Tom Beucler

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Research Interests

Atmospheric Physics, Climate Informatics, Clouds and Convection, Deep Learning, Downscaling, Environmental Data Science, Fluid Dynamics, Scientific Machine Learning, Tropical Meteorology, Weather and Climate Extremes.

Education

MIT Program in Atmospheres, Oceans, and Climate   **2014 – 2019**
Ph.D. in Atmospheric Science: Interaction between Water Vapor, Radiation and Convection   *Cambridge, USA*
Thesis committee: K. Emanuel (co-advisor), T. Cronin (co-advisor), P. O'Gorman, Z. Kuang, C. Bretherton.

École Polytechnique   **2013 – 2014**
Master of Science in Mechanics   *Palaiseau, France*
Major in fluid dynamics and environmental science.

École Polytechnique & Lycée Sainte-Geneviève   **2009 – 2013**
Bachelor of Engineering   *Versailles & Palaiseau, France*
Coursework in mechanics, physics, mathematics, chemistry and biology.

Academic Employment

University of Lausanne, Switzerland   **2021 – Present**
Assistant Professor of Environmental Data Science (Tenure Track)   *Lausanne, Switzerland*

University of California, Irvine   **2019 – 2021**
Assistant Project Scientist in Atmospheric Science: Machine Learning for Climate Science   *Irvine, USA*
Principal investigators: M. Pritchard and P. Gentine.

University of California, Irvine and Columbia University   **2019**
Postdoctoral Scholar in Atmospheric Science: Deep Learning for Convection and Clouds   *Irvine & NYC, USA*
Co-advisors: P. Gentine and M. Pritchard.

Awards and Visiting Positions

- (2021–2025) **Visiting scholar,** Earth System Science Department, UCI
- (2019–2023) **Visiting scholar,** Scripps Institution of Oceanography, UCSD
- (2023) **AGU 2022 Editor's citation for excellence in refereeing**, Journal of Advances in Modeling Earth Systems
- (2022) **AGU 2021 Editor's citation for excellence in refereeing**, Geophysical Research Letters
- (2021) **AGU 2020 Editor's citation for excellence in refereeing**, Journal of Advances in Modeling Earth Systems
- (2019) **Rossby award for best doctoral thesis,** Program in Atmospheres, Oceans and Climate, MIT
- (2019) **Invited scholar,** Max Planck Institute for Meteorology
- (2019) **Summer fellow,** 2nd ICTP Summer School on Climate Dynamics and Convective Organization
- (2018) **Finalist of the "Climate Changed" @ MIT competition,** *Higher Grounds* at MIT
- (2018) **AGU 2017 Editor's citation for excellence in refereeing**, Geophysical Research Letters
- (2018) **Best poster prize (Water & Society)**, *Preparing MIT for 2050 Floodwaters* at the MIT Water Night
- (2018) **Graduate research fellow**, Program on Math. and Stat. Methods for Climate & the Earth System at SIAM Institute
- (2017) **Summer fellow**, Les Houches Summer School on Fundamental Aspects of Turbulent Flows in Climate Dynamics
- (2015) **Geophysical fluid dynamics fellow**, Woods Hole Oceanographic Institution
- (2014-2015) **Rasmussen fellow**, MIT Department of Earth, Atmospheric and Planetary Sciences
- (2014) **Outstanding Master's thesis**, École Polytechnique

Funding

- (2024-Present) **Lead PI, SNSF Project Funding**: *RobustSR: Improving the Robustness of Super-Resolution Algorithms to Climate Change and Extreme Events*. Estimated value of resources awarded to ∂^3AWN: **CHF 584,989**
- (2024-Present) **Co-PI, Horizon Europe (CL5 Call)**: *AI4PEX: Artificial Intelligence and ML for Enhanced Representation of Processes and Extremes in Earth System Models*. Estimated value of resources awarded to ∂^3AWN: **CHF 523,999**
- (2024-Present) **Lead PI, UNIL Teaching Innovation Fund (FIP)**: *Promoting the Teaching of Computational Sciences at the Faculty of Geosciences and Environment*. Estimated value of resources awarded: **CHF 54,000**
- (2021-Present) **Principal Investigator, Canton of Vaud funding for all IDYST professors**: ∂^3AWN Lab at IDYST. Estimated value of awarded resources: **CHF 120,000/year** (2 PhD students)
- (2026) **Lead PI, Interface-Volteface & CAP2037 (UNIL)**: *From measurement to action to sustainably reduce the environmental footprint of research computing and data infrastructures*. Resources awarded to ∂^3AWN: **CHF 25,000**.

- (2026) **Co-Applicant, Swiss AI Initiative**: *Earth System Foundation Model & ClimLlama*
  ∼700k GPU-h on CSCS Alps; personnel funding, engineering support, and outreach funds for pre-training & applications.
  Lead PIs: S. Schemm (Cambridge), T. Hoefler (ETH), S. Mishra (ETH), M. Salzmann (EPFL/SDSC), O. Fuhrer (MCH).
  Estimated value of awarded resources for 14 PIs: **CHF 7,000,000**. UNIL Role: ESFM evaluation & constraining.
- (2025-2026) **Lead PI, Swiss Data Science Center's Call for End-User Innovation Projects**: *Democratizing Neural Weather Forecasting for Switzerland: An Open Platform Approach*. Estimated value of resources awarded: **CHF 100,000**
- (2025) **Lead PI, Alliance Campus Rhodanien Seed Fund for Franco-Swiss Collaborative Projects**: *Towards Physics-Informed Neural Operators for Climate Modeling*. Estimated value of resources awarded to ∂^3AWN: **EUR 8,000**
- (2020-2021) **Principal Investigator, Columbia University subaward**: *Physics-Guided Deep Learning for Climate Predictions*. Estimated value of awarded resources: **$51,986**
- (2020-2021) **Co-Investigator, XSEDE computational resources allocation**: *Simulating global climate with turbulence-permitting cloud superparameterization to train machine learning emulators and advance understanding of aerosol-cloud feedbacks*.
  Lead PI: Mike Pritchard. Estimated value of awarded resources: **$2,025,427**

Peer-Reviewed Publications and Book Chapters

1. (2025) Grundner, A., **T. Beucler**, J. Savre, A. Lauer, M. Schlund & V. Eyring: Reduced Cloud Cover Errors in a Hybrid AI-Climate Model Through Equation Discovery And Automatic Tuning. *Scientific Reports*.
2. (2025) Leclerc, A., E. Koch, M. Feldmann, D. Nerini & **T. Beucler**: Improving Predictions of Convective Storm Wind Gusts through Statistical Post-Processing of Neural Weather Models. *npj Natural Hazards*, **2**(1), 100.
3. (2025) Hibbert, D., **T. Beucler**, K. Domingo & S. Leibel: Respiratory Emergencies in Pediatrics: Associations in Redlining, Air Quality and Traffic Regulation. *Journal of Racial and Ethnic Health Disparities*.
4. (2025) Yu, S., Z. Hu, A. Subramaniam, W. Hannah, L. Peng, J. Lin, M. Bhouri, R. Gupta, B. Lütjens, J. Will, G. Behrens, J. Busecke, N. Loose, C. Stern, **T. Beucler**, ... & M. Pritchard: ClimSim-Online: A Large Multi-scale Dataset and Framework for Hybrid ML-physics Climate Emulation. *Journal of Machine Learning Research*, **26**, 142.
5. (2025) Wang, Z., R. Rios-Berrios, D. P. Stern, A. J. Baker, **T. Beucler**, S. J. Camargo, J.-P. Duvel, ... & E. Wisinski: On the Definition and Tracking of Tropical Cyclone Seeds from a Climate Perspective. *Bulletin of the American Meteorological Society*, **106**, E1815–E1822.
6. (2025) Tam, F. I., F. Augsburger & **T. Beucler**: From Winter Storm Thermodynamics to Wind Gust Extremes: Discovering Interpretable Equations from Data. *Environmental Data Science*, 4:e48.
7. (2025) Sullivan, S. C., P. Vautravers, **T. Beucler**, T. Makgoale & J. Yin: Moisture-Precipitation Couplings for Mesoscale Convective Systems in Tracking Data and Idealized Simulations. *Journal of the Atmospheric Sciences*, **82**, 1885–1902.
8. (2025) Ricard, L., **T. Beucler**, C. Stephan & A. Nenes: A Causal Intercomparison framework unravels precipitation drivers in Global Storm-Resolving Models. *npj climate and atmospheric science*, **8**, 245.
9. (2025) **Beucler, T.**, A. Grundner, S. Shamekh, P. Ukkonen, M. Chantry, R. Lagerquist: Distilling Machine Learning's Added Value: Pareto Fronts in Atmospheric Applications. *Artificial Intelligence for the Earth Systems*, **4**, e240078.
10. (2025) Behrens, G., **T. Beucler**, F. Iglesias-Suarez, S. Yu, P. Gentine, M. Pritchard, M. Schwabe & V. Eyring: Simulating Atmospheric Processes in Earth System Models and Quantifying Uncertainties with Deep Learning Multi-Member and Stochastic Parameterizations. *Journal of Advances in Modeling Earth Systems*, **17**, e2024MS004272.
11. (2025) Lin, J., S. Yu, L. Peng, **T. Beucler**, E. Wong-Toi, Z. Hu, P. Gentine, M. Geleta & M. Pritchard: Navigating the Noise: Bringing Clarity to ML Parameterization Design with O(100) Ensembles. *Journal of Advances in Modeling Earth Systems*, **17**, e2024MS004551.
12. (2025) Aarnink, J., **T. Beucler**, M. Vuaridel & V. Ruiz-Villanueva: Automatic detection of instream large wood in videos using deep learning. *Earth Surface Dynamics*, **13**, 167–189.
13. (2024) Cache, T., M. Gomez, **T. Beucler**, J. Blagojevic, J. Leitao & N. Peleg: Enhancing generalizability of data-driven urban flood models by incorporating contextual information. *Hydrology and Earth System Sciences*, **28**(24), 5443-5458.
14. (2024) **Tam, F. I, T. Beucler** & J. Ruppert: Identifying Three-Dimensional Radiative Patterns Associated with Early Tropical Cyclone Intensification. *Journal of Advances in Modeling Earth Systems*, **16**, e2024MS004401.
15. (2024) Feldmann, M., **T. Beucler**, M. Gomez & O. Martius: Lightning-Fast Convective Outlooks: Predicting Severe Convective Environments with Global AI-based Weather Models. *Geophysical Research Letters*, **51**(22), e2024GL110960.
16. (2024) Christopoulos, C., I. Lopez-Gomez, **T. Beucler**, Y. Cohen, C. Kawczynski, O. Dunbar & T. Schneider: Online Learning of Entrainment Closures in a Hybrid Machine Learning Parameterization. *Journal of Advances in Modeling Earth Systems*, **16**, e2024MS004485.
17. (2024) Eyring, V., W.D. Collins, P. Gentine, E.A. Barnes, M. Barreiro, **T. Beucler**, ... & L. Zanna: Pushing the frontiers in climate modeling and analysis with machine learning. *Nature Climate Change*, **14**, 916–928.
18. (2024) Rampal, N., S. Hobeichi, P. B. Gibson, J. Baño-Medina, G. Abramowitz, **T. Beucler**, J. González-Abad, W. Chapman, P. Harder & José Manuel Gutiérrez: Enhancing Regional Climate Downscaling Through Advances in Machine Learning. *Artificial Intelligence for the Earth Systems*.
19. (2024) **Beucler, T.**, E. Koch, S. Kotlarski, D. Leutwyler, A. Michel & J. Koh: Next-Generation Earth System Models: Towards Reliable Hybrid Models for Weather and Climate Applications. *SATW Whitepaper on "AI for Climate Change Mitigation"*, 5.2.
20. (2024) Grundner, A., **T. Beucler**, P. Gentine & V. Eyring: Data-Driven Equation Discovery of a Cloud Cover Parameterization, *Journal of Advances in Modeling Earth Systems*, **16**, e2023MS003763.
21. (2024) Iglesias-Suarez, F., P. Gentine, B. Solino-Fernandez, **T. Beucler**, M. Pritchard, J. Runge & V. Eyring: Causally-informed deep learning to improve climate models and projections, *Journal of Geophysical Research: Atmospheres*, **129**, e2023JD039202.
22. (2024) Mooers, G., **T. Beucler**, M. Pritchard & S. Mandt: Understanding Precipitation Changes through Unsupervised Machine Learning, *Environmental Data Science*, **3**, e3.
23. (2024) **Beucler, T.**, P. Gentine, J. Yuval, A. Gupta, L. Peng, J. Lin, S. Yu, S. Rasp, F. Ahmed, P. O'Gorman, D. Neelin, N. Lutsko &

M. Pritchard: Climate-Invariant Machine Learning, *Science Advances*, **10**, eadj7250.

24. (2023) **Beucler, T.**, I. Ebert-Uphoff, S. Rasp, M. Pritchard & P. Gentine: Machine Learning for Clouds and Climate, *Clouds and Their Climatic Impact: Radiation, Circulation, and Precipitation*, edited by: Sullivan, SC and Hoose, C., Wiley–American Geophysical Union: 327-346.

25. (2023) Mooers, G., M. Pritchard, **T. Beucler**, P. Srivastava, H. Mangipudi, L. Peng, P. Gentine & S. Mandt: Comparing Storm Resolving Models and Climates via Unsupervised Machine Learning, *Scientific Reports*.

26. (2023) Zanetta, F., D. Nerini, **T. Beucler** & M. Liniger: Physics-constrained deep learning postprocessing of temperature and humidity, *Artificial Intelligence for the Earth Systems*, 2, e220089.

27. (2023) Ganesh S., S., **T. Beucler**, F. I. Tam, M. Gomez, J. Runge & A. Gerhardus: Selecting Robust Features for Machine Learning Applications using Multidata Causal Discovery, *Environmental Data Science*, 2:e27.

28. (2022) Grundner, A.,**T. Beucler**, P. Gentine, F. Iglesias-Suarez, M. Giorgetta & V. Eyring: Deep Learning Based Cloud Cover Parameterization for ICON, *Journal of Advances in Modeling Earth Systems*, e2021MS002959.

29. (2022) Wu, Z.,**T. Beucler**, E. Székely, W. Ball & D. Domeisen: Modeling Stratospheric Polar Vortex Variation and Identifying Vortex Extremes Using Explainable Neural Networks. *Environmental Data Science 1: e17.*

30. (2022) Behrens, G.,**T. Beucler**, P. Gentine, F. Iglesias-Suarez, M. Pritchard & V. Eyring: Non-Linear Dimensionality Reduction with a Variational Encoder Decoder to Understand Convective Processes in Climate Models. *Journal of Advances in Modeling Earth Systems*, e2022MS003130.

31. (2021) Gentine, P., V. Eyring & **T. Beucler**: Deep Learning for the Parametrisation of Subgrid Processes in Climate Models, *Deep learning for the Earth Sciences: With Applications and R, Second Edition*, **307-314**.

32. (2021) Mooers, G., M. Pritchard, **T. Beucler** et al.: Assessing the Potential of Deep Learning for Emulating Cloud Superparameterization in Climate Models with Real-Geography Boundary Conditions. *Journal of Advances in Modeling Earth Systems*, **13**, e2020MS002385.

33. (2021) **Beucler, T.**, M. Pritchard, S. Rasp, J. Ott, P. Baldi & P. Gentine: Enforcing Analytic Constraints in Neural-Networks Emulating Physical Systems, *Physical Review Letters*, **126.9**: 098302. **Editors' Suggestion**.

34. (2020) Brenowitz, N., **T. Beucler**, M. Pritchard & C. Bretherton: Interpreting and Stabilizing Machine-Learning Parametrizations of Convection, *Journal of the Atmospheric Sciences*, **77.12**, 4357-4375.

35. (2020) **Beucler, T.**, D. Leutwyler & J. Windmiller: Quantifying Convective Aggregation Using the Tropical Moist Margin's Length, *Journal of Advances in Modeling Earth Systems*, **12.10**, e2020MS002092.

36. (2020) Abbott, T., T. Cronin & **T. Beucler**: Convective Dynamics and the Response of Precipitation Extremes to Warming in Radiative–Convective Equilibrium, *Journal of the Atmospheric Sciences*, **77**, 1637-1660.

37. (2019) **Beucler, T.**, T. Abbott, T. Cronin & M. Pritchard: Comparing Convective Self-Aggregation in Idealized Models to Observed Moist Static Energy Variability Near the Equator, *Geophysical Research Letters*, **46**, 17-18.

38. (2019) **Beucler, T.**: Interaction between Water Vapor, Radiation and Convection in the Tropics, *Ph.D. Thesis in Atmospheric Science.*

39. (2018) **Beucler, T.** & T. Cronin: A Budget for the Size of Convective Self-Aggregation, *Quarterly Journal of the Royal Meteorological Society, 145, 947– 966.*

40. (2018) **Beucler, T.**, T. Cronin & K. Emanuel: A Linear Response Framework for Radiative-Convective Instability,*Journal of Advances in Modeling Earth Systems*, **10**, 1924-1951.

41. (2016) **Beucler, T.** & T. Cronin: Moisture-Radiative Cooling Instability, *Journal of Advances in Modeling Earth Systems*, **8**, 1620–1640.

42. (2016) **Beucler, T.**: A Correlated Stochastic Model for the Large-Scale Advection, Condensation and Diffusion of Water Vapour. *Quarterly Journal of the Royal Meteorological Society*, **142**, 1721–1731.

43. (2014) **Beucler, T.**: Self-Aggregation Phenomenon in Cyclogenesis, *Master's Thesis in Fluid Mechanics.*

Peer-Reviewed Conference and Workshop Publications

1. (2023, NeurIPS Conference) Yu, S., W. Hannah, L. Peng, M. Bhouri, R. Gupta, J. Lin, B. Lütjens, J. Will, G. Behrens, J. Busecke, N. Loose, C. Stern, **T. Beucler** et al.: ClimSim: A large multi-scale dataset for hybrid physics-machine learning climate emulation. *Advances in Neural Information Processing Systems.* **"Oustanding Datasets and Benchmarks" award.**

2. (2023, NeurIPS Workshop) Lin, J., M. A. Bhouri, **T. Beucler**, S. Yu & M. Pritchard: Stress-testing the coupled behavior of hybrid physics-machine learning climate simulations on an unseen, warmer climate. *2023 Conference on Neural Information Processing Systems.*

3. (2021, NeurIPS Workshop) Mangipudi, H., G. Mooers, M. Pritchard, **T. Beucler** & S. Mandt: Analyzing High-Resolution Clouds and Convection using Multi-Channel VAEs. *2021 Conference on Neural Information Processing Systems.*

4. (2020, IGARSS) **Beucler, T.**, M. Pritchard, P. Gentine & S. Rasp: Towards Physically-Consistent, Data-Driven Models of Convection. *IEEE International Geoscience and Remote Sensing Symposium 2020.*

5. (2020, Climate Informatics) Mooers, G., J. Tuyls, S. Mandt, M. Pritchard & **T. Beucler**: Generative Modeling of Atmospheric Convection. *Proceedings of the 10th International Conference on Climate Informatics*, 98-105.

6. (2019, ICML Workshop) **Beucler, T.**, S. Rasp, M. Pritchard & P. Gentine: Achieving Conservation of Energy in Neural Network Emulators for Climate Modeling. *2019 International Conference on Machine Learning.*

Preprints and Submitted Manuscripts

1. Heuer, H., **T. Beucler**, M. Schwabe, J. Savre, M. Schlund & Veronika Eyring: Beyond the Training Data: Confidence-Guided Mixing of Parameterizations in a Hybrid AI-Climate Model.

2. Lin, J., Z. Hu, **T. Beucler**, K. Frields, H. Christensen, W. Hannah, H. Heuer, ... & M. Pritchard: Crowdsourcing the Frontier: Advancing Hybrid Physics-ML Climate Simulation via $50,000 Kaggle Competition.

3. Ganesh S., S., F. I.-H. Tam, M. Gomez, M. McGraw, M. DeMaria, K. Musgrave, J. Runge & **T. Beucler**: Multidata Causal Discovery

for Statistical Hurricane Intensity Forecasting.

4. Gomez, M., L. Poulain–Auzeau, A. Berne & **T. Beucler**: Global Forecasting of Tropical Cyclone Intensity Using Neural Weather Models.

5. Largeau, L., E. Koch, D. Leutwyler, G. Mariethoz, V. Chavez-Demoulin & **T. Beucler**: Investigating the Robustness of Extreme Precipitation Super-Resolution Across Climates.

6. Furtado, J. C., M. J. Molina, M. C. Arcodia, W. Anderson, **T. Beucler**, J. A. Callahan, L. M. Ciasto, ... & B. G. Zimmerman: Taking the Garbage Out of Data-Driven Prediction Across Climate Timescales.

Invited Seminars

1. (Oct 25) **Keynote** at the workshop on Ocean Benchmarks and AI-Native Solutions for Digital Twins of the Ocean in Brest, France (Remote). *TCBench: A Benchmark for Tropical Cyclone Track and Intensity Forecasting at the Global Scale*.

2. (Aug 25) MeteoSwiss NWP Seminar in Zurich, Switzerland. *Improving the Robustness of Empirical Downscaling Algorithms to Extreme Events and Climate Change*.

3. (May 25) UVA Climate AI Workshop. *How to use AI to generate local information about climate extremes under climate change?*

4. (Apr 25) Université Grenobles-Alpes MEOM Group Seminar. *Improving the Robustness of Super-Resolution Algorithms to Extreme Events and Climate Change*.

5. (Apr 25) University of Lausanne IDYST-ISTE Seminar. *From Atmospheric Physics to Machine Learning and Back*.

6. (Mar 25) University of Leeds Scientific ML Seminar. *From Atmospheric Physics to Machine Learning and Back*.

7. (Mar 25) USMILE ML Retreat in Umhausen, Austria. *"Online Learning" for Hybrid Earth System Modeling*.

8. (Mar 25) UniGe Research Seminar in Statistics. *From Atmospheric Physics to Machine Learning and Back*.

9. (Feb 25) Caltech Geological and Planetary Sci. Division Seminar. *From Atmospheric Physics to Machine Learning and Back*.

10. (Feb 25) UCSD Special Climate and Atmosphere Seminar. *From Atmospheric Physics to Machine Learning and Back*.

11. (Feb 25) UCI Earth System Science Special Seminar. *From Atmospheric Physics to Machine Learning and Back*.

12. (Sep 24) **Keynote** at the Croucher Advanced Study Institute: Revolutionizing Weather Forecast and Climate Prediction Through AI in HKUST, Hong Kong. *From Data-Driven Parameterizations to Neural Weather Models: AI for Convection, Clouds, and Precipitation*.

13. (Jul 24) CleanCloud Monthly Seminar Series. *Data-Driven Parameterization of Cloud Processes: From Deep Learning to Equation Discovery*.

14. (Jun 24) TROPIcal Cyclones in ANthropocene: physics, simulations & Attribution (TROPICANA) seminar in Orsay, France. *AI for Tropical Meteorology: Challenges and Opportunities*.

15. (May 24) ETHZ Colloquium "Atmosphere and Climate". *Distilling Machine Learning's Added Value: Pareto Fronts in Atmospheric Applications*.

16. (Apr 24) Data Science for the Sciences (DS4S) conference in Bern, Switzerland. *Atmospheric physics-guided machine learning for climate modeling and weather forecasting*.

17. (Mar 24) Joint CLIMACT-ECCE Seminar in Lausanne, Switzerland. *Tropical Precipitation in a Changing Climate*.

18. (Jan 24) US CLIVAR Predictability, Predictions, and Applications Interface (PPAI) Panel's Webinar. *Atmospheric physics-guided machine learning for climate modeling and weather forecasting*.

19. (Apr 23) UN's International Telecommunication Union (ITU) "AI for Good" Seminar Series. *AI for tropical meteorology: Challenges and opportunities*.

20. (Jan 24) Jeudis du climat, National Centre for Meteorological Research in Toulouse, France. *Atmospheric Physics-Guided Machine Learning for Climate Modeling and Weather Forecasting*.

21. (Oct 23) Joint Climate Impacts-∂^3AWN Group Meeting. *Demystifying Data-Driven Weather Forecasting*.

22. (Sep 23) Grenoble Alpes University's Institute of Environmental Geosciences Seminar in Grenoble, France. *Atmospheric Physics-Guided Machine Learning for Climate Modeling and Weather Forecasting*.

23. (Jun 23) Caltech Climate Modeling Alliance (CliMA) Seminar. *Systematically Generating Hierarchies of Machine-Learning Models, from Equation Discovery to Deep Neural Networks*.

24. (Apr 23) ai4oac2023: Workshop on AI for Ocean, Atmosphere and Climate Dynamics in Brest, France. *Physically and Causally-Informed ML for Climate Modeling*.

25. (Jan 23) ETHZ Atmospheric Predictability Extended Group Meeting. *Atmospheric Physics-Guided Machine Learning*.

26. (Jan 23) CSSI-Gravity Wave journal club. *Systematically Generating Hierarchies of Machine-Learning Models, from Equation Discovery to Deep Neural Networks*.

27. (Jan 23) **Core Science Keynote** at the 103rd AMS Annual Meeting. *Systematically Generating Hierarchies of Machine-Learning Models, from Equation Discovery to Deep Neural Networks*.

28. (Nov 22) Institute for Mathematical and Statistical Innovation (iMSi) workshop on "ML for Climate and Weather Applications". *Systematically Generating Hierarchies of Machine-Learning Models, from Equation Discovery to Deep Neural Networks*.

29. (Oct 22) ESiWACE2 Second Virtual Workshop on Emerging Technologies for Weather and Climate Modelling. *Atmospheric Physics-Guided Machine Learning*.

30. (Oct 22) UNIL "Machine Learning Café" seminar series. *Physically and Causally-Informed ML for Climate Modeling*.

31. (Sep 22) IPSL LSCE seminar on the Paris-Saclay university campus in France. *Climate-Invariant, Causally-Consistent Neural Networks as Robust Emulators of Subgrid Processes across Climates*.

32. (Sep 22) EPFL Environmental Engineering Seminar Series. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

33. (Sep 22) Royal Meteorological Society workshop on "Machine Learning for Atmospheric Sciences: Values and Controversies". *Systematically Generating Hierarchies of Machine-Learning Models, from Equation Discovery to Deep Neural Networks*.

34. (Jun 22) NVIDIA Invited Webinar. *Climate-Invariant, Causally-Consistent Neural Networks as Robust Emulators of Subgrid Processes across Climates*.

35. (Jun 22) Aspen Global Change Institute workshop "Exploring the Frontiers in Earth System Modeling with Machine Learning and Big Data". *Climate-Invariant Machine Learning*.

36. (Jun 22) CIRA/CSU Invited Seminar in Fort Collins, CO, USA. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

37. (May 22) EGU General Assembly 2022. *Climate-Invariant, Causally-Consistent Neural Networks as Robust Emulators of Subgrid Processes across Climates*.

38. (May 22) Climate Informatics 2022 Conference. *Climate-Invariant, Causally-Consistent Neural Networks as Robust Emulators of Subgrid Processes across Climates*.

39. (Apr 22) "Machine Learning and sampling methods for climate and physics" IXXI workshop at ENS Lyon in France. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

40. (Apr 22) Second workshop of the ELLIS Program 'Machine Learning for Earth and Climate Sciences'. *Climate-Invariant Machine Learning*.

41. (Feb 22) "AI Super-Resolution Simulations: From Climate Science to Cosmology" CMU workshop. *Atmospheric Physics-Guided Machine Learning*.

42. (Feb 22) UCLA AOS 271 and Journal Club seminar. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

43. (Feb 22) Postdam Institute for Climate Impact Research invited seminar on "ML applications in climate science". *Climate-Invariant, Causally-Consistent Neural Networks as Robust Emulators of Subgrid Processes across Climates*.

44. (Jan 22) AMS 102nd Annual Meeting. *Climate-Invariant, Causally Consistent Neural Networks as Robust Emulators of Subgrid Processes across Climates*.

45. (Jan 22) Caltech Climate Modeling Alliance (CliMA) Seminar. *Atmospheric Physics-Guided Machine Learning*.

46. (Nov 21) ESA-ECMWF Workshop 2021: Machine Learning for Earth System Observation and Prediction. *Atmospheric Physics-Guided Machine Learning*.

47. (Nov 21) MeteoSwiss APP Seminar in Locarno, Switzerland. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

48. (Nov 21) University of Bern's Colloquium in Climatology, Climate Impact and Remote Sensing. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

49. (Jul 21) AI2ES NCAR Summer School on Trustworthy AI. *Invited Tutorial: Integrating Physics into Machine Learning*.

50. (May 21) Princeton Plasma Physics Laboratory (PPPL) Machine Learning Seminar. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

51. (May 21) MIT Sack Lunch Seminar Series (SLS) Seminar. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

52. (May 21) NCAR's Climate and Global Dynamics (CGD) seminar series. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

53. (May 21) LANL's Conference on Machine Learning in Solid Earth Geoscience. *Atmospheric Physics-Guided Machine Learning: Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

54. (Jan 21) AMS 101st Annual Meeting. *Climate-Invariant Nets: Using Physical Rescalings to Help Neural Networks Generalize to Out-of-Sample Climates*.

55. (Oct 20) UCI Earth System Science Departmental Seminar Series. *Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

56. (Oct 20) UCSD SIO Machine Learners Group Meeting. *Towards Physically-Consistent, Data-Driven, and Interpretable Models of Convection*.

57. (Oct 20) 2020 IEEE International Geoscience and Remote Sensing Symposium. *Towards Physically-Consistent, Data-Driven Models of Convection*.

58. (Aug 20) First Annual Workshop on Knowlege-Guided Machine Learning (UMN). *Towards Physically-Consistent, Data-Driven Models of Convection*.

59. (Jul 20) SIAM 2020 Conference on "Mathematics of Planet Earth". *Climate-Invariant Nets: Physical Rescalings can Help Neural Networks Generalize to Out-of-sample Climates*.

60. (Jun 20) LANL's "Machine Learning for Turbulence" webinar. *Towards Physically-Consistent, Data-driven, and Interpretable Parametrizations of Convection*.

61. (Apr 20) NOAA Satellite Applications and Research (STAR) Seminar Series. *Towards Physically-Consistent, Data-driven, and Interpretable Parametrizations of Convection*.

62. (Dec 19) AGU Fall Meeting 2019. *Building a Hierarchy of Hybrid, Neural-network Parametrizations of Convection*.

63. (Jul 19) Joint Max-Planck-Institute for Meteorology & University of Hamburg Seminar. *Physical Mechanisms of Convective Self-Aggregation in the Tropics*.

64. (Dec 18) Seminar in Geosciences, ENS Ulm in Paris, France. *Interaction between water vapor, radiation and convection in the Tropics*.

65. (Sep 18) MIT Sack Lunch Seminar Series (SLS) Seminar. *Interaction between water vapor, radiation and convection in the Tropics*.

66. (Oct 18) Yale AOCD Speaker Series in New Haven, CT, USA. *Interaction between water vapor, radiation and convection in the Tropics*.

67. (Aug 18) UCLA Atmospheric & Oceanic Sciences Department (Special Seminar). *Interaction between water vapor, radiation and convection in the Tropics*.

68. (Aug 18) UCI Earth System Science Department (Special Seminar). *Interaction between water vapor, radiation and convection in the Tropics*.

69. (Dec 17) Seminar in Geosciences, Université Pierre et Marie Curie in Paris, France. *A Spectral Budget for the Size of Convective Self-Aggregation*.

70. (Jan 17) Seminar in Geosciences, ENS Ulm in Paris, France. *Radiative-Convective Instability*.

Conference Oral Presentations

1. (Jun 25) D·A·CH 2025 Meteorology Conference. *Distilling ML's Added Value: Pareto Fronts in Atmospheric Applications.*
2. (May 25) Third Paris Workshop on "Bias Correction in Climate Studies" *Improving the Robustness of Empirical Downscaling Algorithms to Extreme Events and Climate Change.*
3. (Apr 25) EGU General Assembly 2025. *Distilling Machine Learning's Added Value: Pareto Fronts in Atmospheric Applications.*
4. (May 24) AMS 36th Conference on Hurricanes and Tropical Meteorology. *Data-Driven Equation Discovery of a Parameterization for Tropical Precipitation.*
5. (Apr 23) 12th International Conference on Climate Informatics. *Systematically Generating Hierarchies of Machine-Learning Models, from Equation Discovery to Deep Neural Networks.*
6. (Jun 22) AMS 23rd Conference on Atmospheric and Oceanic Fluid Dynamics. *Systematically Generating Climate Model Hierarchies from Data using Machine Learning.*
7. (Mar 22) EPFL Applied Machine Learning Days (AMLD). *Atmospheric Physics-Guided Machine Learning.*
8. (Jan 20) AMS 100th Annual Meeting. *Building a Hierarchy of Hybrid, Neural Network Parameterizations of Convection.*
9. (Jun 19) Ninth Northeast Tropical Workshop in Dedham, MA, USA. *Towards Interpretable Neural-Network Parametrizations of Convection.*
10. (Feb 19) UCP 2019: "Understanding Clouds and Precipitation" in Berlin, Germany. *Understanding the Zonal Variability of Thermodynamic Feedbacks in the Tropics.*
11. (Apr 18) AMS 33rd Conference on Hurricanes and Tropical Meteorology. *A Spectral Budget for the Size of Convective Self-Aggregation.*
12. (Jul 17) AMS 17th Conference on Mesoscale Processes. *A Moist Static Energy Perspective on Atmospheric Rivers.*
13. (Jun 17) AMS 21st Conference on Atmospheric and Oceanic Fluid Dynamics. *The Vertical Structure of Radiative-Convective Instability.*
14. (Aug 16) 2016 International Atmospheric Rivers Conference in San Diego, CA, USA. *A Moist Static Energy Perspective on Atmospheric Rivers.*
15. (Apr 16) AMS 32nd Conference on Hurricanes and Tropical Meteorology. *Instabilities of Radiative Convective Equilibrium with an Interactive Surface.*

Conference Posters

1. (Dec 20) AGU Fall Meeting 2020. *Climate-Invariant Nets: Using Physical Rescalings to Help Neural Networks Generalize to Out-of-Sample Climates.*
2. (Jan 20) AMS 100th Annual Meeting. *Comparing Convective Self-Aggregation in Idealized Models to Observed Moist Static Energy Variability near the Equator.*
3. (Dec 19) AGU Fall Meeting 2019. *Comparing Convective Self-Aggregation in Idealized Models to Observed Moist Static Energy Variability near the Equator.*
4. (Jun 19) International Conference on Machine Learning 2019's workshop "Climate Change: How Can AI Help?". *Achieving Conservation of Energy in Neural Network Emulators for Climate Modeling.*
5. (Dec 18) AGU Fall Meeting 2018. *A budget for the size of convective self-aggregation.*
6. (Jan 17) AMS 97th Annual Meeting. *Moisture-Radiative Cooling Instability.*

Teaching Experience

FGSE, University of Lausanne (4 occurences: Fall 22+23+24 & Spring 22) — **Jan 2022 – Present**, *Lausanne, Switzerland*
Main Instructor of "Machine Learning for Earth and Environmental Sciences" (5 ECTS, ≈25 students)
Design and delivery of yearly 12-week course open to all Master's and PhD students in Earth/env. sci. & geography.

FGSE, University of Lausanne (3 occurences: Fall 22+23+24) — **Sep 2022 – Present**, *Lausanne, Switzerland*
Main Instructor of "Introduction to Scientific Programming with Python" (2 ECTS, ≈50 students)
Design and delivery of yearly 4-week course open to all Master's and PhD students in Earth/env. sci. & geography.

FGSE, University of Lausanne (3 occurences: Fall 22+23+24) — **Sep 2022 – Present**, *Lausanne, Switzerland*
Main Instructor of "Géomatique et Systèmes d'Information Géographique" (3 ECTS, ≈100 students)
Design and delivery of yearly 12-week course open to all Bachelor students in Earth/env. sci. & geography.

FGSE, University of Lausanne (1 occurence: Fall 24) — **Sep 2024 – Present**, *Lausanne, Switzerland*
Main Instructor of "Géoinformatique I" (6 ECTS, ≈100 students)
Design and co-delivery of yearly 12-week course open to all Bachelor students in Earth/env. sci. & geography.

International Centre for Theoretical Sciences — **Jul 2025**, *Bangalore, India (Remote)*
Lecturer at the "Advanced Machine Learning for Earth System Modeling" Program
Delivered a short tutorial and lecture on physics-guided ML for Earth system modeling.

International Centre for Theoretical Physics — **May 2025**, *Trieste, Italy*
Teacher and panelist at the 6th Summer School on Climate Dynamics: AI and Climate Modelling
Designed and delivered tutorials on hybrid AI-climate modeling and ML for Earth & environmental sciences.

Institut Pascal & Université Paris-Saclay — **Jun 2024**, *Orsay, France*
Co-Instructor at the TROPICANA Program on Tropical Cyclones' Physics, Simulation, and Attribution
Co-designed and delivered a lecture followed by a tutorial on machine learning applied to tropical cyclones.

Foundation of Research and Technology-Hellas & University of Oxford — **Sep 2023**, *Patras, Greece*
Main Instructor of the iMIRACLI 3rd Summer School on climate data science
Designed and delivered a one-day block course on physics-guided machine learning.

European Centre for Medium-Range Weather Forecasts (MOOC)   **Mar 2022 – Mar 2023**
Consultant, Reviewer, and Content Provider for "Machine Learning for Weather and Climate"   *Remote, Luxembourg*
Main instructor for the "Physics-Guided ML" & "Parametrisation emulation" e-learning modules.

MIT Teaching and Learning Laboratory   **Feb 2017 – May 2017**
Kaufman teaching certificate program   *Cambridge, USA*
Program for MIT graduate students aimed at improving teaching skills.

PAOC, MIT   **Feb 2016 – May 2016**
Teaching Assistant in 12.801, The General Circulation of the Ocean   *Cambridge, USA*
Prof. Raffaele Ferrari.

PAOC, MIT   **Sep 2015 – Dec 2015**
Teaching Assistant in 12.815, Atmospheric Radiation and Convection   *Cambridge, USA*
Prof. Sara Seager and Prof. Kerry Emanuel.

Lycée Sainte-Geneviève   **Sep 2012 – Mar 2014**
Teaching Assistant in physics   *Versailles, France*
Undergraduate level: waves, electromagnetism, optics, newtonian, solid and fluid mechanics.

Public Engagement and Outreach

- (Mar 25) "L'heure H" : L'IA et le climat : amis ou ennemis? *EPFL Outreach Event. Speaker*
- (May 24) Climat, IA et lois physiques, un partenariat gagnant. *Co-author*
- (Mar 24) Modéliser la physique atmosphérique, prévoir la formation de cyclones tropicaux, et prédire le climat futur. *Co-author as part of the contribution to: "Évaluer les risques naturels, simuler le devenir des glaciers ou encore appréhender la complexité des réseaux urbains : les géosciences évoluent avec les progrès de l'intelligence artificielle."*
- (Feb 24) AI and Climate Science & Anticiper l'avenir climatique grâce à l'AI. *Co-author*
- (Jan 24) À la croisée de la physique et de l'intelligence artificielle : les nouveaux horizons de la modélisation. *UNIL Honorary and Retired Professors Ceremony. Speaker.*
- (Sep 23) L'intelligence artificielle au service des sciences du climat. *UNIL FGSE Academic Year Opening Ceremony*
- (Jun 23) CLIMACT Atmospheric Science Day 2023. *Author*
- (Dec 22) Intelligence artificielle : quels enjeux pour l'université ? *Contributor*
- (Mar 21) Teaching a Neural Network the Hard Way. *APS Physics 14*
- (Jun 20 – Jun 21) US CLIVAR Data Science Webinar Series. *Co-organizer and Moderator*
- (Nov 20) Modelling Clouds and Climate. *Communications of the ACM*
- (Aug 20) Outsourcing Sub-Grid Cloud Physics to Neural Networks. *E3SM Blog Post*
- (Jun 18) When the Wind Blows: Predicting how Hurricanes Change with Climate. *CaféSci Boston*
- (Jan 18) Higher Grounds. *MIT Climate Changed Ideas Competition*

Mentorship and Supervision

Direct Research Supervision (PhD students & Postdocs)   **Aug 2021 – Present**
   Lausanne, Switzerland
- (Mar 2025 – Present) Shivanshi Asthana (PhD student at UNIL)
- (Dec 2024 – Present) Fangfei Lan (Postdoctoral researcher at UNIL)
- (Nov 2024 – Present) Filippo Quarenghi (PhD student at UNIL)
- (Aug 2021 – Present) Milton Gomez (PhD student at UNIL)
- (Sep 2021 – Present) Frederick Iat-Hin Tam (PhD student at UNIL)
- (Aug 2021 – Dec 2023) Saranya Ganesh Sudheesh (Postdoctoral researcher at UNIL)

Technical Advising (weekly to biweekly mentoring of early-career scientists)   **Jul 2019 – Present**
   Europe & USA
- (Mar 2025 – Present) Jurij Schoenfeld (PhD student at the German Aerospace Center)
- (Jun 2024 – Present) Miriam Simm (PhD student at KIT)
- (Apr 2024 – Present) Helge Heuer (PhD student at the German Aerospace Center)
- (Sep 2021 – Present) Costa Christopoulos (Previously PhD student then research scientist at Caltech)
- (Sep 2022 – Aug 2024) Jingyan Yu (Postdoctoral fellow at UNIL)
- (Jan 2020 – Mar 2024) Arthur Grundner (Previously PhD student then postdoc at the German Aerospace Center)
- (Jul 2019 – Feb 2024) Gunnar Behrens (Previously PhD student then postdoc at the German Aerospace Center)
- (Apr 2019 – Dec 2023) Griffin Mooers (Previously PhD student at UC Irvine, then postdoc at MIT)
- (Feb 2022 – Nov 2023) Francesco Zanetta (PhD student at ETH/MeteoSwiss, Visiting student at UNIL)
- (Dec 2019 – Jul 2021) Andrea Jenney (Postdoctoral fellow at UC Irvine)

PhD Thesis Committee Member (annual meetings)   **Jan 2020 – Present**
   Europe & USA
- (Aug 2025 – Present) Julien Schmitt (Caltech)
- (Jan 2025 – Present) Ana Marza (UNIL)
- (Sep 2024 – Present) Andrea Davin (UNIMI)
- (Feb 2024 – Present) Lucas Schmutz (UNIL)

- ○ (Apr 2023 – Present) Kejdi Lleshi (UNIL)
- ○ (Jan 2023 – Present) Tabea Cache (UNIL)
- ○ (Sep 2021 – Mar 2025) Janbert Aarnink (UNIL): "From Survey to Satellite: Advancing River Wood Dynamics Monitoring"
- ○ (Jan 2022 – Nov 2024) Costa Christopoulous (Caltech): "Towards Hybrid Physics-Machine Learning Parameterizations: Employing Data Assimilation for Online Learning of Turbulence and Convection Closures in a Unified Scheme"
- ○ (Sep 2022 – Aug 2024) Ségolène Crossouard (IPSL)
- ○ (Jan 2020 – Apr 2023) Griffin Mooers: "Improving the Modeling and Analysis of Tropical Convection and Precipitation Through Machine Learning Methods", *Earth System Science Department, UC Irvine*.

PhD Jury Member (only on final evaluation committee)   **Oct 2022 – Present**
- ○ (Jul 2025) Fatemeh Zakeri: "High-Spatiotemporal-Resolution Data-Driven Downscaling, Forecasting, and Hindcasting Method Applied to Snow Dynamics from Climate Data", *Faculty of Geosciences and Environment, University of Lausanne*.
- ○ (Jul 2024) Raghul Parthipan: "Towards machine learning for the weather: developing methods using simplified dynamical systems", *Department of Computer Science and Technology, University of Cambridge*.
- ○ (Jun 2024) Shahine Bouabid: "Transforming kernel-based learners to incorporate domain knowledge from climate science", *Department of Statistics, University of Oxford*.
- ○ (May 2024) Kai Jeggle: "Towards an improved understanding of cirrus clouds - Machine learning enabled insights from satellite data", *Institute for Atmospheric and Climate Science, ETH Zürich*.
- ○ (Oct 2022) Blanka Balogh (CNRM, Toulouse): "Towards Using Artificial Intelligence in Numerical Climate Models", *Ocean/Atmosphere/Climate Program, CNRM, University of Toulouse*.

Direct Research Supervision (Bachelor & Master students)   **Jul 2020 – Present**
    Europe & USA
- ○ (Mar 2025 – Aug 2025) Max Defez (Master's student at Centrale-Supélec & ECCE intern)
- ○ (Mar 2025 – Jul 2025) Mathieu Prioux (Master's student at Centrale-Supélec & ECCE intern)
- ○ (Dec 2023 – Aug 2025) Alyssia Leclercq (Bachelor student at UNIL)
- ○ (Sep 2024 – Jun 2025) Anton Grudiev (Bachelor student at UNIL)
- ○ (Nov 2022 – Jan 2025) Fabien Augsburger (Master's student at UNIL)
- ○ (Apr 2024 – Aug 2024) Mauricio Lima (Master's student at Sorbonne University & ECCE intern)
- ○ (Mar 2024 – Aug 2024) Louise Largeau (Master's student at EPFL & ECCE intern)
- ○ (Apr 2024 – Aug 2024) Antoine Leclerc (Master's student at École Polytechnique & ECCE intern)
- ○ (Sep 2023 – Apr 2024) Louis Poulain-Auzeau (Master's student at EPFL)
- ○ (Jun 2023 – Aug 2023) Aser Atawya (Bachelor fellow at UNIL)
- ○ (May 2023 – Aug 2023) Marine Berthier (Master's student at ENSTA & ECCE intern)
- ○ (Apr 2023 – Aug 2023) Jo Lécuyer (Master's student at École Polytechnique & UNIL intern)
- ○ (May 2022 – Aug 2022) Léo Micollet (Master's student at ENSTA & UNIL intern)
- ○ (Mar 2022 – Jul 2022) Deborah Bassotto (Post-Master's intern at UNIL)
- ○ (Sep 2021 – Jun 2022) Meryam Cherqaoui (Bachelor student at UNIL)
- ○ (Jul 2020 – Dec 2020) Ankitesh Gupta (Master's student at UC Irvine)

Service

Reviewer for Journals and Workshops (45 submissions, 74 rounds)   **Nov 2016 – Present**
AGU Books, EDS, GMD, GRL, JAMES, JAS, JCLI, JGR, JHM, JMLR, MWR, Nat. Mach. Intell., NeurIPS, PLOS ONE, PNAS, PRL, QJRMS, RSE, Sci. Adv.

Reviewer for Proposals (11 submissions)   **Sep 2020 – Present**
American NSF, Belgian Science Policy Office, CLIMACT, Climate Change AI, German Aerospace Centre

ECCE: Expertise Center for Climate Extremes   **Oct 2022 – Present**
Scientific Committee Member and Co-Founding Member   *Lausanne, Switzerland*

Atmospheric Science Day in Lausanne (3 occurences: Fall 22+23+24)   **May 2022 – Present**
Founder and co-organizer of the annual one-day workshop bringing together EPFL & UNIL groups   *Lausanne, Switzerland*

Artificial Intelligence Advisory Panel for UNIL   **Mar 2024 – Present**
Committee Member   *Lausanne, Switzerland*

Digital Earths Lighthouse Activity, World Climate Research Programme (WCRP)   **Sep 2024 – Present**
Co-chair of the "Data-Model Fusion" effort   *Europe & USA*

Swiss Geocomputing Centre   **Mar 2022 – Present**
Scientific Committee Member   *Lausanne, Switzerland*

ISTE/IDYST Seminar Series   **Oct 2025 – Present**
Lead Faculty Organizer for IDYST (planning & coordination)   *Lausanne, Switzerland*

UNIL FGSE's Faculty Council   **Sep 2023 – Present**
Committee Member   *Lausanne, Switzerland*

UNIL FGSE's Environmental Science Master's Program Sep 2021 – Present
Scientific Committee Member *Lausanne, Switzerland*

D·A·CH 2025 Conference (German, Austrian and Swiss Societies for Meteorology) Aug 2024 – Jun 2025
Convener of the session: Machine Learning for Weather and Climate Applications *Bern, Switzerland*

EGU General Assembly 2025 Oct 2024 – May 2025
Co-convener of the session: Machine Learning for Climate Science *Vienna, Austria*

UNIL FGSE's Research Council Apr 2023 – Aug 2024
Committee Member *Lausanne, Switzerland*

Professor Hiring committee at IGD, UNIL Sep 2023 – Apr 2024
Committee Member for the "Human Geography and/or Sustainable Urban/Regional Planning" position *Lausanne, Switzerland*

UNIL Climate Physics Journal Club Dec 2021 – Jun 2023
Co-founder and faculty support for student-driven seminar series *Lausanne, Switzerland*

PAT Hiring committees at UNIL Jul 2022 – Mar 2023
Commitee Member for the position of "Computational Geoscientist" (IDYST/ISTE) *Lausanne, Switzerland*

20th Edition of the Swiss Geoscience Meeting Feb 2022 – Sep 2022
Co-chair of the session: Spatial Data Science *Lausanne, Switzerland*

AMS 21st Conference on AI for Environmental Science Apr 2021 – Jan 2022
Co-chair of the session: Applications of AI for Improved Estimation and Prediction of Weather and Climate *Houston, USA*

CLIVAR Webinar: Emerging Data Science Tools for Climate Variability & Predictability May 2020 – July 2021
Invited Working Group Member: Co-organizer and moderator of the webinar *USA*

NeurIPS 2020 Workshop: AI for Earth Sciences Jun 2020 – Dec 2020
Co-organizer: Meta-reviewer and organizer of the atmospheric science session *Vancouver, Canada*

Editor-in-Chief Search Committee for JAMES (AGU) Apr 2020 – Sep 2020
Committee Member *USA*

MIT Office of Sustainability Feb 2018 – Dec 2018
Graduate research assistant in the Climate Resiliency Committee *Cambridge, USA*

Student and Post-doc Atmospheric Dynamics Lunch Sep 2016 – May 2018
Head of the organizing committee and founding member *Cambridge, USA*

EAPS Graduate Student Advisory Council Sep 2016 – May 2018
Secretary *Cambridge, USA*

Program in Atmospheres, Oceans and Climate Colloquium Series Sep 2016 – Dec 2017
Head of the organizing committee and founding member *Cambridge, USA*

Program in Atmospheres, Oceans, and Climate 2015 and 2016 Retreats Jan 2015 – Oct 2016
Co-organized 2015/2016 PAOC retreats for the professors, post-docs and students of the program *Hancock and Brewster, USA*

EAPS Social Hour Dec 2015 – Apr 2016
Organized the daily informal social gathering of the EAPS staff *Cambridge, USA*

Graduate Climate Conference 2015 Jan 2015 – Nov 2015
Member of the organizational committee of the 2015 Graduate Climate Conference *Woods Hole, USA*

EAPS Student Retreat 2015 Jul 2015 – Sep 2015
Co-organized the 2015 EAPS retreat for the students of the department *Lakeville, USA*

Non-Academic Professional Experience

Cronite Castings Limited Jul 2013 – Aug 2013
Maintenance engineer *Crewkerne, UK*
Engineering and operator internship in the Crewkerne foundry.

French Air Force Sep 2011 – Apr 2012
Lieutenant *Cazaux, France*
Leadership training as part of the engineering school's curriculum.

Computer Skills

OS: Linux, Unix, Windows   **Programming:** Python, Matlab, Fortran 77/90, VBA, Java   **GIS:** QGIS, ArcGIS Pro

Language Skills

Native: French, **Fluent:** English, **Intermediate:** German, **Beginner:** Japanese (N5), Spanish.

Interests

Weather Forecasting, Weightlifting, Swimming, Jogging, Hiking, Video Games, Rescued two feral kittens (photo).