

Mai, Liting

Tel.: +8615256541421 Email: mlt17@mail.ustc.edu.cn

EDUCATION

- M.S., Atmospheric Science**, University of Science and Technology of China. *Sept. 2021 – Jun. 2024(expected)*
Overall GPA: **4.09** /4.30
- B.S., Atmospheric Science**, University of Science and Technology of China. *Sept. 2017 – Jun. 2021*
Overall GPA: **3.50** / 4.30 (Ranking: **3** / 12)
- B.S., Business Administration**, University of Science and Technology of China. *Jun. 2018 – Nov. 2021*

RESEARCH INTERESTS

Sensitivity tests and precipitation retrieval algorithms based on space-borne active and passive microwave radiation observation

Hefei, China

Advised by Prof. Rui Li from USTC

Jan. 2021 – present

Use Cloud Resolving Model (CRM, now WRF is used) and Microwave Radiative Transfer Model (MRTM) to simulate the signal of space-borne dual-frequency precipitation radar and microwave radiometer, which are radar reflectivity (dBZ) and brightness temperature (TB). There are a few issues that we want to analyze as mentioned below. Besides, the final combined rain-rate (RR)-dBZ-TB dataset is the database to develop a unique RR profile retrieval algorithm.

- **Active Microwave radiative transfer modelling and the related precipitation retrieving algorithm**

As a part of Prof. Li's group, my work is to develop better precipitation retrieving algorithm and products for FY-3G mission. I use CRM and MRTM to simulate radar reflectivities from cloud/precipitation events, compare which with ground-based data and GPM-DPR products to evaluate the accuracy. We particularly focus on studying the radiative properties of solid hydrometeor's shapes and its impacts to precipitation retrievals. We try to answer the following questions:

- (1) What are the performances of simulations using different shape assumptions and using GPM DPR observations as a reference?
- (2) What are the effects of the temperature-dependent shape assumption?
- (3) What are the associated retrieval biases in the Z–R relationship, precipitation top height, and rain area when using different shape assumptions?

- **Passive Microwave Radiation**

As part of the content of Prof. Li's project on passive microwave, I am working on replacing surface type with accurate MLSE in Bayesian retrieval algorithms. I have done numerous of sensitivity tests, i.e., the probability statistical relationships of TB-RR and the effects of solid hydrometer's shape to the channels at high frequencies. Neural network is also tried as a way of sensitivity test.

- **Combined Radar-Radiometer precipitation retrieval algorithm**

Prepare and evaluate the final RR-dBZ-TB dataset for RR profile retrieval algorithm based on deep learning, and help my coworker to analyze the results.

Effects of aerosols on vertical structure of precipitation and latent heat in China

Hefei, China

Advised by Prof. Rui Li from USTC

Jun. 2020 – May 2021

- Tried to find details to indicate indirect effects, i.e., Ice Nuclei and Cloud Condensation Nuclei, in China and obtained the preliminary results. Aerosol Optical Depth (AOD) from MODIS and RR profile from TRMM PR are used, where AOD is matched to the resolution of RR profile by calculating the average AODs of the nearest six pixels.

Lightning Location Based on linear mode and Monte Carlo method

Hefei, China

Advised by Prof. Baoyou Zhu from USTC

Sept. 2019 – Feb. 2020

- Simplify the shape of lightning into a straight line and simulate its electromagnetic field, then using Monte Carlo method to locate the lightning according to a real observation.

PUBLICATION

Liting Mai, Shuping Yang, Yu Wang, and Rui Li. (2023). Impacts of Shape Assumptions on Z–R Relationship and Satellite Remote Sensing Clouds Based on Model Simulations and GPM Observations. *Remote Sensing*, 15(6), 1556.

CONFERENCE

- (Oral)** Impacts of Shape Assumptions on Z-R Relationship and Satellite Remote Sensing Clouds Based on Model Simulations and GPM Observations. In 5th Congress of China Geodesy and Geophysics (*Apr.* 2023). Wuhan, China
- (Poster)** The Retrieval of Cloud Ice Profile: Based on Microwave Radiative Transfer Model and Machine Learning. In The 7th Youth Geoscience Forum (*Jul.* 2021). Guizhou, China
- (Attend)** The 1st Summer Course of Atmospheric Radiation and Remote Sensing (*Jul.* 2021). Shanghai, China

SKILLS

- Models:** Radiative transfer model, Deep learning, WRF
- Data analysis:** Remote sensing data assimilations, Sensitivity tests
- Software skills:** Fortran and Python (frequently used), Matlab and NCL (master), IDL and C (beginner)
- Language:** Mandarin Chinese (native), two dialects of the Southwest area of China(native), English (fluent)
- TOEFL: **92** (R: 28; L: 21; S: 21; W: 22), Best Score: **95** (R: 28; L: 24; S: 21; W: 22)

AWARDS**Academic Scholarship**

The First Prize Scholarship 2023, The First Prize Scholarship 2022; Outstanding Graduate Scholarship 2021; Merit Scholarship, Silver Prize 2020, Merit Scholarship, Silver Prize 2019; Guanghua Education Scholarship 2018.

Women's Football Team of School of Earth and Space Sciences, USTC (Assistant Captain)

Champions of the Provincial Women Soccer Leagues from 2018 to 2020.

Badminton

Team champion of the 2017 Provincial Women Badminton Games; Champions of Woman's singles titles in the College Badminton Tournament from 2017 to 2021

TEACHING EXPERIENCE

- Teaching Assistant** *Complex function A* (Evaluation score: 4.68 / 5). 2021 Fall
- Teaching Assistant** *Atmospheric and Oceanography* (Evaluation score: 4.57 / 5). 2021 Spring
- Teaching Assistant** *Complex function B* (Evaluation score: 4.59 / 5). 2020 Fall
- Mentor** Xuanye Xu, on GPM and FY-3G mission active/passive RT simulations and data analysis (M.S. program). 2022-present
- Mentor** Yue Li, on GPM mission RT simulations and soil-vegetation RT simulations (B.S. program). 2023.9-present

COMMUNITY EXPERIENCE

- Facilitator of the 2021 congress of IRN on Cold Forests 2021
- Volunteer of the Science and Technology Week 2018, 2021
- Writer and art editor of the Stone Science Popularization Studio (Hosted by School of Earth and Space Sciences, USTC) 2018-present