Lluís Palma

PhD Student · Climate Dynamics / Machine Learning

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Education

Universitat de Barcelona *Barcelona*
PhD Physics *01/10/2022 - present*
- Advisors: Dr. Markus Donat & Albert Soret

Universitat de Barcelona *Barcelona*
Msc Meteorology *01/10/2019 - 01/02/2022*
- Advisor: Dr. Llorenç Lledó

Universitat Politècnica de Catalunya *Castelldefels*
BSc Aerospace Engineering *01/10/2013 - 01/07/2018*
- Honors final degree thesis
  research advisors: Dr. Xevi Prats & Dr. Ramón Dalmau

Professional Experience

2022-Now **PhD Student**, Earth Sciences Dept., Barcelona Supercomputing Center
2018-2022 **Jr. Research Engineer**, Earth Sciences Dept., Barcelona Supercomputing Center
2017-2018 **Undergraduate Research Assistant**, ICARUS research group, Universitat Politècnica de Catalunya

Publications

Palma, Ll., Peraza, A., Civantos, D., Duarte, A., Materia, S., Muñoz, Á. G., Peña-Izquierdo, J., Romero, L., Soret, A., Donat, M. G. (2025). **Data-driven seasonal climate predictions via variational inference and transformers.** In arXiv [physics.ao-ph]. http://arxiv.org/abs/2503.20466

Cos, P., Olmo, M., Campos, D., Marcos-Matamoros, R., **Palma, Ll.**, Muñoz, A. G., Doblas-Reyes, F. J. (2024). **Saharan warm air intrusions in the Western Mediterranean: identification, impacts on temperature extremes and large-scale mechanisms.** https://doi.org/10.5194/egusphere-2024-3331

Materia, S., **Palma, Ll.**, van Straaten, C., Sungmin, Mamalakis, A., Cavicchia, L., Coumou, D., de Luca, P., Kretschmer, M., Donat, M. (2024). **Artificial intelligence for climate prediction of extremes: State of the art, challenges, and future perspectives.** Wiley Interdisciplinary Reviews. Climate Change. https://doi.org/10.1002/wcc.914

Manrique-Suñén, A., **Palma, Ll.**, Gonzalez-Reviriego, N., Doblas-Reyes, F. J., Soret, A. (2023). **Subseasonal predictions for climate services, a recipe for operational implementation.** Climate Services, 30(100359), 100359. https://doi.org/10.1016/j.cliser.2023.100359

Chou, C., Marcos-Matamoros, R., **Palma, Ll.**, Pérez-Zanón, N., Teixeira, M., Silva, S., Fontes, N., Graça, A., Dell'Aquila, A., Calmanti, S., González-Reviriego, N. (2023). **Advanced seasonal predictions for vine management based on bioclimatic indicators tailored to the wine sector.**
Climate Services, 30(100343), 100343. https://doi.org/10.1016/j.cliser.2023.100343

Vitart, F., Robertson, A.W., Spring, A., Pinault, F., Roškar, R., Cao, W., Bech, S., Bienkowski, A., Caltabiano, N., De Coning, E., Denis, B., Dirkson, A., Dramsch, J., Dueben, P., Gierschendorf, J., Kim, H. S., Nowak, K., Landry, D., Lledó, Ll., **Palma, Ll**, Rasp, S., Zhou, S. (2022). **Outcomes of the WMO Prize Challenge to Improve Sub-Seasonal to Seasonal Predictions Using Artificial Intelligence**, Bulletin of the American Meteorological Society (published online ahead of print 2022). Retrieved Nov 18, 2022, from https://journals.ametsoc.org/view/journals/bams/aop/BAMS-D-22-0046.1/BAMS-D-22-0046.1.xml

White, C. J., Domeisen, D. I. V., Acharya, N., Adefisan, E. A., Anderson, M. L., Aura, S., Balogun, A. A., Bertram, D., Bluhm, S., Brayshaw, D. J., Browell, J., Büeler, D., Charlton-Perez, A., Chourio, X., Christel, I., Coelho, C. A. S., DeFlorio, M.

J., Delle Monache, L., Di Giuseppe, F., García-Solórzano, A. M., Gibson, P. B., Goddard, L., González Romero, C., Graham, R. J., Graham, R. M., Grams, C. M., Halford, A., Huang, W. T. K., Jensen, K., Kilavi, M., Lawal, K. A., Lee, R. W., MacLeod, D., Manrique-Suñén, A., Martins, E. S. P. R., Maxwell, C. J., Merryfield, W. J., Muñoz, Á. G., Olaniyan, E., Otieno, G., Oyedepo, J. A., **Palma, L.**, Pechlivanidis, I. G., Pons, D., Ralph, F. M., Reis , D. S., Jr., Remenyi, T. A., Risbey, J. S., Robertson, D. J. C., Robertson, A. W., Smith, S., Soret, A., Sun, T., Todd, M. C., Tozer, C. R., Vasconcelos, F. C., Jr., Vigo, I., Waliser, D. E., Wetterhall, F., Wilson, R. G. (2022). **Advances in the Application and Utility of Subseasonal-to-Seasonal Predictions**, Bulletin of the American Meteorological Society, 103(6), E1448-E1472. Retrieved Nov 18, 2022, from https://journals.ametsoc.org/view/journals/bams/103/6/BAMS-D-20-0224.1.xml

Domeisen, D. I. V., White, C. J., Afargan-Gerstman, H., Muñoz, Á. G., Janiga, M. A., Vitart, F., Wulff, C. O., Antoine, S., Ardilouze, C., Batté, L., Bloomfield, H. C., Brayshaw, D. J., Camargo, S. J., Charlton-Pérez, A., Collins, D., Cowan, T., del Mar Chaves, M., Ferranti, L., Gómez, R., González, P. L. M., González Romero, C., Infanti, J. M., Karozis, S., Kim, H., Kolstad, E. W., La-Joie, E., Lledó, L., Magnusson, L., Malguzzi, P., Manrique-Suñén, A., Mastrangelo, D., Materia, S., Medina, H., **Palma, Ll.**, Pineda, L. E., Sfetsos, A., Son, S., Soret, A., Strazzo, S., Tian, D. (2022). **Advances in the Subseasonal Prediction of Extreme Events: Relevant Case Studies across the Globe**, Bulletin of the American Meteorological Society, 103(6), E1473-E1501. Retrieved Nov 18, 2022, from https://journals.ametsoc.org/view/journals/bams/103/6/BAMS-D-20-0221.1.xml

Soret, A.,„ Torralba, V., Cortesi, N., Christel, I., **Palma, Ll.**, Manrique-Suñén, A., Lledó, L., González-Reviriego, N., Doblas-Reyes, F. J. (2019). **Sub-seasonal to seasonal climate predictions for wind energy forecasting**. Journal of Physics. Conference Series, 1222(1), 012009. https://doi.org/10.1088/1742-6596/1222/1/012009

Awards, Fellowships, & Grants

2022	**2nd Awarded team - S2S-AI challenge**, World Meteorological Organisation (WMO)	*CHF 10,000*

Presentations

INVITED TALKS

Palma, Ll., Lledó, Ll., Gómez, C., Bech, S., Manrique-Suñén, A., Soret, A., Gonzalez-Reviriego, N., Serradell, K., Doblas-Reyes, F., On the use of machine learning for subseasonal-to-seasonal predictions, ISC High Performance 2022, Hamburg, Germany, 1st June, https://app.swapcard.com/event/isc-high-performance-2022/planning/UGxhbm5pbmdfODgyNTI3

CONTRIBUTED PRESENTATIONS

Palma, Ll., Manrique-Suñén, A., Gonzalez-Reviriego, N., Doblas-Reyes, F.J., Soret, A. Best practices for an operational climate service implementation based on subseasonal to seasonal predictions (P502), WMO OCP-3, Lisbon, Portugal, 20-22 September 2022. https://community.wmo.int/meetings/third-wmo-workshop-operational-climate-prediction-ocp-3-20-22-september-2022

Palma, Ll., Manrique, A., Lledó, L., Nicodemou, A., Bretonnière, P.-A., Pérez-Zanón, N., Ho, A., and Soret, A.: Lessons learned from the implementation of the near real-time S2S4E Decision Support Tool, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-15537, https://doi.org/10.5194/egusphere-egu21-15537, 2021.

Mentoring

2019-2020	**Francesc Roura**, Research internship, Universitat de Barcelona
2021-2022	**Sergi Bech**, Research internship, Universitat de Barcelona
2023-2024	**Alejandro Peraza**, Research internship and Master thesis, Universitat Politècnica de Cataluña
2025-Now	**Arnau Garcia**, Master thesis, Universitat de Barcelona

Outreach & Professional Development

DEVELOPMENT

Data Parallelism: How to Train Deep Learning Models on Multiple GPUs Barcelona, Spain 22 Dec. 2023. Participation in the course by NVIDIA (credential ID: 617978a2bc9f4bb0aad9a20fff4db1be). This workshop teaches techniques for data-parallel deep learning training on multiple GPUs to shorten the training time required for data-intensive applications.

Becoming a Scientific Writer: Putting Why? before How? Barcelona, Spain 9-10 Nov. 2023. Participation in the course by thepapermill co. The goal of this workshop is to help publishing scientists develop a more impartial and analytical view of scientific writing, to better understand their readers as the focus for their scientific communication, and to make them more efficient writers and editors.

Boosting sub-seasonal forecasts with explainable AI Leiden, Netherlands 5-9 Sept. 2022. Participation in the workshop, attending talks from experts in the fields and actively coding software with the aim of improving subseasonal predictions of drought in the horn of Africa. https://www.lorentzcenter.nl/boosting-sub-seasonal-forecasts-with-explainable-ai.html

XAIDA summer school on artificial intelligence for attribution and detection of climate extremes (remote participation)