Manolis PERROT

Website: https://manolisperrot.github.io/
Email: manolis.perrot@univ-grenoble-alpes.fr

Date of birth: April 25, 1997
Nationality: French

Expertise

Maths: Geometric Fluid Dynamics, Deterministic and Stochastic Modeling, Uncertainty Quantification, Scientific Computing.
Physics: Ocean and Atmosphere Turbulence, Subgrid Parameterizations for Climate models, Energy conservation, Convection, Physics-Dynamics coupling .

Academic experiences

2025 – 2027	Postdoctoral research hosted by Bruno Deremble at Institut des Géosciences de l'Environnement, CNRS, Grenoble: *Impact of surfaces waves on ocean vertical mixing*.
2021 – 2025	PhD research supervised by Eric Blayo, Florian Lemarié at Laboratoire Jean-Kuntzmann, Université Grenoble-Alpes and Inria: *Modeling Oceanic and Atmospheric Convection: Energy, Uncertainties and Rotation*.
2020 – 2021 (10 months)	ENS pre-doctoral internship supervised by Eric Blayo, Florian Lemarié and Etienne Mémin at Laboratoire Jean-Kuntzmann, Grenoble: *Stochastic modelling of air-sea turbulent fluxes*.
2020 (5 months)	M2 Master's thesis (remotely) supervised by Klas Modin (Göteborg Univ., Sweden): *Some geometric aspects of ideal hydrodynamics*.
2018 (5 months)	Internship supervised by Antoine Venaille and Pierre Delplace at Physics Laboratory of ENS de Lyon: *Topological transition in stratified fluids* .
2017 (3 months)	Numerical PDE project supervised by Emmanuel Dormy: *A model of water waves amplification due to wind stress*.
2017 (4 months)	Bachelor's thesis supervised by Laurent Charles: *Egorov's theorem and mathematical quantization*.
2016 (6 months)	TIPE experiments and thesis for the ENS exam entrance: *Electrical resistivity tomography methods applied to the detection of mountain permafrost*.

Publications and preprints

Perrot M., Lemarié F., Energetically Consistent Eddy-Diffusivity Mass-Flux Convective Schemes: 2. Implementation and Evaluation in an Oceanic Context, *Journal of Advances in Modeling Earth System* (2025) .
Perrot M., Lemarié F., Dubos T., Energetically Consistent Eddy-Diffusivity Mass-Flux Convective Schemes: 1. Theory and Models, *Journal of Advances in Modeling Earth System* (2025).
Modin K., Perrot, M.[1] Eulerian and Lagrangian stability in Zeitlin's model of hydrodynamics , *Communications in Mathematical Physics* (2024) [arXiv] .
Perrot M., Delplace P., Venaille A., Topological transition in stratified fluids, *Nature Physics* (2019) [arXiv].

Education

2021 – 2025	Ecole doctorale MSTII, Université Grenoble Alpes, Grenoble, France. **PhD in applied mathematics:** *Modeling Oceanic and Atmospheric Convection: Energy, Uncertainties and Rotation*.
2016 – 2020	Sorbonne Université & Ecole Normale Supérieure (ENS)[2], Paris, France. **Bachelor and Master of pure Mathematics**, additional courses in physics and climate sciences.
2014 – 2016	Classes préparatoires Stanislas (PCSI – PC*), Paris, France. Successful scientific preparation for the national entrance exams to the ENS, with major in mathematics, physics and chemistry.

Community service

2024 – 2026	Elected member of the Research Commission of Université Grenoble-Alpes.

Teaching & outreach

2021 & 2022	Teaching assistant in linear algebra for civil engineering students (Licence 2 – 60h).
2017	Organization of a workshop during a meeting for highschool girls in mathematics (Rendez-vous des Jeunes Mathématiciennes).

[1] In the mathematical community, authors are listed in alphabetical order
[2] Selective french school preparing students to research or teaching career. Students are paid as civil servants during their 4-year tuition

2016 – 2018 (2 years)	Oral examiner (*colleur*) in *Classe préparatoire* in Physics.

Events and Talks

October 2024	Speaker, Fine Scales in Numerical Ocean Models workshop, Brest, France: *Eddy-Diffusivity Mass-Flux convective parameterization: energy budgets, rotation effects and uncertainty quantification* .
May 2024	*GDR DEPHY - Development and Evaluation of Physical Parameterizations* workshop, Fréjus, France .
April 2024	Speaker, EGU Vienna, Austria: *Convective Mixing: an Energetically Consistent Non-Local Parameterization* .
March 2024	Invited speaker, PC6-7 TRACCS kickoff meeting Toulouse, France: *EDMF convective schemes: closed energy budgets and transport-map Bayesian estimation* .
January 2024	Speaker, Ateliers de Modélisation de l'Atmosphère Toulouse, France: *Energetically consistent coupling of EDMF and TKE schemes for Convection*.
December 2023	Invited speaker, MathsInFluid seminar ENS de Lyon, France: *Au-delà de la diffusion turbulente: la convection et ses paramétrisations*.
September 2023	Fluid Dynamics of Sustainable Environment summer school , Cambridge University, United-Kingdom.
July 2023	*Derivation and calibration of consistent Eddy-Diffusivity Mass-Flux parameterizations for ocean models*, talk at the PDEs on the Sphere conference , Grenoble, France .
June 2023	Attendee of Journée annuelle du GDR Théorie et Climat, Paris, France .
May 2023	*GDR DEPHY - Development of Physical Parameterizations* workshop, Fréjus, France .
April 2022	Short talk at the research school *Mathematical Advances in Geophysical Flows*, CIRM, Marseille, France : Multi-fluid modelling for Ocean Deep Convection Parameterizations.
November 2021	Attendee of the winter school *Numerical modelling of Ocean and Atmosphere*, Grenoble, France.
August 2021	Attendee of the *Workshop on Ocean-Atmosphere interaction*, Ecole de Physique des Houches, France.
June 2018	Attendee of the *Mathematical Physics Days : Quantum Chaos*, Lyon, France.

IT skills

LaTeX, Python, Bash, Fortran, Git, Unix.

Languages

French:	Mother tongue.
English:	Fluent.
Spanish:	Fluent.
Portuguese:	Good working knowledge.