

LI-WEI CHAO

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RESEARCH INTERESTS

My research interests focus on climate science using a combination of satellite observations, earth system models, and km-scale global storm resolving models. I am particularly interested in understanding how clouds respond to climate change, which is one of the most critical yet uncertain components of our warming world. My research tackles this complex question by investigating how clouds interact with warming patterns using satellite observations, evaluating global climate models and storm-resolving models in representing cloud processes, and exploring how satellite observations and model evaluations can improve future climate projections.

EMPLOYMENT

2023 – present Postdoctoral Researcher, Lawrence Livermore National Laboratory

EDUCATION

2018 – 2023 **Ph.D. in Atmospheric Sciences**
Texas A&M University, College Station, TX

2014 – 2018 **B.S. in Atmospheric Sciences**
National Taiwan University, Taiwan

PUBLICATIONS

Chao, L.-W., M. D. Zelinka, C. R. Terai, H. Beydoun, B. R. Hillman, N. D. Keen, P. M. Caldwell, & S. A. Klein (2025). Evaluating Mean State Cloud Properties in the Simple Cloud-Resolving E3SM Atmosphere Model. *Journal of Advances in Modeling Earth Systems*, accepted.
doi:10.22541/essoar.175396350.08290010/v1

Zhang, Y., et al., including **L. -W. Chao** (2025). Understanding Biases in Simulated Cloud Radiative Effects in E3SMv3. *Journal of Advances in Modeling Earth Systems*, submitted. doi: 10.22541/essoar.176005514.45243644/v1

Terai, C. R., et al., including **L. -W. Chao** (2025). Climate Response to Warming in Cess-Potter Simulations Using the Global 3-km SCREAM. *Journal of Advances in Modeling Earth Systems*, 17, e2024MS004930. doi: 10.1029/2024MS004930

Zelinka, M. D., **L.-W. Chao**, T. A. Myers, Y. Qin, & S. A. Klein (2025). Technical note: Recommendations for diagnosing cloud feedbacks and rapid cloud adjustments using cloud radiative kernels. *Atmospheric Chemistry and Physics*, 25(3), 1477-1495.
doi:10.5194/acp-25-1477-2025

Lee, J., et al., including **L. -W. Chao** (2024). Systematic and objective evaluation of Earth system models: PCMDI Metrics Package (PMP) version 3. *Geoscientific Model Development*, 17 (9), 3919-3948
doi:10.5194/gmd-17-3919-2024

Chao, L.-W., M. D. Zelinka, & A. E. Dessler (2024). Evaluating cloud feedback components in observations and their representation in climate models. *Journal of Geophysical Research: Atmospheres*, 129(2), e2023JD039427. doi:10.1029/2023JD039427

Chao, L.-W., A. E. Dessler, & M. D. Zelinka (2024). Climate Feedbacks. Encyclopedia of Atmospheric Sciences (Third Edition).

Chao, L.-W., J. C. Muller, & A. E. Dessler (2022). Impacts of the Unforced Pattern Effect on the Cloud Feedback in CERES Observations and Climate Models. *Geophysical Research Letters*, 49(2), e2021GL096299. doi:10.1029/2021GL096299

Chao, L.-W. & A. E. Dessler (2021). An Assessment of Climate Feedbacks in Observations and Climate Models Using Different Energy Balance Frameworks. *Journal of Climate*, 34(24), 9763-9773. doi:10.1175/JCLI-D-21-0226.1

AWARDS AND FELLOWSHIPS

- 2024 **LLNL Atmospheric, Earth, & Energy Division Stand Out Award** for being selected as one of the finalists for the Research SLAM, Lawrence Livermore National Laboratory
- 2024 **LLNL Physical and Life Sciences Directorate Award** for excellence in publication for Lee et al. (2024), Lawrence Livermore National Laboratory
- 2020 **Future Investigators in NASA Earth and Space Science and Technology Award (FINESST)**, NASA, USA (\$150,000, 3 years)
- 2021 **Government Scholarship to Study Abroad**, Ministry of Education, Taiwan (\$32,000, 2 years)
- 2018 **Bachelor Thesis Award**, National Taiwan University, Taiwan
- 2018 **College Student Research Creativity Award**, Ministry of Science and Technology, Taiwan
- 2017 **College Student Research Scholarship**, Ministry of Science and Technology, Taiwan (\$2,500)
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PRESENTATIONS

- 2025
- Gordon Research Conference/Seminar (posters)
 - The World Climate Research Programme Global KM-scale Hackathon (talk)
 - LLNL Postdoc Poster Symposium (poster)
- 2024
- AGU Fall Meeting (poster)
 - [Invited] CERES Science Team Meeting (talk)
 - LLNL Postdoc Poster Symposium (poster)
 - EESM PI Meeting (poster and 3-min talk)
 - LLNL Research SLAM (3-min research presentation)
 - [Invited] Climate Hotspots in Action Webinar (talk)
 - Cloud Feedback Model Intercomparison Project (CFMIP) Meeting (talk)
 - CLIVAR Workshop on Confronting Earth System Model Trends with Observations: The Good, the Bad, and the Ugly (talk)
- 2023
- AGU Fall Meeting (talk)
 - [Invited] International Space Science Institute (ISSI) Meeting (talk)
 - [Invited] Gordon Research Conference/Seminar (poster and talk)
 - [Invited] Equilibrium Climate Sensitivity & Cloud Feedback Virtual Symposium (talk)
- 2022
- AGU Fall Meeting (talk)
 - [Invited] Equilibrium Climate Sensitivity & Cloud Feedback Virtual Symposium (talk)
 - AMS Annual Meeting (talk)

- Cloud Feedback Model Intercomparison Project (CFMIP) Meeting (poster)
- US CLIVAR The Pattern Effect Workshop (poster)

2021

- [Invited] National Taiwan University, Department of Atmospheric Science Seminar (talk)
- AGU Fall Meeting (talk)
- CERES Science Team Meeting (talk)
- CERES/Libera Joint Science Team Meeting (talk)
- Graduate Climate Conference (poster)
- AMS Annual Meeting (poster)

2020

- Graduate Climate Conference (poster)
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TEACHING EXPERIENCE

2022 **Graduate Teaching Assistance**, Texas A&M University
Instructor, ATMO 202 – Weather and Climate Lab
Grader, GEOS 210 – Climate Change

PROFESSIONAL SERVICE

Convener

Early Career Convener, Climate Sensitivity and Feedbacks Session, AGU 2025 Fall Meeting

Reviewer

Journal of Climate
Journal of Advances in Modeling Earth Systems
Journal of Geophysical Research – Atmospheres
Geophysical Research Letters
Atmospheric Chemistry and Physics
Communications Earth & Environment
Climate Dynamics
Journal of Applied Meteorology and Climatology
AGU Outstanding Student Presentation Awards (OSPA)

Atmospheric Sciences Graduate Council, Department of Atmospheric Sciences, Texas A&M University

Student Success Chair (2020 – 2023)
International Representative (2020 – 2022)
Member of Recruitment Committee (2019 – 2020)