

## **CURRICULUM VITAE**

### **CHENG-KU YU**

#### **EDUCATION**

1995 Ph. D., Atmospheric Sciences, National Taiwan University  
1991 M. S., Atmospheric Sciences, National Taiwan University  
1989 B. S., Meteorology, Chinese Culture University

#### **POSITIONS**

2023-present Distinguished Professor, National Taiwan University  
2021-present Chair, Department of Atmospheric Sciences, National Taiwan University  
2020-2021 Acting Chair, Department of Atmospheric Sciences, National Taiwan University  
2021-present Director, Center for Atmospheric resource and disaster studies, National Taiwan University  
2018-present Director, Typhoon Research Center, College of Science, National Taiwan University  
2014-present Professor, Department of Atmospheric Sciences, National Taiwan University  
2009-2014 Professor, Department of Atmospheric Sciences, Chinese Culture University  
2006-2009 Associate Professor, Department of Atmospheric Sciences, Chinese Culture University  
2003-2006 Assistant Professor, Department of Atmospheric Sciences, Chinese Culture University  
2001-2003 Postdoctoral Researcher Exclusively Engaged by the Ministry of Science and Technology of Taiwan, Department of Atmospheric Sciences, National Taiwan University  
1999-2000 Postdoctoral Researcher, Department of Atmospheric Sciences, National Taiwan University  
1996-1999 Research Associate, Department of Atmospheric Sciences, University of Washington  
1995-1996 Postdoctoral Researcher, Postdoctoral fellowship of the National Youth Commission of Taiwan

#### **HONORS AND AWARDS**

- Outstanding Research Award, Ministry of Science and Technology (2022)
- Professor with exemption of review, College of Science, National Taiwan University (2018-present)
- Professor with Exceptional Performance by National Taiwan University (2018-present)
- Teaching Award, National Taiwan University (2017)
- Senior Teaching Award by the Ministry of Education (2015)
- PI Fellowship of Special Excellence Awarded by the Ministry of Science and Technology of Taiwan (2010-2014)
- Excellent Young Scientist Research Project Awarded by the Ministry of Science and Technology of Taiwan (2011-2014)
- Outstanding Teaching Award (College of Science), Chinese Culture University (2011)
- Excellent Guidance Counselor in the 2010-2011 academic year, Chinese Culture University (2011)
- Best Reviewer Award, Terrestrial, Atmosphere and Oceanic Sciences (TAO) (2010)
- Excellent Teacher Award, Chinese Culture University (2007)
- Research Paper Award, Chinese Culture University (2005-2015)
- Postdoctoral Fellowship Awarded by National Youth Commission of Taiwan (1995-1996)

#### **PROFESSIONAL SERVICES**

- Editor, Geoscience Letters (IF=4.0), AOGS (2017-present)
- Guest Editor, Remote Sensing (IF=5.0), (2021-2022)

- Editor-in-Chief, Atmospheric Sciences, Meteorological Society of the ROC (Taiwan) (2017-2021)
- Reviewer of Journal Papers: Journal of the Atmospheric Sciences; Bulletin of the American Meteorological Society; npj Climate and Atmospheric Science; Scientific Reports; Quarterly Journal of the Royal Meteorological Society; Monthly Weather Review; Journal of Climate; International Journal of Climatology; Journal of Geophysical Research (Atmosphere); Atmospheric Chemistry and Physics; Atmospheric Research; Journal of Applied Meteorology and Climatology; Natural Hazards; Asia-Pacific Journal of Atmospheric Sciences; Weather and Forecasting; Advances in Atmospheric Sciences; Journal of the Meteorological Society of Japan; Meteorology and Atmospheric Physics; Journal of Mechanical Science and Technology; Terrestrial, Atmosphere and Oceanic Sciences; Tropical Cyclone Research and Review; Journal of Chung Cheng Institute of Technology (EI); World Meteorological Organization sponsored book; World Scientific Publishing Co. Pte. Ltd.; Atmospheric Sciences (Taiwan); Journal of Ching Yun University
- Reviewer of U.S. National Science Foundation (NSF) Research Proposals
- Co-chair of panel committee, Atmospheric Science Discipline, Department of Natural Sciences and Sustainable Development, Ministry of Science and Technology (2019)
- Panel committee member, Atmospheric Science Discipline, Department of Natural Sciences and Sustainable Development, Ministry of Science and Technology (2017-2019)
- Panel committee member, Earth Science Research Promotion Center, Ministry of Science and Technology (2017-2019)
- Council member, Meteorological Society of the ROC (Taiwan) (2019-2023)
- Academic council commissioner, Meteorological Society of the ROC (Taiwan) (2017-2019)
- Accreditation committee member, National Science and Technology Center for Disaster Reduction (2017-present)
- Section Secretaries of Atmospheric Sciences, AOGS (2015-2023)
- Executive steering committee member, FORMOSAT-7/COSMIC-2 joint mission (2017-present)

### **PROFESSIONAL AFFILIATION**

Member, ROC (Taiwan) Meteorological Society

Member, American Meteorological Society (AMS)

Member, American Geophysical Union (AGU)

### **JOURNAL ARTICLES** (\*corresponding author)

**Yu, C.- K.\***, C.- Y. Lin and C.- H. Pun, 2023: Origin of outer tropical cyclone rainbands. *Nat. Commun.*, **14**. 7061 (2023), doi: <https://doi.org/10.1038/s41467-023-42896-x> .

Shimizu R., S. Shige, T. Iguchi, **C.-K. Yu**, and L.-W. Cheng, 2023: Narrowing the blind zone of the GPM dual-frequency precipitation radar to improve shallow precipitation detection in mountainous Areas. *J. Appl. Meteorol. Climatol.* **62**, 1437-1450, doi: [org/10.1175/JAMC-D-22-0162.1](https://doi.org/10.1175/JAMC-D-22-0162.1).

**Yu, C.- K.\***, W.- F. Liu, L.- W. Cheng, and C.- Y. Lin, 2022: Mechanisms of valley precipitation enhancement over Da-Tun Mountain. *Mon. Wea. Rev.*, **150**, 1851-1871, doi.org/10.1175/MWR-D-21-0195.1

Chen, J.- P.\*, T.-W. Hsieh, Y.-C. Lin, and **C.-K. Yu**, 2022: Accurate parameterization of precipitation particles' fall speeds for bulk cloud microphysics schemes. *Atmos. Res.*, **273**, doi:10.1016/j.atmosres.2022.106171.

- Lin, C.- Y. and **C.- K. Yu\***, 2021: Taiwan rainbands formed in the outer region of tropical cyclones. *Mon. Wea. Rev.*, **149**, 1403-1418, doi: 10.1175/MWR-D-20-0216.1.
- Yu, C.- K.\***, L.- W. Cheng, C.- C. Wu, and C.- L. Tsai, 2020: Outer tropical cyclone rainbands associated with Typhoon Matmo (2014). *Mon. Wea. Rev.*, **148**, 2935-2952, doi: 10.1175/MWR-D-20-0054.1.
- Chang, W.- Y., G.- W. Lee\*, B. J.- D. Jou, W.- C. Lee, P.- L. Lin, and **C.- K. Yu**, 2020: Uncertainty in measured raindrop size distributions from four types of collocated instruments. *Remote Sens.*, **12**(7), 1167, doi: 10.3390/rs12071167.
- Huang, G.- Z., T.- C. Hsu, **C.- K. Yu**, J.- C. Huang\*, and T.- C. Lin\*, 2020: Dilution and precipitation dominated regulation of stream water chemistry of a volcanic watershed. *J. Hydrol.*, **583**, 124564, doi: 10.1016/j.jhydrol.2020.124564.
- Cheng, L.- W., and **C.- K. Yu\***, 2019: Investigation of orographic precipitation over an isolated, three-dimensional complex topography with a dense gauge network, radar observations, and upslope model. *J. Atmos. Sci.*, **76**, 3387-3409, doi: 10.1175/JAS-D-19-0005.1.
- Yu, C.- K.\***, C.- Y. Lin, and J.- S. Luo, 2019: Tracking a long-lasting outer tropical cyclone rainband: Origin and convective transformation. *J. Atmos. Sci.*, **76**, 3267-3283, doi: 10.1175/JAS-D-19-0126.1.
- Chen, Y.- C.\*, K.- T. Chang, S.- F. Wang, J.- C. Huang, **C.- K. Yu**, J.- Y. Tu, H.- J. Chu and C.- C. Liu, 2019: Controls of preferential orientation of earthquake- and rainfall-triggered landslides in Taiwan's orogenic mountain belt. *Earth Surf. Process. Landforms*, doi:10.1002/esp.4601.
- Tsai, C.- L. \*, K. Kim, Y.- C. Liou, G.- W. Lee and **C.- K. Yu**, 2018: Impacts of topography on airflow and precipitation in the Pyeongchang area seen from multiple-Doppler radar observations. *Mon. Wea. Rev.*, **146**, 3401-3424, doi: 10.1175/MWR-D-17-0394.1.
- Yu, C.- K.\***, C.- Y. Lin, L.- W. Cheng, J.- S. Luo, C.- C. Wu, and Y. Chen, 2018: The degree of prevalence of similarity between outer tropical cyclone rainbands and squall lines. *Sci. Rep.*, **8**, 8247, doi: 10.1038/s41598-018-26553-8.
- Schomakers, J., H. Mayer, J.- Y. Lee, T.- Y. Lee, S.- H. Jien, A. Mentler, T. Hein, J.- C. Huang, Z.- Y. Hseu, L.- W. Cheng, **C.- K. Yu**, and F. Zehetner\*, 2018: Soil aggregate breakdown and carbon release along a chronosequence of recovering landslide scars in a subtropical watershed. *Catena*, **165**, 530-536, doi: 10.1016/j.catena.2018.03.004.
- Yamamoto, M. K.\*, S. Shige, **C.- K. Yu**, and L.- W. Cheng, 2017: Further improvement of the heavy orographic rainfall retrievals in the GSMaP algorithm for microwave radiometers. *J. Appl. Meteorol. Climatol.*, **56**, 2607-2619, doi: 10.1175/JAMC-D-16-0332.1.
- Yu, C.- K.\***, and C.- Y. Lin, 2017: Formation and maintenance of a long-lived Taiwan rainband during 1-3 March 2003. *J. Atmos. Sci.*, **74**, 1211-1232, doi:10.1175/JAS-D-16-0280.1.
- Yu, C.- K.\***, and C.- L. Tsai, 2017: Structural changes of an outer tropical cyclone rainband encountering the topography of northern Taiwan. *Quart. J. Roy. Meteor. Soc.*, **143**, 1107-1122, doi: 10.1002/qj.2994.
- Yue, J., Z. Meng\*, **C.- K. Yu**, and L.- W. Cheng, 2017: Impact of coastal radar observability on the forecast of track and rainfall of typhoon Morakot (2009) using a WRF-based EnKF data assimilation. *Adv. Atmos. Sci.*, **34**(1), 66-78, doi: 10.1007/s00376-016-6028-8.

- Lin, P.- H., Y.- J. Yang, C.- H. Liu, S.- P. Hsu, J.- H. Yang, C.- H. Wu, **C.- K. Yu**, S. Jan and C.- H. Sui\*, 2016: Interaction of convection over the maritime continent - SCS with large-scale flow: 2016 winter monsoon pre-experiment. *Atmos. Sci.*, **44**(4), 237-352. (in Chinese with English abstract)
- Lin, C.- Y., and **C.- K. Yu\***, 2016: Effect of sea surface temperature on the convective lines off the southeastern coast of Taiwan. *Atmos. Sci.*, **44**(3), 215-235. (in Chinese with English abstract)
- Wu, C.- C.\*, T.- H. Yen, Y.- H. Huang, **C.- K. Yu**, and S.- G. Chen, 2016: Statistical characteristic of heavy rainfall associated with typhoons near Taiwan based on the high-density automatic gauge data. *Bull. Amer. Meteor. Soc.*, **97**, 1363-1375, doi:10.1175/BAMS-D-15-00076.1.
- Yu, C.- K.\***, P.- R. Hsieh, S. E. Yuter, L.- W. Cheng, C.- L. Tsai, C.- Y. Lin, and Y. Chen, 2016: Measuring droplet fall speed with a high-speed camera: Indoor accuracy and potential outdoor applications. *Atmos. Meas. Tech.*, **9**, 1755-1766, doi: 10.5194/amt-9-1755-2016.
- He, S., A. K. Liu, **C.- K. Yu**, Z. He\*, J. Yang, G. Zheng, Y. Chen, 2016: Rainband feature tracking for wind speeds around typhoon eyes using multiple sensors. *Int. J. Remote Sens.*, **37**, 2016-2031, doi: 10.1080/01431161.2016.1142690.
- Yu, C.- K.\***, and L.- W. Cheng, 2014: Dual-Doppler-derived profiles of the southwesterly flow associated with southwest and ordinary typhoons off the southwestern coast of Taiwan. *J. Atmos. Sci.*, **71**, 3202-3222, doi: 10.1175/JAS-D-13-0379.1.
- Cheng, L.- W., and **C.- K. Yu\***, 2014: Study of intensive rainfall observations over Da-Tun mountains: Distribution of orographic precipitation during the northeasterly monsoon. *Atmos. Sci.*, **42**(1), 61-85. (in Chinese with English abstract)
- Yu, C.- K.\***, and L.- W. Cheng, 2013: Distribution and mechanisms of orographic precipitation associated with Typhoon Morakot (2009). *J. Atmos. Sci.*, **70**, 2894-2915, doi: 10.1175/JAS-D-12-0340.1.
- Yu, C.- K.\***, and P.- R. Hsieh , 2013: Observational study of near-surface droplet fall speed. *Natural Sciences Newsletter*, Ministry of Science and Technology (National Science Council), **25**(1), 4-9.
- Yu, C.- K.\***, and C.- L. Tsai, 2013: Structural and surface features of arc-shaped radar echoes along an outer tropical cyclone rainband. *J. Atmos. Sci.*, **70**, 56-72, doi: 10.1175/JAS-D-12-090.1.
- Huang, J.- C., **C.- K. Yu\***, J.- Y. Lee, L.- W. Cheng, T.- Y. Lee, and S.- J. Kao, 2012: Linking typhoon tracks and spatial rainfall patterns for improving flood lead time predictions over a mesoscale mountainous watershed. *Water Resour. Res.*, **48**, W09540, doi:10.1029/2011WR011508. (AGU Research Spotlight, EOS Vol. 93 No. 47)
- Tsai, C.- L. \*, and **C.- K. Yu**, 2012: Intercomparison analysis for Micro Rain Radar observations. *Atmos. Sci.*, **40**(2), 109-134. (in Chinese with English abstract)
- Tsai, C.- L. \*, and **C.- K. Yu**, 2012: Structures of a typhoon rainband documented by dual-Doppler observations. *Quart. J. Meteor.*, **211**, 9-21. (in Chinese with English abstract)
- Yu, C.- K.\***, and Y. Chen, 2012: Statistical analysis of surface characteristics of typhoon rainbands. *Natural Sciences Newsletter*, Ministry of Science and Technology (National Science Council), **24**(1), 8-14.
- Yu, C.- K.\***, and Y. Chen, 2011: Surface fluctuations associated with tropical cyclone rainbands observed near Taiwan during 2000-08. *J. Atmos. Sci.*, **68**, 1568-1585, doi: 10.1175/2011JAS3725.1.

- Yu, C.- K.\***, 2011: Orographic precipitation in the typhoon environment—unresolved and challenging issues. *Natural Sciences Newsletter*, Ministry of Science and Technology (National Science Council), **23**(1), 14-17.
- Yu, C.- K.\***, and C.- L. Tsai, 2010: Surface pressure features of landfalling typhoon rainbands and their possible causes. *J. Atmos. Sci.*, **67**, 2893-2911, doi: 10.1175/2010JAS3312.1.
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- Yu, C.- K.\***, and L.- W. Cheng, 2008: Radar observations of intense orographic precipitation associated with Typhoon Xangsane (2000). *Mon. Wea. Rev.*, **136**, 497-521, doi: 10.1175/2007MWR2129.1.
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- Tsai, C.- L.\* and **C.- K. Yu**, 2006: Preliminary analysis and application of the micro rain radar observations. *Quart. J. Meteor.*, **188**, 29-37. (in Chinese with English abstract)
- Yu, C.- K.\***, and B. J.-D. Jou, 2005: Radar observations of the diurnally forced offshore convective lines along the southeastern coast of Taiwan. *Mon. Wea. Rev.*, **133**, 1613-1636, doi: 10.1175/MWR2937.1.
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- Yu, C.- K.\***, and N. A. Bond, 2002: Airborne Doppler observations of a cold front in the vicinity of Vancouver Island. *Mon. Wea. Rev.*, **130**, 2692-2708, doi: 10.1175/1520-0493(2002)130<2692:ADOOAC>2.0.CO;2.
- Yu, C.- K.**, B. J.- D. Jou\*, and D. P. Jorgensen, 2001: Retrieved thermodynamic structure of a subtropical, orographically influenced, quasi-stationary convective line. *Mon. Wea. Rev.*, **129**, 1099-1116, doi: 10.1175/1520-0493(2001)129<1099:RTSOAS>2.0.CO;2.
- Yu, C.- K.**, and B. F. Smull\*, 2000: Airborne Doppler observations of a landfalling cold front upstream of steep coastal orography. *Mon. Wea. Rev.*, **128**, 1577-1603, doi: 10.1175/1520-0493(2000)128<1577:ADOOAL>2.0.CO;2.
- Yu, C.- K.\***, B. J.-D. Jou, and B. F. Smull, 1999: Formative stage of a long-lived mesoscale vortex observed by airborne Doppler radar. *Mon. Wea. Rev.*, **127**, 838-857, doi: 10.1175/1520-0493(1999)127<0838:FSOALL>2.0.CO;2.
- Jou, B. J.- D., and **C.- K. Yu**, 1991: Airborne Doppler radar observation of an oceanic mesoscale convective system during TAMEX. *Atmos. Sci.*, **19**(2), 149-176. (in Chinese with English abstract)