Sophie Abramian

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Education

2020–now **Ecole Normale Supérieure de Paris**, *PhD thesis on the Organization of clouds in our climate and in a changing climate, under the supervision of Caroline Muller and Camille Risi*.

2020–now **Collège des Ingénieurs**, *Master of Business and Administration*.

2019–2020 **Ecole Polytechnique & Sorbonne Université**, *Master Degree (Research) in Fluid Dynamics, Fundamentals and Application, with honors*.

2015–2020 **Ecole Normale Supérieure de Paris-Saclay**, *Bachelor and Master, Applied Physics and Engineering with honors*.

2015–2016 **Université Paris Diderot**, *Bachelor, Double Degree in Fundamental Mathematics with first class honors*.

2013–2015 **Lycée Jean-Baptiste Say**, *Preparatory class for the grandes écoles PTSI/PT**.

Research Experience

2020 – now **Laboratoire de Météorologie Dynamique de l'ENS Paris, France**, *Master and PhD thesis*, 3 years, Investigating the organization of clouds in our climate and in a changing climate.
Advisors : **Dr. Caroline Muller**, *Chargée de recherche CNRS, Institute of Technology, Vienna, Austria*, **Dr. Camille Risi**, *Directrice de recherche CNRS, Laboratoire de Météorologie Dynamique*

2018-2019 **Columbia University, New-York, USA**, *Research Internship*, 1 year, Modeling the impact of trees on urban climate regulation.
Advisor : **Dr. Marco Giometto**, *Assistant Professor at Columbia University*

2018 **Ministry of Environment, France**, *Public Policy Research Internship*, 3 months, Modeling the sustainability of Spatial Planning Policy, focus on Public Development Corporations (*Etablissements Publics d'Aménagement*).
Advisor : **Eric Corbel**, *Head of the sustainable development unit*

2017-2018 **Laboratoire de Mécanique et Technologie de l'ENS Paris-Saclay, France**, *Research Project*, 6 months, Studying of the symmetries of the Elasticity Tensor .
Advisor : **Dr. Rodrigue Desmorat**, *Professor*

2017 **Institut de Mathématiques de Jussieu, IMJ-PRG**, *Research Project*, 3 months, Studying Dynamical Systems, in particular rotations of homeomorphisms of the circle and the torus.
Advisor : **Dr. Pierre-Antoine Guihéneuf**, *Assistant Professor*

Publications

In Prep.

exp. 2024 **XAI for Predicting Mesoscale Convective System Size in Global Cloud Resolving Model**, Sophie Abramian, Caroline Muller, Camille Risi, In *AGU Advances*.

Accepted, 2023 **Extreme Precipitation in Tropical Squall Lines**, Sophie Abramian, Caroline Muller, Camille Risi, In *Journal of Advances in Modeling the Earth System*.

Published

2023 **What controls the mesoscale variations in water isotopic composition within tropical cyclones and squall lines? Cloud resolving model simulations**, C Risi, C Muller, F Vimeux, PN Blossey, G Védeau, C Dufaux, S Abramian, In *Journal of Advances in Modeling the Earth System*.

2022 **Shear Convection Interaction and orientation of tropical squall lines**, Sophie Abramian, Caroline Muller, Camille Risi, In *Geophysical Research Letter*.

2019 **Recovering the normal form of an elasticity tensor**, Sophie Abramian, Rodrigue Desmorat, Boris Kolev, Boris Desmorat, Marc Olive, In *Journal of Elasticity*.

Outreach

May 2023 (Cover) **The Cloud Dynamics of convective storm systems**, Caroline Muller & Sophie Abramian, In *Physics Today*.

Conferences

2023 **Investigate Mesoscale Convective Systems Life cycle with Machine Learning (*Awarded*)** , Sophie Abramian, Caroline Muller, Camille Risi, In *CFMIP-GASS*.
Paris, France

2023 **Extreme Precipitation in Tropical Squall Lines**, Sophie Abramian, Caroline Muller, Camille Risi, In *European Geophysical Union*.
Vienna, Austria

2022 **Squall Lines Orientation and its Impact on Precipitation Extremes**, Sophie Abramian, Caroline Muller, Camille Risi, In *3rd Pan-Gass Gewex Meeting*.
Monterey, CA

2022 **Shear Convection Interaction in Cloud Resolving Model**, Sophie Abramian, Caroline Muller, Camille Risi, In *23rd Meeting in Atmospheric and Oceanic Fluid Dynamics*.
Breckenridge, CO

2022 **Investigating Extremes Precipitation in Tropicales Squall Lines**, Sophie Abramian, Caroline Muller, Camille Risi, In *European Geophysical Union*.
Vienna, Austria

2022 **Investigating Extremes Precipitation in Tropicales Squall Lines**, Sophie Abramian, Caroline Muller, Camille Risi, In *2nd Workshop On Convective Organization*.
Utrecht, Netherlands

2022 **L'orientation des lignes de grains tropicales et ses conséquences sur les extrêmes de précipitations**, Sophie Abramian, Caroline Muller, Camille Risi, In *Journée de la Convection Profonde*.

2021 **Investigating tropical squall lines with a cloud resolving model**, Sophie Abramian, Caroline Muller, Camille Risi, In *European Geophysical Union*.

2021 **What sets tropical squall lines orientation, and why ?**, Sophie Abramian, Caroline Muller, Camille Risi, In *Cloud FeedBack Model Intercomparison Project Virtual Meeting 2021*.

Fellowships & Awards

2023 Early Research Career Price at CFMIP-GASS Meeting.

2020 PhD Fellowship *Contrat Doctoral Spécifique Normalien* 3-year funding 60k€.

2015 Scholarship *Normalienne* 4-year funding 50k€.

Teaching Assistantship and Supervision

Winter, 2023 **Sorbonne University**, *1/2 Supervision*, Unsupervised Learning for tropical storms classification in global high resolution simulations, Master Intern, 3 months.

Fall, 2022 **ENS Paris**, *Teaching*, Fluid Dynamics for undergraduate, 20h.

2020-2022 **Sorbonne University**, *Teaching*, Vector Analysis and Multiple Integers for undergraduate., 80h.

2016 **Ecole Alsacienne**, *Teaching*, Instructor of a scientific workshop for children aged 8 to 12 years old..

Computer skills

Programming Python, Matlab.

Web HTML, CSS.

Tools Regular and thorough use of LaTeX, and Microsoft office (Word, Excel, PowerPoint).

Commitments & Outreach

2023 Outreach, Scientific article for the general public, Convective storms, self-aggregation, and squall lines, Caroline Muller, Sophie Abramian, in *Physics Today*

2022-now Climate and Environment, Member of the working group **Climaction** to reduce carbon emissions within the laboratories of the Institut Pierre Simon Laplace (IPSL)

2021-now Equality and Feminism, Member of the working group **Equality & Diversity** to raise awareness of gender and moral harassment within the Geoscience department of ENS Paris

2016 Education, Co-leader of a science club (10 hours) for children from 8 to 12 years old at the Ecole Alsacienne

Position of Responsibility

2023-now **Co-representative**, with Dr. Gaëlle Bruant, of Laboratoire de Météorologie Dynamique at *Conseil de la Fédération de l'Institut Pierre Simon Laplace (IPSL)*

2023 **Organiser** of the *PhD Student's Day of the Lab*

. 2022 **Reviewer** for *Journal of Advances in Modeling the Earth System*

2021-now **Representative** of PhD Students at *Board of Laboratoire de Météorologie Dynamique*

Referees

Dr. Caroline Muller
Chargée de Recherche CNRS
Physics and Atmospheric Sciences
Institute of Technology, Vienna
✉ carolinemuller123@gmail.com