

J. David Neelin

Department of Atmospheric and Oceanic Sciences
University of California, Los Angeles
405 Hilgard Avenue, Los Angeles, CA 90095-1565
(310) 206-3734 neelin@atmos.ucla.edu

Born: October 31, 1959, Ottawa, Canada
Citizenship: Canada/U.S. (dual)

Positions

Vice-Chair, Dept. of Atmospheric and Oceanic Sciences, UCLA January 2004-present

Professor, Dept. of Atmospheric and Oceanic Sciences and Institute of Geophysics
and Planetary Physics, UC Los Angeles July 1995–present

Associate Professor, Dept. of Atmospheric Sciences, UC Los Angeles July 1992–July 1995

Visiting Associate Professor, Dept. of Earth, Atmospheric and Planetary Sciences,
Massachusetts Institute of Technology, January 1994–May 1995 (Houghton Lectureship)

Assistant Professor, Dept. of Atmospheric Sciences, University of California, Los Angeles.
Sept. 1988–June 1992

Postdoctoral Associate, Dept. of Earth, Atmospheric and Planetary Sciences,
Massachusetts Institute of Technology. Sept. 1987–Aug. 1988

Education

Doctorate: October, 1987, Princeton University, Geophysical Fluid Dynamics Program

Master of Science: August, 1983, University of Toronto, Department of Physics

Bachelor of Science, Hon.: June, 1981, University of Toronto, Department of Physics

Selected Awards

Fellow, American Meteorological Society, 2003

Fellow, Royal Meteorological Society, 2003

NSF Special Creativity Award 1999-2000

C. L. Meisinger Award of the American Meteorological Society, 1996

Houghton Lectureship, Dept. of Earth, Atmospheric and Planetary Sciences, MIT, 1994–95

Presidential Young Investigator Award 1991-1996

Research Interests

Ocean-atmosphere interaction. El Niño/Southern oscillation; climate variations on interannual and longer time scales. Sea-ice–ocean interaction. Land-surface–climate interaction.

Tropical atmospheric dynamics. Interaction between moist convection and large-scale motions; evaporation-wind feedback; intraseasonal oscillations.

Building atmospheric and ocean-atmosphere models of intermediate complexity; hybrid coupled models; theoretical models of atmospheric and climate phenomena; use of asymptotic methods to simplify more complex models.

Service (selected)

International Climate Variability and Predictability Study (CLIVAR) Pacific Panel, 2005-present
 Associate Editor, *Journal of Climate*, 1996-2006
 Reviewer, *Third Assessment Report of the Intergovernmental Panel on Climate Change*, 1999-2000
 Global Ocean-Atmosphere-Land System (GOALS) Panel, Board on Atmospheric Sciences and Climate, National Research Council, 1994-98
 Contributor, *Climate Change 1995, The Science of Climate Change*, Contribution of Working Group I to the Second Assessment report of the Intergovernmental Panel on Climate Change.
 American Meteorological Soc. Committee on Hurricanes & Tropical Meteorology & Climate, 1995-98
 University Corporation for Atmospheric Research UCLA representative, 1988-94
 American Meteorological Society Committee on the Interaction of the Sea and Atmosphere, 1992-95
 Tropical-oceans-Global-Atmosphere Program on Seasonal to Interannual Climate Prediction working group, 1992-95

Affiliations

American Meteorological Society (Fellow)
 American Geophysical Union (Member)
 American Association for the Advancement of Science (Member)
 Canadian Meteorological and Oceanographic Society (Member)
 Royal Meteorological Society (Fellow)

Thesis advisor for 9 (total) doctoral students (1 co-advised)

Advisee	Current affiliation
Jia-yuh Yu (PhD, 1994)	Professor, Culture University, Taiwan
Chia Chou (PhD, 1997)	Research Scientist, Academia Sinica, Taiwan
Hsin-Hsin Syu (PhD, 1997)	(No longer in research)
Wenjie Weng (PhD, 1998)	Researcher, Motorola
Mark S. Roulston (PhD 2000; Cal Tech Advisor Y. Yung)	Assistant Professor, Penn State University
Johnny W.-B. Lin (PhD 2000)	Assistant Professor, North Park University
Katrina Hales (PhD 2005)	Staff Research Associate, UCLA
Chris Holloway	Graduate student, UCLA
Melissa Strausberg	Graduate student, UCLA

Advisor for 7 postdoctoral scholars (2 co-advised)

Alistair Adcroft	Research Oceanographer, Geophysical Fluid Dynamics Lab, Princeton
Bruno Blanke	CNRS Researcher, Laboratoire de Physique des Océans, Brest
Rong Fu	Associate Professor, Georgia Inst. of Technology
Fei-Fei Jin	Professor, Florida State University
Roel Neggers	European Centre for Medium-Range Weather Forecasting
Hui Su	Jet Propulsion Laboratory
Duane Waliser	Principal Scientist, Water and Carbon Cycles, Jet Propulsion Laboratory
Jiayan Yang	Associate Scientist, Woods Hole Oceanographic Institution

Publication Summary Information

Total peer-reviewed publications: 92
 Papers with over 100 citations (Thompson ISI): 9
 Index for N papers with over N citations: 29

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Selected Publications before 2003 (numbered from full Principal Publication list)

2. Neelin, J. D., and I. M. Held, 1987: Modelling tropical convergence based on the moist static energy budget. *Mon. Wea. Rev.*, **115**, 3-12.
3. Neelin, J. D., I. M. Held and K. H. Cook, 1987: Evaporation-wind feedback and low frequency variability in the tropical atmosphere. *J. Atmos. Sci.*, **44**, 2341-2348.
4. Neelin, J. D., 1988: A simple model for surface stress and low-level flow in the tropical atmosphere driven by prescribed heating. *Q. J. Roy. Met. Soc.*, **114**, 747-770.
5. Lau, N. C., I. M. Held and J. D. Neelin, 1988: The Madden-Julian oscillation in an idealized general circulation model. *J. Atmos. Sci.*, **45**, 3810-3832.
7. Neelin, J. D., 1989: On the interpretation of the Gill model. *J. Atmos. Sci.*, **46**, 2466-2468.
9. Neelin, J. D., 1990: A hybrid coupled general circulation model for El Niño studies. *J. Atmos. Sci.*, **47**, 674-693.
10. Neelin, J. D., 1991: The slow sea surface temperature mode and the fast-wave limit: Analytic theory for tropical interannual oscillations and experiments in a hybrid coupled model. *J. Atmos. Sci.*, **48**, 584-606.
12. Neelin, J. D., M. Latif, M. A. F. Allaart, M. A. Cane, U. Cubasch, W. L. Gates, P. R. Gent, M. Ghil, C. Gordon, N. C. Lau, C. R. Mechoso, G. A. Meehl, J. M. Oberhuber, S. G. H. Philander, P. S. Schopf, K. R. Sperber, A. Sterl, T. Tokioka, J. Tribbia and S. E. Zebiak, 1992: Tropical air-sea interaction in general circulation models. *Climate Dynamics*, **7**, 73-104.
14. Jin, F.-F., and Neelin, J. D., 1993: Modes of interannual tropical ocean-atmosphere interaction —a unified view. Part I: Numerical results. *J. Atmos. Sci.*, **50**, 3477-3503.
15. Neelin, J. D., and Jin, F.-F., 1993: Modes of interannual tropical ocean-atmosphere interaction —a unified view. Part II: Analytical results in the weak coupling limit. *J. Atmos. Sci.*, **50**, 3504-3522.
17. Yang, J.-Y., and J. D. Neelin, 1993: Sea-ice interactions with the thermohaline circulation. *Geophys. Res. Lett.*, **20**, 217-220.
20. Neelin, J. D., M. Latif and F.-F. Jin, 1994: Dynamics of coupled ocean-atmosphere models: the tropical problem. *Ann. Rev. Fluid Mech.*, **26**, 617-659.
22. Yu, J.-Y., and Neelin, J. D., 1994: Modes of tropical variability under convective adjustment and the Madden-Julian oscillation. Part II: Numerical results. *J. Atmos. Sci.*, **51**, 1895-1914.
23. Jin, F.-F., J. D. Neelin and M. Ghil, 1994: El Niño on the devil's staircase: annual subharmonic steps to chaos. *Science*, **264**, 70-72.
24. Emanuel, K. A., J. D. Neelin and C. S. Bretherton, 1994: On large-scale circulations in convecting atmospheres. *Quart. J. Roy. Meteor. Soc.*, **120**, 1111-1143.
29. Dijkstra, H. A. and J. D. Neelin, 1995: Ocean-atmosphere interaction and the tropical climatology, Part II: Why the Pacific cold tongue is in the east. *J. Climate*, **8**, 1343-1359.
31. Jiang, N., J. D. Neelin and M. Ghil, 1995: Quasi-quadrennial and quasi-biennial variability in COADS equatorial Pacific sea surface temperature and winds. *Climate Dynamics*, **12**, 101-112.
32. Mechoso, C. R., A. W. Robertson, N. Barth, M. K. Davey, P. Delecluse, P. R. Gent, S. Ineson, B. Kirtman, M. Latif, H. Le Treut, T. Nagai, J. D. Neelin, S. G. H. Philander, J. Polcher, P. S. Schopf, T. Stockdale, M. J. Suarez, L. Terray, O. Thual, and J. J. Tribbia, 1995: The seasonal cycle over the tropical Pacific in coupled ocean-atmosphere general circulation models. *Mon. Wea. Rev.*, **123**, 2825-2838.
34. Jin, F.-F., J. D. Neelin and M. Ghil, 1996: El Niño/Southern Oscillation and the annual cycle: subharmonic frequency locking and aperiodicity. *Physica D*, **98**, 442-465.

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Principal Publications (continued)

37. Blanke, B., J. D. Neelin and D. Gutzler, 1997: Estimating the effects of stochastic wind stress forcing on ENSO irregularity. *J. Climate*, **10**, 1473-1486.
39. Neelin, J. D., 1997: Implications of convective quasi-equilibrium for the large-scale flow. In *The physics and parameterization of moist atmospheric convection*. R. K. Smith, ed., Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 413-446.
41. Yu, J.-Y., C. Chou and J. D. Neelin, 1998: Estimating the gross moist stability of the tropical atmosphere. *J. Atmos. Sci.*, **55**, 1354-1372.
42. Neelin, J. D., D. S. Battisti, A. C. Hirst, F.-F. Jin, Y. Wakata, T. Yamagata, and S. E. Zebiak, 1998: ENSO theory. *J. Geophys. Res.*, **103**, 14261-14290.
43. Weng, W., and Neelin, J. D., 1998: On the role of ocean-atmosphere interaction in midlatitude interdecadal variability. *Geophys. Res. Lett.*, **25**, 167-170.
51. Zeng, N., J. D. Neelin, W. K.-M. Lau, and C. J. Tucker, 1999: Enhancement of interdecadal climate variability in the Sahel by vegetation interaction. *Science*, **286**, 1537-1540.
53. Neelin, J. D., and N. Zeng, 2000: A quasi-equilibrium tropical circulation model—formulation. *J. Atmos. Sci.*, **57**, 1741–1766.
54. Zeng, N., J. D. Neelin, and C. Chou, 2000: A quasi-equilibrium tropical circulation model—implementation and simulation. *J. Atmos. Sci.*, **57**, 1767–1796.
55. Lin, J. W., J. D. Neelin, and N. Zeng, 2000: Maintenance of tropical intraseasonal variability: impact of evaporation-wind feedback and midlatitude storms. *J. Atmos. Sci.*, **57**, 2793–2823.
56. Neelin, J. D., F.-F. Jin, and H.-H. Syu, 2000: Variations in ENSO phase-locking. *J. Climate*, **13**, 2570–2590.
60. Zeng, N. and J. D. Neelin, 2000: The role of vegetation-climate interaction and interannual variability in shaping the African Savanna. *J. Climate*, **13**, 2665-2670.
62. Lin, J. W.-B., and J. D. Neelin, 2000: Influence of a stochastic moist convective parameterization on tropical climate variability. *Geophys. Res. Lett.*, **27**, 3691–3694.
65. Su, H., J. D. Neelin, and C. Chou, 2001: Tropical teleconnection and local response to SST anomalies during the 1997-1998 El Niño. *J. Geophys. Res.*, **106**, D17, 20,025–20,043.
66. Chou, C., J. D. Neelin, and H. Su, 2001: Ocean-atmosphere-land feedbacks in an idealized monsoon, *Quart. J. Roy. Meteor. Soc.*, **127**, 1869-1891.
68. Lin, J. W.-B., and J. D. Neelin, 2002: Considerations for stochastic convective parameterization. *J. Atmos. Sci.*, **59**, 959-975.
69. Stevens, B., J. Duan, J. C. McWilliams, M. Münnich and J. D. Neelin, 2002, Entrainment, Rayleigh friction and boundary layer winds over the tropical Pacific. *J. Climate*, **15**, 30-44.
70. Su, H., and J. D. Neelin, 2002: Teleconnection mechanisms for tropical Pacific descent anomalies during El Niño. *J. Atmos. Sci.*, **59**, 2694-2712.
72. Zeng, N., K. Hales, and J. D. Neelin, 2002: Nonlinear dynamics in a coupled vegetation-climate system and implications for desert-forest gradient. *J. Climate*, **15**, 3474-3487.

Principal Publications since 2003

73. Mechoso, C. R., J. D. Neelin and J.-Y. Yu, 2003: Testing simple models of ENSO. *J. Atmos. Sci.*, **60**, 305-318.
74. Chou, C. and J. D. Neelin, 2003: Mechanisms limiting the northward extent of the northern summer monsoons over North America, Asia and Africa. *J. Climate*, **16**, 406-425.
75. Su, H., J. D. Neelin and J. E. Meyerson, 2003: Sensitivity of tropical tropospheric temperature to sea surface temperature forcing. *J. Climate*, **16**, 1283–1301.

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Principal Publications (continued)

76. Lin, J. W.-B., and J. D. Neelin, 2003: Toward stochastic moist convective parameterization in general circulation models. *Geophys. Res. Lett.*, **30**(4), 1162, doi:10.1029/2002GL016203.
77. Dijkstra, H. A., W. Weijer and J. D. Neelin, 2003: Imperfections of the three-dimensional thermohaline ocean circulation: Hysteresis and unique-state regimes. *J. Phys. Oceanog.*, **33**, 2796-2814.
78. Roulston, M. S., and J. D. Neelin, 2003: Non-linear coupling between modes in a low-dimensional model of ENSO. *Atmosphere-Ocean*, **41**, 217-231.
79. Su, H. and J. D. Neelin, 2003: The scatter in tropical average precipitation anomalies. *J. Climate*, **16**, 3966-3977.
80. Neelin, J. D., C. Chou, and H. Su, 2003: Tropical drought regions in global warming and El Niño teleconnections. *Geophys. Res. Lett.*, **30**(24), 2275, doi:10.1029/2003GL018625.
81. Munnich, M., and J. D. Neelin, 2004: Where is ENSO stress balanced? *Atmospheric Science Letters*, **5**, 35-41.
82. K. Hales, J. D. Neelin and N. Zeng, 2004: Sensitivity of tropical land climate to leaf area index: Role of surface conductance versus albedo. *J. Climate*, **17**, 1459-1473.
83. Chou, C. and J. D. Neelin, 2004: Mechanisms of global warming impacts on regional tropical precipitation. *J. Climate*, **17**, 2688-2701.
84. Su, H., J. D. Neelin, and J. E. Meyerson, 2004: Tropical tropospheric temperature and precipitation response to sea surface temperature forcing. In *Ocean-Atmosphere Interaction and Climate Variability*. Geophysical Monograph Series, 147, 397-392. C. Wang, S.-P. Xie, J. Carton, eds., Amer. Geophys. Union.
85. Tang, B. H., and J. D. Neelin, 2004: ENSO influence on Atlantic hurricanes via tropospheric warming. *Geophys. Res. Lett.*, **31**, L24204, doi:10.1029/2004GL021072.
86. Neelin, J. D., and H. Su, 2005: Moist teleconnection mechanisms for the tropical South American and Atlantic sector. *J. Climate*, **18**, 3928-3950.
87. Su, H., J. D. Neelin, and J. E. Meyerson, 2005: Mechanisms for lagged atmospheric response to ENSO SST forcing. *J. Climate*, **18**, 4195-4215.
88. Chou, C., J. D. Neelin, U. Lohmann and J. Feichter, 2005: Local and remote impacts of aerosol climate forcing on tropical precipitation. *J. Climate*, **18**, 4621-4636.
89. Su, H., and J. D. Neelin, 2005: Dynamical mechanisms for African monsoon changes during the mid-Holocene. *J. Geophys. Res.*, **110**, D19105, doi:10.1029/2005JD005806.
90. M. Munnich, J. D. Neelin, 2005: Seasonal Influence of ENSO on the Atlantic ITCZ and equatorial South America. *Geophys. Res. Lett.*, **32**, L21709, doi:10.1029/2005GL023900.
91. J. D. Neelin, M. Munnich, H. Su, J. E. Meyerson and C. Holloway, 2006: Tropical drying trends in global warming models and observations. *Proc. Nat. Acad. Sci.*, in press.
92. Hales, K., J. D. Neelin and N. Zeng, 2006: Interaction of vegetation and atmospheric dynamical mechanisms in the mid-Holocene African monsoon. *J. Climate*, in press.
93. Chou, C., J. D. Neelin, J.-Y. Tu, and C.-T. Chen, 2006: Regional tropical precipitation change mechanisms in ECHAM4/OPYC3 under global warming. *J. Climate*, in press.