

Yan Xie

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Education

University of Michigan, Ann Arbor

Ph.D. Candidate, Climate and Space Sciences and Engineering (GPA: 4.0 / 4.0)

Sep 2019 – Present

May 2021 – Present

McGill University

Undergraduate Research Trainee

Jul – Oct 2018

Nanjing University

Bachelor's Degree in Atmospheric Science, Graduate with honors (GPA: 3.8 / 4.0)

Sep 2015 – June 2019

Publication

Xie, Y., Huang, X., Chen, X., L'Ecuyer, T. S., & Drouin, B. J. (2023). Joint use of far-infrared and mid-infrared observation for sounding retrievals: Learning from the past for upcoming far-infrared missions. *Earth and Space Science*, 10, doi:[10.1029/2022EA002684](https://doi.org/10.1029/2022EA002684)

Xie, Y., Huang, X., Chen, X., L'Ecuyer, T. S., Drouin, B. J., & Wang, J. (2022). Retrieval of Surface Spectral Emissivity in Polar Regions Based on the Optimal Estimation Method. *Journal of Geophysical Research: Atmospheres*, 127, doi:[10.1029/2021JD035677](https://doi.org/10.1029/2021JD035677)

L'Ecuyer, T. S., Drouin, B. J., Anheuser, J., Grames, M., Henderson, D. S., Huang, X., Kahn, B. H., Kay, J. E., Lim, B. H., Mateling, M., Merrelli, A., Miller, N. B., Padmanabhan, S., Peterson, C., Schlegel, N., White, M. L., & **Xie, Y.** (2021). The Polar Radiant Energy in the Far Infrared Experiment: A New Perspective on Polar Longwave Energy Exchanges, *Bulletin of the American Meteorological Society*, 102(7), doi:[10.1175/bams-d-20-0155.1](https://doi.org/10.1175/bams-d-20-0155.1)

Huang, Y., Chou, G., **Xie, Y.**, & Soulard, N. (2019). Radiative Control of the Interannual Variability of Arctic Sea Ice. *Geophysical Research Letters*, 46, 9899– 9908, doi: [10.1029/2019gl084204](https://doi.org/10.1029/2019gl084204)

In Progress

Liu, Y., Huang, Y., Yuan, J., **Xie, Y.**, & Zhou, C. (2024). Contribution of Surface Radiative Effects and Their Interactions to Regional Land Surface Temperature Change and Variability. *Journal of Geophysical Research: Atmospheres*, [in press]

Xie, Y., Pettersen, C., Flanner, M., & Shates, J. (2024). Ground-observed snow albedo changes during rain-on-snow events in northern Alaska. *Journal of Geophysical Research: Atmospheres*, [under review]

Presentation

Xie, Y., Pettersen, C., Flanner, M., & Shates, J. “Ground-observed Influence of Rainfall on Surface Snow Albedo at North Slope of Alaska”. **American Geophysical Union 2023 Fall Meeting**. (C32C-08 eLightning Presentation)

Xie, Y., Huang, X., Chen, X., L'Ecuyer, T. S., Drouin, B. J. “On the use of far-IR radiances in satellite retrievals: how can the observations collected half century ago help us preparing for the upcoming missions”. **American Geophysical Union 2022 Fall Meeting**. (A32B-03 Oral Presentation)

Xie, Y., Huang, X. and Chen, X. “Retrieval of surface spectral emissivity in the polar regions: an optimal-estimation approach”. **American Geophysical Union 2020 Fall Meeting**. (A239-07 Oral Presentation)

Xie, Y. and Huang, Y. “Variability of Arctic sea ice and radiation flux in observations and models.” **American Geophysical Union 2018 Fall Meeting**. (A53I-2597 Poster Presentation)

Research Experience

Oct 2022 – Present

Investigation of rain-on-snow events in northern Alaska using ground-based observations

Dept. of CLaSP, University of Michigan

Advisor: Prof. Claire Pettersen & Prof. Mark Flanner

- Detect rain-on-snow events in northern Alaska using multi-year DOE ARM ground observations
- Evaluate the influence of liquid precipitation on the surface snow cover in terms of snow albedo changes using observations and model simulations
- Demonstrate the seasonal differences in the synoptic conditions associated with rain-on-snow events and the importance of local moisture sources in a warm climate
- Next step: Explore the structure variations of rain-on-snow events utilizing machine learning methods

Sep 2019 – Sep 2022

Satellite retrievals of atmospheric profiles and surface properties in polar regions

Dept. of CLaSP, University of Michigan

Advisor: Prof. Xianglei Huang

- Develop an optimal-estimation based algorithms to (1) retrieve mid-IR and far-IR surface spectral emissivity for the forthcoming PREFIRE mission (2) to simultaneously retrieve atmospheric profiles and surface properties using IRIS-D satellite observations
- Assess the influence of atmospheric water vapor abundance on the surface spectral emissivity retrievals in the far-infrared spectrum
- Demonstrate the importance of surface spectral emissivity to the satellite retrievals of humidity and temperature profiles in the lower troposphere

Nov 2018 – May 2019

Contribution of atmospheric radiative forcings to energy budget based on multi-year reanalysis

School of Atmospheric Sciences, Nanjing University

Advisor: Prof. Chen Zhou

- Demonstrate the temporal and spatial variation of radiative forcing anomalies from March 2000 to February 2018 in China using radiative kernel method
- Assess the contribution and interaction of radiative forcings to the total radiation change

Jul 2018 – Oct 2018

Radiative control of the interannual variability of Arctic sea ice in observations and model

Dept. of Atmospheric and Oceanic Sciences, McGill University

Advisor: Prof. Yi Huang

- Explore the relationship between radiation flux and the sea ice melt anomalies in the Arctic at both the top-of-atmosphere and surface
- Demonstrate that the interannual variability of September sea ice extent is strongly driven by radiative anomalies in earlier summer months

Teaching and Mentorship

Graduate Student Peer Mentor – Department of Climate and Space Sciences and Engineering *Fall 2023*

Graduate Student Instructor – Department of Climate and Space Sciences and Engineering

CLIMATE 105: *Our Changing Atmosphere* (class size: 93 undergraduate students) *Winter 2023*

Complete with Certificate “*Preparing Future Faculty*” seminar – University of Michigan *Spring 2023*

Honor and Membership

Rackham Predoctoral Fellowship – University of Michigan

March 2024

American Geophysical Union – Precipitation Technical Committee

since January 2024

Michigan Geophysical Union – 2023 MGU Organization Committee

since January 2023

Graduate Society of Women Engineers – University of Michigan

since July 2020

Professional Skill

Python, MATLAB, R, C, Fortran, NCL, LaTeX, First Aid/CPR/AED (American Red Cross certified)