Michael F. Wehner

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Education:
Ph.D., 1983, University of Wisconsin-Madison (Nuclear Engineering)
M.S., 1980, University of Wisconsin-Madison (Nuclear Engineering)
B.S., 1978, University of Delaware, Graduated with High Honors (Physics)

Dissertation:
Numerical Evaluation of Path Integral Solutions to Fokker-Planck Equations
    (Advisor: Professor W.G. Wolfer)

Research Interest Statement:

Climate change is no longer a distant problem in the future to be dealt with by somebody else. Rather, attribution analyses of recent heat waves, intense storms and droughts have revealed that changes in the behavior of extreme weather have already become dangerous. While my research interests have been and continue to be focused on understanding the relevant physical processes behind these changes in extreme weather through both attribution and projection studies, I am now expanding these interests to include the societal impacts of changes from extreme weather. I am especially interested in the impacts to the poorer members of society, as they are often the most vulnerable yet the least responsible for climate change. The intersection of the physical and social climate sciences is a difficult point as our communities have very different approaches to identifying and solving problems. However, it also is one of the most interesting points, as there are many important problems to be solved after the communication gaps are bridged.

Employment:
2013-present: Senior Staff Scientist, Scientific Computing Group, Computational Research Division, Lawrence Berkeley National Laboratory, Berkeley, CA
2002-2013: Staff Scientist, Scientific Computing Group, Computational Research Division, Lawrence Berkeley National Laboratory, Berkeley, CA
1998-2002: Physicist, Program for Climate Modeling and Intercomparison, Lawrence Livermore National Laboratory, Livermore, CA
1991-1998: Physicist, Climate System Modeling group, A-division, Lawrence Livermore National Laboratory, Livermore, CA
1985-1991: Physicist, Code Development group, B-division, Lawrence Livermore National Laboratory, Livermore, CA
1983-1984: Post doctoral Research Associate, Nuclear Engineering Department, University of Wisconsin-Madison

Professional Activities:

- Member of Lead Author team, Intergovernmental Panel on Climate Change 6th Assessment Report (IPCC AR6), chapter 11, *Weather and climate extreme events in a changing climate* (2018-2020)
- Contributing author, SF Bay Area Regional Report for California's Fourth Climate Assessment 2018
- Member of Lead Author team, US Global Change Research Program, 2nd,3rd and 4th US National Climate Assessment Reports 2009-2017
- Chief Scientific Editor and co-founder, Advances in Statistical Meteorology, Climatology and Oceanography. A Copernicus journal. 2014-present
- Chair, Ad-Hoc International Detection and Attribution Group (IDAG), 2010-present
- Member of Lead Author team, Intergovernmental Panel on Climate Change 5th Assessment Report (IPCC AR5), chapter 12, *Long Term Projections* (2010-2014)
- Chapter 14 Lead, US Government IPCC AR5 Review Committee (2012)
- Member of Lead Author team, US Climate Change Science Program Synthesis and Assessment Report 3.3, "*Weather and Climate Extremes in a Changing Climate. Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands.*" 2008
- Testified before the House Select Committee on Energy Independence and Global Warming at the briefing "*Extreme Weather in a Warming World*" September 23, 2010.
- Awarded 2010 Editors' Citation for Excellence in Refereeing for Geophysical Review Letters
- Member, Climate Science Working Group of the National Climate Assessment Development and Advisory Committee, 2011-2012

Recent Publications (2017-2018)

For a complete list, including pending publications see this link:

https://crd.lbl.gov/assets/Uploads/Wehner/publications.pdf

Christina Patricola and Michael Wehner (2018) Anthropogenic Influences on Major Tropical Cyclone Events. To appear in *Nature*.

Michael F. Wehner, Colin Zarzycki, Christina Patricola (2018) Estimating the human influence on tropical cyclone intensity as the climate changes. To appear as invited book chapter *Hurricanes and Climate Change (2018)*, Jennifer Collins, editor.

Michael F. Wehner, Kevin A. Reed, Burlen Loring, Dáithí Stone, Harinarayan Krishnan (2018) Changes in tropical cyclones under stabilized 1.5°C and 2.0°C global warming scenarios as simulated by the Community Atmospheric Model under the HAPPI protocols. *Earth System Dynamics*. 9, 187-195 https://doi.org/10.5194/esd-9-187-2018

Michael Wehner, Dáithí Stone, Dann Mitchell, Hideo Shiogama, Erich Fischer, Lise S. Graff, Viatcheslav V. Kharin, Benjamin Sanderson, Harinarayan Krishnan (2018) Changes in extremely hot days under stabilized 1.5°C and 2.0°C global warming scenarios as simulated by the HAPPI multi-model ensemble. *Earth System Dynamics*. 9, 299-311 https://www.earth-syst-dynam-discuss.net/esd-2017-89/

Michael Wehner, Dáithí Stone, Hideo Shiogama, Piotr Wolski, Andrew Ciavarella, Nikolaos Christidis, Harinarayan Krishnan (2018) Early 21st century anthropogenic changes in extremely hot days as simulated by the C20C+ Detection and Attribution multi-model ensemble. *Weather and Climate Extremes* 20 1-8. https://doi.org/10.1016/j.wace.2018.03.001

Monika J. Barcikowska, Scott J. Weaver, Frauke Feser, Simone Russo, Frederik Schenk, Dáithí A. Stone, Michael F. Wehner, Matthias Zahn (2018) Euro-Atlantic winter storminess and precipitation extremes under 1.5°C versus 2°C warming scenarios. *Earth System Dynamics* 9, 679-699 https://doi.org/10.5194/esd-9-679-2018

Christopher J, Paciorek, Dáithí Stone Michael Wehner (2018) Quantifying statistical uncertainty in the attribution of human influence on severe weather. *Weather and Climate Extremes* 20, 69-80. https://doi.org/10.1016/j.wace.2018.01.002

Mark D. Risser and Michael F. Wehner (2017) Attributable human-induced changes in the likelihood and magnitude of the observed extreme precipitation in the Houston, Texas region during Hurricane Harvey. *Geophysical Review Letters*. 44, 12,457–12,464. https://doi.org/10.1002/2017GL075888

Dáithí A. Stone, Mark D. Risser, Oliver M. Angelil, Michael F. Wehner, Shreyas Cholia, Noel Keen, Harinarayan Krishnan, Travis A. O'Brien, Christopher J. Paciorek, William D. Collins (2017) A basis

set for exploration of sensitivity to prescribed ocean conditions for estimating human contributions to extreme weather in CAM5.1-1degree. *Weather and Climate Extremes* 19, 10-19.

Wuebbles, D.J., D.R. Easterling, K. Hayhoe, T. Knutson, R.E. Kopp, K.E. Kunkel, A.N. LeGrande, C. Mears, W.V. Sweet, P.C. Taylor, R.S. Vose, M.F. Wehner (2017) Our globally changing climate. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 35-72,

Knutson, T., J.P. Kossin, C. Mears, J. Perlwitz, M.F. Wehner (2017) Detection and attribution of climate change. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, p. 114-132,

Hayhoe, K., J. Edmonds, R.E. Kopp, A.N. LeGrande, B.M. Sanderson, M.F. Wehner, D.J. Wuebbles (2017) Climate models, scenarios, and projections. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, p. 133-160

Vose, R.S., D.R. Easterling, K.E. Kunkel, M.F. Wehner (2017) Temperature changes in the United States. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, p. 185-206

Easterling, D.R., J.R. Arnold, T. Knutson, K.E. Kunkel, A.N. LeGrande, L.R. Leung, R.S. Vose, D.E. Waliser, M.F. Wehner (2017) Precipitation change in the United States. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 207-230

Wehner, M.F., J.R. Arnold, T. Knutson, K.E. Kunkel, and A.N. LeGrande, 2017: Droughts, floods, and wildfires. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 231-256

Kossin, J.P., T. Hall, T. Knutson, K.E. Kunkel, R.J. Trapp, D.E. Waliser, and M.F. Wehner (2017) Extreme storms. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 257-276,

Sanderson, B.M. and M.F. Wehner (2017) Weighting strategy for the Fourth National Climate Assessment. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 436-442,

Benjamin M. Sanderson, Yangyang Xu, Claudia Tebaldi, Michael Wehner, Brian O'Neill, Alexandra Jahn, Angeline G. Pendergrass, Flavio Lehner, Warren G. Strand, Lei Lin, Reto Knutti, and Jean Francois Lamarque (2017) Community Climate Simulations to assess avoided impacts in 1.5 °C and 2 °C futures. *Earth System Dynamics*, 8, 827-847. https://doi.org/10.5194/esd-8-827-2017

P. Pall, C. M. Patricola, M. F. Wehner, D. A. Stone, C. Paciorek, W. D. Collins (2017) Diagnosing Anthropogenic Contributions to Heavy Colorado Rainfall in September 2013. *Weather and Climate Extremes* 17, 1-6. 10.1016/j.wace.2017.03.004

Michael F. Wehner, Kevin A. Reed and Colin M. Zarzycki (2017) High-Resolution Multi-Decadal Simulation of Tropical Cyclones. Chapter 8 in *Hurricanes and Climate Change*, Jennifer Collins and Kevin Walsh, eds., Springer, pp 187-207

Oliver Angelil, Dáithí Stone, Michael Wehner, Christopher J. Paciorek, Harinarayan Krishnan, William Collins (2017) An independent assessment of anthropogenic attribution statements for recent extreme weather events. *Journal of Climate 30,* 5-16, DOI: 10.1175/JCLI-D-16-0077.1

Mark D. Risser, Dáithí A. Stone, Christopher J. Paciorek, Michael F. Wehner, Oliver Angelil (2017) Quantifying the effect of interannual ocean variability on the attribution of extreme climate events to human influence. *Climate Dynamics* 49, 3051–3073 doi:10.1007/s00382-016-3492-x

Wehner, Michael, Federico Castillo, and Dáithí Stone (2017). "The Impact of Moisture and Temperature on Human Health in Heat Waves." Oxford Research Encyclopedia of Natural Hazard Science. 2017-04-26. Oxford University Press.

Benjamin Sanderson, Michael Wehner, Reto Knutti (2017) Skill and independence weighting for multi-model assessments. *Geoscientific Model Development* 10, 2379-2395.

Oliver Angelil, Daithi Stone, Sarah Perkins-Kirkpatrick, Lisa Alexander, Michael Wehner, Hideo Shiogama, Piotr Wolski, Andrew Ciavarella, Nikos Christidis (2017) On the nonlinearity of spatial scales in extreme weather attribution statements, *Climate Dynamics* doi:10.1007/s00382-017-3768-9

B. Timmermans, D. Stone, M. Wehner, H. Krishnan (2017) Impact of tropical cyclones on modeled extreme wind-wave climate. *Geophysical Research Letters* 44, 1393-1401