Alejandro Román

Postdoctoral researcher | UAV Remote Sensing Specialist

Personal Information

⊙ ICMAN-CSIC, Puerto Real, Spain

📅 03/06/1996

✉ a.roman@csic.es 🔗 [Alejandro Román Vázquez] 🌐 https://alrova96.github.io/

Educational Background

Ph.D Marine Sciences & Technologies
ICMAN-CSIC, Spain
September 2021-July 2024
Mark: Summa Cum Laude

🏆
Best Ph.D
Award (UCA)

M.S. Oceanography
University of Cádiz, Spain
October 2014-July 2018
Mark: Excellent

B.S. Marine Sciences
University of Cádiz, Spain
September 2018- July 2019
Mark: Excellent

Research Experience

Postdoctoral Researcher at ICMAN-CSIC, within the CSIC Momentum Program for the Development of Digital Talent (MMT24-ICMAN-01), with a solid track record in the use of remote sensing techniques with drone-mounted sensors for the study of coastal systems. His main line of research focuses on the development and application of emerging AI techniques to polar sciences and ocean colour with drone data.

Through his involvement in seven research projects (three of them on Antarctica), Dr. Román is the author of 21 scientific articles indexed in the SCI, all published in Q1, high-impact journals (12 of them as first author, with approximately 74% in the top decile, D1). He has an h-index of 12 ([Google Scholar], 2026), with a total of 472 citations and co-authorship with 60 researchers, including 24 international collaborators. In addition, he has participated as a co-author in the preparation of a white paper submitted to Antarctica InSync (Theme 5: Anthropogenic signatures in Antarctica – the race against pollution and other pressures). In terms of knowledge transfer, his experience includes three research stays at international institutions during his predoctoral stage, and one during his postdoc; the participation in over ten international schools and courses; and presentations at up to 17 relevant national and international conferences (e.g. EGU, ESA LPS, OSM). In addition, he has contributed to the development of open-source algorithms and transferable tools applicable to both the scientific and industrial sectors, notably publishing a pioneering georeferencing and mosaicking code for drone-mounted sensor data – addressing, for the first time globally, one of the main limitations of this technology when applied to water-covered surfaces.

In the field of education, he supervises six master's theses and has hosted a predoctoral researcher in 2025. His teaching activity spans several master's programs, courses, and doctoral schools (122 hours), with a focus on GIS, artificial intelligence, and drone-based remote sensing applied to the polar marine environment. His accolades include a Fulbright grant for predoctoral students for a drone-based marine optics project and an FPU fellowship from the Spanish Ministry of Science and Innovation during his PhD.

Honors, Awards & Succesful Applications

ELLIS Summer School on AI for Earth & Climate Sciences	**September 2025**
NASA PACE HACKWEEK	**August 2025**
Copernicus Training In Above-Water Radiometry (FRM4SOC-2025)	**July 2025**
ESA Advanced Ocean Synergy Training Course 2025	**April 2025-June 2025**
Fulbright Scholarship for Pre-Doctorate Studies (US)	**August 2023-February 2024**
GEOTRACES Summer School (Germany)	**July 2022**
FPU Scholarship by the Ministry of Science and Innovation (Spain)	**October 2021-July 2024**
Collaboration Scholarship in University Departments (Spain)	**November 2018-July 2019**

Alejandro Román

PhD Student | UAV Remote Sensing Specialist

Professional Experience

Postdoctoral researcher (ICMAN-CSIC)
November 2024-Actually

CSIC Momentum project (MMT24-ICMAN-01) for the development of AI processing techniques for studying coastal environmental phenomena using drone-mounted sensors.

Technician (ICMAN-CSIC)
August 2024-November 2024

Development of processing methodologies for the detection of sunscreen using a spectrophotometer and drone-based optical imagery.

Ph.D Candidate (ICMAN-CSIC)
September 2021-July 2024

Dissertation research focused on aquatic remote sensing, using satellites and drones to assess coastal environmental processes.

Graduate Research Assistant (UCA)
September 2021-July 2024

Research project based on the use of thermal sensors onboard drones for the detection of SGDs in coastal areas.

International Experience

University of Eastern Finland (UEF, Finland)
November 2025-December 2025

Stay in the framework of Momentum Program.

University of Maryland (UMCES, US)
August 2023-February 2024

Stay in the framework of the Fulbright Scholarship.

University of Nantes (ISOMER, France)
October 2022-November2022

Stay in the framework of the SAT4ALGAE project.

University of Malta (UM, Malta)
February 2022-June 2022

Stay in the framework of the Erasmus+KA103 Scholarship.

Kingston University (KU, United Kingdom)
September 2016-December 2016

Erasmus+ Studies Scholarship.

Polar Campaigns

POLAROMICS Project Antarctic Campaign. January 31st – February 27th, 2026.

DICHOSO Project Antarctic Campaign. January 11th – February 24th, 2025.

Selected Publications

1) Román, A. *et al.* (2026) Unveiling the large coverage of red snow algae blooms in antarctic coastal snowfields. *Commun. Earth Environ.* 7, 53.

2) Román, A. *et al.* (2025) UAV imagery in natural disasters: Real-time damage assessment of flash flooding events. *Ecol. Inform.* 91, 103433.

3) Davies, B.F.R. *et al.* (2024) Intertidal seagrass extent from Sentinel-2 time-series show distinct trajectories in Western Europe. *Rem. Sens. Environ.* 312, 114340.

4) Román, A. *et al.* (2024) Enhancing Georeferencing and Mosaicking Techniques over Water Surfaces with High-Resolution Unmanned Aerial Vehicle (UAV) imagery. *Remote Sens.* 16, 290.

5) Román, A. *et al.* (2023) Characterization of an Antarctic Penguin Colony Ecosystem using High-Resolution UAV Hyperspectral Imagery. *Int. J. Appl. Earth Obs. Geoinf.*, 125, 103565.

6) Román, A. *et al.* (2022) Unmanned Aerial vehicles (UAVs) as a tool for Hazard assessment: The 2021 eruption of Cumbre Vieja volcano, La Palma Island (Spain). *Sci. Total Environ.* 843, 157092.

7) Román, A. *et al.* (2021) Using a UAV-Mounted Multispectral Camera for the Monitoring of Marine Macrophytes. *Front. Mar. Sci.* 8, 722698.

Leadership Capacity

1) Mentoring M.S. students (currently in 2026: 6) and Ph.D. students (In 2025: 1).

2) Organising Committee member for the XX AET Conference hosted in Cádiz in June 2024.

3) Coordination Committee of the POLARCSIC HUB.

4) Participation in the core team of the Antarctica InSync working group "Coastal Connection and Hydrographic Drivers of Antarctic Biogeochemistry and Carbon Cycling".