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AYUDAS RAMÓN Y CAJAL
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Turno de acceso general

Nombre: MUÑOZ ROJAS, MIRIAM
Referencia: RYC2020-029255-I
Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

Global environmental change impacts on soils and ecosystems and novel restoration strategies

Resumen de la Memoria:

My research aims to understand soil and ecosystem processes in natural and degraded landscapes, with a particular focus on soil-plant interactions, to improve ecological conservation and restoration in a context of global environmental change. I am also interested in developing and applying geo-tools, genomics, ecological and environmental technologies to enhance soil and ecosystem functions and ensure the provision of key ecosystem services.

After completing a Master in Environmental Sciences at Wageningen University in The Netherlands, and a Master in Innovation Management (University of Almeria), I obtained a Torres Quevedo (PTQ) contract in 2010 to undertake a PhD at the University of Seville (2010-2012). My PhD research focused on the analysis of global change effects on ecosystem processes and services in semi-arid and temperate ecosystems and the development of a licenced software CarboSOIL model for soil carbon sequestration assessment that has been applied in Spain, Italy, and Egypt.

In November 2013, I was appointed as Research Assistant Professor at the University of Australia and leader of the Soil Program within a multidisciplinary team in a large-scale research project funded by Industry partners, in collaboration with the Western Australian Government. My research during this period (2013-2018) focused on understanding the functioning of dryland ecosystems and particularly the mechanisms of the soil-plant system during their recovery. This research contributed to identifying the most suitable physicochemical and microbiological soil quality indicators in dryland ecosystems of Western Australia and set a benchmark for land restoration in these landscapes. These indicators have proved to be critical in the assessment of ecosystem recovery following natural disturbances (e.g. wildfire).

In 2018, I was awarded an Australian Research Council (ARC) DECRA Fellowship at the University of New South Wales (Australia), and in June 2019 I was promoted to Senior Lecturer. I lead an independent research group and my research is funded through national and international grants such as the Hermon Slade Foundation, for which I am Principal Investigator. Over the past three years, my research has focused on (i) understanding the effects of ecological and biological processes in plant-soil dynamics and (ii) developing native-sourced and soil microbial based inoculants and amendments for improving soil function in ecosystem conservation and restoration. The results of these studies have underlined the importance of soil microorganisms for conservation and restoration of natural ecosystems.

Moving forward, I am interested on extending my previous and current research by (i) investigating global environmental impacts and ecosystem degradation on plant-soil interactions and ecosystem functions, in particular soil carbon dynamics and soil biodiversity, (ii) evaluating the combined effects of climate and degradation on soil function and biodiversity and (ii) exploring novel approaches and techniques based on soil microbial resources for broad application in ecosystem restoration.

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Resumen del Currículum Vitae:

I hold a Master in Environmental Sciences from Wageningen University (Netherlands) and a PhD from the University of Seville, (2010-2012), funded by the Torres Quevedo Subprogram (MICINN-PTQ). Overall, I have 9 years of international experience in highly ranked research institutions, including 7.5 years holding research positions at Australian academic institutions (Curtin University, University of Western Australia, and University of New South Wales). I am currently employed as Senior Lecturer at the University of New South Wales (Sydney) where I lead my research group, supervising two postdoctoral research associates and six PhD students.

My research output includes 63 publications (49 in Scopus) with 1 book, 12 book chapters and 49 peer-review journal articles (43 in SCI journals, 31 in Q1 journals). I am first or last/senior author in 31 of my publications. My work accumulates the following citations: 1,133, h-index 22 (Scopus), 1,750, h-index 25 (Google Scholar).

I have obtained more than 1.5 million in funding as Principal Investigator (PI) or co-PI through highly competitive grants and participated in over 20 research projects in total (total funding over 5 million) funded by the Andalusian, Spanish, and Australian Governments, as well as the European Cooperation in Science and Technology (COST). My research funding includes the highly competitive Australian Research

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Council DECRA (10% success rate). In these projects, I have worked with international researchers and industry partners (mining and environmental sectors, e.g., BHP, Rio Tinto, Greening Australia, Grains Research and Development Corporation) and Australian Departments of Environment and Industry.

I coordinate the SOIL DarkDivNet global network (https://soildarkdivnet.weebly.com/), which includes 80 study sites across five continents with the participation of more than 100 scientists from numerous international groups. This network aims to advance knowledge about the soil s responses to global change and is part of a larger network (DarkDivNet). I am also part of other global networks such as SoilTemp, and international working groups, e.g. the Soil Organic Carbon Group at United Nations-FAO. I am a Committee Member of the European Geoscience Union (EGU) Soil System Division and have been convener and co-convener in 15 sessions and short courses in the EGU Annual Meetings since 2013 until present (8 years).

I am part of the Editorial Boards of prestigious scientific journals including Journal of Applied Ecology (British Ecological Society) (Associate Editor, since 2021) and Journal of Arid Environments (Elsevier) (Associate Editor, since 2019), among others. I have presented my research in more than 40 oral presentations in prestigious national and international conferences and have been invited to give 15 conference talks/ seminars. I have also been examiner/reviewer for 3 PhD and 4 Master theses, and reviewer for research grants for several international panels including the Australian Research Council, Israeli Ministry of Sciences and Technology, Belgium KU Leuven Impulse Council.

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Turno de acceso general

Nombre: BALLESTEROS CANOVAS, JUAN ANTONIO
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Título:

Anticipating hydrological-related disasters using botanical evidence: an innovative method to overcome the lack of baseline data

Resumen de la Memoria:

My research aims at understanding natural hazards in the context of Global Change. I combine evidence-based and modelling approaches to improve Disaster Risk Reduction (DRR) strategies. I defended my PhD in 2011 (summa cum laude; Extraordinary PhD Award UPM) at the Forest Engineering School (Polytechnique University of Madrid). As a postdoc (IGME, 2011-2013), I follow my research in Spain, but then I moved to Switzerland as postdoc (University of Bern, 2013-2015). I was appointed as Maître de Recherche in the Institute of Environmental Science (UNIversity of GEneva, 2015-2018). Since 2018, I hold an Adjoint scientific position in the UNIGE, where I am responsible for the DendroLab the facilities. During this period, my research has evolved from local to global studies, and expanded from the analysis of one process (floods) to integrated multi-processes, associated risks and climate-environmental conditions. I have merged different disciplines such as geomorphology, climatology and forestry, developing standard protocols to use botanical evidence to analyses past and recent flood events. In particular, I am reaching three complementary themes, namely (1) impact of hydrosphere in vegetation; (2) reconstruction of long-term hydrogeomorphic process; and, (3) understanding the linkages between extreme hydrogeomorphic events, climate and anthropogenic activities. I was involved in 17 international competitive projects (getting more than 1.1 Mio-euros as PI or co-PI) and lead/conducted ca. 20 field expeditions in remote mountain regions, such as Himalayas (Nepal, India), Central Asia (Kyrgyzstan), Caucasus (Russia, Georgia), Tatras (Poland), Lithuania, Alps (Austria, Switzerland, France), Japanese Alps, as well as central and south America (Mexico, Costa Rica, Guatemala, Colombian, Peru, Argentina). This experience has allowed me to build an intensive research network, which it is visible in my scientific production (tracked 2 of them above 5% of all research ever scored by Altimetric, and one more above 10%). I paid special attention to engage my research with different stakeholder, in order to transfer my results into national and international guidelines, such Global Assessment Report (UN, 2019), guidelines for the Colombian government, implementation of DRR in Indian Himalayas by Swiss Development and Cooperation Agency or Civil Protection Plans in Spain. My research trajectory got international recognition, as I was elected as scientific committee of the Tree-Ring Society (2013-2015) and lead the Flood Working Group of PAGES (2017-now). This recognition reveals my leadership position in the field, with clear implication for DRR and climate change science. Besides, my research is aligned with different Sustainable Development Goals, such SDGs 1, 6, 11, 13 and 15. Now, after having more than 8 year of international experience, I am highly motivated to initiate my research line "tree-ring and natural hazard" in Spain and hopefully set up a Laboratory in this topic. I hope, therefore, to follow my contribution on the understanding of hydrogeomorphic processes in a Global Change scenario, as basis for implementing reliable adaptation and mitigation strategies.
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Resumen del Currículum Vitae:

I completed my PhD (funded by the Spanish Geological Service, IGME) in 2011 at the Forest Engineering School (Polytechnique University of Madrid, UPM) on the use of botanical evidence to improve flood hazard and risk assessments (awarded as best PhD of that year by the UPM). I got a postdoc contract (IGME, 2011-2013) and moved to Switzerland to finalize my postdoc stage (University of Bern, 2013-2015). In 2015, I was appointed as Maître de Recherche (UNIversity of GEneva, 2015-2018). Since 2018, I hold an Adjoint Scientific position in the UNIGE, being responsible for the DendroLab installation. I published 83 SCI articles (94% in Q1; 10 currently in review), several of them in high-impact journals, such as Nature Geoscience, Nature Climate Change, Nature Communications, Nature Ecology and Evolution or Proceedings of the National Academy of Sciences. I published 4 books, 10 book chapters, 3 encyclopedia chapters and contributed with 68 communications in different conferences. I divulgated my research with 6 broad-audience journal articles, radio and TV interviews. My metrics are: Web of Science (h-index= 22, total citation= 1300), Scopus (23, 1571), Google Scholar (26, 2283). The scientific and social attention of two of my articles are among the top 5% of all research outputs ever scored by Altmetric; and one more is above the 10%. I was involved in 17 international and national projects from competitive calls, H2020, Spanish, Swiss and US Science Foundations. I received more than 1.1 Mio-euros as PI or co-PI from competitive calls and have a large experience on leading / conducting field expeditions in remote mountain region (ca. 20 expeditions during last years). My research has been transferred into international guidelines for Disaster Risk Management Assessment of the UN, (2019), and guidelines for the Colombian, Civil Protection Plans in Spain as well as the India government through Swiss Cooperation Programs. Being part of the scientific committee of the Tree-Ring Society (2013-2015) and leading the International Flood Working Group of PAGES (2017-now), has given me international recognition. I act on the Editorial board of 4 scientific journals and actively contributed as reviewer. I organized 9 scientific meetings. Furthermore, I have (i) teached Bachelor and Master courses (250 h), (ii) organized International Summer School (Spain-USA universities, 120h); (iii) given 6 invited lectures; and (iv) supervised 2 PhD (one more starting in 01/2021), 8 Master and 3 graduate projects. Overall, my CV shows a strong background of high-impact publications and a large experience in externally founded projects, as well as teaching in environmental courses. Besides, my CV

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clearly revealed a leadership position in the scientific community in the use of tree-rings to understand the occurrence of hydrogeomorphic events in mountain ecosystems. My research has clear implication for climate change science and disaster risk managements, and contribute to achieve the millennium goal by addressing different Sustainable Development Goals, such SDGs 1, 6, 11, 13 and 15.

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Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

Towards a better understanding of marine microbial functioning and nutrient budgets

Resumen de la Memoria:

My research is focused on marine planktonic microbial food webs structure and functioning. I investigate the role of different microbial communities in carbon cycling, paying special attention to phytoplankton and bacteria nutrient budgets, interactions and linkages in the context of global change. During my career I have evolved from the use of traditional methodologies to next-generation sequencing techniques and my work includes monitoring and experimental approaches. This allows me to test a wide variety of hypothesis in the field and in the lab with natural mixed populations and model-organisms cultures.

During my PhD I explored the role of nutrient inputs on shaping natural microbial communities metabolism and structure in the context of global change. For this I developed a novel enzymatic technique on microbial respiration and carried out innovative microcosm experiments, publishing 6 first author papers (Martínez-García et al 2009, 2010a,b,2012, 2013, 2015). I moved then my focus to the study of oligotrophic environments at University of Hawaii (2011-2014: Fulbright, CMORE, Moore Foundation) and at MIT (2013: Edventures-NSF) where I got introduced to genomics techniques while I continued my work on respiration and carbon budgets, publishing 4 first author papers (Martínez-García et al 2013, 2015, 2017, 2018). I moved to Linnaeus University to learn to work with bacterial model systems and also perform research on marine bacteria life strategies (2014-2016: Wenner-Gren Foundation, Marie Curie IEF), writting two book chapters and several papers (Martínez-García and Pinhaasi, 2018, 2019, Bunse et al 2019).

I moved back to University of Vigo in 2016 (Marie Curie-COFUND) where, building on my prior research on microplankton across different ecosystems and applying the different techniques learnt I have established a research line on the role of resources and biotic interactions on microbial functioning and nutrient utilization. I have built my own research group (1 postdoc, 4PhD students) so I am strongly involved in training and mentoring (Pontiller et al 2020, Martínez et al submitted, and several others in prep.). Since 2016 I couple my research with a full-time teaching work on marine ecology (degree, master, doctorate levels). In 2019, I was awarded a JIN 3-year project and my research has been recognized by university (UVigo Distinguished Researcher position) and regional government (Xunta de Galicia Distinguished Researcher position). I just started a 3 year project as PI (RETOS, 2019) and gained funding for a 4 year research project from Xunta de Galicia. Since 2016 I have been on two pregnancy/maternity leaves.

Since my first paper in 2009, I have published 34 articles and 2 book chapters (13 has myself or my PhD students as first author). Overall, my scientific experience has consolidated in the field of marine microbial ecology. I have developed a multifaceted experience portfolio, from physiology to genomics, and I have kept an excelled international collaboration network.

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Resumen del Currículum Vitae:

I conducted my PhD (2010, Cum Laude, Special Award, Univ. Vigo) on the effect of nutrient inputs on marine microplanktonic communities. During my PhD work, I developed a novel technique to measure microbial respiration and I used and innovative design that allowed me to show for the first time that in productive systems autotrophic communities may be limited by heterotrophic bacteria activity.

After my PhD I was awarded with 2 different postdoctoral fellowships (Fullbright and CMORE fellowships) as well as private funding (G.B. MooreFoundation, supervisor D. Karl) to work at CMORE-Univ. Hawaii where I published the first study on the annual cycle of size-fractionated microbial respiration at St. ALOHA. During this time I also investigated phytoplankton-derived organic matter utilization by bacteria and was awarded a project as PI (NSF-CMORE) to work at MIT-Boston in order to get introduced to next-generation sequencing techniques at Ed. Delong¿s lab. I later started my postdoctoral work (WennerGren and Marie Curie IEF fellowships) at J. Pinhassi lab (EMiS, Linnaeus Univ., Sweden). I led a "first of its kind" project investigating on functioning (metagenome) of bacteria populations with different life strategies from the BalticSea during a seasonal cycle. I acquired proficiency in working with model microorganisms and studied functional differences of model bacteria in culture. I came back to the Univ. Vigo through a MarieCurie COFUND fellowship in 2016 as PI of my own project and I worked also in two projects devoted to the study of microbial interactions and functional (metatrasncriptome) responses of natural marine microplankton to changing resource availability. In 2016 and 2018 I stopped my scientific career due to 2 pregnancy+maternity leaves. In 2019, I was simultaneously granted a JIN Project (devoted to investigate on nutrient remineralization patterns of bacterial communities) and a UVIGO Distinguished Researcher position, but unfortunately they werent compatible so I cancelled the former. In 2020 I have gained a project as PI (RETOS) devoted to the study of bacterioplankton functional groups and nutrient utilization and I have been selected as one of the 5 Galician Distinguished Researchers by Xunta de Galicia. In summary, I have worked in 19 international projects (6 granted as PI by NSF, Marie Curie, AEI-JIN, AEI-RETOS, Xunta de Galicia). Since my first paper in 2009, I have

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published 34 articles (33 in Q1 and 7 in D1) and 2 book chapters (13 has myself or my PhD students as first author). My H-index is 14 (WOS) and I have given >30 presentations in international meetings. I have served as reviewer for several scientific journals (e.g. PLOS ONE, Biogeosciences) and international funding agencies (e.g. Swiss National Science Foundation)

I work as a full-time teacher since 2016 (ANECA certification), I have mentored several students (3 BSc, 4 MSc) and I am strongly involved in outreach. I served as PhD committee and scientific advisory board (4 students). I currently supervise 4 PhD students and 1 postdoctoral scholar investigating on bacteria functioning by means of metatrasncriptomic analysis. In the next years I plan to develop two investigations devoted to the role of different bacterioplankton functional groups in nutrient cycles in the ocean and the effect of biotic interactions in microbial functioning and structure.

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Nombre: SANMARTIN SANCHEZ, PATRICIA
Referencia: RYC2020-029987-I
Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

NOVEL APPROACHES IN ENVIRONMENTAL TECHNOLOGIES FOR STONE HERITAGE CONSERVATION

Resumen de la Memoria:

Patricia Sanmartín has a BSc in Chemistry (2004. Thesis title: Analysis and characterization of materials used in contemporary art. Score: 9.3/10 outstanding), an MSc in Environmental and Natural Resources (2007. Thesis title: Evaluation of two consolidation treatments applied to granite and sandstone rocks. Score: 10/10 cum laude) and a PhD in Soil Science (2012. Dissertation title: Colour quantification in the study of biofilm formation on granite stone in historical and artistic heritage. Score: Apto cum laude, with European Doctor Mention, Extraordinary PhD Award - with the highest score -, and PhD Thesis Prize in Science and Technology awarded by the County Council of Pontevedra).

The major research interests of P. Sanmartín (http://webspersoais.usc.es/persoais/patricia.sanmartin/index.html) include stone cultural heritage microbiology, biofilm at the stone/air interface, bioreceptivity and the development of innovative environmental technologies aimed at managing, assessing and mitigating natural and human impacts on stone heritage. She has mainly conducted her research activities at the University of Santiago de Compostela (USC) and also at the universities of Alicante (2008 and 2009), Milan (2010, 2012 and 2015), Harvard (2013-2014) and Oxford (2019).

She started working and conducting research in the field of cultural heritage conservation science with contemporary art materials, with a Research Collaboration Grant, MEC (2003-2004), and then with materials for protecting and consolidating heritage stone, as a Third-Cycle Research Fellow, Xunta de Galicia (2006-2007). During her PhD studies (2007-2012) as an FPI researcher, she undertook extensive research on the early detection of damage by quantifying the colour of biological colonization on rocks, with special focus on granite, to obtain further knowledge about the developmental stages of subaerial biofilms. Sanmartín studied a variety of cases mostly involving cyanobacteria, pioneering organisms on lithic substrates. Between 2012 and 2015 at Harvard and Milan universities, she worked as PI on the BioRemoGraf project, aimed at developing a complete methodology for using microorganisms to remove graffiti from construction materials, publishing pioneering (so far unique) studies in this field. In mid-2015, she returned to the USC with a Juan de la Cierva-Incorporation and two postdoctoral contracts from the Xunta de Galicia. During this period (2016-2019), she began novel research on the effect of public lighting on biological colonization on built heritage, working as PI on developing lighting-based strategies to control biological colonization and to manage the chromatic integration of biofouling (Light4Heritage project). In 2019, at the University of Oxford, Sanmartín began to develop a new research line on biological cultural heritage and worked intensely on reformulating the bioreceptivity concept. In 2020, she was awarded a DAAD grant for research stays in Germany but declined the offer owing to the COVID-19 crisis. Currently (2020-2022) she is the Scientific Director of the Third SMARTIAGO Challenge - Smart lighting system for Heritage Conservation, an innovative Public Procurement project awarded European funding of 613,581.43, and the PI of the associated research study with a budget of 228,072.85.

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Resumen del Currículum Vitae:

In July 2019, she received the I3 Certificate (I3/2019/100) - awarded for an outstanding research track record from the Spanish Ministry of Science, Innovation and Universities. A year earlier, she had received the Galician counterpart certification by the criteria describe in BOE-A-2005-14601 from ACSUG (Agency for Quality Assurance in the Galician University System). Her high scientific recognition is evidenced by currently held international collaborations with Harvard University, US (R. Mitchell, A. DeAraujo, A. Vasanthakumar), University of Oxford, UK (H. Viles, R. Grove), Università degli Studi di Milano, Italy (F. Cappitelli, F. Villa), Universidad Autónoma de Campeche, Mexico (B.O.Ortega-Morales, M.J. Chan-Bacab, M.M. Reyes-Estebanez), and national collaborations with Universitat Politècnica de València (P. Bosch-Roig), Universidade de Vigo (J.S. Pozo-Antonio) and Universidade da Coruña (R. Carballeira and J. Sanjurjo-Sánchez), her participation in 64 R&D projects, agreements and contracts (15 as PI), also acting as a project reviewer for the Italian Ministry of Research (MIUR, Ministero dell'Istruzione, dell'Università e della Ricerca) Slovak Research and Development Agency (APVV, Agentúra na podporu výskumu a vývoja) and Science Fund of the Republic of Serbia (SF, Fond za nauku Republike Srbije), 94 peer-reviewed publications, including 54 papers listed in ISI Web of Science and Scopus (80% Q1 by WoS or Scopus; cited over 1000 times according Google Scholar and over 725 and 675 times according Scopus and WoS respectively), 6 papers in non-SCI/Scopus journals, 7 international books and book chapters, 23 full paper proceedings and 4 other publications. In most of these publications (67/94 and 38/54) she is the first or leader and corresponding author. Furthermore, P. Sanmartín is an Editorial Board Member of Heritage and Guest Editor of Coatings and Environments, MDPI. She has acted as a regular reviewer for 20 journals (most of them Q1) and given 59 presentations at 41 scientific conferences in the EU and US (receiving 3 conference awards in US and Spain), has been a member of the scientific and technical committees at 10 international and 2 national congresses and meetings, an invited speaker with plenary lecture on 3 occasions in France

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and Portugal, and convener of a session on stone heritage conservation at the EGU General Assembly 2019.

Sanmartín has also solid experience in teaching subjects related to environmental science, geology and soil science, with 586 hours of teaching in the Teaching Organization Plan (POD), obtaining 4 good ratings (score 3.7-4.5, out of 5) and 3 very good ratings (score > 4.5, out of 5) in the students assessment of teachers. She has received the accreditation required for a Tenured Associate Professor Position (Profesor Contratado Doctor) from ANECA in 2013. As a result of her didactic work, she has also published four papers in peer-reviewed journals of environmental and earth sciences education, acting furthermore as a reviewer in the area. In addition, she has supervised 10 Masters theses and 10 End-of-course projects in Italy and Spain, contracted a postdoctoral research assistant and a PhD assistant, and is currently co-supervising 4 PhD students, having also acted as president, ordinary member, external examiner and alternate member in 5 PhD theses.

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Título:

CLIMATE RESEARCH POWERING THE ENERGY TRANSITION

Resumen de la Memoria:

After my BSc in Physics (Complutense University of Madrid, 2006) and a MSc on scientific computational tools (University of Murcia - UMU, 2008), I formed as climate modeler during my PhD at the UMU (completed in 2011) and several training stays at the European Center for Medium Range Weather Forecast, the Helmholtz-Zentrum Geesthacht and the Max Planck Institute of Meteorology, learning about regional climate models and climate variability and change from a process understanding perspective. Thanks to this expertise, I got involved in a range of cross-disciplinary research works and R&D projects and contracts in the fields of natural hazards, geomorphology, paleoclimatology and air quality. Also, I started my participation in the benchmark Euro-Cordex initiative, which lasts until present. In 2011 I got my first postdoctoral contract at the Dom Luiz Institute - IDL (Portugal) where I developed works on the link between large-scale oscillating teleconnection patterns and the variability of the renewable energy resources at regional scales, and so I started to make the climate information obtained from climate models and observations action-oriented for the energy sector, filling the gap between climate research and usable knowledge. Further in this line, in 2013, hired in the Laboratoire des Sciences du Climat et de l'Environnement - LSCE (France), I led the development of the CLIMIX model, a tool to evaluate climate change impacts on the energy mix, getting involved in the FP7-funded IMAPCT2C project and participating in the Energy Supply and Demand group within ISIMIP.

These periods boosted the marked international and interdisciplinary character of my research career (>150 co-authors from >30 different institutions), which I develop back at the UMU since 2014. I imported here the research line on climate and renewable energies, continuing the collaborations with my former IDL and LSCE groups and promoting new ones (e.g. I enjoyed an invited postdoctoral research stay at the Barcelona Supercomputing Center- Earth System Services group). With my scientific production ceaseless growing, both in quantity and impact (>1500 citations and >25 Q1 papers since 2015, 4 in Nature Communications, 2 of which as 1st author, 1 selected by the Climate Innovation Window of the EU BRIGAID project and 1 included in the IPCC report on impacts at 1.5ºC warming, for which I also acted as referee, as I do for >15 ISI journals, including Nature), my efforts focus now on the successful development of the two R&D projects that I lead as PI: CLIMAX (selected in a Young research leaders call by the Seneca Foundation) and EASE (funded by the Spanish Ministry of Science). For that I coordinate an international team that, besides local researchers, comprises my former supervisors at the IDL and the LSCE (R.M. Trigo and R. Vautard) and external collaborators such as M. Wild (ETH-Zürich) and A. AghaKouchak (University of California, Irvine), pursuing a twofold objective: (1) the identification of key aspects in climate modeling for the simulation of the wind and solar resources, such as the aerosol-radiation-cloud interactions (this is done under the Euro-Cordex umbrella), and (2) the development of the CLIMAX model, an evolution of CLIMIX aimed at effectively help designing decarbonized energy scenarios with maximum efficiency and stability.
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Resumen del Currículum Vitae:

Scientific production: 50 articles (40 in JCR Q1 journals, 25 in the 1st decile, 15 as 1st author, 4 in Nature Communications), 1 scientific data publication, 20 book chapters and 4 proceeding papers. Two of the NCOMMS articles as 1st author (one selected as a Top 10 scientific achievement by a regional media), one in the Top 50 most read papers in NCOMMS from across the Earth and Planetary Sciences and included in the IPCC Special Report on impacts at 1.5ºC global warming, and one selected by the Climate Innovation Window for Climate Change Adaptation under the frame of the EU-H2020 BRIGAID project.

Citations: 1900 (h-index=28) in Google Scholar; 1350 (h-index=22) in WoS.

Scientific conferences: 135 contributions, >30 as 1st author, 1 talk invited by the AGU, 1 poster awarded as outstanding by the WRCP.

R&D projects and contracts: 3 projects as PI (total funds attracted: 260K), one funded by the Portuguese Agency for Science and Technology (FCT), one by the Agency for Science and Technology of the Region of Murcia (Seneca Foundation), and the last by the Spanish Ministry of Science; 6 national (2 Portuguese, 4 Spanish) projects as applying researcher (total funds: 884K); 4 national (2 Spanish, 1 Portuguese, 1 French) and 1 European (FP7-funded) projects as contributing researcher (total funds: 866K), 8 contracts of scientific transference (total funds: 134K); and 2 international initiatives sponsored by the WRCP: ISIMIP and Euro-Cordex.

Grants awarded in public competitive calls: 2-year PhD fellowship by the Euromediterranean Water Foundation Institute, 2-year

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recruitment postdoctoral grant by the University of Murcia, 3-month postdoctoral mobility grant by the Severo Ochoa Mobility Programme, 5-year postdoctoral contract as PI of a project funded by the Portuguese FCT, and 5-year stabilization postdoctoral contract by the University of Murcia. Total funds awarded (approx.): 550K.

Research stays abroad: Helmholtz-Zentrum Geesthacht (Germany, 2.5 months, PhD training), European Center for Medium Range Weather Forecast (UK, 1 month, PhD training) Max-Planck Institut für Meteorologie (Germany, 3 weeks, PhD training), Dom Luiz Institute (Portugal, 28 months, postdoc contract), Laboratoire des Sciences du Climat et de l'Environnement (France, 6 months, postdoc contract). Total: >3 years. Also: invited postdoctoral stay at the Barcelona Supercomputing Center (2.5 months).

Supervision: 10 BSc and 1 MSc final-year projects, 1 PhD thesis, and 1 postdoc researcher hired by one of the projects I lead.

Teaching: >400 hours at BSc and MSc levels.

Reviewer: tribunal member of 2 PhD thesis, external referee of 2 PhD theses, member of 2 evaluation committees for MSc theses, reviewer for the ETH Zurich Postdoctoral Fellowship Program and the Spanish National Research Agency, for the IPCC Special Report on impacts at 1.5ºC global warming, and for 18 top-ranked journals, including Nature, Nature Climate Change, Nature Communications and Science Advances.

Editor: Guest Editor of 4 Special Issues (Geosciences, Atmosphere and Frontiers), Editor of a book by the Spanish Association of Climatology (AEC).

Scientific and organizing committees: AEC Conferences (2014 and 2018) and next Biennial of Physics. Also recently proposed to take part in the CLIVAR committee.

Outreach activity: e.g. Pint of Science and The Conversation.

I3 accredited.

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2020

Turno de acceso general

Nombre: GUILLERA ARROITA, GURUTZETA
Referencia: RYC2020-028826-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: gurutzeta.guillera@unimelb.edu.au

Título:

Advancing modelling methods for monitoring biodiversity and predicting species distributions

Resumen de la Memoria:

I am a Senior Lecturer in Ecological Modelling with excellent quantitative skills and a strong track record of evaluating and improving methodological approaches within ecology to ensure they are fit for purpose . I obtained my PhD in 2012 at the University of Kent, and since PhD completion, I have been employed full-time at the University of Melbourne (Australia). Since 2016, I am a Principal Investigator in my research group (Quantitative and Applied Ecology Group), where I have developed a strong independent research program. The advancement and application of wildlife monitoring methods and modelling approaches for predicting species distributions are areas central to my research, where I have made significant contributions. My track record demonstrates a high level of achievement as an independent researcher and growing recognition as international research leader in my field. My research output is excellent, both in quantity and quality, for my field and career stage (8 years post PhD, with a break for maternity). I have published 60 peer-reviewed articles in international journals. Most of my papers are in highly ranked journals (78% in Q1). My research is well cited (h-index=24, 2200+ citations, Web of Science; h-index=28, 3400+ citations, Google Scholar) with a continuously increasing citation rate; 4 of my papers are classed Highly Cited (Clarivate s Essential Science Indicators) and 3 have been recognized in awards. I have ample research training and mentoring experience (4 PhD and 1 MPhil students have completed under my supervision, with other 7 PhD in progress) and a successful record attracting research funding (for a total of >AUD$2.1M). My international research network is very strong and much of my work (60% of papers) involves international collaborators. My background spans engineering, statistics and applied ecology. I am an advanced modeller (PhD in Statistics), but I also understand the realities of natural systems and the constraints on field studies, knowledge gained through field work and collaboration with field ecologists, as well as through formal education in ecology and conservation (Biology and Ecology courses; MSc in Conservation Science). Feeling comfortable at the interface of methods and applications, I am well set to develop and adapt tools for practical use. I am committed to translating methods into practice, as evidenced by my contributions delivering training workshops, publishing code and tutorials and writing accessible descriptions of models.
.

Resumen del Currículum Vitae:

(same summary as in the main application, as recommended in the instructions; approx. 300 words)

I am a Senior Lecturer in Ecological Modelling with excellent quantitative skills and a strong track record of evaluating and improving methodological approaches within ecology to ensure they are fit for purpose . I obtained my PhD in 2012 at the University of Kent, and since PhD completion, I have been employed full-time at the University of Melbourne (Australia). Since 2016, I am a Principal Investigator in my research group (Quantitative and Applied Ecology Group), where I have developed a strong independent research program. The advancement and application of wildlife monitoring methods and modelling approaches for predicting species distributions are areas central to my research, where I have made significant contributions. My track record demonstrates a high level of achievement as an independent researcher and growing recognition as international research leader in my field. My research output is excellent, both in quantity and quality, for my field and career stage (8 years post PhD, with a break for maternity). I have published 60 peer-reviewed articles in international journals. Most of my papers are in highly ranked journals (78% in Q1). My research is well cited (h-index=24, 2200+ citations, Web of Science; h-index=28, 3400+ citations, Google Scholar) with a continuously increasing citation rate; 4 of my papers are classed Highly Cited (Clarivate s Essential Science Indicators) and 3 have been recognized in awards. I have ample research training and mentoring experience (4 PhD and 1 MPhil students have completed under my supervision, with other 7 PhD in progress) and a successful record attracting research funding (for a total of >AUD$2.1M). My international research network is very strong and much of my work (60% of papers) involves international collaborators. My background spans engineering, statistics and applied ecology. I am an advanced modeller (PhD in Statistics), but I also understand the realities of natural systems and the constraints on field studies, knowledge gained through field work and collaboration with field ecologists, as well as through formal education in ecology and conservation (Biology and Ecology courses; MSc in Conservation Science). Feeling comfortable at the interface of methods and applications, I am well set to develop and adapt tools for practical use. I am committed to translating methods into practice, as evidenced by my contributions delivering training workshops, publishing code and tutorials and writing accessible descriptions of models.

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CONVOCATORIA 2020

Turno de acceso general

Nombre: GROS CALVO, MERITXELL
Referencia: RYC2020-030324-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: mgros@icra.cat

Título:

Characterization and reduction of emissions of emerging contaminants, their fate and risks towards a greener environment

Resumen de la Memoria:

My research focused on investigating the emissions, reduction, fate, and risks of emerging contaminants (ECs) in the environment. I made significant contributions in my field of research by developing innovative analytical methods to study the distribution and impact of ECs in the environment, by pioneering studies on the contamination by pharmaceuticals (PhACs) in Spanish wastewater treatment plants and largest river basins and on the potential of novel water and waste treatment technologies to reduce ECs emissions to the environment. All these achievements have positioned my work as a reference point in studies on PhACs and ECs.
After completing my PhD in 2009 at IDAEA-CSIC (Barcelona), I was appointed as a postdoctoral fellow at the Catalan Institute for Water Research (ICRA, 2009-2012). During this time, I was responsible for starting-up a new research area in Water Quality by establishing analytical capabilities for ECs analysis and applying for competitive research funds. The research conducted at ICRA, besides the analytical work, focused on assessing the impact and hazardous effects of wastewater discharges to non-target aquatic organisms and freshwater ecosystems, the dissemination of antibiotic resistance and the evaluation of non-conventional wastewater treatments to reduce ECs emissions to the environment. I performed a research stay (February-May 2012) at the Swiss Federal Institute of Water Science and Technology (EAWAG), Switzerland, funded by a José Castillejo grant, where I achieved solid knowledge on the use of the most advanced non-target analytical tools to identify novel ECs and the transformation products formed after water treatment. This knowledge was extremely valuable for my next postdoctoral fellowship at the Commonwealth Scientific and Industrial Research Organization (CSIRO, 2012-2014), in Adelaide (Australia), where I established a new research line based on this topic. The research conducted at CSIRO provided previously unavailable and much needed information on the occurrence and fate of ECs in secondary and tertiary wastewater treatments of major use in Australia. In 2014 I moved to the Swedish University of Agricultural Sciences (SLU), in Uppsala (Sweden), where I built a new research line based on target and non-target ECs analysis, expanding their chemical scope and analytical capabilities. I did research on cutting-edge topics such as decentralized and source separated wastewater treatment systems, based on nutrient recovery, and their potential impact on the environment. After that, I was granted a competitive Beatriu de Pinós fellowship (2015-2017), followed by a Marie Curie Individual Fellowship project (2017-2020), both with <10% success rate, that allowed me to establish, consolidate and lead a new research line at ICRA on contaminants in agroecosystems. My research is now supported by a H2020 international project. My research interests are the development of the most advanced analytical workflows to identify novel ECs in wastewater, organic waste and impacted aquatic and terrestrial ecosystems, agricultural activities as vectors of antibiotic resistance and ECs dissemination in the environment, exploiting the potential of dissolved organic matter (DOM) fingerprinting to identify pollution sources and the treatment and valorization of organic wastes to recover high-added value by-products.
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Resumen del Currículum Vitae:

I got a master s degree (2003) and a PhD in Environmental Analytical Chemistry (2009) at UB and IDAEA-CSIC. During the PhD, I was supported by a competitive FPI scholarship and I received an FPI mobility grant to perform a research stay (May-June 2007) at the University at Buffalo (USA). After the completion of the PhD with cum laude distinction I worked in national and international institutions: ICRA in Spain (2009-2012), EAWAG in Switzerland (3 months in 2012), CSIRO in Australia (2012-2014) and SLU in Sweden (2014-2015). I was awarded a Beatriu de Pinós Fellowship (2015-2017) followed by a prestigious Marie Curie Individual Fellowship Project (2017/2020), which allowed me to establish, consolidate and lead a new research line at ICRA. My research is now supported by a H2020 project.

My scientific production encompasses 56 peer-reviewed journal publications with 160 researchers from 22 countries (>90% Q1 journals ,14 as first author, 8 as leading scientist), 8 book chapters and 6 popular science papers and reports. Almost half of these publications are in the top 10% impact factor journals in the Environmental Sciences field. My publications have received a total of 6947 citations (Scopus), (13 articles>200 citations and 8>100 citations), and an h-index of 38. I shared the results of my research through 24 platform (4 invited) and 20 poster presentations at national and international conferences. I have been an invited speaker in 5 workshops and training courses and 1 webinar.

My leadership and management skills are reflected through:
a) the acquisition of competitive research funds: I am directly responsible for attracting ca 505.000 as PI and ~680.000 as co-PI and co-applicant through R&D projects and contracts.

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b) being the Principal Investigator (PI) in 3 R&D projects (1 MSCA-H2020, 1 Catalan government, 1 Swedish Research Council FORMAS), co-PI in 2 (HaV Sweden and CSIRO Australia) and co-applicant in other 2 (MINECO and an on-going H2020), being task leader in the H2020 project.
c) being responsible for 6 R&D contracts with public or private entities (4 as PI and 2 as co-PI and scientific coordinator).
d) the participation in 12 R&D national and international projects as researcher.
e) the achievement of competitive research fellowships and grants (Beatriu de Pinós, José Castillejo, FPI and FPI mobility)
f) my capabilities for starting-up new research lines and a research area in Water Quality.
g) supervision of students: I co-supervised 3 PhD thesis (2 on-going and 1 completed), 4 master theses, 2 bachelor s degree projects and 5 visiting researchers (total duration 16 months).
h) my experience in organizing R&D activities (I have been a member of the organizing committee in 2 workshops and I co-chaired a scientific session at the 25th SETAC Europe conference).
i) the invitation to take part in 2 PhD committees as member of the jury (1 at the University of Minas Gerais, Brazil and 1 at UAB in Barcelona) and 3 as reserve at ICRA-UdG.
j) numerous national and international collaborations (active collaborations with University of Koblenz-Landau Germany, University of Coimbra Portugal, SLU Sweden, CNRS-UMR and IEM France, CTBeta-Vic, environmental engineers, hydrologists and microbiologists at ICRA)
k) being member of project evaluation panels (NERC, UK) and I am a regular reviewer for prestigious SCI journals

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Turno de acceso general

Nombre: COELHO DOS SANTOS, ANA MARGARIDA
Referencia: RYC2020-029407-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: ana.margarida.c.santos@gmail.com

Título:

Understanding community assembly and functioning: from local to island and global scales

Resumen de la Memoria:

My main research goal is to strengthen the link between biogeography and community ecology, centring in understanding how processes occurring at different scales affect different facets of biodiversity and also ecosystem functioning, in a context of global change. My work relates with three main research lines: island biogeography; the macroecology of trait and phylogenetic diversity; and functional ecology and ecosystem functioning and services.
I have been working on understanding species distributions on islands since the beginning of my career. During my PhD (Imperial College London, 2006-2010), I made some conceptual contributions to this topic, showing the importance of the species pool in structuring island communities, and that island species tend to be generalists; I also proposed methods to deal with data quality and to study host-parasitoid interactions at large geographical extents. This research line intertwines with the second, that I started during my first postdoc (Univ. Federal Goiás, Brazil, 2011 2012), and carried on during consecutive postdocs and contracts I held (cE3c, Univ. Lisboa, 2012 2014; Marie Curie Fellow, Museo Nacional de Ciencias Naturales/CSIC, Madrid, 2014 2016; Juan de la Cierva-Incorporación Fellow, Univ. Alcalá, 2016 2019; Assistant Researcher, cE3c, Univ. Lisboa, 2019; Assistant Prof, Univ. Autonoma de Madrid, 2019-present). Indeed, a significant part of my research has focused on the distributional patterns of trait diversity on islands at global and regional scales, rendering me a position of international reference.
My ongoing research within these two topics focuses on: a) evaluating cross‐scale variations of species richness and functional and phylogenetic structure of island and mainland extinct and extant communities across spatial and temporal scales; b) identifying the factors behind the geographical variations in functional and phylogenetic diversity, evaluating if they change with scale; c) investigating how data quality and resolution (of biological and environmental variables) influence the perception and interpretation of diversity patterns; d) identifying the main drivers of the conservation status of island mammal species and of plant invasions on islands; and e) assessing trait evolution throughout the island s ontogeny, also identifying the drivers of trait changes and community assembly.
My most recent research line on functional ecology and ecosystem functioning and services, deals with topics identified as societal challenges by UN 2030 Sustainable Development Agenda and EU Horizon Europe research framework. I evaluate the impacts of global change on the ecological functions and ecosystem services provided by insects, particularly dung beetles. I have supervised a PhD thesis on this topic, and I led two projects on this topic (funded by Fundación Biodiversidad and AEET) that included field land laboratory experiments to evaluate how climate and land use management affect dung beetle diversity and their role in different ecosystem functions. Current research on this topic delves into evaluating the importance of regional processes and global change on ecosystem functioning.
As secondary research topics, I am also interested in publication trends (scientometry) and parasitoid ecology.

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Resumen del Currículum Vitae:

I have a BSc in Biology (2003; Univ. Lisbon, Portugal), and a PhD in Ecology (2010; Imperial College London, UK). Currently I am an Assistant Professor at the Universidad Autónoma de Madrid (UAM).
My research career started as a research assistant at University of Azores (Angra do Heroísmo, Portugal, 2003 2005). I then enrolled on my PhD studies (2006-2010), and afterwards I hold several postdoctoral positions at the: a) Federal University of Goiás (Goiânia, Brazil, 2011 2012); b) Centre for Environmental Biology (now cE3c - Centre for Ecology, Evolution and Environmental Changes; Univ. Lisbon, Portugal, 2012 2014; maternity leave of approx. 4 months); c) Museo Nacional de Ciencias Naturales (CSIC) as a Marie Curie Research Fellow (2014 2016; maternity leave of approx. 4 months); d) Univ. Alcalá as a Juan de la Cierva (Incorporación) Postdoctoral Fellow (2016-2019; with a medical leave of almost 6 months, and a maternity leave of approx. 4 months); and e) cE3c as an Assistant Researcher (2019). Since I established at UAM in December 2019, I already formed a research group working on biogeography, community ecology, functional ecology and conservation biology. Currently is composed of 2 PhD and 3 BSc students.
I have 34 peer-reviewed papers published in JCR journals (nearly half as either first or last author) in journals with a mean impact factor of 5.13, that have been cited 616 times, with an h-index of 15 according to the Web of Knowledge. 24 of them are in Q1 journals (71%), and five in Q2 (15%). These papers were published together with over 150 authors, in topics classified by WoK as Biochemistry & Molecular Biology, Biodiversity Conservation, Ecology, Entomology, Environmental Sciences, Evolutionary Biology, Limnology, Multidisciplinary Sciences, Physical Geography and Plant Sciences, which shows the multidisciplinarity of my research. I also published 17 peer-reviewed articles in journals not listed in JCR, 18 book chapters and 16 other publications. The publications included in Google Scholar reach 1120

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citations (h = 18; i10-index: 27). This research has been supported by 15 R&D projects (4 of them as PI) funded through competitive calls of public entities in 3 different countries and in the EU (over 2M; ca. 90.000 as PI), and by 6 independently-funded research contracts/grants obtained through competitive calls that were carried out in four countries (Brazil, Portugal, Spain and UK). I am the coordinator of the Island Biology Interest Group (Asociación Española de Ecología Terrestre) and I was a member of the board of directors of the International Biogeography Society (acting as student-at-large, 2011 2013). I presented 64 contributions at conferences (35 as first author) and gave 23 invited talks (8 at conferences and/or scientific meetings and 15 at institutions). I was involved in the organization of 5 international congresses, 4 symposia and one workshop. I am a frequent reviewer for a large number of journals, acting as editor for four, among which: Global Ecology and Biogeography, and Journal of Animal Ecology. In 2019 I obtained the certification I3, that acknowledges the quality of my scientific activity. I have also experience in teaching (ca. 720 hours) and mentoring, having already supervised one PhD, two MSc and four BSc students. Finally, I had 3 maternity leaves and a medical leave of almost 6 months.

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Turno de acceso general

Nombre: PROIA , LORENZO
Referencia: RYC2020-029304-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: lorenzo.proia@uvic.cat

Título:

Aquatic Ecology and Ecotoxicology

Resumen de la Memoria:

I started my career at the University of Rome Tor Vergata (Italy) conducting field studies on streams self-depuration capacity. Afterwards, I moved to the University of Girona (Marie Sklodowska-Curie fellowship) to start my Ph.D focused on microbial biofilm communities responses to changing environmental conditions and emerging contaminants detected in freshwaters. In 2012, I completed my PhD in Experimental Science and Sustainability with a dissertation entitled Biofilm responses to multiple stressors associated to global change in river ecosystems which received the cum laude distinction. In the first step of my postdoctoral stage at the Blanes Center for Advanced Studies I investigated on nitrogen dynamics in freshwater ecosystems with a particular focus on the microbial benthic communities role. Then, I moved to the Catalan Institute for Water Research to coordinate and lead the investigation on microbial communities role in carbon fate along a sequence of lentic-lotic systems generated by small dams, in the framework of the national project CARBONET. Through my following postdoc at the Institute of Aquatic Ecology (University of Girona) I investigated the interactions between physical heterogeneity and microbial processes in subsurface sediments. During my 3-year abroad experience, I was the Head of the Antibiotic Resistance (AR) Research line at the Ecology of Aquatic Systems group of the Universitè Libre de Bruxelles (Belgium) and the Principal Investigator of the ANTIBIORIV project aiming to investigate the AR spread from urban areas to freshwaters. In 2018, I was hired as Senior Researcher in charge of the ongoing research activities (two European projects and one R&D non-competitive contract with private entities) related with Aquatic Ecology and Ecotoxicology at BETA Technological Center (CT BETA) of University of Vic-Central University of Catalonia (UVIC-UCC). In 2019, I was awarded with a Marie Sklodowska-Curie COFUND Beatriu de Pinos fellowship for the BIOTREAT project aiming to investigate the use of natural microbial communities as a nature-based solution to improve the quality of the urban treated waters released to the ecosystem. In 2020, I became the Head of the Aquatic Ecology and Ecotoxicology Unit, establishing and leading my research line at BETA-UVIC-UCC. As can be argued from the timeline of my career, briefly summarized above, I have always conducted my research along the border between Aquatic Ecology and Ecotoxicology. In particular, I have been strongly interested in the study of processes occurring at microbial scale which may have consequences at ecosystem level focusing on four main scientific areas: i) Microbial biofilms communities as bioindicators of ecotoxicological impacts; ii) Natural microbial communities role in ecosystem processes and services; iii) Antimicrobial resistance spread in freshwater environments; and iv) Natural microbial communities as nature-based solutions for wastewater treatment. At mid and long term, my main goal is to consolidate and expand my research unit at BETA-UVIC-UCC following the main investigation line developed during my career but also moving beyond the comfort zone of my own past studies. I consider the Ramon y Cajal grant as the perfect vehicle to keep fulfilling the prospects of my professional career as researcher and research unit scientific leader.
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Resumen del Currículum Vitae:

My research is focused on aquatic ecology and ecotoxicology particularly focusing on the microbial communities role in freshwater ecosystems (PhD in Experimental Science and Sustainability, 2012). The firsts steps of my career were developed at the University of Rome Tor Vergata (Italy). Then I moved to the University of Girona (Spain) because I got a Marie Sklodowska-Curie fellow as Early Stage Researcher of the Training Network Keybioeffects . Later, I had several postdoctoral experiences at Blanes Centre for Advanced Studies (CEAB), Catalan Institute of Aquatic Research (ICRA), Institute of Aquatic Ecology (IAE - UdG) and 3 years of abroad experience at the Ecology of Aquatic Systems group of the Université Libre de Bruxelles (Belgium) thanks to a Charge de Recherches fellowship funded by the Belgian National Funds for Scientific Research.

Since 2018, I ve joined a Senior Researcher the BETA Technological Center (BETA) of the University of Vic-Central University of Catalonia (UVIC-UCC) where I am developing an important scientific and technological career. My areas of expertise include: i) Microbial biofilms communities as bioindicators of ecotoxicological impacts; ii) Natural microbial communities role in ecosystem processes and services; iii) Antimicrobial resistance spread in freshwater environments; iv) natural microbial communities as nature-based solutions for wastewater treatment and v) management strategies for water-related climatic resilience and ecological impacts reduction. Currently, I am the Head of the Aquatic Ecology and Ecotoxicology Unit as well as Marie Sklodowska-Curie COFUND Beatriu de Pinos fellow at BETA-UVIC-UCC (TECNIO network).

My overall scientific production counts with 35 peer-reviewed publications (89% in Q1 journals, 11 as first and 2 as last author), 5 book chapters (2 as first author) and several popular science papers and reports. These publications accumulated 1062 citations resulting in an H-index of 19. I am regular reviewer of high-impact journals (>30 manuscripts) and Guest Editor of two Special Issues. I have participated in >30 conferences (17 talks, 10 posters, 6 as invited speaker and 2 as session organizer). I have participated in 15 R&D projects funded

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through competitive calls (e.g. FP7, H2020, LIFE+, Euroregion Pyrenees Mediterranean, RETOS de la Sociedad, FECYT, COST) and 8 R&D non-competitive contracts being the Coordinator or Principal Investigator in 5 of them.
I proved the ability to attract competitive research funds through (i) the obtention of numerous prestigious fellowships (Chargé de Recherches and Marie Sklodowska-Curie fellows such as ESR, Tecniospring Plus and COFUND Beatriu de Pinos), (ii) being involved in the writing and execution of European and national projects and (iii) being in charge of direct contracts with companies and public administrations. Furthermore, I have supervising experience with 1 junior postdoc, 3 PhDs, 1 MSc and 6 final career and external stage students. After 15 years of national and international research experience, I am currently well positioned to move a step forward and consolidate myself as a research leader. The potential success of this application will help me to achieve this goal.

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Turno de acceso general

Nombre: ROMERA CASTILLO, CRISTINA
Referencia: RYC2020-029555-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: criskim7@hotmail.com

Título:

Biogeochemistry of the dissolved organic matter / Impact of marine microplastics on the carbon cycle

Resumen de la Memoria:

I started my scientific career in 2004 thanks to an Introduction to Research Fellowship (Spanish Ministry) in the Analytical Chemistry Department in the University of Jaén (UJA). From 2004-2006, I did 2 years of research to get the Diploma de Estudios Avanzados (DEA) , focused on the isolation and characterization of antioxidant compounds in L. nobilis wood. In 2006, I started my PhD in Instituto de Ciencias del Mar-CSIC (ICM-CSIC) on biogeochemistry of the oceanic dissolved organic matter (DOM) under the supervision of Cèlia Marrasé (ICM-CSIC) and Xosé Antón Álvarez-Salgado (IIM-CSIC). In particular, I focused on the coloured and fluorescent fractions of the DOM and its links with marine phytoplankton and bacteria.

In 2012, I started the postdoctoral period. I moved to Florida International University (Miami, Fl, USA) to study in deep the chemistry of the DOM. I learned new isolation techniques that allowed me to better analyze the chemical composition of the DOM. I also developed the methodology to measure antioxidant activity in DOM extracts. In 2014, I was contracted by Prof. Dennis Hansell in University of Miami (Miami, Fl, USA) where I learnt more about chemical oceanography of the DOM. I studied the distribution of the dissolved organic carbon (DOC) in the Atlantic Ocean and the factors controlling it. Doing that, I realized that I had a gap of knowledge on physical oceanography that would help me in the study of the oceanic DOC. Therefore, I applied for a Juan de la Cierva-Incorporación Fellowship (JdC) to go back to Spain (ICM-CSIC) in Prof. Josep Luis Pelegrí group who is a known physical oceanographer interested in biogeochemistry. However, the resolution of that Fellowship took too long and I needed a job. While I was studying the DOC distribution in the Atlantic Ocean, I also found a high signal of DOC that I could not explain with the variables I was working with. That signal coincided with a high marine debris pollution area. So, I wonder if marine plastic debris could be leaching DOC contributing to that carbon pool. I proposed my idea to Prof. Gerhard Herndl who contracted me in the University of Vienna (Austria) to give answer to that question. I found that marine plastic leaches out DOC and that it stimulates bacterial growth.

When I finished my work in Vienna with successful results, I went back to Spain thanks to a JdC Fellowship in Prof. Pelegrí group. I worked with DOC in the different water masses of the deep Atlantic Ocean and I learned more about physical oceanography. Once back in ICM-CSIC, I also got a ComFuturo project grant to go on with my research on marine plastics. I started a new line of research on such topic in the ICM-CSIC becoming a group leader. In 2020, I got a JIN Project to characterize the chemical composition of plastic leachates and apply sequencing techniques to find the microbes involved in their degradation. I also pretend to understand the influence of marine plastic debris in the carbon cycle, how it affects microbes and which microbes are selected on marine plastic contaminated areas to find new routes of plastic biodegradation. In the future, I would like to go on with that research line but also with the study of the biogeochemistry of DOM. For that, I will keep combining chemical, biological and physical oceanography with molecular approaches.

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Resumen del Currículum Vitae:

I graduated in Chemistry in 2004. I got my Advanced Studies Diploma (DEA) in 2006, studying the isolation and characterization of antioxidant compounds in L. nobilis wood. I isolated 3 antioxidant compounds (2 publications) and one of them is being commercialized by ENZO LIFE SCIENCES AG Company. In 2007, I started my PhD in Instituto de Ciencias del Mar-CSIC (ICM-CSIC), in Barcelona, with a I3P Postdoctoral Fellowship. During that period, I participated in 6 oceanographic cruises and did 2 stays abroad (USA and Germany). I published 8 articles, all of them in first quartile journals and 4 of them as first author (2 of them > 150 citations). After my PhD, I started 5 years of postdoctoral period abroad, in 3 different universities in Miami (Florida International University and University of Miami) and Austria (University of Vienna). I went back to ICM-CSIC in 2017 with a Juan de la Cierva-Incorporación Fellowship. In 2018, I received a ComFuturo grant project as principal investigator to work on microplastics and its effect on the carbon cycle. In 2020, I was granted with a JIN project as PI.
I have independently designed my own research profile and projects. From my work at each postdoctoral lab, I have published at least one high impact paper. Since I started my PhD, my research has focused on the study of the biogeochemistry of the dissolved organic matter in the ocean and its interaction with marine microbes. In 2016, I linked that research with a global concern, marine microplastics. Since then, I am also studying the effects of marine microplastics on the carbon cycle and how it affects microbes.

In the last 7 years, I have been in four different institutions of three different countries and in departments of three different disciplines

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within the marine science field: chemistry, biology and physics, showing the multidisciplinarity of my research. My 26 publications count with 1024 citations and in 60% of them, I am the first and lead author. Two of my first author s papers have been published in high impact journals (Nature Communication and PNAS). The paper in Nat. Comm. accumulates > 70 citations in two years, it was awarded with the Lindeman Award by the ASLO (2020) and it was among the Top 50 Earth & planetary sciences articles from 2018. Marine plastic leaching is one of the research lines that I have opened in my field.

The period abroad and the research on plastic that I have started in my institution as group leader show my scientific independence and that I am able to carry on original research, get funding and lead my own group. Currently, I am supervising 1 PhD thesis, 1 master Thesis and 1 JAE-Intro fellow and I am finishing the process to contract 1 technician and 1 researcher. Also, I supervised another 3 master Thesis and 2 more students in the past. I got up to 400.000 of research funding (6 grants as PI). Along my scientific career, I have been awarded with 16 grants/fellowships. Since 2017, I have received 4 national and international scientific Awards including the competitive L Oreal-UNESCO International Rising Talents Award. I participate in dissemination and outreach activities including talks in schools, private companies, social associations, etc., appearing in press media (TV shows, Radio, newspapers). I have been invited as speaker to conference meetings and to the COP25. All that shows that my work has transcended the scientific borders reaching the society and becoming a reference in my field.

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2020

Turno de acceso general

Nombre: DURAN HUMIA, JORGE
Referencia: RYC2020-029331-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: jdh@uc.pt

Título:

Effects of global change drivers on ecosystem functioning

Resumen de la Memoria:

My research career has developed around the study of the effects of different disturbances on biogeochemical processes. A figure summarizing such development can be found in https://drive.google.com/file/d/1qzgwAQ1ujP70u3QKWZ8mLQ-ouYnJzvAJ/view?usp=sharing

I completed my doctorate in the U. P. de Olavide (Spain). My thesis, focused on the effects of wildfires on soil attributes in pine forests, deserved the maximum qualification, received the Extraordinary Doctorate Award, and resulted in 5 Q1 SCI articles. During this stage, I gained deep knowledge on soil biogeochemical cycles and advanced statistics, began to test and develop research methods (2 SCI papers), and started my network of national collaborations, through which I acquired interest and proficiency in the spatial heterogeneity of soil resources. The success of this first phase reflects in the number of SCI papers (13), contributions to scientific meetings (15), and book chapters (4) derived from it.

Then, I obtained a postdoctoral Fulbright fellowship to work at the Cary IES (NY), investigating the effects of climate change (CCh) on forest soil functioning, particularly on greenhouse gas (GHG) fluxes. In this phase, I produced relevant insights on how CCh influences key ecosystem processes (e.g. soil respiration, mineralization, methane fixation, and nitrous oxide production). This period laid the foundations of what today are the main axes of my research: GHG fluxes, the effects of disturbances on soil functioning, and the assessment of the mechanistic processes behind these effects. During that stage, I also began my work as a mentor, started developing my organizational skills, and continued with my efforts to test and develop new methods (2 more SCI papers). During this phase, I was able to produce 13 SCI-papers in addition to 1 book chapter and 14 contributions to national and international conferences.

After this phase, I moved to Portugal to work as a postdoctoral researcher at the CFE (Coimbra), where my career as a complete and independent researcher really took off: my productivity grew strong (21 SCI papers; 12 only the last year; 5 more under review; 20 contributions to scientific conferences; 2 book chapters); I increased my network of international collaborations (more than 100 co-authors from 20 countries); and developed skills as a mentor (4 Ph.D., 2 MSc, and 2 bachelor theses), teacher, and science communicator. I demonstrated autonomy by obtaining research funding (3 projects as a PI; 390.000) and by setting up my own research group. I have incorporated into my research more anthropogenic disturbances (e.g N deposition, grazing, or urbanization), and ecosystems (Mediterranean, polar dryland, tropical and global studies). Finally, I did not stop pursuing the improvement of my methodological capabilities and regained my interest in the analysis of the drivers of the spatial heterogeneity of soil resources and biodiversity. I am the PI of the research line Biogeochemistry and Global Change , and co-responsible for the Terrestrial Ecology Laboratory in my current institution.

I am confident that I have enough scientific independence and international collaborations to establish a new, high-quality research group in Spain to keep helping to understand how disturbances influence soil and ecosystem functioning.

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Resumen del Currículum Vitae:

I started my career with two Becas de colaboración in the U. of Vigo. My Ph.D. thesis (P. Olavide University; 2009) deserved the maximum qualification and the Extraordinary Doctorate Award, and resulted in 5 SCI articles. During this stage, I started my collaboration network (6 SCI papers as 2nd author) and began my interest in testing and developing research methods (2 SCI papers).

Then, I obtained a postdoctoral Fulbright fellowship to work at the Cary IES (NY; 2010). In this phase, I increased the quality (e.g. 3 articles in Global Change Biology, and 2 in Ecology) and quantity (13 SCI publications) of my papers. Further, I began my work as a mentor; started developing my organizational skills (Postdoctoral Committee of the Cary IES); and continued with my efforts to test and develop new methods (2 SCI papers).

After this phase, I moved to Portugal to work at the CFE (Coimbra), which is where my career as a complete, independent researcher took off. I increased my network of international collaborations and developed skills as a mentor, teacher, and science communicator. I also

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demonstrated autonomy by obtaining research funding (3 projects as a PI; 390.000) and by setting up my own research group. As a result, my productivity has grown strong in the last years (21 SCI papers published in this phase, 11 only the last year).

I have spent more than 10 years in foreign institutions. I have 47 indexed SCI publications (5 more under review), including some in highly reputed journals such as Global Change Biology, Ecology, or Functional Ecology). I have also co-authored up to 8 book chapters and several papers not included in the SCI for a total of more than 60 scientific publications. My articles have been cited 960 times; my h-index is 20 (Google Scholar 17/01/2021). My accumulated citations and publications ($R^2=0.99$; $P<0.01$) fit nicely to a quadratic curve, suggesting that my research is increasingly impacting the scientific community, but also that such impact is likely to grow strong in the near future. 45 out of my 47 SCI publications are in journals of the first quartile (most of them in Ecology and Soil science areas). I have also led or co-authored 49 communications in national and international conferences.

I have co-supervised 4 PhD. (one more ongoing), two MSc, and two bachelor theses, as well as several research internships. I am editor for the Plant & Soil journal (5-year IF=3.9), and I have reviewed articles for 13 international journals and invited to be invited speaker and part of project panels and hiring committees in 3 countries. I have participated in several outreach activities (including exhibitions, podcasts, written press, etc). I have participated in 25 scientific projects, including 3 as PI (total budget = 390.000). I have teaching experience in 4 countries; I have participated in the organization of 2 international seminars. I hold an honorary position in the Pablo de Olavide University (Seville, Spain) since 2014. In my current institution, I am the PI of the research line Biogeochemistry and Global Change and co-responsible for the Terrestrial Ecology Laboratory . I am currently involved in four global surveys to understand the ecological effects of different disturbances.

More information in https://www.cienciavitae.pt//en/6D15-0B6F-1D3A or https://jorgeduranecology.wixsite.com/personal.

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Turno de acceso general

Nombre: KOENIG , STEPHAN
Referencia: RYC2020-030014-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: stephan.koenig@uni-tuebingen.de

Título:

Constraining the co-evolution of plate tectonics and habitable ocean-atmosphere on Earth

Resumen de la Memoria:

I investigate links between Earth s surface and interior processes that shape our habitable planet. My approach is to investigate the interplay between efficient plate tectonics and a functioning ocean-atmosphere system by combining radiogenic (Sr-Nd-Hf-Pb-Os) and novel heavy stable isotope (e.g., Mo, Zn, Se) analyses of carefully selected rocks and minerals. The perspective of deeply subducted and long-term recycled materials provides new perspectives of Earth s ancient surface evolution. Breakthrough studies with me as second author, project designer, and PI are published in high-impact journals like Nature Geoscience and Science Advances. Topics cover Outer solar system origin of Earth s volatiles and Deep mantle record of Earth s ancient ocean-atmosphere .
After my Ph.D., I was granted a total of 315,000 Euro by the German Research Foundation (2 consecutive DFG grants) to fund myself as postdoctoral fellow. I used these projects to develope my own techniques for isotope dilution and hydride generation ICP-MS analyses of S-Se-Te as tracers of Earth s volatile-chalcophile element origin and evolution. I also learned to measure radiogenic Os isotopes as a visiting researcher in Durham, UK, and helped set up Se measurements as a visiting scientist in Nantes, France. My current 1,5 Million Euro ERC project is designed to combine my skills with new analytical approaches and find new links between Earth s outer and interior evolution, leading to its habitability.
For my ERC project I worked at the University of Vienna (Austria) to combine Os and Se isotope measurements and at the University of Johannesburg (South Africa), where I recently acquired over 400 inclusion-bearing diamonds. These are now targeted for analyses with my newly designed techniques to assess the onset of plate tectonics and relative timing of ocean-atmosphere oxygenation. I am also engaged in the setup of analytical methods in the newly established mass spectrometry lab at IACT in Granada (Spain). These collaborations and frequent visits are still ongoing until the present and belong to my strategic setup of an interdiscsiplinary and international network. My achievements in Science and analytical developments are complemented by demonstrated ability to build and successfully lead my own research team with successful Postdoctoral researchers, PhD- MSc-, and BSc students on my own research grants that amount to over 2 Million Euros.
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Resumen del Currículum Vitae:

My Geology passion developed among Javanese volcanoes when I attended Bandung International School, Indonesia, at age 13-16. My interest further led to a one-year, certified Geology working internship in Costa Rica in 2000 before I returned to Germany and obtained my Geology diploma at the University of Münster in 2005, and my doctorate (in English) in Mineralogy at the University of Bonn in 2010. Since then, I successfully applied for competitive national (German DFG) and international (ERC) funding. During my 10-year, self-funded career since Ph.D. I build an extensive international collaboration network working in international laboratories. I am an internationally recognised expert in chalcophile element and stable isotope geochemistry in igneous systems, branching into low-T geochemistry.
International laboratories where I worked within my own research projects include the US (Urbana IL, 1 week), UK (Durham, 1 month), France (Nantes, 3 months), and particularly South Africa (Johannesburg, 3 months), Austria (Vienna, 3 months) and Spain (Granada, 3 months), as these are essential collaborations for my ERC project and still are ongoing until the present. I attended and presented as the first author in 7 German and 16 international (including 7 intercontinental) conferences. I attended special invitations for seminars and gave oral presentations before audiences in Europe, Australia, Oceania, Africa, Latin America, and the US. I was 3 times invited speaker at the largest international Geochemistry Goldschmidt conference and have published JCR papers and book chapters with international experts in Geology. Some of my supervised publications resulted in public media outreach in mutliple languages (press, Radio Station and TV documentaries, see the link to my website below).
As European Research Council (ERC) Principal Investigator and Group leader at one of Germanys 11 elite Universities (Tuebingen), I have built my own research team with 2 very successful Ph.D. students (one winning best faculty Ph.D. thesis), postdoctoral scientists (4), MSc (7) and BSc (4) students as the first supervisor on my research grants. My analytical method developments involve calibration of double isotope spikes and new chemical treatment techniques for precise isotope measurements of minerals and rocks on MC-ICPMS. Although in my field patents are not awarded for method developments, the instrumental and chemical method is published in top journals with me as 2nd author and PI. Furthermore, I planned and led many rock sampling field campaigns within my ERC, including French Polynesia, Tonga, Costa Rica, Scotland, N. Norway, Greece, Cyprus, the Canary Islands, and French Pyrenees.
Together with my previous and other ongoing grants, I have acquired total funding of over 2 Million . I target the top journals in my field and currently have 30 publications, including 12 as first author and another 9 as second author and PI. Top journals include 1 Science Advances, 1 Nature Geoscience, 1 Geochemical Perspective Letters, 7 Earth and Planetary Science Letters and 9 Geochimica et

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Cosmochimica Acta. Multiple articles are currently under review (notably 1 in Geology with me as second author and PI). I have ca. 1000 citations with an h-index of 17, i10-index of 22 (Google scholar 15/01/2021). All papers (incl. open-access downloadable pdf versions of accepted manuscripts) and press releases (incl. TV documentary) are accessible on my website www.o2rigin.net.

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Turno de acceso general

Nombre: CABRERIZO PASTOR, ANA
Referencia: RYC2020-030339-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: anacabrerizopastor@hotmail.com

Título:

Biogeochemical cycles of organic pollutants in terrestrial and freshwater ecosystems.

Resumen de la Memoria:

My major interests and research line focus on understanding the biogeochemical cycles of organic pollutants in terrestrial and freshwater ecosystems under field and laboratory conditions with special emphasis on polar areas, such as the Antarctica and the Arctic, in which I have been the project leader of 8 sampling campaigns performed in the last 10 years. I have performed much of this work as a PhD and postdoctoral researcher at top excellence international institutions (Environment Canada, European Commission, Lancaster University and IDAEA-CSIC), showing a high capacity to obtain fellowships (12), including an International Outgoing Fellowships to Ana Cabrerizo, from EU-Marie Curie Actions (244.333,30). I have also demonstrated my independent thinking to obtain and manage projects as a PI. My proposals on the fate of POPs in an Arctic watershed impacted by permafrost degradation were funded by Canada s Northern Contaminant Program (NCP) for two years (2016-17; 2017-18)

My main line of research is titled: Biogeochemical cycles of organic pollutants in terrestrial and freshwater ecosystems, includes 3 main sub-lines:

1. Innovative development and validation of new sampling techniques for studying soil-air exchange and partitioning of pollutants including human exposure to pollutants: 7 publications.
2. Understanding of diffuse processes and transport of pollutants, including persistence, bioaccumulation, and long range transport potential of chemicals: 5 publications
3. Legacy and emerging contaminants in polar areas with special focus on terrestrial and marine environments, aquatic food chain and links with global warming and climatic parameters: 21 publications

My pioneering research line has produced 33 papers (+ 6 under submission, including a manuscript in PNAS), ranked within Q1 and accumulate 830 citations (Scopus), 1008 (Scholar Google)). One of my last papers received an award recognition as one of the best papers published in 2018 in ES&T.

My research line has produced important contributions to the scientific knowledge. It was pioneering: i) to the understanding of the partitioning of persistent organic pollutants (POPs) between the solid, liquid and gas phases, ii) to elucidate the factors affecting the soil-air exchange and partitioning of semivolatile pollutants and organochlorine pesticides in the soil, vegetation and snow/ice compartment from temperate areas, iii) to show, for the first time, that not only temperature but also biogeochemical processes control the remobilization and reservoirs of POPs in the Antarctica, iv) to elucidate with field data, that climatic disturbances and climatic oscillations are affecting the temporal trends, distribution and fate of legacy and emerging POPs in the top predator (Salvelinus alpinus) from the High Arctic Lakes.

At medium-long term I aim to further develop my research line with more studies on bioaccumulation and bioavailability of persistent and bioaccumulative chemicals in the aquatic and terrestrial environments with special focus on emerging pollutants such as microplastics in food webs and relationship with warming. A major focus, at the short term, will be the development and refinement of analytical methodologies for newly emerging persistent chemicals such microplastics, fluorinated surfactants, flame retardants, or drug POPs candidates.

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Resumen del Currículum Vitae:

I am an Environmental Chemist (PhD in Analytical and Environmental and Analytical Chemistry, 2012, University of Barcelona (UB)) with Excellence, Cum Lauden and European Mention, (three stays (3 months each) at Lancaster University (UK)), M.SC in Environmental Science and Technology, 2005 (Vrije University, Brussels) and B.Ss in Environmental Science 2004, Autonoma University of Madrid (UAM)) with more than 16 years of experience in the study of the fate and behaviour of organic pollutants in various environmental compartments. I have shown a high capacity to obtain fellowships (12), including 2 important postdoc fellowships (IOF-Marie Curie fellowship, a Grantholder 30, from the European Commission) and an important pre-doctoral fellowship form the Spanish Ministry (FPU).

From 2012 until today, I have performed 4 postdoctoral stages (>7 years) at high ranked European and International Institutions such as Institute of Environmental Assessment and Water Research (IDAEA-CSIC) (2012-2013), Institute for Environment and Sustainability (IES), European Commission (Italy) (2013-2015), Environment and Climate Change Canada (ECCC), Burlington, ON, Canada (IOF-Marie Curie Postdoctoral Fellow) (2015-2017) and IDAEA-CSIC (IOF-Marie Curie Postdoctoral Fellow) (2017-2018). Since 2020, I am a professor at the University of Valladolid (Department of Chemical Engineering and Environmental Technology). My pioneering research focussing on pollutants, resulted in highly impacted 33 publications (14/33 published in Environ. Sci. Technol (ES&T) IF=8.1) + 6 under submission including a paper in Nature. My publications are ranked within Q1 and accumulate 830 citations (Scopus), 1008 (Scholar Google)). I am the

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first author in half of my publications, including 8 papers published in ES&T IF=8.1. One of my last publications (Cabrerizo et al, 2018) received an award recognition in Orlando (April 2019) as one of the best papers published in 2018 in ES&T (IF=8.10). My H-index is 15 (Scopus), 16 (Google Scholar) and i10 index=18. Much of the work I performed, it was done together with international collaborators (from Canada, EEUU, Spain, UK, Italy and Austria). I have the project leader in 5 scientific sampling campaigns in the Arctic/Antarctica and 3 in temperate areas. I have participated in more than 52 presentations at international conferences (2 invited speaker and 1 invited in a plenary conference). I have actively participated in 30 research projects funded from competitive calls (6 from the Spanish National Plan, 2 European Projects and 12 International Project). I have lead two of the most important projects (1 European and 1 International) as PI, managing successfully about 300.000 in research projects. I have broad experience in mentoring researchers and I am currently supervising my own research team. I am serving the scientific community as a Guest Editor in the Journal Environmental Pollution (5 year IF=5.3), manuscript/project reviewer and chair at international meetings (e.g SETAC). I am on board of 4 International POPs Experts groups including IASC (in which I am the Spanish representantive), ACAP, AMAP and IMPACT groups.

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Nombre: GAZQUEZ SANCHEZ, FERNANDO
Referencia: RYC2020-029811-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: f.gazquez@ual.es

Título:

NEW ISOTOPIC TOOLS FOR QUANTITATIVE PALEOCLIMATE RECONSTRUCTIONS FROM LAKE AND CAVE SEDIMENTS

Resumen de la Memoria:

My research has been mainly directed to the study of cave minerals and lake sediments as paleoenvironmental indicators. I obtained my PhD (with honor mention) in 2012 at the University of Almeria (Spain) in the field of Environmental Sciences, with focus on the geochemical characterization of gypsum and carbonate speleothems. During my 1-year postdoctoral fellowship at the University of Valladolid I was involved in project on mineralogical chacterization of Martian analogues and planetary missions. During my 3-years postdoctoral fellowship at the Department of Earth Sciences of Cambridge University (UK) I developed and applied novel methods for the analysis stable isotopes in gypsum from lake sediments. The outcomes of my projects had an important impact in international media. During my 2-years postdoctoral fellowship at the School of Earth and Environmental Sciences of St. Andrews University (UK), I developed and applied methods for the analysis of 17O in nitrates to reconstruct past environmental conditions. At current, I am a post-doctoral fellow and academic member of the Department of Biology and Geology of the University of Almeria.

My current research lines are directed to apply novel methods to quantify paleoclimate changes in the Iberian Peninsula and globally, with implications for the current climate change. In 2020, I was granted by the Junta de Andalucía Government to conduct a two-years project, of which I am the Principal Investigator, to investigate lake sediments and speleothems. In addition, I have been involved in other 3 regional projects, 8 national and 4 international (EU) projects, including 3 ERC grants and 1 RISE action.

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Resumen del Currículum Vitae:

My publication record consists of 48 contributions in international journals (SCI) published from 2011, of which 32 correspond to Q1 and 8 to Q2, and a total of 64 peer-reviewed publications, including 5 international book chapters. My scientific production includes an article as co-author in Science and multiple articles as first author (30) in the most prestigious geoscience and multidisciplinary journals.

I am active member of the geoscience community and I have reviewed over 50 manuscripts for JCR journals during the past 5 years. I am a member of the editorial board of the International Journal of Speleology and a guest editor of Frontiers in Earth Sciences. I have been a member of committees in prestigious institutions (e.g. IAEA) and have chaired conference sessions in specialized meetings. I have been invited to conferences as solicited speaker and to give talks in several national and international institutions (e.g. University of Cologne; IAEA, etc.). I have directed master (5) and degree final projects (4). I have participated in international review panels, including proposal evaluation for the Hungarian and the Argentinian academies of Science and for book proposals for international publishers (i.e. Springer).

In 2020, I was granted by the Junta de Andalucía Government with 48.492 to conduct a two-years project, of which I am the Principal Investigator, to investigate lake sediments and speleothems. In addition, I have been involved in other 3 regional projects, 8 national and 4 international (EU) projects, including 3 ERC grants and 1 RISE action.

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Turno de acceso general

Nombre: DE JUAN MOHAN, SILVIA
Referencia: RYC2020-029062-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: sdejuanmohan@gmail.com

Título:

Ecological condition of marine habitats, ecosystem functions and the provision of services to society

Resumen de la Memoria:

RESEARCH CAREER: I obtained the PhD in 2007 by the University of Barcelona, conducting my research in the Institute of Marine Sciences (ICM-CSIC) in Barcelona, funded by a fellowship from the Catalan Autonomous Government. From 2012 to 2016, I worked in two international postdoctoral projects (in New Zealand, funded by the postdoctoral mobility grants from the Spanish Ministry of Education, and Chile, associated to the project Centre for Marine conservation). In 2017, I returned to ICM-CSIC with a Marie S. Curie Action. Currently, I am working for H2020 project MaCoBioS, being the a work-package leader.
RESEARCH PRODUCTIVITY: I have authored 33 peer reviewed publications, being first author of 19, and my current SCOPUS H-factor is 15. Additionally, I have actively collaborated with international conservation agencies (e.g., WWF, UNEP) and government agencies (from Spain, Chile and New Zealand) with 9 scientific reports published. My professional network is large, multidisciplinar and international and I am a member of 3 working groups on different disciplines of my interest: the dynamics of benthic communities (ICES WGCOMEDA), fishing impacts on ecosystems (ICES WGFBIT) and assessment of marine ecosystem services (ICES WGRMES). In 2016-2017, I coordinated an international research network for the multidisciplinar valuation of ecosystem services in coastal areas in Chile. I have experience in teaching and tutoring, as I coordinated and taught the course Marine Spatial Planning for the Marine Biology degree from the Pontificia Universidad Católica, Chile. I also co-supervised one Ph.D. project from the University of Barcelona (2010-2014) and 5 undergraduate projects.
RESEARCH INTERESTS: To date, I have combined experimental and applied research, scientific consultancy and teaching, investing every effort in generating knowledge that returns to society and contributes to the sustainable development goals in marine and coastal areas. My current research experience focus on 3 main axes: 1) the quantification and evaluation of ecological integrity of marine benthic ecosystems; 2) understanding the mechanistic link between marine ecosystem functioning and ecosystem service supply; 3) assessment of links and feedbacks in marine and coastal socio-ecological systems. I ambition to contribute to a sustainable future transition in marine and coastal areas by producing knowledge on the relationship between biodiversity, ecosystem functions and services provided by these ecosystems. To this aim, I pursue leading the consolidation of this research area in the NW Mediterranean, being the RyC a first an essential step for research career consolidation.
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Resumen del Currículum Vitae:

As a product of my research activities, I have published 33 papers in international peer-reviewed journals, being first author in 19. I have presented works in 35 international conferences, 14 as presenting author. I have also published 9 scientific reports for local governments and conservation agencies. I have participated in 6 international projects and 8 national projects. I have managed 3 non-competitive contracts with a total funding of 17,000 . I am member of 3 ICES working groups and 1 expert workshop, and a CYTED ibero-american research network. I have supervised 1 PhD thesis and 5 undergraduate students; also, I coordinated and imparted a novel course on Marine Spatial Planning for the Pontificia University of Chile. I have also made efforts to transmit the scientific knowledge to general public, including 2 outreach papers and a number of scientific seminars in schools and outreach events. I have actively collaborated with international conservation agencies (e.g., WWF, UNEP) and government agencies (from Spain, Chile and New Zealand) with 9 scientific reports published. I am a member of three scientific evaluation committees: 1) Gestión de Evaluaciones de la Subdivisión de Evaluación y Coordinación de la Agencia Estatal de Investigación (EVALUA) since 2018; 2) Agencia de calidad Universitaria from the Balearic Islands, since 2020; Sustainable Seas National Challenge, from New Zealand research agency, 2019. I have proved capacity to attract funding as since the PhD I have been granted public funding: a grant from the PhD by the Catalan Autonomous Government and a postdoc mobility grant from the Spanish Ministry of Education. In 2017 I was granted a Marie Sklodowska-Curie Actions individual fellowship for reintegration in European science (at ICM-CSIC). After the MSCA I became a member of an international consortia working for the H2020 project MaCoBioS, of which I am the leader of work-package 1 (Marine coastal ecosystems biodiversity, functions and services in a changing environment).

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Turno de acceso general

Nombre: RODRIGUEZ CABALLERO, EMILIO
Referencia: RYC2020-030762-I
Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

Role of biocrust on key cross-scale processes governing drylands functioning, in a context of global change

Resumen de la Memoria:

Drylands are at a high risk of land degradation and desertification and their vulnerability has increased during the Anthropocene. One of the most representative biotic components of dryland regions around the world are biocrusts. These are complex communities of photosynthetic organisms, such as cyanobacteria, algae, lichens and bryophytes growing together with heterotrophic microorganisms within the uppermost layer of the soil. These organisms may cover up to 100% of open spaces among plants in many drylands, where they modulate soil biogeochemical and water cycles, increase soil fertility and prevent wind and water erosion.
My research is focused on the role of biocrust on key processes governing drylands functioning, their interaction with other surface components, and the influence of global change on them. To advance in this knowledge gap, I combine field studies with modelling and remote sensing techniques to address it at different spatio-temporal scales. As a result, my investigation deals not only local biocrust¿s effects on soil stability or water and nutrient cycles, but also the importance of water and nutrient redistribution from biocrusts to vegetation, having a complete and multi‐disciplinary picture of drylands functioning. Some of the main achievements and results obtained during my research carrier are 52 papers published in scientific journals during the last 8 years, 47 of them in journal within the JCR index, 30 of them in Q1 SCI-journals and 15 of them on the 10% of the ranking; h-index: 18; Total citations 1012; First or last author in 45% of the publications; The Paul Crutzen Nobel Laureate fellowship (2016 and 2017) with 80000 founding per year, supervision of a PhD thesis (currently supervising 3 PhD student), participation in regional (3) national (8), cooperation projects (1) and in international networks (2). To do this I have also developed tools to map and quantify their coverage under current and future climatic conditions, which could be of particular importance for drylands management and for modelling diverse climatic scenarios in the future. In addition, I am participating in several research project focused on biocrust restoration as biotechnological tool to recover dryland capacity to provide multiple services and goods to society. During the last year, I also started a new project, as Principal Investigator, with the objective to transfer the current knowledge about biocrusts to land managers and other social actors in order to facilitate biocrust conservation.

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Resumen del Currículum Vitae:

At the beginning of my professional career (2009), I was granted with a FPI fellowship funded by the Andalusian Government to do my PhD on the role of biocrusts on runoff and water erosion under supervision of Proff Y.Canton. As results of this, I disentangle the complex interactions among the different effects of biocrust on hydrological processes. Once I identified the hydrological role of biocrust at plot scale, I focused on the analysis of biocrust spectral response, in order to develop a novel methodology to quantify their cover and spatial distribution at ecosystem scale, which was a crucial step to analyze spatial interactions between biocrust and vegetation that control drylands hydrology, and to include their effects on runoff and erosion models, some of the main gaps in the knowledge about biocrust functions. To do this, I moved to the ITC (Netherlands), to include biocrusts effect on the water erosion model LISEM. Four years after the beginning of my PhD thesis, I finished it with the highest qualification (Apto Cum Laude, Extraordinary Doctorate Award) and I got a post-doctoral fellowship from the Andalusian government which offered me the possibility of starting a new research line on how biocrusts and their effect on water cycle interact with the C balance and vegetation. To achieve it I develop a postdoctoral research stay in the CSTARS at University of Davis, CA (EEUU). At the end of 2014, I obtained a postdoctoral stipend of the Max Planck society to start my work at the Max Planck Institute for Chemistry (MPIC), were I was involved in a dynamic group focused on biogeochemical interaction between soil and atmosphere, and in the up-scaling of regional C and N fluxes to global scale. After one year at the MPIC, I obtained the Paul Crutzen Nobel Laureate fellowship, which is recognition for outstanding junior postdoc with unique insight in to the research activities of the Nobel Laureates. This give me the opportunity to work together with the Nobel Laureate Paul Crutzen, in order to analyze the global distribution of biocrusts under current and future environmental conditions and their effect on key processes governing earth system functioning, like C and N fixation or soil NOx emissions. After 2.5 years at the Max Planck, I returned to the University of Almeria to work on the application of cyanobacteria inoculation for drylands restoration. In 2018, I moved to the EEZA, CSIC with a Juan de la Cierva Incorporacion fellowship, were I collaborator in the activities and research projects of the Geoecology and Desertification department until I moved to the UAL with a HIPATIA-UAL posdoctoral contract. At the UAL, I continue my research line in order to disentangle the important role of biocrusts on drylands functioning at different spatio-temporal scales in collaboration with researchers all over the world. All the results obtained since have been published in some of the most important journals in remote sensing, soil science, water resources, etc. Moreover, I collaborated in in the edition of two books and several book chapters, and my interest for the development of novel methodologies resulted in the development of an automatic software. Parallel to my research activity, I collaborated as teacher assistant and I supervised several

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Turno de acceso general

Nombre: CAÑEDO-ARGUELLES IGLESIAS, MIGUEL
Referencia: RYC2020-029829-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: mcanedo.fem@gmail.com

Título:

Ecology and management of aquatic ecosystems

Resumen de la Memoria:

I obtained my PhD from the University of Barcelona in 2009, focusing on the ecology and management of coastal ecosystems and publishing 7 JRC articles. During that period I did a research stay at the University of Algarve (Portugal), where I later (2010-2011) worked on integrated coastal management as a contracted researcher. Then (2011-2012) I came back to the University of Barcelona as an adjunct professor and a contracted researcher and I became interested on freshwater salinisation. I coordinated several mesocosm experiments and published 3 JRC articles, including a review acknowledged as highly cited by the Web of Science. Then I was awarded with a Fulbright Fellowship at the Oregon State University (2012-2014) to asses the impacts of climate change on stream biodiversity. There, I started my own research line on metacommunity ecology (publishing 2 JRC articles) and continued my research on freshwater salinisation (e.g. I created Global Interest Group at the Society of Environmental Toxicology and Chemistry). By then, I already had a strong and wide scientific network and I had gained international recognition. This allowed me to obtain a Marie Curie Fellowship at the University of Vic (2014-2016), where I created a research line on freshwater salinisation. I coordinated several experiments, supervised students and led my own research projects. This resulted in 5 JRC articles, including 1 published in the policy forum section of Science. After that (2016-present) I came back to the University of Barcelona, where I worked as a contracted researcher and an adjunct professor, and I was finally hired as a tenure-eligible lecturer professor within the Serra-Hunter talent attraction programme. During this period I have started a research line on biodiversity conservation planning, and I have gained research independency (e.g. leading research projects, supervising students) and international reputation (e.g. plenary/invited talks, editorial activity, scientific advisory boards, media interviews).
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Resumen del Currículum Vitae:

JCR articles: I have published a total of 48 JCR articles, 26 of them in journals belonging to the first quartile. I am the first author of 19 and the last author of 4 of those articles, including top journals like Science (IF = 37.2), Philosophical Transactions of the Royal Society B (IF = 5.7) and Science of the Total Environment (IF = 4.9).

Citations: my publications have been cited 1362 and 1928 times and my h-index is 19 and 23, according to Scopus and Google Scholar (respectively). According to the Field Citation Ratio, my articles have been cited on average 6.2 times more than the rest of articles published in the same field and in the same year.

Student supervision and teaching: I have supervised 1 PhD student (Pol Tarrats, qualification = summa cum laude) and I am currently supervising 2 more. Additionally I have supervised 2 postdoc researchers, 6 master theses and 6 undergraduate dissertations. I have taught a total of 362 hours of official BsC and master courses, mainly dealing with the ecology and management of aquatic ecosystems.

Editorial Activity: I serve as an academic editor for Plos One (IF = 2.7) and I have served as guest editor for Philosophical Transactions of the Royal Society B (IF = 5.7), Limnology and Oceanography Letters (IF = 5.2) and Frontiers Ecology And Evolution (IF = 2.1). I have reviewed 154 articles for 37 different journals and in 2017 I was awarded by Publons as the third best reviewer from the University of Barcelona.

My research focuses on understanding and managing the human impacts on aquatic ecosystems. I have participated in 20 R&D projects funded through competitive calls of public or private entities (leading 5), 8 R&D non-competitive contracts (leading 4) and I have directly secured 527.656 euros in research funds. My research has gained national and international recognition. For example, I created and chaired a Global Interest Group on Freshwater Salinization at the Society of Environmental Toxicology and Chemistry and I serve as a senior expert for the committee to set reference conditions and develop climate change indicators in rivers and lakes, created by the Ministry of Environment of the Spanish Government. Also, I have served in the organizing and scientific committees of 1 and 4 international conferences (respectively) and I have organized 1 international workshop; I have been invited to give 8 talks (including 4 plenary talks), chaired 9 special sessions and given 54 regular presentations at international conferences (one of them awarded as the best student presentation); and I have been a member of 6 theses committees.

My enthusiasm for science extends beyond academia. During my career I have participated in many science dissemination activities (e.g. science fairs, workshops, mentoring high school students, TED Talks). Also, I am a member of the Gender and Science Commission of the Iberian Limnological Society and I served as the representative of early career researchers in the European Federation for Freshwater

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Turno de acceso general

Nombre: WORMER , LARS PETER
Referencia: RYC2020-028899-I
Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

Conventional and high resolution molecular biomarker analysis for paleoenvironmental reconstruction and the exploration of microbial life in extreme environments

Resumen de la Memoria:

Trained as an environmental scientist, my initial research focused on the fate of man-made pollutants and cyanobacterial toxins. Research carried out during my PhD significantly contributed to a better understanding of the bio- and photodegration of these toxins and their sedimentation, and thus on the potential exposure risk. At the same time, it provided me with analytical expertize and an ecosystem-perspective that would be of crucial relevance for my future career and current interests.

By joining the working group of Kai-Uwe Hinrichs at Marum (University of Bremen), I became aware of the potential of chemical signatures - molecular biomarkers for the interpretation of past and present ecosystems. Such molecular biomarkers can be used to infer the composition and function of modern microbial systems, but also to reconstruct past environmental and climate conditions, when retrieved from the sedimentary record as molecular fossils .

Consequently, I have gained a firm foothold in two research lines. The first one deals with the characterization of microbial life in extreme environments, most prominently deep marine sediments, but also deserts or hydrothermal systems. The ocean floor harbours a unique microbial community, the so-called deep biosphere, and I have contributed to define the relevance of specialized survival cells (Wörmer et al. 2019), and the temperature limits for life (Heuer et al. 2020) in it.

The ocean floor is also an extraordinary archive of past climate and ecosystem change that can be interrogated through chemical informants. To reconcile such reconstruction with human timescales (seasons to decades), I pioneered the implementation of Mass Spectrometry Imaging (MSI) of molecular proxies in marine and lacustrine sediments (Wörmer et al. 2014). MSI allows to obtain proxy information with micrometer-resolution and thus to explore these systems with unprecedented temporal resolution (Alfken et al., 2020; Obreht et al., 2020).

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Resumen del Currículum Vitae:

I have established my career at the convergence of topics with societal relevance, fundamental science focused on the interpretation of microbial ecosystems, and analytical innovation. My future research will continue this path and interrogate (1) microbial life in extreme environments and (2) past ecosystems subjected to disruptive events through the use of chemical informants. Unique insights will be attainable by their exploration at the microscale.

I obtained a degree in Environmental Sciences at Universidad Autónoma de Madrid (UAM, Spain) in 2004, and subsequently enjoyed a NASA Planetary Biology Internship at Duquesne University (USA). There I investigated the biotransformation of roxarsone, an additive to poultry feed, and evidenced the release of toxic arsenic species (Stolz et al. 2007). My PhD was carried out under the supervision of Prof. Antonio Quesada (UAM, Spain) and dealt with the environmental fate of cyanobacterial toxins (e.g. Wörmer et al. 2008, 2010, 2011), while I was also involved in monitoring and assessment duties related to these toxins.

In 2010 I joined the working group of Prof. Kai-Uwe Hinrichs at MARUM (Univ. Bremen, Germany). MARUM is a worldwide leading institution in marine environmental research. My initial task was to provide innovation in the analysis and interpretation of molecular biomarkers, employed as informants of past or present ecosystems. Protocols developed during this time are reference methods in the marine and geosciences (e.g., Wörmer et al. 2015).

Two topics caught my special attention. On the one hand, I am fascinated by microbial survival in extreme environments, particularly the ocean floor: life in this energy-starved environment challenges our most basic assumptions. In 2014, I led a project that established a research line on bacterial dormancy. As a result, I have contributed to two additional research grants (one as PI) and assisted in PhD supervision. Together with international collaborators, we evidenced the relevance of specialized survival cells in the ocean floor and in deserts (Wörmer et al., 2019, Schulze-Makuch et al., 2018), and defined the temperature limits of life (Heuer et al., 2020).

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On the other hand, I pioneered an analytical innovation that interrogates molecular signatures at micrometer resolution through Mass Spectrometry Imaging (MSI, Wörmer et al. 2014). This led to a successful ERC Advanced Grant proposal, to which I significantly contributed. Since 2015 I have worked in the ZOOMECULAR project, overseen the newly created Geobiomolecular Imaging Lab, and assumed a central role in outlining goals, coordinating day-to-day activities, supervising PhD and MSc students and conducting research. MSI can explore modern microbial ecosystems (Wörmer et al., 2020), and the sedimentary record as archive of past environments (Alfken et al., 2020, Obreht et al., 2020) with unprecedented detail. Since November 2020, I carry out my research as part of the Excellence Cluster The Ocean Floor Earth s Uncharted Interface .

My research has benefited from collaborations with scientists worldwide, resulting in first authored publications with colleagues from JAMSTEC (Japan) or MIT (USA) and co-authorships in Nature Communications, PNAS, or FEMS Microbiology Ecology. I look forward to further strengthen such collaboration, and the exploration of common research interests.

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Turno de acceso general

Nombre: MONTOYA TERAN, DANIEL
Referencia: RYC2020-028780-I
Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

Ecological communities under global change: basic and applied aspects

Resumen de la Memoria:

My core background is on Community Ecology, and my research aims to understand how biodiversity and species interactions affect community structure and stability, and how they affect the functioning of ecosystems. My work explores the response of communities and ecosystems to global change factors, such as climate change, biological invasions and habitat destruction. My research combines a diverse set of approaches: simulations and mathematical models, analysis of large datasets, field observations and experiments. My ultimate goal is to contribute to an integrative and predictive knowledge of the effects of global change on communities and ecosystems, and to apply this knowledge to inform restoration, and to design sustainable agricultural systems. My work is divided into three general research lines:

1) Structure, functioning and stability of ecological communities: I investigate the stability of food webs in space, as well as the relationships between the structure of these communities and their functioning. Together with my collaborators, I have revealed how species interaction networks are structured at local versus landscape scales. In addition, I have studied the response of communities to global change drivers e.g. deforestation, habitat fragmentation, warming and show that the structure of such communities is key to understanding their response to global change. I have started a collaboration to investigate the effects of microplastics on the structure and functioning of communities. Some of my work in this section is the result of a Marie Curie Fellowship which I was awarded in 2012. This fellowship provided funding for me to stay at the University of Bristol (UK) until 2015.

2) Biodiversity and ecosystem functioning. In the context of agricultural systems, I have found that land-use intensification imposes trade-offs and synergies on ecosystem services that affect not only their mean provision but also their temporal stability. This has huge implications for agricultural management for multiple stakeholders demands, and for food security under global change. My research offers new perspectives in landscape management that better consider the spatiotemporal dynamics of multiple ecosystem services related with biodiversity and crop production, with two main objectives: (i) develop a theoretical framework of ecosystem service stability, and (ii) investigate scenarios for food security under global change scenarios. Most of this research started during a 3-year AgreenSkills Fellowship hosted by INRA Agroecologie and the Center for Biodiversity Theory and Modelling (CNRS, Moulis), France.

3) Ecosystem restoration. My work has contributed to making a global synthesis of the outcome of restoration across regions and ecosystems around the world. The findings of this work support two core conclusions: i) restored ecosystems accumulate a recovery debt and only recover part of their lost biodiversity, functions, and benefits to societies, even after decades or centuries, and ii) active restoration efforts do not always yield better results than naturally regenerating ecosystems. One main conclusion of my work is that the field of restoration would benefit from integrating recent advances in diverse ecological theories and by taking a more holistic view; e.g. considering species interactions and ecosystem functioning.
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Resumen del Currículum Vitae:

I began my scientific career with a PhD at University of Alcala (2005-2009). During my PhD I did research placements at the University California Irvine (2005), Princeton University (2006), Microsoft Research Cambridge (2007), University of London (2007). I then moved to Bristol University, where I held two Postdoc positions: one funded by the Spanish Ministry of Education & Science (2010-2012), the other a Marie Curie Fellowship (2012-2014). Next, I moved to France with a 3-year AgreenSkills Fellowship hosted by INRA and CNRS, where I continue as a postdoc researcher.

My research studies the effects of biodiversity on the structure, stability and functioning of ecosystems. My work combines a diverse set of methodologies, which has allowed me to use theory, field work and experiments as complementary tools to investigate ecological questions.

I have 31 publications, and I am the first, last or sole author in 14 of them. I have several articles as 1st author in generalist journals such as Science, Nature Communications, Trends in Ecology & Evolution, and in leading journals in ecology such as Ecology, Ecography, Proc Roy Soc Lond B, and Ecology Letters. I have prioritised quality over quantity: 89% of my publications are SCI, and 93% are in the 1st quartile of the Ecology, Evolution, Behaviour & Systematics category in the ISI Journal Citations Reports. My work has been cited >1700 times and my h index is 17 (2008-present). Impact factor: Mean = 7.384; Median = 5.175.

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I am editor of Frontiers in Ecology & Evolution and Journal of Animal Ecology, and project reviewer for the British Ecological Society (UK), ANEP (Spain) and the Swiss National Science Foundation. I am a regular reviewer of journals such as Nature Ecology & Evolution, Trends in Ecology & Evolution, Ecology Letters, Global Change Biology, and J. Ecology. I have participated in multiple conferences (often invited), organised sessions in international conferences, symposia and workshops.

I have obtained competitive research funding from different institutions and countries: Marie Curie contract in the UK; AgreenSkills contract at the CNRS and INRA, France; grants funded by the Natural Environment Research Council, the Royal Society of London and the British Ecological Society (UK), the Spanish Ministry of Science, the National Association pour la Recherche (France), the National Socio-Environmental Synthesis Centre (USA) and German Centre for Integrative Biodiversity Research (Germany), and the CEED (Australia).

I have participated in social outreach activities to expand scientific research to the non- academic society. I have written popular articles. My research has attracted media attention in national and international press articles, as well as research journals, news and websites, and other institutions.

My teaching experience includes seminars, postgraduate courses and master's degrees in Spain, the UK and France. I have supervised up to 18 students at different levels, including scientific degree projects, external thesis evaluation or master and PhD directions.

I have worked in research in the UK, Spain and France for several years each. I have also conducted research stays in several centers in the US and Australia. This has given me abundant experience in various academic cultures, and a large network of collaborators and an international perspective.

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Turno de acceso general

Nombre: HERNANDEZ HERNANDEZ, ARMAND
Referencia: RYC2020-029253-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: armandhernandezh@gmail.com

Título:

A Holocene perspective to climate changes, extreme events and water resources: the predictive capability of the palaeosciences

Resumen de la Memoria:

As a palaeolimnologist and palaeoclimatologist, I am focused on the study of the past and present climate system to better understand possible changes in the future. I have an extensive experience of reconstructing climate and evaluating its environmental impacts using sediments and instrumental records.

My main scientific expertise focus on:
1) Sedimentology, stratigraphy and palaeoecology to study impacts of natural and human-induced processes on lake ecosystems.
2) Isotopes in diatom silica from lake records to understand lake dynamics and reconstruct local and regional environmental changes.
3) Statistical modelling of sedimentary processes and climate changes to (1) define the main control factors for sediment deposition, (2) built chronostratigraphical models and (3) develop quantitative proxy-based climate reconstructions.

The scientific quality and relevance of my research is supported by 27 publications (all of the first quartile Q1; 18 of the first decile D1; 10 papers as a first author; 5 as a second, last or corresponding author). I have also published four papers in top-ranked journals (IF>9 or first journal of the area; two as a first author and one as a second and corresponding author). I have been Principal Investigator (PI) of 5 research projects (>400k) and on several pre-doc and post-doc secondments accumulating more than 6 years of experience working in foreign research centres with internationally recognised research groups. I have also got experience supervising students at different levels (3 PhD students, 4 Master students and 5 undergraduate students) and a longstanding engagement with educational and dissemination activities (e.g., university lectures, outreach tasks, laboratory trainings and seminars).

My medium-term plan is to develop a decision-support research to evaluate decadal-scale climate variability during the Holocene with the aim of characterising critical long-term climatic patterns and their relationship with extreme climatic events and water resources. To achieve this, I will use lacustrine sedimentary archives and will apply innovative approaches in geochronology (tephrochronology), calibration of proxy-based records and advanced statistics (Bayesian modelling and frequency analysis) for quantitative climate reconstructions. This palaeo-perspective is crucial for testing, validating and refining climate change projections related to water resources in W Europe and the Mediterranean, highly sensitive regions to precipitation variability in the current context of global change.

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Resumen del Currículum Vitae:

I am a palaeolimnologist and palaeoclimatologist with a broad range of interests, including climate reconstructions and proxy-data calibration. Over the last years, I have established my international reputation as a leading innovator of new approaches to the study of multi-decadal variability of atmospheric circulation in the most recent past. A proof of that is my contributing as an author to the AR6 of the Intergovernmental Panel for Climate Change (IPCC) Working Group I and an invited review paper in the Earth-Science Reviews journal (Hernandez et al., 2020. IF=9.7; Position 2/200).

I graduated in Geology in 2003 at the Universitat de Barcelona (UB). I was awarded my PhD at the ICTJA-CSIC and UB with maximum qualifications in September 2010. I also received the award for the best PhD thesis on Earth-Sciences presented at the UB in 2010. As an early-career researcher, I was awarded two fellowship: a competitive FCT-Marie Curie Cofund fellowship from 2012 to 2017 to join the research group of Prof. Trigo (IDL-University of Lisbon) and a Beatriu de Pinós postdoctoral fellowship (AGAUR and EU-funded project FLODES2k-Marie Curie program), from 2018 to 2020, to develop my own research project at ICTJA-CSIC.

During my career I have accumulated a large experience working in foreign centres with worldwide recognised research groups in Quaternary Science, which has allowed me to found a fruitful network of collaborators and acquire a comprehensive set of interdisciplinary research skills in biogeochemistry, geochronology, advanced statistics and climate reconstruction methods, and complementary skills in leaderships, project management, working with external partners and knowledge exchange. I have been on secondment at British Geological Survey (UK), Universidade de Lisboa (Portugal), University College of Dublin (Ireland) and Royal Holloway University of London (UK). Main outputs of these collaborations include excellent profile of publications, leadership in several R+D projects and initiatives that prove my capacity as an independent researcher.

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My status as an early career research leader is demonstrated by:
i)Peer-reviewed scientific papers published (27+3 submitted) in the most recognised journals of their disciplines (all of the first quartile Q1; 18 of the first decile D1; 10 papers as a first author; 5 as a second, last or corresponding author). Four papers published in top-ranked journals (IF>9 or first journal of the area; two as a first author and one as a corresponding author). A total of 548 citations and a h-index of 13 (Scopus, Jan 2021). Two book chapters and two papers in no-ISI journals.
ii)Principal Investigator of 5 research projects and several competitive grants and travel awards (>400k) which highlights my ability to secure funding. I have also participated in 16 national and international research projects (EC-FP7, H2020, COSTaction).
iii)More than 30 communications in international conferences, invited talks and seminars.
iv)Reviewer for top-ranked journals, member of PhD thesis and European grants evaluation panels and supervisor of students: 3 PhD, 4 Master and 5 undergraduate students.
v)Educational and outreach activities
vi)R+D management activities (e.g., seminars coordinator, convener of international conferences).
vii)I3 certification (I3/2019/0783) in the CTM Global area by the Spanish AEI

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Turno de acceso general

Nombre: RAMIREZ BENITEZ, FRANCISCO JOSE
Referencia: RYC2020-030078-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: ramirez@icm.csic.es

Título:

Global change ecology and marine biodiversity conservation

Resumen de la Memoria:

My research focuses on global change ecology and marine biodiversity conservation, with a special emphasis on (i) investigating the long-term trends in key environmental and biological variables in the world s oceans; (ii) identifying those marine areas most at risk due to climate and human-driven environmental changes; (iii) evaluating wildlife responses to environmental changes in highly-impacted marine systems; and (iv) designing suitable management alternatives to enhance ecosystem resilience to climate change and to ensure a sustainable balance between marine biodiversity conservation and human use of ecosystem services (Figure 1).

Over the last several years, my research has contributed to advancing the state-of-the-art in these fields by (i) producing the most spatially explicit assessments on climate and human impacts in the marine environment; (ii) providing new insights on the biological consequences of climate change and overfishing; and (iii) devising new approaches to identifying key areas for marine biodiversity conservation.

To accomplish these goals, I have worked at different levels of ecological complexity (from individuals to communities and ecosystems), with different study models (e.g., fish, seabirds and cetaceans), and in various biogeographical areas (tropical, template and polar regions).

The scientific value and social interest of my research is illustrated by the number of scientific publications (55), all published in highly ranked peer-reviewed journals (74% in Q1; 94% in Q1 + Q2; 863 citations and H index=19, source: SCOPUS). National and international media has echoed several of these publications (see details in: https://fjramirez1980.wixsite.com/website).

With 7 postdoctoral contracts (including a Juan de la Cierva-Incorporación and three contracts through international EU projects from FP7 and H2020 Framework Programmes), participation in 15 national and international research projects and the supervision of two PhD theses and six Masters theses, I have established myself as a mature researcher in a consolidated research line. I have been able to integrate and develop my scientific expertise within the main objectives of the different research groups and institutions with which I have been involved, while gaining flexibility in the use of different approaches and techniques to address my own scientific goals and interests.

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Resumen del Currículum Vitae:

(ORCID ID: 0000-0001-9670-486X; ReseacherID: I-3553-2014; ScopusID: 55612439700). 1) 55 published scientific articles (2 in press*) in highly ranked peer-reviewed journals (Table 1) 2) 14 published articles within the top ten ranked journals in their categories including: Global Change Biology (IF: 8.88), Science Advances (IF: 11.51), Conservation Biology (IF: 5.89), Proceedings of the Royal Society B (IF: 4.94), Scientific Reports (IF: 4.259), Diversity and Distribution (IF: 4.83) or Environmental Science and Technology (IF: 5.23), among others; 3) 18 articles as first author, 16 articles as second author and 4 articles as the last author; 4) Google Scholar: 1185 citations and H index=20, SCOPUS: 863 citations; H index=19, Publons (WoS Researcher ID): 789 citations; H index=16; 5) 7 postdoctoral contracts, including a Juan de la Cierva-Incorporación (IJCI-2015-24531) and three contracts under international EU projects from FP7 (ECOGENES) and H2020 (ECOPOTENTIAL , and TRIATLAS) Framework Programmes; 6) participation in 15 national and international projects, and IP of a project (AUS$ 15,000) funded by Phillip Island Nature Park (Australia); 7) supervision of 2 PhD theses and 6 Masters theses; 8) a wide international research network (co-authored with ca. 150 researchers from a number of countries and research institutes; source: SCOPUS); 9) Expert member of EVALUA agency (Agencia Estatal de Investigación AEI; http://www.aei.gob.es); Oficina Española de Cambio Climático (OECC, https://www.miteco.gob.es/es/cambio-climatico/temas/organismos-e-instituciones-implicados-en-la-lucha-contra-el-cambio-climatico-a-nivel-nacional/oficina-espanola-en-cambio-climatico/); and contributor to the IUCN assessment of the conservation status for the little penguin (http://dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T22697805A112478911.en) 10) Profesor Contratado Doctor (ANECA, PCD: 2020-3561), Profesor Ayudante Doctor (ANECA, PCD: 2020-3562), Acreditació de Recerca (AQU, convocatòria Agregat 2020, NT2637N2R).

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Turno de acceso general

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Correo Electrónico: pauarribas@um.es

Título:

Evolutionary Ecology and Conservation of Arthropod Biodiversity

Resumen de la Memoria:

I would describe myself as an evolutionary ecologist interested in arthropod biodiversity. My research focuses on understanding the processes that (i) generate biodiversity, and (ii) influence the structure of biodiversity in space and time, and (iii) integrating this information within a conservation framework. I have taken both traditional and state-of-the-art molecular and analytical techniques to develop an innovative and integrative approach that I apply to a range of fields, including biogeography, community ecology, micro and macroevolution, conservation biology and soil science.

My primary research line is to reveal and understand the enormous but largely undocumented diversity of arthropods that inhabit soil. This research pivots on the use of the huge potential offered by the High Throughput Sequencing (HTS) to unveil this large fraction of global biodiversity, and thus contribute to the sustainable management of soils. I achieve this by developing and implementing both community-based and lineage-based HTS approaches to reveal the ecological and evolutionary processes shaping soil arthropod diversity at the levels of genes, species, functional traits and entire assemblages. These are fundamental data, now within reach as a result of my research, for robust evaluations of current and future risks to soil biodiversity, and the ecosystem processes that it contributes to.

I obtained my PhD in Biology in 2013 (Ex Cum Lau, University of Murcia) which was awarded at both the national and European level. I undertook postdoctoral stays at both Imperial College London (Newton International 2014-2015) and the IPNA-CSIC (Juan de la Cierva 2016-2018 and H2020 iBioGen project 2018-2021). During my research career I have published 42 (JCR) papers (12 as first author, 15 as second and 3 as senior, 34 of them Q1 and 23 with IF > 5). My H-index is 17 (1000 citations, Google Scholar 15/01/21). I have also published 3 book chapters and 7 non-JCR publications. I have ongoing collaborations with 25 international institutions. I have participated in 26 projects (5 international and 1 as PI (Newton International, total income 81.225)), including an H2020 (999.332) and a major equipment grant (361.769). I have co-supervised two PhD students in 2017 and 2020, and currently supervising one. I have presented >20 contributions to national and international conferences (3 as invited speaker). I am currently on the Editorial Board of Front in Ecol & Evol and PCI Genomics. I have reviewed for more than 15 international journals, served as project reviewer for the ANEP, and have over 180 hours of teaching at the University of Murcia, Imperial College London and the University of La Laguna. I have performed fieldwork in 6 countries and participated in multiple outreach activities at the Natural History Museum of London and at the IPNA-CSIC.

My top scientific achievement is my successful development and expansion of a dynamic international network, within which my research and scientific interests are the core. I have designed and managed my primary research line since the beginning of my postdoctoral stage. My research has a high scientific, technical and social impact potential, demonstrated by the novelty and impact of my publications. Currently, I am actively searching for funding to establish myself as a research leader and to expand my science.

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Resumen del Currículum Vitae:

(1) Number of scientific (JCR) publications = 42 (12 as first author, 15 as second and 3 as senior, 34 of them Q1 and 23 with IF > 5). (2) Number of book chapters & non-JCR publications = 3 and 7 respectively. (3) H-index = 17; i10-index = 28. Citations = 1000 (Google Scholar 15/01/21). (4) Projects as PI = 1 (+3 Follow On Support associated to this project). Total income 81.225 . (5) Projects in which I participated = 26 (23 competitive, 5 of them international). (6) PhDs supervised and defended = 2. Currently supervising = 1. (7) MScs supervised and defended = 2. (8) Competitive predoctoral / postdoctoral fellowships = 6 (2 predoctoral, 3 postdoctoral (+3 Follow On Support)). (9) Number of research centers in which I have worked = 3 (1 of them international, 2 national). (10) Number of distinctions = 4 (2 Graduation awards + 2 PhD thesis awards). (11) Number of contributions to national and international conferences >20 (3 as invited speaker). (12) Number of journals for which I am reviewer = 15, and a member of the editorial board = 2. (13) Project reviewer for the ANEP = 1. (14) Teaching hours = 180 hours at the University of Murcia, Imperial College London and the University of La Laguna.

In addition to the metrics described above, I have successfully developed, expanded and maintained a collaborative international network to strengthen my principal research line and scientific interests. In all my publications as first author, I have been the driver, from project design and data generation through to the publication process. This is reflected in my assignment as corresponding author in all these papers. I also have a high and multiple-stage involvement in most of my collaborative publications. I have substantially contributed to the improvement and development of the research groups and infrastructures of the institutions where I have worked. I have achieved essential experience in scientific bureaucracy, applying for funding and project management (including H2020, Plan Nacional, and regional/local research projects). I have developed valuable mentoring and team-building skills, including collaboration and knowledge transference to regional and local stakeholders. I endeavor to communicate my research to the general public and stakeholders. Finally, I seek to promote the visibility and peer-mentoring of women, particularly mothers, in biodiversity research.

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Turno de acceso general

Nombre: GONZALEZ ALCARAZ, MARIA NAZARET
Referencia: RYC2020-029322-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: nazaret.gonzalez@upct.es

Título:

Soil pollution evaluation and remediation in multi-stressed environments: from biogeochemistry to ecotoxicity under a global warming perspective

Resumen de la Memoria:

The guiding thread of my research career has been related to soil pollution evaluation and remediation (soil biogeochemistry; environmental soil management; soil ecotoxicity and climate change). I obtained my PhD (2012) from the Technical Univ. Cartagena-Spain UPCT on the biogeochemistry of N, P and metals in soil-water-plant systems of eutrophic and polluted wetlands. I tested the capacity of these systems as sink/source of these elements and the effects of the binomial plant vs. soil amendment on pollutants mobilization risks and appropriate remediation measures. I made two predoctoral stays (2+2 months; ETH Zurich- Switzerland; Univ. Lisbon-Portugal). My PhD allowed me to acquire a broad and applied vision of degradation problems in metal-polluted and eutrophic environments and led me to become interested in the field of soil ecotoxicology to link the biogeochemical issues with the toxic effects of pollutants. In 2013 I got the Ramón Areces Postdoctoral Fellowship to work in the field of global change ecotoxicology at the VU Univ. Amsterdam-Holland (10/13-09/15). I opened a pioneer line focused on the effects of rising air temperature and soil dryness on the ecotoxicity of soils affected by metal mine wastes from SE Spain, using soil invertebrates as bioindicators. From 10/15 to 06/16 I continued working at the VU to set up a research network established between VU and UPCT. Based on the knowledge I acquired, I concluded that the ecotoxicity risks of metal-polluted soils may change depending on the prevailing climate conditions and that soil ecotoxicology must consider the emergent suite of stressors driven by climate change. In 2016 I got the Marie Sklodowska-Curie Individual Fellowship and in 2017 I moved to the Univ. Aveiro-Portugal UA to lead a project on the effects of single/multiple climate factors (air temperature, soil moisture, atmospheric CO2, UV radiation) on the ecotoxicity of metal-polluted agricultural/forest soils from central-northern Portugal (01/17-01/19). I evaluated the effects on soil invertebrates through population performance indicators but also the damage at genetic and biochemical level. In 2018 I got two R&D projects as Principal Investigator at the UA to deepen in the effects of climate change on the ecotoxicity/functionality of anthropogenic metal-polluted soils from temperate regions: METOXCLIM (project from Portuguese National Plan; 06/18-05/21); MICROCLIM (project from French CNRS/INEE-OHMI; 07/18-06/19). With these projects I started working with the soil microbial component looking at the effects of climate factors on its structure and functions. I was hired as researcher by METOXCLIM project for 14 months (03/19-05/20). In June 2020 I returned to the UPCT with a Saavedra Fajardo Research Contract (Séneca Foundation of Murcia-Spain) to study the ecotoxicity of soils affected by metal pollution from the Murcia Region under forecasted climate change scenarios (06/20-05/23). I pursuit to coordinate my own research group aiming to unravel how future climate scenarios will impact the ecotoxicity and functionality of terrestrial ecosystems degraded by anthropogenic pollution from the Mediterranean region, by using soil invertebrates, microorganisms, and plants as bioindicators of possible alterations.
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Resumen del Currículum Vitae:

ACADEMIC MERITS
- PhD in 2012 by Technical Univ. Cartagena-Spain (UPCT). Cum Laude & Special Doctorate Award (best PhD Thesis in Basic Sciences in 2012)
- MSc Degree in 2012 by UPCT in Advanced Techniques in Agricultural and Food Research and Development. Special Award for Degree (Mention of Excellence by MSc Program)
- Biology Degree in 2006 by Univ. Murcia

SCIENTIFIC PRODUCTION
- SCI papers: 40 (75% Q1; 20% D1); first author in 19 & senior author in 8; corresponding author in 21; 549 citations (h-index 13, i10-hindex 23)
- Book chapters: 4 in international books (1 first author, 1 senior) & 16 in Spanish monographs (1 first author, 5 senior)
- Other publications: 2 non-SCI papers (1 first author, 1 senior) & 16 technical reports (10 first author, 2 senior)
- Scientific meetings: 68 at international level (11 keynote/invited speaker) & 23 at national level (7 keynote/invited speaker)

FUNDRAISING, LEADING & COLLABORATION IN RESEARCH
- Own competitive research fellowships/contracts (total of 324,435.6 including own salary + research funds)
*Research Contract Saavedra Fajardo from Séneca Foundation-Spain
*Marie Skłodowska-Curie Individual Fellowship-EU
*Postdoctoral Fellowship from Ramón Areces Foundation-Spain
- Competitive R&D projects with participation: 3 international projects (1 as Principal Investigator PI); 1 international research network; 1 Portuguese National project (PI); 8 Spanish National projects; 3 Spanish Regional projects. Total of 1 182,491

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- Competitive projects of fundraising for large facilities/durable equipment: 1 (143,928.0)
- R&D projects of knowledge transfer with public administrations/private sector: 17 (1 as PI). Total of 772,021. 38

INTERNATIONAL EXPERIENCE

- Research career in 4 foreign institutions, >6 years abroad

*2017-2020 at Univ. Aveiro-Portugal UA , 38 months
*2013-2016 at VU Univ. Amsterdam-Holland, 33 months
*In 2010 at Univ. Lisbon-Portugal, 2 months
*In 2009 at ETH Zurich-Switzerland, 2 months

- Collaborations (Spain, Portugal, Holland, Switzerland, Czech Republic, Turkey & China)
- Member of SETAC-Stakeholder roundtable prioritizing research questions for the Mediterranean region
- Evaluator of H2020 proposals & Marie Sklodowska-Curie Fellowships

MENTORING & TEACHING EXPERIENCE

- Supervisions

*3 PhD Thesis (1 in progress) at UPCT-Spain
*3 MSc Thesis at VU-Holland & 1 at UPCT-Spain
*1 BSc Thesis at VU-Holland & 6 at UPCT-Spain (1 in progress)
*2 Postdoctoral researchers at UA-Portugal
*2 Research fellows at UA-Portugal
*1 Student of experimental laboratory practices at UA-Portugal & 10 at UPCT-Spain

- Teaching activities

*UPCT-Spain: theoretical/practical teaching in BSc, MSc and PhD Degrees from 2020 (8 ECTS); external teacher in MSc Degree between 2015 and 2020 (5.1 ECTS); practical teaching in BSc Degrees between 2008 and 2011 (16.5 ECTS)
*UA-Portugal: (co)responsible for 2 postgraduate courses in 2019 (16 hours of teaching)
*National Univ. San Luis-Argentina: invited lecturer in postgraduate course in 2013 (50 hours)

OTHER MERITS

3 ANECA Accreditations (Profesor Ayudante Doctor; Profesor Contratado Doctor; Profesor Universidad Privada). Erasmus+ Coordinator at UPCT for Nicolaus Copernicus Univ. Tórun-Polland. Task leader at UPCT within EUt+ Initiative. Committee member of 6 PhD & 1 MSc Thesis. Secretary Soil Degradation & Recovery Control section of Spanish Society of Soil Science.

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Turno de acceso general

Nombre: MACEDA VEIGA, ALBERTO
Referencia: RYC2020-030298-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: albertomaceda@gmail.com

Título:

Integrative Zoology for the Conservation of Rivers and Fish

Resumen de la Memoria:

I am at the moment starting as PI the Integrative Zoology Lab for the Conservation of Rivers and Fish at the University of Barcelona (UB). I combine approaches from the individual (e.g. physiology, histology, life-history traits, -omic biomarkers) to the community (fish and other taxa, including symbionts) and ecosystem levels (e.g. ecological processes) to appraise how biological invasions and chemical pollution affect aquatic biodiversity. I also study human uses of species and the interactions between aquatic and terrestrial biodiversity to develop more complete management actions.

The first part of the report describes the 10 strengths that I consider are key for the full development of my lab at the university: 1) Efficiency in conducting inter-disciplinary cutting-edge original research; 2) Continuous funding and leadership of research lines created de novo; 3) International and national mobility in the context of climate change and personal constraints; 4) Networking and recognition at national and international levels; 5) Cross-disciplinary teaching and teaching innovation; 6) Host of visiting researchers and supervision of PhD, master and undergraduate students; 7) Outreach activities: knowledge transfer to general public, administration and industry; 8) My career pays attention to applied science but also to fundamental studies of natural history; 9) Promoting cohesion in centres, healthy labs and coaching activities and 10) My profile as truly interdisciplinary researcher.

The second part of the report describes my career and research interests chronologically from my original job for the aquarium industry (2000-2009) to becoming Assistant Professor and member of the Institute of Research in Biodiversity at UB (2017-present).

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Resumen del Currículum Vitae:

Dr Maceda is the PI of the Integrative Zoology Lab for the conservation of rivers and fish at UB. Before he moved to academia full time in 2009, he worked for the aquarium industry for 9 years. He got his Master studies in Animal Biodiversity in 2007 and his PhD in 2011 (Premio Extraordinario de Doctorado) under the supervision of Dr. A de Sostoa. From 2011 to 2013 he led a work package on metal pollution in an AECID project in Lake Titicaca and the conservation plans for two fish species in northeastern Spain. He moved to Cardiff University in 2013 with a Marie Curie IEF and he won three highly competitive fellowships in 2015 (Severo Ochoa, FCT Portugal and JdC), having to decline FCT and JdC because authorities did not accept his delayed incorporation and he was already compromised to accept SO at DBS-CSIC in 2015. After two years in Seville, Dr Maceda was appointed as Assistant Professor and academic member of the Institute for Research in Biodiversity, both at UB.

Dr Maceda s research has been pioneer in assessing the aquarium trade as a source of fish invasions in southwestern Europe, in developing non-destructive biomarkers (physiological indicators) for the monitoring of health status in native wild fish and in taking an integrative zoological approach (e.g. combining studies of physiology, community ecology, microbiology, sociology) for assessing and preventing the impacts of biological invasions and chemical pollution on riverine fishes, which are the most threatened vertebrates on Earth. His studies included the importance of habitat quality and biotic interactions for the success of invaders and the role of riparian communities in mitigating pollution in rivers. His research is published in top journals of Environmental Sciences/Fisheries/Marine & Freshwater Sciences, but he also develops studies of basic biology when is required by the poor knowledge of the focal study system. His research is regularly featured in media (interviews, TV, press releases) and is used in national and international policy documents (nitrate, alien species, Water Framework Directive, animal welfare, CAP policy). He has self-funded his complete career and has been very active in knowledge transfer to society and public and private sectors. Funding includes individual prestigious grants and the participation in national and international projects, acting 7 times as PI and working in manuscripts with 176 coauthors from 34 nationalities, 112 different research centres and from 123. His PhD supervisor had not collaborated previously with >90% of them. Dr Maceda has been proactive in supervising PhD, Master and undergraduate students and teaching at three national and international universities, where he uses cutting-edge teaching innovation skills. The former PhD students have jobs in and outside academia. The organization of international conferences, invited articles to SCI journals, reviewer for journals and for projects from different countries, including EU projects, and acting as host for international and national researchers further proves his reputation. In the last 3 years he has had major teaching management responsibilities but he has still been very active in publications and science activities, including outreach activities and providing advice to aquatic animal facilities in research centres and in providing training to industry.

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Nombre: SECO GUIX, ROGER
Referencia: RYC2020-029216-I
Área Temática: **Ciencias y tecnologías medioambientales**
Correo Electrónico: roger.seco@bio.ku.dk

Título:

Responses of biogenic volatile emissions to climate change and their impact on atmospheric chemistry

Resumen de la Memoria:

My main research line studies the biosphere-atmosphere interactions through the biogenic emissions of Volatile Organic Compounds (VOCs). I am an interdisciplinary researcher that combines plant ecophysiology with atmospheric chemistry to study the impacts of climate on vegetation physiology, and the vegetation impacts on air quality and climate. My research has been driven by the need to quantify and understand the effect of climate change on VOC emission. Indeed, it is imperative to understand the processes controlling VOC emission from terrestrial ecosystems and accurately represent these processes in Earth System models to predict the consequences of climate change.

I built a solid international network of collaborators, having developed my career in Spain (6 years including PhD), USA (7 years), and Denmark (2+ years). I gained extensive experience in international field campaigns as well as in laboratory experiments, and in the use of biogenic emission models to help interpret my measurements of biosphere-atmosphere interactions. I have taught courses at the University of California Irvine and University of Copenhagen, and mentored 7 PhD students.

The main tools used in my research are online mass spectrometers (e.g. PTR-MS) for real-time (without pre-concentration of the air sample) measurement of VOCs. In recent years, I have coupled those mass spectrometers to fast 3D wind measurements in a micrometeorological technique called Eddy Covariance that enabled me to measure ecosystem-scale VOC fluxes from mature vegetation in its natural habitat. I have also led measurements of OH radical, OH reactivity, and other chemical species that are intimately linked to the atmospheric oxidation capacity and control how VOCs react in the air.

I have participated in 12 collaborative field campaigns, leading the deployment of online mass spectrometers in urban and natural environments in Spain, USA, Brazil, Israel, South Korea, Antarctica, Sweden and Norway; measuring from ground, towers, ships, balloons, and airplanes. The measured ecosystem-scale VOC fluxes from temperate, tropical, Mediterranean, and Arctic ecosystems shed light on the responses of VOC emissions to drought and temperature. In addition, results of these field campaigns advanced the knowledge of the atmospheric oxidation of VOCs, the subsequent formation of secondary aerosols, and the influence of human-induced pollution on those processes.

My immediate research plans include the measurement of VOCs from Arctic birch forests in response to insect herbivory, which is increasing as a result of climate warming. Medium- and long-term plans involve measurement of eddy covariance VOC fluxes from Spanish ecosystems, including crops with importance for the economy. In addition, I would like to apply what I have learned studying biogenic fluxes to measure fluxes of anthropogenic VOCs by eddy covariance in urban areas such as the city of Barcelona. This would transfer my knowledge from the natural world to a more human-centered environment. In that sense, my scientific profile is quite unique in the Spanish research system, as no other researcher based in Spain has hands-on experience in applying eddy covariance to the study of VOCs in neither natural nor urban areas.

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Resumen del Currículum Vitae:

Since 2018, I am an Assistant Professor at the University of Copenhagen (KU), working on ecosystem-scale Volatile Organic Compound (VOC) fluxes from high-latitude tundra within an ERC Consolidator grant. I have built a solid international network of collaborators, having developed my career in Spain (6 years including PhD), USA (7 years), and Denmark (2+ years). I gained extensive experience in international field campaigns as well as in laboratory experiments, and in the use of biogenic emission models to help interpret my measurements of biosphere-atmosphere interactions. I have taught courses at the Uni. California Irvine (UCI) and KU, and mentored 7 PhD students.

I earned my PhD in Ecology in 2010 at the Universitat Autònoma de Barcelona, funded by a FPI fellowship (68,000), studying the leaf-level biogenic emissions of oxygenated VOCs with Prof Josep Peñuelas. I obtained the Extraordinary doctorate award and was "Top-50 Highly Cited Author 2007-2010" by the Q1 journal "Atmospheric Environment".

In 2011, I was PI of a competitive postdoctoral fellowship (66,000) by the Ramón Areces Foundation to work at the National Center for Atmospheric Research (NCAR) in Colorado (USA) at the lab of Alex Guenther, a leader in measurement and modelling of biogenic VOCs. There I learned the Eddy Covariance technique applied to the biogenic VOC fluxes and thus transitioned from leal-level to ecosystem-level scale of measurements.

In 2013, I went as postdoc to UCI in the lab of Prof Saewung Kim. I also obtained a second competitive postdoctoral grant (72,459 Beatriu de Pinós, with a success rate of only 5%). In 2015, I was promoted to "Project scientist" and started mentoring graduate and undergraduate students and managing a new laboratory at UCI.

During my career I have been part of 16+ research projects funded by Spanish and international agencies (e.g. EU ERC; NSF, DOE, EPA and

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NASA from the USA) and was awarded a group achievement award by NASA (2017).
Regarding teaching, I was instructor of record (responsible for content and evaluation) of an Air Pollution class at UCI and also coordinated and taught at an international PhD course at KU in 2019. I am accredited as "Profesor Ayudante Doctor" by ANECA and as "Professor Lector" and Professor Agregat by AQU Catalunya.
I was convener of a session at the 2013 Fall Meeting of the American Geophysical Union (AGU) and I have presented my research at international conferences (81+ contributions, with 19 as first author).
I am on the editorial board of Forests (Q1) and Frontiers in Forests and Global Change. I reviewed proposals for the ERC Consolidator grants, and 38 articles for 18 SCI journals, and the IPCC 6th AR (2020). In addition, I am a Scientific Steering Committee member of the Belgian project ALBERI (2019-2021).
As of January 2021, I have published 48 SCI articles (77% Q1; 46% 1st decile), 2 book chapters, and several divulgation and non-SCI articles; with an H-index of 20 and 1,454 citations in the WoS database (H-index = 22 and 1,955 citations in Google Scholar). My research has been published in top journals like Science Advances (IF=12.804), Nature Communications (IF=12.124), PNAS (IF=9.661), Global Change Biology (IF=8.444), and two articles are "highly cited paper" in WoS (enough citations to be top 1% of Geosciences for their publication year).

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Nombre: ROMANI PEREZ, ALOIA
Referencia: RYC2020-030690-I
Área Temática: **Ciencias y tecnologías medioambientales**
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Título:

Waste biorefinery for circular economy

Resumen de la Memoria:

I have devoted my scientific career in the last 16 years to the development of strategies for lignocellulosic residues valorization. Particularly, I have notably contributed to second-generation bioethanol production that is paving the way for the development of efficient biorefineries. Thus, I have contributed to the knowledge working in the following 3 areas, where I have participated in the supervision, design, and performance of experiments and contributed in the manuscript writing and scientific discussion of works:
1. Residue Valorization. I have worked in chemical characterization and valorization of residues from paper and pulp industry (such as eucalyptus bark and chips and wastewater sludge), from food and beverage industry (namely pineapple waste, brewery¿s spent grain, cheese whey, spent coffee ground, seaweed hydrocolloid residue), from agroindustrial industry (for instance corncob, corn stover, wheat straw, oat straw, Aloe vera residue and vine pruning residue) and biomasses such as: fast-growing species (Paulownia tomentosa, Arundo donax, Eucalyptus globulus wood), invasive species (for example Sargassum muticum and Acacia dealbata), marginal land resources, identified as sources of main fire forest cases in Portugal, (namely broom, carqueja, eucalyptus, pine, mimosa and rockrose).
2. Sustainable Development Processes for Biomass Fractionation. I have optimized and studied environmentally-friendly treatments (without chemical catalysts as mineral acids) for biomass processing, including autohydrolysis and steam explosion (using water as solvent), organosolv (using ethanol and glycerol byproduct from diesel industry as organic solvents) and deep eutectic solvents as alternative pretreatments to acid, alkali and Kraft processes. Moreover, emerging technologies such as microwave and ohmic heating have been also evaluated as more cost-effective treatments and green alternatives compared to conventional heating treatments.
3. Using biocatalysts for bioconversion of biomass fractions into biofuels and bio-based products. I have evaluated and optimized biocatalysis using lignocellulosic enzymes as alternative to chemical catalysts. In these works, I have studied the use of commercial enzymes for the saccharification of cellulose and xylooligosaccharides into glucose and xylose, respectively, for bioethanol and xylitol production by means several configurations (such as separate hydrolysis and fermentation-SHF, simultaneous saccharification and fermentation-SSF and Consolidate Bioprocessing-CBP). Moreover, industrial Saccharomyces cerevisiae strains have been engineered to overexpress endogenous and heterogeneous genes to produce and secret several enzymes (such as beta-galactosidase, aldose reductase and xylanases) in order to use the yeast as whole-cell biocatalysts. This approach provides an environmentally friendly alternative to traditional chemical catalysis. In comparison with chemical catalysis, biocatalysis presents higher selectivity and catalytic efficiency, it is carried out at milder operation conditions and multi-step reactions are performed in a single strain that allows cofactor regeneration. Moreover, the use of microorganisms, as whole-cell biocatalyst, is an attractive strategy to provide pre-immobilized enzymes reducing the costly process of purification.

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Resumen del Currículum Vitae:

Dr. Romaní received her degree in Agricultural Technical Engineering in 2005 and she graduated in Food Science and Technology in 2007 at University of Vigo (UVIGO). During her PhD, she spent 2 months at CIEMAT (Madrid) under the supervision of M Ballesteros. In 2011, she received her PhD degree by the UVIGO with a cum laude distinction being awarded an Extraordinary Prize under supervision of Prof. Parajó and Prof. Garrote. She started her Postdoc research funded by FCT-Portugal (2012-2015) and I2C-Xunta de Galicia (2015-2016) fellowships at the Centre of Biological Engineering-CEB (University of Minho-UMINHO, Portugal) under supervision of Prof. Teixeira and Prof. Domingues. In September 2016, she started an Assistant Researcher position at the UMINHO. At CEB, she implemented a new research line concerning the eco-friendly treatment of lignocellulosic biomass for biofuel and value-added compounds production by biotechnological processes. Dr. Romaní has collaborated with BioPol4fun group (CICECO, University of Aveiro, Portugal) in the evaluation of deep eutectic solvents for the valorization of wood within MultiBiorefinery project (POCI-01-0145-FEDER-016403). In 2018, we established a collaboration with A. Kondo s research group (Kobe University, Japan) for the development of recombinant industrial yeast by cell-surface display of heterologous enzymes to be used as an alternative to chemical catalysts. In 2019, she spent 2 months in the Sustainable Separation Process group (University of Santiago de Compostela-USC) to evaluate ionic liquid as pretreatment of biomass. Since 2019, Dr. Romaní is involved in 2 international projects, namely BioVino project (INTERREG Spain-Portugal-POCTEP) and EcoTech project (in collaboration with the University of São Paulo-USP, Brazil). In 2020, she stayed for 2 months in the Association BLC3 (Portugal) to evaluate the lignocellulosic mixture as a source to produce lactic acid. She has been also involved in transference and dissemination activities (such as encontro Ciência¿18, Semana C&T, Biomass workshops, interviews in specialized journals). The candidate has devoted her scientific career to develop strategies for lignocellulosic residues valorization. She has notably contributed to 2nd generation bioethanol production

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that is paving the way for the development of efficient biorefineries. She also has started to work with seaweed to obtain sugars (used for PHA plastics production) within the AlgaePlas project in collaboration with the University of Lisbon. Her scientific production is summarized in 61 peer-reviewed papers, 6 book chapters and 71 conferences. 53 papers (87%) were published in JCR Q1 journals, 33 of them (62%) in the top 10%, with an impact factor average of 5.45. She is 1st, 2nd, corresponding and last author in 21, 20, 12 and 3 of these publications, respectively. Some papers were published in collaboration with researchers from international institutions. She has been involved in 15 financed projects (>4.5 M), being Principal Investigator in 2 of them. The applicant has been awarded 5 fellowships in competitive calls. Her h-index is 22 with over 1500 citations. Dr. Romaní has supervised 5 PhD theses, 5 MSc and 2 undergraduate students. The candidate has teaching experience in degree and postgraduate courses and she got the I3 accreditation.