

Vadim BERTRAND

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Grenoble area
France



2nd year PhD student in Oceanography – Master's Degree in Statistics – Software Engineer

EDUCATION

- 2024- **PhD** | Institut des Géosciences de l'Environnement – Team **MEOM**
Stochastic Modelling of Drifting Object Trajectories at the Ocean Surface using Machine Learning
Supervised by Julien Le Sommer (CNRS Researcher), Emmanuel Cosme (UGA Full Professor) and Adeline Leclercq Samson (UGA Full Professor)
→ Implementing the Python package [pastax](#)
- 2023 **Master's Degree in Statistics and Data Science** | Université Grenoble Alpes – IM²AG
Graduated with High Honors
Bayesian statistics, Computational statistics, Spatial statistics, Operations research and optimization, Non-parametric and functional estimation, Supervised and unsupervised learning
- 2014 **Engineering Degree** | Grenoble INP – Phelma / Ensimag
Signal processing, Algorithms and programming, Graph theory, Information theory

ACADEMIC AND PROFESSIONAL EXPERIENCE

- 2024-2025 **Summer School** | [Ocean Training Course 2025](#) – Organized by the European Space Agency
Advanced Training Course on Ocean Synergy Remote Sensing focusing on the joint use of different satellite instruments to observe oceanic and atmospheric processes
Shore-based component of 14 training sessions on different Earth Observation satellite measurements
Ship-based component of 6 weeks from Tromsø (Norway) to Nice (France) aboard the [Statsraad Lehmkuhl](#)
→ Designed and assembled low-cost surface drifters to be deployed during the campaign, more details [here](#)
→ Organized a drifter position prediction challenge taking place during the shipboard training, see [here](#)
- 2023 **Research Engineer** | Institut des Géosciences de l'Environnement – Team **MEOM**
Variational cyclogeostrophic inversion for estimating ocean surface currents
Supervised by Emmanuel Cosme (UGA Full Professor) and Julien Le Sommer (CNRS Researcher)
→ Implemented the Python package [jaxparrow](#), leveraging JAX. [10.5281/zenodo.14871648](#)
- 2023 **Research Internship** | TIMC – Team Models and Algorithms for Genomics
Exploration of joint deconvolution algorithms for omic data ([report](#), [poster](#))
Supervised by Magali Richard (CNRS Researcher)
- 2022-2023 **Mentored Master's Project** | Université Grenoble Alpes – IM²AG
Effect of anthropogenic noise on narwhals behavior (as part of [this larger study](#))
Supervised by Adeline Leclercq Samson (UGA Full Professor)
- 2022 **Research Internship** | Laboratoire Jean Kuntzmann – Team Données, Apprentissage et Optimisation
Deep generative learning for next-generation drugs ([report](#))
Supervised by Sergei Grudin (CNRS Researcher)
- 2016-2021 **Software Engineer** | Inria / GIPSA-lab – Team Dynamics and Control of Networks
Supervised by Carlos Canudas-de-Wit (CNRS Researcher)
→ Developed the web-application [GTL-VILLE](#), collecting, estimating and predicting road traffic indicators in real time in the Grenoble Metropolis ([subsequent publication](#))

TEACHING

- 2024 **Computing and Data Analysis Project (Supervision of 2 students)** | Université Grenoble Alpes - Master in Earth, planetary and environmental sciences
- 2024 **Statistics (Practical Session)** | Université Grenoble Alpes - Bachelor in Biochemistry

INTERNSHIP SUPERVISION

- 2024 **Léo Boux de Casson (Bachelor, École Normale Supérieure de Lyon)**, with Julien Le Sommer
Eulerian comparison of lagrangian drifter velocities and reconstructed sea surface currents within the SWOT swath in the Mediterranean sea

SCIENTIFIC ACTIVITIES

- 2025 **Journal Article** *in preparation* | V. Bertrand, J. Le Sommer, M. Ballarotta, V. Zaia De Almeida, A. Samson, E. Cosme, *Robust inversion of the cyclogeostrophic balance equation: Application to global Sea Surface Height maps*.
- 2025 **Hackathon** | Attendee in the [JAXATHON](#) organized at IGE, Grenoble, France.
Gave an informal presentation of the JAX ecosystem. [PDF](#)
- 2024 **Poster Presentation** | *Stochastic and differentiable simulators of drifting objects trajectories*, EDITO WP2 Workshop, Grenoble, France. [PDF](#)
- 2024 **Oral Presentation** | *Cyclogeostrophic inversion for estimating Sea Surface Currents from SWOT altimeter data*, 30YPRA-OSTST, Montpellier, France. [PDF](#)
- 2024 **Poster Presentation** | *Cyclogeostrophic inversion for estimating Sea Surface Currents*, EGU, Vienna, Austria. [10.5194/egusphere-egu24-17489](https://doi.org/10.5194/egusphere-egu24-17489)
- 2023 **Poster Presentation** | *Scoring and ranking strategies to benchmark cell type deconvolution pipelines*, JOBIM and ISMB, Nice and Lyon, France. [PDF](#)
- 2018 **Journal Article** | G. Casadei, V. Bertrand, B. Gouin, C. Canudas-de-Wit, *Aggregation and travel time calculation over large scale traffic networks: An empiric study on the Grenoble City*. Transportation Research Part C: Emerging Technologies, 2018. [10.1016/j.trc.2018.07.033](https://doi.org/10.1016/j.trc.2018.07.033)

OPEN SOURCE CONTRIBUTIONS

Personal Projects, developer and maintainer of:

[pastax](#) *Parameterizable Auto-differentiable Simulators of ocean Trajectories in jAX*
[jaxparrow](#) *A package for computing the inversion of the cyclogeostrophic balance based on a variational formulation approach*. [10.5281/zenodo.14871648](https://doi.org/10.5281/zenodo.14871648)

Community Projects, contributor to:

[clouddrift](#) *Accelerates the use of Lagrangian data for atmospheric, oceanic, and climate sciences*
[quax](#) *Multiple dispatch over abstract array types in JAX*
[widetrax](#) *Toolbox for manipulating wide-swath altimetry ocean data*

MISCELLANEOUS

Living languages

English: fluent, Spanish: notions

Programming languages

Python (JAX, PyTorch, NumPy, Xarray, etc...), Julia, R ; Git ; Shell scripting

Hobbies

Rugby (2 years in sports study) and now Touch rugby ([what is this?](#)), Running, Ski touring, Diving