Oleg Belyaev K.

Oceanographer & GIS Scientist

(+34) 630629151
Residence: Cádiz, SP
Nationality: Spain

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Growing up immersed in dual cultures and languages has endowed me with a global perspective and advanced critical thinking skills, enabling me to approach and solve problems effectively. Holding a Bachelor's degree in Biology and a Master's in Coastal Oceanography, my current research focuses on integrating biogeochemical insights with earth observation to understand the complexities of marine ecosystems, particularly in the Antarctic region. My academic journey is driven by a passion for understanding and preserving marine biodiversity, leveraging my expertise in both theoretical and practical aspects of marine science. Outside academia, I enjoy exploring diverse cultures, engaging in outdoor activities, and spending quality time with friends and family.

RESEARCH EXPERIENCE

PhD PROGRAM / DICHOSO ANTARCTIC PROJECT   January 2024 — Ongoing
Institute of Marine Sciences of Andalusia (ICMAN-CSIC) - Cádiz University (UCA)   *Cádiz, Spain*

- Describing the biogeochemical features of Deception Island, Antarctica.
- Understanding the physical-biological interaction of Deception Island ecosystem and its relationship with the biochemical budgets.
- Forecasting future trends and characterizing biogeochemical current budgets of Deception Island.

REMOTE SENSING SCIENTIST / MARINE STRATEGIES PROJECT   May 2023 — December 2023
Institute of Marine Sciences of Andalusia (ICMAN-CSIC)   *Cádiz, Spain*

- Worked on satellite-based algorithms for the detection of marine heat events.
- Continued the development of the Andalusian Marine Observatory.

REMOTE SENSING SCIENTIST / EUROSEA PROJECT   August 2022
Marine Institute (MI)   *Galway, Irealnd*

- Collaboration at Galway's Marine Institute within the framework of the EuroSea project for the development of an observation and warning system for risks derived from extreme marine events.

REMOTE SENSING SCIENTIST / SAT4ALGAE PROJECT   November 2021 — March 2023
Institute of Marine Sciences of Andalusia (ICMAN-CSIC)   *Cádiz, Spain*

- Generated satellite tools for the detection of algal blooms, focusing on both macroalgae and microalgae.
- Contributed to the development of the Andalusian Marine Observatory as part of the SOLAUT project.
- Worked on the Sat4Algae project, emphasizing the advancement of marine sciences through satellite technology.
- Collaborated in multidisciplinary teams to enhance satellite-based environmental monitoring capabilities.

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.**, Román A., Belliure J., Navarro G., Barbero L., & Tovar-Sánchez A. *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.**, Huertas, I.E., Navarro G., Amaya-Vías S., De La Paz M., Sparaventi E., Heredia S., Sukekava C. F., Laglera L. M., & Tovar-Sánchez A. *Hydrothermal alteration of seawater biogeochemistry in Deception Island (South Shetland Islands, Antarctica)*. **Frontiers in Marine Science**, 2024.

- Fernández-Barba, M., **Belyaev, O.**, Huertas, I.E., & Navarro G. *Marine heatwaves in a shifting Southern Ocean induce dynamical changes in primary production*. **Communications Earth & Environment**, 2024.

- Fernández-Barba, M., **Belyaev, O.**, Huertas, I. E., & Navarro, G. *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.**, ... & Cusack C. *An observational and warning system for the aquaculture sector.* **Frontiers in Marine Science**, 2024.

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- **Belyaev, O.**, Sparaventi, E., Navarro G., Rodríguez-Romero A., & Tovar-Sánchez A. *The contribution of penguin guano to the Southern Ocean iron pool.* **Nature Communications**, 2023.

- **Belyaev, O.**, Sparaventi, E., Navarro G., Rodríguez-Romero A., & Tovar-Sánchez A. *Training dataset for object detection - Penguins from UAV, Ver. 1, Australian Antarctic Data Centre*, 2023. [**DATASET**]

- Pereiro D., Cusack C., Dunbar M. B., Navarro G., Alvarez-Berastegui, D., O'Carroll, J., **Belyaev, O.**, ... & Wilkes, R. *Connections between" Extreme Marine Events" and Biological EOVs Report.* **GEOMAR OceanRep**, 2022.

- **Belyaev, O.**, Caballero, I., & Navarro G. *Servicio de monitorización oceánica en tiempo cuasi real a través de la teledetección: Observatorio Marino de Andalucía.* **Conference Book of the Spanish Remote Sensing Association**, 2021. ISBN: 978-84-9769-383-7

- **Belyaev, O.**, Román A., Navarro G., & Tovar-Sánchez A. *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

CONFERENCES

- **XX Congress of the Spanish Association of Remote Sensing (AET) 2024**. National congress, Cádiz, June 2024. Listener & co-organizer.

- **II International Meeting on Knowledge and Blue Economy – InnovAzul 2022**. Meeting of students with companies and professionals from the Blue Economy sectors, Cádiz, November 29 - December 2, 2022. Listener.

- **2022 Sustainable Ocean Summit (SOS) & Global Blue Finance Summit (BlueFIN)**. International congress, Barcelona, October 2022. Listener.

- **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).

- **XXXIII Conference of the Spanish Association of Entomology**. National congress, Almería, November 15-18, 2017. *Oral presentation* - Bergmann's Temporal Rule? Contrasting effects of temperature and solar radiation on the body size of dung beetles across circadian rhythms.

- **IX Spanish Space Students Conference at LEEM-UPM**. Madrid, 2017. *Co-organizer* & Listener.

PROJECTS

- **DICHOSO - Contribution of water masses of Deception Island to biogeochemical inventories of the Southern Ocean: current budgets and future trends (Ref: PID2021-125783OB-I00).**
  PI: Emma Huertas & Antonio Tovar-Sánchez. *PhD Program*. **2024 — ongoing**

- **Marine Strategies - Application of models for the quantification of cumulative impacts on pelagic habitats in pilot areas.**
  PI: Gabriel Navarro *Development of satellite-based algorithms for the detection of marine heat events*. **2023**

- **EuroSea - Improving the European ocean observing and forecasting system in a global context. (Ref: 862626).**
  Development of Irish part of the Marine Observatory within the framework of this project.. **2022**

- **Sat4Algae Project (Ref: PY20-00244. 2021-2022), Project of Excellence, Junta de Andalucía.** PI: Gabriel Navarro.
  Development of the Andalusian Marine Observatory within the framework of this project.. **2021 — 2023**

- **PiMetAn Project (Ref: RTI2018-098048-B-100)**, Ministry of Science and Innovation. PI: Antonio Tovar-Sánchez.
  Master's thesis developed within the framework of this project. **2021**

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EDUCATION

PhD. in Marine Science and Technology, *CADIZ UNIVERSITY*, Spain **2024 — ongoing**
Antarctic Biogeochemistry and Remote Sensing research
MSc. in Oceanography, *CADIZ UNIVERSITY*, Spain **2020 — 2021**
Deep understanding of biological, physical, chemical and geological processes in the coastal oceanic systems.
BSc. in Molecular Biology (Erasmus+ Program), *UMEÅ UNIVERSITY*, Sweden **2018 — 2019**
Advanced molecular biology and genetics laboratory techniques, Neurobiology.
BSc. in Biology, *ALCALA UNIVERSITY*, Spain **2015 — 2018**
Understanding of the basic structures and dynamics of living organisms and its interactions with their environment.

TECHNICAL PROFICIENCIES

Text Edition and Database	Git, LaTeX
GIS Software	QGIS, UGCS, Google Earth Engine
Scientific Programming	Python, JavaScript (for GEE), MATLAB
Design	Adobe Illustrator, Photoshop, AfterEffects

COURSES

PhD Course on spatial data analysis in ecology with R   Cádiz University
A1-A3 & A2 UAV Certified Operator   AESA
SSI Divemaster   +220 logged dives and +100 OW Assisted OW Courses, Nitrox Certified. Princess Divers
Google Earth Engine   CSIC
Field-work Risk Management   CSIC

AREAS OF EXPERTISE

- Geographical Information Systems, UAVs, Coastal Oceanography Processes
- Neural-network based object detection
- Scientific illustration
- Teamwork, communication, pathfinder
- Cross-Functional Team Leadership

LANGUAGES

Spanish, Russian	Native level
English	Fluent speaker
French	Basic speaker

PERSONAL ACTIVITIES AND ADDITIONAL INFORMATION

Coral Restoration program with OceanQuest and Sea Sepherd in Thailand	**2020**
European Driving License B	**2016**
Co-Manager of Literature and Philosophy Club, *La flauta Magica* in Madrid	**2015-2017**

PRIVACY