

JUSTIN STALLER MANKIN

CONTACT INFORMATION

Department of Geography
Dartmouth College
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Division of Ocean & Climate Physics
Lamont-Doherty Earth Observatory
61 Route 9W, P.O. Box 1000
Palisades, NY 10964

Primary Email: jsmankin@ldeo.columbia.edu
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ACADEMIC APPOINTMENTS

Dartmouth College **Hanover, NH**
2018 - 2023 Assistant Professor, Department of Geography
Faculty Affiliate, Ecology, Evolution, Environment & Society (EEES)
Adjunct Assistant Professor, Department of Earth Sciences

Lamont-Doherty Earth Observatory (LDEO) of Columbia University **Palisades, NY**
2018 - Adjunct Associate Research Scientist, Division of Ocean & Climate Physics
2015 - 2018 Postdoctoral Research Fellow, Division of Ocean & Climate Physics

NASA Goddard Institute for Space Studies **New York, NY**
2015 - 2017 Postdoctoral Research Fellow, Joint Appointment with LDEO

EDUCATION

Ph.D., Stanford University **Stanford, CA**
Climate Science, September 2015

M.P.A., Columbia University **New York, NY**
Environmental Science & Policy, May 2010

M.Sc., The London School of Economics **London, UK**
Global Politics & Development Economics, October 2008

B.A., Columbia University **New York, NY**
Political Science, May 2004

PUBLICATIONS

★ Denotes research where Mankin is the lead or senior author; underlined are: PI-advised (P)ostdoc, (G)rad student, (U)ndergrad, and (R)esearch Assistant

Total peer-reviewed papers published: 53. Total citations: ~3,800; h-/i-10 index: 27/42 (based on Google Scholar)

MANUSCRIPTS SUBMITTED OR IN REVISION

57. ★Gottlieb, A. (G) & **J. S. Mankin**, Human-caused snow loss has reduced boreal spring runoff over the last four decades, *revising*.
56. Byrne, M. P., G. Hegerl, J. Scheff, A. Berg, C. Hohenegger, V. Humphrey, M. M. Laguë, F. H. Lambert, **J. S. Mankin**, K. A. McColl, K. A. McKinnon, A. G. Pendergrass, Lucas Vargas Zeppetello, Y. Zhang, Hot and unsettled: land-climate science in a warming world, *under review*.
55. ★Callahan, C. (G) & **J. S. Mankin**, Carbon majors and the scientific case for climate liability,

revising.

54. ★Li, Z. (P), J. E. Smerdon, R. Seager, N. Seigert (R), & **J. S. Mankin**, Emergent trends complicate interpretation of the United States Drought Monitor, *under review*.

53. ★**Mankin, J. S.**, N. Seigert (R), J. E. Smerdon, B. I. Cook, R. Seager, A. P. Williams, C. Lesk, (P), Z. Li (P), H. Singh (R), E. Martinez (U), Nonlinear plant responses to carbon dioxide and climate diminish future freshwater availability, *revising*.

PEER-REVIEWED PUBLICATIONS

2023

53. ★Callahan, C. (G) & **J. S. Mankin**, Persistent effect of El Niño on global economic growth, *Science* (2023) 10.1126/science.adf2983.

52. ★Callahan, C. (G), N. J. Dominy, J. M. DeSilva, & **J. S. Mankin**, Global warming, home runs, and the future of America's pastime, *Bulletin of the American Meteorological Society* (2023)10.1175/BAMS-D-22-0235.1.

51. ★Gottlieb, A. (G) & **J. S. Mankin**, Snow drought & its impacts: insights from quantifying and sourcing specific uncertainties, *The Bulletin of the American Meteorological Society* (2023).

2022

50. ★Callahan, C. (G) & **J. S. Mankin**, Globally unequal effect of extreme heat on economic growth, *Science Advances* (2022) 10.1126/sciadv.add3726.

49. A. Hoell, X-W Quan, M. Hoerling, H. F. Diaz, R. Fu, C. He, J. R. Lisonbee, A. Sheffield, I. R. Simpson, E. R. Wahl, **J. S. Mankin**, R. Seager, Water Year 2021 Compound Precipitation and Temperature Extremes in California and Nevada, *The Bulletin of the American Meteorological Society* (2022) 10.1175/BAMS-D-22-0112.2.

48. ★Coffel, E. (P), C. Lesk (P), & **J. S. Mankin**, Earth System Model overestimation of cropland temperatures scales with agricultural intensity, *Geophysical Research Letters* (2022) 10.1029/2021GL097135.

47. Cook, B. I., J. E. Smerdon, E. R. Cook, A. P. Williams, K. P. Anchukaitis, **J. S. Mankin**, *alphabetical thereafter*, Megadroughts in the Common Era and the Anthropocene, *Nature Reviews, Earth and Environment* (2022) 10.1038/s43017-022-00329-1

46. ★Callahan, C. (G) & **J. S. Mankin**, National-scale attribution of historical climate damages, *Climatic Change* (2022) 10.1007/s10584-022-03387-y.

45. ★He, Y., (P), J. Chipman, N. Siegert (U), **J. S. Mankin**, Rapid Indo-Malaysian land use and land cover change over the last 35 years, *Annals of the American Association of Geographers* (2022) 10.1080/24694452.2022.2077168

44. Williams, A.P., B. Livneh, K. A. McKinnon, W. D. Hansen, **J. S. Mankin**, B. I. Cook, J. E. Smerdon, A. M. Varuolo-Clarke, N. R. Bjarke, C. S. Juang, D. P. Lettenmaier, Growing impact of wildfire on western United States water supply, *Proceedings of the National Academy of Sciences* (2022) 10.1073/pnas.2114069119.

43. ★Coffel, A. (P), C. Lesk (P), J. Winter, E. Osterberg, **J. S. Mankin**, Crop-climate feedbacks boost US maize and soy yields, *Environmental Research Letters* 17(2)(2022) 10.1088/1748-9326/ac4aa0.

42. ★Gottlieb, A. (G) & **J. S. Mankin**, Observing, measuring, and assessing the consequences of snow drought, *Bulletin of the American Meteorological Society* (2022) 10.1175/BAMS-D-20-0243.1.

41. Hoell, A., X Quan, M. Hoerling, R. Fu, **J. S. Mankin**, I. Simpson, R. Seager, C. He, J. Lisonbee, B. Livneh, A. Sheffield, Record Low 2020 North American Monsoon Rains Reignites American Southwestern Drought, *The Bulletin of the American Meteorological Society* (2022) 10.1175/BAMS-D-21-0129.1.

2021

40. **★Mankin, J. S.**, I. Simpson, A. Hoell, R. Fu, J. Lisonbee, A. Sheffield, D. Barrie, NOAA Drought Task Force Report on the 2020-2021 Southwestern U.S. Drought. NOAA Drought Task Force, MAPP, and NIDIS (2021) 10.25923/j0rj-an85.

39. Huang, H., C. M. Patricola, J. M. Winter, E. C. Osterberg, & **J. S. Mankin**, Rise in Northeast US Extreme Precipitation Caused by Ocean Variability and Climate Change, *Weather & Climate Extremes* (2021) 10.1016/j.wace.2021.100351.

38. Cook, B., **J. S. Mankin**, A. P. Williams, K. Marvel, J. E. Smerdon, H. Liu, Uncertainties, limits, and benefits of climate change mitigation for soil moisture drought in Southwestern North America, *Earth's Future* (2021) 10.1029/2021EF002014.

37. Scheff, J., **J. S. Mankin**, S. Coats, & H. Liu, CO₂-plant effects do not account for the gap between dryness indices and projected dryness impacts in CMIP5 or CMIP6, *Environmental Research Letters* (2021) 10.1088/1748-9326/abd8fd.

36. McDermid, S. S., B. I. Cook, M. DeKauwe, **J. S. Mankin**, J. E. Smerdon, A. P. Williams, R. Seager, M. Puma, I. Aleinov, M. Kelley, L. Nazarenko, Disentangling the regional climate impacts of competing vegetation responses to elevated [CO₂], *Journal of Geophysical Research - Atmospheres* (2021) 10.1029/2020JD034108.

35. **★Coffel, E. (P)**, & **J. S. Mankin**, Thermal power generation is disadvantaged in a warming world, *Environmental Research Letters* (2021) 10.1088/1748-9326/abd4a8.

2020

34. **★Mankin, J. S.**, F. Lehner, S. Coats, K. McKinnon, The value of initial condition large ensembles to robust decision-making, *Earth's Future* (2020) 10.1029/2020EF001610.

33. **★Callahan, C. (G)** & **J. S. Mankin**, The influence of internal climate variability on projections of synoptically driven Beijing haze, *Geophysical Research Letters* (2020) 10.1029/2020GL088548.

32. Cook, B. I., **J. S. Mankin**, K. M. Marvel, A. P. Williams, J. E. Smerdon, K. J. Anchukaitis, Climate change and drought: twenty-first century projections from the CMIP6 radiative forcing scenarios, *Earth's Future* (2020) 10.1029/2019EF001461.

31. Qin, Y., J. T. Abatzoglou, S. Siebert, L. S. Huning, A. AghaKouchak, **J. S. Mankin**, C. Hong, D. Tong, S. J. Davis, N. D. Mueller, Agricultural vulnerability to changing snowmelt, *Nature Climate Change* (2020) 10.1038/s41558-020-0746-8.

30. **★He, Y. (P)**, E. Lee, **J. S. Mankin**, Seasonal tropospheric cooling in Northeast China associated with cropland expansion, *Environmental Research Letters* (2020) 10.1088/1748-9326/ab6616.

29. Winter, J. M., H. Huang, E. Osterberg, **J. S. Mankin**, Anthropogenic impacts on the exceptional precipitation of 2018 in the Mid-Atlantic United States, *Bulletin of the American Meteorological Society* (2020) 10.1175/BAMS-D-19-0172.1

2019

28. Lehner, F., A. W. Wood, J. A. Vano, D. M. Lawrence, M. P. Clark, **J. S. Mankin**, The potential to reduce uncertainty in regional runoff projections from climate models, *Nature Climate Change* (2019) 10.1038/s41558-019-0639-x.

27. ★**Mankin, J. S.**, R. Seager, J. E. Smerdon, B. I. Cook, A. P. Williams, Mid-latitude freshwater availability reduced by projected vegetation responses to climate change, *Nature Geoscience* (2019) s41561-019-0480-x.
26. ★**Raymond, C. (G)**, & **J. S. Mankin**, Coastal moderation of extreme heat in the United States, *Environmental Research Letters* (2019) 10.1088/1748-9326/ab495d.
25. ★**Coffel, E. (P)**, B. Keith, C. Lesk, E. Bower, J. Lee, R. M. Horton, **J. S. Mankin**, More concurrently hot and dry years in the Nile Basin despite increasing precipitation, *Earth's Future* (2019) 10.1029/2019EF001247.
24. ★**Coffel, E. (P)**, R. M. Horton, J. M. Winter, **J. S. Mankin**, Nonlinear increases in extreme temperatures paradoxically dampen increases in extreme humid-heat, *Environmental Research Letters* (2019) 10.1088/1748-9326/ab28b7.
23. Schultz, K. & **J. S. Mankin**, Is temperature exogenous? Conflict Related Uncertainty in the Instrumental Climate Record in Sub-Saharan Africa, *American Journal of Political Science* (2019) 10.1111/ajps.12425.
22. Bishop, D., A. P. Williams, R. Seager, A. M. Fiore, B. I. Cook, **J. S. Mankin**, D. Singh, J. E. Smerdon, M. P. Rao, Investigating the causes of increased 20th-century precipitation over the southeastern United States, *Journal of Climate* (2019) 10.1175/JCLI-D-18-0244.1.

2018

21. Trugman, A. T., D. Medvigy, **J. S. Mankin**, W. R. L. Anderegg, Soil moisture drought as a major driver of carbon cycle uncertainty, *Geophysical Research Letters* (2018) 10.1029/2018GL078131.
20. Cook, B. I., **J. S. Mankin**, K. Anchukaitis, Climate change and drought: from past to future, *Current Climate Change Reports* (2018) 10.1007/s40641-018-0093-2.
19. ★ **Mankin, J. S.**, R. Seager, J. E. Smerdon, B. I. Cook, A. P. Williams, R. M. Horton, Projected blue water tradeoffs with CO₂-enriched ecosystems, *Geophysical Research Letters* (2018) 10.1002/2018GL077051.
18. Skinner, C. B., C. J. Poulsen, **J. S. Mankin**, Amplification of heat extremes by plant CO₂ physiological forcing, *Nature Communications* (2018) 10.1038/s41467-018-03472-w.
17. Diffenbaugh, N. S., D. Singh, **J. S. Mankin**, Probability of unprecedented climate events: comparing historical changes with the UN aspirational targets and NDC commitments, *Science Advances* (2018) 10.1126/sciadv.aao3354.
16. Ault, T. R., S. St. George, J. E. Smerdon, S. Coats, **J. S. Mankin**, C. Carrillo, B. I. Cook, S. Stevenson, A robust null hypothesis for the potential causes of megadrought in western North America, *Journal of Climate* (2018) 10.1175/JCLI-D-17-0154.1.
15. Cook, B. I., A. P. Williams, **J. S. Mankin**, R. Seager, J. E. Smerdon, D. Singh, Revisiting the leading drivers of Pacific coastal drought variability in the Contiguous United States, *Journal of Climate* (2018) 10.1175/JCLI-D-17-0172.1.

2017

14. Swain, D. L., D. Singh, D. Horton, **J. S. Mankin**, T. Ballard, N. S. Diffenbaugh, Remote linkages to anomalous winter atmospheric ridging over the northeastern Pacific, *Journal of Geophysical Research-Atmospheres* (2017) 10.1002/2017JD026575.
13. Williams, A. P., Cook, B. I., Smerdon, J. E., Bishop, D. A., Seager, R., **Mankin, J. S.**, The 2016 southeastern US drought: an extreme departure from centennial wetting and cooling, *Journal of Geophysical Research - Atmospheres* (2017) 10.1002/2017JD027523.
12. Smerdon, J. E., Luterbacher, J., Phipps, S. J., (alphabetical thereafter), Comparing data and model estimates of hydroclimate variability and change over the Common Era, *Climate of the Past*

(2017) 10.5194/cp-2017-37.

11. ★ **Mankin, J. S.**, J. E. Smerdon, B. I. Cook, A. P. Williams, R. Seager, The curious case of projected 21st-century drying but greening in the American West, *Journal of Climate* (2017) 10.1175/JCLI-D-17-0213.1.

10. Diffenbaugh, N. S., D. Singh, **J. S. Mankin**, A. Charland, M. Haugen, D. E. Horton, D. L. Swain, D. E. Touma, M. Tsiang, B. Rajaratnam, Quantifying the influence of historical global warming on the probability of unprecedented extreme climate events, *Proceedings of the National Academy of Sciences* (2017), 10.1073/pnas.1618082114.

9. ★ **Mankin, J. S.**, D. Viviroli, M. M. Mekonnen, A. Y. Hoekstra, R. Horton, J. E. Smerdon, and N. S. Diffenbaugh, Influence of internal variability on population exposure to hydroclimatic changes, *Environmental Research Letters* (2017) 10.1088/1748-9326.

2016

8. Ault, T., **J. S. Mankin**, B. I. Cook, J. E. Smerdon, Relative impacts of mitigation, temperature, and precipitation on 21st Century megadrought risk in the American Southwest, *Science Advances* (2016) 10.1126/sciadv.1600873.

7. Horton, R., **J. S. Mankin**, C. Lesk, E. Coffel, C. Raymond, A review of recent advances in research on extreme heat events, *Current Climate Change Reports* (2016) 10.1007/s40641-016-0042-x.

6. Coats, S. & **J. S. Mankin**, The challenge of accurately quantifying future megadrought risk in the American Southwest, *Geophysical Research Letters* (2016) 10.1002/2016GL070445.

5. Singh, D, D. L. Swain, **J. S. Mankin**, D. E. Horton, L. Thomas, N. S. Diffenbaugh, Recent amplification of the North American winter temperature dipole, *Journal of Geophysical Research: Atmospheres* (2016) 10.1002/2016JD025116.

2015

4. **Mankin, J. S.**, D. Viviroli, D. Singh, A. Y. Hoekstra, and N. S. Diffenbaugh, The potential for snow to supply human water demand in the present and future, *Environmental Research Letters* (2015) 10.1088/1748-9326/10/11/114016.

3. ★ **Mankin, J. S.**, N. S. Diffenbaugh, Influence of temperature and precipitation variability on near-term snow trends, *Climate Dynamics*, **45** 1099-1116 (2015) 10.1007/s00382-014-2357-4.

< 2015

2. Siegfried, T., T. Bernauer, R. Guennet, S. Sellars, A. W. Robertson, **J. S. Mankin**, P. Bauer-Gottwein, Will Climate Change Exacerbate or Mitigate Water Stress in Central Asia?, *Climatic Change*, **112** (3-4) 881 (2012) DOI 10.1007/s10584-011-0253-z.

1. ★ **Mankin, J. S.**, Gaming the system: how Afghan opium underpins local power, *Journal of International Affairs*, **63** (1) 195 (2009).

PEER-REVIEWED BOOK CHAPTERS

1. Moore, F., **J. S. Mankin**, A. H. Becker, Disciplines: Integrating Climate and Social Sciences, Chapter 4 in *Climate Cultures: Anthropological Perspectives on Climate Change*. Jessica Barnes and Michael Dove (eds). New Haven: Yale University Press (2015).

DATASETS

1. National-scale attribution of historical climate damages, (2022) DOI pending. Available at: https://rcweb.dartmouth.edu/CMIG/national_attribution_2022/prod/. These data are being used in ongoing climate litigation by Our Children's Trust in their national

court case (Juliana v. United States) and international cases (e.g., in Canada’s LaRose v. Her Majesty, among others in development). Our paper is also the basis of an advising opinion being written by the International Court of Justice for the UN on questions of Loss & Damage.

OTHER PUBLICATIONS

12. ★**Mankin, J. S.** & C. Callahan (G), The other climate change, *LA Times*, page A11, 25 May 2023.
11. ★C. Callahan (G) & **Mankin, J. S.**, MLB home run counts are rising and global warming is playing a role, *The Conversation*, 7 April 2023.
10. ★**Mankin, J. S.** & C. Callahan (G), The Scientific Case for Climate Liability and Loss and Damage Claims, *Lawfare*, 2022.
9. ★**Mankin, J. S.**, The American West’s drought isn’t a disaster. It’s our new, permanently arid normal, *The Washington Post*, 2021.
8. Fu, R., I. Simpson, **J. S. Mankin**, A. Hoell, D. Barrie, Fueled by climate change, costly South-west drought isn’t going away, *The Washington Post*, 2021.
7. ★Coffel, E. (P) & **J. S. Mankin**, Thermal power generation disadvantaged under global warming, *Carbon Brief*, 2021.
6. Fu, R., A. Hoell, **J. S. Mankin**, I. Simpson, Addressing drought-heatwave-wildfire interactions, *EOS*, 2021.
5. ★Coffel, E. (P) & **J. S. Mankin**, More rain but less water in the Nile Basin, *The Conversation*, 13 January 2020.
4. ★**Mankin, J. S.**, et al., Will plants help make the planet wetter or drier in a changing climate?, *Carbon Brief*, 5 November 2019.
3. Schultz, K. & **J. S. Mankin**, The weather stations that monitor climate change are at risk. This is why, *Washington Post*, *Monkey Cage*, 22 April 2019.
2. **Mankin, J. S.**, Rotten to the core, *Foreign Policy*, (2011).
1. **Mankin, J. S.**, Preventive semantics, *Foreign Policy*, 146 (2005).

GRANTS

EXTERNAL AGENCIES: SUCCESSFUL, PENDING, AND PLANNED

10. **NOAA MAPP**, lead PI, with Columbia University, *pending*, Reliable western drought assessment in a nonstationary climate, 2022 (\$739,291; \$533,890 to Dartmouth)
9. **NOAA MAPP**, co-PI, with Cornell University, *pending*, Sourcing and constraining hydroclimate uncertainty for robust adaptation decisions, 2022 (\$526,201; \$216,238 to Dartmouth).
8. **NSF Human-Environment and Geographical Sciences**, lead PI, *revising*, Internal climate variability and the distribution of climate adaptation benefits, (\$474,825 to Dartmouth).
7. **NSF Climate & Large Scale Dynamics**, co-PI, with Syracuse University, *pending*, Agriculture as a driver of regional climate extremes, (\$516,000; \$128,075 to Dartmouth).
6. **Aspen Global Change Institute**, co-PI, with Cornell *awarded*, Future resilience and risk of terrestrial water availability: towards an integrated perspective on water, plants, and climate.
5. **NSF Hydrologic Sciences**, lead PI, with UCSB and UCLA, *revising*, Collaborative Research: A regional-scale framework for determining the hydrologic legacies of wildfire in western North America, (\$990,846; \$330,000 to Dartmouth).
4. **Department of Energy**, co-PI, with J. Smerdon and R. Seager of Columbia University, *9/2021 - 8/2024*, The Role of Vegetation in Past and Future Global Hydroclimatic Change, (\$759,000;

\$332,560 to Dartmouth).

3. **NSF Human-Environment and Geographical Sciences**, co-PI, the lead PI is my post-doc E. Coffel who wrote it under my direction and is now a professor at Syracuse University, 7/2021 - 6/2024, The Crop-Climate Feedback Cycle and its Implications for Global Food Production, (\$360,000; \$26,600 to Dartmouth).

2. **NSF Graduate Research Fellowship**, for Mankin advisee C. Callahan, 2021-2023 (\$102,000 to Dartmouth).

1. **NOAA Modeling, Analysis, Predictions and Projections**, lead PI, with J. Smerdon, B. Cook, and R. Seager of Columbia University, 9/2020 - 8/2023, Regional Influences of Vegetation on Complex Droughts in North America, (\$582,441; \$421,334 to Dartmouth).

INTERNAL: SUCCESSFUL AND PENDING

Wright Center for the Study of Computation and Just Communities, lead PI, National Attribution of Historical Climate Damages: Data in Service of Climate Litigation, Dartmouth, 2022 (\$9,496).

Neukom Institute CompX, lead PI, Assessing adaptation feedbacks to present and future climate extremes, Dartmouth, 2020-21 (\$20,000).

Rockefeller Center, lead PI, Estimating the time of emergence and distribution of climate adaptation benefits for climate decision-making, Dartmouth, 2020-21 (\$15,000).

Walter and Constance Burke Research Initiation Award, lead-PI, The role of vegetation in shaping present and future aridity and drought, 2018 (\$25,000).

Earth Institute lead PI, Columbia University, 2015-2017, (\$138,000).

Earth Institute Cross-Cutting Initiative, (\$23,000).

E-IPER Graduate Summer Research Grant, 2012 (\$4,000).

McGee Grant, Stanford University, School of Earth Sciences, 2011 (\$4,000).

FELLOWSHIPS

Junior Faculty Fellowship, Dartmouth College, 2021-2022.

Earth Institute Postdoctoral Fellowship, Lamont-Doherty Earth Observatory & The Center for Climate Systems Research, 2015-2017.

Northeast Climate Science Center Fellowship, The Center for Climate Systems Research & University of Massachusetts, Amherst, 2015-2017.

Predocctoral Science Fellowship, Center for International Security and Cooperation (CISAC), Stanford University, tuition and stipend, 2014-2015.

Stanford Center on International Conflict and Negotiation (SCICN) Fellowship, Stanford Law School, 2012-2013.

Margaret Jonsson Family Foundation Fellowship, School of Earth Sciences, Stanford University, tuition and stipend, 2010-2014.

Environmental Science Academic Fellowship, Columbia University, 2010.

ACADEMIC HONORS AND AWARDS

Climate Science Leader, Climate Judiciary Project, Environmental Law Institute, Washington, D.C., 2023.

Institute of Physics (IOP) Publishing, 2022 Outstanding Reviewer Awards.

The Bulletin of the American Meteorological Society Research Highlight, Observing, measuring, and assessing the consequences of snow drought, 2022.

Institute of Physics (IOP) Publishing, Trusted Reviewer Status (top 15% of reviewers), 2021.

American Geophysical Union Article Highlight, Invited Commentary by Clara Deser on “The value of initial condition large ensembles to robust adaptation decision-making” by Mankin et al., *Earth’s Future*, (2020) <https://doi.org/10.1029/2020EF001854>.

Named Co-Lead, National Oceanic and Atmospheric Administration (NOAA) Drought Task Force IV, 2020.

Editor’s Citation for Outstanding Reviewing, *Institute of Physics (IOP Publishing)*, 2016.

Environmental Research Letters Editors’ Highlight of 2015, April 2016.

Institute of Physics Select Article, “The potential for snow to supply human water demand in the present and future”, *ERL*, November 2015.

Environmental Research Letters Monthly Highlights Collection, November 2015.

Rising Environmental Leadership Program (RELP), Woods Institute for the Environment, Stanford University, 2012-2013.

Andrew Wellington Cordier Essay Winner, Columbia University, 2009.

Distinction, MSc. Thesis, London School of Economics, 2008.

ACADEMIC SERVICE

PROFESSIONAL

Program Co-Chair, American Meteorological Society 2024 Annual Meeting on Climate Variability and Change

Committee Member, Earth’s Future Editor-in-Chief Search Committee, 2023

Chair, American Meteorological Society CVC STAC Awards Committee, 2021-present

Associate Editor, *Earth’s Future*, American Geophysical Union, 2022-present

Co-lead, National Oceanic and Atmospheric Administration Drought Task Force (NOAA DTF), 2020-2023

Committee Member, American Meteorological Society Committee on Climate Variability and Change (AMS CVC), 2020-present

Member Representative, University Corporation for Atmospheric Research (UCAR) for Dartmouth College, 2020-present

Committee Member, American Meteorological Society STAC Awards Committee, 2020

Senior Anti-Corruption Advisor, NATO International Security Assistance Force (ISAF), 2012

Advisor, U.S. House of Representatives, Subcommittee on Environment of the House Committee on Science, Space, and Technology Majority, 2022-present

DARTMOUTH

Chair, Curriculum Committee, Dartmouth EEES PhD program, 2020-2022

Committee Member, Committee on the Faculty (COF), Dartmouth, 2020-2021

Committee Member, Program Chair Selection Committee, Dartmouth EEES PhD program,

2021-present

Advisory Board Member, Irving Institute Faculty Advisory Board, 2022-present

Member, Ad Hoc Group on Energy for Dartmouth Sustainability Office, 2022-present

Steering Committee Member, Design Initiative at Dartmouth (DIAD), 2022-present

Faculty Advisor, Center for Environmental Leadership Training (CELT), 2022-present

RESEARCH

Referee for National Science Foundation (Climate & Large Scale Dynamics; Human-Environment and Geographical Sciences; Paleo Perspectives on Climate Change), National Oceanic and Atmospheric Administration, Department of Energy, Human Frontier Science Program, Swiss National Science Foundation, Journal of Climate, Geophysical Research Letters, Journal of Hydrology, Water Resources Research, Earth's Future, Biogeosciences, Climate Dynamics, Environmental Research Letters, Nature Climate Change, Agricultural and Forest Meteorology, PNAS, Nature Communications, Nature Water, Journal of Geophysical Research-Atmospheres, Earth-Science Reviews, npj Climate Science, PlosOne, Science Advances, Climatic Change

Session Convener, American Geophysical Union (AGU) 2022, 'Drought: Mechanisms and Impacts in the Past, Present, and Future'; American Meteorological Society (AMS) 2022, 'Land-Atmosphere Interactions'; American Geophysical Union (AGU) 2021, 'Drought: Mechanisms and Impacts in the Past, Present, and Future'; American Meteorological Society (AMS) 2021, 'Downscaling and Regional Climate Change'; American Geophysical Union (AGU) 2020, 'Understanding the Terrestrial Hydrological Response to Atmospheric CO₂: Constraints from the Geologic Past and Insights into the Future'; American Meteorological Society (AMS) 2020, 'The use of large ensembles in understanding climate variability and change', January 2020

Seminar organizer, Dartmouth's 'Critical Data' seminar series, 2019-2020; Lamont-Doherty Earth Observatory Division of Ocean & Climate Physics Seminar, 2016-2017

Conference organizer, PAGES2k PMIP3 Workshop planning committee, Lamont-Doherty Earth Observatory, June 1-3 2016

OSPA Judge, AGU 2016 Fall Meeting; AMS 2020 Annual Meeting; AMS 2021 Annual Meeting; AGU 2021 Annual Meeting; AMS 2022 Annual Meeting

E-IPER Student Representative to the Executive Committee, Stanford University, 2011-2012

Professional societies, Member, American Geophysical Union (AGU), 2010-present; American Meteorological Society (AMS), 2012-present; American Association of Geographers (AAG) 2017-present

ACADEMIC CERTIFICATIONS

National Center for Atmospheric Research (NCAR), Boulder, CO, USA
Community Land Model Workshop **September 2016**

National Centre of Competence in Research, Climate (NCCR), Grindewald, Switzerland
NCCR Swiss Climate Research Summer School **Summer 2013**

National Center for Atmospheric Research (NCAR), Boulder, CO, USA
Community Earth System Model (CESM) Workshop **Summer 2012**

ADVISEES

Lead advisor for three PhD students, four postdocs, and ten undergraduate students

GRADUATE STUDENTS

Callahan, Christopher, PhD student, EEES program, Dartmouth, NSF GRFP funded, lead advi-

sor (2018-present)

Gottlieb, Alex, PhD student, EEES program, Dartmouth, DOE funded, lead advisor (2019-present)

Lane, Erin, PhD student, EEES program, Dartmouth, committee member (2021-present)

Perlmutter, Flora, PhD student, EEES Program, Dartmouth, NSF GRFP funded, lead advisor (2022-present)

POSTDOCTORAL FELLOWS

Coffel, Ethan, Postdoctoral Fellow, Neukom Institute, Dartmouth, lead advisor (2018-2020), now Asst. Prof. at Syracuse University

He, Yaqian, Postdoctoral Fellow, Department of Geography, Dartmouth, lead advisor (2018-2020), now Asst. Prof. at University of Central Arkansas

Lesk, Corey, Postdoctoral Fellow, Neukom Institute, Dartmouth, lead advisor (2022-present)

Li, Zhiying, Postdoctoral Fellow, Department of Geography, Dartmouth, lead advisor (2021-present)

UNDERGRADUATE STUDENTS

Liu, Joanne, Women in Science Program Fellow (WISP), Dartmouth undergraduate (2019-2019)

Martinez, Emily, Junior Research Fellow, Neukom Scholar, Dartmouth undergraduate (2019-2022)

Rust, Elise, Senior Honors Thesis QSS, Dartmouth undergraduate (2020-2021)

Zamora Castillo, Santiago, Dartmouth undergraduate (2020-2020)

Siebert, Noel, Dartmouth undergraduate (2020-2021)

Pronichenko, Katya, Dartmouth Sophomore Research Scholar (2021-present)

Adobamen, Anna, Women in Science Program Fellow (WISP), Dartmouth undergraduate (2021-2021)

Kulasingham-Poon, Meghan, Women in Science Program Fellow (WISP), Dartmouth undergraduate (2021-present)

Yildirim, Ulgen, Women in Science Program Fellow (WISP), Dartmouth undergraduate (2021-2021)

Gerber, Annabel, Women in Science Program Fellow (WISP), Dartmouth undergraduate (2021-present)

Moon, Zoe, Women in Science Program Fellow (WISP), Dartmouth undergraduate (2022-present)

Bryant, Grace, Senior Honors Thesis Student, Earth Sciences, Dartmouth undergraduate (2022-present)

Simon, Erica, Neukom Scholar, Dartmouth undergraduate (2022-present)

Lertbunnaphongs, Buntida “Beam”, ENVIS scholar, Dartmouth undergraduate (2023-present)

TEACHING

★ Denotes an original course developed by Mankin for Dartmouth students

1. GEOG 01.01: The Natural Environment

Lower-division course that introduces students to the study of the physical environment using a systems approach. The lab-based course examines how energy, mass, and momentum are exchanged through physical world, the sets of feedbacks a processes such exchange generates, and how those determine the varied forms of life on Earth. Offered SP 2021

2. ★ GEOG 16.01: A Climate for Human Security

Mid-division course that examines how the biogeophysics of the the climate system shape human welfare and security; assumes a knowledge of the physics of global warming (e.g., GEOG 5) and statistics. Topics include climate projections, climate variability, climate uncertainty, climate sensitivity, and the carbon budget, the consumptive and paradoxical dimensions of the climate problem, the differences between 1.5°C and 2°C worlds, climate and political violence, mitigation,

adaptation, and geoengineering. Offered SU 2019, SP 2021, SP 2023

3. ★ GEOG 18.01/EEES 140: Climate Extremes on a Warming Planet
Mid-division course on the physics, impacts, and future of extreme weather and climate with a parallel graduate-level offering (EEES 140). The cloud-based python notebook problem sets developed by Mankin for the class led GEOG 18.01 to be selected as the pilot class for Dartmouth's Data Science Infused for Undergraduate STEM Education Project (DIFUSE), which is an NSF-funded project to develop data science applications in Dartmouth undergraduate classrooms. Assumes no prior knowledge of atmospheric science or programming. Offered SP 2019, SP 2020, SU 2020, SP 2023
4. ★ GEOG 60.01/EEES 160: Earth System Modeling
Upper division course with a parallel graduate-level offering (EEES 160) introduces the concepts (theory and practicalities) related to the science and art of numerical modeling generally, and process-based modeling for climate science, specifically. Students build and work with a range of models, from simple, zero-dimensional radiation balance models to compiling and running fully-coupled global-scale Earth System Model experiments on a supercomputer (NCAR's Cheyenne cluster). Students learn the potentials and pitfalls of modeling more generally, while positioning a rational evaluation of models and their place in society, especially around predictions of climate change. Assumes knowledge of scientific computing, linear algebra, vector calculus, statistics, and differential equations. Offered W 2023

INVITED WORKSHOPS

8. *upcoming* Continental Weather and Climate Workshop, Harvard University, Cambridge, MA, USA *June 14-16, 2023*.
7. Assessing Drought in a Changing Climate, National Integrated Drought Information System (NIDIS) and the USDA Climate Hubs, Boulder, CO, USA, *29 February 2023*.
6. Environmental Law Institute, Climate Leaders Judiciary Project, Washington, D.C., USA, *27-28 February 2023*.
5. Rapid Attribution Workshop, National Oceanic and Atmospheric Administration, Boulder, CO, USA, *24-25 May 2022*.
4. Continental Climate Change: Simple Models to Understand the Future, University of St. Andrews, Scotland, UK, *15 June, 2022*.
3. United States Climate Modeling Summit (US-CMS) on Land-Atmosphere Interactions and Extremes, NOAA Center for Weather and Climate Prediction, College Park, MD, USA, *April 4, 2018*.
2. NSF-EASM Workshop on Surviving peak drought and warming in the Southwest, University of Arizona, Tucson, AZ, USA, *March 29-30, 2018*.
1. PAGES2K / PMIP3 Hydroclimate Workshop, Lamont-Doherty Earth Observatory, Palisades, NY, USA, *June 1-3, 2016*.

PRESENTATIONS

INVITED TALKS (SELECTED)

37. Earth Research Institute, University of California, Santa Barbara, Santa Barbara, CA, USA *May 19, 2023*.
36. K. Douglas Nelson Seminar, Department of Earth and Environmental Sciences, Syracuse University, Syracuse, NY, USA *6 April 2023*.
35. Advances in Climatology, American Association of Geographers Annual Meeting, Denver, CO, USA *23 March 2023*.
35. Environmental Law Institute, Washington, D.C., USA *28 February 2023*.

34. Irving Energy Institute, Faculty Seminars on Energy and Climate, Dartmouth College, Hanover, NH, USA *17 February 2023.*
33. Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY, USA *19 October 2022.*
32. Department of Atmospheric Sciences, Texas A&M, College Station, TX, USA *21 September 2022.*
31. The causes and consequences of the Western U.S. drought, Rapid Attribution Workshop, NOAA-CIRES, Boulder, CO, USA *24 May 2022.*
30. School of Earth and Environmental Sciences, University of St. Andrews, Fife, Scotland, UK *15 June 2022.*
29. School of Ocean and Earth Science and Technology (SOEST), University of Hawaii, Manoa *19 November 2021.*
28. Science Pub of Vermont, Brandon, VT, USA *7 November 2021.*
27. Department of Earth System Science, University of California, Irvine, Irvine, CA, USA *12 April 2021.*
26. NOAA Drought Task Force Monthly Meeting, Teleconference, USA *8 January 2021.*
25. Department of Earth, Environmental and Planetary Sciences, Rice University, Houston, TX, USA *20 February 2020.*
24. Department of Environmental Science, University of Virginia, Charlottesville, VA, USA *13 February 2020.*
23. Department of Environmental, Earth and Atmospheric Sciences, University of Massachusetts-Lowell, Lowell, MA, USA *17 October 2019.*
22. American Geophysical Union, Washington, D.C., USA, *12 December 2018.*
21. American Geophysical Union, New Orleans, LA, USA, *13 December 2017.*
20. Center for Lifetime Study, Marist College, Poughkeepsie, NY, USA, *3 October 2017.*
19. Pacala lab, Princeton University, Princeton, NJ, USA, *3 May 2017.*
18. Department of Earth & Planetary Sciences, Brown University, Providence, RI, USA, *1 May 2017.*
17. Sustainable Development Program (*guest lecture*), Columbia University, New York, NY, USA, *24 May 2017.*
16. School of the Environment, Washington State University, Vancouver, WA, USA, *9 February 2017.*
15. Department of Earth Sciences, University of Minnesota, Minneapolis, MN, USA, *6 February 2017.*
14. Department of Environmental Science, American University, Washington, DC, USA, *31 January 2017.*
13. Department of Geography, Dartmouth College, Hanover, NH, USA, *16 January 2017.*
12. Society, Water, and Climate, The University of Utah, Salt Lake City, Utah, USA, *29 November 2016.*
11. Urban Ecology Studio, Graduate School of Architecture, Planning, and Preservation, Columbia University, New York, NY, USA, *30 June 2016 and again 28 September 2016.*
10. Department of Earth & Planetary Sciences Seminar, Northwestern University, Evanston, IL, USA, *19 February 2016.*

9. Earth Matters Series, “A Matter of Degrees”, School of Continuing Education, Stanford University, Stanford, CA, USA, 24 February 2015.
8. Ocean & Climate Physics Seminar, Lamont-Doherty Earth Observatory, Palisades, NY, 20 February 2015.
7. Center for International Security and Cooperation (CISAC), Freeman Spogli Institute (FSI), Stanford, CA, USA, 15 January 2015.
6. Stanford Center on International Conflict and Negotiation (SCICN), Stanford, CA, 28 May 2013.
5. Knowledge transfer program (KTP), University of Reading, Reading, UK, 4 May 2012.
4. Policy & Economic Research Roundtable (PERR), Stanford University, Stanford, CA, USA, 27 January 2012.
3. National Conference on Science, Policy and the Environment (NCSE): Environment and Security, Washington, DC, USA, 18 January 2012.
2. Center for International Security and Cooperation (CISAC), Hewlett Foundation, CA, USA, 17 January 2012.
1. NATO ISAF HQ CJIATF-Shafafiyat, Kabul, Afghanistan, 30 January 2011.

CONTRIBUTED TALKS (SELECT 1st AUTHOR ONLY)

9. **Mankin, J.S.**, Nonlinear plant responses to carbon dioxide and climate diminish water availability, American Geophysical Union Annual Meeting, Chicago, IL, USA, 12 December 2022.
8. **Mankin, J.S.**, The causes, consequences, and future of the ongoing Western U.S. drought, American Association of Geographers, New York, NY, USA 27 February 2022.
7. **Mankin, J.S.**, H. Singh, J. E. Smerdon, B. I. Cook, R. Seager, Impact of vegetation on historical North American droughts and the implications for a future greenhouse world, American Geophysical Union Annual Meeting, Washington, D.C., USA, 7 December 2020.
6. **Mankin, J.S.**, R. Seager, J. E. Smerdon, B. I. Cook, A. P. Williams, Will plants ameliorate or amplify drought risks under global warming? American Geophysical Union Annual Meeting, Washington, D.C., USA, 10 December 2018.
5. **Mankin, J. S.**, Blue water tradeoffs with ecosystems in a CO₂-enriched climate, American Association of Geographers, New Orleans, LA, USA 11 April 2018.
4. **Mankin, J. S.**, J. E. Smerdon, B. I. Cook, A. P. Williams, R. Seager, Transpiration-driven aridification of the American West in 21st century model projections, American Geophysical Union Annual Meeting, San Francisco, CA, USA, 12 December 2016.
3. **Mankin, J. S.**, Climate certainty, uncertainty and human water availability in a warming world, Stanford University, Stanford, CA, USA, 12 June 2015.
2. **Mankin, J. S.**, D. Viviroli, M. M. Mekonnen, A. Y. Hoekstra, and N. S. Diffenbaugh, Quantifying the crucial role of snow in supplying human water demand. American Geophysical Union Annual Meeting, San Francisco, CA, USA, 15 December 2014.
1. **Mankin, J. S.**, M. Scherer, and N. S. Diffenbaugh, Diagnosing the inter-model spread in snow water equivalent over Central and Southwest Asia. Stanford School of Earth Sciences Review, CA, USA, 12 April 2013.

SKILLS &
MISCELLANY

Technical: Unix/Linux shell, Python/Jupyter, NCL, R, Matlab, ArcGIS, ENVI, git, HTML, CSS
L^AT_EX

Clearance: Top Secret (TS/SCI) clearance, granted 2004; NATO Secret as of 2011

SCIENTIFIC
COMMUNICATION &
OUTREACH

Media interviews and coverage of research (truncated): The New York Times, The Washington Post, The Los Angeles Times, The Guardian, AP, Reuters, AFP, CNN, CBS, NPR, Bloomberg, BBC, Scientific American, Nature, Accuweather, CNBC, National Geographic, The Atlantic, The Weather Channel, FSRN, Axios, The Christian Science Monitor, Phys.org, CarbonBrief, Environmental Research News, Salon, USA Today.

Documentary films: Climate in Therapy (2023) <https://www.imdb.com/title/tt18163368>

Updated: *June 2023*

<http://jsmankin.github.io>