

## CURRICULUM VITAE

### **Chih-Pei Chang**

Distinguished Chair Professor, Department of Atmospheric Sciences, National Taiwan University  
Distinguished Professor Emeritus, Department of Meteorology, U.S. Naval Postgraduate School

### **Education:**

B. S., National Taiwan University, Meteorology, 1966  
Ph. D., University of Washington, Atmospheric Sciences, 1972  
(Advisor: Professor James R. Holton)

### **Professional Experience:**

Assistant Professor of Meteorology, U.S. Naval Postgraduate School, 1972-1976  
Associate Professor of Meteorology, U.S. Naval Postgraduate School, 1976-1982  
Professor of Meteorology, U.S. Naval Postgraduate School, 1982-2003  
Distinguished Professor of Meteorology, U.S. Naval Postgraduate School, 2003-2013  
Affiliated Graduate Faculty, University of Hawaii, 2004-2012  
National Science Council Chair Professor, National Taiwan University, 2009-2014

### **Awards and Honors:**

Commendation for Excellence in Teaching, U.S. Naval Postgraduate School, 1978  
Menneken Research Award, Sigma Xi Society Monterey Chapter, 1980  
Fellow, American Meteorological Society, elected 1981  
Clarence Meisinger Award, American Meteorological Society, 1983  
Best Paper Award, Papers in Meteorological Research, 1989  
Distinguished Professor Medal, Naval Postgraduate School, 2003  
Fellow, Meteorological Society Republic of China, elected 2007  
U.S. Department of Navy Superior Civilian Service Award 2013  
Honorary Member, Hong Kong Meteorological Society, elected 2013  
Appreciation for Outstanding Leadership as Monsoon Panel Chair for a Decade, WMO, 2017  
Science Review Lecturer, WCRP-WWRP Monsoon Project Office Inauguration, 2022  
Distinguished Chair Professor, National Taiwan University

### **Committees and Boards:**

Scientific Advisory Committee, National Ocean Research Center, Taiwan, 1999-2001.  
U.S. Scientific Working Group on South China Sea Monsoon Experiment (*Co-Chair*), 1993-1998.  
Navy Operational Global Atmospheric Prediction System Validation Panel, 1995-1999.  
NOAA-Columbia University External Review Panel for IRICP, 1999.  
WMO TMRP International Panel on East Asian Monsoon (*Vice Chair*) 1997-2003, (*Chair*) 2004-2006.  
WMO World Weather Research Programme Joint Science Committee 2006-2009.  
WMO IWM-III/IWM-IV/IWM-V/IWM-VI International Organizing Committee (*Chair*), 2004, 2008, 2013, 2017.  
APEC Research Center on Typhoon and Society Scientific Advisory Committee (*Co-Chair*), 2011-2014  
Science Advisor, Central Weather Bureau, Taiwan, 1983-2014  
Beijing Climate Center/National Climate Center, China, Scientific Advisory Committee, 2010-2014  
WMO/WWRP Working Group on Tropical Meteorology Research 2008-2017, Emeritus Member 2018-  
WMO/WWRP/WGTMR Monsoon Panel (*Chair*), 2007-2017  
Singapore Center for Climate Science Research International Scientific Advisory Panel, 2011-2017  
APEC Climate Center Scientific Advisory Committee, 2006-2020  
Science Advisor, Hong Kong Observatory, 1996-present  
Distinguished Visiting Scientist, Central Weather Bureau, 2015-present  
WMO/WWRP/WGTMR Monsoon Climate Change Workshop, Chair, 2019  
WMO IWM-VII International Science Committee (*Co-Chair*) 2021-2022

### Editorial Boards:

Advisory Editor, Papers in Meteorological Research, 1978-1988.  
Associate Editor, Journal of Atmospheric Sciences, 1983-1987.  
Advisory Editor, Advances in Atmospheric Sciences, 2000-2008.  
Advisory Editor, Acta Meteorologica Sinica/Journal of Meteorological Research, 2008-2018  
Editor-in- Chief, World Scientific Series on Asia-Pacific Weather and Climate, 2000-present

### Books Edited:

Chang, C.-P. and T. N. Krishnamurti, eds., 1987, *Monsoon Meteorology*, Oxford University Press, 544 pp.  
Sham, P. and C.-P. Chang, eds., 1990. *Proceedings of International Conference on East Asia and Western Pacific Meteorology and Climate*. World Scientific, 572 pp.  
Kyle, W. J. and C.-P. Chang, eds., 1993. *Proceedings of 2nd Conference East Asia and Western Pacific Meteorology and Climate*. World Scientific, 621 pp.  
Chang, C.-P. J. C. Chan and J. T. Wang, eds., 1998. *Proceedings of 3rd Conference East Asia and Western Pacific Meteorology and Climate*. World Scientific, 562 pp.  
Chang, C.-P. G. X. Wu, B. Jou and C. Y. Lam, eds., 2002. *Selected Papers from 4th Conference on East Asia and Western Pacific Meteorology and Climate*. World Scientific, 440 pp.  
Chang, C.-P., ed., 2004. *East Asian Monsoon*. World Scientific, 564 pp.  
Chang, C.-P., B. Wang and G. N.-C. Lau, eds., 2005. *The Global Monsoon System: Research and Forecast*. World Meteorology Organization TD-1266, Geneva, 542 pp.  
Chang, C.-P., Y. H. Ding, R. H. Johnson, G. N.-C. Lau, B. Wang and T. Yasunari, eds., 2011. *The Global Monsoon System: Research and Forecast, 2<sup>nd</sup> Edition*. World Scientific Series on Asia-Pacific Weather and Climate, Vol. 5, World Scientific, 608 pp.  
Chang, C.-P., M. Ghil, M. Latif, and J.M. Wallace, 2015, eds: *Climate Change: Multidecadal and Beyond*. World Scientific Series on Asia-Pacific Weather and Climate, Vol. 6, World Scientific, 390 pp.  
Chang, C.-P., H.C. Kuo, R. H Johnson, N.C. G. Lau, B. Wang, and M. C. Wheeler ed., 2017. *The Global Monsoon System: Research and Forecast. 3rd Ed.*, Vol. 9, World Scientific, 385 pp  
Chang, C.-P., K.-J. Ha, D. Kim, R. H Johnson, N.C. G. Lau, and B. Wang, 2020. *The Multiscale Global Monsoon System*, Vol. 10, World Scientific, 400 pp.

### Refereed Publications:

Wallace, J. M., and C.-P. Chang, 1969: Spectrum Analysis of Large-Scale Wave Disturbances in the Tropical Lower Troposphere. *J. Atmos. Sci.*, **26**, 1010-1025.  
Chang, C.-P., 1970: Westward Propagating Cloud Patterns in the Tropical Pacific as Seen from Time-Composite Satellite Photographs. *J. Atmos. Sci.*, **27**, 133-138.  
Chang, C.-P., V. F. Morris and J. M. Wallace, 1970: A Statistical Study of Easterly Waves in the Western Pacific July-Dec. 1964. *J. Atmos. Sci.*, **27**, 195-201.  
Chang, C.-P., 1971: On the Stability of Low-Latitude Quasi-Geostrophic Flow in a Conditionally Unstable Atmosphere. *J. Atmos. Sci.*, **28**, 270-274.  
Chang, C.-P., 1973: A Dynamical Model of the Intertropical Convergence Zone. *J. Atmos. Sci.*, **30**, 190-212.  
Chang, C.-P., 1973: On the Depth of the Equatorial Planetary Boundary Layer *J. Atmos. Sci.*, **30**, 436-443.  
Chang, C.-P. and R. T. Williams, 1974: On the Shortwave Cutoff of CISK. *J. Atmos. Sci.*, **31**, 830-833.  
Chang, C.-P. and T. M. Piwowar, 1974: Effect of a CISK Parameterization on Tropical Wave Growth. *J. Atmos. Sci.*, **31**, 1256-1261.  
Chang, C.-P., 1974: A Note on the Laterally Forced Wave Motions in the Tropics. *J. Meteor. Soc. Japan*, **52**, 247-249.  
Chang, C.-P., F. T. Jacobs and B. B. Edwards, 1974: A Diagnostic Model for Estimating Large-Scale Flow Patterns in the Tropical Upper Troposphere from Satellite Cloud Brightness Data. *Mon. Wea. Rev.*, **103**, 536-549.

- Chang, C.-P., 1976: Vertical Structure of Tropical Waves Maintained by Internally-Induced Cumulus Heating. *J. Atmos. Sci.*, **33**, 729-739.
- Chang, C.-P., 1976: Forcing of Stratospheric Kelvin Waves by Tropospheric Heat Sources. *J. Atmos. Sci.*, **33**, 740-744.
- Chang, C.-P. and A. E. Maas, Jr., 1976: A Case of Cross-Equatorial Displacement of a Vortex. *Mon. Wea. Rev.*, **104**, 653-655.
- Chang, C.-P., 1977: Comments on "Instability Theory of Large-Scale Disturbances in the Tropics". *J. Atmos. Sci.*, **33**, 1667-1668.
- Chang, C.-P. and C. R. Miller, III, 1977: Comparison of Easterly Waves in the Tropical Pacific during Two Contrasting Periods of Sea-Surface Temperature Anomalies. *J. Atmos. Sci.*, **34**, 615-628.
- Chang, C.-P., 1977: Viscous Internal Gravity Waves and Low Frequency Oscillations in the Tropics. *J. Atmos. Sci.*, **34**, 901-910.
- Chang, C.-P., 1977: Some Theoretical Problems of the Planetary Scale Monsoons. *Pure Applied Geophys*, **115**, 1089-1109.
- Chang, C.-P. and R. J. Pentimonti, 1978: A Numerical Study of Time-Mean Northern Summer Monsoon with Steady and Fluctuating Heating. *Indian J. Meteor., Hydro. Geophys*, **29**, 205-214.
- Tupaz, J. B., R. T. Williams and C.-P. Chang, 1978: A Numerical Study of the Locally Unstable Barotropic Easterly Jet. *Indian J. Meteor., Hydro. Geophys.*, **29**, 308-313.
- Tupaz, J. B., R. T. Williams and C.-P. Chang, 1978: A Numerical Study of Barotropic Instability in a Zonally Varying Easterly Jet. *J. Atmos. Sci.*, **35**, 1265-1280.
- Chang, C.-P., D. M. Delaney and E. Maas, Jr., 1979: Possible Influences of Sea-Surface Temperature on the Easterly Waves over the Equatorial Pacific. *Papers Meteor. Res.*, **2**, 1-13.
- Chang, C.-P., J. E. Erickson and K. M. Lau, 1979: Northeasterly Cold Surges and Near-Equatorial Disturbances over the Winter MONEX Area during Dec. 1974. Part I: Synoptic Aspects. *Mon. Wea. Rev.*, **107**, 812-829.
- Chang, C.-P., 1979: Reply to Comments on "Viscous Internal Gravity Waves and Low Frequency Oscillations in the Tropics". *J. Atmos. Sci.*, **36**, 547.
- Chang, C.-P. and K. M. Lau, 1980: Northeasterly Cold Surges and Near-Equatorial Disturbances over the Winter MONEX Area during Dec. 1974. Part II: Planetary Scale Aspects. *Mon. Wea. Rev.*, **108**, 298-312.
- Chen, G. T. J. and C.-P. Chang, 1980: Structure and Vorticity Budget of Early Summer Monsoon Trough (Mei-Yu) over Southeastern China and Japan. *Mon. Wea. Rev.*, **108**, 942-953.
- Lim, H. and C.-P. Chang, 1981: A Theory for Mid-Latitude Forcing of Tropical Motions during Winter Monsoons. *J. Atmos. Sci.*, **38**, 2377-2392.
- Chang, C.-P. and S. T. Wang, 1981: Possible 2-day Oscillations in the Troposphere and Lower Stratosphere. *Papers Meteor. Res.*, **4**, 31-37.
- Chang, C.-P. and K. M. Lau, 1982: Short-Term Planetary-Scale Interactions over the Tropics and Midlatitude during Northern Winter. Part I: Contrasts between Active and Inactive Periods. *Mon. Wea. Rev.*, **110**, 933-946.
- Chang, C.-P. and H. Lim, 1982: Viscous Rossby Waves on an Equatorial Beta Plane. *J. Atmos. Sci.*, **39**, 1726-1733.
- Chang, C.-P., J. E. Millard and G. T. J. Chen, 1983: Gravitational Character of Cold Surges during Winter MONEX. *Mon. Wea. Rev.*, **111**, 293-307.
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- Saha, K. R. and C.-P. Chang, 1983: The Baroclinic Process of Monsoon Depressions. *Mon. Wea. Rev.*, **111**, 1506-1514.
- Lim, H. and C.-P. Chang, 1983: Dynamics of Teleconnections and Walker Circulations Forced by Equatorial Heating. *J. Atmos. Sci.*, **40**, 1897-1915.
- Williams, R. T., H. Lim and C.-P. Chang, 1984: Nonlinear and Linear Effects in an Easterly Jet with Downstream Variation. *J. Atmos. Sci.*, **41**, 621-636.
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- Chang, C.-P. and K. G. Lum, 1985: Tropical-Midlatitude Interactions over Asia and the Western Pacific Ocean during the 1983-84 Northern Winter. *Mon. Wea. Rev.*, **113**, 1345-1358.

- Lim, H. and C.-P. Chang, 1986: Generation of Internal- and External-Mode Motions from Internal Heating: Effects of Vertical Shear and Damping. *J. Atmos. Sci.*, **41**, 948-957.
- Chang, C.-P., G. T. J. Chen and T.E. Gerish, 1986: Structure Variations of the Synoptic-Scale Cyclonic Disturbances near Borneo during the WMONEX Period. *Papers Meteor. Res.*, **9**, 117-135.
- Chen, G. T. J., C.-P. Chang and Y. J. Wang, 1987: Evaluation of Surface Prognoses of Cyclones and Anticyclones of JMA and FNOG Models over East Asia and the Western Pacific during the 1983 Mei-Yu Season. *Mon. Wea. Rev.*, **115**, 235-250.
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- Chang, C.-P., M. S. Peng and J. S. Boyle, 1991: Interannual Variations of Tropical Upper Tropospheric Divergence and Pacific Teleconnections during Northern Winter. *Terrestr., Atmos. Oceanic Sci.*, **1**, 337-362.
- Lim, H., T.K. Lim and C.-P. Chang, 1991: Vertical wind shear effects on Kelvin wave-CISK modes: possible relevance to 30-60 day oscillations. *Terrestr., Atmos. Oceanic Sci.*, **1**, 203-216.
- Chang, C.-P. and J. M. Chen, 1992: A Statistical Study of Winter Monsoon Cold Surges over the South China Sea and the Large-Scale Equatorial Divergence. *J. Meteor. Soc. Japan*, **70-1**, 287-302.
- Chang, C.-P., T.C. Yeh and J.M. Chen, 1993: Effects of Terrain on the Surface Structure of Typhoons over Taiwan. *Mon. Wea. Rev.*, **121**, 734-752.
- Peng, M. S., C.-P. Chang and B.F. Jeng, 1993: Forecasting of Typhoon Motion in the Vicinity of Taiwan with a Dynamical Model. *Wea. Forecast.*, **8**, 309-325
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- Chen, J. M., and C.-P. Chang, 1994: Multiple-set Canonical Correlation Analysis, Part II: A Reliability Case Study. *Mon. Wea. Rev.*, **122**, 2494-2505.
- Chang, C.-P., and L. Zambresky, 1995: Observed and Navy Global Model Climatologies of Synoptic Disturbances over the Tropical Western Pacific during Northern Winter 1991-92: A Spectral Analysis. *Mon. Wea. Rev.*, **122**, 430-443.
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- Chang, C.-P. and George T. Chen, 1995: Tropical Circulations associated with Southwest Monsoon Onset and Westerly Surges over the South China Sea. *Mon. Wea. Rev.*, **123**, 3254-3267.
- Chang, C.-P., J. M. Chen., P. A. Harr and L. E. Carr, 1996: Northwestward-Propagating Wave Patterns Over the Tropical Western North Pacific During Summer. *Mon. Wea. Rev.*, **124**, 2245-2266.
- Chu, P. C. and C.-P. Chang, 1997: South China Sea Warm Pool in Boreal Spring. *Advances in Atmos. Sci.*, **14**, 195-206.

- Chu, P.C., H. C. Tseng, C.-P. Chang, and J.M. Chen, 1997: South China Sea Warm Pool Detected in Spring from the Navy's Master Oceanographic Observational Data Set (MOODS), *J. Geophys. Res.*, **102 C7**, 15761-15771.
- Chang, C.-P., S. C. Hou, H. C. Kuo and G.T. Chen, 1998: The Development of An Intense East Asian Summer Monsoon Disturbance with Strong Vertical Coupling. *Mon. Wea. Rev.*, **126**, 2692-2712.
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- Chang, C.-P., L. Yi, and George T. J. Chen 2000: A Numerical Simulation of Vortex Development during the 1992 East Asian Summer Monsoon Onset Using the Navy' s Regional Model. *Mon. Wea. Rev.*, **128**, 1604-1631.
- Chang, C.-P. and T. Li, 2000: A Theory for Tropical Tropospheric Biennial Oscillation. *J. Atmos. Sci.*, **57**, 2209-2224.
- Li, T., T. F. Hogan and C.-P. Chang, 2000: Dynamic and Thermodynamic Regulation of Ocean Warming. *J. Atmos. Sci.*, **20**, 3353-3365.
- Chang, C.-P. , Y. Zhang and T. Li, 2000: Interannual and Interdecadal Variation of the East Asian Summer Monsoon Rainfall and Tropical SSTs. Part 1: Roles of the Subtropical Ridge. **13**, *J. Climate*, 4310-4325.
- Chang, C.-P. , Y. Zhang and T. Li, 2000: Interannual and Interdecadal Variation of the East Asian Summer Monsoon Rainfall and Tropical SSTs. Part 2: Meridional Structure of the Monsoon. *J. Climate*, **13**, 4326-4340.
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- Kuo, H.-C., J.-H. Chen, R. T. Williams and C.-P. Chang, 2001: Rossby Waves in Zonally Opposing Mean Flow: Behavior in Northwest Pacific Summer Monsoon. *J. Atmos. Sci.*, **58**,1035-1050.
- Chang, C.-P., P. A. Harr and J. Ju, 2001: Possible Roles of Atlantic Circulations on the Weakening Indian Monsoon-ENSO relationship. *J. Climate*, **14**, 2376-2380.
- Li, T., Y. Zhang, C.-P. Chang and B. Wang, 2001: On the relationship between Indian Ocean SST and Asian summer monsoon. *Geophys. Res. Lett.*, **28**, 2843-2846.
- Li, T. B. Wang, C.-P. Chang, 2001: Theories on the tropospheric biennial oscillation: A review. *Dynamics of Atmos. and Oceanic Circulations and Climate*, Eds: M. Wang et al, Chinese Academy of Sciences, China Meteor. Press, Beijing, 872pp.
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- Chang, C.-P., Z. Wang, J. Ju and T. Li, 2004: On the relationship between western Maritime Continent monsoon rainfall and ENSO during northern winter. *J. Climate*, **17**, 665-672.
- Chang, C.-P., P. A. Harr, J. McBride, and H. H. Hsu, 2004: Maritime Continent monsoon: Annual cycle and boreal winter variability. *East Asian Monsoon*, World Scientific Series on Meteorology of East Asia. Vol. **2**,107-150.
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- Chang, C.-P., P. A. Harr, and H. J. Chen, 2005: Synoptic disturbances over the equatorial South China Sea and western Maritime Continent during boreal winter. *Mon. Wea. Rev.*, **133**, 489-503.
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- Lim, S. Y., C. Marzin, P. Xavier, and C. P. Chang, 2017: Impacts of Boreal Winter Monsoon Cold Surges and the Interaction with MJO on Southeast Asia Rainfall, *J. Climate*. **30**, 4267-4281. doi.org/10.1175/JCLI-D-16-0546.1.
- Li, T., B. Wang, B. Wu, T. Zhou, C. P. Chang, and R. Zhang, 2017: Theories on Formation of an Anomalous Anticyclone in Western North Pacific during El Niño: A Review. *J. Meteorol. Res.*, **31**, 987-1006.
- Chang, C. P., R. H. Johnson, K. J. Ha, D. Kim, G. N. Lau, B. Wang, M. M. Bell, and Y. Luo, 2018: The Multiscale Global Monsoon System: Research and Prediction Challenges in Weather and Climate. *Bull. Amer. Met. Soc.* doi:10.1175/BAMS-D-18-0085.1.
- Luo Y. L. Li, R. H. Johnson, C. P. Chang et al., 2019: Science and prediction of monsoon heavy rainfall. *Science Bulletin*, doi: 10.1016/j.scib.2019.09.005.
- Chang, C. P., T. Li, and S. Yang, 2020: Seasonal Prediction of Boreal Winter Rainfall over the Western Maritime Continent during ENSO. *J. Meteorol. Research*, 34(2) 294-303. doi: 10.1007/s13351-020-9181-z
- Chang, C. P., T. Li, and S. Yang, 2020: Seasonal prediction of boreal winter rainfall over the western Maritime Continent during ENSO. *J. Meteor. Res.*, **34(2)**, 294 – 303, doi: 10.1007/s13351-020-9181-z
- Wang, B. et al, 2021: Monsoons Climate Change Assessment. *Bull. Am. Meteorol. Soc.*, **102**. doi: 10.1175/BAMS-D-19-0335.1.
- Chen, Y.L., C.H. Sui, and C.P. Chang, 2021: Effect of the MJO on East Asian Winter Rainfall as Revealed by an SVD Analysis. *J. Climate*, **34**. doi: 10.1175/JCLI-D-20-0941.1.

### **Invited Talks:**

- Barotropic Instability of Zonally Varying Mean Flows. Global Atmospheric. Research Program Workshop on Numerical Experiments, Exeter, England, Aug. 1976.
- Planetary Scale Winter Monsoon Circulations. Second National Conference on Atmospheric Sciences, Taipei, Taiwan, Dec. 1980.
- Oscillations of Planetary Scale Winter Monsoon during Cold Surge and Break Periods. Conference on Early Results of FGGE and Large-Scale Aspects of its Monsoon Experiments, Tallahassee, Florida, Jan. 1981.
- A Theory on Mid-Latitude Forced Tropical Monsoons. 3rd Scientific Assembly of International Assoc. of Meteorology and Atmospheric. Physics, Hamburg, Germany, Aug. 1981.
- Short Term Midlatitude-Tropical Interactions during Winter Monsoon. WMO Regional Conference on Tropical Meteorology, Tsukuba, Japan, Oct. 1982.
- Midlatitude-Tropical Interactions during the Winter Monsoon. AIT-CCNAA Joint Seminar on Monsoon and Tropical Meteorology, Taipei, April 1983.
- Planetary Scale Circulation, Observation and Theory. National Academy of Sciences Workshop on TOGA: Indian Ocean/Monsoon Climate Program, La Jolla, CA, Feb. 1984.
- Midlatitude-Tropical Interaction during Northern Winter. National Academy of Sciences Workshop on FGGE, Woods Hole, MA, July 1984.
- Winter Monsoon Cold Surges. World Meteor. Organization Regional Workshop on Winter Monsoons, Kuala Lumpur, Malaysia, June 1988.
- Interannual Variations of Tropical Divergence during Northern Winter. International Symposium on TOGA and Air-Sea Interaction over the Western Pacific, Beijing, Nov. 1988.
- A Numerical Study of Mei-Yu Front. International Conference on East Asia and West Pacific Meteorology and Climate, Hong Kong, July 1989.

Synoptic scale propagating disturbances in the tropical western Pacific during northern summer 1989-1991. International Conference on Monsoons, Tsukuba, Japan, Sep. 1992.

A proposed field experiment to study the onset of East Asian summer monsoon over the South China Sea. International Conference on Weather Forecasting in the Western Pacific, Pacific Science Association, Taipei, Feb. 1993.

Synoptic scale propagating wave patterns and typhoon periodicity in the tropical Pacific. 5th U.S.-P.R.C. Monsoons Workshop, Hangzhou, China, June 1993.

Development of low-level westerlies over the South China Sea during monsoon onsets in May and westerly surges in June. International Symposium on the Asian Monsoon and Its Variabilities, Guangzhou, China, Nov. 1994.

South China Sea warm pool and monsoon development. Workshop on SCSMEX, Beijing, China, June 1995.

A Look of NOGAPS and NORAPS Systematic Errors Over the Tropical Monsoon Region in July 1995-June 1996, Naval Research Laboratory, Monterey. July 1996.

Forecast of A Severe East Asian Monsoon Disturbance Using Navy's Operational Regional Model: A sensitivity Study on Initial Data Analysis. First WMO International Workshop on Monsoon Studies, Bali, Indonesia, 24-28 Feb. 1997.

The Development of A Mei-Yu Disturbance During East Asian Monsoon. First WMO International Workshop on Monsoon Studies, Bali, Indonesia, 24-28 Feb. 1997.

A Mei-Yu Disturbance with Strong Vertical Coupling. Conference on Weather Analysis and Forecasting for Centennial Commemoration of the Central Weather Bureau of the Republic of China, Taipei, 3-6 Mar. 1997.

Tropospheric Biennial Oscillation in a Simple Tropical Atmosphere-Ocean-Land System. East Asian Monsoon Meteorology Session, West Pacific Geophysics Meeting, American Geophysical Union, July 1998.

Monsoon and ENSO, An Interactive System. International Conference on the Variability and Predictability of the Asian Monsoon, Xian, China, Sep. 1998.

Interannual Variability of Meiyu Rainfall AND Tropical SST During the East Asian Summer Monsoon. (with Y. Zhang). International Conference on the Variability and Predictability of the Asian Monsoon, Xian, China, Sep. 1998.

Interannual and Interdecadal Variations of the East Asian Summer Monsoon and Tropical Sea Surface Temperatures. (with Y. Zhang and T. Li). Spring Meeting American Geophysical Union, Boston, Mass, June 1999.

A Theory on Tropical Tropospheric Biennial Oscillation. (with T. Li). University of Washington, Aug. 1999.

A Theory on Tropical Tropospheric Biennial Oscillation. (with T. Li). 4th International Conf. on East Asia and West Pacific Meteorology and Climate, Hangzhou, China, Oct. 1999.

A Theory on Tropical Tropospheric Biennial Oscillation. (with T. Li). UCLA, Nov. 1999.

A Theory on Tropical Tropospheric Biennial Oscillation. (with T. Li). Monsoon-CLIVAR Conference, International Pacific Research Center, University of Hawaii, Dec. 1999.

ENSO-Monsoon Relationship, US-Japan Workshop on Monsoon Systems, NASA Goddard Space Flight Center, Nov. 2000.

Possible Roles of Atlantic Circulations on the Weakening Monsoon-ENSO Relationship. CLIVAR Workshop on Interdecadal Variations, International Pacific Research Center, University of Hawaii, Jan. 2001.

Interdecadal Variations of the Relationship between ENSO and the Asian monsoon. Interdecadal and Interannual Variations of East Asian Monsoon, Taipei, Mar. 2001.

Monsoon-ENSO Relationships and Monsoon Biennial Variability. (with T. Li). WMO International Conference on Monsoon Forecasting from Days to Years. Delhi, India, Mar. 2001.

Interdecadal Variations of the ENSO - Monsoon Relationship, 8th Scientific Assembly of International Assoc. of Meteorology and Atmospheric Sciences, Innsbruck, Austria, July 2001.

Interactions of Northern Winter Monsoon over Western Maritime Continent, ENSO, and Indian Ocean Winds. Asia-Pacific Network Workshop for Monitoring and Predicting ENSO Events and the Western Pacific Warm Pool Sea Surface Temperature, Macao, China, Feb. 2002.



Maritime Continent Winter Monsoon Rainfall and ENSO. CAS/TWAS/WMO Second International Symposium on Physico-Mathematical Problems Related to Climate Modeling and Prediction. Shanghai, China, September 2002.

Formation of Typhoon Vamei. Naval Weather Center, Republic of China Navy, Tamsui, Taiwan, March 2003.

The East Asian Monsoon. Hong Kong Observatory 120th Anniversary Commemoration Distinguished Lecture Series, Hong Kong Science Museum, October 2003.

Typhoon Vamei - An Equatorial Tropical Cyclone Development. Hong Kong Observatory, October 2003.

Typhoon Vamei - An Equatorial Tropical Cyclone Development. National Central University, Chungli, Taiwan, October 2003.

Maritime Continent Monsoon: Mean flow and Variations. Marine Meteorology Division, Naval Research Laboratory, March 2004.

Annual cycle of Southeast Asia - Maritime Continent Rainfall and the Asymmetric Monsoon Transition. Fourth International Symposium for Asian Monsoon, Kunming, China, May 2004.

Synoptic Disturbances Over the Equatorial South China Sea and Western Maritime Continent during Boreal Winter. First Meeting of the Asia Oceania Geosciences Society, Singapore, July 2004.

The Maritime Continent Monsoon – A Review. Third International Workshop on Monsoons, World Meteorology Organization, Hangzhou, China, November 2004.

Annual cycle of Southeast Asia - Maritime Continent Rainfall and the Asymmetric Monsoon Transition. Central Weather Bureau, Taipei, Taiwan, November 2004.

Research in Tropical and Monsoon Meteorology – A Personal Prospective. Commemoration of the 50th Anniversary of Atmospheric Sciences at National Taiwan University, Taipei, Taiwan, May 2005.

Annual Cycle and the Asymmetric Seasonal Transition of Southeast Asian Rainfall. Opening Ceremony of APEC Climate Center, Busan, Korea, November 2005.

Interactions of synoptic systems over the equatorial South China Sea during the Asian winter monsoon. WMO Symposium on Winter MONEX: A Quarter Century and Beyond, Kuala Lumpur, Malaysia, April 2006.

Regional Climate Model and East Asian Monsoon. Workshop on Energy and Atmospheric Effects, City University Hong Kong, July 2006.

Steady decline of East Asian Monsoon Winds. Workshop on Decadal to Centennial Variability of East Asian Monsoon, Qindao, China, July 2006.

Maritime Continent Monsoon. Seoul National University, Seoul, Korea, August 2006.

Steady decline of East Asian Monsoon Winds. Seoul National University, Seoul, Korea, August 2006.

Maritime Continent Monsoon. APEC Climate Center, Busan, Korea, August 2006.

Concentric Eyewall Tropical Cyclones in Western North Pacific: A Climatology. APEC Climate Center, Busan, Korea, August 2006.

Steady decline of East Asian Monsoon Winds. APEC Climate Center Symposium, Busan, Korea, September 2006.

Concentric Eyewall Tropical Cyclones in Western North Pacific: A Climatology. Central Weather Bureau, Taipei, Taiwan, October 2006.

Maritime Continent Monsoon. National Central University, Chungli, Taiwan, December 2006.

Tropical Meteorology and the Asian-Australian Monsoon. National Taiwan University, Taipei, Taiwan. March 2007.

Steady decline of East Asian Monsoon Winds. Symposium on Global Change, Asian Monsoon, and Extreme Weather and Climate, 21st Pacific Science Congress, Okinawa, Japan, June 2007.

Concentric Eyewall Tropical Cyclones in Western North Pacific: An updated Climatology. APEC Climate Center, Busan, Korea, September 2007.

The Maritime Continent Monsoon. Chinese Academy of Sciences and China Meteorological Administration, Beijing, October 2007.

Concentric Eyewall Structure of Western North Pacific Typhoons. Chinese Academy of Sciences and China Meteorological Administration, Beijing, October 2007.

Terrain Effects in Southeast Asian Monsoon. Fourth Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia, Beijing, April 2008.

Strategic Plan for World Weather Research Programm Monsoon Panel. Second WWRP Joint Science Committee Meeting, World Meteorological Administration, Geneva, July 2008

Southeast Asian Cold Surges in Late Winter 2005. Fourth Scientific Symposium of the Asian Pacific Economic Cooperation Climate Center, Lima, Peru, August 2008.

The Maritime Continent Monsoon. International Symposium on Equatorial Monsoon. Indonesian Meteorology and Geophysics Agency, Yogyakarta, Indonesia, September 2008.

A Review of the Asian Winter and Maritime Continent Monsoon. WMO 4<sup>th</sup> International Monsoon Workshop, Beijing, October 2008.

The East Asian Winter Monsoon. PAGES Global Monsoon in Modern vs Paleo-Climatology Symposium, Shanghai, October 2008.

Unusual Late Season Cold Surges during the 2005 Asian Winter Monsoon: Roles of Atlantic Blocking and the Central Asian Anticyclone. Fifth Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia, Beijing, April 2009.

Rare Typhoon Development near the Equator. Shanghai Typhoon Institute, Shanghai, April 2009.

Wind-Terrain Interactions in Southeast Asian Monsoon. Fifth Scientific Symposium of the Asian Pacific Economic Cooperation Climate Center, Singapore, July 2009.

Convection and Shear Flow in TC Intensification (Kuo HC, CP Chang and CH Liu). TCS 08 Workshop, Monterey, CA, October 2009.

An Introduction to APEC Climate Center. Asia-Pacific Typhoon Workshop, Manila, Philippines, January 2010.

Change of Siberian-Mongolian High Intensity from November to December-January. Sixth Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia, Beijing, China, April 2010.

Change of Siberian-Mongolian High Intensity from November to December-January. Sixth Scientific Symposium of the Asian Pacific Economic Cooperation Climate Center, Busan, Korea, June 2010.

Can we blame Typhoon Morakot (2009) on Global Warming? COAA 5th International Ocean-Atmosphere Conference, Taipei, June 2010.

Features of the Asian Winter Monsoon. Mike Wallace Symposium, University of Washington, Seattle, September 2010.

The Asian Winter Monsoon. Michio Yanai Symposium, American Meteorological Society, Seattle, January 2011.

Intraseasonal Predictability of Siberian High and the East Asian Winter Monsoon in Recent Decade , Seveth Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia, Beijing, China, April 2011.

Variation of Summer Monsoon and Tropical Cyclone Rainfall in Mainland China and Taiwan since the Middle 20th Century. IUGG2011, Melbourne, Australia 28 June - 7 July, 2011.

Intraseasonal Predictability of the East Asian Winter Monsoon in Recent Decades. AOGS2011, Taipei, Taiwan, August 2011.

Variation of Summer Monsoon and Tropical Cyclone Rainfall in Mainland China and Taiwan since the Middle 20th Century. AOGS2011, Taipei, Taiwan, August 2011.

Intraseasonal Predictability of the East Asian Winter Monsoon in Recent Decades. WCRP Open Science Meeting, Denver, Colorado, October 2011.

Variation of Summer Monsoon and Tropical Cyclone Rainfall in Mainland China and Taiwan since the Middle 20th Century WCRP Open Science Meeting, Denver, Colorado, October 2011.

Intraseasonal Predictability of the East Asian Winter Monsoon in Recent Decades. International Conference on Opportunities and Challenges of Monsoon Prediction, Pune, India, February 2012.

Intraseasonal Predictability of Siberian High and East Asian Winter Monsoon and Its Inter-Decadal Variability. Seventh Session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Asia, Beijing, China, April 2012.

Extreme and Tropical Cyclone Rainfall in East Asian Summer Monsoon. AOGS 2012, Singapore, August 2012

Intraseasonal Predictability of Siberian High and East Asian Winter Monsoon and Its Inter-Decadal Variability. International Conference on Land Processes in Monsoons, Dunhuang, China, August 2012.

Multidecadal Trends of Tropical Cyclone and China Summer Monsoon Extreme Rainfall and Taiwan Typhoon Rain Intensity. NTU International Science Conference on Climate Change: Multidecadal and Beyond. Taipei, Taiwan, September 2012.

Trends of Tropical Cyclone and China Summer Monsoon Extreme Rainfall and Taiwan Typhoon Rain Intensity, Chinese Culture University, Taipei, Taiwan, December 2012.

Is Record-Breaking Increase in Taiwan Typhoon Rainfall Related to Global Warming? National Central University, Zhongli, Taiwan, April 2013.

Is Record-Breaking Increase in Taiwan Typhoon Rainfall Related to Global Warming? Kyoto University, Kyoto, Japan, April 2013.

(AOGS June 2013 Brisbane, Australia )

(COAA August 2013 Hong Kong)

(WMO IWM-IV October 2013 Macao)

(CCRS March 2014 Singapore)

(APCC August 2015 Busan, Korea)

(Shanghai Climate Center December 2015 Shanghai, China)

(Intraseasonal and S2S Workshop April 2016 Singapore)

(International MJO Workshop August 2016 Chengdu, China)

(Sun Yat-sun University December 2016 Guangzhou, China)

(Meteorological Society of Republic of China 2017 Taipei, China): Record-Breaking Increase in Taiwan Typhoon Rainfall in the 21st Century: Is It Related to Global Warming?

(National Sun Yat-sun University June 2017 Kaoshiung, Taiwan): Boreal Winter Rainfall Systems around the Southern South China Sea.

(Working Group Tropical Meteorological Research. Chinese University of Hong Kong September 2017 Hong Kong): Winter Monsoon Weather Systems around the Southern South China Sea: Interaction of Large-Scale Motion and Complex Terrain.

(IWM-VI November 2017, Singapore): Monsoon Rainfall Prediction Problem in the Western Maritime Continent.

(WMO/WGTMR Monsoon Rainfall Assessment, December 2019, Zuhai, China): East Asian monsoon extreme precipitation.

(AMS Annual Meeting 2022, Houston, Texas): Boreal Winter Seasonal Prediction of Western Maritime Continent Rainfall during ENSO.

(WCRP-WWRP Monsoon Project Office Inauguration 2022, Pune, India): Monsoon Weather and Climate Research- Spanning Meso-, Synoptic, and Global Climate time Scales.

## **Publications in other fields**

### Medical Science

Chang, C.P. and T.C. Hain, 2008: A theory for treating visual vertigo due to optical flow. *CyberPsychology and Behavior*, 11(4):495-498. doi:10. 1089/cpb.2007.0075.

Chang, C.P. and T.C. Hain, 2020: Visual vertigo treatment through optokinetic stimulation with stationary anchoring. *Physiotherapy Research and Reports*, 3:1-4. doi: 10.15761/PRR.1000133.

### Philosophy

A Meteorologist's perspective of God and time, and human free will. Third Conference of the Society of Catholic Scientists. 7-9 June 2019, Notre Dame University, South Bend, Indiana.