

CURRICULUM VITAE

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LOUIS RIVOIRE

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PROFESSIONAL EXPERIENCE

Harvard University

Department of Earth and Planetary Sciences
Postdoctoral fellow, M. Linz research group
Dynamics of the global circulation in the stratosphere
Tropical cyclone track modeling in future climates

Cambridge, MA
2020 - now

EDUCATION

Colorado State University

Ph.D., Atmospheric Science
Programs of Research and Scholarly Excellence
Interactions between tropical cyclones and their upper tropospheric and lower stratospheric environment

Fort Collins, CO
2020

Pierre and Marie Curie Univ. (Sorbonne Univ. affiliate)/Ecole Normale Supérieure Paris, France
M.S., Ocean, Atmosphere, Climate, and Remote Sensing 2015

Ecole Normale Supérieure

Diploma of Ecole Normale Supérieure, in recognition of interdisciplinary curriculum with a focus on environmental sciences (soil science, hydrology, land/ocean-atmosphere interactions, paleoclimatology, biogeochemistry, ecology, geopolitics)

Paris, France
2015

Ecole Normale Supérieure

B.S., Earth Sciences

Paris, France
2013

Higher School Preparatory Classes

2-year intensive training for highly competitive selection to enroll at the *Grandes Ecoles*
Mathematics, physics, chemistry, biology, geology, geography, philosophy, and English

Lyon, France
2010-2012

RESEARCH EXPERIENCE

Internships:

Colorado State University

Intern with Dr. Thomas Birner and Dr. Richard Johnson
Modulation of tropical tropopause layer characteristics by the Madden-Julian Oscillation

Fort Collins, CO
2015

National Center for Atmospheric Research - ACOM

Intern with Dr. William J. Randel

Boulder, CO
2014

Global characterization of dry tongues in the tropical troposphere

University Pierre and Marie Curie

Paris, France

Intern at the Institute of Mineralogy, Materials Physics and Cosmochemistry

2013

Synthesis and reactivity of carbonated green rusts for the denitrification of wastewater

Field and laboratory experience:

Colorado State University

Fort Collins, CO

- Participant in the WE-CAN aircraft wildfire chemistry campaign 2018
- Radiosonde launches for an inter-comparison project 2018

Haute Provence Observatory

France

Atmospheric dynamics, boundary layer and stratospheric LIDAR meteorology

2015

METEO FRANCE

Toulouse, France

Glaciology and remote sensing of the cryosphere, introduction to weather forecasting

2014

Ecole Normale Supérieure

Alps, France

- GPS measurement campaign for a geodetic study 2013
- Mapping and structural geology 2013

Oceanography Laboratory of Villefranche-sur-Mer

Villefranche-sur-Mer, France

Marine reflection seismology, in situ atmosphere-ocean flux measurements

2013

Ecole Polytechnique (LMD)

Palaiseau, France

LIDAR meteorology, atmospheric pollutant transport and chemistry

2013

Paris Institute of Earth Physics

Paris, France

Geomorphological and hydrological experiments

2013

Pierre and Marie Curie University (LOCEAN)

Paris, France

Rotating tank fluid dynamics experiments

2013

COMMUNITY SERVICE

Peer reviews:

NASA proposal review panel (2)	Harvard College proposal review (1)	J. of Geophys. Res. (6)
Atmos. Sci. Lett. (1)	Bull. Am. Met. Soc. (1)	Int. J. Climatol. (1)
Ann. Geophys-Italy (1)	QJRM (2)	Atmos. Chem. Phys. (1)
		Other (18)

International Presidential Fellow at Colorado State University

2015–2016

TEACHING/MENTORING EXPERIENCE

Colorado State University

Fort Collins, CO

Teaching assistant, Atmospheric Dynamics II

2016

Graduate student mentor for undergraduate and graduate summer internships

2016, 2019, 2020

Harvard University

Cambridge, MA

Graduate student mentor

2020-present

CONFERENCE ABSTRACTS AND INVITED LECTURES

- **Rivoire, L.**, M. Linz, J. Curbelo, C. Golja, An improved jet detection algorithm for climate studies, EGU General Assembly, Vienna, Austria, 2022.
- **Rivoire, L.**, M. Linz, J. Neu, P. Lin, A simple approach to the statistical significance of trends in stratospheric ozone, 102nd Annual Meeting of the AMS, virtual, 2022.
- **Rivoire, L.**, D. Chavas, J. A. Knaff, A multivariate approach to future tropical cyclone tracks, conference abstract, 34th AMS Conference on Hurricanes and Tropical Meteorology, virtual, 2021.

- **Rivoire, L.**, Ozone and hurricanes, outreach presentation for Earth Day, French Consulate in Boston, virtual, 2021.
- **Rivoire, L.**, What is cooling the tropopause above tropical cyclones?, invited seminar, NCAR, ACOM, Boulder, CO, 2019.
- **Rivoire, L.**, What is cooling the tropopause above tropical cyclones?, oral presentation, 19th Cyclone Workshop with award travel grant, Seeon, Bavaria, Germany, 2019.
- **Rivoire, L.**, Temperature tendencies in the UTLS above tropical cyclones, oral presentation, Front Range Tropical Cyclone workshop, Fort Collins, CO, 2018.
- **Rivoire, L.**, J. A. Knaff, Climatology and structure of cut-off lows in the north Atlantic, oral presentation, NOAA Center for Satellite Applications and Research - COoperative Research Program workshop, Madison, WI, 2018.
- **Rivoire, L.**, T. Birner, J. A. Knaff, Evolution of the upper-level thermal structure in reanalyzed tropical cyclones, poster presentation, 33rd AMS Conference on Hurricanes and Tropical Meteorology, Ponte Vedra, FL, 2018.
- **Rivoire, L.**, T. Birner, J. A. Knaff, Evolution of the upper-level thermal structure in tropical cyclones, poster presentation, 49th Fall Meeting of the AGU, San Francisco, CA, 2016.
- **Rivoire, L.**, T. Birner, J. A. Knaff, Evolution of the fine-scale vertical structure in tropical cyclones inferred from GPS Radio Occultation measurements, oral presentation, 32nd AMS Conference on Hurricanes and Tropical Meteorology, San Juan, PR, 2016.
- **Rivoire, L.**, Dry layers in the tropical troposphere, invited lecture at Colorado State University, 2016.
- **Rivoire, L.**, T. Birner, R. H. Johnson, Sensitivity study of CAPE, poster presentation, Young Scientist Symposium on Atmospheric Research at Colorado State University, Fort Collins, CO, 2015.

PEER-REVIEWED PUBLICATIONS

- (**L. Rivoire**, M. Linz, J. Curbelo, and co-authors, A dynamically-driven algorithm for the detection of atmospheric jets, *in preparation*.)
- (**L. Rivoire**, M. Linz, and co-authors, Detecting stratosphere-to-troposphere transport from total column ozone retrievals, *in preparation*.)
- (**L. Rivoire**, M. Linz, P. Lin, J.N. Neu, Towards understanding robust trend detection in stratospheric ozone, *in preparation for Atmospheric Chemistry and Physics*.)
- (**L. Rivoire**, T. Birner, J. A. Knaff and co-authors, Convectively-driven tropopause layer cooling in reanalysis data sets, *in preparation*.)
- **L. Rivoire**, T. Birner, J. A. Knaff, N. Tourville, Quantifying the radiative impact of clouds on tropopause layer cooling in tropical cyclones, *J. Clim*, 2020.
- W. J. Randel, **L. Rivoire**, L. L. Pan, S. Honomichl, Dry layers in the tropical troposphere observed during CONTRAST and global behavior from GFS analyses, *J. Geophys. Res.*, 2016.
- **L. Rivoire**, T. Birner, J. A. Knaff, Evolution of the upper-level thermal structure in tropical cyclones, *Geophys. Res. Lett.*, 2016.

TECHNICAL SKILLS AND INTERESTS

- Advanced knowledge of Matlab (10+ years), working knowledge of UNIX shell, Fortran, L^AT_EX, MS Office.
- Linux environment and workload managers.
- Extensive experience with large data sets and data formats including GRIB, GRIB2, NetCDF, HDF, ASCII.

- Modify model code and run ensemble simulations to improve the reliability of model projection.
- Native French speaker, proficient in English.
- Certificate recipient for online courses offered by the University of Texas at Austin, Georgetown University, Delft University of Technology, Harvard University (water management, energy production and distribution, impacts of globalization, programming languages)
- Creative writing, concept art design, skydiving.