

Alejandro Román

Post-doctoral researcher

Institute of Marine Sciences of Andalusia (ICMAN-CSIC)

Date of Birth: 03/06/1996

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Education

Ph.D.	Science & Marine Technologies	ICMAN-CSIC	24/07/2024
			Qualification: Suma Cum Laude
M.S.	Oceanography	University of Cádiz	2019
B.S.	Marine Sciences	University of Cádiz	2018

Research & Professional Experience

A. Area of Professional Expertise:

Dr. Román has proven experience in using remote sensing technologies with drones for characterizing various coastal environmental phenomena and marine ecosystems. His work ranges from determining water quality parameters (such as chlorophyll-a, turbidity, total suspended solids, etc.) and monitoring intertidal systems to observing and tracking the evolution of polar regions. Specifically, he has worked with data obtained from various miniaturized sensors that can be equipped on drones (including RGB optical, thermal, LiDAR, gas sensors, water sampling devices, multi- and hyperspectral sensors), combined with emerging machine learning techniques, artificial intelligence, and programming languages (Python, R, Matlab, etc.) to develop algorithms and processing methodologies that enable the study of these systems at local and regional scales.

B. Professional Experience:

Postdoctoral Researcher 2024/11-actually

Institute of Marine Sciences of Andalusia (ICMAN-CSIC).

Postdoctoral researcher in the DIGIDRON project under the Momentum CSIC Programme: Develop Your Digital Talent (MMT24-ICMAN-01). The research focuses on developing emerging technologies for digitization and data processing to study environmental phenomena using drone-mounted sensors, with an emphasis on coastal systems and polar regions.

M2 contract associated with a research project 2024/08-2024/11

Institute of Marine Sciences of Andalusia (ICMAN-CSIC).

Development of processing methodologies for the detection of sunscreen using a spectrophotometer equipped on drones, within the framework of the project "Sensors for detecting emerging contaminants for integration into observational platforms in support of sustainable tourism".

Ph.D Candidate 2021/09-2024/07

Institute of Marine Sciences of Andalusia (ICMAN-CSIC).

Dissertation research focused on aquatic remote sensing and optics, utilizing satellite imagery and drones to assess coastal environmental processes.

Graduate Research Assistant 2018/09-2019/07

University of Cádiz (Spain), Department of Earth Sciences.

Development of a research project based on the use of thermal sensors onboard drones for the detection of submarine groundwater discharge (SGD) in coastal areas, with a focus on Cádiz Bay.

C. International Experience:

University of Maryland Center for Environmental Sciences (UMCES, US) 2023/08-2024/02

Horn Point Laboratory, Cambridge, MD, US.

Stay in the framework of the Fulbright Scholarship Program.

Kent State University (KSU, US) 2023/07-2023/08

The Gerald H. Read Center for International and Intercultural Education, Kent, OH, US.

Stay in the framework of the Fulbright Scholarship Pre-Academic Program.

University of Nantes (ISOMER, France) 2022/10-2022/11

University of Nantes, Nantes, France.

Stay in the framework of the SAT4ALGAE project.

Alfred Wegener Institute (AWI, Germany) 2022/07-2022/07

Helmholtz Centre For Polar and Marine Research (AWI), Bremerhaven, Germany.

Stay in the framework of the GEOTRACES Summer School.

University of Malta (UM, Malta) 2022/02-2022/06

University of Malta, Msida, Malta.

Stay in the framework of the Erasmus+KA103 Scholarship.

Kingston University (KU, United Kingdom) 2016/09-2016/12

Kingston University, London, UK.

Stay in the framework of the Erasmus+ Studies Scholarship.

Teaching Experience

5 teaching experiences (Teaching assistant: 90 hours; Lecturer: 26 hours)

Lecturer, Chile Mayor University, Santiago de Chile, Chile

22 hours of teaching in the M.S. of "Remote Sensing" (Chile Mayor University) – December 2024.

Lecturer, University of Cádiz, Spain.

2 hours of teaching in the "Ecosystems Oceanography" module (M.S. in Oceanography, University of Cádiz) – 10/12/2024.

Lecturer, University of Cádiz, Spain.

2 hours of teaching in the "Management of the natural environment from an ecosystem-based approach" module (M.S. in Conservation, University of Cádiz) – 29/10/2024.

Teaching Assistant, University of Cádiz, Spain.

45 hours of teaching in the "GIS and Remote Sensing" module (2nd year at the B.S. in Marine Sciences, University of Cádiz) – Winter 2022/23.

Teaching Assistant, University of Cádiz, Spain.

45 hours of teaching in the "GIS and Remote Sensing" module (2nd year at the B.S. in Marine Sciences, University of Cádiz) – Winter 2021/22.

Mentoring

3 mentoring experiences (M.S. students: 2; Ph.D. research stays: 1)

Claudia Giménez Poblador, Ph.D. student

2025/03-2025/04

Research stay in the context of the NetOPS 2025 mobility grant calls.

Research Line: Application of SfM photogrammetry with RGB, multispectral, LiDAR, and thermal-based imagery to produce high-resolution orthomosaics in different study basins, with a focus on polar research.

Grace Carolina Yañez Cruz, M.S. student

2025/01-actually

M.S. in Oceanography, University of Cádiz, Spain.

Research Line: Integrated use of machine learning techniques and drone-based remote sensing for the study of marine organism populations in coastal areas.

María Barbudo Compagnucci, M.S. student

2025/02-actually

M.S. in Conservation and Management of the Natural Environment, University of Cádiz, Spain.

Research Line: Use of drones and artificial intelligence for the detection and identification of macroplastics during the Cut-Off Low emergency (Valencia).

Publications

A. Publications in Peer-Reviewed Scientific Journals:

17 publications (first author: 9; book chapters: 2; number of citations: 276 (Google Scholar); h-index:9)

1. **Román, A.**, Oiry, S., Davies, B.F.R., Rosa, P., Gernez, P., Tovar-Sánchez, A., Navarro, G., Méléder, V., Barillé, L. (2024) Mapping intertidal microphytobenthic biomass with very high-resolution remote sensing imagery in an estuarine system. *Science of the Total Environment*, 177025. DOI: <https://doi.org/10.1016/j.scitotenv.2024.177025>
2. Belyaev, O., **Román, A.**, Belliure, J., Navarro, G., Tovar-Sánchez, A. (2024) Assessing Topographic Features and Population Abundance in an Antarctic penguin colony through UAV-Based Deep-Learning Models. *International Journal of Applied Earth Observation and Geoinformation*, 134, 104124. DOI: 10.1016/j.jag.2024.104124
3. Davies, B.F.R., Oiry, S., Rosa, P., Zoffoli, M.L., Sousa, A.I., Thomas, O.R., Smale, D.A., Austen, M.C., Biermann, L., Attrill, M.J., **Román, A.**, Navarro, G., Barillé, A.L., Harin, N., Clewley, D., Martínez-Vicente, V., Gernez, P., Barillé, L. (2024) Intertidal seagrass extent from Sentinel-2 time-series show distinct trajectories in Western Europe. *Remote Sensing of Environment*, 312, 114340. DOI: 10.1016/j.rse.2024.114340
4. Davies, B.F.R., Oiry, S., Rosa, P., Zoffoli, M.L., Sousa, A.I., Thomas, O.R., Smale, D.A., Austen, M.C., Biermann, L., Attrill, M.J., **Román, A.**, Navarro, G., Barillé, A.L., Harin, N., Clewley, D., Martínez-Vicente, V., Gernez, P., Barillé, L. (2024) A sentinel watching over inter-tidal seagrass phenology across Western Europe and North Africa. *Communications Earth & Environment*, 5, 382. DOI: 10.1038/s43247-024-01543-z
5. **Román, A.**, Navarro, G., Tovar-Sánchez, A., Zarandona, P., Roque-Atienza, D., Barbero, L. (2024) ShetlandsUAVmetry: unmanned aerial vehicle-based photogrammetric dataset for Antarctic environmental research. *Scientific Data*, 11, 202. DOI: 10.1038/s41597-024-03045-1
6. **Román, A.**, Heredia, S., Windle, A.E., Tovar-Sánchez, A., Navarro, G. (2024) Enhancing Georeferencing and Mosaicking Techniques over Water Surfaces with High-Resolution Unmanned Aerial Vehicle (UAV) imagery. *Remote Sensing*, 16, 290. DOI: 10.3390/rs16020290
7. **Román, A.**, Tovar-Sánchez, A., Fernández-Marín, B., Navarro, G., Barbero, L. (2023) Characterization of an Antarctic Penguin Colony Ecosystem using High-Resolution UAV Hyperspectral Imagery. *International Journal of Applied Earth Observation and Geoinformation*, 125, 103565. DOI: 10.1016/j.jag.2023.103565
8. **Román, A.**, Prasyad, H., Oiry, S., Davies, B.F.R., Brunier, G., Barillé, L. (2023) Mapping intertidal oyster farms using unmanned aerial vehicles (UAV) high-resolution multispectral data. *Estuarine, Coastal and Shelf Science*, 291, 108432. DOI: 10.1016/j.ecss.2023.108432

9. **Román, A.**, Tovar-Sánchez, A., Gauci, A., Deidun, A., Caballero, I., Colica, E., D'Amico, S., Navarro, G. (2023) Water-Quality Monitoring with a UAV-Mounted Multispectral Camera in Coastal Waters. *Remote Sensing*, 15(1), 237. DOI: 10.3390/rs15010237
10. Bonnet-Dunbar, M., **Román, A.**, Caballero, I., Navarro, G. (2022) Remote Sensing: Satellite and RPAS (Remotely Piloted Aircraft System). In: *Marine Analytical Chemistry*, Springer. DOI: 10.1007/978-3-031-14486-8
11. Roca, M., Bonnet-Dunbar, M., **Román, A.**, Caballero, I., Zoffoli, L., Gernez, P., Navarro, G. (2022) Monitoring the Marine Invasive Alien Species *Rugulopteryx okamurae* using Unmanned Aerial Vehicles (UAVs) and Satellites. *Frontiers in Marine Science*, 9, 1004012. DOI: 10.3389/fmars.2022.1004012
12. **Román, A.**, Navarro, G., Caballero, I., Tovar-Sánchez, A. (2022) High-spatial resolution UAV multispectral data complementing satellite imagery to characterize a chinstrap penguin colony ecosystem on Deception Island (Antarctica). *GIScience & Remote Sensing*, 59(1), 1159-1176. DOI: 10.1080/15481603.2022.2101702
13. **Román, A.**, Tovar-Sánchez, A., Roque-Atienza, D., Huertas, I.E., Caballero, I., Fraile-Nuez, E., Navarro, G. (2022) Unmanned Aerial vehicles (UAVs) as a tool for Hazard assessment: The 2021 eruption of Cumbre Vieja volcano, La Palma Island (Spain). *Science of the Total Environment*, 843, 157092. DOI: 10.1016/j.scitotenv.2022.157092
14. Caballero, I., **Román, A.**, Tovar-Sánchez, A., Navarro, G. (2022) Near-real time water quality monitoring with Sentinel-2 and Landsat-8 satellites during the 2021 volcanic eruption in La Palma (Canary Islands). *Science of the Total Environment*, 822, 153433. DOI: 10.1016/j.scitotenv.2022.153433
15. Tovar-Sánchez, A., **Román, A.**, Roque-Atienza, D., Navarro, G. (2021) Applications of unmanned aerial vehicles in Antarctic environmental research. *Scientific Reports*, 11, 21717. DOI: 10.1038/s41598-021-01228-z
16. **Román, A.**, Tovar-Sánchez, A., Olivé, I., Navarro, G. (2021) Using a UAV-Mounted Multispectral Camera for the Monitoring of Marine Macrophytes. *Frontiers in Marine Science*, 8, 722698. DOI: 10.3389/fmars.2021.722698
17. Navarro, G., **Román, A.**, Roque, D., Tovar-Sánchez, A. (2021) UAV imagery in Deception Island (Antarctica): PiMetAn Antarctic campaign 2020-2021. *DIGITAL CSIC*. DOI: 10.20350/digitalCSIC/13850

B. Under Review / In Progress:

2 manuscripts (under review: 2; first author: 0)

18. Amaya-Vías, S., Flecha, S., **Román, A.**, Haro, S., Oviedo, J.L., Navarro, G., Arroyo, G.M., Huertas, I.E. Does saltmarsh management regulate air-water CO₂ exchange? A case study in temperate saltpan systems. *Under Review: Journal of Environmental Management*.
19. Windle, A.E., Gray, P.C., **Román, A.**, Heredia, S., Navarro, G., Silsbe, G.M. DroneWQ: A Python package for processing MicaSense multispectral drone imagery for aquatic remote sensing. *Under review: The Journal of Open Source Software*.

C. Conference Publications:

10 proceeding publications derived from conference abstracts

1. **Román, A.**, Windle, A.E., Tovar-Sánchez, A., Navarro, G., Silsbe, G. (2024) Uso de dron equipado con sensor multiespectral para la evaluación de la calidad de agua en la Bahía de Chesapeake (Estados Unidos). In: *Conference Book of the XX Congreso de la Asociación Española de Teledetección (AET)*.
2. **Román, A.**, Oiry, S., Davies, B.F.R., Rosa, P., Tovar-Sánchez, A., Navarro, G., Méléder, V., Barillé, L. (2024) Exploración de la relación cuantitativa entre la pigmentación del Microfitobentos

(MPB) y las medidas derivadas del empleo de un dron equipado con sensor multiespectral. *In: Conference Book of the XX Congreso de la Asociación Española de Teledetección (AET)*.

3. Castañeda, C., López-Flores, R., **Román, A.**, Mota, D., Abdelrazek, A., Navarro, G. (2024) Drones para el muestreo de agua y el registro de datos multiespectrales en humedales protegidos de Aragón localizados en cuencas agrícolas. *In: Conference Book of the XX Congreso de la Asociación Española de Teledetección (AET)*.

4. Del Valle García, M.A., Navarro, G., **Román, A.**, Barbero, L., López, J.A., Chisvert, A., Peris, G., Tovar-Sánchez, A. (2024) Optimización y aplicación de análisis espectrofotométrico para la monitorización de filtros UV en aguas costeras. *In: Conference Book of the XX Congreso de la Asociación Española de Teledetección (AET)*.

5. **Román, A.**, Tovar-Sánchez, A., Fernández-Marín, B., Navarro, G., Barbero, L. (2024) High-Resolution UAV Hyperspectral Imagery for Antarctic Research. *In: European Geosciences Union (EGU) General Assembly (2024), Vienna (Austria), EGU24-154*.

6. **Román, A.**, Tovar-Sánchez, A., Gauci, A., Deidun, A., Caballero, I., Colica, E., D'Amico, S., Heredia, S., Navarro, G. (2023) High-resolution UAV multispectral imagery for water-quality monitoring in coastal regions. *In: European Geosciences Union (EGU) General Assembly 2023, Vienna (Austria), EGU23-8599*.

7. **Román, A.**, Tovar-Sánchez, A., Roque-Atienza, D., Huertas, I.E., Caballero, I., Fraile-Nuez, E., Navarro, G. (2022) Use of Unmanned Aerial Vehicles (UAVs) for emergency assessment during volcanic activities: La Palma Island volcanic eruption (2021). *In: Conference Book of the VIII International Symposium on Marine Sciences 2022 (ISMS)*.

8. **Román, A.**, Tovar-Sánchez, A., Caballero, I., Olivé, I., van Bergeijk, S.A., Vilas, C., Navarro, G. (2021) Uso de UAV con sensor multiespectral para la monitorización de macrófitos marinos y microfítobentos (MPB) en zonas intermareales. *In: Conference Book of the XIX Congreso de la Asociación Española de Teledetección (AET)*. ISBN: 978-84-9769-383-7

9. **Román, A.**, Tovar-Sánchez, A., Olivé, I., Navarro, G. (2021) Monitorización de Macrófitos Marinos en la Bahía de Cádiz mediante dron con sensor multiespectral. *In: Conference Book of the III JIS del Mar, Fundación CEI-Mar*. ISBN: 978-84-09-36126-7

10. **Román, A.** (2021) Methodologies for the detection and study of submarine groundwater discharges (SGD) in the Gulf of Cádiz. *In: Conference Book of the II JIS del Mar, Fundación CEI-Mar*. ISBN: 978-84-09-13664-3

Presentations

A. Conferences:

Participation in 20 national/international conferences (oral comm.: 10, poster comm.: 3, co-authoring: 7)

1. **Román, A.**, Windle, A.E., Tovar-Sánchez, A., Navarro, G., Silsbe, G. (2024) Uso de dron equipado con sensor multiespectral para la evaluación de la calidad de agua en la Bahía de Chesapeake (Estados Unidos). *Oral presentation at XX Spanish Remote Sensing Association Conference (AET), Cádiz (Spain), 04-07/06/2024*. [Presenter](#).

2. **Román, A.**, Oiry, S., Davies, B.F.R., Rosa, P., Tovar-Sánchez, A., Navarro, G., Méléder, V., Barillé, L. (2024) Exploración de la relación cuantitativa entre la pigmentación del Microfítobentos (MPB) y las medidas derivadas del empleo de un dron equipado con sensor multiespectral. *Poster presentation at XX Spanish Remote Sensing Association Conference (AET), Cádiz (Spain), 04-07/06/2024*. [Presenter](#).

3. Castañeda, C., López-Flores, R., **Román, A.**, Mota, D., Abdelrazek, A., Navarro, G. (2024) Drones para el muestreo de agua y el registro de datos multiespectrales en humedales protegidos de Aragón localizados en cuencas agrícolas. *Oral presentation at XX Spanish Remote Sensing Association Conference (AET), Cádiz (Spain), 04-07/06/2024*. [Co-authoring](#).

4. Del Valle García, M.A., Navarro, G., **Román, A.**, Barbero, L., López, J.A., Chisvert, A., Peris, G., Tovar-Sánchez, A. (2024) Optimización y aplicación de análisis espectrofotométrico para la monitorización de filtros UV en aguas costeras. *Poster presentation at XX Spanish Remote Sensing Association Conference (AET), Cádiz (Spain), 04-07/06/2024.* [Co-authoring.](#)
5. **Román, A.**, Tovar-Sánchez, A., Fernández-Marín, B., Navarro, G., Barbero, L. (2024) High-Resolution UAV Hyperspectral Imagery for Antarctic Research. *Oral presentation at European Geosciences Union (EGU) General Assembly, Vienna, 14-19/04/2024.* [Presenter.](#)
6. **Román, A.**, Heredia, S., Windle, A.E., Tovar-Sánchez, A., Silsbe, G., Navarro, G. (2024) Novel Direct Georeferencing-Based Method for Accurate Water Surface Mosaicking with High-Resolution UAV Imagery. *Oral presentation at Ocean Sciences Meeting, New Orleans (US), 02/22/2024.* [Presenter.](#)
7. Peterson, S., Spera, A., **Román, A.**, Loughheed, V., Tweedie, C.E. (2024) Improving the understanding of spatiotemporal controls on nearshore water quality in an Arctic Lagoon. *Oral presentation at Ocean Sciences Meeting, New Orleans (US), 02/19/2024.* [Co-authoring.](#)
8. **Román, A.**, Tovar-Sánchez, A., Roque-Atienza, D., Huertas, I.E., Caballero, I., Fraile-Nuez, E., Navarro, G. (2023) Use of Remote Sensing Techniques for Volcanic Eruption Monitoring: The 2021 Eruption on La Palma Island, Spain. *Oral presentation at Virtual II Symposium Vulcana, Las Palmas de Gran Canaria, 01/12/2023.* [Presenter.](#)
9. Davies, B.F.R., Oiry, S., Rosa, P., Zoffoli, M.L., Sousa, A.I., Thomas, O.R., Smale, D.A., Austen, M.C., Biermann, L., Attrill, M.J., **Román, A.**, Navarro, G., Barillé, A.L., Harin, N., Clewley, D., Martinez-Vicente, V., Gernez, P., Barillé, L. (2023) A Sentinel Watching Over Intertidal Seagrass Phenology. *Poster presentation at EC-ESA Joint Earth System Science Initiative, Frascati, Rome (Italy), 23/11/2023.* [Co-authoring.](#)
10. Ferrera, I., Salles, S., Cabello, A.M., Martin, J.P., González-Vega, A., **Román, A.**, Huertas, I.E., Tovar-Sánchez, A., Arrieta, J.M., Fraile-Nuez, E. (2023) Impacts of the Volcanic Eruption in La Palma (Canary Islands) on the Nearby Marine Bacterioplankton Communities. *Oral presentation at ASLO Aquatic Sciences Meeting, Palma de Mallorca (Spain), 04-09/06/2023.* [Co-authoring.](#)
11. **Román, A.**, Tovar-Sánchez, A., Gauci, A., Deidun, A., Caballero, I., Colica, E., D'Amico, S., Heredia, S., Navarro, G. (2023) High-resolution UAV multispectral imagery for water-quality monitoring in coastal regions. *Oral presentation at European Geosciences Union (EGU) General Assembly, Vienna, 24-28/04/2023.* [Presenter.](#)
12. **Román, A.**, Tovar-Sánchez, A., Roque-Atienza, D., Huertas, I.E., Caballero, I., Fraile-Nuez, E., Navarro, G. (2022) Unmanned aerial vehicles (UAVs) as a tool for Hazard assessment: The 2021 eruption of Cumbre Vieja volcano, La Palma Island (Spain). *Oral presentation at Virtual I Symposium Vulcana, Las Palmas de Gran Canaria, 21/11/2022.* [Presenter.](#)
13. **Román, A.**, Tovar-Sánchez, A., Caballero, I., Olivé, I., Van Bergeijk, S.A., Vilas, C., Navarro, G. (2022) Uso de UAV con sensor multiespectral para la monitorización de macrófitos marinos y microfitobentos (MPB) en zonas intermareales. *Oral presentation at XIX Spanish Remote Sensing Association Conference (AET), Pamplona (Spain), 23-27/07/2022.* [Presenter.](#)
14. Roca, M., Dunbar, M.B., **Román, A.**, Caballero, I., Zoffoli, L., Gernez, P., Navarro, G. (2022) Monitoring the marine invasive alien macrophyte *Rugulopteryx okamurae* using remote sensing in Tarifa (Spain). *Poster presentation at XIX Spanish Remote Sensing Association Conference (AET), Pamplona (Spain), 23-27/07/2022.* [Co-authoring.](#)
15. Huertas, I.E., Fraile-Nuez, E., Flecha, S., Tovar-Sánchez, A., Navarro, G., Amaya-Vias, S., Rodríguez, S., **Román, A.**, Roque-Atienza, D., Caballero, I. (2022) Assessing the impact of the Cumbre Vieja volcanic eruption on the coastal fringe of La Palma Island: from the space to the sea bottom. *Oral presentation at Goldschmidt Conference, Honolulu (Hawaii), 10-15/07/2022.* [Co-authoring.](#)

16. **Román, A.**, Tovar-Sánchez, A., Roque-Atienza, D., Huertas, I.E., Caballero, I., Fraile-Nuez, E., Navarro, G. (2022) Use of Unmanned Aerial Vehicles (UAVs) for Emergency Assessment during Volcanic Activities: La Palma Island Volcanic Eruption (2021). *Oral presentation at VIII International Symposium on Marine Sciences (ISMS), 04-08/07/2022.* [Presenter.](#)
17. **Román, A.**, Navarro, G., Caballero, I., Tovar-Sánchez, A. (2022) Chinstrap penguin colonies monitoring at Deception Island (Antarctica) with high-resolution UAV imagery and moderate-resolution satellite imagery. *Poster presentation at ESA Living Planet Symposium (LPS), 23-27/05/2022.* [Presenter.](#)
18. Dunbar, M.B., **Román, A.**, Caballero, I., Zoffoli, M.L., Gernez, P., Navarro, G. (2022) Monitoring the invasive alien species *Rugulopteryx okamurae* using unmanned aerial vehicles and satellites: a zoomed-out approach to biodiversity monitoring. *Poster presentation at ESA Living Planet Symposium (LPS), 23-27/05/2022.* [Presenter.](#)
19. **Román, A.** (2022) Use of Unmanned Aerial Vehicles (UAV) for the study of coastal environmental processes in Antarctica (PiMetAn project). *Oral presentation at Virtual PTI-POLARCSIC Early Careers Scientists Journey, 13/05/2022.* [Presenter.](#)
20. **Román, A.** (2019) Methodologies for the detection and study of submarine groundwater discharges (SGD) in the Gulf of Cádiz. *Oral presentation at II Young Researchers of the Sea Conference, 01-04/10/2019.* [Presenter.](#)

B. Invited talks:

3 invited talks (seminars: 4 hour 15 minutes; joint sessions: 2 hours)

1. **Román, A.** (2024) Research in the marine environment with drones and satellites (Rota, Spain), 28/11/2024 (3 hours seminar).
2. **Román, A.** (2024) From Oceans to Coasts: Advancements and Applications of UAVs and Satellite Observations: Part II –UAVs. MASS24: Mallorca Science School 2024 (Palma de Mallorca, Spain), 21/10/2024 (45 minutes seminar).
3. **Román, A.** (2024) Pre-departure orientation talk for Fulbright scholars. Oral presentation in the Pre-Departure Orientation session for Fulbright scholars for the 2024/25 academic year (Madrid, Spain), 27/06/2024 (30 minutes seminar and two hours joint table at the cultural session).

C. Seminars / Webinars:

Participation in 6 seminars/webinars with oral communications (on-site: 5; online: 1)

- Román, A.** (2025) Use of drones in polar research. *Oral presentation at the Spanish Antarctic Base Gabriel de Castilla Scientific Seminars, 05/02/2025.*
- Román, A.** (2023) From Poles to Propellers: Drones in Antarctic Research. *Oral presentation at Horn Point Laboratory (UMCES) Student Seminars, 03/11/2023.*
- Román, A.** (2022) Game of Drones: coastal environmental processes from the air. *Oral presentation at Earth Observation Group Seminars at ICMAN-CSIC, 08/04/2022.*
- Román, A.**, Sparaventi, E. (2021) Pimetrivial, el juego de preguntas sobre la Antártida. *Oral presentation at Manuel de Falla High School (Puerto Real, Cádiz), 12/11/2021.*
- Román, A.**, Tovar-Sánchez, A., Olivé, I., Navarro, G. (2021) Monitorización de Macrófitos Marinos en la Bahía de Cádiz mediante Dron con Sensor Multiespectral. *Oral presentation at III Young Researchers of the Sea Conference, 06-09/09/2021.*
- Román, A.** (2020) Desarrollo de herramientas de teledetección y drones para el estudio de procesos costeros. *Oral presentation at M.S. in Oceanography during a virtual session, 09/12/2020.*

D. Scientific Outreach Events:

Participation in more than 10 on-site outreach events (national: 7; international: 3)

REWRITE project Annual Meeting**October 2024**

Participation in the Horizon Europe REWRITE project Annual Meeting in Ghent (Belgium), including a short presentation in the Mixer session.

Horn Point Laboratory Open House**October 2023**

Participation in the Open House at Horn Point Laboratory (HPL) on its 50th anniversary. Scientific outreach activities showcasing the work conducted at HPL.

XVII International Science on the Street Conference, DIVERCIENCIA**May 2023**

Participation in the Diverciencia 2023 event at the booth of the Institute of Marine Sciences of Andalusia, presenting and showcasing drones from the SeaDron platform.

Blue Cloud Hackathon**February 2022**

Participation in the Blue Cloud Hackathon 2022, hosted online, as part of the “Ocean Warning - Heat Busters” team.

Ocean Hackathon**October 2020**

Participation in the Ocean Hackathon 2020, held at the Zona Franca de Cádiz, as part of the project “Detection of plastics using drones”.

European Researchers' Night**September 2018**

Participation as a researcher at the University of Cádiz Drone Service stand.

IV Science and Knowledge Outreach Plan**September 2017**

Participation as a volunteer in three scientific outreach events: “Researchers' Night”, “Science is Eaten”, and “Cádiz, 300 Years of the Sea”.

Participation in Research Projects

1. **Project: REWRITE** “REWilding and Restoration of InterTidal sediment Ecosystems for carbon sequestration, climate adaptation and biodiversity support” (Ref: 101081357). University of Nantes, 2023-2028 (7,932,116€). PI: Vona Méléder.
2. **Project: DICHOSO** “Contribution of water masses of Deception Island to biogeochemical inventories of the Southern Ocean: current budgets and future trends” (Ref: PID2021-125783OB-100). CSIC, 2021-2024 (338,800€). PI: Antonio Tovar-Sánchez and Emma Huertas.
3. **Project: TurisDron** “Drone technology in support of sustainable tourism” (Ref: ProyExcel_00052). CSIC, 2022-2025 (157,757€). PI: Antonio Tovar-Sánchez.
4. **Project: Sat4Algae** “Development of satellite tools for the detection of algal blooms: Macroalgae and Microalgae” (Ref: PY20_00244). CSIC, 2021-2022 (85,290€). PI: Gabriel Navarro.
5. **Project: Sen2Coast** “Improved assessment of algorithms for bathymetry and water quality parameters with Sentinel-2A/B high-resolution satellites for advancement of coastal applications” (Ref: RTI2018-098784-J-100). CSIC, 2019-2022 (165,770€). PI: Isabel Caballero.
6. **Project: PiMetAn** “The role of penguins in the biogeochemical cycles of trace metals in the Southern Ocean” (Ref: RTI2018-098048-B-100). CSIC, 2019-2021 (272,250€). PI: Antonio Tovar-Sánchez.

Awards & Honors**A. Obtained grants and scholarships:**

Fulbright Scholarship for Pre-Doctorate Studies (Maryland, US)	2023/08-2024/02
Fulbright Scholarship Pre-Academic Program (Ohio, US)	2023/07-2023/08
FPU Scholarship by the Ministry of Science and Innovation (Spain)	2021/11-2024/11
Collaboration Scholarship in University Departments by the Ministry of Education, Culture and Sports (Spain)	2018/11-2019/07

B. Funding:

UCA's Own Plan 2023-2024 for Research and Transfer Support (1000€) <i>EGU 2024 General Assembly (Vienna, Austria)</i>	April 2024
UCA's Own Plan 2023-2024 for Research and Transfer Support (1500€) <i>Ocean Sciences Meeting 2024 (New Orleans, US)</i>	February 2024
UCA's Own Plan 2022-2023 for Research and Transfer Support (1000€) <i>EGU 2023 General Assembly (Vienna, Austria)</i>	March 2023
UCA's Own Plan 2021-2022 for Research and Transfer Support (350€) <i>ISMS 2022 (Las Palmas de Gran Canaria, Spain)</i>	July 2022
EC Grants European Space Agency LPS (700€) <i>ESA Living Planet Symposium (Bonn, Germany)</i>	May 2022

C. Successful applications:

ESA Advanced Ocean Synergy Training Course 2025 (OTC25) European Space Agency (ESA) – Selected for the scientific voyage Tromsø – Nice aboard the tall ship Statsraad Lehmkuhl, and a mandatory on-line course.	2025/04-2025/06*
GEOTRACES Summer School Helmholtz Centre For Polar and Marine Research (AWI), Bremerhaven, Germany.	2022/07-2022/07

Training / Workshops / Courses

Advanced Training Course NASA PACE <i>NASA ARSET, Virtual</i> Certificate of completion for a 6-hour advanced training course entitled “Introduction to Plankton, Aerosol, Cloud, Ocean Ecosystem (PACE) Hyperspectral Observations for Water Quality Monitoring.	October 2024
Course Psychological and Emotional Education <i>ASPY Prevención (Montgat, Barcelona), Virtual</i> Certificate of completion for a 25-hour course on psychosocial factors and risks in the workplace, management and prevention of work-related stress, handling of workplace conflict situations, emotional management, and healthy leadership.	October 2023
Course Introduction to Python Programming <i>Spanish National Research Council (CSIC), Virtual</i> Certificate of completion in an introductory Python programming course, covering fundamental concepts, types and data structures, flow control, functions, use of modules and packages, object-oriented programming, and error handling.	May 2023
Hexacopter Drone CONDOR Certification, DroneTools <i>DroneTools S.L., Gelves (Seville, Spain)</i> Certificate of practical and theoretical training for authorization to operate the Condor drone by DroneTools brand.	May 2023
Course MOOC Machine Learning in Weather & Climate <i>European Centre for Medium-Range Weather Forecasts (ECMWF), Virtual</i> Certificate of completion on this MOOC Course exploring the basics of machine learning in weather & climate, the concepts of machine learning, and practical machine learning applications.	April 2023
Course Field Trip Safety Resource <i>Spanish National Research Council (CSIC), Virtual</i> Certificate of completion in a 50-hour basic level course in occupational hazard prevention, covering fundamental concepts of workplace safety and health, general risks and their prevention, first aid, specific risks, and prevention in field trips.	April 2023

Course Python 3 from A to Z <i>Frogames Support Team, Virtual</i> A 50-hour course to learn how to use Python for real-world tasks, such as working with files and text, reading CSV or JSON files, creating data structures, loading and visualizing data needed for exploratory analysis in Data Science, and much more.	December 2022
Inter-comparison and calibration Workshop/experiment <i>PTI TELEDETECT WP6, Colmenar de Oreja (Madrid, Spain)</i> This workshop offered the opportunity to exchange ideas and experience in the use of spectroradiometers and cameras (field and UAV mounted sensors) for in situ and proximal sensing.	September 2022
Course One Planet, One Ocean <i>GEOMAR Helmholtz Centre for Ocean Research (Kiel, Germany), Virtual</i> Certificate of completion in a course on the physics, biology, and chemistry of the ocean; the impact of human interactions with the ocean on its resilience; regulations governing ocean use and misuse, along with the economics of ocean ecosystems; and sustainable solutions for coasts, fisheries, and other systems.	May 2022
Course Remote Sensing as a Global Tool <i>Universidad Internacional Menéndez Pelayo (UIMP), Virtual</i> Certificate of completion in a 30-hour course providing an overview and current insights into the techniques and applications of remote sensing within the context of global change.	July 2021
Pix4Dmapper Essentials Workshop <i>Pix4D, Virtual</i> Received training on Pix4Dmapper Structure from Motion (SfM) photogrammetry workflows including best practices for capturing RGB images with drones and handling mapping data.	June 2021
Course in Search, Management, and Communication of Scientific Information <i>University of Cádiz (Cádiz, Spain)</i> Basic 35-hour course on searching, managing, and communicating scientific information in academic and professional contexts.	June 2021
Course in Occupational Hazard Prevention in Field Work <i>Spanish National Research Council (CSIC), Virtual</i> Certificate of completion in a course on Occupational Hazard Prevention in field work, focusing on procedural guidelines and the implementation of general recommendations.	April 2021
Course in Basic GIS and Remote Sensing <i>University of Cádiz (Cádiz, Spain)</i> A 40-hour fundamental training course in GIS and Remote Sensing applied to project management in marine and terrestrial environments, as well as environmental protection.	March 2021
Course Hyperspectral Data for Land and Coastal Systems <i>National Aeronautics and Space Administration (NASA), Virtual</i> Certificate of completion in this training course including three sessions about the use of hyperspectral sensors on land and coastal systems.	February 2021
Course Laboratory Practices, Waste Management, and First Aid <i>University of Cádiz (Cádiz, Spain)</i> A 2-hour basic training course on laboratory best practices, waste management, and first aid.	November 2014
Other Certifications	
Radio Operator Course <i>World Aviation Flight Academy, Madrid (Spain)</i>	November 2023
Small Unmanned Aircraft System Airman Certificate (Part 107) <i>Federal Aviation Administration, FAA (US)</i>	September 2023
Certificate PADI Ocean Water	December 2021

Professional Association of Diving Instructors (PADI)

Remote Drone Pilot Certificate A1/A3, A2, STS, STS01, STS02
European Union Aviation Safety Agency, EASA

December 2020

Certificate in Advanced English (CAE-C1)
Cambridge Assessment English, Part of the University of Cambridge (UK)

February 2020

Field Experience

A. Emergencies:

Valencia Cut-off Low Post-event Emergency Assessment
Valencia (Spain), December 8th-11th 2024.

Valencia Cut-off Low Post-event Emergency Assessment
Valencia (Spain), November 8th-11th 2024.

La Palma Volcanic Eruption
R/V Ángeles Alvariño, October 1st-3rd 2021.

B. Research Campaigns:

DICHOSO Project Antarctic Campaign 2025
Aboard Oceanographic Research vessels: BIO Hespérides, January 11th-15th 2025; B/O Sarmiento de Gamboa, February 9th-24th 2025. In the Spanish Antarctic Base: January 15th – February 9th, 2025.

Trace Metals and UV filters concentration in water sampling
Neom (Saudi Arabia), November 29th - December 8th 2024.

GEOTRACES Summer School
R/V Heincke, July 10th-15th 2022.

C. Field Operations:

Popler Island UAV/Drone Fieldwork
Popler Island (Maryland, US), October 11th 2023.

UAV/Drone Surveys
Numerous field work campaigns to conduct and support drone surveys in coastal and lacustrine environments, including more than 500 controlled UAV/drone surveys.

Other Skills

A. Computer skills:

Programing Language: Python, Matlab, R.

GIS Software: SAGA GIS, QGIS, eCognition, ArcGIS.

Photogrammetric Software: Pix4D Mapper, Agisoft Metashape, Pix4Dmatic, DJI Terra.

Drone Planning Software: UgCS, Ground Station Pro, DJI Pilot.

LiDAR Analysis Software: CloudCompare, Global Mapper, LAsTools.

Image Processing: Adobe Photoshop, Adobe Lightroom, Adobe Illustrator.

B. Oceanography Sensing skills:

Biogeochemistry Sensing: Aqualogger PT, YSI EXO2, OBScope, MiniDOT LOGGER, Cyclops, RBR XR-420, NKE WiSense CTDS 300, ADCP, Pro Oceanus, Seabird HydroCAT.

Carbon Sensing: LICOR 7810

C. Co-Peer Reviewing:

Journal of Hazardous Materials, Drones MPDI, Bulletin of Vulcanology, Ecological Indicators, Remote Sensing Applications: Society and Environment, Remote Sensing in Ecology and Conservation, International Journal of Remote Sensing and Remote Sensing Letters, Applied Geomatics, Geo-spatial Information Science, Frontiers in Plant Science, Remote Sensing Journal (AET "Revista de Teledetección"), Aquatic Conservation: Marine & Freshwater Ecosystems.

* Last updated: March 2025.