

Research positions

- 2023–present **ASP Postdoctoral Fellow**, *Mesoscale and Microscale Meteorology Lab*,
(ending 2026) *NSF National Center for Atmospheric Research, Boulder, Colorado.*
- 2023 **Research assistant in Mesoscale Meteorology**, *Regional Climate Group*,
Department of Earth Sciences, University of Gothenburg, Sweden.

Education

- 2018–2023 **Ph.D. in Natural Sciences**,
Regional Climate group, Department of Earth Sciences, University of Gothenburg, Sweden,
Thesis project: Observing and Modeling Precipitation in the Tibetan Plateau region.
Advisor: Prof. Deliang Chen
- 2017–2018 **M. Sc. in Atmospheric Sciences**, *Final grade: VG (Excellent)*,
Department of Earth Sciences, University of Gothenburg, Sweden,
Thesis project: Temporal and spatial variability of convection, clouds and precipitation over the
Tibetan Plateau derived from recent satellite retrievals.
Advisor: Prof. Deliang Chen
- 2013–2016 **B. Sc. in Earth Sciences with Major in Climatology**, *Final grade: VG (Excellent)*,
Department of Earth Sciences, University of Gothenburg, Sweden,
Thesis project: Major ion deposition in the accumulated winter snowpack in northern Sweden.
Advisor: Prof. Hans Linderholm

Research visits

- 2024 **Pacific Northwest Laboratory, Washington, USA.**,
Host: Dr. Zhe Feng, Atmospheric Sciences and Global Change Division.
- 2023 **National Center for Atmospheric Research, Boulder, Colorado, USA**,
Project: Evaluation of convective storms in kilometer-scale climate simulations.
- 2021–2022 **National Center for Atmospheric Research, Boulder, Colorado, USA**,
ASP Graduate visitor program, Host: Dr. Andreas Franz Prein,
Project: Ensemble-based convection-permitting simulations in the Third Pole region.
- 2017 **School of Atmospheric Sciences, Nanjing University, China**,
Research visit in Aerosol-cloud research group, Host: Prof. Minghuai Wang,
Project: Satellite observations of convective clouds over the Tibetan Plateau.
- 2016 **Max Planck Institute for Meteorology, Hamburg, Germany**,
Internship in Hydrological group, Host: Dr. Tobias Stacke,
Project: Validation of a global dynamical wetland scheme in land-atmosphere coupled simulations.
- 2014 **Helmholtz Centre for Ocean Research, Kiel, Germany**,
Internship in Paleoclimatology and Natural Resources, Host: Dr. rer. nat. Warner Brückmann.

Outreach and Engagement

- 2018–2021 **Coordinator in GAC (Gothenburg Air and Climate Network) Board.**
- 2018–2021 **Executive Secretary of APECS (Association of Polar and Alpine Early Career Scientists).**
- 2024–present **Steering board member of the NCAR Early Career Scientist Assembly (ECSA).**

Contributions to research community

Reviewer for the following scientific journals,

JGR Atmosphere, Journal of Climate, Journal of Applied Meteorology and Climatology, International Journal of Climatology, Geoscientific Model Development, Geoscience Data Journal, Climatic Change.

Co-convenor for sessions at the following scientific conferences,

European Geoscience Union: Advancing understanding of the circulation-coupling and Lagrangian evolution of clouds

American Meteorological Society: Climate Impacts of Tropical Ice Clouds .

Awards and Grants

- 2023 **Faculty of Science Doctoral Thesis Award,**
Gothenburg, Sweden.
- 2021 **NCAR Advanced Study Program for graduate visitors,**
Colorado, USA.
- 2019 **Travel fund to International Conference on Regional Climate-CORDEX 2019,**
China.
- 2018 **Research Fund Adlerbertska Stiftelse,**
Sweden.
- 2018 **Sven Lindqvists forskningsstiftelse,**
Sweden.
- 2018-2023 **SNSA Grant: The role of convection for precipitation in the Third Pole region - Satellite and ground-based observation vs model simulations,** *Swedish National Space Agency (SNSA) Grant nr. 188/18 4).*

Skills

Computer	Python (<i>Advanced</i>), Linux and Bash scripting (<i>Good</i>), NCO/CDO (<i>Good</i>), R (<i>Basic</i>), Matlab (<i>Basic</i>)
Utilities	Anaconda, Git, Jupyter Notebook, Slurm
Languages	German (<i>Mothertongue</i>), English (<i>Fluent</i>), Swedish (<i>Fluent</i>), French (<i>Good</i>), Spanish (<i>Basic</i>)
Numerical Models	Weather Research and Forecasting (WRF) Model, Model Prediction Across Scales (MPAS)

Research Interests

Climate change effects on precipitation

Mesoscale convective systems

Convection-permitting climate modeling

Process-oriented model evaluation

2025

Feng, Z., Prein, A., **Kukulies**, J., Fiolleau, T., Jones, W., Maybee, B., Moon, Z. L., Núñez Ocasio, K. M., Dong, W., Molina, M. J., Albright, M. J., Feng, R., Song, J., Song, F., Leung, R., Varble, A. C., Klein, C., and Roca, R (2024). Mesoscale Convective Systems tracking Method Intercomparison (MCSMIP): Application to DYAMOND Global km-scale Simulations.

Pfreundschuh, S., **Kukulies**, J., Amell, A., Hallborn, H., May, E., & Eriksson, P. (2025). The Chalmers Cloud Ice Climatology: A novel robust climate record of frozen cloud hydrometeor concentrations. *Journal of Geophysical Research: Atmospheres*, 130(6), e2024JD042618.

2024

Kukulies, J., Prein, A. F., and H. Morrison (2024). Simulating precipitation efficiency across the deep convective gray zone. *Journal of Geophysical Research: Atmospheres*, 129(24), e2024JD041924.

Kukulies, J., Li, W., and Chen, D. (2024). Mean flow and eddy summer moisture transport over East Asia in reanalysis data and a regional climate simulation. *Climate Dynamics*, 1-25.

Prein, A. F., Feng, Z., Fiolleau, T., Moon, Z. L., Núñez Ocasio, K. M., Roca, R., Varble, A., Rehbein, A., Liu, C., Ikeda, K., Mu, Y., **Kukulies**, J., and Rasmussen, R. M. (2024). Km-scale simulations of mesoscale convective systems over South America—A feature tracker intercomparison. *Journal of Geophysical Research: Atmospheres*, 129(8), e2023JD040254.

Sokolowsky, G. A., Freeman, S. W., Jones, W. K., **Kukulies**, J., Senf, F., Marinescu, P. J., Heikenfeld, M., Brunner, K., Bruning, E., Collis, S., Jackson, R., Leung, G., Pfeifer, N., Raut, B., Saleeby, S., Stier, P. and van den Heever, S. C. (2023). *tobac v1. 5: Introducing Fast 3D Tracking, Splits and Mergers, and Other Enhancements for Identifying and Analysing Meteorological Phenomena*. *EGU sphere*, 2023, 1-37.

2023

Prein, A., Feng, Z., Fiolleau, T., Moon, Z., Nunez Ocasio, K., **Kukulies**, J., Roca, R., Varble, A., Rehbein, A., Liu, C., Ikeda, K., Mu, Y. and Rasmussen, R (2023). Km-Scale Simulations of Mesoscale Convective Systems (MCSs) Over South America - A Feature Tracker Intercomparison. *JGR Atmosphere*, 129(8), e2023JD040254.

Minola, L., Zhang, G., Ou, T., **Kukulies**, J., Curio, J., Guijarro, J. A. and Chen, D. (2023). Climatology of near-surface wind speed from observational, reanalysis and high-resolution regional climate model data over the Tibetan Plateau. *Climate Dynamics*, 1-21.

Freeman, S. W., Brunner, K., Jones, W. K., **Kukulies**, J., Senf, F., Stier, P. and van den Heever, S. C., (2023). Advancing our Understanding of Cloud Processes and Their Role in the Earth System through Cloud Object Tracking. *Bulletin of the AMS*.

Kukulies, J., Prein, A. F., Curio, J., Yu, H. and Chen, D. (2023). Kilometer-scale multi-model and multi-physics ensemble simulations of a mesoscale convective system in the lee of the Tibetan Plateau: Implications for climate simulations. *Journal of Climate*, 1-56.

Kukulies, J., Lai, H. W., Curio, J., Feng, Z., Lin, C., Li, P., Sugimoto, S., and Chen, D. Mesoscale convective systems in the Third Pole region: Characteristics, mechanisms and impact on precipitation (2023). *Frontiers in Earth Science*, 11, 469.

Ou, T., Chen, D., Tang, J., Lin, C., Wang X., **Kukulies**, J. and Lai, H (2023). Wet bias of summer precipitation in the northwestern Tibetan Plateau in ERA5 is linked to weakened lower-level southerly wind over the plateau. *Climate Dynamics*, 1-1

2022

Prein, A. F., Ban, N., Ou, T., Tang, J., Sakaguchi, K., Collier, E., Jayanarayanan, S., Sobolowski, S., Li, L., Chen, X., Zhou, X., Lai, H., Sugimoto, S., Zhou, L., Hasson, S., Ekstrom, M., Pothapakula, P.,

Ahrens, B., Stuart, R., Steen-Larsen, H. C., Leung, R. Belusic, D., **Kukulies, J.** , Curio, J. and Chen, D. (2022). Towards Ensemble-Based Kilometer-Scale Climate Simulations over the Third Pole region. *Climate Dynamics*, 1-27.

2021

Kukulies, J., Chen, D. and Curio, J. (2021). The Role of Mesoscale Convective Systems in Precipitation in the Tibetan Plateau Region. *Journal of Geophysical Research: Atmospheres*, 126(23), e2021JD035279.

Zhang, X., Yin, Y., **Kukulies, J.**, Li, Y., Kuang, X., He, C., and Chen, J. (2021). Revisiting Lightning Activity and Parameterization Using Geostationary Satellite Observations. *Remote Sensing*, 13(19).

2020

Lai, H. W., Chen, H. W., **Kukulies, J.**, Ou, T. and Chen, D. (2020). Regionalization of seasonal precipitation over the Tibetan Plateau and associated large-scale atmospheric systems. *Journal of Climate*, 1-45.

Kukulies, J., Chen, D. and Wang, M. (2020). Temporal and spatial variations of convection and precipitation over the Tibetan Plateau based on recent satellite observations. Part II: Precipitation climatology derived from GPM. *International Journal of Climatology*.

2019

Kukulies, J., Chen, D. and Wang, M. (2019). Temporal and spatial variations of convection and precipitation over the Tibetan Plateau based on recent satellite observations. Part I: Cloud climatology derived from CloudSat and CALIPSO. *International Journal of Climatology*.