

Total peer-reviewed publications: over 240 journal articles, 5 book chapters.

Books

Neelin, J. D., *Climate change and climate modeling*, Cambridge University Press, 282 pp. (2011).

Selected Publications— since 2018

1. Wu, M., Su, H. & Neelin, J.D. Multi-objective observational constraint of tropical Atlantic and Pacific low-cloud variability narrows uncertainty in cloud feedback. *Nature Communications* **16**, 218 (2025).
2. Kuo, Y.-H. & Neelin, J. D. Anelastic convective entities. part 1: Formulation and implication for nighttime convection. *J. Atmos. Sci.* doi:10.1175/JAS-D-23-0214.1 (2025).
3. Kuo, Y.-H. & Neelin, J. D. Anelastic convective entities. part 2: Adjustment processes and convective cold top. *J. Atmos. Sci.* doi:10.1175/JAS-D-24-0130.1 (2025)
4. Duan, S. Q., Ahmed, F. & Neelin, J. D. Moist heatwaves intensified by entrainment of dry air that limits deep convection. *Nature Geoscience*, doi:10.1038/s41561-024-01498-y (2024).
5. Beucler, T., Gentine, P., Yuval, J., Gupta, A., Peng, L., Lin, J., Yu, S., Rasp, S., Ahmed, F., O’Gorman, P. A., Neelin, J. D., Lutsko, N. J. & Pritchard, M. Climate-invariant machine learning. *Science Advances* **10**, eadj7250 (2024).
6. Jiang, X., Su, H., Jiang, J., Neelin, J. D., Wu, L., Tsushima, Y. & Elsaesser, G. Muted extratropical low cloud seasonal cycle is closely linked to underestimated climate sensitivity in models. *Nature Communications* **14**, 5586 (2023).
7. Neelin, J. D., Krasting, J., Radhakrishnan, A., Liptak, J., Jackson, T., Ming, Y., Dong, W., Gettelman, A., Coleman, D., Maloney, E., Wing, A., Kuo, Y.-H., Ahmed, F., Ullrich, P., Bitz, C., Neale, R., Ordóñez, A. & Maroon, E. Process-oriented diagnostics: principles, practice, community development & common standards. *Bull. Amer. Meteorol. Soc.* **104**, E1452–E1468 (2023).
8. *Bekris, Y., Loikith, P. C. & Neelin, J. D. Short warm distribution tails accelerate the increase of humid-heat extremes under global warming. *Geophys. Res. Lett.* **50**, e2022GL102164 (2023).
9. Martínez-Villalobos, C. & Neelin, J. D. Regionally high risk increase for precipitation extreme events under global warming. *Scientific Reports* **13**, 5579 (2023).
10. Schiro, K. A., Su, H., Ahmed, F., Dai, N., Singer, C. E., Gentine, P., Elsaesser, G. S., Jiang, J. H., Choi, Y.-S. & Neelin, J. D. Model spread in tropical low cloud feedback tied to overturning circulation response to warming. *Nature Communications* **13**, 1–12 (2022).
11. Xue, Y. *et al.* Spring land temperature in Tibetan Plateau enhances global-scale summer precipitation prediction. *BAMS* **103**, E2756–E2767. (2022).
12. Kuo, Y.-H. & Neelin, J. D. Conditions for convective deep inflow. *Geophys. Res. Lett.* **49**, e2022GL100552 (2022).
13. Martínez-Villalobos, C., Pendergrass, A. G. & Neelin, J. D. Metrics for evaluating CMIP6: representation of daily precipitation probability distributions. *J. Climate* **35**, 5719–5743 (2022).
14. Leung, L. R., Boos, W. R., Catto, J. L., DeMott, C., Martin, G. M., Neelin, J.D., and co-authors. Exploratory precipitation metrics: spatiotemporal characteristics, process-oriented, and phenomena-based. *J. Climate* **35**, 3659–3686 (2022).
15. Wolding, B., Powell, S. W., Ahmed, F., Dias, J., Gehne, M., Kiladis, G. & Neelin, J. D. Tropical thermodynamic-convection coupling in observations and reanalyses. *J. Atm. Sci.* **79**, 1781–1803 (2022).
16. *Neelin, J. D., Martínez-Villalobos, C., Stechmann, S. N., Ahmed, F., Chen, G., Norris, J. M., Kuo, Y.-H. & Lenderink, G. Precipitation extremes and water vapor. *Curr Climate Change Repts* 17–33 (2022).
17. Dulguero, L., Ahmed, F. & Neelin, J. D. Extreme tropical precipitation clusters show strong increases in probability under global warming in CMIP6 models. *Geophys. Res. Lett.* **49**, e2021GL096037 (2022).
18. Xue, Y. *et al.* Impact of initialized Land Surface Temperature and Snowpack on Subseasonal to Seasonal Prediction Project, Phase I (LS4P-I): Organization and experimental design. *Geoscientific Model Development* **14**, 4465–4494 (2021).
19. Ahmed, F. & Neelin, J. D. A process-oriented diagnostic to assess precipitation-thermodynamic relations and application to CMIP6 models. *Geophys. Res. Lett.* **48**, e2021GL094108 (2021).

20. *Adames, Á. F., Powell, S. W., Ahmed, F., Mayta, V. C. & Neelin, J. D. The evolution of tropical precipitation in an empirical buoyancy-based framework. *J. Atmos. Sci.* **78**, 509–528 (2021).
21. Norris, J. M., Hall, A., Neelin, J. D., Thackeray, C. W. & Chen, D. Evaluation of the tail of the probability distribution of daily and sub-daily precipitation in CMIP6 models. *J. Climate* **34**, 2701–2721 (2021).
22. Ahmed, F., Neelin, J. D. & Adames, Á. F. Quasi-equilibrium and weak temperature gradient balances in an equatorial beta-plane model. *J. Atmos. Sci.* **78**, 209–227 (2021).
23. Martinez-Villalobos, C. & Neelin, J. D. Global climate models capture key features of extreme precipitation probabilities across regions. *Environmental Research Letters* **16**, 024017 (2021).
24. Schiro, K. A., Sullivan, S. C., Kuo, Y.-H., Su, H., Gentine, P., Elsaesser, G. S., Jiang, J. H. & Neelin, J. D. Environmental controls on tropical mesoscale convective system precipitation intensity. *J. Atmos. Sci.* **77**, 4233–4249 (2020).
25. Chekroun, M. D., Tantet, A., Dijkstra, H. A. & Neelin, J. D. Ruelle-Pollicott resonances of stochastic systems in reduced state space. Part I: Theory. *J. Stat. Phys.* **179**, 1366–1402 (2020).
26. Ahmed, F., Adames, Á. F. & Neelin, J. D. Deep convective adjustment of temperature and moisture. *J. Atmos. Sci.* **77**, 2163–2186 (2020).
27. Su, H., Wu, L., Zhai, C., Jiang, J. H., Neelin, J. D. & Yung, Y. L. Observed tightening of tropical ascent in recent decades and linkage to regional precipitation changes. *Geophys. Res. Lett.* **47**, e2019GL085809 (2020).
28. Kuo, Y.-H., Neelin, J. D., Booth, J. F., Chen, C.-C., Chen, W.-T., Gettelman, A., and co-authors. Convective transition statistics over tropical oceans for climate model diagnostics: GCM evaluation. *J. Atmos. Sci.* **77**, 379–403 (2020).
29. *Ahmed, F. & Neelin, J. D. Explaining scales and statistics of tropical precipitation clusters with a stochastic model. *J. Atmos. Sci.* **76**, 3063–3087 (2019).
30. *Loikith, P. C. & Neelin, J. D. Non-gaussian cold-side temperature distribution tails and associated synoptic meteorology. *J. Climate* **32**, 8399–8414. (2019).
31. *Martinez-Villalobos, C. & Neelin, J. D. Why do precipitation intensities tend to follow gamma distributions? *J. Atmos. Sci.* **76**, 3611–3631 (2019).
32. Martinez-Villalobos, C., Newman, M., Vimont, D. J., Penland, C. & Neelin, J. D. Observed El Niño–La Niña asymmetry in a linear model. *Geophys. Res. Lett.* **46**, 9909–9919 (2019).
33. Maloney, E. D., Gettelman, A., Ming, Y., Neelin, J. D., and co-authors. Process-oriented evaluation of climate and weather forecasting models. *BAMS* 1665–1668 (2019).
34. Norris, J., Chen, G. & Neelin, J. D. Thermodynamic versus dynamic controls on extreme precipitation in a warming climate from the Community Earth System Model Large Ensemble. *J. Climate* **32**, 1025–1045 (2019).
35. Chen, G., Norris, J., Neelin, J. D., Lu, J., Leung, L. R. & Sakaguchi, K. Thermodynamic and dynamic mechanisms for hydrological cycle intensification over the full probability distribution of precipitation events. *J. Atmos. Sci.* **76**, 497–516 (2019).
36. Schiro, K. A. & Neelin, J. D. Deep convective organization, moisture vertical structure, and convective transition using deep-inflow mixing. *J. Atmos. Sci.* **76**, 965–987 (2019).
37. *Martinez-Villalobos, C. & Neelin, J. D. Shifts in precipitation accumulation distributions during the warm season over the United States. *Geophys. Res. Lett.* **45**, 8586–8595 (2018).
38. *Ahmed, F. & Neelin, J. D. Reverse engineering the tropical precipitation–buoyancy relationship. *J. Atmos. Sci.* **75**, 1587–1608 (2018).
39. *Kuo, Y.-H., Neelin, J. D. & Schiro, K. A. Convective transition statistics over tropical oceans for climate model diagnostics: Observational baseline. *J. Atmos. Sci.* **75**, 1553–1570 (2018).
40. *Swain, D. L., Langenbrunner, B., Neelin, J. D. & Hall, A. Increasing climate volatility in 21st century California. *Nature Climate Change* **8**, 427–433 (2018).
41. Schiro, K. A., Ahmed, F., Giangrande, S. E. & Neelin, J. D. GoAmazon2014/5 campaign points to deep-inflow approach to deep convection across scales. *PNAS* **115**, 201719842 (2018).
42. Martinez-Villalobos, C., Vimont, D. J., Penland, C., Newman, M. & Neelin, J. D. Calculating state-dependent noise in a linear inverse model framework. *J. Atmos. Sci.* **75**, 479–496 (2018).

Selected Publications—pre 2018

43. Su, H., Jiang, J. H., Neelin, J. D., Shen, T. J., Zhai, C., Yue, Q., Wang, Z., Huang, L., Choi, Y.-S., Stephens, G. L. & Yung, Y. L. Tightening of tropical ascent and high clouds key to precipitation change in a warmer climate. *Nature Comm.* **8**, 15771 (2017).
44. Neelin, J. D., S. Sahany, S. N. Stechmann, and D. N. Bernstein, 2017: Global warming precipitation accumulation increases above the current-climate cutoff scale, *Proc. Nat. Acad. Sci.*, 114 (5).
45. Neelin, J. D., Langenbrunner, B., Meyerson, J. E., Hall, A. & Berg, N. California winter precipitation change under global warming in the Coupled Model Intercomparison Project 5 ensemble, 2013: *J. Climate* **26**, 6238–6256.
46. Holloway, C. E. and J. D. Neelin, 2009: Moisture vertical structure, column water vapor, and tropical deep convection. *J. Atmos. Sci.*, **66**, 1665–1683.
47. Neelin, J. D., O. Peters and K. Hales, 2009: The transition to strong convection. *J. Atmos. Sci.*, **66**, 2367–84.
48. Chou, C., J. D. Neelin, C.-A. Chen and J.-Y. Tu, 2009: Evaluating the rich-get-richer mechanism in tropical precipitation change under global warming. *J. Climate*, **22**, 1982–2005.
49. Zeng, N., J.-H. Yoon, J. A. Marengo, A. Subramaniam, C. A. Nobre, A. Mariotti, and J. D. Neelin, 2008: Causes and impacts of the 2005 Amazon drought. *Environ. Res. Lett.* **3**, 0114002.
50. Peters, O. & J.D. Neelin 2006: Critical phenomena in atmospheric precipitation. *Nature Phys* **2**, 393–396.
51. Neelin, J. D., M. Munnich, M., Su, H., J. E. Meyerson, and C. Holloway, 2006: Tropical drying trends in global warming models and observations. *Proc. Nat. Acad. Sci.*, **103**, 6110–6115.
52. Chou, C. and J. D. Neelin, 2004: Mechanisms of global warming impacts on regional tropical precipitation. *J. Climate*, **17**, 2688–2701.
53. 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.
54. Su, H., and J. D. Neelin, 2002: Teleconnection mechanisms for tropical Pacific descent anomalies during El Niño. *J. Atmos. Sci.*, **59**, 2694–2712.
55. 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.
56. Neelin, J. D., and N. Zeng, 2000: A quasi-equilibrium tropical circulation model—formulation. *J. Atmos. Sci.*, **57**, 1741–1766.
57. 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.
58. 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.
59. 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.
60. 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.
61. 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.
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63. 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.
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65. Jin, F.-F., and J. D. Neelin, 1993: Modes of interannual tropical ocean-atmosphere interaction—a unified view. Part I: Numerical results. *J. Atmos. Sci.*, **50**, 3477–3503.
66. Neelin, J.D., 1991: The slow sea surface temperature mode and the fast-wave limit: Analytic theory for tropical interannual oscillations & experiments in a hybrid coupled model. *J. Atmos. Sci.*, **48**, 584–606.
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68. Neelin, J. D., and I. M. Held, 1987: Modelling tropical convergence based on the moist static energy budget. *Mon. Wea. Rev.*, **115**, 3–12.