

Curriculum Vitae  
**Associate Professor**  
**Wei-Ting Chen**

Updated Jan 1<sup>st</sup>, 2024

Department of Atmospheric Sciences, National Taiwan University  
No. 1, Sec. 4, Roosevelt Rd., Taipei 10673, Taiwan  
Tel: +886-2-3366-3914  
Email: weitingc@ntu.edu.tw

**Academic Positions:**

Associate Professor, Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan (Sep, 2020-Present)

Assistant Professor, Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan (Aug, 2012-Aug, 2020)

Postdoctoral Associate, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA (May, 2009-Feb, 2012)

Postdoctoral Associate, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, USA (Jan.-Apr., 2009)

Graduate Research Assistant, California Institute of Technology, Pasadena (2002-2008)

Research Assistant, National Taiwan University, Taipei (2001-2002)

**Education:**

*Ph.D.*, Environmental Science and Engineering, California Institute of Technology (2009). Advisor: John H. Seinfeld. Thesis title: "I. Global Simulations of Interactions between Aerosols and Future Climate and II. Sensitivity of Multiangle Imaging to the Optical and Microphysical Properties of Biomass Burning Aerosols."

*M.S.*, Environmental Science and Engineering, California Institute of Technology (2004). Advisor: John H. Seinfeld.

*B.S.*, Atmospheric Sciences, National Taiwan University (2001)

**Academic Awards:**

2023 俞家忠教授論文獎

2023 Excellent Award of Article in Atmospheric Science (Meteorological Society of the ROC) 大氣科學期刊優良論文獎

2020-2022 Taiwan MOST Project for Excellent Junior Research Investigators 科技部年輕優秀學者研究計畫

2021 NTU Outstanding Teaching Award (Top 1%) 台大教學傑出教師

2014, 2016 and 2017 NTU Excellent Teaching Award (Top 10%) 台大教學優良教師

## Professional Appointment and Society Membership:

- Member of IPWG Orographic Precipitation Focus Group (2023-present)
- Member of Editorial Board of Geoscience Letters (2022-present)
- GEWEX/CLIVAR Monsoon Panel - Asian-Australian Monsoon Working Group (2021-present)
- American Geophysical Union (2005-present)
- American Meteorology Society (2012-present)
- Meteorology Society, R.O.C. (member, 2015-present; Youth Committee, 2015-2016 & 2023-present; Academic Committee, 2023-present)

## Research Expertise:

Applying the satellite-retrieved cloud and precipitation products and a hierarchy of atmospheric models (CRM, CESM, SPCAM) to investigate the multi-scale convections over Asian monsoon regions and their interactions with the large-scale environment including thermodynamics, dynamics, anthropogenic aerosols:

- Understand the role of the diurnal cycle and convection organization in the cross-scale convection interactions of monsoon and tropical variability, as well as the representation of associated physical processes in global models
- Establish satellite-based, high-resolution gridded data sets of aerosol, cloud, precipitation, and lightning over Taiwan and Asia to investigate the long-term trend of air pollution, the relationships between aerosols and meteorology, and the occurrence of extreme rainfall systems
- Understand the climate impacts of anthropogenic aerosols over Asian monsoon regions, including the effects on convection over coastal or complex topography, and the synergistic effects with land surface changes such as irrigation.

## Peer-Reviewed Publications:

- Chen, P.-J., W.-T. Chen\*, S.-W. Chou, C.-M. Wu and M.-H. Lo (2024), Machine Learning Detection of Fog Top over Eastern Taiwan Mountains from Himawari-8 Satellite True-color Images, Remote Sensing Application: Society and Environment, submitted. Available at SSRN: <http://dx.doi.org/10.2139/ssrn.4692055>.
- Su, C.-Y.\*, C.-M. Wu, W.-T. Chen, and J. Peters (2024), Modulation of Tropical Convection-circulation Interaction by Aerosol Indirect Effects in Idealized Simulations of a Global Convection-permitting Model, J. Geophys. Res. Atmos., in revision.
- Wu, C.-H., W.-T. Chen\*, and C.-M. Wu (2024), Multi-scale Variability of Autumn Precipitation in Eastern Taiwan Modulated by ENSO, ISO, and TC activity, Asia. Pac. J. Atmos. Sci., in revision.
- Yo, T.-S., S.-H. Su, C.-M. Wu, W.-T. Chen, J.-L. Chu, C.-W. Chang, and H.-C. Kuo (2024), Learning Representations of Satellite Images with Evaluations on Synoptic Weather Events, Earth and Space Science, under review.
- Li, J.-L.\*, W.-L. Lee, K.-M. Xu, Y. C. Tsai, J. Jiang, J.-Y. Yu, G. Stephen, E. J. Fetzer, and W.-T. Chen (2023), Radiatively-Active Hydrometeors Frequencies from CloudSat-CALIPSO Data for Evaluating Cloud Fraction in Global Climate Models, J. Geophys. Res. Atmos., 128(21), e2023JD038511, doi: 10.1029/2023JD038511.

- Chen, Y.-C.\*, W.-L. Tseng, C.-M. Wu, W.-T. Chen, H.-Y. Tseng (2023), Influence of Synoptic Weather on Aerosol Variability over East Asia: Present and Future, *Atmos. Res.*, (295)107023, <https://doi.org/10.1016/j.atmosres.2023.107023>.
- Chang, Y.-H., W.-T. Chen\*, C.-M. Wu, Y.-H. Kuo, and J. D. Neelin (2023), Identifying the Deep-inflow Mixing Features in Orographically Locked Diurnal Convection, *Geophys. Res. Lett.*, 50(10), e2023GL103107, <https://doi.org/10.1029/2023GL103107>
- Jung, C.-R.\*, W.-T. Chen, L.-H. Young, and T.-C. Hsiao (2023), A hybrid model for estimating the number concentration of ultrafine particles in central Taiwan, *Environment International*, 175, 107937, <https://doi.org/10.1016/j.envint.2023.107937>.
- Kuo, K.-T., C.-M. Wu\*, and W.-T. Chen (2023), Effects of the Horizontal Scales of the Cloud-Resolving Model on Tropical Cyclones in the Superparameterized Community Atmosphere Model, *Earth and Space Science*, 10(4), e2022EA002681, <https://doi.org/10.1029/2022EA002681>.
- Hsu, T.-H., W.-T. Chen\*, C.-M. Wu, and M.-K. Hsieh (2023), The observation-based index to investigate the role of lee vortex in enhancing pollution over Northern Taiwan, *Journal of Applied Meteorology and Climate*, 62 (3), 427–439, <https://doi.org/10.1175/JAMC-D-22-0102.1>.
- Chen, Y.-C., C.-M. Wu\*, and W.-T. Chen (2022), A Deep Learning Framework for Analyzing Cloud Characteristics of Aggregated Convection Using Cloud-Resolving Model Simulations, *Atmospheric Science Letters*, e1150, <https://doi.org/10.1002/asl.1150>.
- Chang, Y.-C., W.-T. Chen, S.-H. Su, C.-R. Jung\*, and B.-F. Hwang (2022), PM<sub>2.5</sub> exposure and incident attention-deficit/hyperactivity disorder during the prenatal and postnatal periods: a birth cohort study, *Environmental Research*, 214, 113769, <https://doi.org/10.1016/j.envres.2022.113769>
- Su, C.-Y., W.-T. Chen\*, C.-M. Wu, H.-Y. Ma (2022), Object-based evaluation of tropical precipitation systems in DYAMOND simulations over the maritime continent. *J. Meteor. Soc. Japan*, 100, 647-659, <https://doi.org/10.2151/jmsj.2022-033>
- Su, S.-H., Y.-H. Chang, C.-H. Liu, W.-T. Chen\*, W.-Y. Chang, J.-P. Chen, W.-N. Chen, K.-S. Chung, J.-P. Hou, M.-K. Hsieh, H.-C. Kuo, Y.-C. Lee, P.-L. Lin, P.-Y. Lin, P.-H. Lin, Y.-C. Liou, M.-H. Lo, S.-H. Wang, C.-M. Wu, J.-H. Yang, M.-J. Yang (2022), Yilan Experiment of Severe Rainfall in 2020 (YESR2020): The Scientific Strategy and the Field Campaign, *Q. J. R. Meteorol. Soc.*, 148(745), 1663-1682, <https://doi.org/10.1002/QJ.4271>
- Su, C.-Y., C.-M. Wu\*, W.-T. Chen, and J.-H. Chen (2022), The Effects of the Unified Parameterization in the CWBGFS: the Diurnal Cycle of Precipitation over Land in the Maritime Continent, *Climate Dynamics*, 58, 223–233, <https://doi.org/10.1007/s00382-021-05899-2>
- Chang, C.-W., Y.-C. Chen\*, and W.-T. Chen (2021), Susceptibility of East Asian Marine Warm Clouds to Aerosols in Winter and Spring from Collocated A-Train Satellite Observations, *Remote Sens.*,13(24), 5179; <https://doi.org/10.3390/rs13245179>
- Chang, C.-W., Y.-C. Chen\*, and W.-T. Chen (2021), The susceptibility of East Asian marine warm clouds to aerosol index during Winter and Spring, *Atmospheric Sciences (in Chinese)*, 49, 176-200pp., <https://doi.org/10.53106/025400022021124902003>
- Chang, Y.-H., W.-T. Chen\*, C.-M. Wu, C. Moseley, and C.-C. Wu (2021), Tracking the influence of cloud condensation nuclei on summer diurnal precipitating systems over complex topography in Taiwan, *Atmos. Chem. Phys.*, 21, 16709–16725, <https://doi.org/10.5194/acp-21-16709-2021>
- Su, C.-Y., C.-M. Wu\*, W.-T. Chen, and J.-H. Chen (2021), Implementation of the Unified

Representation of Deep Moist Convection in the CWBGFS, *Month. Weather Rev.*, 149(10), 3525–3539, <https://doi.org/10.1175/MWR-D-21-0067.1>.

- Jung, C.-R., W.-T. Chen, and S. F. Nakayama\* (2021), A National-Scale 1-km Resolution PM2.5 Estimation Model over Japan Using MAIAC AOD and a Two-Stage Random Forest Model. *Remote Sensing*, 13(18):3657, <https://doi.org/10.3390/rs13183657>
- Chen, P.-J., W.-T. Chen\*, C.-M. Wu, T.-S. Yo (2021), Convective cloud regimes from the classification of object-based CloudSat observations over Asian-Australian monsoon areas, *Geophys. Res. Lett.*, 48(10), doi:/10.1029/2021GL092733
- Jian, H.-W., W.-T. Chen\*, C.-M. Wu, and K. L. Rasmussen (2021), The synoptically-influenced extreme precipitation systems over Asian-Australian monsoon region from TRMM PR Measurements, *J. Meteor. Soc. Japan*, 99 (2), 269-285, doi:10.2151/jmsj.2021-013
- Shiu, C.-J., Y.-C. Wang, H.-H. Hsu, W.-T. Chen, H.-L. Pan, R. Sun, Y.-H. Chen, and C.-A. Chen (2021) GTS v1.0: A Microphysics Scheme for Climate Models Based on a Probability Density Function, *Geosci. Model Dev.*, doi:10.5194/gmd-2020-144
- Ma, H.-Y.\* , C. Zhou, Y. Zhang, S. Klein, M. Zelinka, X. Zheng, S. Xie, W.-T. Chen, and C.-M. Wu (2021), A multi-year short-range hindcast experiment for evaluating climate model moist processes from diurnal to interannual time scales, *Geosci. Model Dev.*, doi: 10.5194/gmd-2020-39
- Su, S.-H.\* , C.-W. Chang, W.-T. Chen (2020), The Temporal Evolution of PM2.5 Pollution Events in Taiwan: Clustering and the Association with Synoptic Weather, *Atmosphere*, 11(11), 1265, doi:10.3390/atmos11111265
- Hung, M.-P., W.-T. Chen\*, P.-J. Chen, C.-M. Wu, and P.-N. Feng (2020) Intraseasonal Vertical Cloud Regimes Based on CloudSat Observations over the Tropics, *Remote Sensing*, 12 (14), doi://10.3390/rs12142273
- Wang, C.-M., C.-R. Jung, W.-T. Chen, B.-F. Hwang (2020) Exposure to fine particulate matter (PM 2.5) and pediatric rheumatic diseases. *Environ Int*, 138: 105602, doi: 10.1016/j.envint.2020.105602.
- Kuo, K.-T., W.-T. Chen\*, and C.-M. Wu (2020), Effects of convection-SST interactions on the South China Sea Summer Monsoon Onset in a Multiscale Modeling Framework Model, *Terr. Atmos. Ocean*, doi:10.3319/TAO.2019.08.16.01.
- Su, C.-Y., W.-T. Chen\*, J.-P. Chen, W.-Y. Chang, and B. J.-D. Jou (2020), The Impacts of Cloud Condensation Nuclei on the Extreme Precipitation of a Monsoon Coastal Mesoscale Convection System, *Terr. Atmos. Ocean*, doi:10.3319/TAO.2019.11.29.01.
- Sui, C.-H, P.-H. Lin, W.-T. Chen, S. Jan, C.-Y. Liu, Y.-J. Yang, C.-H. Liu, J.-M. Chen, M.-J. Yang, J.-S. Hong, L.-H. Hsu, L.-S. Tseng (2020), The South China Sea Two Islands Monsoon Experiment for studying convection and subseasonal to seasonal variability, *Terr. Atmos. Ocean*, doi:10.3319/TAO.2019.11.29.02.
- Kuo, Y.-H., J. D. Neelin, J. F. Booth, C.-C. Chen, W.-T. Chen, L. J. Donner, A. Gettelman, X. Jiang, K.-T. Kuo, E. Maloney, C. R. Mechoso, Y. Ming, K. A. Schiro, C. J. Seman, C.-M. Wu, M. Zhao (2020), Convective transition statistics over tropical oceans for climate model diagnostics: GCM evaluation, *J. Atmos. Sci.*, 75(5), 1553-1570, doi:10.1175/JAS-D-19-0132.1
- Lin, C. A., Y.-C. Chen\*, C.-Y. Liu, W.-T. Chen, J. H. Seinfeld, and C. C. K. Chou (2019). Satellite-Derived Correlation of SO<sub>2</sub>, NO<sub>2</sub>, and Aerosol Optical Depth with Meteorological Conditions over East Asia from 2005 to 2015, *Remote Sensing*, 11(15), 1738, 11(15), 1738, 21pp, doi:10.3390/rs11151738.
- Chen, W.-T.\*, C.-M. Wu, W.-M. Tsai, P.-J. Chen, and P.-Y. Chen (2019), Role of coastal

convection to moisture buildup during the South China Sea summer monsoon onset, *J. Meteor. Soc. Japan*, 97(6), 1155–1171, doi:10.2151/jmsj.2019-065

- Chen, W.-T., S.-P. Hsu, Y.-H. Tsai, and C.-H. Sui\* (2019), The Influences of Scale-Interactions Involving Convectively-Coupled Kelvin Waves on Rainfall Variability over South China Sea and Maritime Continent in December 2016, *J. Climate*, 32(20), 6977–6993, <https://doi.org/10.1175/JCLI-D-18-0471.1>
- Jung, C.-R., W.-T. Chen, Y.-H. Tang, B.-F. Hwang\* (2019), Fine particulate matter exposure during pregnancy and infancy and incident asthma, *Journal of Allergy and Clinical Immunology*, 143(6), 2254-2262.e5, <https://doi.org/10.1016/j.jaci.2019.03.024>.
- Chen, W.-T.\*, C.-M. Wu, and H.-Y. Ma (2019), Evaluating the bias of South China Sea summer monsoon precipitation associated with fast physical processes using climate model hindcast approach, *J. Climate*, 32, 4491–4507, <https://doi.org/10.1175/JCLI-D-18-0660.1>
- Chen, C.-C., M.-H. Lo\*, E.-S. Im, J.-Y. Yu, Y.-C. Liang, W.-T. Chen, I. Tang, C.-W. Lan; R.-J. Wu and R.-Y. Chien (2019), Thermodynamic and dynamic responses to deforestation in the Maritime Continent: A modeling study, *J. Climate*, 32(12), 3505-3527, <https://doi.org/10.1175/JCLI-D-18-0310.1>
- Jung, C.-R., W.-T. Chung, W.-T. Chen, R.-Y. Lee, and B.-F. Hwang\* (2019), Long-term exposure to traffic-related air pollution and systemic lupus erythematosus in Taiwan: A cohort study, *Sci. Total Environ.*, 668, 342-349, <https://doi.org/10.1016/j.scitotenv.2019.03.018>
- Su, C.-Y., C.-M. Wu\*, W.-T. Chen, and J.-H. Chen (2019), Object-Based Precipitation System Bias in Grey Zone Simulation: the 2016 South China Sea Summer Monsoon Onset, *Climate Dynamics*, 53, 617–630, <https://doi.org/10.1007/s00382-018-04607-x>
- Chen, W.-T.\*, K.-Z. Huang, M.-H. Lo, L. H. Linho (2018), Post-Monsoon Season Precipitation Reduction over South Asia: Impacts of Anthropogenic Aerosols and Irrigation, *Atmosphere*, 9(8), 311, doi:10.3390/atmos9080311
- Jung, C.-R., B.-F. Hwang, W.-T. Chen\*, (2017), Incorporating long-term satellite-based aerosol optical depth, localized land use data, and meteorological variables to estimate ground-level PM2.5 concentrations in Taiwan from 2005 to 2015, *Environ. Pollution*, 237, 1000-1010, doi: 10.1016/j.envpol.2017.11.016
- Jung, C.-R., W.-T. Chen, Y.-T. Lin, B.-F. Hwang (2016), Ambient air pollutant exposures and hospitalization for Kawasaki disease in Taiwan: a case-crossover study (2000–2010), *Environ. Health Perspect.*, 125(4), 670-676, <http://dx.doi.org/10.1289/EHP137>
- Wu, C.-M., M.-H. Lo, W.-T. Chen and C.T. Lu (2015), The impacts of Heterogeneous Land Surface Fluxes on the Diurnal Cycle Precipitation – A Framework for Improving the GCM Representation of Land-Atmosphere Interactions, *J. Geophys. Res. Atmos.*, 120, 3714–3727. doi:10.1002/2014JD023030.
- Li, J.-L. F., D. E. Waliser, W.-T. Chen, B. Guan, T. L. Kubar, G. L. Stephens, H.-Y. Ma, D. Min, L. J. Donner, C. J. Seman, and L. W. Horowitz (2012), An observationally-based evaluation of cloud ice water in CMIP3 and CMIP5 GCMs and contemporary reanalyses using contemporary satellite data, *J. Geophys. Res. Atmos.*, D16105, doi:10.1029/2012JD017640
- Leibensperger, E. M., L. J. Mickley, D. J. Jacob, W.-T. Chen, J. H. Seinfeld, A. Nenes, P. J. Adams, D. G. Streets, N. Kumar, and D. Rind (2012), Climatic effects of 1950–2050 changes in US anthropogenic aerosols – Part 2: Climate response, *Atmos. Chem. Phys.*, 12, 3349-3362.
- Leibensperger, E. M., L. J. Mickley, D. J. Jacob, W.-T. Chen, J. H. Seinfeld, A. Nenes, P. J. Adams, D. G. Streets, N. Kumar, and D. Rind (2012), Climatic effects of 1950–2050 changes in US anthropogenic aerosols – Part 1: Aerosol trends and radiative forcing, *Atmos. Chem. Phys.*

12, 3333-3348

- Chen, W.-T.\*, C. P. Woods, J.-L. Li, D. E. Waliser, J. Chern, W. K. Tao, J. Jiang, A. Tompkins (2011), Partitioning CloudSat ice water content for comparison with upper-tropospheric ice in global atmospheric models, *J. Geophys. Res.*, 116, D19206, doi:10.1029/2010JD015179
- Waliser, D. E., J.-L. Li, T. L'Ecuyer, and W.-T. Chen (2011), The impact of precipitating ice and snow on the radiation balance in global climate models, *Geophys. Res. Lett.*, 38, L06802, doi:10.1029/2010GL046478
- Chen, W.-T., Y. H. Lee, P. J. Adams, A. Nenes, and J. H. Seinfeld (2010), Will black carbon mitigation dampen aerosol indirect forcing?, *Geophys. Res. Lett.*, 37, L09801, doi:10.1029/2010GL042886
- Chen, W.-T., A. Nenes, H. Liao, P. J. Adams, J.-L. F. Li, and J. H. Seinfeld (2010), Global climate response to anthropogenic aerosol indirect effects: Present day and year 2100, *J. Geophys. Res.*, 115, D12207, doi:10.1029/2008JD011619
- Raes, F., H. Liao, W.-T. Chen, and J. H. Seinfeld (2010), Atmospheric chemistry-climate feedbacks, *J. Geophys. Res.*, 115, D12121, doi:10.1029/2009JD013300.
- Liao, H., Y. Zhang, W.-T. Chen, and J. H. Seinfeld (2009), Effect of chemistry-aerosol-climate coupling on predictions of future climate and future levels of tropospheric ozone and aerosols, *J. Geophys. Res.*, 114, D10306, doi:10.1029/2008JD010984
- Chen, W.-T., R. A. Kahn, D. Nelson, K. Yau, and J. H. Seinfeld (2008), Sensitivity of multiangle imaging to the optical and microphysical properties of biomass burning aerosols, *J. Geophys. Res.*, 113, D10203, doi:10.1029/2007JD009414
- Chen, W.-T., H. Liao, and J. H. Seinfeld (2007), Future climate impacts of direct radiative forcing of anthropogenic aerosols, tropospheric ozone, and long-lived greenhouse gases, *J. Geophys. Res.*, 112, D14209, doi:10.1029/2006JD008051
- Liao, H., W.-T. Chen, and J. H. Seinfeld (2006), Roles of climate change in global predictions of future tropospheric ozone and aerosols, *J. Geophys. Res.*, 111, D12304, doi:10.1029/2005JD006852

### Book Chapter:

- 周佳、陳維婷、羅敏輝、李威良、李時雨、陳昭安、許晃雄、藍嘉偉、黃筱晴、王啟芸、劉千義、蘇世顯 (2017), 第一章：全球氣候變遷，臺灣氣候變遷科學報告 2017—第一冊：物理現象與機制，臺灣氣候變遷推估與資訊平台建置計畫團隊，國家災害防救科技中心 (Chou, C., W.-T. Chen, M.-H. Luo, W.-L. Lee, S.-Y. Lee, C.-A. Chen, H.-H. Hsu, C.-W. Lan, H.-C. Huang, C.-Y. Wang, C.-Y. Liu, and S.-H. Su (2017), Chapter 1: Global Climate Change, in Taiwan Climate Change Scientific Report 2017-Volume 1: Physical Processes, edited by Taiwan Climate Change Projection and Information Platform, The National Science and Technology Center for Disaster Reduction, in Chinese)

### Teaching Experience:

Instructor:

- Synoptic Meteorology (Sep, 2020-Present, Undergraduate Compulsory)
- Lab of Synoptic Meteorology (Sep, 2020-Present, Undergraduate Compulsory)
- Programming and Scientific Computation (Sep, 2012-Present, Undergraduate Compulsory)

- Workshop on Programming in Atmospheric Sciences (Sep, 2017-Present, Undergraduate Selective)
- Cloud and Environment (Sep, 2014-Present, Graduate Core Selective)
- Global Climate Change (Feb, 2016-Present, Graduate Core Selective)

Co-Instructor:

- Introduction to Atmospheric Sciences (Sep, 2012, 2013, 2019-Present, Undergraduate Compulsory)
- Introduction to Earth System Sciences (Feb, 2015-2017, Undergraduate Compulsory)
- Introduction to Atmospheric Science Research (Feb, 2013-present, Undergraduate Selective)
- Earth System Model (Feb, 2012-Jun 2014, Graduate Selective)
- Independent Study (Feb, 2013; Sep, 2015-Present, Undergraduate Selective)
- Climate Diagnostics (Feb, 2015, Graduate Selective)
- Workshop on Climate Change and Human Settlements (Feb, 2016-Jun, 2017, Undergraduate and Graduate Selective)
- Workshop on Climate Change (Feb, 2013-2015, Undergraduate and Graduate Selective)
- Earth Environmental Problems and Resolutions (Feb, 2014, Undergraduate and Graduate Selective)

### **Invited Lecture or Presentation:**

- The International Workshop on Communications on Future Changes of Extreme Weather with Reduced Uncertainty Based on Physical Understandings, University of Tokyo, Extreme Convective Systems over the Asian-Australian Monsoon Region and the Associated Moisture Transport Patterns: Insights from Satellite Observations and Explainable Machine Learning, invited oral presentation
- Seminar at Geophysical Fluid Dynamics Laboratory, Princeton University, 2023, Bridging the Gap between Observations and Models: Understanding Diurnal Convection over Complex Topography through Idealized Cloud-Resolving Simulations, *invited oral presentation*
- International Precipitation Working Group - Orographic Precipitation Focus Group Meeting, 2023, Online, Heavy rainfall from the interactions of East Asia marine stratocumulus and coastal terrain of Taiwan, *invited oral presentation*.
- Mini-workshop on the atmospheric convection, 2022, University of Tokyo, Local Circulation and Boundary Layer Processes over Complex Island Topography: Deep-inflow Mixing of Organized Convection and Pollutant Transport, *invited oral presentation*.
- Seminar at Department of Atmospheric and Oceanic Sciences, 2022 UCLA, Local Circulation and Boundary Layer Processes over Complex Island Topography: Deep-inflow Mixing of Organized Convection and Pollutant Transport, *invited oral presentation*.
- Online International Workshop “Storyline Approach on Regional Extreme Weather and Their Future Change for Better Adaptations to the Climate Change”, 2021, University of Tokyo, Extreme Convective Systems over the Asian-Australian Monsoon Region in Satellite Observations, *invited oral presentation*.
- Mini-workshop on the tropical climate and its variability, 2019, University of Tokyo, Effects of convection-SST interactions on South China Sea Summer Monsoon Onset in a Multiscale Modeling Framework Model, *invited oral presentation*.

- The 3<sup>rd</sup> International Workshop on Climate Change and Precipitation in the East Asia, University of Tokyo, 2018, Convective organization and moisture buildup over South China Sea: A key feature for summer monsoon onset, *invited oral presentation*.
- Asia Oceania Geoscience Society Annual Meeting, Singapore, 2017, Large-eddy simulations of springtime marine advection fog over the Taiwan Strait, *invited oral presentation*.
- Asia Oceania Geoscience Society Annual Meeting, Singapore, 2017, Improving simulation of tropical diurnal precipitation by the superparameterized CAM coupled to a slab ocean model, *invited oral presentation*.

### **Funded Research Projects (as PI):**

- Investigating The Physical Processes of Convection Aggregation in Northwest Pacific Summer Monsoon: Process-oriented Hierarchical Observational Analysis and Global Model Simulations/ 探討西北太平洋夏季風的對流聚集物理過程:物理導向多層次觀測分析及全球模擬 (2023/08/01-2025/07/31, National Science and Technology Council, Taiwan, NSTC 112-2111-M-002-008)
- Improvement of the cloud physics parameterizations in the Global Forecast System Model/ 全球預報模式雲物理參數化方案改進作業建置委外案 (2023/01/01-12/31, Central Weather Bureau, Taiwan)
- Improvement of the cloud physics parameterizations in the Global Forecast System Model/ 全球預報模式雲物理參數化方案改進作業建置委外案 (2022/01/01-12/31, Central Weather Bureau, Taiwan)
- Improvement of the cloud physics parameterizations in the Global Forecast System Model/ 全球預報模式雲物理參數化方案改進作業建置委外案 (2021/01/01-12/31, Central Weather Bureau, Taiwan)
- Convection organization and cross-scale interactions over the South China Sea and Maritime Continent (II)/ 南海與海洋大陸對流之組織化與跨尺度交互作用(II) (2020/08/01-2023/07/31, Ministry of Science and Technology, Taiwan, MOST 109-2628-M-002-003-MY3)
- Implementation to improve the cloud microphysics parameterization in the Global Forecast System Model/ 全球預報模式雲微物理過程參數化方案改進作業建置委外案 (2020/01/01-12/31, Central Weather Bureau, Taiwan)
- Convection organization and cross-scale interactions over the South China Sea and Maritime Continent/ 南海與海洋大陸對流之組織化與跨尺度交互作用(2019/08/01-2020/07/31, Ministry of Science and Technology, Taiwan, MOST 108-2111-M-002-004)
- Implementation to improve the cloud microphysics parameterization in the Global Forecast System Model/ 全球預報模式雲微物理過程參數化方案改進作業建置委外案 (2019/01/01-12/31, Central Weather Bureau, Taiwan)
- Moist Processes over the South China Sea and Maritime Continent (III): Convection Organization and Diurnal Variation/ 南海與海洋大陸對流雲雨之組織化與日夜變化 (III) (2018/08/01-2019/07/31, Ministry of Science and Technology, Taiwan, MOST 107-2119-M-002-024)
- Moist Processes over the South China Sea and Maritime Continent (II): Convection Organization and Diurnal Variation/ 南海與海洋大陸對流雲雨之組織化與日夜變化 (II) (2017/08/01-2018/07/31, Ministry of Science and Technology, Taiwan, MOST 106-2111-M-002-005)



- Diurnal Variations of Moist Processes over the South China Sea and Their Representation in Global Models (I)/ 南海對流雲雨之日夜變化及其在全球模式之表現(I) (2016/08/01-2017/07/31, Ministry of Science and Technology, Taiwan, MOST 105-2119-M-002-027)
- Investigating the Structure and Transition of Clouds and Convection using Satellite Observations and Numerical Simulations (II)/運用衛星資料分析及數值模擬探討雲與對流之結構與演變 (II) (2015/08/01-2016/07/31, Ministry of Science and Technology, Taiwan, MOST 104-2111-M-002-006)
- The role of topography and human land-use activities on tropical islands in modulating the intraseasonal/diurnal variability of convective clouds and rainfall/熱帶島嶼地形與人類土地利用對季內/日夜尺度對流雲與降水之影響(2014/01/01-2015/12/31, Drunken Moon Project, College of Science, National Taiwan University 103R3259)
- Investigating the Structure and Transition of Clouds and Convection using Satellite Observations and Numerical Simulations/運用衛星資料分析及數值模擬探討雲與對流之結構與演變 (2014/08/01-2015/07/31, Ministry of Science and Technology, Taiwan, MOST 103-2111-M-002-007)
- Applying the Year of Tropical Convection (YOTC) Co-located Satellite and Model Analysis Data Set to Investigate the Structure and Transition of Tropical Convection/運用熱帶對流年 (YOTC)衛星及模式分析共同定位資料探討熱帶對流之結構與演變(2012/09/01-2014/07/31, National Science Council/Ministry of Science and Technology, Taiwan, NSC101-2111-M-002-009 -MY2)

### **Peer-Review Activities:**

- Reviewer for Journal of Geophysical Research, Geophysical Research Letters, Atmospheric Chemistry and Physics, Journal of Climate, Journal of Atmospheric Science, Journal of Hydrology, Journal of the Meteorological Society of Japan, Terrestrial, Atmospheric and Oceanic Sciences, Asia-Pacific Journal of Atmospheric Sciences, Atmospheric Environment, Remote Sensing, Journal of Applied Meteorology and Climatology, Atmosphere
- Proposal reviewer for NOAA Earth System Science Program and Taiwan MOST

### **Graduate Student Advisor:**

- Chun-Yen Su 蘇俊彥 (2013/08-2015/07), Master Thesis: An evaluation of the CLR two-moment cloud microphysics scheme using the Southwest Monsoon Experiment (SoWMEX) /Terrain-influenced Monsoon Rainfall Experiment (TiMREX) observations, 2015
- Chin-An Lin 林晉安 (2013/08-2015/07), Master Thesis: The influence of near-surface boundary layer conditions on advection fog, 2015
- Kuan-Tzu Huang 黃冠慈 (2013/08-2015/07), Master Thesis: The impact of anthropogenic aerosols and irrigation to dry season climate over Northern India, 2015
- Shao-Lun Liang 梁紹倫 (2013/08-2017/07), Master Thesis: The Effects of Ice Nuclei on Clouds and Precipitation: A Numerical Case Study of a Winter Frontal System in East Asia, 2017
- Peng-Jen Chen 陳鵬任 (2014/08-2016/07), Master Thesis: Diurnal variation of convection over South China Sea region during summer monsoon onset, 2016

- Kuan-Tzu Huang 黃冠慈 (2015/07-present), PhD Thesis: Impact of biomass burning aerosols on Convection over Maritime Continent
- Chin-Jie Chou 周晉傑 (2015/08-2017/07), Master Thesis: The interaction between diurnal cycle precipitation and MJO over the Maritime Continent in a multi-scale global climate model, 2017
- Chao-Wei Chang 張巧薇 (2015/08-2017/07), Master Thesis: The susceptibility of East Asian marine warm clouds to aerosol index during Winter and Spring, 2017
- Hung-Wen Jian 簡弘文 (2016/08-2018/07), Master Thesis: Relationships among Maximum Rain Rate, Flash Counts, and System Size of Tropical Thunderstorms, 2018
- Chin-Hui Lee 李晉輝 (2016/08-2018/07), Master Thesis: Application and comparison of meteorological drought indices in Taiwan, 2018
- Yu-Hung Chang 張宇泓 (2018/08-2020/07), Master Thesis: Tracking the Influence of Cloud Condensation Nuclei on Summer Diurnal Precipitating Systems over Complex Topography in Taiwan, 2020
- Tzu-Han Hsu 徐子涵 (2019/08-2021/06), Master Thesis: The Fine Particulate Pollutant Distribution over the Lee Side of Mountains in Taiwan under Consecutive Cold-season Weak Synoptic Days, 2021
- Shao-Yu Tseng 曾少禹 (2020/08-2022/06), Master Thesis: The Multi-scale Interactions between the Long-lived Convective Systems and the Northwest Pacific Monsoon Trough: Satellite Observation Perspectives
- Chi-Huan Hsu 徐啟桓 (2020/08-2022/08), Master Thesis: Evaluating the Convectively Coupled Equatorial Rossby Waves in the Hindcasts of Global Models with Different Convection Representations from a Lagrangian Perspective
- Yu-Hsiu Wang 王毓琇 (2021/08-2023/08), Master Thesis: Novel Perspectives on Diurnal Convection over Complex Topography through VVM Simulations
- Chia-Shin Kuo 郭佳欣 (2022/08-present), Master Thesis: Reconstructing The Precipitation Contribution by Organized Convective Systems in Boreal Summer Southwesterly Monsoon flow in Global Models Combining GPM Rainfall Observation and ERA-5 Large-Scale Environment
- Yu-Hsaing Chang 張清翔 (2023/08-present), Master Thesis: The Precipitation Hotspots of Summertime Afternoon Thunderstorms in Northern Taiwan

### Thesis Committee:

- PhD: T.-C. Tsai 蔡子衿 (2014/06)、T.-S. Kuo 郭子仙 (2016/04)、C.-R. Jung 鍾朝仁 (2016/05)、C.-W. Lan 藍嘉偉 (2019/06)、J.-R. Pi 皮加容 (2022/01)、C.-Y. Su 蘇俊彥 (2022/04)、
- Master: C.-Y. Wang 王啟芸 (2012/11)、M.-S. Wu 吳孟軒 (2013/07)、W.-Y. Chen 陳婉瑜 (2014/01)、K.-K. Wong 黃家傑 (2014/03)、W.-M. Tsai 蔡偉銘 (2014/06)、C.-Y. Chang 張瓊尹 (2014/07)、I.-J. Chen 陳怡甄 (2014/07)、H.-W. Wey 魏豪緯 (2015/06)、W.-L. Lin 林文琳 (2015/06)、J.-S. Hung 洪竟書 (2016/06)、Y.-C. Chen 陳逸昌 (2016/07)、H.-Y. Tseng 曾弘毅 (2016/07)、Y.-C. Chen 陳勇志 (2016/07)、H. Hsu 徐辛 (2016/07)、C.-C. Chen 陳竹君 (2017/01)、C.-Y. Wu 吳佳瑩 (2017/03)、H.-W. Peng 彭浩維 (2017/07)、P.-Y. Chen 陳柏言 (2017/11)、L.-W. Chao 趙俐惟 (2018/04)、Y.-J. Chen 陳映潔 (2018/06)、C.-C. Lin 林晉丞 (2018/07)、Y.-H. Tseng 曾翊涵 (2018/07)、S.-W. Tsu 鄒適文 (2019/01)、C.-W. Lee 李

崇瑋 (2019/01)、J. Yanti (2019/01)、E.-H. Chen 陳恩浩 (2019/01)、C.-M. Wang 王麒閔 (2019/06)、H.-Y. Chu 朱心宇 (2019/07)、Y.-L. Chen 陳約禮 (2020/07)、C.-W. Chu 朱清緯 (2020/07)、Y.-Y. Kuo 郭毓揚 (2021/01)、C.-T. Chang 張佳棟 (2021/01)、Y.-C. Chang 張雅筑 (2021/07)、M.-L. Tsai 蔡旻霖 (2021/07)、Y.-S. Fan 范祐軒 (2022/05)、T.-Y. Tsai 蔡宗育 (2022/08)

### **Other Presentations at International Conferences:**

- American Geophysical Union Fall Meeting, San Francisco, CA, 2005, Sensitivity of multiangle imaging to the optical and microphysical properties of biomass burning aerosols, *poster presentation*.
- American Geophysical Union Fall Meeting, San Francisco, CA, 2006, Future climate impacts of direct radiative forcing of anthropogenic aerosols, tropospheric ozone, and long-lived greenhouse gases, *poster presentation*.
- Gordon Research Conference on Radiation and Climate, New London, NH, 2007, Sensitivity of multiangle imaging to the optical and microphysical properties of biomass burning aerosols, *poster presentation*.
- American Geophysical Union Fall Meeting, San Francisco, CA, 2008, Global climate response to anthropogenic aerosol indirect effects: Present day and year 2100, *oral presentation*.
- Joint CALIPSO-CloudSat Science Team Meeting, Madison, WI, 2009, Developing and applying a CloudSat-centric A-Train and ECMWF analysis data set to better characterize clouds and convections, *poster presentation*.
- American Geophysical Union Fall Meeting, San Francisco, CA, 2009, Developing and applying a CloudSat-centric A-Train and ECMWF analysis data set to better characterize clouds and convections, *oral presentation*.
- Western Pacific Geophysics Meeting, Taipei, Taiwan, 2010, The structure and environment of tropical deep convective clouds from a CloudSat-centric A-Train and ECMWF analysis data set, *poster presentation*.
- International Symposium on the A-Train Satellite Constellation 2010, New Orleans, LA, 2010, Partitioning CloudSat ice water content for comparison with upper-tropospheric ice in global atmospheric models, *poster presentation*.
- American Geophysical Union Fall Meeting, San Francisco, CA, 2010, Partitioning CloudSat ice water content for comparison with upper-tropospheric ice in global atmospheric models, *poster presentation*.
- The Year of Tropical Convection International Science Symposium, Beijing, China, 2011, The structure and environment of tropical deep convective clouds from a CloudSat-centric A-Train and ECMWF analysis data set during YOTC, *poster presentation*.
- Joint CALIPSO-CloudSat Science Team Meeting, Montreal, Canada, 2011, The structure and environment of tropical deep convective clouds from a CloudSat-centric A-Train and ECMWF analysis data set, *poster presentation*.
- Gordon Research Seminar of Radiation and Climate, Waterville, ME, 2011, The structure and environment of tropical deep convective clouds from a CloudSat-centric A-Train and ECMWF analysis data set, *oral presentation*.
- World Climate Research Programme Open Science Conference, Denver, Colorado, 2011, The structure and environment of tropical deep convective clouds from a CloudSat-centric A-Train and ECMWF analysis data set, *poster presentation*.

- American Geophysical Union Fall Meeting, San Francisco, CA, 2011, The CloudSat-centric A-Train and ECMWF analysis data set: Applications for characterizing the Cloud, convection, and radiation associated with different MJO phases during the Year of Tropical Convection (YOTC), *poster presentation*.
- Asia Oceania Geoscience Society - American Geophysical Union (Western Pacific Geophysics Meeting) Joint Assembly, Singapore, 2012, Investigating DYNAMO Hypotheses of the MJO Using the YOTC CloudSat-Centric, Collocated A-Train and ECMWF Data Set, *poster presentation*.
- The American Meteorological Society Annual Meeting, Austin, Texas, 2013, Investigating DYNAMO Hypotheses of the MJO Using the Year of Tropical Convection (YOTC) CloudSat-Centric, Collocated A-Train and ECMWF Data Set, *poster and oral presentation*.
- The 10th East Asia Climate and Chemistry Workshop, Beijing, China, 2014, Potential applications of the CloudSat-Centric co-located A-Train and ECMWF analysis data set to the investigation of aerosol-cloud-precipitation interactions over East Asia, *oral presentation*.
- Asia Oceania Geoscience Society Annual Meeting, Sapporo, Japan, 2014, Evolution of Clouds and Convection Associated with the MJO over the Tropical Indian Ocean, *poster presentation*.
- 26th International Union of Geodesy and Geophysics General Assembly, Czech Republic, 2015, Evolution of cloud population and convection associated with the Madden-Julian Oscillation over the tropical Indian Ocean and Maritime Continent, *poster presentation*.
- CFMIP/WCRP/ITCP Conference on Cloud Processes, Circulation and Climate Sensitivity, Trieste, Italy, 2016, Evaluation of the bias of East Asia summer monsoon precipitation in a global climate model using the hindcast approach, *poster presentation*.
- The American Meteorological Society Annual Meeting, Seattle, Washington, 2017 Diurnal variations of precipitation and convective clouds over South China Sea during summer monsoon onset, *poster presentation*.
- WCRP GEWEX Upper Tropospheric Clouds & Convection PROcess Evaluation Study meeting, New York City, New York, 2017, Diurnal variations of precipitation and convective clouds over South China Sea during summer monsoon onset, *oral presentation*.
- The Japan Geoscience Union- American Geophysical Union Joint Meeting, 2017, Chiba, Japan, The bias of South China Sea summer monsoon precipitation associated with physical processes in global climate models: The multi-year hindcast approach, *oral presentation*.
- South China Sea Science Conference, 2017, Kaohsiung, Taiwan, Investigating the tropical coastal convection systems using cloud resolving simulations and satellite observation, *oral presentation*.
- The 6<sup>th</sup> WMO International Workshop on Monsoon, Singapore, 2017, The bias of South China Sea summer monsoon precipitation associated with physical processes in global climate models: The multi-year hindcast approach, *oral presentation*.
- The American Meteorological Society Annual Meeting, Austin, Texas, 2018, Convective organization and moisture buildup over South China Sea: A key feature for summer monsoon onset, *oral presentation*.
- Asia Oceania Geoscience Society Annual Meeting, Honolulu, USA, 2018, Convective Organization and Moisture Buildup over South China Sea: A Key Feature for Summer Monsoon Onset, *poster presentation*.
- The Japan Geoscience Union Meeting, 2019, Chiba, Tokyo, Role of coastal convection to moisture buildup during the South China Sea summer monsoon onset, *oral presentation*.
- Convection Parametrization: Progress and Challenges workshop 2019, Exeter, United Kingdom,

2019, Evaluating the bias of South China Sea summer monsoon precipitation associated with fast physical processes using climate model hindcast approach, *oral presentation*.

- The 2019 University Allied Workshop on Climate and Extreme Weather, 2019, Atmosphere and Ocean Research Institute, University of Tokyo, The Synoptically- Influenced Extreme Precipitation Systems over Asian-Australian Monsoon Region from TRMM PR Measurements, *oral presentation*.
- The American Meteorological Society Annual Meeting, Boston, Massachusetts, 2020 Evaluating the bias of South China Sea summer monsoon precipitation associated with fast physical processes using climate model hindcast approach, *poster presentation*.
- The Japan Geoscience Union- American Geophysical Union Joint Meeting, 2020, Chiba, Japan (online meeting), The Synoptically- Influenced Extreme Precipitation Systems over Asian-Australian Monsoon Region from TRMM PR Measurements, *poster presentation*.
- The European Geoscience Union General Assembly, online meeting, 2021 The Synoptically- Influenced Extreme Precipitation Systems over Asian-Australian Monsoon Region from TRMM PR Measurements, *oral presentation*.
- Asia Oceania Geoscience Society Annual Meeting, online meeting, 2021, Object-based Evaluation of Tropical Precipitation in DYAMOND, *oral presentation*.
- The American Geophysical Union Fall Meeting, New Orleans, USA (hybrid meeting), 2021, The Fine Particulate Pollutants Distribution over the Lee Side of Mountains in Taiwan under Consecutive Cold-season Weak Synoptic Days, *oral presentation (online)*.
- The 35<sup>th</sup> Hurricanes and Tropical Meteorology Conference, New Orleans, USA (hybrid meeting), 2021, Object-Based Evaluation of Tropical Precipitation Systems in DYAMOND Simulations over the Maritime Continent, *oral presentation (online)*.
- CFMIP Conference on Cloud Processes, Circulation and Climate Sensitivity, Seattle, USA, 2022, The Multi-scale Convection Aggregation of Asian-Australian Monsoon from the Observational Perspective, *poster presentation*.
- The 3rd Pan-GASS Meeting Understanding and Modeling Atmospheric Processes, Monterey, USA, 2022, Object-Based Evaluation of Tropical Precipitation Systems in DYAMOND Simulations over the Maritime Continent, *poster presentation*.
- Asia Oceania Geosciences Society Annual Meeting, Singapore, 2023, Investigating the Heavy Precipitation Over Complex Topography in the Stratocumulus-dominated Environment Using Idealized Large-eddy Simulations, *oral presentation*.
- The 6<sup>th</sup> International Workshop on Nonhydrostatic Modeling, Sapporo, 2023, Novel Perspectives on Diurnal Convection over Complex Topography through VVM Simulations, *oral presentation*.