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CHONGXING FAN

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EDUCATION

University of Michigan, Ann Arbor (UM) *August 2019 – May 2024*
Ph.D. in Climate and Space Sciences and Engineering
Certificate of Graduate Studies in Computational Discovery and Engineering (2022)
GPA: 4.00/4.00
Dissertation: The Importance of Accurate Physical Parameterization for Radiative Transfer in Global Climate Simulations and Remote Sensing: Examples of Cloud Longwave Scattering and Solar Farm Modeling.
Advisor: Prof. Xianglei Huang

Nanjing University (NJU) *September 2015 – July 2019*
Bachelor of Science in Atmospheric Sciences
GPA: 3.95/4.00

EMPLOYMENT

Princeton University *June 2024 – Present*
Postdoctoral Research Associate
Program in Atmospheric and Oceanic Sciences

RESEARCH INTERESTS

- Atmospheric Radiative Transfer and Energy Budget
- Climate Modeling
- Application of Machine Learning in Climate Sciences

HONORS AND AWARDS

AGU Outstanding Student Presentation Award *2024*

Richard and Eleanor Towner Prize for Distinguished Academic Achievement Award (UM) *2023*

Future Investigators in NASA Earth and Space Science and Technology Fellowship ($150,000, NASA) *2022*
Project Title: Impacts of Solar Farming on Surface Energy Budget and Climate

from Long-Term NASA Satellite Observations

Rackham International Students Fellowship (UM)	*2020*
MICDE Fellowship (UM)	*2019*
Honorable Mention in the Mathematical Contest in Modeling (MCM, COMAP)	*2018*
Chow Tai Fook Scholarship (Top 1%, NJU)	*2018*
China's National Scholarship (Top 1%, NJU)	*2017*
Scholarship of Mr. Liao (Top 1%, NJU)	*2016*

PROFESSIONAL SERVICES

1. **Peer reviewer** for *Advances in Atmospheric Sciences* (2022; 2023)
2. **Peer reviewer** for *Journal of Climate* (2023)
3. **Peer reviewer** for *Journal of Geophysical Research – Atmospheres* (2023; 2024)
4. **Peer reviewer** for *Atmospheric Chemistry and Physics* (2023)
5. **Peer reviewer** for *Environmental Research: Climate* (2024; selected as **IOP Trusted Reviewer**)
6. **Peer reviewer** for *Journal of the Atmospheric Sciences* (2024)
7. **Peer reviewer** for *Geoscientific Model Development* (2024)
8. **Peer reviewer** for *Environmental Research Communications* (2024)

PEER-REVIEWED PUBLICATIONS

Published manuscripts:

1. **Fan, C.**, & Huang, X. (2023). Infrared scattering of cloud in an isothermal atmosphere. *Journal of the Atmospheric Sciences*, 80(11), 2701-2710. https://doi.org/10.1175/JAS-D-23-0050.1.
2. **Fan, C.**, Chen, Y.-H., Chen, X., Lin, W., Yang, P., & Huang, X. (2023). A refined understanding of the ice cloud longwave scattering effects in climate model. *Journal of Advances in Modeling Earth Systems*, 15, e2023MS003810. https://doi.org/10.1029/2023MS003810.
3. Huang, X., Chen, X., **Fan, C.**, Kato, S., Loeb, N., Bosilovich, M., et al. (2022). A synopsis of AIRS global-mean clear-sky radiance trends from 2003 to 2020. *Journal of Geophysical Research: Atmospheres*, 127, e2022JD037598. https://doi.org/10.1029/2022JD037598.
4. **Fan, C.**, & Huang, X. (2021). Direct impact of solar farm deployment on surface longwave radiation. *Environmental Research Communications*, 3(12), 125006. https://doi.org/10.1088/2515-7620/ac40f1.
5. **Fan, C.**, & Huang, X. (2020). Satellite-observed changes of surface spectral reflectances due to solar farming and the implication for radiation budget. *Environmental Research*

Letters, 15(11), 114047. https://doi.org/10.1088/1748-9326/abbdea.

6. **Fan, C.**, Wang, M., Rosenfeld, D., Zhu, Y., Liu, J., & Chen, B. (2020). Strong precipitation suppression by aerosols in marine low clouds. *Geophysical Research Letters*, 47(7), e2019GL086207. https://doi.org/10.1029/2019GL086207.

Submitted manuscripts:

7. **Fan, C.**, & Huang, X. A fast and physically accurate radiation parameterization for large-scale solar farms [submitted to *Journal of Quantitative Spectroscopy and Radiative Transfer*]. Preprint available at SSRN: http://dx.doi.org/10.2139/ssrn.4845508

CONFERENCES, PROCEEDINGS, AND ABSTRACTS

[O] Oral Talks; **[P]** Posters

1. **[O] Fan, C.**, Chen, Y.-H., Chen, X., Lin, W., Huang, X, & Yang, P. Address Climate Model Bias by Refining Radiation Scheme: Examples and Future Perspectives. AGU Fall Meeting 2023. San Francisco, CA, USA. December 11-15, 2023.
2. **[O]** Huang, X., Chen, X., Strow, L., **Fan, C.**, Loeb, N., Kato, S., Yue, Q. The Insights from Twenty Years of AIRS Radiances and an Outlook for the Incoming Decade: A Climate Perspective. 20th Annual Meeting of the Asia Oceania Geosciences Society. Singapore. July 30 - August 4, 2023.
3. **[P] Fan, C.**, & Huang, X. Understanding How Solar Farms Modify Radiation Budget and Regional Climate Based on Satellite-observation Constrained Climate Modeling. 20th Annual Meeting of the Asia Oceania Geosciences Society. Singapore. July 30 - August 4, 2023.
4. **[O] Fan, C.**, Chen, Y.-H., Chen, X., Lin, W., Huang, X, & Yang, P. Including Ice-cloud Longwave Scattering and Surface Spectral Emissivities in Climate Models Leads to More Impacts on Mean-state Climate Than Climate Feedbacks. 20th Annual Meeting of the Asia Oceania Geosciences Society. Singapore. July 30 - August 4, 2023.
5. **[P] Fan, C.**, Chen, Y.-H., Chen, X., Lin, W., Huang, X, & Yang, P. Ice-Cloud Longwave Scattering in Climate Models Leads to More Impacts on Mean-State Climate than Climate Feedbacks. GRC Radiation and Climate. Lewiston, Maine, USA. July 23-28, 2023.
6. **[O] Fan, C.**, Chen, Y.-H., Chen, X., Lin, W., Huang, X, & Yang, P. Including Ice-Cloud Longwave Scattering and Surface Spectral Emissivities in Climate Models Leads to More Impacts on Mean-State Climate than Climate Feedbacks. EGU General Assembly 2023. Vienna, Austria. April 23-28, 2023.
7. **[O] Fan, C.**, Chen, Y.-H., Jing, X., Chen, X., Lin, W., Huang, X, & Yang, P. An Overall Assessment of the Ice-Cloud Longwave Scattering Effects on the Simulated Global Climate. 36th Conference on Climate Variability and Change, 103rd AMS Annual Meeting.

Denver, CO, USA. January 8-12, 2023.

8. **[O] Fan, C.**, & Huang, X., Satellite-observed changes of surface reflectance, emissivity, and temperature due to solar farming and the implication for radiation budget. 14th Conference on Weather, Climate, and the New Energy Economy, 103rd AMS Annual Meeting. Denver, CO, USA. January 8-12, 2023.
9. **[O] Fan, C.**, Chen, Y.-H., Jing, X., Chen, X., Lin, W., Huang, X, & Yang, P. An Overall Assessment of the Ice-Cloud Longwave Scattering Effects on the Simulated Global Climate. AGU Fall Meeting 2022. Chicago, IL, USA. December 12-16, 2022.
10. **[P] Fan, C.**, & Huang, X., Satellite-Observed Changes of Surface Radiative Properties due to Solar Farming and the Implication for Radiation Budget. Midwest Student Conference on Atmospheric Research 2022. Urbana, IL, USA. October 1-2, 2022.
11. **[P] Fan, C.**, Chen, Y.-H., Jing, X., Chen, X., Lin, W., Huang, X., & Yang, P., Cloud scattering and surface spectral emissivities in climate model: Performance evaluation and feedback analysis. 2022 CFMIP Meeting on Clouds, Precipitation, Circulation and Climate Sensitivity. Seattle, WA, USA. July 19-22, 2022
12. **[O] Fan, C.**, & Huang, X., Satellite-Observed Changes of Surface Radiative Properties due to Solar Farming and the Implication for Radiation Budget. 2022 International Radiation Symposium. Thessaloniki, Greece. July 4-8, 2022.
13. **[P] Fan, C.**, & Huang, X., Solar Farm as an ideal test bed for satellite surface emissivity and temperature retrieval algorithms. AGU Fall Meeting 2021. New Orleans, LA, USA. December 13-17, 2021.
14. **[O] Fan, C.**, & Huang, X., Use different machine-learning algorithms for clear-sky detections in infrared hyperspectral observations: assessment and physical interpretability. 3rd NOAA Workshop on Leveraging AI in Environmental Sciences. Online. September 13-17, 2021.
15. **[P] Fan, C.**, & Huang, X., Satellite-observed changes of surface spectral reflectances due to solar farming and the implication for radiation budget. AGU Fall Meeting 2020. Online. December 1-17, 2020.

INTERNSHIP EXPERIENCE

Globalink Research Internship *July 2018 – October 2018*

- Project Title: Evaluation of quantitative precipitation estimation from model, satellite and radar
- Advisor: Prof. Yongsheng Chen (York University, Canada)

Meteorological Bureau of Hunan Province, China *February 2018*

- Weather forecast intern

TEACHING EXPERIENCE

Grader for CLIMATE 586 (Advanced Data Analysis) *September - December 2023*

- Responsibility: grading assignments; hosting office hours to answer students' questions

Grader for CLIMATE 586 (Advanced Data Analysis) *September - December 2022*

- Responsibility: grading assignments

COMMUNITY SERVICES

CLaSP-Fate High School Outreach *October 2023*

- Volunteered to host ~30 10th graders from the Jalen Rose Leadership Academy in the department for exciting hands-on activities and lab tours.
- Planned the event and proposed physics demonstrations.
- Conducted physical demonstrations and explained the physics to students.

Daily Email Group for International Students *October 2019 – October 2020*

- Created and organized the group where members write emails to other group members at any frequency they like to share their life, experiences, and stories.
- Named to be the English Language Institute (ELI) Student of the Month in December 2019. https://lsa.umich.edu/eli/news-events/all-news/dec19studentofthemonth.html

SKILLS

Computer Skills

- Programming languages: C/C++, Fortran, Visual Basic, Python, NCL
- Platforms: Windows, Linux, macOS
- Applications: Excel, MindMaster, Git, Adobe Premiere Pro, Adobe Audition, OBS

Certifications

- Jiangsu Computer Rank Examination Certificate of Level Two: C Language (Excellent Grade, 2017)
- National Computer Rank Examination Certificate of Level Two: C Language (Excellent Grade, 2017)
- Jiangsu Computer Rank Examination Certificate of Level Two: Visual Basic (Excellent Grade, 2016)