

ZHIMING KUANG Curriculum Vitae

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EDUCATION:

Peking University, Space Physics (minor in Electrical Engineering), B.S., 1996
Caltech, Planetary Science (minor in Applied Computation), Ph.D., 2003

AWARDS:

2012 The Clarence Leroy Meisinger Award, American Meteorological Society, “*For fundamental contributions to understanding tropical convection and its interaction with larger-scale circulations in the tropical atmosphere.*”
2002 NOAA Climate and Global Change Postdoctoral Fellowship
2000 Geophysical Fluid Dynamics Fellowship, Woods Hole Oceanographic Institution
1998 Li Ming Scholarship, California Institute of Technology

PROFESSIONAL EXPERIENCE:

2010-present *Associate Professor*, Harvard University
2005-2010 *Assistant Professor*, Harvard University
2004-2005 *Research Scientist*, California Institute of Technology
2003-2004 *NOAA Postdoctoral Fellow*, University of Washington
2000 *Geophysical Fluid Dynamics Fellow*, Woods Hole Oceanographic Institution
1996-2002 *Graduate Research/Teaching Assistants*, California Institute of Technology

TEACHING:

APMATH111: Introduction to Scientific Computing (undergraduate, spring 2006-2011)
EPS208: Physics of Climate (graduate, fall 2007-2011)
EPS255r: Topics in tropical dynamics (graduate, fall 2006, spring 2012)

PUBLICATIONS:

33. Wofsy, J. and Z. Kuang, Cloud resolving model simulations and a simple model of an idealized Walker cell, *J. Climate*, submitted
32. Kuang, Z., Weakly forced Walker cells, *J. Atmos. Sci.*, submitted
31. Nie, J. and Z. Kuang, Responses of shallow cumulus convection to large-scale temperature and moisture perturbations: a comparison of large-eddy simulations and a convective parameterization based on stochastically entraining parcels, *J. Atmos. Sci.*, submitted

30. Ma, D. and Z. Kuang, Modulation of radiative heating by the Madden-Julian Oscillation and convectively coupled Kelvin waves as observed by CloudSat, *Geophys. Res. Letts.*, in press.
29. Andersen, J. A. and Z. Kuang, Moist static energy budget of MJO-like disturbances in the atmosphere of a zonally symmetric aquaplanet, *J. Climate*, in press.
28. Romps, D. M. and Z. Kuang, A transient matrix for moist convection, *J. Atmos. Sci.*, 68, 2009-2025, (2011).
27. Kuang, Z., The wavelength dependence of the gross moist stability and the scale selection in the instability of column integrated moist static energy, *J. Atmos. Sci.*, 68, 61-74, (2011).
26. Solodoch A., W. R. Boos, Z. Kuang, E. Tziperman, Excitation of intraseasonal variability in the equatorial atmosphere by Yanai wave-group via WISHE-induced convection, *J. Atmos. Sci.*, 68, 210-225 (2011).
25. Blossey, P. N., Z. Kuang, D. M. Romps, Isotopic Fractionations in the TTL in cloud-resolving simulations of an idealized tropical circulation, *J. Geophys. Res.*, 115, D24309, (2010)
doi:10.1029/2010JD014554
24. Boos, W. R. and Z. Kuang, Mechanisms of poleward-propagating, intraseasonal convective anomalies in cloud-system resolving models, *J. Atmos. Sci.*, 67, 3673-3691 (2010).
23. Nie, J., W. R. Boos, Z. Kuang, Observational evaluation of a quasi-equilibrium view of monsoons, *J. Climate*, 23, 4416-4428, (2010).
22. Romps, D. M. and Z. Kuang, Nature versus nurture in shallow convection, *J. Atmos. Sci.*, 67, 1655-1666, (2010).
21. Kuang, Z., Linear response functions of a cumulus ensemble to temperature and moisture perturbations and implication to the dynamics of convectively coupled waves, *J. Atmos. Sci.*, 67, 941-962, (2010).
20. Romps, D. M. and Z. Kuang, Do undiluted convective plumes exist in the upper tropical troposphere? *J. Atmos. Sci.*, 67, 468-483, (2010).
19. Boos, W. R. and Z. Kuang, Dominant control of South Asian monsoon by orographic insulation versus plateau heating, *Nature*, 463, 218-222, (2010).
18. Romps, D. M. and Z. Kuang, Overshooting convection in tropical cyclones, *Geophys. Res. Letts.*, 36, L09804, doi:10.1029/2009GL037396. (2009).
17. Waliser, D. E., J. F. Li, C. P. Woods, R. T. Austin, J. Bacmeister, J. Chern, A. Del Genio, J. H. Jiang, Z. Kuang, H. Meng, P. Minnis, S. Platnick, W. B. Rossow, G. L. Stephens, S. Sun-Mack, W. Tao, A. M. Tompkins, D. G. Vane, C. Walker, and D. Wu (2009), Cloud ice: A climate model challenge with signs and expectations of progress, *J. Geophys. Res.*, 114, D00A21, doi:10.1029/2008JD010015 (2009)

16. Andersen, J. A., Z. Kuang, A toy model of the instability in the equatorially trapped convectively coupled waves on the equatorial beta plane, *J. Atmos. Sci.*, 65, 3736-3757, (2008).
15. Peters, M. E., Z. Kuang, C. Walker, Analysis of atmospheric energy transport in ERA40 and implications for simple models of the mean tropical circulation, *J. Climate*, 21, 5229-5241, (2008).
14. Kuang, Z., A moisture-stratiform instability for convectively coupled waves, *J. Atmos. Sci.*, 65, 834-854, (2008).
13. Kuang, Z., Modeling the interaction between cumulus convection and linear waves using a limited domain cloud system resolving model, *J. Atmos. Sci.*, 65, 576-591, (2008).
12. Kuang, Z., and D. L. Hartmann, Testing the Fix Anvil Temperature hypothesis in a cloud-resolving model, *J. Climate*, 20, 2051-2057, (2007).
11. Kuang, Z. and C. S. Bretherton, A mass-flux scheme view of a high-resolution simulation of a transition from shallow to deep cumulus convection, *J. Atmos. Sci.*, 63, 1895-1909, (2006).
10. Kuang, Z., P. N. Blossey, C. S. Bretherton, A new approach for 3D cloud resolving simulations of large scale atmospheric circulation, *Geophys. Res. Lett.*, 32, L02809, 10.1029/2004GL021024 (2005).
9. Kuang, Z. and C. S. Bretherton, Convective influence on the heat balance of the tropical tropopause layer: A cloud-resolving model study, *J. Atmos. Sci.*, 61, 2919-2927, (2004).
8. Kuang, Z., The norm dependence of singular vectors, *J. Atmos. Sci.*, 61, 2943-2949, (2004).
7. Crisp D., R.M. Atlas, F.-M. Breon, L.R. Brown, J.P. Burrows, P. Ciais, B.J. Connor, S.C. Doney, I.Y. Fung, D.J. Jacob, C.E. Miller, D. O'Brien, S. Pawson, J.T. Randerson, P. Rayner, R.J. Salawitch, S.P. Sander, B. Sen, G.L. Stephens, P.P. Tans, G.C. Toon, P.O. Wennberg, S.C. Wofsy, Y.L. Yung, Z. Kuang, B. Chudasama, G. Sprague, B. Weiss, R. Pollock, D. Kenyon, S. Schroll, The Orbiting Carbon Observatory (OCO) mission, *Advances in Space Research*, 34, 700-709, (2004).
6. Notholt, J., Z. Kuang, C. P. Rinsland, G. C. Toon, M. Rex, N. Jones, T. Albrecht, H. Deckelmann, J. Krieg, C. Weinzierl, H. Bingemer, R. Weller, and O. Schrems, Enhanced Upper Tropical Tropospheric COS: Impact on the Stratospheric Aerosol Layer, *Science*, 300, 307-310, (2003).
5. Kuang, Z., G. C. Toon, P. O. Wennberg, Y. L. Yung, Measured HDO/H₂O ratios across the tropical tropopause, *Geophys. Res. Lett.*, 30, No. 7, 10.1029/2003GL017023, (2003).
4. Kuang, Z., J. S. Margolis, G. C. Toon, D. Crisp, Yuk. L. Yung, Spaceborne measurements of atmospheric CO₂ by high-resolution NIR spectrometry of reflected sunlight: an introductory study, *Geophys. Res. Lett.*, 29, 1716-1720, (2002).
3. Kuang, Z. and Y. L. Yung, Reflectivity variations off the Peru Coast: evidence for indirect effect of anthropogenic sulfate aerosols on clouds, *Geophys. Res. Lett.*, 27, 2501-2504, (2000).

2. Kuang, Z. and Y. L. Yung, Observed albedo decrease related to the spring snow retreat, *Geophys. Res. Lett.*, **27**, 1299-1302, (2000).

1. Kuang, Z., Y. Jiang, Y. L. Yung, Cloud optical thickness variations during 1983-1991: Solar cycle or ENSO? *Geophys. Res. Lett.*, **25**, 1415-1417, (1998).