

Frederick Iat-Hin Tam

Project Research Assistant

Dept. of Atmospheric Sciences, National Taiwan University

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RESEARCH INTEREST

- Extreme precipitation events
- Convective processes (dynamic, thermodynamic, microphysics)
- Convection under climate change (focus: convection-moisture interactions)
- Radar polarimetry
- Tropical meteorology

SKILLS & TRAINING

Programming languages: Python, Fortran 77/90, MATLAB, NCL, Linux

Modeling: Weather Research and Forecasting Model (WRF) – 5-year experience

Software: Remote sensing analysis tools (Radx, SOLOii, PyART, PyDDA), Model analysis tools (wrf-python, VAPOR)

Training: HYSPLIT tutorial, AMS Annual Meeting, Austin, TX (Jan. 2018)

Language: Cantonese (native), Mandarin Chinese (fluent), English (fluent), Turkish (beginner), French (beginner)

EDUCATION

M. S., Atmospheric Sciences, National Taiwan University, Taipei, Taiwan, 2019

- Thesis: The impact of ice microphysics and ambient instabilities on nocturnal convective system maintenance
- Advisors: Prof. Ming-Jen Yang (NTU), Dr. Wen-Chau Lee (NCAR)

B. S., Atmospheric Sciences, National Taiwan University, Taipei, Taiwan, 2016

PROFESSIONAL EMPLOYMENTS

Project Research Assistant, 2019–Present

Center of Atmospheric Resources and Disaster Studies, Dept. of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan

Graduate Research Assistant, 2016–2019

Dept. of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan
Convective and Precipitation Laboratory

PUBLICATIONS

Peer-reviewed/Refereed:

Tam, F. I.-H., M.-J. Yang, and W.-C. Lee (*in preparation*): Sensitivity of a simulated nocturnal convective system to hydrometeor sedimentation and pre- convective moisture heterogeneity.

- Altered parameterization codes to test scientific hypothesis

Tam, F. I.-H., M.-J. Yang, and W.-C. Lee, (*in revision*): Polarimetric size sorting signatures in the convective regions of PECAN MCSs: their implications on convective kinematics, thermodynamics, and precipitation pathways. *Journal of Geophysical Research: Atmospheres*

- Designed an object-based algorithm to identify radar signatures in 74.5 hours of radar observations.
- Compared radar signatures to high-resolution (3km/1km) WRF outputs

Others:

Tam, F. I.-H., Ming-Jen Yang, 2019: Sensitivity of Simulated Nocturnal Convective Systems to Graupel Sedimentation Characteristics. Preprints, 2019 Conference of Weather Analysis and Forecast. Taiwan Geoscience Assembly (TGA), Taipei, Taiwan, 13-17 May 2019.

CONFERENCE PRESENTATIONS

Tam, F. I.-H., Ming-Jen Yang, Wen-Chau Lee, 2020: Assessing the impacts of sedimentation settings in double-moment microphysical schemes on the kinematic-thermodynamic characteristics of nocturnal convective systems. 2020 Conference of Weather Analysis and Forecast, Central Weather Bureau (CWB), Taipei, Taiwan, 13-17 May 2020.

Tam, F. I.-H., Ming-Jen Yang, 2019: Sensitivity of Simulated Nocturnal Convective Systems to Graupel Sedimentation Characteristics. 2019 Conference of Weather Analysis and Forecast. Taiwan Geoscience Assembly (TGA), Taipei, Taiwan, 13-17 May 2019.

Tam, F. I.-H., Ming-Jen Yang, Wen-Chau Lee, 2018: Response of Nocturnal Convective Systems to Graupel Sedimentation during PECAN IOP30. Cross- Strait Atmospheric Sciences Student Conference and Graduate Students Symposium. Institute of Atmospheric Physics, Chinese Academy of Sciences, Guangzhou, China.

Tam, F. I.-H., Ming-Jen Yang, Wen-Chau Lee, 2018: Maintenance of Nocturnal MCSs: The Role of Low-Tropospheric Moisture Advection and Graupel Size Sorting.

Conference for Graduate Students in Atmospheric Sciences. Meteorological Society of the Republic of China, Taipei, Taiwan.

Tam, F. I.-H., Ming-Jen Yang, Wen-Chau Lee, 2018: Microphysical and Near-Storm Environmental Control on the Maintenance of the 15 July 2015 MCS. A Special Symposium on Plains Elevated Convection at Night (PECAN), AMS Annual Meeting, Austin, TX.

Tam, F. I.-H., Ming-Jen Yang, Wen-Chau Lee, 2017: An Observational Study on a Weakening MCS in a Nocturnal Environment during PECAN IOP30. 12th International Conference on Mesoscale Convective Systems and High-Impact Weather in Asia (ICMCS-XII), Taipei, Taiwan.

AWARDS

Second-placed best paper and presentation award, Cross-Strait Atmospheric Sciences Student Conference and Graduate Students Symposium. Institute of Atmospheric Physics, Chinese Academy of Sciences, Guangzhou, China.

PROFESSIONAL SERVICES

Field Campaigns:

Lead Forecaster; Student Trainer/Coordinator, Taiwan-Area Heavy Rain Observation and Prediction Experiment (TAHOPE), Taiwan, Jun 2020; May-June 2021

- Design observational strategies to capture pre-storm moisture and precipitation characteristics.
- Coordinate instrumental resources
- Provide daily high-resolution model outputs
- Train students to give regular weather briefings during field campaign
- Collaborate with international partners to prepare for an international field campaign in East Asia/Western Pacific in mid-2022.

Student Participant, Propagation of Intra-Seasonal Tropical Oscillations (PISTON), Palau, Western Pacific (R/V Thompson)

Student Participant, Plains Elevated Convection at Night (PECAN), U. S. Great Plains, May-July 2015

Teaching Experiences:

Dept. of Atmospheric Sciences, National Taiwan University

- Special Topics in Deep Convection (graduate level), Fall 2020
- Numerical Weather Prediction (graduate level), Fall 2017
- Fluid Dynamics (undergraduate level), Spring 2017 and 2018

COURSEWORKS

Graduate level: Advanced Atmospheric Dynamics, Mesoscale Meteorology, Radar Meteorology, Numerical Weather Prediction, Deep Convection, Tropical Meteorology, Stratocumulus Cloud Dynamics.

Undergraduate level: Atmospheric Thermodynamics and Radiation, Numerical Analysis, Applied Mathematics (Ordinary and Partial Differential Equations), Scientific Programming, Atmospheric Chemistry, Atmospheric Dynamics, Synoptic Meteorology, Climatology, Physical Oceanography.

PERSONAL INTERESTS

Weather Forecasting, hiking, landscape photography, piano, cinema