Yan Xie

yanxieyx@umich.edu | (+1) 734-263-9631

Education

University of Michigan, Ann Arbor *Sep 2019 – Present*
Ph.D. Candidate, Climate and Space Sciences and Engineering (GPA: 4.0 / 4.0) *May 2021 – Present*

McGill University *Jul – Oct 2018*
Undergraduate Research Trainee

Nanjing University *Sep 2015 – June 2019*
Bachelor's Degree in Atmospheric Science, Graduate with honors (GPA: 3.8 / 4.0)

Publication

Liu, Y., Huang, Y., Yuan, J., **Xie, Y.**, & Zhou, C. (2024). Contribution of surface radiative effects, heat fluxes and their interactions to land surface temperature variability. *Journal of Geophysical Research: Atmospheres*, 129, doi:10.1029/2023JD039495

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

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

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

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

In Progress

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)