CURRICULUM VITAE
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LOUIS RIVOIRE

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PROFESSIONAL EXPERIENCE

Massachusetts Institute of Technology, *Cambridge, MA* — Jan 2024 - present
Postdoctoral Associate
Department of Earth, Atmospheric and Planetary Sciences

Harvard University, *Cambridge, MA* — Jul 2020 - Dec 2023
Postdoctoral Fellow
Department of Earth and Planetary Sciences

Jet Propulsion Laboratory, Caltech, *Pasadena, CA* — Dec 2021 - Nov 2023
Providing expertise for the development of a satellite mission

Colorado State University, *Fort Collins, CO* — Aug 2015 - May 2020
Graduate research and teaching assistant
Funded by Programs of Research and Scholarly Excellence award

Colorado State University, *Fort Collins, CO* — Mar - Jul 2015
Climate dynamics intern with Dr. Thomas Birner and Dr. Richard Johnson
Modulation of tropical tropopause layer characteristics by the Madden-Julian Oscillation

National Center for Atmospheric Research, *Boulder, CO* — Mar - Jul 2014
Atmospheric chemistry intern with Dr. William J. Randel
Global characterization of dry layers in the tropical troposphere

Peer review since 2016
NASA Research Opportunities in Space and Earth Science (ROSES) panels, *Washington, D.C.* — 2017, 2019
Harvard College Research Program, *Cambridge, MA* — 2022, 2023, 2024

Nature Communications	J Geophys Res	Bull Am Meteorol Soc
Atmos Sci Lett	Q J R Meteorol Soc	Atmos Chem Phys
Int J Climatol	Ann Geophys	Marine Pollution Bulletin
Int. J. Remote Sens.		

Professional meetings
Session Lead Convener and Student Award Judge,
European Geosciences Union General Assembly, *Vienna, Austria* — 2023, 2024

Short research visits
Center for Mathematical Research, Universitat Autònoma de Barcelona, *Barcelona, Spain* — Sep - Oct 2023
Work with Dr. Jezabel Curbelo on a Lagrangian jet tracker

EDUCATION

Colorado State University, *Fort Collins, CO* 2020
Ph.D., Atmospheric Science

Sorbonne University, *Paris, France* 2015
M.S., Ocean, Atmosphere, Climate, and Remote Sensing
with distinction of Diploma of Ecole Normale Supérieure granted for additional coursework in environmental sciences and geopolitics.

Ecole Normale Supérieure, *Paris, France* 2013
B.S., Earth Sciences

Higher School Preparatory Classes, *Lyon, France* 2010-2012

PUBLICATIONS

Peer reviewed

- **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.

In preparation

- **L. Rivoire**, M. Linz, P. Lin, J.N. Neu, co-authors, Detectability of trends in stratospheric ozone, *in prep for ACP*.
- **L. Rivoire**, M. Linz, J. Li, Observational limitations to the emergence of climate signals, *GRL, in review*.
- H. Garny and co-authors including **L. Rivoire**, Age of stratospheric air: Progress on processes, observations and long-term trends, *Reviews of Geophysics*.
- **L. Rivoire**, J. Curbelo, co-authors, Tracking atmospheric jets as Lagrangian objects, *in prep for GRL*.

TEACHING AND MENTORING

Colorado State University, *Fort Collins, CO* 2016

Teaching assistant, Atmospheric Dynamics II

Undergraduate student intern advisor 2016, 2019

Harvard University, *Cambridge, MA*

Graduate student mentor 2020-2022

Short-term undergraduate student intern advisor 2022

Undergraduate student research advisor 2022

CONFERENCE ABSTRACTS AND INVITED LECTURES

- **Rivoire, L.**, J. Curbelo, Tracking the jets as Lagrangian objects, EGU General Assembly, Vienna, Austria, 2024.
- M. K. Linz, **Rivoire, L.**, co-authors, Using trace gas observations to determine trends in the stratospheric circulation and in age of air, 104th Annual Meeting of the American Meteorological Society, Baltimore, MD, 2024.

- J. L. Neu and co-authors including **Rivoire, L.**, The STRAtosphere TO Surface (STRATOS) Mission: An Earth System Explorer Proposal to Study Long-Term Changes in the Stratosphere and Their Impacts at Earth's Surface, 56th Fall Meeting of the AGU, San Francisco, CA, 2023.
- **Rivoire, L.**, How to detect robust climate signals, seminar at the Center for Mathematical Research, Universitat Autònoma de Barcelona, 2023.
- **Rivoire, L.**, M. Linz, J. Li, M. Abalos, Trends in the Brewer Dobson Circulation from age of air in models, EGU General Assembly, Vienna, Austria, 2023.
- **Rivoire, L.**, M. Linz, J. Curbelo, A. Hatzius, Detecting tropopause folds with total column ozone, SPARC General Assembly General Assembly, Boulder, CO, 2022.
- **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, 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, 2021.
- **Rivoire, L.**, Ozone across atmospheric reservoirs, seminar, Colorado State University, 2021.
- **Rivoire, L.**, Ozone and hurricanes, Earth Day outreach seminar, French and German Consulates, Boston, 2021.
- **Rivoire, L.**, What is cooling the tropopause above tropical cyclones?, seminar at 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 symposium, 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, seminar 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.

LABORATORY AND FIELD EXPERIENCE

Colorado State University, *Fort Collins, CO*

Participant in an airborne atmospheric chemistry campaign	2018
Radiosonde launches for an inter-comparison project	2018

Haute Provence Observatory, *France*

Atmospheric dynamics, boundary layer and stratospheric LIDAR meteorology	2015

Météo-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 (Laboratoire de Météorologie Dynamique), *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, *Paris, France*
Rotating tank fluid dynamics experiments 2013
Intern at the Institute of Mineralogy, Materials Physics and Cosmochemistry 2013

TECHNICAL SKILLS

Computational:

- 12+ years of Matlab experience, working knowledge of Linux environment and workload managers, Bash, Fortran, HTML, Markdown, some Python.
- Extensive experience with large gridded and non gridded data sets (GRIB, GRIB2, NetCDF, HDF, ASCII, TIFF).
- Graphic design software (Adobe Photoshop, Blender), LaTeX, scientific literature databases, MS Office.

Languages: English (fluent), French (native), Dutch (CEFR level A2).