

CURRICULUM VITAE OF HUNG-CHI KUO

Recent research interest:

Typhoon dynamics, mathematical modeling, scientific computing, and atmospheric and oceanic fluid dynamics

PERSONAL INFORMATION:

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EDUCATIONS:

Ph.D., Atmospheric Sciences, Colorado State University, U.S.A., 1987/03,
(Dissertation adviser W. Schubert).

M.S., Atmospheric Sciences, Colorado State University, U.S.A., 1983/11,
(Thesis adviser T. Vonder Harr).

B.S., Atmospheric Sciences, National Taiwan University, Taiwan, 1979/06.

CURRENT POSITIONS:

Professor, Department of Atmospheric Sciences, National Taiwan University.

Director, Center for Weather Climate and Disaster Research, 2010-2013

PROFESSIONAL EXPERIENCE:

NTU Chair Professor, National Taiwan University, 2010-2013

Committee member, Center for Teaching and Learning Development, Office of Academic Affairs, National Taiwan University, 2010-2011

Chair, Faculty Appeals Committee, National Taiwan University, 2009-2011

Director, Center of Weather Climate and Disaster Research, National Taiwan University, 2009-2013

Committee member, Department of Natural Sciences, National Science Council, 2010-2011

Chair, Scientific Committee of the Third International Earth Science Olympiad, 2008-2009

Scientist, Institute of Mathematical Modeling and Scientific Computing,

National Chiao -Tung University (Taiwan), 2009

Convener, Meteorological Branch, Disaster Mitigation Section, National Science Council (Taiwan), 2006-2008.

Deputy Dean, College of Sciences, National Taiwan University, 2004-2005.

Visiting Professor, Purdue University, U.S.A., 2002-2003.

(Lectured courses: Boundary Layer Meteorology, Atmospheric Thermodynamics, Atmospheric Dynamics, and Geophysical Fluid Dynamics)

Convener, Atmospheric Sciences Branch, Natural Sciences Section, National Science Council (Taiwan), 1997-2001.

Chair, Publishing Committee of Terrestrial, Atmospheric and Oceanic Sciences, 1997-1999.

Chief Editor, Terrestrial, Atmospheric and Oceanic Sciences, 1995-1997.

Visiting Professor, Naval Postgraduate School, U.S.A., 1997-1999 summers.

Visiting Professor, University of California, Los Angeles (UCLA), U.S.A., 1994.

(Lectured courses: Efficient Methods for Computation)

Professor, National Taiwan University, Taiwan, 1993/06-present.

Associate Professor, National Taiwan University, Taiwan, 1990/02-1993/06.

Research Scientist, Naval Research Laboratory, Monterey, U.S.A., 1988/02-1990/02.

Postdoctoral Research, Colorado State University, U.S.A., 1987/03-1988/02,
(Advisers D. E. Stevens and W. Schubert).

FIELDS OF SPECIALTY:

Typhoon and Vortex Dynamics

Mathematical Modeling and Scientific Computing

Atmospheric & Oceanic Fluid Dynamics

Two-Dimensional Turbulence

MAJOR AWARDS AND HONORS:

Chair Professor, National Taiwan University, 2010-2013

Chair Professor, National Chung-Hsing University, 2008-2014

Chair, Scientific Committee of the Third International Earth Science Olympiad, 2008-2009

Ministry of Education National Chair Professor, 2007-2010

Distinguished Professor, National Taiwan University (Permanent), 2006.

Special Invited Researcher, National Science Council (Taiwan), 2005-2008.

Outstanding Research Award, National Research Council (Taiwan), 1996-1997, 1999-2000, 2002-2004.

National Science Council Excellence Award, 1994-1995

National Science Council First Ranked Award, 1992-1993, 1998-1999, 2001-2002

Outstanding Teaching Award of National Taiwan University, 2002.

Honor Teaching Award of National Taiwan University, 1998, 2007.

University of California Faculty Exchange Award, 1994, (with Professor Fovell of UCLA).

Invited Lecturer, Kyushu University, Japan, 2011/02. (3 lectures)

Invited Lecturer, Institute for Mathematical Sciences, National University of Singapore, 2006/11. (2 lectures)

Invited Lecturer, Frontier Research Center for Global Change, Japan, 2001/11, (host : Y. Kurihara). (2 lectures)

PUBLICATIONS:

1. E. A. Hendricks, H.-C. Kuo, M. S. Peng, and D. Hodyss, 2011: Barotropic aspect of hurricane structural and intensity variability. In-Tech, Vienna, Austria, 26pp. (Book Chapter)
2. Chien, F.-C. and H.-C. Kuo, 2011: On the extreme rainfall of Typhoon Morakot (2009), *J. Geophys. Res.*, **116**, D05104, doi:10.1029/2010JD015092.
3. Kuo, H.-C., C.-P. Chang, and C.-H. Liu, 2011: Convection and Shear Flow in Typhoon Development and Intensification: An Observation of Typhoon Sinlaku during TCS-08/T-PARC. *Mon. Wea. Rev.*, In revision.
4. Tsai, Y.-M., H.-C. Kuo, and W. H. Schubert, 2010: Filamentation time diagnosis of thinning troughs and cutoff lows. *Mon. Wea. Rev.*, **138**, 2327-2335.
5. Kuo, H.-C., C.-P. Chang, Y.-T Yang, and H.-J. Jiang, 2009: Western North Pacific typhoons with concentric eyewalls. *Mon. Wea. Rev.*, **137**, 3758-3770.
6. Fovell, R. G., K. L. Corbosiero and H.-C. Kuo, 2009: Cloud microphysics impact on hurricane track as revealed in idealized experiments. *J. Atmos. Sci.*, **66**, 1764-1778.
7. Kuo, H.-C., W. H. Schubert, C.-L. Tsai, and Y.-F. Kuo, 2008: Vortex interactions and barotropic aspects of concentric eyewall formation. *Mon. Wea. Rev.*, **136**, 5183–5198.
8. Kuo, H.-C., L.-Y. Lin, C.-L. Tsai, and Y.-L. Chen, 2008: Vortex interactions and typhoon concentric eyewall formation. *Recent Progress in Atmospheric Sciences: Applications to the Asia-Pacific Region*, The World Scientific Publishing Company.
9. Schubert, W. H., E. Ruprecht, R. Hertenstein, RN. Ferreira, R. Taft, C. Rozoff, P. Ciesielski, and H.-C. Kuo, 2004: English translations of twenty-one of Ertel's papers on geophysical fluid dynamics. *Meteor. Zeit.*, **13**, 527-576.
10. Kuo, H.-C., L.-Y. Lin, C.-P. Chang, and R. T. Williams, 2004: The formation of concentric vorticity structure in typhoon. *J. Atmos. Sci.*, **61**, 2722-2734.

11. Chang, C.-P., C.-H. Liu, and H.-C. Kuo, 2003: Typhoon Vamei: an equatorial tropical cyclone formation. *Geophysical Research Letters*, **30**, 1151-1154.
12. Schubert, W. H., S. A. Hausman, M. Garcia, K. V. Ooyama, and H.-C. Kuo, 2001: Potential vorticity in a moist atmosphere. *J. Atmos. Sci.*, **58**, 3148-3157.
13. Kuo, H.-C., R. T. Williams, J.-H. Chen, and Y.-L. Chen, 2001: Topographic effects on barotropic vortex motion: no mean flow. *J. Atmos. Sci.*, **58**, 1310-1327.
14. 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.
15. Wu, C.-C., H.-C. Kuo, H.-H. Hsu, and B. J.-D. Jou, 2000: Weather and climate research in Taiwan: Potential application of GPS/MET data. *TAO*, **11**, 211-234.
16. Kuo, H.-C., G. T.-J. Chen, and C.-H. Lin, 2000: Merger of tropical cyclone Zeb and Alex. *Mon. Wea. Rev.*, **128**, 2967-2975.
17. Kuo, H.-C., and C.-T. Cheng, 1999: Experiments with a spectral convection model. *TAO*, **10**, 651-692.
18. Kuo, H.-C., T.-M. Leou, and R. T. Williams, 1999: A study on the high-order Smolarkiewicz methods. *Computers and Fluids*, **28**, 779-799.
19. Kuo, H.-C., R. T. Williams, and J.-H. Chen, 1999: A possible mechanism for the eye rotation of typhoon Herb. *J. Atmos. Sci.*, **56**, 1659-1673.
20. Kuo, H.-C., 1998: Topographic effect on the barotropic vortex motion: no mean flow. 3rd International Conference on East Asia and Western Pacific Meteorology and Climate, 227-237.
21. Kuo, H.-C., and R. T. Williams, 1998: Scale dependent accuracy in regional spectral methods. *Mon. Wea. Rev.*, **126**, 2640-2647.
22. Chang, C.-P., S.-C. Hou, H.-C. Kuo, and G. T.-J. Chen, 1998: The development of an intense East Asian summer monsoon disturbance with strong vertical coupling. *Mon. Wea. Rev.*, **126**, 2692-2712.

23. Liou, C.-S., J.-H. Chen, C.-T. Terng, F.-J. Wang, C.-T. Fong, T. E. Rosmond, H.-C. Kuo, C.-H. Shiao, and M.-D. Cheng, 1997: The second-generation global forecast system at the central weather bureau in Taiwan. *Wea. Forecasting*, **12**, 653-663.
24. Kuo H.-C., and W. A. Nuss, 1995 : P-vectors as a diagnostic tool for synoptic-scale circulations. *Mon. Wea. Rev.*, **123**, 776-789.
25. Kuo, H.-C., and C.-H. Horng, 1994: A study of finite amplitude barotropic instability. *TAO, TAMEX Special Issue* , **5**, 199-243.
26. Kuo, H.-C., and S.-W. Chen, 1993: Semigeostrophic invertibility experiments with TAMEX data. *TAO*, **4**, 179-200.
27. Kuo, H.-C., and W. H. Schubert, 1993: Balanced Atmospheric Response to a Moving Heat Source. 2nd International Conference on East Asia and Western Pacific Meteorology and Climate. 83-91.
28. Kuo, H.-C., and R. T. Williams, 1992: Boundary effects in regional spectral models. *Mon. Wea. Rev.*, **120**, 2986-2992.
29. Schubert, W. H., P. E. Ciesielski, D. E. Stevens, and H.-C. Kuo, 1991: Potential vorticity modeling of the ITCZ and the Hadley Circulation. *J. Atmos. Sci.*, **48**, 1493-1509.
30. Stevens, D. E., H.-C. Kuo, W. H. Schubert, and P. E. Ciesielski, 1990: Quasi-balanced dynamics in the tropics. *J. Atmos. Sci.*, **47**, 2262-2273.
31. Kuo, H.-C., and R. T. Williams, 1990: Semi-Lagrangian solutions to the inviscid Burgers equation. *Mon. Wea. Rev.*, **118**, 1278-1288.
32. Kuo, H.-C., 1990: Radiation effects in the cloud-topped marine boundary layer. *TAO*, **1**, 45-72.
33. Hack, J. J., W. H. Schubert, D. E. Stevens and H.-C. Kuo, 1989: Response of the Hadley circulation to convective forcing in the ITCZ. *J. Atmos. Sci.*, **46**, 2957-2973.
34. Kuo, H.-C., and W. H. Schubert, 1988: Stability of cloud-topped boundary layers. *Quart. J. Roy. Meteor. Soc.*, **114**, 881-910.

35. Kuo, H.-C., 1987: Dynamical modeling of marine boundary layer convection. Ph.D. dissertation (Atmospheric Science Paper No.412), Colorado State University, Fort Collins, Co.80523.
36. Kuo, H.-C., and S. P. Kumar, 1986: Solving positive definite linear systems on vector computers. Preprints, 1986 International Conf. on parallel processing, A.C.M, pp 441-443.
37. Kuo, H.-C., 1983: Radiation fields in maritime stratocumulus. M.S. thesis, Colorado State University, Fort Collins, Co.80523.
38. 葉天降、郭鴻基、呂國臣、王世堅、陳怡良, 2010, 莫拉克颱風路徑與降雨作業預報校驗, *大氣科學*, 第三十八期, 第二號, 85-98。
39. 郭鴻基、林李耀、陳珮雯, 2009: 全球暖化與不時風雨。 *科學月刊* 6 月號, 432-437。
40. 郭鴻基、林李耀、陳怡良, 2004: 近期颱風研究之回顧。 *大氣科學*, **32**, 205-224。
41. 郭鴻基、吳俊傑、李清勝, 2001: 天搖地動—颱風研究的挑戰。 *科學發展月刊*, **29**, 859-866。
42. 林李耀、郭鴻基, 2000: 不同水氣垂直結構的颱風線模擬測試。 *大氣科學*, **28**, 143-160。
43. 林李耀、郭鴻基, 1999: 颱風線基本結構的數值模擬研究。 *大氣科學*, **27**, 319-340。
44. 郭鴻基、林宗賢、陳建河、吳佳純, 1998: 賀伯颱風眼轉動可能機制探討。 *大氣科學*, **26**, 49-264。
45. 林禧閔、郭鴻基, 1996: 1994 年南臺灣夏季午後對流之研究。 *大氣科學*, **24**, 249-280。
46. 柳再明、郭鴻基, 1995: 半拉格朗日法與正定義數值方法之比較。 *大氣科學*, **23**, 35-63。
47. 陳建河、郭鴻基, 1994: 中央氣象局全球波譜模式之非線性正模初始化。 *氣象學報*, **40**, 185-198。
48. 柳再明、郭鴻基, 1994: Smolarkiewicz 正定義數值方法中的交錯項。 *大氣科學*, **22**, 277-296。

49. 郭鴻基、柳再明，1994：正定義數值方法的基本測試。大氣科學，**22**，1-22。
50. 郭鴻基、游志淇，1992：淺對流層積雲動力模擬。大氣科學，**20**，1-18。
51. 郭鴻基、柳再明、周仲島，1990：平流傳輸方程的計算：交錯網格之有限差分法。大氣科學，**18**，159-169。