management of IUCN - International Union for Conservation of Nature. Member of the Ecosystem Services Partnership (ESP), ESP Working Group on Modelling ES, and Member of the International Council for Exploration of the Sea, ICES Working Group on Resilience and Marine Ecosystem Services (ICES WG RMES). Published 26 articles in ISI journals. Has 6 book chapters and 6 books. Has 1 patent. She has Supervised 1 Ph.D. thesis with success and has (6 ongoing). Supervised several MSc dissertations and BSc reports. Has received 2 awards. Participated at national and international levels, as Principal investigator in 3 projects and as a Researcher in more than 20 projects. Works in the area of Natural sciences with emphasis on Earth and Environmental Sciences: Landscape Management; Climate change; Ecological Modelling; Ecosystem restoration; Ecosystem services; Nature-based Solutions.

Rui Cortes
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Full Professor at the Forestry Department at the University of Trás-os-Montes e Alto Douro (UTAD), presently retired.

Previous Director of the Laboratory of Fluvial Ecology-UTAD

Lecturing subjects related to Aquatic Sciences, River Restoration, Riparian Ecology, Forest Ecology, Environmental Impact Assessment.

Member of the Research Center for Agro-Environmental Technologies (CITAB).

Area of scientific activity: Forest Sciences; Ecology and Management of Aquatic Ecosystems.

Monitorization of aquatic ecosystems, with special relevance to bio-indicators based on benthic fauna, fishes; Forest ecology and sustainable management. Management of afforested catchments. Development of hydromorphological survey systems; river rehabilitation; Ecology and restoration of riparian layers. Soil engineering techniques and erosion control. Environmental Impact Assessment.

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Andre Ribeiro da Fonseca is an Auxiliary Researcher in Universidade de Trás-os-Montes e Alto Douro. He is an integrated member of the Centre for Research and Agro-Environmental and Biological Technologies (CITAB UTAD). Published 33 articles in journals. Has 2 sections of books and 1 book. Organised 3 events. Co-supervised 1 PhD thesis. Co-supervised 3 MSc dissertations. Participates and/or participated as Invited Scientist Fellow in 1 project(s) and Researcher in 9 project(s). Works in the area(s) of Engineering and Technology with emphasis on Environmental Engineering, Engineering and Technology with emphasis on Chemical Engineering and Engineering and Technology with emphasis on Electrotechnical Engineering, Electronics and Informatics. In his professional activities interacted with 120 collaborators' co-authorship of scientific papers. In his curriculum, the most frequent terms in the context of scientific, technological and artistic-cultural output are climate change; Hydrology modelling; Risk assessment; Hydrology; climate change; water quality modelling; Geographic Information Systems; Pinch Technology; Python; Matlab; R; VBA.

Simone Varandas

Associate Professor

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Simone Varandas is an Associate Professor at the University of Trás-os-Montes and Alto Douro, School of Agricultural and Veterinary Sciences, Department of Forestry Sciences and Landscape Architecture, Portugal. She is an integrated member of the Center for Research and Agro-Environmental and Biological Technologies (CITAB UTAD), a collaborator of the Center for Research in Biodiversity and Resources Genetics (Biopolis-CIBIO), and a member of the Antimicrobials Unit, Biocides and Biofilms. (Co)Author of more than 90 international peer-reviewed articles. Her main research interest has been in aquatic ecosystem ecology, including a) ecology and conservation of aquatic species; b) biodiversity and functioning of aquatic and riverine ecosystems; c) environmental monitoring in surface waters with particular emphasis on benthic invertebrates, ichthyofauna, and habitat characterization; d) river basin management; e) extreme weather events; f) assessment of the environmental impact on aquatic ecosystems and definition of mitigating measures; g) environmental rehabilitation in aquatic ecosystems to promote biodiversity; h) ecophysiology of freshwater bivalves; i) exotic species; j) investigation of antibiotic resistance in aquatic ecosystems.

Université de Bretagne Occidentale

Denis Bailly

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PhD in Environment and Natural Resources Economics

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Coordinator of the Ocean University Initiative

Denis Bailly is a senior lecturer in economics at the University of Brest (UBO) and coordinator of the Ocean University Initiative. He conducts his research in AMURE (www.umr-amure.fr), Center for Law and Economics of the Sea, at the European Institute for Marine Studies (IUEM). He has been deputy director of AMURE until 2020. After an MSc in marine social sciences at the University of Kagoshima, Japan, he got his PhD in economics at the university of Rennes, France, in 1994. Before joining UBO, he worked at the Marine Economics Department of IFREMER. His main areas of research have been sustainable development of aquaculture, integrated coastal zone and watershed management, marine conservation and ecosystem services assessment. Since 2010 he is one of the national coordinators of the economic and social assessment for the EU Marine Strategy Framework Directive, initial assessment and updating every 6 years. He has also co-coordinated the marine and coastal report of the French Evaluation of Ecosystems and Ecosystem Services (EFESE) in 2016. Present research work is in the development of methodologies for participatory integrated assessment of socio-ecological systems and science-policy interface in relation to the agenda of international conventions. He coordinates the Ocean University Initiative (<https://ocean-univ.org>).

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Johanna Ballé-Béganton is a contract environmental scientist at the University of Brest (UBO). She conducts her research in AMURE (www.umr-amure.fr), Center for Law and Economics of the Sea, at the European Institute for Marine Studies (IUEM).

After an MsC in applied mathematics at the University of Paris IX Dauphine, France, she completed a PhD in Oceanology, Meteorology and Environment, at the University of Paris VI Jussieu, in 1998.

She has researched for almost 30 years a wide range of modelling approaches, developing numerical models, operational models and companion system models. These models have been developed in the context of international and European projects for environmental management.

Her main areas of research have been climate change, watershed hydrological management, microbiological contamination in fresh and marine waters, fisheries, and integrated coastal management.

Present research work is in the development of methodologies for stakeholder engagement in integrated participatory assessment of socio-ecological systems and science-management interfaces as well as the development of knowledge integration platforms.

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Thomas Houet

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Thomas Houet is a senior scientist at the National Center of Scientific research in France, affiliated to a research laboratory in Environmental Geography located in Rennes. He holds PhD (2006) and Habilitation (2015) theses in Geography applied in land change science. He has a strong expertise in land change modelling, participatory scenarios and remote sensing at fine scales. He has worked on various geographical contexts such as agricultural intensification, urbanization and mountain land abandonment and their related environmental issues. Since 2019, he is the joint-Director of the Long Term Socio-Ecological Research observatory (LTSER) “Zone Atelier Armorique” (<https://deims.org/31e67a47-5f15-40ad-9a72-f6f0ee4ecff6>) that is part of the European network eLTER. He has also developed and is responsible of a UAV scientific platform dedicated to UAV acquisition for ecological and environmental applications (<https://letg.cnrs.fr/article1262.html>).

Université de Rennes

Cendrine Mony

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Cendrine Mony is a full professor at the UMR ECOBIO at the University of Rennes, France. Her research focuses on community ecology with two main research axes. First one analyzes the effect of landscape structure on plant biodiversity, how plants disperse in landscapes and whether ecological connectivity promotes species conservation. Second one is developed in the framework of agroecology and analyzes the relationships between plants and microbes in order to better understand their consequences on soil fertility. She has published ~85 articles in top-journals in ecology (TREE, Micro iome, New phytologist, Journal of Ecology,...), and coordinate several research projects. She is leading a research group in landscape ecology at the ECOBIO lab, and is the codirector of the eLTER ZA Armorique. She was awarded in 2019 by the French Research Society of Ecology.

Basque Centre for Climate Change (BC3)

Stefano Balbi

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I'm an Ikerbasque research fellow at the Basque Centre for Climate Change (BC3) in sustainability science and adaptation to climate change with focus on coupled human-natural systems. My main works include the **analysis and modelling of ecosystem services** including environmental conservation issues, social equity, food security, risk of natural hazards and tourism/recreation/mobility dynamics. I'm actively involved in the management and development of the ARIES (ARtificial Intelligence for Ecosystem Services) project and the related k.LAB technology for integrated modelling. Since completing my **Master's in Environmental Economics**, I've been studying interactions between human and natural systems from a holistic perspective, in which theories and approaches from both social and environmental scientific practice are integrated to overcome disciplinary boundaries and provide more accurate representations of individual behaviors, spatial dependencies and temporal dynamics. This emphasis led me to pursue a **Ph.D. in Analysis and Governance of Sustainable Development** and to direct my interests towards cutting edge research in human geography, making use of computationally intensive, non-equilibrium methods to explore the complexity of social-ecological systems. To this end I frequently apply integrative and complexity embracing modelling methodologies such as **agent-based modelling** and semantic meta-modelling.