

Gwendal Rivière, CNRS senior research scientist

Birth date: 19th of July 1974 in Brest.

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Education

January 2012 **Habilitation thesis** (University Toulouse III).

Title: Dynamics of mid-latitude cyclones and their role in the general circulation of the atmosphere.

1999 - 2002 **PhD Thesis** (University Paris VI) at Laboratoire de Météorologie Dynamique (Ecole Normale Supérieure, Paris, France). Title: Local dynamics of perturbation growth in quasigeostrophic flows and predictability. Advisors: Drs. Lien Hua and Patrice Klein.

Award “Prix Prud’homme 2004” received from the Société Météorologique de France in december 2004 for this PhD work.

1998 - 1999 **Master of Science (University Paris VI)** in meteorology, oceanography and environment (DEA).

1995 - 1998 **Engineering degree from Ecole Polytechnique.**

Majors: (i) fluid mechanics, (ii) meteorology.

Research positions

2019 - now **CNRS senior scientist** at Laboratoire de Météorologie Dynamique - Ecole Normale Supérieure (Paris, France).

2006 - 2019 **CNRS junior scientist** at Centre National de Recherches Météorologiques (CNRS & Météo-France, Toulouse, France) and then Laboratoire de Météorologie Dynamique - Ecole Normale Supérieure (Paris, France).

2004 - 2005 **Postdoctoral position at GFDL** (Princeton University, USA).

2002 - 2003 **Postdoctoral position at CNRM-GAME** (Toulouse, France).

Research activities

Number of publications

- **55 publications in peer-reviewed international journals**; 23 as a main author.
- **4 publications in broad audience scientific journals.**
- **2 book chapters**

The 5 most significant publications

- Schäfler A., G. Craig, H. Wernli, P. Arbogast, J. D. Doyle, R. McTaggart-Cowan, J. Methven, **G. Rivière** and co-authors, 2018: *The North Atlantic Waveguide and Downstream Impact Experiment*. Bull. Amer. Meteor. Soc., 99, 1607-1637.
- Shaw T., M. Baldwin, E. Barnes, R. Caballero, C. Garfinkel, Y.-T. Hwang, C. Li, P. O’Gorman, **G. Rivière**, I. Simpson and A. Voigt, 2016: *Storm track processes and the opposing influences of climate change*. Nature Geoscience, 9, 656-664.
- Michel, C. et **Rivière, G.** 2011 : *The link between Rossby wave breakings and weather regimes transitions*. J. Atmos. Sci., 68, 1730-1748.
- **Rivière, G.** 2011 : *A dynamical interpretation of the poleward shift of the jet streams in global warming scenarios*. J. Atmos. Sci., 68, 1253-1272.
- **Rivière, G.** et I. Orlanski, 2007: *Characteristics of the Atlantic storm-track eddy activity and its relation with the North Atlantic Oscillation*. J. Atmos. Sci., 64, 241-266.

Main collaborators

- **National:** with Météo-France scientists (Didier Ricard, Philippe Arbogast Eric Bazile) and scientists from Laboratoire Aérologie (Florian Pantillon, Jean-Pierre Chaboureau), LATMOS (Julien Delanoë), LSCE (Sébastien Fromang) and LMD (Fabio D’Andrea, Etienne Vignon).
- **International:** with scientists implied in the THINICE field campaign in the Arctic (Jim Doyle, John Methven, Sue Gray), with ETH scientists (Sebastian Schemm, Hanin Binder, Heini Wernli), with future field campaign NAWDIC (Julian Quinting, Annika Oertel, Christian Grams, Shira Raveh-Rubin).

Project coordination

- **Principal investigator (PI) of the ONR (Office Naval Research) funded project RALI-THINICE:** Interactions between Arctic cyclones, tropopause polar vortices, clouds and sea ice (2020-2022)

- **Principal investigator (PI) of the CNRS/INSU/LEFE project CYCLONICE:** Interactions between Arctic cyclones dynamics, cloud microphysics and sea ice (2022-2025).
- **Principal investigator (PI) of the ANR (Agence National de la Recherche) funded project DIP-NAWDEX:** Diabatic processes during NAWDEX (North Atlantic Waveguide Downstream and impact EXperiment) (2017-2022)
- **PI of two CNRS/INSU/LEFE projects:** "EPIGONE: Excitation, Propagation, et Impact du Guide d'Ondes Nord-Atlantique" (2010-2012) and "F-NAWDEX: French - North Atlantic Waveguide Downstream Impact Experiment" (2015-2017)
- **(Co)-PI of the French component of the international field campaign NAWDEX** (September-October 2016): participation in the science plan (<http://www.nawdex.org/>), coordinator of the IPSL funding project "Ground-based-NAWDEX", (Co)-decision maker of the French Falcon aircraft flight tracks during NAWDEX.
- **(Co)-PI of the young grant ANR project "ENVISTORM (Rôle de l'environnement (humidité, déformation) sur le cycle de vie et la variabilité des tempêtes)"** from 2006 to 2009.

Research management

- **President of scientific committee CNRS/INSU/LEFE/IMAGO** from 2014 to 2021 (**member** from 2012 to 2021). Evaluation of LEFE proposals.
- **Convenor of the EGU dynamical meteorology session** from 2009 to 2015.
- **Member elected of ICDM-IAMAS** (international commission in dynamical meteorology of the International Association of Meteorology and Atmospheric Sciences) between 2015 and 2023.
- **Member elected at the LMD council** between 2013 and 2018.

Teaching

- 2012-2019: **Course in general atmospheric circulation** (master in geosciences) at Ecole Normale Supérieure (Paris).
- 2017: **Tutorials in atmospheric and oceanic dynamics** (bachelor level) at Ecole Polytechnique (Paris).
- 2009 - 2013: **Course in dynamical meteorology** (master level) at University Paul Sabatier and Ecole Nationale de la Météorologie (Toulouse).

Student supervision

- **PhD students:** Emilien Jolly (PSL, Paris; defended in 2020); Loic Robert (UPMC, Paris; defended in 2017); Filipa Varino (Univ. Paul Sabatier, Toulouse; defended in 2017); Benoit Coronel (Univ. Paul Sabatier, Toulouse; defended in 2015); Marie Drouard (Univ. Paul Sabatier, Toulouse; defended in 2014); Ludivine Oruba (UPMC, Paris; defended in 2012); Clio Michel (INP, Toulouse; defended in 2012); Jean-Baptiste Gilet (Univ. Paul Sabatier, Toulouse; defended in 2009).
- **Postdocs / early-career scientists:** Meryl Wimmer (2022-2024), Marion Saint Lu (2021-2022), Jacopo Riboldi (2019-2021), Marie Mazoyer (2017-2021), Hanin Binder (2017-2019), David Flack (2018-2019), Sebastian Schemm (2016), Alexandre LaÃ©né (2008-2009).
- **Master students:** Lukas Hofmann (2022, PSL), Priya Vyas (2020, Sorbonne Universit ), Emilien Jolly (2017, UPMC); R mi Pellerej (2014, Univ. Bretagne Occidentale); Loic Robert (2013, UPMC); S gol ne Berthou (2012, UPMC); Emmanuel Demael (2012, ENM, Univ. Paul Sabatier); St phane Beck (2011, Univ. Paul Sabatier); Clio Michel (2009, Univ. Paul Sabatier); Ludivine Oruba (2009, Univ. Paul Sabatier); Maiwenn Perrin (2008, Univ. Paul Sabatier); Lorraine Manlay (2007, Univ. Paul Sabatier); Jean-Baptiste Gilet (2006, ENM, Univ. Paul Sabatier); Gaelle Ouzeau (2008, master 1, Univ. Paul Sabatier); Katy Pol and Lorraine Manlay (2006, master 1, Univ. Paul Sabatier).