Hungjui Yu

Department of Atmospheric Science/Cooperative Institute for Research in the Atmosphere (CIRA)
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+ CURRENT POSITION

Research Scientist
Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University (CSU)
Fort Collins, CO, USA

+ RESEARCH TOPICS

- **3D Cloud Structure and Variability in the Current and Future Climate**
- **Mesoscale Convective Process and the Environments using Machine Learning**
- **Application of Remote Sensing and Numerical Modeling to Aviation and Severe Weather Hazards**
- **Global Spatial and Temporal Variability of Mesoscale Convective Systems & Organized Convection**
- **Observational Field Campaigns, and Radar/Radiosonde Operations, Data Quality Control and Analysis**

+ EDUCATION

- 2011 – 2018 **Ph.D. in Atmospheric Sciences >** Department of Atmospheric Sciences, National Taiwan University
  Dissertation: "Quasi-2-day Convective Disturbances in the Equatorial Indian Ocean: DYNAMO Observation"
  Advisor: Dr. Hung-Chi Kuo and Dr. Richard H. Johnson

- 2012 – 2014 **Visiting Student >** Department of Atmospheric Science, Colorado State University
  Graduate Student Study Abroad Program, Ministry of Science and Technology, Taiwan
  Advisor: Dr. Richard H. Johnson

- 2005 – 2009 **B.S. in Atmospheric Sciences >** Department of Atmospheric Sciences, National Taiwan University
  Dean's Award

+ PROFSESIONAL EXPERIENCE

- 2025 – present **Resch Scientist/Scholar I: Cloud Properties & Cloud-Free Line of Sight Specialist**
  Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University (CSU)
  - OVERCAST Project
    Major developer of the DCFLOS package with CIRA 3D cloud dataset for OVERCAST project.
  - CAIG Project
  - INCUS Project

⊙ 2023 – 2025 **Postdoctoral Fellow (extended offer of Research Scientist 1)**
Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University (CSU)

- Package development: DCFLOS_toolbox
  Major developer of the Python package for estimating Deterministic Cloud-Free Line-of-Sight (DCFLOS) with CIRA 3D cloud dataset for RAM-HORNS/OVERCAST projects.

⊙ 2020 – present **Postdoctoral Fellow**
Department of Atmospheric Science, Colorado State University

- Field Campaign: Prediction of Rainfall Extremes Campaign in the Pacific (PRECIP) – pre-experiment 2021
  Participation in Radiosonde operation, radar strategy decision-making, personnel training, and instrument development for the campaign and radiosonde network
- Package development: Cloud System Classification
  Major developer of the TRMM-heritage Storm Mode classification Python package for multiple observation and numerical model datasets.

⊙ 2018 – 2020 **Postdoctoral Fellow**
Department of Atmospheric Sciences, National Taiwan University

- Field Campaign: TAipei Severe Storm Experiment (TASSE)
  Major field campaign coordinator for decision-making, weather analysis, personnel training, and instrument development for the radiosonde network.

⊙ 2011 – 2018 **Student Research Assistant**
Research Center of Climate Change and Sustainable Development, National Taiwan University

+ GRANTS AND FELLOWSHIP

⊙ 2023 – present **U.S. Office of Naval Research (ONR) RAM-HORNS (Research Advances in Meteorology-Honing Operational Readiness for National Security) and Optical Variability Evaluation of Regional Cloud Asymmetries in Space and Time (OVERCAST)**
PI: Steven D. Miller (CSU)
Dr. Yu (co-I) serves as the major contributor and developer of the Deterministic-Cloud-Free Line-of-Sight (DCFLOS) algorithm and tool in Task 5.

⊙ 2024 – present **National Science Foundation (NSF) Collaborations in Artificial Intelligence and Geosciences (CAIG) Program (Award #: 2425923)**
"Toward a Deeper Understanding of Cloud Processes and Future Storm Modes using AI"
PI: Imme Ebert-Uphoff (CSU)
Dr. Yu (co-I) serves as the major contributor to the Application 2.

⊙ 2024 – present **INvestigation of Convective UpdraftS (INCUS) Mission**
PI: Dr. Susan van den Heever (CSU)
DPI: Dr. Kristen Rasmussen (CSU)
Dr. Yu serves as the major contributor/developer of AUX-LIGHT algorithms and products.

⊙ 2024 – present **NOAA Climate Program Office (CPO), Modeling, Analysis, Predictions, and Projections (MAPP) Program**
"Storm Mode Classification as a Process-Oriented Tool to Diagnose Precipitation Biases in Climate Models"
PI: Dr. Kristen Rasmussen (CSU)
Dr. Yu (co-I) serves as the major contributor and lead to the Objective 1.

⊙ 2020 – 2021 **Postdoctoral Research Abroad Program, Ministry of Science and Technology, Taiwan**
"Characteristics and Mechanisms for Mesoscale Convective Systems and Rainfall Extremes in the Tropical Ocean and Land"

⊙ 2013 – 2014 **Graduate Student Study Abroad Program, Ministry of Science and Technology, Taiwan**
"Characteristics and Variability of Atmospheric Stable Layers during DYNAMO-AMIE 2011"

+ PUBLICATIONS

1. **Yu, H**., Ver Hoef, L., Rasmussen, K. L., Ebert-Uphoff, I. (2025): Using machine learning to downscale coarse-resolution environmental variables for understanding the spatial frequency of convection. *(under review)*

2. **Yu, H**., Rasmussen, K. L., Dolan, B. (2025). Current and Future Convective Storm Modes over CONUS from GPM Observations and Convection-Permitting Regional Climate Model Simulations. *(reformatting for submission)*

3. H.-C. Kuo, T.-S. Yo, **H. Yu**, S.-H. Su, C.-H. Liu, P.-H. Lin (2025). Data Quality Control and Calibration for Mini-Radiosonde System "Storm Tracker" in Taiwan. *Journal of the Meteorological Society of Japan Ser II (気象集誌. 第2輯), 103(5), 573–593*. doi: 10.2151/jmsj.2025-029.

4. **Yu, H**., Rasmussen, K. L., Kuo, H.-C. (2021). Quasi-2-day and diurnal cloud variation timescales over convectively active regions. *Journal of Geophysical Research: Atmospheres, 126, e2021JD035426.* https://doi.org/10.1029/2021JD035426

5. Tsujino, S., H.-C. Kuo, **H. Yu**, B.-F. Chen, and K. Tsuboki (2021). Effects of mid-level moisture and environmental flow on the development of afternoon

thunderstorms in Taipei. *Terr. Atmos. Ocean. Sci., 32, 497-518*, doi: 10.3319/TAO.2021.11.17.01.

6. Hwang, W. C., Lin, P. H., & **Yu, H.** (2020). The development of the "Storm Tracker" and its applications for atmospheric high-resolution upper-air observations. *Atmospheric Measurement Techniques, 13*(10), 5395-5406.

7. **Yu, H.**, Johnson, R. H., Ciesielski, P. E., & Kuo, H. C. (2018). Observation of quasi-2-day convective disturbances in the equatorial Indian Ocean during DYNAMO. *Journal of the Atmospheric Sciences, 75*(9), 2867-2888.

8. **Yu, H.**, Ciesielski, P. E., Wang, J., Kuo, H. C., Vömel, H., & Dirksen, R. (2015). Evaluation of humidity correction methods for Vaisala RS92 tropical sounding data. *Journal of Atmospheric and Oceanic Technology, 32*(3), 397-411.

9. Ciesielski, P. E., **Yu, H.**, Johnson, R. H., Yoneyama, K., Katsumata, M., Long, C. N., ... & Van Hove, T. (2014). Quality-controlled upper-air sounding dataset for DYNAMO/CINDY/AMIE: Development and corrections. *Journal of Atmospheric and Oceanic Technology, 31*(4), 741-764.

+ INVITED PRESENTATIONS

⊙ 2023 **Central Weather Bureau (now Central Weather Administration, CWA) in Taiwan**
Clouds and Storms on Bridging Weather and Climate

⊙ 2022 **Climate Hotpots in Action (CHiA) Forum Webinar**
Quasi-Two-Day and Diurnal Cloud Variation Timescales over Convectively Active Regions

⊙ 2020 **Department of Atmospheric Sciences, National Central University (NCU)**
Department of Atmospheric Sciences, Chinese Culture University (PCCU)
Quality-Controlled High-Resolution Upper-Air Sounding Dataset for TASSE: Development and Corrections of the "Storm Tracker" Observations

⊙ 2019 **Department of Atmospheric Sciences, Chinese Culture University (PCCU)**
TAipei Severe Storm Experiment (TASSE): Upper-air Radiosonde Observations and the Development of the "Storm Tracker"

⊙ 2018 **Department of Earth Sciences, National Taiwan Normal University (NTNU)**
Quasi-2-day Convective Disturbances in the Equatorial Indian Ocean: DYNAMO Observation

+ CONFERENCE PRESENTATIONS

⊙ 2023 **The 15th International Conference on Mesoscale Convective Systems (ICMCS-XV)**
Current & Future Convective Storm Modes over CONUS from GPM Observations and Convection-permitting Regional Climate Model Simulations

⊙ 2022 **American Meteorological Society (AMS) 102nd Annual Meeting**
1. Quasi-Two-Day and Diurnal Cloud Variation Timescales over Convectively Active Regions
2. Upper-Air Radiosonde Observations and Data Corrections of the Storm Tracker during PRECIP 2021

⊙ 2020 **2020 Conference on Weather Analysis and Forecasting (Central Weather Bureau, Taiwan)**
Quality-Controlled High-Resolution Upper-Air Sounding Dataset for TASSE: Development and Corrections of the Storm Tracker Observations

⊙ 2019 **Asia Oceania Geosciences Society (AOGS) 16th Annual Meeting**
Quasi-2-day Convective Disturbances Over the Equatorial Indian Ocean and Western Pacific

2019 Taipei Severe Weather and Extreme Precipitation (SWEP) Workshop
Upper-air Radiosonde and "Storm Tracker" Observations in TASSE 2018

13th International Conference on Mesoscale Convective Systems and High-Impact Weather in East Asia (ICMCS-XIII)
Characteristics of Quasi-2-Day Convective Disturbances over the Tropical Ocean

⊙ 2017 **12th International Conference on Mesoscale Convective Systems and High-Impact Weather in East Asia (ICMCS-XII)**
An Observational Study on Quasi-2-day Convective Disturbances in the Equatorial Indian Ocean during DYNAMO/AMIE/CINDY 2011

⊙ 2015 **2015 American Geophysical Union (AGU) Fall Meeting**
Two-day Convective Disturbances in the Equatorial Indian Ocean

2015 International Workshop on Typhoon and Flood–APEC Experience Sharing on Hazardous Weather Events and Risk Management
Two-day Disturbances over the Equatorial Indian Ocean during DYNAMO-AMIE-CINDY 2011

⊙ 2014 **Asia Oceania Geosciences Society (AOGS) 11th Annual Meeting**
Characteristics and Variability of the Melting Stable Layer during DYNAMO-AMIE-CINDY 2011

17th Symposium on Meteorological Observations and Instrumentation / 21st Conference on Applied Climatology
Evaluation of GRUAN and DigiCORA Humidity Corrections to Vaisala RS92 Sounding Data during DYNAMO

2014 National Conference of Graduate Students in Atmospheric Sciences
Characteristics and Variability of the Melting Stable Layer during DYNAMO-AMIE-CINDY 2011

⊙ 2013 **2013 American Geophysical Union (AGU) Fall Meeting**
Characteristics and Variability of the Melting Stable Layer during DYNAMO-AMIE-CINDY 2011

⊙ 2012 **2012 American Geophysical Union (AGU) Fall Meeting**
Validation of Sonde Moisture Corrections using GPS and MWR Precipitable Water Retrievals during DYNAMO-CINDY 2011-AMIE

+ CODE PACKAGES DEVELOPMENT

⊙ 2025 **DCFLOS_Toolbox: v0.2.0**
Python package designed to estimate the DCFLOS using a 3D cloud dataset generated at CIRA. Task 5 for RAM-HORNS and OVERCAST projects.

⊙ 2022 **Cloud System Classification: v1.0**
Fundamental tool for classifying cloud systems for CAIG project.
Yu, H. (2022). yuhungjui/Cloud_System_Classification: v1.0 (v1.0). Zenodo.
https://doi.org/10.5281/zenodo.6491940

+ PROFESSIONAL SERVICE AND OUTREACH

⊙ Conferences and Workshops **2025 Taiwan-US Workshop on AI/ML for Satellite Data, Severe Weather, and Tropical Cyclones at CIRA**
CSU side of the workshop was organized by Dr. Hungjui Yu (lead; ATS/CIRA), Dr. Imme Ebert-Uphoff (co-lead; CIRA) and Dr. Michael Bell (co-lead; ATS).

⊙ Student Mentoring **Mesoscale & Climate Research Group (Rasmussen Research Group) at Department of Atmospheric Science at CSU**
Scientific discussion and co-advising graduate students of Dr. Kristen Rasmussen at Department of Atmospheric Science at CSU.

+ HONORS AND AWARDS

⊙ 2015 **Outstanding Student Poster Award in International Conference**
2015 American Geophysical Union (AGU) Fall Meeting

1st Place of IWTF Student Poster Competition Award
2015 International Workshop on Typhoon and Flood (IWTF), Taipei, Taiwan

⊙ 2014 **Distinction in Student Poster Session**
2014 National Conference of Graduate Students in Atmospheric Sciences, Central Weather Bureau (CWB), Taiwan

⊙ 2009 **Dean's Award**
College of Science, National Taiwan University (NTU)

+ FIELD CAMPAIGNS

⊙ 2021	**Prediction of Rainfall Extremes Campaign in the Pacific (PRECIP) – pre-experiment 2021** Radiosonde operation, radar strategy decision-making, personnel training, and instrument development for the campaign and radiosonde network
⊙ 2016 – 2020	**TAipei Severe Storm Experiment (TASSE)** Organization, decision-making, weather analysis, personnel training, and instrument development for the campaign and radiosonde network
⊙ 2011 – 2012	**Dynamics of Madden-Julian Oscillation (DYNAMO)** Field operator conducting upper-air radiosonde observation at Malé, Maldives