Jiawei Bao

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EMPLOYMENT

2023 - now **Institute of Science and Technology Austria, Austria**
Marie Skłodowska-Curie postdoctoral fellow (IST-bridge co-funded)

2019 - 2023 **Max Planck Institute for Meteorology, Germany**
Postdoctoral Researcher

EDUCATION

2015 - 2019 **University of New South Wales, Australia**
Ph.D. in Climate Science, advisor: Prof. Steven Sherwood

2012 - 2015 **Beijing Normal University, China**
M.Sc. in Climate Science, advisor: Prof. Jinming Feng

2008 - 2012 **Nanjing University of Information Science and Technology, China**
B.Sc in Atmospheric Science

AWARDS AND HONOURS

2026 **Outstanding reviewer award**, Geophysical Research Letters
American Geophysical Union (AGU)

2026 **AGU editor's highlight paper**
Paper title: Precipitation Characteristics and Thermodynamic-Convection Coupling in Global Kilometer-Scale Simulations

2025 **PNAS paper featured by Futura-Sciences magazine as one of the "Top Five Weather Discoveries of 2025"**
Paper title: Tropics-wide intraseasonal oscillations

2025 **EGU highlight paper**
nextGEMS: entering the era of kilometer-scale Earth system modeling

2022 **Award for outstanding early career presentation**
GEWEX 3rd Pan-Gass meeting in Monterey USA

2020 **Uwe Radok Award** for Best PhD thesis
Australian Meteorological & Oceangraphic Society (AMOS)

2019 **Chinese government award** for outstanding students abroad (300 globally across all the disciplines)

2018 **Award for best published paper** by a student
ARC centre of excellence for climate extremes (five universities in Australia)

2017 **AGU editor's highlight paper**
Paper title: The robust relationship between extreme precipitation and convective organization in idealized numerical modeling simulations.

2015 **TFS PhD scholarship, CCRC top-up PhD scholarship**
University of New South Wales

2015 **Laureate Fellowship top-up PhD scholarship**
University of New South Wales

GRANTS AND FELLOWSHIPS

2023-2025 **IST-bridge Marie Skłodowska-Curie fellowship (~180000 Euro)**

PUBLICATIONS

I have published 21 papers (13 as first author) in peer-reviewed journals. 3 additional papers (1 as first author) are currently under review. According to Google Scholar, my work has been cited 1041 times (h-index: 13) as of March 7, 2026.

In review

- He, Y., Wang, J., Feng, J. **Bao, J.** & Nie, J. Anthropogenic warming intensified the July 2023 North China extreme rainfall through enhancing moisture transport and convective organization（submitted to *Weather and Climate Extremes*）
- Wang, J., Tett, S. **Bao, J.**, Sun Y., Wang, X. & Ge, Q. Anthropogenically inequitable risks of sequential extreme precipitation-humid heat events between tropical and extratropical regions （submitted to *Science Advances*）
- **Bao, J**.*, Muller, C. & Singh, M. Understanding the role of land and convective organization in determining the free-tropospheric temperature in the tropics (submitted to *Journal of Advances in Modeling Earth Systems)*

Published

21. **Bao, J**.*, Becker, T.* & Takasuka, D.* (2026) Characteristics of precipitation and moisture-convection relationships in global km-scale simulations. *Journal of Advances in Modeling Earth Systems. (in press, *equal first authors, **AGU editor's highlight paper**)*
20. Yoon, A., Hohenegger C., **Bao, J.** & Brunner, L. (2026) Threats on Amazon after deforestation: beyond annual precipitation. *Earth System Dynamics.* https://doi.org/10.5194/esd-17-167-2026
19. **Bao, J**., Bony, S., Takasuka, D. & Muller, C. (2025) Tropics-wide intraseasonal oscillations. *Proceedings of the National Academy of Sciences.* https://doi.org/10.1073/pnas.2511549122 (***Highlighted by Futura-Sciences magazine as one of the "Top Five Weather Discoveries of 2025"***)
18. Segura, H. & co-authors including **Bao, J**. (2025) nextGEMS: entering the era of kilometer-scale Earth system modeling. *Geoscientific Model Development.* https://doi.org/10.5194/gmd-18-7735-2025 (***EGU highlight paper***)
17. Gnanaraj A., **Bao, J.** & Schmidt H. (2025) The impact of the rotation rate on an aquaplanet's radiant energy budget: Insights from experiments varying the Coriolis parameter. *Weather and Climate Dynamics.* https://doi.org/10.5194/wcd-6-489-2025
16. Schmidt, H. & co-authors including **Bao, J**. (2024) Effects of vertical grid spacing on the climate simulated in a global storm-resolving model. *Geoscientific Model Development.* https://doi.org/10.5194/gmd-17-1563-2024
15. **Bao, J.**, Stevens B., Kluft, L., & Muller, C. (2024) Intensification of tropical precipitation extremes from more organized convection. *Science Advances*. https://doi.org/10.1126/sciadv.adj6801
14. Hu, Y., Lin Y., Deng Y., & **Bao, J.** (2023) Summer Extreme Rainfall over the Middle and Lower Reaches of Yangtze River: Role of Synoptic Patterns in Historical Changes and Future Projection. *Journal of Geophysical Research: Atmospheres.* 128, e2023JD039608. https://doi.org/10.1029/2023JD039608
13. Hohenegger, C. et al. (including **Bao J.**) (2023) ICON-Sapphire: simulating the components of the Earth System and their interactions at kilometer and subkilometer scales. *Geoscientific Model Development.* https://doi.org/10.5194/gmd-16-779-2023
12. Windmiller, J., **Bao, J.**, Sherwood, S. C., & Schanzer, T. (2023) Predicting convective downdrafts from updrafts and environmental conditions in a global storm resolving simulation. *Journal of Advances in Modeling Earth Systems.* https://doi.org/10.1029/2022MS003048
11. **Bao, J.**, Dixit, V., Sherwood, S. C. (2022) Zonal temperature gradients in the tropical free troposphere. *Journal of Climate.* https://doi.org/10.1175/JCLI-D-22-0145.1

10. **Bao, J.**, Stevens, B. Kluft, L. & Jimenez-de-la-Cuesta, D. (2021) Changes in the tropical lapse rate due to entrainment and their impact on climate sensitivity. *Geophysical Research Letters.* https://doi.org/10.1029/2021GL094969

9. Keil, P., Schmidt, H, Stevens, B. & **Bao, J**. (2021) Variations of tropical lapse rates in climate models and their implications for the upper tropospheric warming. *Journal of Climate*. https://doi.org/10.1175/JCLI-D-21-0196.1

8. **Bao, J.** & Stevens, B. (2021) The elements of the thermodynamic structure of the tropical atmosphere. *Journal of the meteorological society of Japan* . https://doi.org/10.2151/jmsj.2021-072

7. **Bao, J.** & Windmiller, J. M. (2021) Impact of microphysics on tropical precipitation extremes in a global storm-resolving model. *Geophysical Research Letters*. https://doi.org/10.1029/2021GL094206

6. **Bao, J.** & Sherwood, S. C. (2019). The role of convective self-aggregation in extreme instantaneous vs. daily precipitation. *Journal of Advances in Modeling Earth Systems*. https://doi.org/10.1029/2018MS001503

5. **Bao, J.**, Sherwood, S. C., Alexander, L. V., & Evans, J. P. (2018). Comments on 'Temperature-extreme precipitation scaling: a two-way causality?' *International Journal of Climatology.* https://doi.org/10.1002/joc.5665

4. **Bao, J.**, Sherwood, S. C., Colin, M., & Dixit, V. (2017). The robust relationship between extreme precipitation and convective organization in idealized numerical modeling simulations. *Journal of Advances in Modeling Earth Systems*, 9, 2291–2303. https://doi.org/ 10.1002/2017MS001125 (***AGU editor's highlight paper***)

3. **Bao, J.**, Sherwood, S. C., Alexander, L. V., & Evans, J. P. (2017). Future increases in extreme precipitation exceed observed scaling rates. *Nature Climate Change*, *7*, 128-132. https://doi.org/10.1038/nclimate3201.

2. **Bao, J.**, & Feng, J. (2016). Intercomparison of CMIP5 simulations of summer precipitation, evaporation, and water vapor transport over Yellow and Yangtze River basins. *Theoretical and applied climatology*, *123*(3-4), 437-452.

1. **Bao, J.**, Feng, J., & Wang, Y. (2015). Dynamical downscaling simulation and future projection of precipitation over China. *Journal of Geophysical Research: Atmospheres*, *120*(16), 8227-8243.

TEACHING

09/2024	Participant in 2-day workshop on basics in Didactics: Teaching & Learning in Higher Education
2024	**Lecturer** and **coordinator** for a graduate course in University of Vienna: Journal club about Climate modeling Main lecturers: Jiawei Bao and Blaz Gasparini
2023	**Guest lecturer** for a graduate course in University of Hamburg: Tropical clouds and convection Main lecturer: Raphaela Vogel
2020	**Teaching assistant** for a graduate course in University of Hamburg: The trade winds Main lecturer: Bjorn Stevens

SUPERVISION

PhD	Abisha Ganaraj (10/2021-10/2025) PhD in University of Hamburg/IMPRS Topic: Impact of earth's rotation on radiation, circulation and climate sensitivity Co-supervise with Dr. Hauke Schmidt
PhD intern	Noe Klavier (10/2025-now) Phd rotation program at ISTA Topic: Understanding the MCS characteristics in RCEMIP simulations Supervise with Prof. Caroline Muller

PhD intern	Haruki Hagiwara (01/2024-02/2024) Six-week rotation program at ISTA Topic: Understanding the precipitation diurnal cycle over tropical island Supervise with Prof. Caroline Muller
Master intern	Leo Demaine (03/2024-07/2024) Five-month master intern program at ENS Lyon & ISTA Topic: Understanding the relationship between precipitation extremes and MCS in RCEMIP simulations Co-supervise with Prof. Caroline Muller
Master intern	Khushi Dani (09/2023-now) Master intern at IIT Bombay Topic: Understanding the link between convective organisation and Indian monsoon Co-supervise with Prof. Vishal Dixit
Master intern	Laura Hasbini Six-month master intern program at ENSTA Paris & MPI-M Topic: Relative humidity distribution in CMIP6 simulations Co-supervise with Dr. Hauke Schmidt

PROFESSIONAL ACTIVITIES

2024-now	**Member** of WCRP APARC project: Atmospheric Temperature Changes and their Drivers (ATC)
2024-now	**Coordinator** for joint meetings between climate dynamics group at University of Vienna and convection group at ISTA
2024/2025	**Judge** of EGU OSPP (Outstanding Student and PhD candidate Presentation)
2016-now	**Reviewer** (30+ papers) for *Nature Geosciences, Science Advances, Journal of Advances in Modeling Earth Systems, Journal of Climate, Geophysical Research Letters, Weather and Climate Extremes, International Journal of Climatology, Weather and Climate Dynamics, Journal of Geophysical Research-Atmosphere, Journal of the Atmospheric Sciences*
2019-2020	**Coordinator** for MPI atmospheric department internal seminar

INVITED PRESENTATIONS

2026

- *Invited lecture on atmospheric convection* ***at 2nd summer school on moist convective dynamics of monsoons*** (forthcoming)

- **Nanjing University of Information Science and Technology**, department seminar
Tropics-wide intraseasonal oscillations (TWISO)

2025

- **University of Wisconsin–Madison,** department seminar (online)
Tropics-wide intraseasonal oscillations (TWISO)

- **ETH Zurich,** IAC institute colloquium
Tropics-wide intraseasonal oscillations (TWISO)

- **GEOMAR Helmholtz Centre for Ocean Research Kiel,** department seminar
Understanding the dynamics of mesoscale processes in the atmosphere

- **Imperial College London**, department seminar
Understanding the dynamics of mesoscale processes in the atmosphere

2024

- **University of Vienna**, department colloquium
Intensification of tropical daily precipitation extremes from more organised convection

- **Stockholm University**, department seminar
Understanding the dynamics of mesoscale processes in the atmosphere

- **Peking University**, department seminar
Intensification of tropical daily precipitation extremes from more organised convection

2023

- **Tropical lapse rate workshop, Sorbonne University**, talk
The thermal structure of tropical troposphere

2022

- **University of California Los Angeles,** seminar (virtual)
The thermal structure of tropical troposphere

- **Europe Geoscience Union General Assembly**, talk
Zonal temperature gradients in the tropical free-troposphere

- **Joint seminar at MPI-M,** talk
Impact of microphysics on tropical precipitation extremes in a global storm-resolving model

2021

- **University of Texas at Austin**, seminar (virtual)

2020

- **Climate Change Summer Institute, University of Washington**, talk (virtual)

2018

- **Monash University**, department seminar

Conferences Seminars and workshops

2026

- Europe Geoscience Union General Assembly, talk
Tropics-wide intraseasonal oscillations

2025

- Europe Geoscience Union General Assembly, talk
Links between atmospheric temperature, surface temperature and convective organisation

- WCRP APARC ATC spring meeting, talk
Links between atmospheric temperature, surface temperature and convective organisation

2024

- GEWEX Open Science conference, talk
Intensification of tropical daily precipitation extremes from more organised convection

- Europe Geoscience Union General Assembly, talk
Intensification of daily tropical precipitation extremes from more organised convection

2023

- 3rd workshop on spatial organization of convection, clouds and precipitation, talk
Intensification of tropical precipitation extremes from more organized convection.

- CFMIP-GASS, poster
Tropical-wide oscillations: RCE or MJO?

2022

- 3rd GEWEX Pan-Gass meeting, talk
Intensification of tropical precipitation extremes from more organized convection

- CFMIP, talk

Zonal temperature gradients in the tropical free-troposphere

2021

- MPI-Meteorology, seminar
- CFMIP, poster
- 1st Workshop on spatial organization of convection, clouds and precipitation, poster

2019

- 2nd ICTP Summer School on Theory, Mechanisms and Hierarchical Modelling of Climate Dynamics

2018

- CFMIP, poster
- The 2nd GEWEX Pan-Gass meeting, poster

2016

- Convection permitting modeling workshop, poster