HUSILE BAI

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RESEARCH INTERESTS

I am interested in climate dynamics and modeling research. I studied the teleconnection mechanisms and its impact on the ecological-evolutionary processes including conifer seed masting and bird migration for my Ph.D. dissertation. Currently, I am working on cryosphere-atmosphere interactions and glacier mass balance and dynamic modeling.

EDUCATION BACKGROUND

2018-2022 Ph.D. University of Utah, Department of Atmospheric Sciences **Salt Lake City, UT**

- Advisor: Courtenay Strong
- Dissertation project: Teleconnection mechanisms associated with ecologically-relevant climate dipoles

2015-2018 M.S. University of Chinese Academy of Sciences, Institute of Earth Environment **Beijing, China**

- Advisors: Dr. Guohui Li and Dr. Yu Liu
- Thesis project: Impact of the ice nuclei on the development of the cumulus clouds over the North China Plain

2011-2015 B.S. Lanzhou University, College of Atmospheric Sciences **Lanzhou, China**

- Advisor: Dr. Yi Yang
- Capstone project: Numerical weather simulation and analysis of a heavy rainstorm

PUBLICATIONS

Husile Bai, Courtenay Strong, Jalene M. LaMontagne, Ivy V. Widick, and Benjamin Zuckerberg (2023). A North American climate-masting-irruption teleconnection and its change under global warming, (*submitted*)

Husile Bai and Courtenay Strong (2023). Atmospheric modeling study on convection triggered teleconnections driving the summer North American dipole*, Journal of Climate,* *https://doi.org/10.1175/JCLI-D-23-0015.1, (in press)*

Husile Bai, Courtenay Strong, and Benjamin Zuckerberg (2023). Drivers of an ecologically relevant summer North American dipole, *Journal of Climate*, 36, 2387-2399, https://doi.org/10.1175/JCLI-D-22-0542.1

Hu Sile, Liu Yu, Li Guohui (2019). Impact of ice nuclei on the development of cumulus clouds over the North China Plain, *Journal of Earth Environment*, 10(3):257-266 (in Chinese)

Hu Sile, Li Yan, Fang Congxi, Chen Zhihong (2018). The relationship between Ural blocking, Siberian high, and East Asian winter monsoon, *Journal of Lanzhou University (natural sciences)*, 54(4):440-452 (in Chinese)

Jalene M. LaMontagne, Courtenay Strong, **Husile Bai**, Jessie J. Forest, Andrew Hacket-Pain, Mark Schulze, and Benjamin Zuckerberg (2023), Atmospheric waves synchronize and desynchronize mast seeding at a hemispheric scale (*Submitted*)

Luke Stone, Courtenay Strong, **Husile Bai**, Thomas Reichler, Greg McCabe, and Paul D. Brooks (2023). Atlantic Ocean influence on western U.S. hydroclimate and water resources *(under Review)*

Yu Liu, Weiyuan Ta, Qiang Li, Huiming Song, Changfeng Sun, Qiufang Cai, Han Liu, Lu Wang, **Hu Sile**, Junyan Sun, Wenbiao Zhang, Wenzhu Li (2018). Tree-ring stable carbon isotope-based April-June relative humidity reconstruction since AD 1648 in Mt. Tianmu, China, *Climate Dynamics*, 50, 1733–1745, https://doi.org/10.1007/s00382-017-3718-6

Yu Liu, Han Liu, Huiming Song, Qiang Li, George S. Burr, Lu Wang, and **Hu Sile** (2017). A monsoon-related 174-year relative humidity record from tree-ring δ18O in the Yaoshan region, eastern central China, *Science of the Total Environment*, 593: 523-534, https://doi.org/10.1016/j.scitotenv.2017.03.198

RESEARCH EXPERIENCE

2023 (Jan) -	Dynamic downscaling over the complex terrain using Weather Research and Forecasting model (WRF) Glacier dynamic modeling using *ICEPACK* model
2020-2022	Studied atmospheric teleconnections influencing ecological processes including bird irruption and seed masting Investigated the response of atmospheric circulation to the sea surface temperature perturbations using Community Earth System Model (CESM2)
2019-2020	Studied land surface processes using Land Information System (LIS) framework
2017-2018	Studied microphysics of clouds. Specifically, investigated the aerosol-cloud interactions using Cloud Resolving Weather Research and Forecasting (CR-WRF) model
2016-2017	Participated in the dendroclimatology fieldwork Tained in the dendroclimatology lab: tree-ring cross-dating and data processing
2015-2016	Trained LINUX operating system Analyzed satellite and Doppler radar products

TEACHING EXPERIENCE

University of Utah, Department of Atmospheric Sciences

ATMOS 5400	The Climate System	Fall 2021 Fall 2020	Assist students in homeworks, host exam review sessions

ATMOS 6040	Environmental Stats	Spring 2021	Assist students in software operation (Matlab and Python)

MENTORSHIP

Olivia Mondlock, co-mentored Capstone project in Department of Atmospheric Sciences, University of Utah, 2021-2022

Zoe Exelbert, co-mentored Wilkes Scholar undergraduate project in Department of Atmospheric Sciences, University of Utah, Jan 2023 - present

PRESENTATIONS

- **Husile Bai**, Courtenay Strong, Jalene M. LaMontagne, and Benjamin Zuckerberg. Summer North American dipole driven by stationary Rossby waves associated with tropical and monsoonal convection. Poster at 2022 AGU Fall Meeting, In-person, 12-16, December, 2022
- Ivy Widick, **Husile Bai**, Courtenay Strong, Jalene M. LaMontagne, and Benjamin Zuckerberg. Climate Dipoles entrain ecological dipoles: irruption dynamics of boreal finches. Oral presentation at 2022 AGU Fall Meeting, In-person, 12-16, December, 2022
- **Husile Bai**, Courtenay Strong, Benjamin Zuckerberg, and Jalene M. LaMontagne. Continental-scale climate dipoles driven by pan-Pacific waves. Poster at 2021 AGU Fall Meeting, In-person, 13-17, December, 2021
- **Husile Bai**, Courtenay Strong, Benjamin Zuckerberg, and Jalene M. LaMontagne. Global teleconnections of west-east pine siskin irruption mode. Poster at Macrosystems PI Annual Meeting, Virtual, 13-14, January, 2021
- **Hu-sile**, Liu-Yu, Li-Guohui. Impact of ice nuclei on the development of cumulus clouds over the North China Plain. Oral presentation at 2017 AGU Fall Meeting, 11-15, December, 2017

TRAINING AND WORKSHOPS

- Weather Research & Forecasting (WRF) tutorial, July 2023, NCAR Foothills Laboratory, Boulder, CO
- MAGIC workshop, June 2023, Lamont-Doherty Earth Observatory, Columbia University, New York, NY
- NASA HiMAT workshop, June 2023, University of Utah, Salt Lake City, UT
- 2nd US Ice Core Open Science Meeting, May 2023, University of Washington. Seattle, WA
- *ICEPACK* glacier dynamic model training, May 2023, University of Washington, Seattle, WA
- MOOC machine learning in weather and climate training, January-April, 2023, European Centre for Medium-Range Weather Forecast (ECMWF) & International Foundation Big Data Artificial Intelligence for Human Development (IFAB), *Virtual*
- Research Mentoring training, August 2022 - March 2023, Research Education (REd), University of Utah, *Virtual*
- AGU Chapman Conference Second National Conference: Justice in Geoscience, August 2022, Washington, DC

GRANT AND AWARDS

2023 Dr. Norihiko Fukuta Memorial Award Best Peer-Reviewed Publication, Department of Atmospheric Sciences, University of Utah (*$1.5K*)
2022 AGU Chapman Conference Second National Conference travel grant ($*2.5K*)
2022 Rockstars Student Service Award, Department of Geology & Geophysics, University of Utah
2021 University of Utah Graduate Student Travel Award ($*0.5K*)

EDI PROMOTION

- Assisted as committee member in the Committee for the Advancement of Inclusion and Diversity (CAID), College of Mines and Earth Sciences, University of Utah, 2020-2022
- Inclusive Earth officer (social media promotion), College of Mines and Earth Sciences, University of Utah, 2021-2022
- Presentation: Kevin Anthony Mendoza, Alysha Armstrong, Sam Bagge, **Husile Bai**, Eric Humphrey, Chantelle Kiessner, Emily Hope Chuningham, Monique Maria Holt, Jory Lerback, Gabriela St. Pierre. Student Resiliency and Advancement of DEI Objectives Through Leadership Change and Pandemic Uncertainties: Perspectives from Inclusive Earth". AGU 2022 Fall Meeting, In-person, 12-16, December, 2022

PROFESSIONAL SKILLS

Statistical and modeling techniques:

- Weather Research and Forecasting (WRF) model
- Global climate models (GCM), including Community Earth System model (CESM), Geophysical Fluid Dynamics Laboratory (GFDL) Climate Model, and Coupled Model Intercomparison Project phase 6 (CMIP6)
- Land Information System (LIS) Framework
- Fu-Liou radiative transfer model
- *ICEPACK* glacier dynamics model
- Programming languages: NCL, Matlab, Python, Fortran, IDL, JeKyll, CDO
- In addition, I am familiar with a wide range of techniques and programs for data analysis and simulation under Unix (Linux) and Mac OS environments.

Other:

- I am fluent in Mongolian, English, and Mandarin Chinese, and have given presentations and taught in all three languages.