

## CURRICULUM VITAE

June 24, 2020

# LOUIS RIVOIRE

Postdoctoral research fellow  
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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

Cambridge, MA  
2020 - now

## EDUCATION

**Colorado State University**  
Ph.D., Atmospheric Science  
Programs of Research and Scholarly Excellence

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** Paris, France  
Diploma of Ecole Normale Supérieure, in recognition of interdisciplinary curriculum 2015  
with a focus on environmental sciences (soil science, hydrology, land/ocean-atmosphere interactions, paleoclimatology, biogeochemistry, ecology, geopolitics)

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

**Higher School Preparatory Classes** Lyon, France  
2-year intensive training for highly competitive selection to enroll at the *Grandes Ecoles* 2010-2012  
Mathematics, physics, chemistry, biology, geology, geography, philosophy, and English

## RESEARCH EXPERIENCE

Internships:

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

**National Center for Atmospheric Research - ACOM** Boulder, CO  
Intern with Dr. William J. Randel 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:

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| <b>Colorado State University</b>                             | Fort Collins, CO             |
| • Participant in the WE-CAN aircraft chemistry campaign      | 2018                         |
| • Radiosonde launches for an inter-comparison project        | 2018                         |
| <b>Haute Provence Observatory</b>                            | France                       |
| Atmospheric dynamics, LIDAR meteorology                      | 2015                         |
| <b>METEO FRANCE</b>  | Toulouse, France             |
| Glaciology, meteorology, and remote sensing                  | 2014                         |
| <b>Ecole Normale Supérieure</b>                              | Alps, France                 |
| • GPS measurement campaign for geodetic study                | 2013                         |
| • Mapping and structural geology                             | 2013                         |
| <b>Oceanography Laboratory of Villefranche-sur-Mer</b>       | Villefranche-sur-Mer, France |
| Marine seismics and atmosphere-ocean flux measurements       | 2013                         |
| <b>Ecole Polytechnique (LMD)</b>                             | Palaiseau, France            |
| Introduction to LIDAR, meteorology and atmospheric chemistry | 2013                         |
| <b>Paris Institute of Earth Physics</b>                      | Paris, France                |
| Geomorphological and hydrological experiments                | 2013                         |
| <b>Pierre and Marie Curie University (LOCEAN)</b>            | Paris, France                |
| Fluid dynamics experiments                                   | 2013                         |

## COMMUNITY SERVICE

Peer reviews:

|                                |                         |                       |
|--------------------------------|-------------------------|-----------------------|
| NASA proposal review panel (1) | J. of Geophys. Res. (4) | Atmos. Sci. Lett. (1) |
| Int. J. Climatol. (1)          | Ann. Geophys-Italy (1)  | QJRMS (2)             |
|                                |                         | Other (18)            |

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| International Presidential Fellow at Colorado State University | 2015–2016 |
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## TEACHING/MENTORING EXPERIENCE

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| <b>Colorado State University</b>                   | Fort Collins, CO |
| Teaching assistant, Atmospheric Dynamics II        | 2016             |
| Graduate student mentor for short-term internships | 2016, 2019, 2020 |

## CONFERENCE ABSTRACTS AND INVITED LECTURES

- **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**, T. Birner, J. A. Knaff and co-authors, Sensitivity of clouds to their thermodynamic environment in the UTLS, *in preparation, using a theoretical framework and idealized simulations.*)
- (**L. Rivoire**, T. Birner, J. A. Knaff and co-authors, Impacts of tropopause layer cooling on tropical cyclone structure and dynamics, *in preparation, using regional numerical simulations.*)
- (**L. Rivoire**, T. Birner, J. A. Knaff and co-authors, Thermal structure of tropical cyclones 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,  $\LaTeX$ , 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.