

Oleg Belyaev

Residence: Cádiz, SP
Nationality: Spain

Oceanographer & GIS Scientist

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PhD Candidate and Oceanographer focused on Antarctic biogeochemistry and Remote Sensing. My research integrates Earth Observation with in-situ fieldwork to understand Southern Ocean ecosystem dynamics, ranging from water mass characterization to the monitoring and biogeochemical impact of penguin populations.

RESEARCH EXPERIENCE & PROJECTS

PHD CANDIDATE / DICHOSO PROJECT

Jan 2024 — Ongoing

Institute of Marine Sciences of Andalusia (ICMAN-CSIC)

Cádiz, Spain

- **Project DICHOSO** (Ref: PID2021-1257830B-I00): Describing biogeochemical features and forecasting future trends of Deception Island, Antarctica.
- Integrating physical-biological interactions into biochemical budgets under PIs Emma Huertas & Antonio Tovar-Sánchez.

REMOTE SENSING SCIENTIST / MARINE STRATEGIES

May 2023 — Dec 2023

Institute of Marine Sciences of Andalusia (ICMAN-CSIC)

Cádiz, Spain

- **Marine Strategies Project** (PI: Gabriel Navarro): Developed satellite-based algorithms for detecting marine heat events and quantifying cumulative impacts on pelagic habitats.
- Continued the technical development of the Andalusian Marine Observatory.

REMOTE SENSING SCIENTIST / EUROSEA PROJECT

Aug 2022

Marine Institute (MI)

Galway, Ireland

- **Project EuroSea** (Ref: 862626): Collaborated on the development of an observation and warning system for extreme marine events (Irish component).

REMOTE SENSING SCIENTIST / SAT4ALGAE

Nov 2021 — Mar 2023

Institute of Marine Sciences of Andalusia (ICMAN-CSIC)

Cádiz, Spain

- **Project Sat4Algae** (Ref: PY20-00244): Generated satellite tools for the detection of macroalgae and microalgae blooms.
- Contributed to the Andalusian Marine Observatory (SOLAUT project) to enhance satellite-based environmental monitoring.

FIELDWORK EXPERIENCE

XXXVII SPANISH ANTARCTIC CAMPAIGN

February 10 — March 26, 2024

"Gabriel de Castilla" Spanish Antarctic Base / "Hespérides" Research Vessel

Deception Island, Antarctica

- 22 days of fieldwork at the "Gabriel de Castilla" base at Deception Island.
- 12 days onboard the R/V "Hespérides".
- Participation as part of the DICHOSO Antarctic Project Framework.

PUBLICATIONS & DATASETS

- Belyaev, O., et al. *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*, 2024.
- Belyaev, O., et al. *Hydrothermal alteration of seawater biogeochemistry in Deception Island (South Shetland Islands, Antarctica). Frontiers in Marine Science*, 2024.
- Fernández-Barba, M., Belyaev, O., et al. *Marine heatwaves in a shifting Southern Ocean induce dynamical changes in primary production. Communications Earth & Environment*, 2024.
- Fernández-Barba, M., Belyaev, O., et al. *Marine Heatwaves in a Changing Southern Ocean: Heat Budget Analysis in Modular Ocean Model v4p1 (ESM2M GFDL) and Causal Inference through Convergent Cross Mapping. DIGITAL.CSIC.*, 2024. [DATASET]
- Pereiro D., Belyaev, O., et al. *An observational and warning system for the aquaculture sector. Frontiers in Marine Science*, 2024.
- Belyaev, O., et al. *The contribution of penguin guano to the Southern Ocean iron pool. Nature Communications*, 2023.
- Belyaev, O., et al. *Training dataset for object detection - Penguins from UAV, Ver. 1, Australian Antarctic Data Centre*, 2023. [DATASET]

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- Pereiro D., ... Belyaev, O., et al. *Connections between "Extreme Marine Events" and Biological EOVs Report*. **GEOMAR OceanRep**, 2022.
- Belyaev, O., et al. *Penguin population quantification from UAV imagery using deep-learning in Deception Island (South Shetland Islands, Antarctica)*. **Conference Book of the Young Sea Researchers Conference (JIs del Mar)**, 2021. ISBN: 978-84-09-36126-7

Only relevant publications are shown here.

CONFERENCES

- X International Symposium on Marine Sciences (ISMS) 2026**. International congress, Cádiz, July 2026. **Poster presentation** – Regional trace element and nutrient exchange at Deception Island, Antarctica.
- Living Planet Symposium 2025 (LPS2025), The European Space Agency**. International congress, Vienna, Austria, June 2025. **Poster presentation** – Evaluating topographic characteristics and population density in an Antarctic penguin colony using UAV-driven deep learning models.
- XX Congress of the Spanish Association of Remote Sensing (AET) 2024**. National congress, Cádiz, June 2024. Co-organizer.
- VIII International Symposium on Marine Sciences (ISMS) 2022**. International congress, Gran Canaria, July 2022. **Poster presentation** – Satellite monitoring of forecasted oceanic variables through the Marine Observatory of Andalusia.
- XIX Congress of the Spanish Association of Remote Sensing (AET) 2022**. National congress, Pamplona, June-July 2022. **Poster presentation** – Ocean monitoring service through remote sensing: Andalusian Marine Observatory.
- EuroSea Annual Meeting 2022**. European congress, Cádiz, May 2022. **Oral presentation** - Development of a near-real-time remote sensing ocean monitoring service: the Andalusian Marine Observatory.
- III Congress of Young Marine Researchers (JIS)**. International congress, Motril, Granada, September 2021. **Oral presentation** – Quantification of penguin populations using neural networks on Deception Island (South Shetland Islands, Antarctica).

Only relevant conferences are shown here.

EDUCATION

Ph.D. in Marine Science and Technology, Cadiz University, Spain	2024 — ongoing
MSc. in Oceanography, Cadiz University, Spain	2020 — 2021
BSc. Biology, Molecular Biology (Erasmus+ Program), Alcala & Umeå Universities, Spain, Sweden	2015 — 2019

SKILLS & CERTIFICATIONS

Scientific Computing Python, MATLAB, R, JavaScript (GEE), QGIS, Git, $\text{\LaTeX}$
Operational & Fieldwork UAV Certified Operator (A1-A3, A2), SSI Divemaster (+220 dives, Nitrox), Fieldwork Risk Mgmt (CSIC), European Driving License B
Languages Spanish & Russian (Native), English (Fluent), French (Basic)
Design Adobe Illustrator, Photoshop, AfterEffects

REFERENCES

- Dr. Emma Huertas** – Research Scientist, ICMAN-CSIC. emma.huertas@csic.es
- Dr. Antonio Tovar-Sánchez** – Research Professor, ICMAN-CSIC. a.tovar@csic.es
- Dr. Gabriel Navarro** – Research Scientist, ICMAN-CSIC. gabriel.navarro@icman.csic.es

PRIVACY

I hereby authorise the use of my personal data in accordance to the GDPR 679/16-"European regulation on the protection of personal data"