Liran Peng

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EDUCATION:

2015-2019	University of Alaska, Fairbanks, AK
	Ph.D. in Atmospheric Sciences
	Advisor: Xiangdong Zhang
2008-2013	University of Wyoming, Laramie, WY
	MS in Atmospheric Science
	Advisor: Zhien Wang, Jefferson R. Snider
2004-2008	Nanjing University, Nanjing, JiangSu, China
	BS in Atmospheric Science
	Advisor: Shoujuan Shu

EMPLOYMENT:

06/2023 – present: Assistant Project Scientist at Department of Earth System Sciences, University of California, Irvine

03/2020 – 05/2023: Postdoctoral Associate at Department of Earth System Sciences, University of California, Irvine

08/2014 – 05/2019: Research assistant at Department of Atmospheric Sciences, University of Alaska Fairbanks

08/2008 – 08/2014: Research assistant at Department of Atmospheric Sciences, University of Wyoming

PUBLICATIONS:

Bhouri, M. A., **Peng, L.**, Pritchard, M. S., & Gentine, P. 2023. Multi-fidelity climate model parameterization for better generalization and extrapolation. arXiv preprint arXiv:2309.10231.

Yu, S., Hannah, W., **Peng, L.**, Lin, J., Bhouri, M. A., Gupta, R., ... & Pritchard, M. 2023. ClimSim: A large multi-scale dataset for hybrid physics-ML climate emulation. 37th Conf. Neural Inf. Process. Syst., NeurIPS 2023.

Mooers, G., Pritchard, M., Beucler, T., Srivastava, P., Mangipudi, H., **Peng, L.,** ... & Mandt, S. 2023. Comparing storm resolving models and climates via unsupervised machine learning. Sci. Rep., 13(1), 22365.

Peng,L., Blossey, P.N.,Hannah, W.M.,Bretherton, C.S.,Terai, C.R.,Jenney, A.M., &Pritchard,M. 2024. Improving stratocumulus cloud amounts in a 200-m resolution multi-scale modeling framework through tuning of its interior physics. J. Adv. Model. Earth Syst.,16, e2023MS003632. https://doi.org/10.1029/2023MS003632

Beucler, T., M. Pritchard, J. Yuval, A. Gupta, **L. Peng**, S. Rasp, F. Ahmed, P. O'Gorman, J. Neelin, N. Lutsko, P. Gentine. 2024. Climate-invariant machine learning Sci. Adv. 10.6 eadj7250.

Peng L., M. Pritchard, W. Hannah, P. Blossey, P. Worley and C. Bretherton 2022. Load balancing intense physics calculations to embed regionalized high-resolution cloud resolving models in the E3SM and CESM climate models, J. Adv. Model. Earth Syst., 14.

Peng, L., Zhang, X., Kim, J.-H., Cho, K.-H., Kim, B.-M., Wang, Z., & Tang, H. 2021. Role of intense Arctic storm in accelerating summer sea ice melt: An in situ observational study. Geophy. Rea. Lett., 48, e2021GL092714.

Peng L., J. R. Snider and Z. Wang, 2015. Ice crystal concentrations in wave clouds: dependencies on temperature, D > 0.5 μm aerosol particle concentration, and duration of cloud processing, Atmos. Chem. Phys., 15, 6113-6125.

Z. Wang, J. French, G. Vali, P. Wechsler, S. Haimov, A. Rodi, M. Deng, D. Leon, J. R. Snider, **L. Peng**, and A. L. Pazmany, 2012. Single Aircraft Integration of Remote Sensing and In Situ Sampling for the Study of Cloud Microphysics and Dynamics. Bull. Amer. Meteor. Soc., 93, 653–668.

Shu S., and **L. Peng**, 2011. Analysis on structure of typhoon Longwang based on GPS dropsonde data. J. Trop. Meteorol., 17, 3.

PRESENTATIONS:

Peng L., M. S. Pritchard, P. N. Blossey, W. M. Hannah, C. S. Bretherton, A. M. Jenney, and C. Terai. Low Cloud Feedback study with High-Resolution Multi-scale Modeling Frameworks (HR-MMF). American Geophysical Union Fall meeting, California, CA, December 2023 – Poster presentation

Peng, L., M. S. Pritchard, P. N. Blossey, W. M. Hannah, C. S. Bretherton, A. M. Jenney, and C. Terai. Low-cloud Feedbacks in an Ultra-parameterized GCM with Improved Computational Efficiency and Fidelity. American Geophysical Union Fall meeting, Chicago, IL, December 2022 - Oral presentation

Peng L., M. S. Pritchard, W. M. Hannah, P. N. Blossey, and C. S. Bretherton. Making regionalized high intensity physics calculations flexible with a new geographic load-balancing scheme to enable hybridsuperparameterization. American Geophysical Union Fall meeting, New Orleans, LA, December 2021 - Oral presentation

Peng L., M. S. Pritchard, P. Worley, P. N. Blossey, and C. S. Bretherton. Making superparameterization flexible for low cloud feedback analysis by focusing turbulence-permitting resolution where it matters most with geographic parallel load balancing. American Geophysical Union Fall meeting, San Francisco, CA, December 2020 - Oral presentation

Peng L., and X. Zhang, J. Zhang, Y. Yang, and J. H. Kim. Transient Impacts of Arctic Storm on Sea ice: Regional and Seasonal analysis. American Geophysical Union Fall meeting, San Francisco, CA, December 2019 - Oral presentation and Flash talk

Peng L., and X. Zhang. Sensitivity of Sea ice Simulation to Ice Dynamic Treatments. American Geophysical Union Fall meeting, Washington, D.C., December 2018 - Poster presentation and Flash talk

Peng L., J. H. Kim, X. Zhang, K. Cho, B. M. Kim, S. J. Park, Z. Wang, and Z. Xie. Two Intense Arctic Storms Occurring in Summer 2016 and their Impacts on Melting Process of Sea Ice. Graduate Climate Conference, University of Washington, Seattle, WA, November 2018 – Oral presentation

Peng L., J. H. Kim, X. Zhang, K. Cho, B. M. Kim, S. J. Park, Z. Wang, and Z. Xie. Impacts of an Intense Arctic Storm in August 2016 on Sea Ice Decline. American Geophysical Union Fall meeting, New Orleans, Louisiana, December 2017 – Poster presentation.

Peng L., J. H. Kim, X. Zhang, K. Cho, B. M. Kim, S. J. Park, Z. Wang, and Z. Xie. An Intense Arctic Storm Occurring in Summer 2016 and Its Impacts on Melting Process of Sea Ice. The International Workshop with the theme 'Polar Climate Change: Driving Processes, Extreme Events, and Global Linkages', Hohai University, Nanjing, China, October 2017 – Oral presentation

Peng L., J. H. Kim, X. Zhang, K. Cho, B. M. Kim, S. J. Park, Z. Wang, and Z. Xie. An Intense Arctic Storm Occurring in Summer 2016 and Its Impacts on Melting Process of Sea Ice. Alfred-Wegener Institute, Potsdam, Germany August 2017 - Oral presentation

Peng L., J. R. Snider and Z. Wang. Ice Crystal Concentrations in Wave Clouds: Dependencies on Temperature, D>0.5 μm Aerosol Particle Concentration and Duration of Cloud Processing. 95th American Meteorological Society Annual Meeting, Phoenix, AZ. January 2015. Oral (Presented by Jefferson R. Snider).

Peng L., J. R. Snider and Z. Wang. Ice Crystal Concentrations in Wave Clouds: Dependencies on Temperature, Large Aerosol Particle Concentration and Processing Time. 14th Conference on Cloud Physics, Westin Copley Place, Boston, MA. July 2014 – Poster presentation

Peng L., J. R. Snider and Z. Wang. Heterogeneous Ice Nucleation in Wave Clouds: Dependencies on Temperature, Coarse Aerosol and Nuclei Processing Time, Large Aerosol Particle Concentration and Processing Time. 19th International Conference on Nucleation & Atmospheric Aerosols, Fort Collins, CO. July 2014 – Poster presentation

FIELD EXPERIENCES:

2018 : The First YOPP Special Observing Period (SOP1) in the Arctic Ocean on the research vessel Araon (27 days)

2017: Beaufort Sea Research expedition on the research vessel Araon (39 days)

2016: Chukchi Sea and East Siberian Sea Research Cruise on Araon (23 days)

TEACHING EXPERIENCES:

Fall 2017 Teaching Assistant, ATM F413 Atmospheric radiation

SELECTED WORKSHOPS ATTENDED

2018	SIPN2 Meeting at AGU Fall Meeting
2018	NSF CESM Polar Modeling Workshop, Boulder, CO: "Isolating Feedbacks between Sea Ice and Synoptic Storms in the Arctic"
2017	2017 CESM Tutorial, Boulder, CO.
2011	NCL Workshop, Laramie, WY.

MISCELLANY

2014-2015 Computational support from National Center for Atmospheric Research (NCAR): 200,000 combined core-hours on Computational & Information Systems Laboratory (CISL) clusters. Proposal title: "Impact of Storm Activity on Recent

Changes in Arctic Sea Ice Mass Balance" (PI Prof. Xiangdong Zhang, co-PI Liran Peng)

2017-2018 Computational support from Blue Waters, the University of Illinois at Urbana-Champaign:
400,000 combined core-hours on Computational & Information Systems Laboratory (CISL) clusters. Proposal title: "Effects of Intense Storms on Sea Ice and Ocean Properties in an Ultra-high Resolution Coupled Ocean-Ice General Circulation Model" (PI Prof. Xiangdong Zhang, co-PI Liran Peng)

HONORS

2018 Thesis/Dissertation Completion Fellowship
University of Alaska Fairbanks

COMMUNITY INVOLVEMENT

2015-2017 University of Alaska Fairbanks Science Potpourri volunteer: Explained scientific concepts (temperature inversion, Kelvin-Helmholtz instability, cloud formation, global warming, and sea level rise) to children.

PROFESSIONAL AFFILIATIONS

2016- 2022 American Geophysical Union