

Oleg Belyaev K.

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Residence: Cádiz, SP
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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-100): 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

- **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

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|---|-----------------------|
| 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, \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"