

Caroline Muller

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RESEARCH TOPICS	Hydrological cycle (mean and extreme precipitation), spatial organization of tropical clouds, cyclogenesis, ocean circulation, internal waves.	
RESEARCH EXPERIENCE	<p>2021 - present Institute of Science and Technology Austria (ISTA) Assistant Professor</p> <p>2015 - present CNRS, Laboratoire de Météorologie Dynamique (LMD), École Normale Supérieure (ENS) Paris CNRS researcher <i>Chargée de Recherche CNRS</i> & joint appointment as ENS lecturer <i>Maître de Conférence attachée à l'ENS</i></p> <p>2012 - 2015 CNRS, Laboratoire d'Hydrodynamique de l'X (LadHyX), École Polytechnique CNRS researcher <i>Chargée de Recherche CNRS</i></p> <p>2010 - 2012 Princeton University/GFDL Atmosphere Ocean Science Dept. Associate Research Scholar, with Isaac Held</p> <p>2008 - 2010 Massachusetts Institute of Technology (MIT) Earth, Atmospheric and Planetary Sciences Dept. Postdoctoral Associate, with Paul O’Gorman</p> <p>2003 - 2008 New York University (NYU) Courant Institute of Mathematical Sciences Ph.D. research, with Oliver Bühler</p> <p>Summers of 2004, 2005 and 2006 NASA Goddard Institute for Space Studies Summer internships, with Vittorio Canuto and Armando Howard</p> <p>2001 - 2002 Georgia Institute of Technology, Aerospace Engineering Dept Masters research, with Panagiotis Tsiotras</p>	
EDUCATION	<p>Courant Institute of Mathematical Sciences, New York University (NYU) Ph.D. in Applied Mathematics, May 2008 M.S. in Mathematics, May 2005</p> <ul style="list-style-type: none">• Ph.D. title: Wave-induced mixing in the abyssal ocean• Advisor: Oliver Bühler <p>Georgia Institute of Technology M.S. in Aerospace Engineering, March 2003 - selective dual degree program with Supaéro</p> <ul style="list-style-type: none">• Master’s thesis topic: A wavelet method for solving optimal control problems• Advisor: Panagiotis Tsiotras <p>Supaéro, École Nationale Supérieure de l’Aéronautique et de l’Espace, France Engineering degree, March 2003</p> <ul style="list-style-type: none">• Ranked first on the competitive entrance exam for Supaéro Mathematics major	

DISTINCTIONS	2019–2024	ERC Starting Grant <i>European Research Council (ERC)</i>
	2019	Invited professor - Spring semester <i>New York University - Abu Dhabi campus</i>
	2012–2017	Director of the graduate summer school “Fluid Dynamics of Sustainability and the Environment” (FDSE): annual summer school co-organized by École Polytechnique & the University of Cambridge <i>fdse.org</i>
	2016	Invited professor - Spring semester <i>New York University - Shanghai campus</i>
	2015	Joint appointment as ENS lecturer <i>École Normale Supérieure, Paris</i>
	2009	Publication selected to be an “Editor’s Highlight” <i>Geophysical Research Letter</i>
	2007	“Sandra Bleistein” Prize for notable achievement in applied math <i>Courant Institute of Mathematical Sciences</i>
	2007	Nominated for Outstanding Teaching Award <i>New York University, College of Arts and Sciences</i>
	2007	Best poster presentation award <i>AMS 16th Conference on Atmospheric and Oceanic Fluid Dynamics</i>
	2003–2008	Henry MacCracken Fellowship <i>New York University Graduate School of Arts and Sciences</i>
	1999	Ranked first on the entrance exam for Supaéro, Math major <i>Supaéro, École Nationale Supérieure de l’Aéronautique et de l’Espace</i>
OUTREACH	2017–present	Appearances in the media on hurricanes and on climate change <i>Television (e.g., France Info - France télévision; BFMTV; LCI television; M6 including the scientific TV show E=M6; France O; France 5...); Radio (e.g., AFP; France culture; France Inter; Radio Canada, TF1...); Written press (e.g., Newspaper 20 minutes, Wiener zeitung, Der Standard...)</i>
	2017–present	Public seminars on tropical cyclones and on climate change <i>Les Houches City Hall; L’Institut des Hautes Études pour la Science et la Technologie (IHEST); La Direction Générale de l’Armement; Journées UPA - Union des Professeurs des classes préparatoires aux grandes écoles</i>
	2015–present	Scientific popularization participation and scientific presentations at numerous events <i>Open-door events at ENS; Alumni visits at ENS; High-school students days; science for kids events</i>
SUPERVISIONS	<p>Postdocs Yi-Ling Hwong (2022-ongoing; Marie Curie Fellow); Bidyut Goswami (2022-ongoing); Lokahith Agasthya (2022-ongoing; Marie Curie Fellow); Benjamin Fildier (2019-ongoing); Nicolas Da Silva (2019); Jean-Baptiste Courbot (2017-2018)</p> <p>PhD students Bowen Yang (2022-ongoing); Andrea Stollner (2022-ongoing); Sima Dogan (2022-ongoing); Julie Andre (2021-ongoing); Sophie Abramian (2020-ongoing); Sara Shamekh (2017-2020); Océane Richet (2014-2017)</p> <p>Masters students/interns P. Aglas 2022; R. Puri 2022; A. Polesello 2022; T. Marino 2021 & 2022; S. Markovic 2020 & 2021; G. Vedeau 2020; R. Gaillard 2020; A. Asgari 2020; B. Poujol 2018; P. Nguyen 2017; O. Tessiot 2017; M. Guerard 2016; K. Raja 2014; A. Lefauve 2014; B. Alonso 2014; N. Da Silva 2014; J. Morgan 2013; F. Lefevre 2013.</p>	

PHD COMMITTEES	2021	Member of the PhD committee (reviewer) of Roy Kumar <i>Indian Institute Of Tropical Meteorology, advisor P. Mukhopadhyay</i>	
	2021	Member of the PhD committee of Leo Vinour <i>UBO, advisor S. Jullien</i>	
	2020	Member of the PhD committee of Samuel Boury <i>ENS Lyon, advisor P. Odier</i>	
	2020	Member of the PhD committee (reviewer) of Cruz Garcia Molina <i>LEGI, advisor C. Staquet</i>	
	2019	Member of the PhD committee (reviewer) of Jiawei Bao <i>The University of New South Wales, Australia; advisor Steven Sherwood</i>	
	2018	Member of the PhD committee of Antoine Renaud <i>ENS Lyon, advisor Antoine Venaille</i>	
	2018	Member of the PhD committee of Maxence Lefevre <i>Sorbonne Université, advisor Sébastien Lebonnois</i>	
	2018	Member of the PhD committee of Grimaud Pillet <i>ENS Lyon, advisor Thierry Dauvois</i>	
	2018	Member of the PhD committee of Keshav Raja <i>LEGI, advisor Joël Sommeria</i>	
	2017	Member of the PhD committee of Jessica Loriaux <i>KNMI, De Bilt, The Netherlands, advisor Pier Siebesma</i>	
	2017	Member of the PhD committee of David Coppin <i>LMD, advisor Sandrine Bony</i>	
	2015	Member of the PhD committee of Tamara Beitzel-Barriquand <i>LOCEAN, advisor Pascale Bouruet-Aubertot</i>	
	ADMINISTRATION	2021–ongoing	Search Committee Member <i>ISTA</i>
		2021–ongoing	Mission Advisory Member <i>ESA Harmony</i> satellite mission
2018–2021		Editor for the journal <i>Current Climate Change Reports</i>	
2016–2021		Elected member of the laboratory committee of <i>LMD</i>	
2018		Vice-president of the search committee <i>ENS Paris</i>	
2017		Search Committee Member <i>Université de la Polynésie Française</i>	
2012–2017		Director of the FDSE graduate summer school	
2016–2017		Organizer of laboratory (LMD) seminars at <i>ENS</i>	
2014–2015		Organizer of laboratory (LadHyX) seminars at <i>École Polytechnique</i>	
2010–2012		Organizer of the climate dynamics seminar at <i>Princeton University</i>	
2008–2010	Created and ran a journal club to discuss papers at <i>MIT</i>		
2003–present	Reviewer for several journals , including <i>Nature</i> , <i>Proceedings of the National Academy of Sciences</i> , <i>Reviews of Geophysics</i> , <i>Geophysical Research Letters</i> , <i>J. of Advances in Modeling Earth Systems</i> , ...		
TEACHING ACTIVITIES	2022	Lecturer	<i>Dry and Moist Atmospheric Convection</i> <i>ISTA</i>
	2017-2021	Lecturer	<i>Clouds and Atmospheric Convection</i> <i>ENS Paris</i>
	2015-2021	Lecturer	<i>Linear Algebra for Geosciences</i> <i>ENS Paris</i>
	2015-2021	Lecturer	<i>Meteorology</i> <i>ENS Paris</i>
	2014&16&18	Lecturer	<i>Clouds and Climate</i> FDSE graduate summer school, University of Cambridge UK
	2013&15&17	Lecturer	<i>Numerical methods for fluid dynamics and applications</i> FDSE graduate summer school, Ecole Polytechnique
	2016	Lecturer	<i>Calculus</i> NYU, Shanghai campus
	2013-2015	Teaching Assistant	<i>Fluid Dynamics</i> <i>ENSTA</i>
	2014	Teaching Assistant	<i>Turbulence</i> Ecole Polytechnique
	2013	Lecturer	<i>Physical Oceanography</i> <i>ENSTA</i>
	2005-2008	Lecturer	<i>PreCalculus, Calculus II and Calculus III</i> NYU
	2003-2005	Teaching Assistant	<i>Business Calculus and Quantitative Reasoning</i> NYU

MAIN FUNDINGS & PARTICIPATION IN NATIONAL AND INTERNATIONAL PROJECTS

2019–2024	PI , ERC Starting Grant, funded by ERC: <i>organisation of CLoUdS, and implications for Tropical cyclones and for the Energetics of the tropics, in current and in a waRming climate</i>
2018–2019	PI , PSL/NYU international collaborative project, funded by PSL (consortium of French universities and research institutions) and NYU (New York University): <i>New perspectives on tropical cyclone formation and intensification</i>
2018–2021	PI , LMD collaborative project, funded by LEFE (French national funding program from CNRS-INSU): <i>Robustness Of the Self-Aggregation of convection to Large-scale forcing, and implications for precipitation over tropical Islands</i>
2017–2018	co-PI , PI: B. Legras, PSL collaborative project, funded by PSL (consortium of French universities and research institutions): <i>Analyse de la croissance et morphologie des amas nuageux par méthodes variationnelles d'imagerie et de dynamique des fluides</i>
2017–2019	co-PI , PI: L.Oruba, collaborative project, funded by LEFE (French national funding program from CNRS-INSU): <i>Ocean-Atmosphere interactions: oceanic mesoscale eddies and tropical cyclones</i>
2016–2017	PI , ENS collaborative project, funded by ENS Actions Incitatives: <i>Role of small-scale Ocean dynamics in the large-scale Oceanic and atmospheric Circulation</i>
2016–2017	PI , LadHyX collaborative project, funded by Chaire DDX-EDF (Chair for Sustainable Development) at Ecole Polytechnique: <i>Role of ocean Internal waves in the ocean Circulation</i>
2016–2017	PI , France-Berkeley international collaborative project, funded by the France-Berkeley fund: <i>Impact of Self- Aggregation on Cyclogenesis</i>
2015–2016	PI , LadHyX/LMD collaborative project, funded by Chaire DDX-EDF: <i>Modeled Aggregation of Convection And Cyclogenesis</i>
2014–2015	PI , LadHyX/LMD collaborative project, funded by Chaire DDX-EDF: <i>Organization of Convection in the Tropical Atmosphere</i>
2013–2017	PI , PhD funding, funded by Direction Générale de l'Armement (DGA): <i>Dissipation Of Tidal Energy in the Deep Ocean</i>

ORGANIZATION OF SCIENTIFIC MEETINGS AND GRADUATE SCHOOLS

2019	Co-organizer of the ICTP graduate summer school on cloud organization and climate sensitivity, Trieste Italy (2 week school)
2012–2020	Director (2012-2017) and co-organizer (2018-2020) of the graduate summer school FDSE (2 week school)
2018	Co-organizer of the graduate summer school "Cloud Modeling" at ENS Paris (1 week school)
2017	Co-organizer of the conference AMA - "Ateliers de Modélisation de l'Atmosphère" (1 week workshop)
2015	Co-organizer of the conference "NewWave" on internal waves (3 day workshop)