Curriculum Vitae

Man-Yau ("Joseph") Chan

Assistant Professor
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Earned Degrees

The Pennsylvania State University	Meteorology and Atmospheric Science	Ph.D. (2022)
National University of Singapore	Physics	B.Sc. (Hons; 2017)

Research Areas and Interests

Data Assimilation, Numerical Weather Prediction, Uncertainty Quantification and Propagation

Employment History

Jan 2024 – present	Assistant Professor	Atmospheric Science Program, Department of Geography, The Ohio State University
Jan 2023 – Dec 2023	Postdoctoral Fellow	Advanced Study Program (ASP), National Center for Atmospheric Research
Apr 2019 – Dec 2022	Graduate Research Assistant	Department of Meteorology and Atmospheric Science, The Pennsylvania State University
Jan 2019 – Apr 2019	Course Instructor	Department of Meteorology and Atmospheric Science, The Pennsylvania State University
Aug 2017 – Jan 2019	Graduate Research Assistant	Department of Meteorology and Atmospheric Science, The Pennsylvania State University

Teaching Experience (The Ohio State University)

ATMOSSC 5401	Practical Data Processing and Analysis for Atmospheric Sciences	Spring 2026 (projected)
ATMOSSC 5502	Physical Meteorology	Spring 2026 (projected)
ATMOSSC 5950	Atmospheric Thermodynamics	Fall 2025
ATMOSSC 4194	Physical Meteorology	Spring 2025
ATMOSSC 4194	Practical Programming and Data Analysis for Atmospheric Science	Fall 2024
ATMOSSC 2940	Basic Meteorology	Spring 2024

Teaching Awards (The Ohio State University)

- Finalist in the 2025 College of Arts and Sciences' Outstanding Teaching Award.

Current Funding Support

Principal Investigator
Project Title: Improving the Navy's Numerical Atmospheric Predictions by Advancing Novel Transformative Low-Cost Forecast Ensemble Creation Methods
Agency: Office of Naval Research
Solicitation: Young Investigator Program
Award Period: 01 October 2024 to 30 September 2027
Amount Requested: $723,810
Outcome: Funded and ongoing.

Publications

ORCiD: https://orcid.org/0000-0001-5037-1991
Google Scholar: https://scholar.google.com/citations?user=n34AAP8AAAAJ&hl=en

Peer-Reviewed Journal Articles (**Red**: Undergraduate Student)

1. **Chan, M.-Y.**, Chipilski H. G., **Schwartz J.**, **Albrecht M.**, **Ridgway A.**, Shuvo S. D. (*under review*): Characterizing non-Gaussian forecast statistics using 1,000-member ensembles of a general circulation model. *Will submit to Geophysical Research Letters. Projected publication date: 2026.*
2. Luszczak W., **Chan, M.-Y.** (*under review*): Using Cosmic Rays to Predict the Weather: Meteorological Data Assimilation of Atmospheric Muon Flux Data. *May submit to Physics Review Letters D. Projected publication date: 2026.*

3. **Chan, M.-Y.** (*accepted*; 2025): Improving Infrared Radiance Ensemble Data Assimilation through Mitigating Deleterious Non-Gaussian Artifacts. *Quarterly Journal of the Royal Meteorological Society.*
4. **Chan, M.-Y.** (2024): Improving Ensemble Data Assimilation with Probit-space Ensemble Size Expansion for Gaussian Copulas (PESE-GC). *Nonlinear Processes in Geophysics.* doi: 10.5194/egusphere-2023-2699
5. **Chan, M.-Y.**, Chen X. and Anderson J. L. (2023): The potential benefits of handling clear and cloudy ensemble members separately through an efficient bi-Gaussian EnKF. *Journal of Advances in Modeling Earth Systems.* doi: 10.1029/2022MS003357
6. **Chan, M.-Y.**, Chen X. and Leung R. L. (2022): A high-resolution Tropical Mesoscale Convective System Reanalysis (TMeCSR). *Journal of Advances in Modeling Earth Systems.* doi: 10.1029/2021MS002948
7. Hartman, C. M., Chen X. and **Chan M.-Y.** (2022): Improving Tropical Cyclogenesis Forecasts of Hurricane Irma (2017) through the Assimilation of All-sky Infrared Brightness Temperatures. *Monthly Weather Review.* doi: 10.1175/MWR-D-22-0196.1.
8. **Chan, M.-Y.**, and Chen X. (2021): Improving the Analyses and Forecasts of a Tropical Squall Line Using Upper Tropospheric Infrared Satellite Observations. *Advances in Atmospheric Sciences*. doi: 10.1007/s00376-021-0449-8.
9. Zhang, Y., Sieron S. B., Lu Y., Chen X., Nystrom R. G., Minamide M., **Chan M.-Y.**, Hartman C. M., Yao Z., Ruppert J. H., Okazaki A., Greybush S. J., Clothiaux E. E. and Zhang F. (2021): Ensemble-Based Assimilation of Satellite All-Sky Microwave Radiances Improves Intensity and Rainfall Predictions for Hurricane Harvey (2017). *Geophysical Research Letters*. doi: 10.1029/2021GL096410.
10. Hartman, C. M., Chen X., Clothiaux E. E. and **Chan M.-Y.** (2021): Improving the Analysis and Forecast of Hurricane Dorian (2019) with Simultaneous Assimilation of GOES-16 All-Sky Infrared Brightness Temperatures and Tail Doppler Radar Radial Velocities. *Monthly Weather Review*. doi: 10.1175/MWR-D-20-0338.1.
11. He, J., Ma X., Ge X., Liu J., Cheng W., **Chan M.-Y.** and Xiao Z. (2021): Variational Quality Control of Non-Gaussian Innovations in the GRAPES m3DVAR System: Mass Field Evaluation of Assimilation Experiments. Advances in Atmospheric Sciences. doi: 10.1007/s00376-021-0336-3.
12. **Chan, M.-Y.**, Anderson J. L. and Chen X. (2020): An Efficient Bi-Gaussian Ensemble Kalman Filter for Satellite Infrared Radiance Data Assimilation. *Monthly Weather Review.* doi: 10.1175/MWR-D-20-0142.1.
13. **Chan, M.-Y.**, Zhang F., Chen X. and Leung R. L. (2020): Impacts of Assimilating All-sky Satellite Infrared Radiances on Convection-Permitting Analysis and Prediction of Tropical Convection. *Monthly Weather Review.* doi: 10.1175/MWR-D-19-0343.1.
14. **Chan, M. Y.**, Lo, J. C. and Orton, T. (2018): The structure of tropical Sumatra squalls. *Weather*. doi: 10.1002/wea.3375.

Research Fellowships

National Center for Atmospheric Research	Advanced Study Program (ASP) Postdoctoral Fellowship	2022
National Center for Atmospheric Research	Advanced Study Program (ASP) Graduate Visitor Program Fellowship	2019
The Pennsylvania State University	University Graduate Fellowship	2017
The Pennsylvania State University	Arnulf I. Muan Graduate Fellowship	2017

Other Research-Related Awards

The Pennsylvania State University	John C. Wyngaard Graduate Research Award	2022
American Meteorological Society Annual Meeting 2021	First Place Oral Presentation Winner in the Student Competition	2021
The Pennsylvania State University	Second Place Winner for the Graduate Research Showcase	2021
Fourth Midwest Student Conference on Atmospheric Research	Outstanding Oral Presentation	2020
The Pennsylvania State University	Hans Neuberger Award (for excellent teaching of meteorology)	2019

Invited Seminars

1. Advancing the Data Assimilation of Observations into Numerical Weather Prediction
   Department of Meteorology and Atmospheric Science, The Pennsylvania State University (Aug 2025)

2. Ensemble Data Assimilation (EnsDA): Improving Atmospheric Forecasts by Fusing Models with Observations
   Department of Engineering Physics, Air Force Institute of Technology (May 15, 2025)

3. Ensemble Data Assimilation (EnsDA): Creating Weather Forecasts by Marrying Ensembles and Observations
   29th Annual Weather, Water, and Climate Symposium, The Ohio State University (Mar 21, 2025)

4. Advancing the Geospatial Big Data Fusion of Observations and Forecast Models
   Department of Scientific Computing, Florida State University (Aug 28, 2024)

5. Improving the Ensemble Data Assimilation of Geostationary Satellite Infrared Imagery
   Department of Atmospheric Science, Colorado State University (Nov 16, 2023)
6. Improving the analysis and forecasts of tropical mesoscale convective systems by advancing the ensemble data assimilation of satellite infrared imagery
   Mesoscale and Microscale Meteorology Laboratory, National Center for Atmospheric Research, USA (June 2023)
7. Improving the analysis and forecasts of tropical mesoscale convective systems by advancing the ensemble data assimilation of satellite infrared imagery
   Naval Research Laboratory, USA (June 2023)
8. The Bi-Gaussian Ensemble Kalman Filter (BGEnKF): A Cloud-Aware Ensemble Data Assimilation Method
   Environmental Modeling Center, National Center for Environmental Prediction (Dec 2022)
9. Improving the Analyses and Forecasts of Tropical Mesoscale Convective Systems by Advancing the Ensemble Data Assimilation of Geostationary Satellite Infrared Radiances
   Center for Climate Research Singapore, Meteorological Service Singapore, Singapore (Nov 2022)
10. Restraining Tropical Chaos with Satellite Observations
    Special Programme in Science, National University of Singapore, Singapore (Sept 2021)

Conference Presentations

1. ***(invited)*** Benefitting NOAA through Improving the Exploitation of Observations in Ensemble Data Assimilation
   Unifying Innovations in Forecasting Capabilities Workshop (2025; UIFCW)
2. Advancing EnKF-based Infrared Radiance DA through Understanding and Mitigating Non-Gaussian Artefacts
   American Meteorological Society's 29th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (2025)
3. A Dime a Hundred: Cost Effective Large Ensembles through Probit-space Ensemble Size Expansion for Gaussian Copulas (PESE-GC)
   American Meteorological Society's Fourth Symposium on Community Modelling and Innovation (2025)
4. A high-resolution Tropical Mesoscale Convective System Reanalysis (TMeCSR; "tea-mixer")
   American Meteorological Society's Second Symposium on the Future of Weather, Forecasting, and Practice (2024)
5. Mitigating the curse of small ensembles with Probit-space Ensemble Size Expansion for Gaussian Copulas (PESE-GC; "peace gee-see")
   American Meteorological Society's 28th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (2024)

6. A high-resolution Tropical Mesoscale Convective System Reanalysis (TMeCSR; "tea-mixer")
   15th International Conference on Mesoscale Convective Systems (2023)

7. Mitigating the curse of small ensembles with Probit-space Ensemble Size Expansion for Gaussian Copulas (PESE-GC; "peace gee-see")
   The 9th International Symposium for Data Assimilation (2023)

8. The Potential Benefits of Handling Mixture Statistics via a Bi-Gaussian EnKF: Tests with All-Sky Satellite Infrared Radiances
   American Meteorological Society's 27th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (2023)

9. On the Importance of Parallel EnKFs for All-sky Infrared Data Assimilation
   The 8th International Symposium for Data Assimilation (2022)

10. An Efficient Bi-Gaussian Ensemble Kalman Filter (BGEnKF) for Satellite Infrared Data Assimilation
    The 8th International Symposium for Data Assimilation (2022)

11. On the Importance of Parallel EnKFs for All-sky Infrared Data Assimilation
    American Meteorological Society's 35th Conference on Hurricanes and Tropical Meteorology (2022)

12. An Efficient Bi-Gaussian Ensemble Kalman Filter (BGEnKF) for Satellite Infrared Data Assimilation
    American Meteorological Society's 26th Conference on Integrated Observing and Assimilation Systems for Atmosphere, Oceans and Land Surface (2022)

13. Improving Analyses and Forecasts of a Tropical Squall Line using Geostationary Infrared Observations
    Asia Oceania Geosciences Society's Annual Meeting (2021)

14. An Efficient Bi-Gaussian Ensemble Kalman Filter (BGEnKF) for Satellite Infrared Data Assimilation
    American Meteorological Society's 25th Conference on Integrated Observing and Assimilation Systems for Atmosphere, Oceans and Land Surface (2021)

15. Improving Analyses and Forecasts of a Tropical Squall Line using Geostationary Infrared Observations
    American Meteorological Society's 24th Conference on Satellite Meteorology, Oceanography and Climatology (2021)

16. Improving Analyses and Forecasts of a Tropical Squall Line using Geostationary Infrared Observations
    Fourth Midwest Student Conference on Atmospheric Research, University of Illinois at Urbana-Champaign (2020)

17. All-sky Geostationary Infrared Data Assimilation over the Tropics
    Ninth Annual Young Scientist Symposium on Atmospheric Research, Colorado State University (2019)

18. Potential impacts of assimilating All-Sky Satellite Infrared Radiances on Convention-Permitting Analysis and Prediction of Tropical Convection

Eighth American Meteorological Society Symposium on the Joint Center for Satellite Data Assimilation (JCSDA; 2019)

Conference Session Chair

- American Meteorological Society's 29th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (2025)
- American Meteorological Society's 28th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (2024)

Other Research-related Professional Activities

- Member of the American Meteorological Society (AMS)
- Member of the American Geophysical Union (AGU)
- Peer Reviewer for manuscripts submitted to research journals at AMS, AGU, the European Geosciences Union (EGU), and the Royal Meteorological Society (RMS).
- Associate Editor of the AMS Monthly Weather Review journal.
- Editor of the Springer Advances in Atmospheric Sciences journal.

Service Roles (The Ohio State University)

- Faculty member on the Graduate Studies Committee, Department of Geography
- Graduate Faculty Representative, The Graduate School
- Curriculum overhaul: Participated in the overhauling of the undergraduate Atmospheric Science Program major curriculum. My main contributions are the creation and teaching of two new atmospheric science courses to ensure the curriculum complies with federal requirements.