

PAOLO CHEVALIER

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Objectives / Biography

I am a student in applied mathematics at the National Institute of Applied Sciences (INSA) in France. Currently on my fifth and final year. With an open minded and curious approach, I am eager to use my analytical skills and theoretical knowledge acquired through my studies. I am seeking a PhD opportunity in the field of mathematics applied to climate science, specifically focusing AI for climate and/or extremes, starting the next academic year.

Education

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| National Institute of Applied Sciences (INSA) <i>Ing. Applied Mathematics - Equivalent to a MSc in Applied Mathematics</i> <ul style="list-style-type: none">Average: 16.04/20 (Year 1)Rank: 3rd/21 (Year 1) | September 2023 – June 2026 Rennes, France |
| Newcastle University <i>Erasmus+ Exchange Semester</i> <ul style="list-style-type: none">Average: 95% / First-Class Honours | January 2025 – June 2025 Newcastle, UK |
| National Institute of Applied Sciences (INSA) <i>Preparatory classes (Classe Préparatoire Intégrée)</i> <ul style="list-style-type: none">Intensive multidisciplinary science curriculum specifically designed to prepare for engineering studies.Average: 16.5/20 / First-Class HonoursRank: 10th/230 | September 2021 – June 2023 Rennes, France |
| Lycée Gaspard Monge la Chauvinière <i>Baccalaureate in Mathematics, Further Mathematics and Engineering Sciences</i> <ul style="list-style-type: none">With highest honours | September 2018 – June 2021 Nantes, France |

Relevant Coursework

- Data Analytics (PCA, CA, MFA)
- (Non)Linear Computing
- Stochastic models (Markov, Martingales)
- Operations research
- Transforms
- Linear Models
- Optimization (Continuous/Discrete/Stochastic)
- Statistical Inference
- Classification
- ODE/PDE
- Extremes
- Design of Experiments
- Bayesian Methods
- Variational Methods
- Lagrangian Dynamics
- Uncertainties and Sensitivity
- Reliability and Survival models
- Deep Learning
- Optimal Control

Experience

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| Laboratory of Climate and Environmental Sciences (LSCE) <i>Research Internship, Using AIFS (ECMWF AI model) for rare event simulation with <u>Pascal Yiou</u></i> | February 2026 – Present Paris, France |
| Laboratory of Climate and Environmental Sciences (LSCE) <i>Research Internship, Transfer learning for the estimation of committor functions with <u>Pascal Yiou</u></i> <ul style="list-style-type: none">The LSCE is a leading joint research unit (UMR 8212) of CEA, CNRS, UVSQ, Université Paris-Saclay & IPSLThe goal of the internship was to assess the possibility of using transfer learning for the prediction of extreme climate events (heatwaves specifically)Applied transfer learning to improve heatwave forecasts, extending the prediction lead time from 3 to 5 days using circulation analogs.Trained a U-Net deep learning model in both IPSL-CM6A-LR and ERA5 to predict temperature fields from circulation fields in ERA5, achieving correlations above 0.95 for 1-day forecasts. Improving slightly results obtained on a model trained solely on ERA5.The work was done remote servers using Python, with Dask, Xarray and numpy mostly. I wrote optimized code for calculating atmospheric analogs using matrix operations, which significantly reduced computation time. | June 2025 – September 2025 Paris, France |
| Técnico Lisboa - Grupo de Física Matemática <i>Research Internship, Entropic Optimal Transport with <u>Léonard Monsaingeon</u></i> <ul style="list-style-type: none">Optimal transport theory, relaxation, entropic regularisation, dual, Monge and Monge-Kantorovich problemsImplementation of Sinkhorn algorithms, log domain (python)Wasserstein distances and barycenters (python) | June 2024 – August 2024 Lisbon, Portugal |
| Eurofins <i>Worker Internship in a commercial and sampling agency</i> <ul style="list-style-type: none">Managed bottling and shipment logisticsAssisted sampling technicians during fieldwork in various environments, including rivers and industrial sites.Conducted industrial prospecting activities to identify potential business opportunities. | June 2022 – July 2022 Nantes, France |

Technical Skills

Spoken languages: French(Native), English(C1, TOEIC 990/990), Spanish(B1)
Languages: Python, R, Matlab, C++, Java, C, Julia, SQL

Leadership / Extracurricular

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| Handball <i>Player and coach</i> <ul style="list-style-type: none">Played handball for the last 13 years. Helped me develop teamwork and communication skills. I've also learned to handle pressure and stay focused at important times.In charge of the handball section at INSA Rennes for two years. Monitoring of training / Organisation of officials and friendly games / Responsibility in case of injuries | 2015 – Present Nantes – Rennes |
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