Ricardo CAMACHO CASTILLA

PhD Candidate, MSc., Civil & Environmental Engineer

PERSONAL DATA

ADDRESS: 201 Wellington Parade South, East Melbourne 3002, Victoria, Australia
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EDUCATION

SEP 2025 (EXPECTED)
PhD in Engineering & IT, THE UNIVERSITY OF MELBOURNE, Parkville, Australia
Thesis: *"Spatial dynamics of the informal urban growth in disaster-prone cities"*
Advisor: Assoc.Prof. Jagannath ARYAL | Prof. Abbas RAJABIFARD

MAY 2024
Disaster Management Workshop, THE UNIVERSITY OF MELBOURNE, Parkville, Australia
Centre for Disaster Management and Public Safety (CDMPS)

DEC 2016
Master of Science in Civil Engineering for Risk Mitigation, POLITECNICO DI MILANO, Lecco, Italy
Thesis: *"Enhancing structured and organized post disaster damage loss data according to the SFDRR. Case: June 2013 flooding in Vall d'Aran and the Pyrenees"*
Advisor: Prof. Scira MENONI | Dr. Ouejdane MEJRI   [EN]

OCT 2014
Bachelor in Environmental Engineering, UNIVERSITY OF LOS ANDES, Bogotá, Colombia
Major: Land Administration and GIS |

MAR 2014
Bachelor in Civil Engineering, UNIVERSITY OF LOS ANDES, Bogotá, Colombia
Major: Structural Engineering |

ACADEMIC AND PROFESSIONAL EXPERIENCE

AUG 2024 – DEC 2024
Research Assistant at THE UNIVERSITY OF MELBOURNE, Parkville (AU)
- Conducted advanced geospatial analysis to assess baseline conditions and 25-year fire impacts on Angkamuthi Country, providing critical intelligence for land management and ecological understanding.
- Produced high-quality intelligence products, including temporal and spatial fire pattern maps and a StoryMap, effectively communicating complex geospatial insights to diverse stakeholders.

JUL 2022 – DEC 2023
Tutor at THE UNIVERSITY OF MELBOURNE, Parkville (AU)
- Assisted lecturer on the subjects **Integrated Spatial Systems** and **Digital Infrastructure Systems**, fostering spatial literacy and technical capability by tutoring students, demonstrating laboratory equipment, and grading assignments.

JAN 2017 – DEC 2023
Researcher at UNIVERSITY OF LOS ANDES, Bogota (CO)
- Developed a Cellular Automata-based Land Use Cover Change model for the city of Cali (Colombia) and its metropolitan region, providing predictive intelligence on urban expansion and its implications for risk assessment.
- Designed and implemented an innovative Machine Learning-based 3D population density model for Bogota, enhancing situational awareness and intelligence for urban planning and emergency response.
- Conducted detailed intelligence gathering on ecological changes (e.g., invasive species, forest regeneration) using multispectral imagery, UAVs, and historical data, informing environmental management strategies in three different National Natural Parks of Colombia.
- Led comprehensive post-disaster intelligence analysis of the 2017 Mocoa mudslides, identifying critical linkages between urban development and disaster consequences, resulting in an award, a peer-reviewed publication, and multiple international presentations.

JAN 2017 – JAN 2020
Instructor professor (Full-time Lecturer) at UNIVERSITY OF LOS ANDES, Bogota (CO)
- Supervised six undergraduate and four graduate research theses, four of which led to publications in international congresses.
- Directed and lectured the **Geomatics** course, introducing cutting-edge UAV and LIDAR technologies to prepare students for advanced geospatial intelligence and data acquisition, including new fieldwork for geo-morphological information processing.
- Implemented innovative pedagogical methods (flipped classroom) in **Statics**, developing problem-solving and analytical capabilities in students.

PUBLICATIONS

1. **R. Camacho**, Aryal, J. & Rajabifard, A. "Modelling the 'What If': A Scenario-Based Framework for Understanding Disaster Impacts on Urban Spatial Dynamics", *(in progress)*

2. **R. Camacho**, Aryal, J. & Rajabifard, A. "How do disasters disrupt the spatial growth of informal settlements? A multi-temporal remote sensing approach – The case study of Mocoa, Colombia.", HABITAT INTERNATIONAL, (2025). DOI: 10.1016/J.HABITATINT.2024.103272

3. **R. Camacho**, J. Aryal, and A. Rajabifard, "Disaster-induced disruption of policies for informal urban settlements.", CITIES, (2024). DOI: 10.1016/J.CITIES.2024.105098

4. N. Pardo, R. Sulpizio, F. Lucchi, G. Giordano, S. Cronin, B. Pulgarin, M. Roverato, A. M. Correa, and **R. Camacho**, M. Cabrera, "Late Holocene volcanic stratigraphy and eruption chronology of the dacitic Young Doña Juana volcano, Colombia.", GSA BULLETIN, (2023). DOI: 10.1130/B36557.1

5. S. Salazar, **R. Camacho**, S. Villota, N. Pardo, A. Velasquez, M. Cabrera, and B. Pulgarin, "Geomorphology on a tropical volcanic setting: interplay of fluvial, gravitational, structural, and volcanic processes in the Doña Juana Volcanic Complex, Colombia.", JOURNAL OF MAPS, (2022). DOI: 10.1080/17445647.2022.2101948

6. L.A. Guzman, **R. Camacho**, D.A. Rodriguez, and C. Beltrán, "Modeling population density guided by land use cover change model: a case study of Bogotá", POPULATION AND ENVIRONMENT, (2022). DOI: 10.1007/S11111-022-00400-5

7. N. Pardo, C. Gonzalez, M. Espinosa, M. Cabrera, S. Salazar, S. Archila, N. Palacios, D. Prieto, **R. Camacho**, and L. Parra, "Worlding resilience in the Doña Juana Volcano, Northern Andes (Colombia): a transdisciplinary view ", NATURAL HAZARDS, (2021). DOI: 10.1007/S11069-021-04662-4

8. L. Navarro, **R. Camacho**, J. Gallego, and J.F. Saldarriaga, "Assessment of the potential risk of leaching pesticides in agricultural soils: Study case Tibasosa, Boyaca, Colombia", HELIYON, (2021). DOI: 10.1016/J.HELIYON.2021.E08301

9. L.F. Prada-Sarmiento, M. Cabrera, **R. Camacho**, N. Estrada, and A. Ramos, "The Mocoa Event on March 31 (2017). Analysis of a series of mass movements in a tropical environment of the Andean-Amazonian Piedmont.", LANDSLIDES, (2019). DOI: 10.1007/S10346-019-01263-Y

POSTER AND ORAL PRESENTATIONS

1. **R. Camacho**, A. Rajabifard, and J. Aryal, "Do disasters disrupt the spatial growth of informal settlements? The case of Mocoa, Colombia", *Oral* at the *43rd EARSeL Symposium, Manchester, UK.* 17 - 20 Jun, 2024.

2. **R. Camacho**, A. Rajabifard, and J. Aryal, "Spatial growth patterns of informal settlements in disaster environments: The case of Mocoa, Colombia", *Oral* at the *LOCATE23, Adelaide, Australia.* 10 - 12 May, 2023.

3. **R. Camacho**, A. Rajabifard, and J. Aryal, "Disaster induced disruption of Informal Urban Settlements and spatial growth patterns: Three case studies in Latin-America", *Oral* at the *International Symposium on Rebuilding Communities after Displacement, Online.* 13 – 14 Dic, 2021.

4. L.A. Guzman, **R. Camacho**, C. Beltran, and A. Rodriguez, "The 3D component of a land-use change model for Bogotá: A random forest-based population density model," *Oral* at the *XXI PANAM 2021, Online.* 11 – 13 Aug, 2021.

5. N. Pardo, M. Cabrera, C. Gonzalez, M. Espinosa, **R. Camacho**, N. Palacios, S. Salazar, L. Parra, and S. Archila, "A transdisciplinary approach to mass-movements mitigation strategies in volcanic habitats: an approach from complex systems ," *Oral* at the *EGU General Assembly 2020, Online.* 4 – 8 May, 2020.

6. M. Cabrera, L.F. Prada-Sarmiento, **R. Camacho**, N. Estrada, and A. Ramos, "The Mocoa 2017 Event. A case-study of mass movements in the Andean-Amazonian Piedmont." *Poster* at the *AGU Fall Meeting 2019, San Francisco, USA.* 9 – 13 Dec, 2019.

7. J.R. Escorcia, **R. Camacho**, and J. Wills, "Historical analysis of road infrastructure accessibility in Colombia," *Oral* at the *FIG Working Week 2019, Hanoi, Vietnam.* 22 – 29 Apr, 2019.

8. L. Cardenas, C. Salcedo, and **R. Camacho**, "Comparison of two methodologies to estimate flood footprints based in GIS using hydrological data," *Oral* at the *International Perspectives on Water and the Environment - IPWE2018, Cartagena, Colombia.* 04 – 07 Dec, 2018.

Scholarships and Awards

Nov 2022   **Dejar Huella recognition. Best Impactful Project**
Awarded by Universidad de Los Andes.

Sep 2021   **Biennial Javeriana Award in Research**
Awarded by Pontificia Universidad Javeriana.

Dec 2020   **Partial fee remission Graduate Research Scholarship**
Awarded by The University of Melbourne.

Jan 2020   **Beneficiary of the Call of Proposals 860 of 2019 to undertake doctoral studies abroad**
Awarded by Ministry of Science, Technology and Innovation of Colombia.

Jun 2019   **Innovative Professor Award**
Awarded by Universidad de Los Andes.

Oct 2018   **80% Scholarship in Technical formation in Woodworking at Escuela de Artes y Oficios Santo Domingo**
Funded by Santo Domingo Foundation.

Sep 2014   **UniverLecco Gold Scholarship**
Merit scholarship for international students based on previous academic performance and qualifications.

Memberships and academic activities

May 2025   People's Panel Member - *Melbourne 2050 People's Panel*
City of Melbourne, Australia

Jun 2024 – Dec 2024   Member of the 2024 Horizons Doctoral Academy (Horizons Program)
Melbourne Centre for Cities, The University of Melbourne, Australia

Aug 2020 – *Present*   Researcher at the Centre for Spatial Data Infrastructures and Land Administration (CSDILA)
The University of Melbourne, Australia

Aug 2020 – *Present*   Researcher at the Centre for Disaster Management and Public Safety (CDMPS)
The University of Melbourne, Australia

Jan 2018 – *Present*   Member of the Research Portfolio on Historical Ecology and Social Memory (EHMS)
Universidad de Los Andes, Colombia

Jan 2017 – Dec 2020   Member of the research group on Urban and Regional Sustainability (SUR)
Universidad de Los Andes, Colombia

Jun 2017 – Dec 2020   Member of the Disaster Risk Reduction Working Group of the United Nations Major Group for Children and Youth (UNMGCY).

Apr 2019   **Co-convener** at the Hack the Risk - Smart solutions on water issues and floods, Bogotá (CO) *Co-organizer*
Event organized by University of Los Andes, NASA, and Water Youth Network (WYN).

Research and Experimental Skills

Laboratory: Terrestrial LiDAR, UAVs, GNSS, Total Station, and Level.
Data analysis: Photogrammetric analysis, multi spectral image analysis, LiDAR data processing.
Numerical: Cellular automaton method, Random Forests regression models.

Technical Software & Analytical Skills

Good Knowledge: MatLab, AutoCAD, Revit, ArcGIS, QGIS, R, Pix4D, Metronamica, and MS Office.
Basic Knowledge: Python, CloudCompare, Illustrator, Agisoft, LaTeX, and ENVI.

Languages

Spanish: Native speaker   Italian: Fair (A2)
English: Full proficiency

Reviewer at

Habitat International
Geo-Spatial Information Science
Journal of Geovisualization and Spatial Analysis

Extracurricular Activities

Cooking, Woodwork, Literature, Sailing, Travel.

Academic references

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Dr. Luis A. Camacho
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