Valeria Mascolo

Laboratoire de Physique
Ecole Normale Superieure de Lyon
mascolovaleria7@gmail.com

Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.
M. Skłodowska-Curie

About

Deeply passionate about climate physics, statistical and dynamical properties of rare and extreme climate events, disordered and complex systems. Profoundly intrigued and concerned about the societal, environmental and health impacts of climate change. Coordinator of the EArtH project: bridging art and climate by reimagining art masterpieces under the effects of climate change. Enthusiastic about art history, baking, swimming and running.

Education

2021–2024 **Ph.D. in Physics**, ***Ecole Normale Superieure de Lyon***
Title: *Studying extreme heatwaves using novel theoretical approaches*, advised by Prof. Dr. Freddy Bouchet. Published manuscript available here.
Fellow of the Maria Skłodowska-Curie ITN H2020 project EDIPI

2019–2020 **M.Sc.in Complex systems modelling**, ***King's College London***, *Highest honors*

2016–2019 **B.Sc.in Physics Engineering**, ***Politecnico di Torino***, *Highest honors*

Research visits

Oct. - Dec. 2023 **Visiting PhD student of Prof. Francesco Ragone**, *Royal Meteorological Institute of Belgium*

Oct. - Dec. 2022 **Visiting PhD student of Prof. Nili Harnik**, *Tel Aviv University, Depertment of Geoscience*

Experience

Participation to schools and trainings

2021– 2024 **Third academic year (2023-2024)**

- EDIPI ITN 5th training week at KIT, Karlsruhe, Germany
- EDIPI ITN 6th training week - *Network-wide ESR Research and Soft Skills Training* at Cyprus Institute, Nicosia, Cyprus
- Participation to the European Geosciences Union General Assembly, Wien, Austria
- Workshop - *Prévisibilité dans les sciences de l'atmosphère et Points de bascule* for the Group De Recherche "Défis théoriques pour les sciences du climat", Institut Henri Poincaré, Paris, France
- Workshop - *Interfaces dans le système climatique*, for the Group De Recherche "Défis théoriques pour les sciences du climat", Grenoble, France

Second academic year (2022-2023)

- **Workshop** - *Mathematics and theoretical physics for climate dynamics* , Ecole Normale Superieure de Lyon, Lyon, France
- **Summer school** - *Climate sensibility*, Ecole Normale Superieure de Lyon, Lyon, France
- EDIPI ITN 4th training week - *Idealized modelling in climate sciences*, Institut Royal Météorologique, Brussels, Belgium
- **Summer school** - *Out of equilibrium statistical physics*, Beg Rohu, France
- Course - *Granular, jammed and disordered media*, Ecole Normale Superieure de Lyon, Lyon, France
- Participation to the European Geosciences Union General Assembly, Wien, Austria

First academic year (2021-2022)

- Course - *Large deviations in physics*, Ecole Normale Superieure de Lyon, Lyon, France
- Course - *Climate change, climate change impacts, and energetic transition*, Ecole Normale Superieure de Lyon, Lyon, France
- **Summer school** - *Artificial intelligence for detection and attribution of climate extremes*, XAIDA project, ICTP, Trieste, Italy
- **School** - *Machine Learning and the Physics of Climate* and Workshop on *Extreme Events in Weather and Climate*, Fletcher Hotel, Berg en Daal, The Netherlands
- EDIPI ITN 1st & 2nd training weeks - *Basics of statistics, probability, extreme events modelling and extreme value theory*, Uppsala University, Uppsala, Sweden
- EDIPI ITN 3rd training week - *Attribution studies, tipping point of climate and advanced statistical methods for extremes*, Ecole Normale Superieure, Paris, France
- Journées de la physique statistique, Ecole Normale Superieure, Paris, France
- Journées du lancement du Group De Recherche *'Défis théoriques pour les sciences du climat'*, Auditorium TOTEM, Paris, France

Traineeship at the European Commission's Joint Research Centre

Nov. 2020 – Mar. 2021 **Trainee in the Text Mining & Analysis Competence Centre team**, working in the field of sentiment analysis of text from news and social media in the aim of advancing social listening capabilities.

Talks and posters

2025 **ETH Zurich**, Invited speaker. Presentation of the work: Gaussian framework and optimal projection of weather fields for prediction of extreme events. Invited by Prof. Dr. Daniela Domeisen

2024 **European Geosciences Union General Assembly, EGU24**, Presentation of the work: A Gaussian Framework for Optimal Prediction of Extreme Heatwaves

2023 **GdR Defi théoriques pour les sciences du climat**, Poster presentation of the work: Heatwaves prediction using Gaussian assumption

2023 **Beg Rohu School of Out of equilibrium statistical physics**, Presentation of the work: Heatwaves prediction using Gaussian assumption

2023 **European Geosciences Union General Assembly, EGU23**, Presentation of the work: Comparing the influence of Atlantic Multidecadal Variability and spring soil moisture on European summer heatwaves

2022 **Tel-Aviv University, Department of Geoscience**, Presentation of the work: Comparing the influence of Atlantic Multidecadal Variability and spring soil moisture on European summer heatwaves

2022 **GdR Defi théoriques pour les sciences du climat**, Poster presentation of the work: Comparing the influence of Atlantic Multidecadal Variability and spring soil moisture on European summer heatwaves

Skills

Programming Python, MATLAB, C, Bash, LaTeX, Microsoft Office

Languages Italian, English, French, Neapolitan

Interests

Sports Running, hiking, swimming

Hobbies Baking, cooking, poetry and novels reading and writing, art's history and museums

Publications

[1] Valeria Mascolo. *Studying extreme heatwaves using novel theoretical approaches*. PhD thesis, École normale supérieure de Lyon, 2024. https://theses.hal.science/tel-04843914/.

[2] Valeria Mascolo, Clément Le Priol, Fabio d'Andrea, and Freddy Bouchet. Influence of the atlantic multidecadal variability and of soil moisture on extreme heatwaves in europe. In *EGU General Assembly Conference Abstracts*, pages EGU–7124, 2023. https://doi.org/10.5194/egusphere-egu23-7124.

[3] Valeria Mascolo, Clément Le Priol, Fabio D'Andrea, and Freddy Bouchet. Comparing the influence of atlantic multidecadal variability and spring soil moisture on european summer heat waves. *Oxford Open Climate Change*, 5(1), 2025. https://doi.org/10.1093/oxfclm/kgae023.

[4] Valeria Mascolo, Alessandro Lovo, Corentin Herbert, and Freddy Bouchet. Gaussian framework and optimal projection of weather fields for prediction of extreme events, 2024. *To be published in Journal of Advances in Modelling Earth Systems, available at* https://arxiv.org/abs/2405.20903.

[5] Valeria Mascolo, Alessandro Lovo, Corentin Herbert, and Freddy Bouchet. A gaussian framework for optimal prediction of extreme heat waves. In *EGU General Assembly Conference Abstracts*, page 18866, 2024. https://doi.org/10.5194/egusphere-egu24-18866.

[6] Valeria Mascolo, Francesco Ragone, Nili Harnik, and Freddy Bouchet. Rare events algorithm study of extreme double jet summers and their connection to heatwaves over Eurasia, 2024. *To be submitted to Journal of Climate*.