Lapere Rémy

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Scientific Interests

- Climate feedback of air pollution, long-range transport of aerosols, attribution of extreme pollution events
- Assessment and forecast of solar and wind energy resources

Education

2018 – 2021 — **PhD, Laboratoire de Météorologie Dynamique, École Polytechnique** in Atmospheric Chemistry, under the supervision of Dr. Laurent Menut and Dr. Sylvain Mailler.
Thesis: *Observation and modeling of pollution events in Chile*. http://www.theses.fr/s257397

2017 – 2018 — **MST, "Energy Environment: Science Technology and Management" (STEEM), École Polytechnique, France**. 3.95 GPA.
Thesis: *Modeling the Impacts of Future Emission Scenarios on Air Pollution in Santiago, Chile*

2011 – 2015 — **Grande École d'Ingénieur, ENSTA Paris, France.**
Mathematical Finance, high honors.

2014 – 2015 — **Master's Degree, Université Paris I Panthéon-Sorbonne, France.**
Quantitative Finance, highest honors. Thesis: *Filtering, Hidden Markov Models and Finance*

Teaching & Outreach

Teaching Assistant at École Polytechnique

Engineers — Renewable energy data analysis projects (wind nowcasting, optimal wind/solar mix)

Bachelors — Physics 101 lab sessions

Masters — Tutoring in maths and atmospheric sciences

Outreach

2019 — *Climate Change and Energy Transition on the Mediterranean* conference - Facilitator/redactor

2018 – 2021 — *Fête de la Science*: experiment-based introduction to Earth's climate and renewable energies

Employment History

2015 – 2017 — Consultant in the Finance Business Unit, Sia Partners, Paris, France.

2013 – 2014 — Life insurance structuring engineer, Axa Life Invest, Paris, France

Tools and methods

Code — Python, NetCDF, Fortran, VBA, LaTeX, Jupyter Notebook

Model — Modeling with CHIMERE, WRF

Satellite — Use of products from MODIS, IASI, CALIOP

Maths — Statistical analysis, time series forecasting, stochastic processes

Miscellaneous

Languages — French (mother tongue), English (TOEFL: 112), Spanish (B2), Japanese (beginner)

Miscellaneous (continued)

Trainings	DIM QI^2 school on Air quality // Numerical modeling of the Ocean and the Atmosphere - MODNUMA // European Research Course on Atmospheres - ERCA // EUGLOH 2021 - Arctic Environments // ESiWACE Summer School on HPC
Hobbies	Sports: basketball, running, cycling, aviation (learning pilot)
	Music instruments played: guitar, piano, saxophone
	Photography: astrophotography, nature, horse riding

Publications

Peer-reviewed Research Articles

- **Lapere, R.**, Menut, L., Mailler, S., & Huneeus, N. (2020). Soccer games and record-breaking PM2.5 pollution events in Santiago, Chile. *Atmospheric Chemistry and Physics*, *20*(8), 4681–4694. https://doi.org/10.5194/acp-20-4681-2020
- Bessagnet, B., Menut, L., **Lapere, R.**, Couvidat, F., Jaffrezo, J.-L., Mailler, S., Favez, O., Pennel, R., & Siour, G. (2020). High Resolution Chemistry Transport Modeling with the On-Line CHIMERE-WRF Model over the French Alps-Analysis of a Feedback of Surface Particulate Matter Concentrations on Mountainous Meteorology. *Atmosphere*, *11*(6), 565. https://doi.org/10.3390/atmos11060565
- **Lapere, R.**, Mailler, S., Menut, L., & Huneeus, N. (2021). Pathways for wintertime deposition of anthropogenic light-absorbing particles on the Central Andes cryosphere. *Environmental Pollution*, *272*, 115901. https://doi.org/10.1016/j.envpol.2020.115901
- **Lapere, R.**, Menut, L., Mailler, S., & Huneeus, N. (2021). Seasonal variation in atmospheric pollutants transport in central Chile: dynamics and consequences. *Atmospheric Chemistry and Physics*, *21*(8), 6431–6454. https://doi.org/10.5194/acp-21-6431-2021
- **Lapere, R.**, Mailler, S., & Menut, L. (2021). The 2017 Mega-Fires in Central Chile: Impacts on Regional Atmospheric Composition and Meteorology Assessed from Satellite Data and Chemistry-Transport Modeling. *Atmosphere*, *12*, 344. https://doi.org/10.3390/atmos12030344
- Huneeus, N., **Lapere, R.**, Mazzeo, A., Ordoñez, C., Donoso, N., Muñoz, R., & Rutllant, J. (2021). Deep winter intrusions of urban Black Carbon into a canyon near Santiago, Chile: a pathway towards Andean glaciers evidenced from field measurements. *Environmental Pollution*, *291*, 118124. https://doi.org/10.1016/j.envpol.2021.118124
- **Lapere, R.**, Huneeus, N., Couvidat, F., & Muñoz, R. (n.d.). Seasonality in meteorological export and deposition fluxes of Black Carbon on glaciers of the central Chilean Andes, *[in preparation]*.
- Silva, P., Geirinhas, J., **Lapere, R.**, Laura, W., Cassain, D., Alegria, A., & Campbell, J. (n.d.). Heatwaves and fire in Pantanal: historical and future perspectives from CORDEX-CORE, *[in preparation]*.

Conferences and Seminars

- Lapere, R. (2019). PM2.5 extreme events in Santiago, Chile: observation and modeling, Seminar at the Center for Climate and Resilience Research (CR2), Santiago, Chile.
- Lapere, R., Menut, L., Mailler, S., & Huneeus, N. (2020). Combining air quality network data and chemistry-transport modeling for the attribution of extreme pollution events: a case study of Santiago, Chile, Online EGU General Assembly 2020.
- Lapere, R., Mailler, S., Menut, L., & Huneeus, N. (2021). Mountain-valley circulation in central Chile: consequences for Black Carbon deposition over glaciers in wintertime and summertime, Online EGU General Assembly 2021.
- Lapere, R., Menut, L., Mailler, S., & Huneeus, N. (2021). Mountain-valley circulation in central Chile: consequences for Black Carbon deposition over glaciers and Ozone injection into the free troposphere, International Global Atmospheric Chemistry - IGAC 2021.

- Lapere, R., Huneeus, N., Mailler, S., & Menut, L. (2021). Is black carbon deposition on glaciers of the central Chilean Andes underestimated?, Congreso Colombiano y conferencia internacional Calidad del Aire y Salud Pública – CASAP VIII.

Reports

- Lapere, R. (2021). *Observation and modeling of pollution events in Chile* (PhD thesis). Laboratoire de Météorologie Dynamique, Ecole Polytechnique, Institut Polytechnique de Paris. Palaiseau, France.
- Drobinski, P., Azzopardi, B., Ben Janet Allal, H., Bouchet, V., Civel, E., Creti, A., Duic, N., Fylaktos, N., Mutale, J., Pariente-David, S., Ravetz, J., Taliotis, C., & Vautard, R. (2020). *Energy transition in the Mediterranean. In Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report*. [Cramer W, Guiot J, Marini K (eds.)] Union for the Mediterranean, Plan Bleu, UNEP/MAP, Marseille, France, 58pp.
- Lapere, R. (2018). *Modeling the Impacts of Future Emission Scenarios on Air Pollution in Santiago, Chile* (MSc thesis). Laboratoire de Météorologie Dynamique, Ecole Polytechnique, Institut Polytechnique de Paris. Palaiseau, France.