



Job - PhD position within the CHAR Marie Skłodowska-Curie Action Doctoral Network (2026-2029)

PhD position: DC#10 - Assessment of hydroclimate and pollution impacts on built cultural heritage through dose-response functions: from observations to models

Details

Location	Bogotá-Colombia
Function types	PhD position
Scientific fields	Natural Sciences, Earth System Science, Climatology, Material Sciences, Engineering, Statistics and associated fields
Hours	40 hours per week (in annual calculation)
Salary	See below
Education	Doctoral Programme in Natural Sciences
Employer	Earth System Sciences Department - Universidad del Rosario

Job description

Universidad del Rosario is recruiting a PhD researcher for a four-year period in the framework of Project 101226989— [CHARM](#) (Conservation Heritage Architecture, buildings and sites by Resilient Methods: hydro-climate factors), financed by European Research Executive Agency under action HORIZON MSCA Doctoral Networks.

Project description

<p>Project title: Assessment of hydroclimate and pollution impacts on built cultural heritage through dose-response functions: from observations to models</p>
<p>Objectives: This PhD project aims to quantify both observed and modelled damages (based on numerical simulations and laboratory experiments) caused by the combined effects of hydroclimate and air pollution. The goal is to identify the most vulnerable cultural heritage sites and materials to environmental stressors worldwide.</p> <p>Only a limited number of independent equations (dose–response functions) currently exist to estimate different categories of damage. These functions are mainly restricted to limestone materials and consider only a subset of climatic and pollution parameters. Therefore, observational and monitoring campaigns conducted worldwide need to be systematically reviewed to compile and harmonize all available on-site measurements.</p> <p>The first objective is thus to determine: Where are the most sensitive built cultural heritage sites located? Which environmental factors (pollutants, temperature, precipitation, humidity, etc.) most strongly affect different construction materials? using observations and simulations. The second objective is to assess how extreme compound events (e.g., record-breaking acidic rainfall combined with drought conditions) affect heritage materials compared to average climatic conditions. They may cause significantly greater damage than single events alone. However, the impacts of extreme compound events on built cultural heritage remain poorly</p>



understood. An experimental plan will therefore be developed in collaboration with CYU and CNR-ISAC partners and applied to materials representative of highly vulnerable heritage sites. Finally, building upon previous work, the project will provide robust global projections of damage to cultural heritage sites under different warming and pollution scenarios. These projections will rely on CMIP6 climate models and selected SSP scenarios and will account for multiple types of damage and dose–response functions (e.g., surface recession, thermal stress, biomass accumulation).

The overarching research question is: How will damages to built cultural heritage evolve under future climate and pollution conditions?

Supervisory Committee:

- Supervisor: Benjamin QUESADA Universidad del Rosario (academics)
- Co-Supervisor: Alessandra BONAZZA ISAC-CNR (academics)
- Mentor: Dario Camuffo CNR-ISAC (academic)

Planned secondment(s):

- Secondment 1: Beatriz MENENDEZ (CY Cergy Paris Université, 6 months)

Enrolment in Doctoral degree(s): Doctoral Programme in Natural Sciences

Requirements

- Applicants should hold a relevant Master’s degree in Natural Sciences, Earth System Science, Climatology, Material Sciences, Engineering, Statistics and associated fields
- Applicants should not have been awarded a PhD degree
- Applicants must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting institution for more than 12 months in the 3 years immediately before the recruitment date
- Proficiency in written and spoken English
- Be highly motivated
- Creativity and high level of independency

Conditions of employment

We offer a 4-year full-time PhD provision of services contract based in Bogotá-Colombia. The full-time remuneration is approx. 2000€ of living allowance and approx. 530€ of Mobility Allowance (exact amounts in Colombian pesos will depend on the exchange rate). A Family Allowance will be paid if applicable. This amount includes all compulsory deductions under national law that will apply, including: Social security contributions (both employee and employer shares), and any applicable direct taxes. The remuneration and terms of employment for this position will comply with the provisions set out in the Statute of Workers’ Rights, the Science Law (Law 14/2011 of 1 June, as amended by Law 17/2022 of 5 September), and the Marie Skłodowska-Curie Actions regulations.

Contract type: Temporary, we offer a 4-year full-time PhD contract.

Organisation

Universidad del Rosario is a Colombian private higher education institution with university status and legal recognition granted by the Ministry of Government of Colombia in 1895. With nearly four centuries of academic tradition, UR is one of the most prestigious and historically influential universities in Colombia, playing a central role in the country’s political, intellectual and social development. UR holds High Quality Institutional Accreditation from the Colombian



Ministry of Education since 2005 and has been recognized by QS Stars since 2016. It is currently ranked as the #1 university in Sustainability in Colombia according to the UI GreenMetric ranking, reflecting its institutional commitment to environmental responsibility, sustainable development and societal impact. As a research-intensive, multicampus university, UR hosts 47 research groups recognized by the Colombian Ministry of Science (Minciencias), spanning health sciences, natural sciences, social sciences, law, economics, and engineering. Its research agenda addresses major global and regional challenges, including peacebuilding and post-conflict transitions, gender and democracy, political representation, climate change and environmental sustainability, ageing societies, digital governance, and technology at the service of human rights.

The University promotes interdisciplinary collaboration and research-based learning across undergraduate, master's and doctoral programmes. UR has developed strong international research and cooperation capacities through active participation in Horizon Europe projects, Marie Skłodowska-Curie Actions (MSCA), Erasmus+ International Credit Mobility, Erasmus+ Capacity Building in Higher Education (Strands 1 and 2), and the coordination of a Jean Monnet Module. Through these programmes, UR has strengthened institutional expertise in project design and management, financial administration, quality assurance, monitoring and evaluation, dissemination, open science practices and stakeholder engagement, fully aligned with European standards. Its comprehensive internationalization strategy integrates global, international and intercultural dimensions across research, teaching, outreach and governance, fostering scientific excellence, global citizenship and high-impact knowledge transfer. This positioning consolidates Universidad del Rosario as a benchmark institution in Colombia and Latin America, particularly in linking research excellence with societal transformation and sustainability transitions.

Laboratory

The Undergraduate Program in Earth System Sciences at Universidad del Rosario (<https://urosario.edu.co/ciencias-del-sistema-tierra>) offers a unique, transdisciplinary academic formation designed to understand the Earth as an integrated and dynamic system. It is the only program of its kind in Colombia and throughout Latin America, training professionals to analyze and address complex interactions among the lithosphere, hydrosphere, atmosphere, biosphere, and human systems through scientific inquiry and research-oriented learning. The curriculum combines geology, climatology, hydrology, sustainability, ecology, and systems thinking to equip students with competencies in environmental analysis, global change processes, and sustainable solutions. Students engage in fieldwork, quantitative methods, and collaborative projects that prepare them to investigate urgent societal and environmental challenges — including climate change, resource management, and risk assessment — within both local and global contexts. Graduates are prepared for careers in research, policy, environmental consulting, and interdisciplinary problem-solving, contributing to scientific knowledge and sustainable development in an era of rapid planetary change

How to apply?

The following documents must be updated in the Microsoft Form with your application in an anonymous form:

- (a) Written documentation concerning prior education, including a certified copy of your Master certificate and list of grades (with certified translation for languages other than English or Spanish);
- (b) A personal letter of motivation, indicating why you wish to conduct this research project offered by Universidad del Rosario and ISAC-CNR, and why you expect that you will be able to complete the research and training programme successfully;



- (c) Detailed curriculum vitae, including – if applicable – relevant publications;
- (d) The applicant should have a minimum level of proficiency in English language, which could be demonstrated by providing an English language certificate and that will be confirmed in a later interview, if needed.

Selection procedure

The selection of the candidates will be carried out in a two-step procedure:

1. Candidates will be pre-selected according to their CVs and motivation letter.
2. Pre-selected candidates will go through online selection interviews in which they will give a short talk on their background and the topic of the PhD and answer the questions from the committee.

The recruiting committee will be formed by the PhD supervisors, researchers from the secondment centers and a member of the MetaExplore coordination team.

Key dates

Deadline for submission applications	15 th April 2026
Candidates pre-selected for interviews will be informed	16 th -20 th April 2026
Selection interviews	20-25 th April 2026
Successful candidates will be informed	28 th April 2026
Acceptance by successful candidates	4 th May 2026
Start of employment	1 st September 2026

Selection criteria

Criteria	Rate
Relevant academic background	0-30
Interview and presentation	0-40
Motivation statement	0-10
Relevant publications/work experience	0-20

Information

For questions related to this project, please contact benjamin.guesada@urosario.edu.co | mariaal.correa@urosario.edu.co