Shangyong Shi

Pim Postdoc Fellow, Johns Hopkins University

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RESEARCH INTERESTS

Snow hydrology, precipitation phase, snow-to-precipitation ratio, extreme precipitation, remote sensing, satellite precipitation retrieval, surface hydrology, machine learning, climate change

EDUCATION

Florida State University, Tallahassee, FL
Ph.D., Meteorology. Advisor: Guosheng Liu *Jan. 2021 – Aug. 2024*

Florida State University, Tallahassee, FL
M.S., Meteorology. Advisor: Guosheng Liu *Sept. 2018 – Dec. 2020*

Nanjing University, Nanjing, China
B.S., Atmospheric Sciences *Sept. 2014 – Jun. 2018*

National Taiwan University, Taipei, China
Exchange Student, Department of Atmospheric Sciences *Sept. 2016 – Jan. 2017*

EMPLOYMENTS AND EXPERIENCES

Johns Hopkins University, Department of Earth and Planetary Sciences Baltimore, MD
Pim Postdoc Fellow *Sept. 2024 - Present*
Mentor: Benjamin Zaitchik, Harihar Rajaram

- Implementing novel precipitation phase partitioning scheme in the Noah-MP model and test the sensitivity of snow accumulation to snow-to-precipitation (S/P) ratio.
- Exploring the impact of varying S/P ratio on streamflow.

University of Maryland,
Cooperative Institute for Satellite Earth System Studies College Park, MD
Research Intern *Jun 2023 – Aug 2023, Oct 2023 – May 2024*
Advisor: Yongzhen Fan, Huan Meng

- Developed an orographic precipitation index to identify orographic snowfall. Incorporate new variables in the machine learning algorithm to reduce the orographic snowfall rate bias estimates from satellite microwave sensors.

Florida State University,
Department of Earth, Ocean, and Atmospheric Science Tallahassee, FL
Research Assistant *Sept. 2018 – Aug. 2022, Jun. 2023 – Aug. 2024*

- Explore the role of extreme precipitation in Florida's hydroclimate variations.
- Investigated the trends in snow event to precipitation event ratio.
- Developed an energy-based phase partitioning scheme for satellite precipitation retrievals and hydrological modeling.
- Investigated the sensitivity of S/P ratio to warming using satellite data.

Florida State University,
Department of Earth, Ocean, and Atmospheric Science Tallahassee, FL
Teaching Assistant *Sept. 2022 – May 2023*

- Course: Atmospheric Dynamics I and II. Assisted syllabus design, guided recitation and conducted tank experiments.

Nanjing University, School of Atmospheric Sciences Nanjing, China

Research Assistant, Dissertation *Sept. 2017 – Jun. 2018*

- Studied the modification on the Indo-Western Pacific Ocean Capacitor Effect by the Pacific Meridional Mode in boreal spring.

Student Innovative Project Leader *Sept. 2015 – Jul. 2016*

- Simulated the Fujiwara Effect between two vortices in a rotating water tank.

MANUSCRIPTS IN PREPARATION

1. **Shi, S.,** & Zaitchik, B. (2025). Snow modeling uncertainty induced by precipitation phase partitioning schemes (In preparation).
2. **Shi, S.*,** & Liu, G. (2024). Investigation on the sensitivity of the snow-to-precipitation ratio to temperature based on satellite data (In preparation)
3. **Shi, S.,** Fan, Y., Dong, J., and Meng, H (2024). Developing a machine learning algorithm to improve orographic snowfall retrieval from satellite passive microwave sensors. (In preparation)

PUBLICATIONS

1. **Shi, S.***, & Liu, G. (2024). Improvements on Phase Classification Using Atmospheric Melting and Refreezing Energy Based on Soundings. *Journal of Geophysical Research: Atmospheres,* 129(10), e2023JD040030. https://doi.org/10.1029/2023JD040030.
2. Jeoung, H., **Shi, S.,** & Liu, G.* (2022). A novel approach to validate satellite snowfall retrievals by ground-based point measurements. *Remote Sensing*, 14(3), 434. https://doi.org/10.3390/rs14030434
3. **Shi, S.*,** & Liu, G. (2021). The latitudinal dependence in the trend of snow event to precipitation event ratio. *Scientific Reports*, 11(1), 18112. https://doi.org/10.1038/s41598-021-97451-9
4. **Shi, S.,** & Misra, V.*. (2020). The role of extreme rain events in Peninsular Florida's seasonal hydroclimate variations. *Journal of Hydrology*, 589, 125182. https://doi.org/10.1016/j.jhydrol.2020.125182

PRESENTATIONS

1. **Shi. S.** (Dec. 2024). Satellite Observed Non-linear Sensitivity of Snow-to-Precipitation Ratio to Temperature Warming. *2024 AGU Annual Meeting* (Poster).
2. **Shi. S.** (Jan. 2024). Developing a machine learning algorithm to improve orographic snowfall retrieval from satellite passive microwave sensors. JPSS Hydrology Initiative Telecon (Online)
3. **Shi, S.** (Dec. 2023). Improvements on Phase Classification Using Atmospheric Melting and Refreezing Energy Based on Soundings. *2023 AGU Annual Meeting* (Poster)
4. **Shi, S.** (Jan. 2023). Classifying precipitation phase with atmospheric soundings. *2023 AMS Annual Meeting* (Oral)

PEER REVIEW

Reviewer of Asia-Pacific Journal of Atmospheric Sciences, Journal of Hydrology, Climate Dynamics,

AWARDS

- 1st place oral presentation among student entries in the Hydrology section 2023
- Member of Chi Epsilon Pi Meteorology Honor Society 2019
- National Scholarship for outstanding undergraduates (top 2% in NJU) 2017
- The Liao's Scholarship (University-level, top 2% in school, NJU) 2016
- The Liao's Scholarship (University-level, top 2% in school, NJU) 2015
- University-level outstanding students (top 5% in NJU) 2015

SKILLS

- Coding: Python, Matlab, Fortran, C;
- Platforms: Linux, Github code management