

Romain Pic

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Experience

- Postdoctoral Researcher**, University of Geneva – Geneva, Switzerland Oct 2024 –
- **Supervisors** : Sebastian Engelke, Johanna Ziegel (ETH Zurich)
- PhD Student & Teaching Assistant**, C.N.R.S. (*Laboratoire de Mathématiques de Besançon*) – Besançon, France Sept 2021 – Aug 2024
- **Supervisors** : Clément Dombry, Philippe Naveau, Maxime Taillardat
 - See Education section.
- Research Intern**, Sainsbury laboratory (University of Cambridge) – Cambridge, UK March 2020 – July 2020
- **Supervisor** : François Nédélec
 - Modeling of mitotic spindle mechanical properties
- Research Intern**, Hatsopoulos Microfluids laboratory (MIT) – Cambridge, USA May 2018 – June 2018
- **Supervisor** : Irmgard Bischofberger
 - Spontaneous emergence of patterns during the drying of confined PAAm hydrogels
- Research Intern**, PMMH laboratory (ESPCI) – Paris, France May 2018 – June 2018
- **Supervisors** : José Bico, Emmanuel Siefert, Vincent Cognet
 - Dynamic modulation of the twist angle on wind turbine blades using baromorphs
- Civil servant student**, ENS Paris-Saclay – Cachan, France Sept 2017 – Aug 2021
- See Education section and internships in the Experience section for more details.

Teaching

2023-2024

- **Data analysis** tutorials and practicals for first-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Advanced Python** tutorials for second-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Statistical Learning** tutorials and practicals in for second-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Introduction to Deep Learning** tutorials for second-year Master's students at *Université de Franche-Comté*, Besançon (France).

2022-2023

- **Refresher course in Mathematics** for first-year Bachelor students at *Université de Franche-Comté*, Besançon (France).
- **Python** tutorials for first-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Advanced Python** tutorials for second-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Statistical Learning** tutorials and practicals in for second-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Introduction to Deep Learning** tutorials for second-year Master's students at *Université de Franche-Comté*, Besançon (France).

2021-2022

- **Refresher course in Mathematics** for first-year Bachelor students at *Université de Franche-Comté*, Besançon (France).
- **Python** tutorials for first-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Statistical Learning** tutorials and practicals in for second-year Master's students at *Université de Franche-Comté*, Besançon (France).
- **Introduction to Deep Learning** tutorials for second-year Master's students at *Université de Franche-Comté*, Besançon (France).

Education

- Université Bourgogne Franche-Comté**, Doctor of Science (PhD) in Mathematics Sept 2021 – Aug 2024
- **Supervisors** : Clément Dombry, Philippe Naveau, Maxime Taillardat
 - Statistical postprocessing of ensemble forecasts : theory, application in weather forecasting and verification.
- ENS Paris-Saclay**, Fundamental Physics curriculum. Sept 2017 – Aug 2021
- Admitted through the entrance exam after two years of *Classe Préparatoire aux Grandes Ecoles* (PCSI-PSI*) at Lycée Joffre (Montpellier, France)
- Université Lumière Lyon 2**, Master's degree in Statistics and Data Science Sept 2020 – Aug 2021
- **Coursework**: Statistical learning in R and Python, Data Mining, Machine Learning, Advanced Data Storage, Time series.
- Sorbonne Université**, Master's degree in Physics of Complex Systems Sept 2019 – Aug 2020
- **Coursework**: Computational Science, Numerical Simulations, Complex Networks, Machine Learning, Statistical Field Theory, Stochastic Processes, Nonequilibrium and Active Systems, Econophysics.
- Sorbonne Université**, *Licence* (equivalent Bachelor's) in Fundamental Physics and Applications Sept 2017 – Aug 2018
- **Coursework**: Statistical Physics, Phase Transitions, Quantum Mechanics, Special Relativity.

Preprints & Publications

Preprints

- Distributional Regression U-Nets for the Postprocessing of Precipitation Ensemble Forecasts** July 2024
Romain Pic, Clément Dombry, Philippe Naveau, Maxime Taillardat
[arXiv:2407.02125](https://arxiv.org/abs/2407.02125)
- Proper Scoring Rules for Multivariate Probabilistic Forecasts based on Aggregation and Transformation** June 2024
Romain Pic, Clément Dombry, Philippe Naveau, Maxime Taillardat
[arXiv:2407.00650](https://arxiv.org/abs/2407.00650)

Publications

- Stone's theorem for distributional regression in Wasserstein distance** Aug 2024
Clément Dombry, Thibault Modeste, Romain Pic
Journal of Nonparametric Statistics DOI:10.1080/10485252.2024.2393172
- A new methodology to predict the oncotype scores based on clinico-pathological data with similar tumor profiles** Nov 2023
Zeina Al Masry, Romain Pic, Clément Dombry, Christine Devalland
Breast Cancer Research and Treatment DOI:10.1007/s10549-023-07141-5

Distributional regression and its evaluation with the CRPS: Bounds and convergence of the minimax risk

Oct 2023

Romain Pic, Clément Dombry, Philippe Naveau, Maxime Taillardat

International Journal of Forecasting DOI:10.1016/j.ijforecast.2022.11.001

Evaporation-Driven Cellular Patterns in Confined Hyperelastic Hydrogels

Sep 2023

Baudoin Saintyves, Romain Pic, L. Mahadevan, Irmgard Bischofberger

Physical Review Letters DOI:10.1103/PhysRevLett.131.118202

Reviewing activities

Reviewer for

- [Journal of Applied Meteorology and Climatology \(JAMC\)](#)
- [Meteorological Applications](#)
- [Quarterly Journal of the Royal Meteorological Society \(QJRMS\)](#)

Presentations

2024

- [SAMA-IPSL Retreat](#). Mini-course on Machine Learning (with Clément Dombry), 16-19 September 2024, Aussois (France).
- [Workshop on Large-Scale Deep Learning for the Earth System](#). Poster on "Distributional Regression U-Nets for the Postprocessing of Precipitation Ensemble Forecasts", 29-30 August 2024, Bonn (Germany).
- [IMAG Probability and Statistics team Seminar](#). "Postprocessing weather forecasts, distributional regression and convergence", 25 March 2024, Montpellier (France).

2023

- [IMAG PhD students' seminar](#). "Postprocessing weather forecasts, distributional regression and convergence", 8 November 2023, Montpellier (France).
- [Journée de la Fédération BFCM 2023](#). 20 October 2023, Dijon (France).
- [Extreme Value Analysis Conference 2023](#). "U-Net based Methods for the Postprocessing of Precipitation Ensemble Forecasting", 26-30 June 2023, Milano (Italia).
- [7ème Journée Probabilités et Statistiques Besançon-Dijon](#). 9 June 2023, Besançon (France).
- [Annual Meeting RDI-BMB](#). "A new methodology to predict the oncotype scores based on clinico-pathological data with similar tumor profiles", 16 May 2023, Besançon (France).
- [EGU General Assembly 2023, Session NP5.1](#). Talk on "U-Net based Methods for the Postprocessing of Precipitation Ensemble Forecasting" and poster on "Mathematical Properties of Continuous Ranked Probability Score Forecasting", 23-28 April 2023, Vienna (Austria).
- Workshop Valpred 4. "Distributional forecasting and its evaluation with the CRPS", 3-6 April 2023, Aussois (France)

2022

- [Journées Math Bio Santé 2022](#). Poster on "Probabilistic forecast for breast cancer using distributional random forest to predict ODX based on clinico-pathological data", 3-7 October 2022, Besançon (France).
- [Workshop on Forecast Verification and Data Assimilation](#). Talk on "Mathematical Properties of Continuous Ranked Probability Score Forecasting", 21-23 September 2022, Reading (United Kingdom).
- Reading group of [WMO Joint Working Group on Forecast Verification Research](#). "Mathematical Properties of Continuous Ranked Probability Score Forecasting", 30 June 2022, online.
- [53e Journées de Statistiques de la Société Française de Statistique](#). "Minimax convergence rate for distributional regression based on Continuous Ranked Probability Score", 13-17 June 2022, Lyon (France).
- [Machine Learning and Uncertainties in Climate Simulations](#). "Mathematical Properties of Continuous Ranked Probability Score Forecasting", 6-9 June 2022, Moulin-Mer (France).

2021

- [*Forum des Jeunes Mathématicien.ne.s 2021*](#). Talk on "Theoretical framework of statistical learning for distributional regression using the Continuous Ranked Probability Score", 8-10 December 2021, Besançon (France).