Haohao Sun

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Education

- **Nanjing University** — Nanjing, China
  Ph.D. - Meteorology — *Sep 2020 - Present*
  Advisor: Prof. Lili Lei
- **Nanjing University** — Nanjing, China
  B.S. - Atmospheric Science — *Sep 2016 - Jun 2020*

Research Experience

- **Research Assistant** — Nanjing University
  Online paleoclimate data assimilation — *Sep 2023 - Present*
  - Developed an online paleoclimate data assimilation based on a deep learning-based network and an integrated hybrid EnKF
  - Provided informative ensemble priors by blending cycling ensemble forecasts with analog climatological ensembles
  - Tested the network's superiority over a linear inverse model in reconstructing surface temperature

  Offline paleoclimate data assimilation — *Sep 2020 - Sep 2023*
  - Proposed an analog offline EnKF (AOEnKF) for paleoclimate data assimilation
  - Developed a hybrid gain offline EnKF (HGAOEnKF) for paleoclimate data assimilation

Publications

- **Sun, H.**, L. Lei, Z. Liu, L. Ning, and Z. Tan, 2024 "An Online Paleoclimate Data Assimilation with a Deep Learning-based Network", *Journal of Advances in Modeling Earth Systems* (submitted).
- **Sun, H.**, L. Lei, Z. Liu, L. Ning, and Z. Tan, 2023 "A Hybrid Gain Analog Offline EnKF for Paleoclimate Data Assimilation", *Journal of Advances in Modeling Earth Systems*, **16**, e2022MS003414.
- Z. Wang, **Sun, H(co-first-author).**, L. Lei, Z. Tan, and Y. Zhang, 2023 "The Importance of Data Assimilation Components for Initial Conditions and Subsequent Error Growth", *Science China Earth Sciences*, **67**, 105-116.
- **Sun, H.**, L. Lei, Z. Liu, L. Ning, and Z. Tan, 2022 "An Analog Offline EnKF for Paleoclimate Data Assimilation", *Journal of Advances in Modeling Earth Systems*, **14**, e2021MS002674.

Project Management

- National Natural Science Foundation of China(Basic Research Program for Young Students), 2024-2026 "Ensemble-based Multi-scale Data Assimilation for Last Millennium Climate Reconstruction", **leader**
- National Key Research and Development Program of China, 2023-2028 "Data Assimilation Theory and Techniques for Holocene Climate Change in the Tropical Western Pacific" participation

Presentations

- 8th Youth Geoscience Forum, Wuhan, China, 2023 (oral)
- 10th National Doctoral Forum in Geographic Information Science, Nanjing, China, 2022 (**excellent oral**)
- 102nd AMS Annual Meeting, Houston, USA, 2022 (oral)
- AGU Fall Meeting 2022, Chicago, USA, 2022 (poster)

Teaching

- Graduate course: Data Assimilation, Spring 2022
- Undergraduate course: Dynamic Meteorology, Fall 2021

Awards

- Presidential Scholarship - 2020, CNY 20000
- Environmental Planning Scholarship - 2022, CNY 5000
- Guorui Scholarship - 2022, CNY 5000
- People's Scholarship - 2017, 2018, 2019

Programming

- MATLAB
- Python(numpy, scipy, xarray, Tensorflow, Pytorch)
- Linux
- Fortran
- C