PENG GU

Affiliation: Department of Geography, The Ohio State University
Email: gu.911@osu.edu
Mail: 2716 Collinford Dr, Unit G, Dublin, OH 43016
Website: https://geography.osu.edu/people/gu.911

AREA OF EXPERTISE

Climate change, Air-sea interactions, Stochastic climate model

EDUCATION

The Ohio State University — Columbus, Ohio, U.S.
Ph.D., Atmospheric Science — August 2021– present

Nanjing University of Information Science & Technology — Nanjing, Jiangsu, China
Master of Science, Meteorology — September 2017 – June 2020
Bachelor of Science, Atmospheric Science — September 2013 – June 2017

PUBLICATIONS AND THESIS

2024 **Gu, P.**, Liu, Z., & Delworth, T. L. (2024). Strong oceanic forcing on decadal surface temperature variability over global ocean. *Geophysical Research Letters*, 51(8), e2023GL107401.

Gu, P. and Liu, Z. (2024). Assessing Climate Forcing from the Sea Surface Temperature-Surface Heat Flux relation for SST-coupled oscillatory variability. *Geophysical Research Letters*. 51 (12), e2024GL108552.

Gu, P., Beck, K. J., Ding, R. &. Quiring, M. S. (Under review). Evaluating the Climate Change Risk on a Company's Supply Chain. Manuscript submitted to *Bulletin of the American Meteorological Society*

2023 Liu, Z., **Gu, P.,** & Delworth, T. L. (2023). Strong Red Noise Ocean Forcing on Atlantic Multidecadal Variability Assessed from Surface Heat Flux: Theory and Application. *Journal of Climate*, 36(1), 55-80. https://doi.org/10.1175/JCLI-D-22-0063.1

2022 Cheng, J., **Gu, P.**, & Ma, Yiyi. (2022). Spatial patterns of East Asian summer monsoon rainfall under warming climate. *Trans Atmos Sci*, 45(2), 239-246. 10.13878/j.cnki.dqkxxb.20200601001

2021 Cheng, J., Wu, H., Liu, Z., **Gu, P.**, Wang, J., Zhao, C., ... & Song, Y. (2021). Vegetation feedback causes delayed ecosystem response to East Asian Summer Monsoon Rainfall during the Holocene. *Nature communications*, 12(1), 1-9. https://doi.org/10.1038/s41467-021-22087-2

Yang, X., Cheng, J., & **Gu, P.** (2021). The influence of spring Arctic sea ice abrupt change on East Asian summer precipitation under the RCP8. 5 scenario of MPI-ESM-LR model. *Trans Atmos Sci*, 44(1), 140-150. 10.13878/j.cnki.dqkxxb.20201027001

Gu, P. and Cheng, J. (2021). The Uncertainty and Possible Mechanism of Atlantic Multi-decadal Oscillation in CMIP5 Model (Master's thesis). Nanjing University of Information Science & Technology.

2019 Ma, H., Li, T., Jiang, Z., & **Gu, P.** (2019). Unexpected large-scale atmospheric response to urbanization in East China. *Climate Dynamics*, 52(7), 4293-4303. https://doi.org/10.1007/s00382-018-4380-3

2017 **Gu, P.** and Cheng, J. (2017). Analysis of Climate Impacts Driven by Decadal Factors — An Information Flow Method (Bachelor's thesis). Nanjing University of Information Science & Technology.

RESEARCH PROJECTS

Project: Ocean dynamics in decadal SST variability in CESM

Role: Research Associate
Sponsor: National Science Foundation and National Center for Atmospheric Research, USA
Contract period: 10/2023 – 07/2026

- Conduct sensitivity experiments to examine the physical processes linked to ocean forcing
- Isolate various physical mechanisms potentially associated with the oceanic forcing.

Project: Assessing and Understanding Oceanic Climate Forcing on Decadal Climate Variability from Surface Heat Flux

Role: Research Associate
Sponsor: National Science Foundation, USA
Contract period: 08/2023 – 07/2026

- Developed idealized stochastic climate model.
- Quantify atmospheric and oceanic forcing magnitude and heat flux feedback.
- Analyzed the observation climate record and CMIP6 model output.

Project: Assessing and Understanding Atlantic Multidecadal Variability in a Suite of GFDL Climate Models: Roles of Climate Feedback and Teleconnection

Role: Research Associate
Sponsor: The National Oceanic and Atmospheric Administration, USA
Contract period: 09/2019 – 08/2022

- Simulated the ecological vegetation system through employment of the Trace simulation data forcing the CLM model.

- Analyzed the Holocene period interactions amongst the East Asian summer monsoon and the ecological environmental determinants.

Project: The Global Pattern and Attribution of Inter-Decadal Climate Change Since the Industrial Revolution

Role: Research Associate
Sponsor: National Natural Science Foundation of China
Contract period: 09/2017 – 06/2020

- Assessed the couple models data of CMIP5 and analyzed Causes and Mechanisms of Differences in Decadal Variability Periods in Coupling Modes
- Finalized 5 sets of inter-decade transient simulations by utilizing CAM model.

Project: The Attribution of Extreme summertime temperature in Gaochun District

Role: Principal Student Investigator
Sponsor: Natural Science Foundation, Jiangsu, China
Contract period: 05/2014 – 06/2017

- Analyzed the observational temperature records in Gaochun District.
- Implement sensitivity experiments by Weather Research and Forecasting (WRF) Model.

CONFERENCE PRESENTATIONS

2023 Strong Red Noise Ocean Forcing on Atlantic Multidecadal Variability Assessed from Surface Heat Flux: Theory and Application [Poster Presentation]. AGU23 Annual meeting. (Dec.11-15, San Francisco, CA, U.S.)

INTERNSHIP

Weather Forecaster Intern Huainan Meteorological Bureau, Anhui China
06/2015 - 07/2015

- Collected meteorological data (temperature, precipitation, and solar radiation) at the meteorological observation base.
- Created daily weather maps underpinned on meteorological observation site data and revised MICAPS forecast results.

Meteorology Intern Shaoxing Meteorological Bureau, Zhejiang, China
06/2014 - 07/2014

- Participated in the informative rainy season discussions.
- Conducted daily weather analysis within 48 hours as based on MICAPS (China's numerical weather prediction system)

PATENTS

National Utility Model Patent Certificate: A Multifunctional Spray Brush, China April 2015

AWARDS

E. Willard and Ruby S. Miller Fellowship ($4,000), OSU — May 2024
Merit Recognition Scholarship, NUIST — June 2017
Excellent Graduate Scholarship, NUIST — June 2017
Outstanding Graduate Award, NUIST — December 2016
Merit Recognition Award, 2015-2016 Academic Year, NUIST — December 2016
Excellent Student Leaders Award, 2014-2015 Academic Year, NUIST — November 2015
Merit Recognition Award, 2013-2014 Academic Year, NUIST — November 2015
National College Student Meteorological Popularization Competition, Second Prize — December 2014

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

American Geophysical Union

American Mereology Society

SKILLS & LANGUAGES

Programming Languages: Python, MATLAB, R, FORTRAN, C , and NCL (NCAR command language)
Numerical Climate Model: CESM and WRF
Operating system: Linux and Windows
Languages: Mandarin, English