

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

- **62 publications in peer-reviewed international journals**; 25 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

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

- 2022-2024: **Principal investigator (PI) of the CNRS/INSU/LEFE project CY-CLONICE**: Interactions between Arctic cyclones dynamics, cloud microphysics and sea ice.
- 2017-2022 **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)
- 2015-2017 **PI of CNRS/INSU/LEFE project "F-NAWDEX: French - North Atlantic Waveguide Downstream Impact Experiment"**
- September-October 2016: **(Co)-PI of the French component of the international field campaign NAWDEX**: 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.
- 2009-2012: **PI of two CNRS/INSU/LEFE projects**: "EPIGONE: Excitation, Propagation, et Impact du Guide d'Ondes Nord-Atlantique"
- 2006-2009: **(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)"**.

Research management

- 2020- **Co-editor of the journal "Weather Climate Dynamics"**.
- 2022 **Organizer of third international storm-track workshop** at Oléron Island (France)
- 2015-2023 **Member elected of ICDM-IAMAS** (international commission in dynamical meteorology of the International Association of Meteorology and Atmospheric Sciences)
- 2015-2021 **President of scientific committee CNRS/INSU/LEFE/IMAGO**. Evaluation of research proposals.
- 2009-2015 **Convenor of the EGU dynamical meteorology session**.
- 2013-2018 **Member elected at the LMD council**.

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:** Myriam Besson (PSL, Paris, 2023-); Lea Raillard (Sorbonne Université, Paris, 2022-); Vinita Deshmukh (PSL, Paris, 2021-2024); Emilien Jolly (PSL, Paris; 2017-2020); Loic Robert (UPMC, Paris; 2014-2017); Filipa Varino (Univ. Paul Sabatier, Toulouse; 2014-2017); Benoit Coronel (Univ. Paul Sabatier, Toulouse, 2012-2015); Marie Drouard (Univ. Paul Sabatier, Toulouse; 2011-2014); Ludivine Oruba (UPMC, Paris; 2009-2012); Clio Michel (INP, Toulouse; 2009-2012); Jean-Baptiste Gilet (Univ. Paul Sabatier, Toulouse; 2006-2009).
- **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:** Nicolas Chiabrande (2024, master 2, IP Paris); Mathieu Barbe (2024, master 1, SU); Lukas Hofmann (2022, PSL), Priya Vyas (2020, Sorbonne Université), Emilien Jolly (2017, UPMC); Rémi Pellerej (2014, Univ. Bretagne Occidentale); Loic Robert (2013, UPMC); Ségolène Berthou (2012, UPMC); Emmanuel Demael (2012, ENM, Univ. Paul Sabatier); Stéphane 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); Gaëlle Ouzeau (2008, master 1, Univ. Paul Sabatier); Katy Pol and Lorraine Manlay (2006, master 1, Univ. Paul Sabatier).