

Michael F. Wehner

Publications

2018

Karthik Kashinath, Prabhat, Yunjie Liu, Evan Racah, Mayur Mudigonda, Ankur Mahesh, Christopher Beckham, Tegan Maharaj, Samira Kahou, Christopher Pal, Jim Biard, Kenneth Kunkel, Michael Wehner, Travis O'Brien, William Collins (2018) Deep Learning Recognizes Weather and Climate Patterns. Submitted to *EOS Transactions*

Allison A. Wing, Suzana J. Camargo, Adam H. Sobel, Daehyun Kim, Yumin Moon, Hiroyuki Murakami, Kevin A. Reed, Gabriel A. Vecchi, Michael F. Wehner, Colin Zarzycki, Ming Zhao (2018) Moist static energy budget analysis of tropical cyclone formation and intensification in high-resolution climate models. Submitted to the *Journal of Climate*

Christine A. Shields, Jonathan J. Rutz, L. Ruby Leung, F. Martin Ralph, Michael Wehner, Travis O'Brien, Roger Pierce (2018) Defining Uncertainties When Comparing Atmospheric River Tracking Methodologies. Submitted to *Bulletin of the American Meteorological Society*

Grzegorz Muszynski, Karthik Kashinath, Vitaliy Kurlin, Michael Wehner, Prabhat (2018) Towards a Topological Pattern Detection in Fluid and Climate Simulation Data. Submitted to *8th International Workshop of Climatic Informatics*.

Ben Timmermans, Christina Patricola, Michael Wehner (2018) Simulation and analysis of hurricane-driven extreme wave climate under two ocean warming scenarios. In review at *Oceanography*.

Mark Risser, Christopher J Paciorek, Michael F Wehner, Travis A O'Brien, William D Collins (2018) A probabilistic gridded product for daily precipitation extremes over the United States. Submitted to *Climate Dynamics*

Christina Patricola and Michael Wehner (2018) Anthropogenic Influences on Major Tropical Cyclone Events. In review at *Nature*.

Grzegorz Muszynski, Vitaliy Kurlin, Dmitriy Morozov, Michael Wehner, Karthik Kashinath, Prabhat (2018) Topological Methods for Pattern Detection in Climate Data, in *Big Earth Data Analytics in Earth, Atmospheric and Ocean Sciences*. editors: Thomas Huang, Phil Yang, Tiffany Vance, Christopher Lynnes. *In review*.

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>

Grzegorz Muszynski, Karthik Kashinath, Vitaliy Kurlin, Michael Wehner, Prabhat (2018) Topological Analysis and Machine Learning for Recognizing Atmospheric River Patterns in Large Climate Datasets. In public review *Geoscientific Model Development*. <https://www.geosci-model-dev-discuss.net/gmd-2018-53/>

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, Volume 4 (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.net/9/299/2018/esd-9-299-2018.html>

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. Special C20C+ issue of *Weather and Climate Extremes* 20 1-8. <https://doi.org/10.1016/j.wace.2018.03.001>

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>

D. Cooley, E. Thibaud, F.C. Castillo, M.F. Wehner (2018) A Nonparametric Method for Producing Isolines of Exceedance Probabilities. Submitted to *Extremes*

Christine Shields, Jonathan Rutz, Ruby Leung, Martin Ralph, Michael Wehner, Brian Kawzenuk, Juan Lora, Elizabeth McClenny, Tashiana Osborne, Ashley Payne, Paul Ullrich, Alexander Gershunov, Naomi Goldenson, Bin Guan, Yun Qian, Alexandre Ramos, Chandan Sarangi, Scott Sellars, Irina Gorodetskaya, Karthik Kashinath, Vitaliy Kurlin, Kelly Mahoney, Grzegorz Muszynski, Roger Pierce, Aneesh Sabramanian, Ricardo Tome, Duane Waliser, Daniel Walton, Gary Wick, Anna Wilson, David Lavers, Prabhat, Allison Collow, Harinarayan Krishnan, Gundrun Magnussdottir, and Phu Nguyen (2018) Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Project Goals and Experimental Design. *Geoscientific Model Development* 11, 2455-2474, doi.org/10.5194/gmd-11-2455-2018

M. J. Roberts, P. L. Vidale, C. Senior, H.T. Hewitt, C. Bates, S. Berthou, P. Chang, H. M. Christensen, S. Danilov, M.-E. Demory, S. M. Griffies, R. Haarsma, T. Jung, G. Martin, S. Minobe, T. Ringler, M. Satoh, R. Schiemann, E. Scoccimarro, G. Stephens, M. F. Wehner (2018) The benefits of global high-resolution for climate simulation: process-understanding and the enabling of stakeholder decisions at the regional scale. To appear in the *Bulletin of the American Meteorological Society*.

Ben Timmermans, Michael Wehner, Dan Cooley, Travis O'Brien, Emeric Thibaud, Hari Krishnan (2018) Consistency of extremes in gridded precipitation datasets. in review *Climate Dynamics*

2017

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 Research 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. <https://doi.org/10.1016/j.wace.2017.12.003>

Stone, D. A., H. Krishnan, R. Lance, S. Sippel, and M. F. Wehner (2017) The First and Second Hackathons of the International CLIVAR C20C+ Detection and Attribution Project. *CLIVAR Exchanges*, No. 71, 55-57.

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 35-72, doi: 10.7930/J08S4N35

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, p. 114-132, doi: 10.7930/J01834ND

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, p. 133-160, doi:10.7930/J0WH2N54

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, p. 185-206, doi: 10.7930/J0N29V45

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 207-230, doi: 10.7930/J0H993CC

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 231-256 doi: 10.7930/J0CJ8BNN

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 257-276, doi: 10.7930/J07S7KXX

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, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 436-442, doi: 10.7930/J06T0JS3

L. Ruby Leung Mingua Zhang, David A. Randall, James T. Randerson, Charles Jackson, Gerald A. Meehl, Michael Wehner (2017) Grand Challenges in Earth and Environmental Systems Sciences. Chapter 3 in "Grand Challenges for Biological and Environmental Research: Progress and Future Vision". <https://science.energy.gov/~media/ber/berac/pdf/Reports/BERAC-Grand-Challenges-Draft-Report.pdf>

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, Volume 3*. 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. <<http://naturalhazardscience.oxfordre.com/view/10.1093/acrefore/9780199389407.001.0001/acrefore-9780199389407-e-58>>

Benjamin Sanderson, Michael Wehner, Reto Knutti (2017) Skill and independence weighting for multi-model assessments. *Geoscientific Model Development* 10, 2379-2395. <https://doi.org/10.5194/gmd-2016-285>

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

Jennifer Nakamura, Suzana Camargo, Adam Sobel, Naomi Henderson , Kerry Emanuel, Arun Kumar, Tim LaRow , Hiroyuki Murakami, Malcolm Roberts, Enrico Scoccimarro, Pier Luigi Vidale, Hui Wang, Michael Wehner, Ming Zhao (2017) Western North Pacific tropical cyclone model tracks in present and future climates. *Journal of Geophysical Research-Atmospheres* 122, 9721–9744, <https://doi.org/10.1002/2017JD027007>

Mitchell, D., AchutaRao, K., Allen, M., Bethke, I., Forster, P., Fuglestedt, J., Gillett, N., Haustein, K., Iverson, T., Massey, N., Schleussner, C.-F., Scinocca, J., Seland, Ø., Shiogama, H., Shuckburgh, E., Sparrow, S., Stone, D., Wallom, D., Wehner, M., and Zaaboul, R.: Half a degree Additional warming, Projections, Prognosis and Impacts (HAPPI): Background and Experimental Design (2017). *Geoscientific Model Development*. 10, 571-583, <https://doi.org/10.5194/gmd-10-571-2017>, 2017

Eli Dart, Prabhat, Michael F. Wehner, William D. Collins (2017) An Assessment of Data Transfer Performance for Large-Scale Climate Data Analysis and Implications for the Design of CMIP6. <https://arxiv.org/abs/1709.09575>

2016

Oliver Angelil, Sarah Perkins-Kirkpatrick, Lisa Alexander, Dáithí Stone, Markus Donat, Michael Wehner, Hideo Shiogama, Andrew Ciavarella, Nikolaos Christidis (2016) Comparing regional precipitation and temperature extremes in climate model and reanalysis products. *Weather and Climate Extremes* 13, 35-43 DOI: 10.1016/j.wace.2016.07.001

Michael Wehner, Dáithí Stone, Hari Krishnan, Krishna AchutaRao, Federico Castillo (2016) The deadly combination of heat and humidity in India and Pakistan in summer 2015 [in “Explaining Extremes of 2015 from a Climate Perspective”]. *Bull. Amer. Meteor. Soc.*, 97 (12), S81 –S86, doi: 10.1175/BAMS-D-16-0145.1.

Kamoru A. Lawal, Abayomi A. Abatan, Oliver Angélil, Eniola Olaniyan, Victoria H. Olusoji, Philip G. Oguntunde, Benjamin Lamptey, Babatunde J. Abiodun, Hideo Shiogama, Michael F. Wehner, Dáithí A. Stone (2016) The Late Onset of the 2015 Wet Season in Nigeria [in “Explaining Extremes of 2015 from a Climate Perspective”]. *Bull. Amer. Meteor. Soc.*, 97 (12), S63 –S69, doi: 10.1175/BAMS-D-16-0131.2.

Yunjie Liu, Evan Racah, Prabhat, Joaquin Correa, Amir Khosrowshahi, David Lavers, Kenneth Kunkel, Michael Wehner, William Collins (2016) Application of Deep Convolutional Neural Networks for Detecting Extreme Weather in Climate Datasets. International Conference on Advances in Big Data Analytics (ABDA) 2016.

Reinhard Schiemann, Marie-Estelle Demory, Len C. Shaffrey, Jane Strachan, Pier Luigi Vidale, Matthew S. Mizieliński, Malcolm J. Roberts, Mio Matsueda, Michael F. Wehner, Thomas Jung (2016) The resolution sensitivity of northern hemisphere blocking in four 25-km atmospheric global circulation models. *Journal of Climate* 30, 337–358 <https://doi.org/10.1175/JCLI-D-16-0100.1>

S. E. Strazzo, J. B. Elsner, T. E. LaRow, H. Murakami, M. Wehner, M. Zhao (2016) The influence of model resolution on the simulated sensitivity of tropical cyclone maximum intensity to sea surface temperature. *Journal of Advances in Modeling Earth Systems*. 8, 1037–1054. DOI:10.1002/2016MS000635

Soyoung Jeon, Christopher J. Paciorek, Michael F. Wehner (2016) Quantile-based Bias Correction and Uncertainty Quantification of Extreme Event Attribution Statements. *Weather and Climate Extremes* 12, 24-32 DOI:10.1016/j.wace.2016.02.001

David R. Easterling, Kenneth E. Kunkel, Michael F. Wehner, Liqiang Sun (2016) Detection and Attribution of Climate Extremes in the Observed Record. *Weather and Climate Extremes* 11, 17-27. doi:10.1016/j.wace.2016.01.001

Claudia Tebaldi and Michael Wehner (2018) Benefits of mitigation for future heat extremes under RCP4.5 compared to RCP8.5. *Climatic Change*. 146, 349-361. DOI:10.1007/s10584-016-1605-5

Hamed Ashouri, Kuo-Lin Hsu, Soroosh Sorooshian, Michael G. Bosilovich, Jaechoul Lee, Michael F. Wehner, Joey Jaw (2016) Evaluation of NASA's MERRA Precipitation Product in Reproducing the Trend and the Distribution of the U.S. Extreme Precipitation Events. *Journal of Hydrometeorology*. 17: 693-711. DOI:10.1175/JHM-D-15-0097.1

2015

Wehner, M.F. and D.R. Easterling (2015) The global warming hiatus's irrelevance. *Science* 350, 1482-1483 (Originally entitled: Is the global warming hiatus important?)

Soyoung Jeon, Prabhat, Surendra Byna, Junmin Gu, William D. Collins, and Michael F. Wehner (2015) Characterization of Extreme Precipitation within Atmospheric River Events over California. *Advances in Statistical Climatology, Meteorology and Oceanography* 1, 45-57, doi:10.5194/ascmo-1-45-2015, 2015.

Kevin J. E. Walsh, Suzana Camargo, Gabriel Vecchi, Anne Sophie Daloz, James Elsner, Kerry Emanuel, Michael Horn, Young-Kwon Lim, Malcolm Roberts, Christina Patricola, Enrico Scoccimarro, Adam Sobel, Sarah Strazzo, Gabriele Villarini, Michael Wehner, Ming Zhao, Jim Kossin, Tim LaRow, Kazuyoshi Oouchi, Siegfried Schubert, Hui Wang, Julio Bacmeister, Ping Chang, Fabrice Chauvin, Christine Jablonowski, Arun Kumar, Hiroyuki Murakami, Tomoaki Ose, Kevin Reed, R. Saravanan, Yohei Yamada, Colin Zarzycki, Pier-Luigi Vidale, Jeffrey Jonas, Naomi Henderson (2015) Hurricanes and climate: the U.S. CLIVAR working group on hurricanes. *Bulletin of the American Meteorological Society* **96**, 997–1017. doi: <http://dx.doi.org/10.1175/BAMS-D-13-00242.1>

Prabhat, Surendra Byna, Venkatram Vishwanath, Eli Dart, Michael Wehner, and William D. Collins. (2015) TECA: Petascale Pattern Recognition for Climate Science. *Lecture Notes in Computer Science (LNCS)* **9257**, 426-436 CAIP 2015: 16th International Conference on Computer Analysis of Images and Patterns.

Richard Grotjahn, Robert Black, Ruby Leung, Michael F. Wehner, Mathew Barlow, Mike Bosilovich, Sasha Gershunov, William Gutowski, Richard W. Katz, Yun-Young Lee, Young-Kwon Lim, Prabhat (2015) North American Extreme Temperature Events and Related Large Scale Meteorological Patterns: Statistical Methods, Dynamics, Modeling, and Trends. *Climate Dynamics* **46**, 1151–1184. DOI 10.1007/s00382-015-2638-6

Michael Wehner, Prabhat, Kevin Reed, Daithi Stone, William D. Collins, Julio Bacmeister (2015) Resolution dependence of future tropical cyclone projections of CAM5.1 in the US CLIVAR Hurricane Working Group idealized configurations. *J. Climate*. 28, 3905-3925 DOI:10.1175/JCLI-D-14-00311.1,

Reed, K. A., J. T. Bacmeister, N. A. Rosenbloom, M. F. Wehner, S. C. Bates, P. H. Lauritzen, J. E. Truesdale, and C. Hannay (2015), Impact of the dynamical core on the direct simulation of tropical cyclones in a high-resolution global model, *Geophys. Res. Lett.*, **42**, 3603–3608 doi:10.1002/2015GL063974.

2014

Michael F. Wehner, Kevin Reed, Fuyu Li, Prabhat, Julio Bacmeister, Cheng-Ta Chen, Chris Paciorek, Peter Gleckler, Ken Sperber, William D. Collins, Andrew Gettelman, Christiane Jablonowski (2014) The effect of horizontal resolution on simulation quality in the Community Atmospheric Model, CAM5.1. *Journal of Modeling the Earth System* 06, 980-997. doi:10.1002/2013MS000276

Michael F. Wehner (2014) Perspective: A temporary hiatus in warming of extreme temperatures is not unusual, nor inconsistent with model simulations of human-induced climate change. *Environmental Research Letters*. **9** 071001 doi:10.1088/1748-9326/9/7/071001

Walsh, J., D. Wuebbles, K. Hayhoe, J. Kossin, K. Kunkel, G. Stephens, P. Thorne, R. Vose, M. Wehner, J. Willis, D. Anderson, S. Doney, R. Feely, P. Hennon, V. Kharin, T. Knutson, F. Landerer, T. Lenton, J. Kennedy, and R. Somerville, 2014: Ch. 2: Our Changing Climate. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 2-1-2-nn.

Walsh, J., D. Wuebbles, K. Hayhoe, J. Kossin, K. Kunkel, G. Stephens, P. Thorne, R. Vose, M. Wehner, J. Willis, D. Anderson, V. Kharin, T. Knutson, F. Landerer, T. Lenton, J. Kennedy, and R. Somerville, 2014: Appendix 3: Climate Science Supplement. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 735-789. doi:10.7930/J0KS6PHH.

Walsh, J., D. Wuebbles, K. Hayhoe, J. Kossin, K. Kunkel, G. Stephens, P. Thorne, R. Vose, M. Wehner, J. Willis, D. Anderson, V. Kharin, T. Knutson, F. Landerer, T. Lenton, J. Kennedy, and R. Somerville, 2014: Appendix 4: Frequently Asked Questions. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, A4-1-A4-nn.

Bacmeister, Julio T., Michael F. Wehner, Richard B. Neale, Andrew Gettelman, Cecile Hannay, Peter H. Lauritzen, Julie M. Caron, John E. Truesdale, 2014: Exploratory High-Resolution Climate Simulations using the Community Atmosphere Model (CAM). *J. Climate*, **27**, 3073–3099. <http://dx.doi.org/10.1175/JCLI-D-13-00387.1>

Martha M Campbell, John Casterline, Federico Castillo, Alisha Graves, Thomas L Hall, John F May, Daniel Perlman, Malcolm Potts, J Joseph Speidel, Julia Walsh, Michael F Wehner, Eliya Msiyaphazi Zulu (2014) Population and climate change: who will the

grand convergence leave behind? *The Lancet Global Health* 2, e253-e254 DOI: 10.1016/S2214-109X(14)70021-X

Piotr Wolski, Dáithí Stone, Mark Tadross, Michael Wehner, Bruce Hewitson (2014) Attribution of floods in the Okavango basin, Southern Africa. *Journal of Hydrology*. 511, 350-358, doi:10.1016/j.jhydrol.2014.01.055

Pardeep Pall, Michael Wehner, Dáithí Stone (2014) Probabilistic Extreme Event Attribution in *Dynamics and Predictability of Large-Scale, High-Impact Weather and Climate Events*, Richard Grojahn, Jianping Li, Richard Swinbank, Hans Volkert, editors. Cambridge University Press. 37-46, ISBN 978-1-107-07142-1.

Daniel A. Shaevitz, Suzana J. Camargo, Adam H. Sobel, Jeffrey A. Jonas, Daeyhun Kim, Arun Kumar, Timothy E. LaRow, Young-Kwon Lim, Hiroyuki Murakami, Kevin Reed, Malcolm J. Roberts, Enrico Scoccimarro, Hui Wang, Michael F. Wehner, Ming Zhao (2014) Characteristics of tropical cyclones in high-resolution models of the present climate. *Journal of Modeling the Earth System* 6, 1154–1172, DOI: 10.1002/2014MS000372

Oliver Angelil, Daithi A. Stone, Mark Tadross, Fiona Tummon, Michael Wehner, Reto Knutti (2014) Attribution of extreme weather to anthropogenic greenhouse gas emissions: sensitivity to spatial and temporal scales. *Geophysical Research Letters*, 41, 2150–2155, 10.1002/2014GL059234.

Donald J. Wuebbles, Kenneth Kunkel, Michael Wehner, and Zachary Zobel (2014) Severe Weather in the United States under a Changing Climate, *Eos Trans. AGU*, 95(18), 149,150

I.N. Williams, M.S. Torn, W.J. Riley, M.F. Wehner, W.D. Collins, & J.A. Berry (2014) Climate extremes and the stability of land climates and carbon cycles to global warming. *Environmental Research Letters* 9 094011 doi:10.1088/1748-9326/9/9/094011

Gabriele Villarini, David A. Lavers, Enrico Scoccimarro, Ming Zhao, Michael F. Wehner, Gabriel A. Vecchi, Thomas R. Knutson, and Kevin A. Reed, 2014: Sensitivity of Tropical Cyclone Rainfall to Idealized Global-Scale Forcings. *J. Climate*, 27, 4622–4641. <http://dx.doi.org/10.1175/JCLI-D-13-00780.1>

Anne S. Daloz, S. J. Camargo, J. P. Kossin, K. Emanuel, M. Horn, J. A. Jonas, D. Kim, T. LaRow, Y.-K. Lim, C. M. Patricola, M. Roberts, E. Scoccimarro, D. Shaevitz, P. L. Vidale, H. Wang, M. Wehner, and M. Zhao, 2015: Cluster Analysis of Downscaled and Explicitly Simulated North Atlantic Tropical Cyclone Tracks. *J. Climate*, 28, 1333–1361. doi: <http://dx.doi.org/10.1175/JCLI-D-13-00646.1>

2013

Collins, M., R. Knutti, J. M. Arblaster, J.-L. Dufresne, T. Fichet, P. Friedlingstein, X. Gao, W. J. Gutowski, T. Johns, G. Krinner, M. Shongwe, C. Tebaldi, A. J. Weaver and M.

Wehner, 2013: Long-term Climate Change: Projections, Commitments and Irreversibility. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T. F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P. M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Dean N. Williams, Timo Bremer, Charles Doutriaux, John Patchett, Sean Williams, Galen Shipman, Ross Miller, David R. Pugmire, Brian Smith, Chad Steed, E. Wes Bethel, Hank Childs, Harinarayan Krishnan, Prabhat Prabhat, Michael Wehner, Claudio T. Silva, Emanuele Santos, David Koop, Tommy Ellqvist, Jorge Poco, Berk Geveci, Aashish Chaudhary, Andy Bauer, Alexander Pletzer, Dave Kindig, Gerald L. Potter, Thomas P. Maxwell, "Ultrascale Visualization of Climate Data," *Computer*, vol. 46, no. 9, pp. 68-76, Sept. 2013, doi:10.1109/MC.2013.119

M. Zhao, I.M. Held, G. Vecchi, E. Scoccimarro, H. Wang, M. Wehner, Y.-K. Lim, T. LaRow, S. J. Camargo, K. Walsh, S. Gualdi, A. Kumar, S. Schubert, K.A. Reed (2013) Robust direct effect of increasing atmospheric CO₂ concentration on global tropical cyclone frequency - A multi-model inter-comparison. *U.S. CliVAR Variations* Fall 2013, Vol. 11, No. 3, 17-23

Wei-Chen Chen, George Ostrouchov, David Pugmire, Prabhat, Michael Wehner (2013) A Parallel EM Algorithm for Model-Based Clustering Applied to the Exploration of Large Spatio-Temporal Data. *Technometrics*, 55, 513-523. 10.1080/00401706.2013.826146

John C. H. Chiang, C. Y. Chang and M.F. Wehner (2013) Long-term trends of the Atlantic Interhemispheric SST Gradient in the CMIP5 Historical Simulations, *J. Climate* 26 8628-8640

Dáithí A. Stone, Christopher J. Paciorek, Prabhat, Pardeep Pall, Michael Wehner (2013) Inferring the anthropogenic contribution to local temperature extremes. *Proceedings of the National Academy of Sciences*. 110 (17), E1543-E1543, doi:10.1073/pnas.1221461110

Malcolm Potts, Eliya Zulu, Michael Wehner, Federico Castillo, Courtney Henderson (2013) Crisis in the Sahel: Possible solutions and the consequences of inaction, OASIS: Organizing to Advance Solutions in the Sahel, A report of the conference hosted by the University of California, Berkeley and the African Institute for Development Policy held in Berkeley on September 21, 2012. http://bixby.berkeley.edu/wp-content/uploads/2013/04/potts_2013_oasis_crisis_in_the_sahel.pdf

Brian Smith, Daniel M. Ricciuto, Peter E. Thornton, Galen Shipman, Chad Steed, Dean Williams, Michael Wehner (2013) ParCAT: Parallel Climate Analysis Toolkit. *Procedia Computer Science: 2013 International Conference on Computational Science*, 18, 2367-2375

V. V. Kharin, F. W. Zwiers, X. Zhang, M. Wehner (2013) Changes in temperature and precipitation extremes in the CMIP5 ensemble, *Climatic Change* **119**, 345-357
10.1007/s10584-013-0705-8.

Michael F. Wehner (2013) Very extreme seasonal precipitation in the NARCCAP ensemble: Model performance and projections. *Climate Dynamics* **40**, 59-80. DOI: 10.1007/s00382-012-1393-1

T.C. Peterson, R. Heim, R. Hirsch, D. Kaiser, H. Brooks, N.S. Diffenbaugh, R. Dole, J. Giovannetone, K. Guiguis, T.R. Karl, R.W. Katz, K. Kunkel, D. Lettenmaier, G. J. McCabe, C.J. Paciorek, K. Ryberg, S. Schubert, V.B.S. Silva, B. Stewart, A.V. Vecchia, G. Villarini, R.S. Vose, J. Walsh, M. Wehner, D. Wolock, K. Wolter, C.A. Woodhouse and D. Wuebbles (2013) Monitoring and Understanding Changes in Heatwaves, Coldwaves, Floods and Droughts in the United States: State of Knowledge, *Bulletin of the American Meteorological Society* June 2013, 821-834, DOI: 10.1175/BAMS-D-12-00066.1, Supplement DOI: 10.1175/BAMS-D-12-00066.2

K.E. Kunkel, T.R. Karl, H. Brooks, J. Kossin, J. Lawrimore, D. Arndt, L. Bosart, D. Changnon, S. Cutter, N. Doesken, K. Emanuel, P. Ya. Groisman, R.W. Katz, T. Knutson, J. O'Brien, C. Paciorek, T. Peterson, K. Redmond, D. Robinson, J. Trapp, R. Vose, S. Weaver, M. Wehner, K. Wolter, D. Wuebbles (2013) Monitoring and Understanding Trends in Extreme Storms: State of Knowledge, *Bulletin of the American Meteorological Society*, **94**, 499-514, 10.1175/BAMS-D-11-00262.1

Seung-Ki Min, Xuebin Zhang, Francis Zwiers, Hideo Shiogama, Yu-Shiang Tung, and Michael Wehner (2013) Multi-Model Detection and Attribution of Extreme Temperature Changes, *Journal of Climate* **26**, 7430-7451. doi: <http://dx.doi.org/10.1175/JCLI-D-12-00551.1>

Donald Wuebbles, Gerald Meehl, Katharine Hayhoe, Thomas R. Karl, Kenneth Kunkel, Benjamin Santer, Michael Wehner, Brian Colle, Erich M. Fischer, Rong Fu, Alex Goodman, Emily Janssen, Huikyo Lee, **Wenhong Li**, Lindsey N. Long, Seth Olsen, Anji Seth, Justin Sheffield, Liqiang Sun (2014) CMIP5 Climate Model Analyses: Climate Extremes in the United States, *Bulletin of the American Meteorological Society*. **96**, 571-583. <https://doi.org/10.1175/BAMS-D-12-00172.1>

Fuyu Li, William D. Collins, Michael F. Wehner, Ruby L. Leung (2013), Hurricanes in an aquaplanet world: implications of the impacts of external forcing and model horizontal resolution. *Journal of Advances in Modeling Earth Systems*, **5**, doi:10.1002/jame.20020.

Russell S. Vose, Scott Applequist, Mark A. Bourassa, Sara C. Pryor, Rebecca J. Barthelmie, Brian Blanton, Peter D. Bromirski, Harold E. Brooks, Arthur T. DeGaetano, Randall M. Dole, David R. Easterling, Robert E. Jensen, Thomas R. Karl, Richard W. Katz, Katherine Klink, Michael C. Kruk, Kenneth E. Kunkel, Michael C. MacCracken, Thomas C. Peterson, Karsten Shein, Bridget R. Thomas, John E. Walsh, Xiaolan L. Wang, Michael F. Wehner, Donald J. Wuebbles, and Robert S. Young, 2014: Monitoring and Understanding Changes in Extremes: Extratropical Storms, Winds,

and Waves. *Bulletin of the American Meteorological Society*, **95**, 377–386.
10.1175/BAMS-D-12-00162.1

E. Wes Bethel , Prabhat Prabhat , Suren Byna , Oliver Rübél , K. John Wu, Michael Wehner (2013) Why high performance visual data analytics is both relevant and difficult ", Proc. SPIE 8654, Visualization and Data Analysis 2013, 86540B; doi:10.1117/12.2010980; <http://dx.doi.org/10.1117/12.2010980>

2012

Santer, B.D., J. Painter, C. Mears, C. Doutriaux, P. Caldwell, J.M. Arblaster, P. Cameron-Smith, N.P. Gillett, P.J. Gleckler, J.R. Lanzante, J. Perlwitz, S. Solomon, P.A. Stott, K.E. Taylor, L. Terray, P.W. Thorne, M.F. Wehner, F.J. Wentz, T.M.L. Wigley, L. Wilcox and C.-Z. Zou (2012) Identifying Human Influences on Atmospheric Temperature: Are Results Robust to Uncertainties? *Proceedings of the National Academy of Sciences*. 110, 26-33, 10.1073/pnas.1210514109

Prabhat, Oliver Ruebel, Surendra Byna, Kesheng Wu, Fuyu Li, Michael Wehner and Wes Bethel (2012) TECA: A Parallel Toolkit for Extreme Climate Analysis, International Conference on Computational Science, ICCS 2012, Workshop on Data Mining in Earth System Science, *Procedia Computer Science* 9, 866-876

Michael F. Wehner (2012) Methods of Projecting Future Changes in Extremes. Chapter 8 in *Extremes in a Changing Climate: Detection, Analysis and Uncertainty*, A. AghaKouchak et al. (eds.), Water Science and Technology Library 65, DOI 10.1007/978-94-007-4479-0 8, Springer
<http://www.springer.com/earth+sciences+and+geography/atmospheric+sciences/book/978-94-007-4478-3>

Fuyu Li, Daniele Rosa, William D. Collins, and Michael F. Wehner (2012) ‘Super-Parameterization’ – a Better Way to Simulate Regional Extreme Precipitation? . *Journal of Advances in Modeling Earth Systems*, 4, M04002, doi:10.1029/2011MS000106.

2011

John Abraham, Harold Brooks, Scott Mandia, Ben Santer, Brian Soden, Robert Trapp, Michael Wehner, Ray Weymann (2011) A brief assessment of the impact of large scale change on severe thunderstorms and tornadoes. A report of the Climate Science Rapid Response Team to the US Office of Science and Technology Policy. http://www.climaterapidresponse.org/Tornadoes_Climate_Change_Report.pdf

Michael F. Wehner, Leonid Oliker, John Shalf, David Donofrio, Leroy A. Drummond, Ross Heikes, Shoaib Kamil, Celal Konor, Norman Miller, Huiro Miura, Marghoob Mohiyuddin, David Randall, Woo-Sun Yang (2011) Hardware/Software Co-design of Global Cloud System Resolving Models. *Journal of Advances in Modeling Earth Systems* 3, M10003, DOI:10.1029/2011MS000073

Surendra Byna, Prabhat, Michael F. Wehner, Kesheng Wu (2011) Detecting Atmospheric Rivers in Large Climate Datasets. *Proceedings of the 2nd International Workshop on Petascale Data Analytics: Challenges, and Opportunities* (PDAC-11/ Supercomputing11/ ACM/IEEE) November 14, 2011. Seattle, WA, USA

B.D. Santer, Carl Mears , Charles Doutriaux , Peter Gleckler , Tom Wigley , Nathan Gillett , Detelina Ivanova , Thomas Karl , John Lanzante , Gerald Meehl , Peter Stott , Karl Taylor , Peter Thorne , Michael Wehner , Frank Wentz (2011) Separating Signal and Noise in Atmospheric Temperature Changes: The Importance of Timescale, *Journal of Geophysical Research-Atmospheres* 116, D22105, doi:10.1029/2011JD016263

John Shalf, David Donofrio, Chris Rowen, Leonid Oliker, Michael Wehner (2011) Green Flash: Climate Machine (LBNL), *The Encyclopedia of Parallel Computing* 809-819

Michael Wehner, David R. Easterling, Jay H. Lawrimore, Richard R. Heim Jr., Russell S. Vose, Benjamin Santer (2011) Projections of Future Drought in the Continental United States and Mexico. *Journal of Hydrometeorology* 12, 1359–1377. doi: <http://dx.doi.org/10.1175/2011JHM1351.1>

Fuyu Li, William Collins, Michael Wehner, David Williamson, Jerry Olson (2011) Response of precipitation extremes to idealized global warming in an aqua-planet climate model: towards a robust projection across different horizontal resolutions, *Tellus* 63, 876-883. DOI: 10.1111/j.1600-0870.2011.00543.x

Fuyu Li, William Collins, Michael Wehner, David Williamson, Jerry Olson, Christopher Algieri (2011) Impact of horizontal resolution on simulation of precipitation extremes in an aqua-planet version of Community Atmospheric Model (CAM3). *Tellus* 63, 884-823 DOI: 10.1111/j.1600-0870.2011.00544.x

Chang, C.-Y., J. C. H. Chiang, M. F. Wehner, A. R. Friedman, R. Ruedy (2011) Sulfate Aerosol Control of Tropical Atlantic Climate over the Twentieth Century. *Journal of Climate*, 24, 2540–2555. doi: 10.1175/2010JCLI4065.1

2010

D. Hasenkamp, A. Sim, M. Wehner and K. Wu (2010) Finding Tropical Cyclones on a Cloud Computing Cluster: Using Parallel Virtualization for Large-Scale Climate Simulation Analysis, Proceedings of the 2nd IEEE International Conference on Cloud Computing Technology and Science, Indianapolis November 30-December 3, 2010

Michael F. Wehner, G. Bala, Phillip Duffy, Arthur A. Mirin, and Raquel Romano (2010) "Towards Direct Simulation of Future Tropical Cyclone Statistics in a High-Resolution Global Atmospheric Model," *Advances in Meteorology*, vol. 2010, Article ID 915303, 13 pages, 2010. doi:10.1155/2010/915303

Wehner, M.F. (2010) Sources of uncertainty in the extreme value statistics of climate data. *Extremes* **13**, 205-217, doi 10.1007/s10687-010-0105-7

Wehner, M.F. ,R. Smith, P. Duffy, G. Bala, (2010) The effect of horizontal resolution on simulation of very extreme US precipitation events in a global atmosphere model. *Climate Dynamics* **32**, 241-247, doi 10.1007/s00382-009-0656-y

2009

Easterling, D. R., and M. F. Wehner (2009), Is the climate warming or cooling?, *Geophys. Res. Lett.*, 36, L08706, doi:10.1029/2009GL037810.

Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009. (Michael Wehner was a member of lead author team).

B.D. Santer, K.E. Taylor, P.J. Gleckler, C. Bonfils, T.P. Barnett, D.W. Pierce, T.M.L. Wigley, C. Mears, F.J. Wentz, W. Brueggemann, N.P. Gillett, S.A. Klein, S. Solomon, P.A. Stott, and M.F. Wehner (2009) Incorporating Model Quality Information in Climate Change Detection and Attribution Studies. *Proceeding of the National Academy of Sciences*. doi:10.1073/pnas.0901736106

Michael Wehner, Lenny Oliker, John Shalf (2009) Low Power Supercomputers, *IEEE Spectrum*, October 2009. <http://spectrum.ieee.org/computing/embedded-systems/lowpower-supercomputers>

David Donofrio, Leonid Oliker, John Shalf, Michael Wehner, Chris Rowen, Jens Krueger, Shoaib Kamil and Marghoob Mohiyuddin, Energy-Efficient Computing for Extreme Scale Science, *IEEE Computer*, 42(11). October 2009, pp 62-71 (cover article).

2008

Michael Wehner, Leonid Oliker, John Shalf, "Towards Ultra-High Resolution Models of Climate and Weather", *International Journal of High Performance Computing Applications*. (2008) **22**, 149-165. LBNL-60799

Gutowski, W.J., G.C. Hegerl, G.J. Holland, T.R. Knutson, L.O. Mearns, R.J. Stouffer, P.J. Webster, M.F. Wehner, F.W. Zwiers, 2008: Causes of Observed Changes in Extremes and Projections of Future Changes in *Weather and Climate Extremes in a Changing Climate. Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands*. T.R. Karl, G.A. Meehl, C.D. Miller, S.J. Hassol, A.M. Waple, and W.L. Murray (eds.). A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research, Washington, DC.

Easterling, D.R., D.M. Anderson, S.J. Cohen, W.J. Gutowski, G.J. Holland, K.E. Kunkel, T.C. Peterson, R.S. Pulwarty, R.J. Stouffer, M.F. Wehner, 2008: Measures to Improve Our Understanding of Weather and Climate Extremes in *Weather and Climate Extremes in a Changing Climate. Regions of Focus: North America, Hawaii, Caribbean,*

and U.S. Pacific Islands. T.R. Karl, G.A. Meehl, C.D. Miller, S.J. Hassol, A.M. Waple, and W.L. Murray (eds.). A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research, Washington, DC.

Impacts of Climate Variability and Change on Transportation Systems and Infrastructure -- Gulf Coast Study (2008). Synthesis and Assessment Product 4.7 of the US Climate Change Science Program (CCSP). (contributing author)
<http://www.climatechange.gov>

N. P. Gillett, D. A. Stone, P. A. Stott, T. Nozawa, A. U. Karpechuk, G. C. Hegerl, M. F. Wehner, P. D. Jones, (2008) Attribution of polar warming to Human influence, *Nature Geoscience*, doi: 10.1038/ngeo338

2007

B. D. Santer, C. Mears, F. J. Wentz, K. E. Taylor, P. J. Gleckler, T. M. L. Wigley, T. P. Barnett, J. S. Boyle, W. Brüggemann, N. P. Gillett, S. A. Klein, G. A. Meehl, Nozawa, D. W. Pierce, P. A. Stott, W. M. Washington, and M. F. Wehner, "Identification of Human-Induced Changes in Atmospheric Moisture Content", (2007), *Proceedings National Academy of Sciences*, **107**, 15248-15253 (cover article)

Mears, C. A., B. D. Santer, F. J. Wentz, K. E. Taylor, and M. F. Wehner (2007), Relationship between temperature and precipitable water changes over tropical oceans, *Geophys. Res. Lett.*, **34**, L24709, doi:10.1029/2007GL031936.

2006

B.D. Santer, T.M.L. Wigley, P.J. Gleckler, C. Bonfils, M.F. Wehner, K. AchutaRao, T.P. Barnett, J.S. Boyle, W. Brueggemann, M. Fiorino, N. Gillett, J.E. Hansen, P.D. Jones, S.A. Klein, G.A. Meehl, S.C.B. Raper, R.W. Reynolds, K.E. Taylor, and W.M. Washington. "Forced and unforced ocean temperature changes in Atlantic and Pacific tropical cyclogenesis regions" (2006) *Proceedings National Academy of Sciences*, **103**, 13905-13910. LBNL-61597

"Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences", Synthesis and Assessment Product 1.1 of the US Climate Change Science Program (CCSP). Contributing author to Chapter 5, "How well can the observed vertical temperature changes be reconciled with our understanding of the causes of these temperature changes?" LBNL-61595

Peterson, Thomas C., McGuirk, Marjorie, Houston, Tamara, Horvitz, Andrew H., Wehner, Michael (2006) Climate Variability and Change with Implications for Transportation. Report commissioned by the National Research Council and the National Academy of Sciences. LBNL-61689

2005

B.D. Santer, T.M.L. Wigley, C. Mears, F.J. Wentz, S.A. Klein, D.J. Seidel, K.E. Taylor, P.W. Thorne, M.F. Wehner, P.J. Gleckler, J.S. Boyle, W. Collins, K.W. Dixon, C. Doutriaux, M.

Free, Q. Fu, J.E. Hansen, G.S. Jones, R. Ruedy, T.R. Karl, J.R. Lanzante, G.A. Meehl, V. Ramaswamy, G. Russell, and G.A. Schmidt, Amplification of Surface Temperature Trends and Variability in the Tropical Atmosphere. *Science* **309** (2005) 1551-1556.

Michael Wehner, The impact of SciDAC on US climate change research and the IPCC AR4, SciDAC 2005 J. Phys. Conference Series 16 (2005) pp 601-605

“Science-Driven System Architecture: A New Process for Leadership Class Computing” Horst Simon, William Kramer, William Saphir, John Shalf, David Bailey, Leonid Oliker, Michael Banda, C. William McCurdy, John Hules, Andrew Canning, Marc Day, Philip Colella, David Serafini, Michael Wehner and Peter Nugent, March, 2004 Journal of the Earth Simulator Vol 2, March 2005, LBNL-56545

“Leading Computational Methods on Scalar and Vector HEC Platforms” Leonid Oliker, Jonathan Carter, Michael Wehner, Andrew Canning, Stephane Ethier, Bala Govindasamy, Art Mirin, David Parks, Patrick Worley, Shigemune Kitawaki, Yoshinori Tsuda, 2005 SC Conference LBNL-58053

Michael Wehner, “Changes in daily precipitation and surface air temperature extremes in the IPCC AR4 models.” *US CLIVAR Variations*, **3**, (2005) pp 5-9. LBNL-61594

James L. Kinter III and Michael Wehner, "Computing Issues for WCRP Weather and Climate Modeling", White Paper prepared for First Session of the World Climate Research Programme (WCRP) Modeling Panel (WMP), Exeter, UK, 6 October 2005 LBNL-61596

2004

Curt Covey, Krishna M. AchutaRao, Peter J. Gleckler, Thomas J. Phillips, Karl E. Taylor and Michael F. Wehner, Coupled ocean-atmosphere climate simulations compared with simulations using prescribed sea surface temperature: Effect of a “perfect ocean”. *Global and Planetary Change* **41** (2004) 1-14 LBNL-53518

N.P. Gillett, A.J. Weaver, F.W. Zwiers, and M.F. Wehner, Detection of volcanic influence on global precipitation, *Geophysical Review Letters* **31** (2004) L12217

N.P. Gillet, M.F. Wehner, S.F.B. Tett, Testing the linearity of the response to combined greenhouse gas and sulfate aerosol forcing, *Geophysical Review Letters* **31** (2004) L14201 LBNL-53503

B. D. Santer, T. M. L. Wigley, A. J. Simmons, P. Kahlberg, G. A. Kelly, S. Uppala, C. Ammann, J. S. Boyle, W. Brüggemann, C. Doutriaux, M. Fiorino, C. Mears, G. A. Meehl, R. Sausen, K.E. Taylor, W. M. Washington, M. F. Wehner and F. J. Wentz, Identification of anthropogenic climate change using a second generation analysis. *J. Geophysical Research* **109** (2004) D21104

M.F. Wehner, Predicted 21st century changes in seasonal extreme precipitation events in the Parallel Climate Model, *J. Climate* **17** (2004) 4281-4290

2003

B. D. Santer, T. M. L. Wigley, G. A. Meehl, M. F. Wehner, C. Mears, M. Schabel, F. J. Wentz, C. Ammann, J. Arblaster, T. Bettge, W. M. Washington, K.E. Taylor, J. S. Boyle, W. Brüggemann, and C. Doutriaux, Influence of Satellite Data Uncertainties on the Detection of Externally Forced Climate Change, *Science* 300 (2003) 1280-1284
LBNL-53516

P.B. Duffy, B. Govindasamy, J. Milovich, K. Taylor, M. Wehner, A. Lamont, and S. Thompson, High Resolution Simulations of Global Climate, Part 1: Present Climate. *Climate Dynamics* 21 (2003) 371-290.

John R. Christy, Roy W. Spencer,, B. D. Santer, T. M. L. Wigley, G. A. Meehl, M. F. Wehner, C. Mears, M. Schabel, F. J. Wentz, C. Ammann, J. Arblaster, T. Bettge, W. M. Washington, K. E. Taylor, J. S. Boyle, W. Brüggemann, and C. Doutriaux, Reliability of Satellite Data Sets, *Science* **301** (2003) 1046-1049

B. D. Santer, M. F. Wehner, T. M. L. Wigley, R. Sausen, G. A. Meehl, C. Ammann, J. Arblaster, W. M. Washington, J.S. Boyle, W. Brueggemann, Contributions of Anthropogenic and Natural Forcing to Recent Tropopause Height Changes, *Science* 301 (2003) 479-483.

B. D. Santer, T. M. L. Wigley, G. A. Meehl, M. F. Wehner, C. Mears, M. Schabel, F. J. Wentz, C. Ammann, J. Arblaster, T. Bettge, W. M. Washington, K.E. Taylor, J. S. Boyle, W. Brüggemann, and C. Doutriaux, Response to Christy and Spencer's Comments on "Influence of Satellite Data Uncertainties on the Detection of Externally Forced Climate Change", *Science* 301 (2003) 1047-1049

B. D. Santer, M. F. Wehner, T. M. L. Wigley, R. Sausen, G. A. Meehl, C. Ammann, J. Arblaster, W. M. Washington, J.S. Boyle, W. Brueggemann, Response to Pielke and Chase's comments on "Contributions of Anthropogenic and Natural Forcing to Recent Tropopause Height Changes" *Science* 303 (2003) 1771

1983-2002 (prior to LBNL)

Curt Covey, Krishna M. AchutaRao, Michael Fiorino, Peter J. Gleckler,, Karl E. Taylor and Michael F. Wehner, Intercomparison of Climate Data Sets as a Measure of Observational Uncertainty, PCMDI Report #69, LLNL Report UCRL-ID-147371, April 2002.

B.D.Santer, T.M.L. Wigley, D.J.Gaffen, L. Bengtsson, C. Doutriaux, J.S. Boyle, M. Esch, J.J.Hnilo, P.D. Jones, G.A.Meehl, E. Roeckner, K.E.Taylor, M.F. Wehner, Interpreting Differential Temperature Trends at the Surface and in the Lower Troposphere. *Science* 287 (2000) 1227-1232

M.F. Wehner, Determination of the Sampling Size of AGCM Ensemble Simulations, *Climate Dynamics* 16 (2000) 321-331

Richard J Engelen, Laura D. Fowler, Peter J. Gleckler and Michael F. Wehner ,
Sampling Strategies for the Comparison of Climate Model Calculated and Satellite
Observed Brightness Temperatures, PCMDI Report #52, *J. Geophysical Research* 105
(2000) 9393-9406

B. Govindasamy, M.F. Wehner, C.R. Mechoso, P. Duffy, The Influence of a Soil-
Vegetation-Atmosphere Transfer Scheme on the Simulated Climate of the
LLNL/UCLA AGCM, *Global and Planetary Change*, 20 (1999) 67-86.

Cohen-Solal, Emmanuelle S., Peter J. Gleckler, Michael F. Wehner, Benjamin D.
Santer, Karl E. Taylor and Charles Doutriaux, The Sensitivity of AGCM Simulations to
the Temporal Resolution of Ocean Surface Boundary Conditions, PCMDI Report #46
(1999)

A.A. Mirin, D. Shumaker, M.F. Wehner, Efficient Filtering Techniques for Finite-
Difference Atmospheric General Circulation Models on Parallel Processors, *Parallel
Computing*, 24, (1998) 729-740

Wehner, M., Mirin, A., Bolstad, J., Creach, U., Duffy, P., Dannevik, W., Eltgroth, P.,
Matarazzo, C., Chan, B., Climate Systems Modeling on Massively Parallel Computers
at Lawrence Livermore National Laboratory, in Next Generation Environmental
Models and Computational Methods:, Proceedings of the NGEMCOM Workshop, Bay
City, MI Aug.7-9, 1995, SIAM. Philadelphia (1997) pp. 21-29

Wehner, M. F., P. G.Eltgroth, A.A. Mirin, P.B. Duffy, K.G. Caldeira, J.H. Bolstad, H.
Wang, C.M. Matarazzo, U. Creach , Comprehensive Climate System Modeling on
Massively Parallel Computers, in Mission Earth:Modeling and Simulation for a
Sustainable Global System, Proceedings of the 1997 Western MultiConference Jan
12-15, 1997, Society for Computer Simulation, San Diego (1997)

P.G. Eltgroth, J.H. Bolstad, W.P. Dannevik, P.B. Duffy, A.A. Mirin, H. Wang and M.F.
Wehner, Coupled Ocean/Atmosphere Modeling on High-Performance Computing
Systems, Eighth SIAM Conference on Parallel Processing for Scientific Computing,
Minneapolis (1997), UCRL-JC-125948.

G. Potter and M. Wehner, Analyzing Climate Variability with Ensembles of
Simulations, NERSC 1997 Annual Report, National Energy Research
Supercomputing Center, E.O. Lawrence Berkeley National Laboratory, p. 55.

M.F. Wehner and C. Covey, Analyzing Potential Climate Predictability with an
ensemble of AMIP Simulations, Proceedings of the Twenty-second Annual Climate
Diagnostics and Prediction Workshop, Berkeley, CA Oct. 6-10, 1997.

Mirin, A. and Wehner, M., Climate System Modeling in High-Performance Computing
Systems, with an Application to Modeling the Atmosphere, NERSC Buffer 20 No. 1
(1996) 1-5.

Wehner, M.F. "Results from the parallel UCLA/LLNL atmospheric general circulation model.", Proceedings of the 1st International AMIP conference, Monterey, CA, May 15-19, 1995, World Climate Research Programme, WCRP-92, December 1995.

Wehner, M., A. Mirin, P. Eltgroth, W. Dannevik, C. Mechoso, J. Farrara, J. Spahr, Performance of a Distributed Memory Finite Difference Atmospheric General Circulation Model, *Parallel Computing* 21, (1995) 1655-1675

Wehner, M. and Covey, C., Description and validation of the LLNL/UCLA parallel atmospheric GCM, UCRL-ID-123223, Lawrence Livermore National Laboratory, December 1995.

Ambrosiano, J., J. Bolstad, A. Bourgeois, J. Brown, B. Chan, W. Dannevik, P. Eltgroth, B. Grant, C. Matarazzo, A. Mirin, M. Wehner, High-Performance Climate System Modeling Using a Domain and Task Decomposition Message-Passing Approach. Proceedings of the Scalable High-Performance Computing Conference, Knoxville, TN, May 23-25, 1994 IEEE Computer Society (1994) p. 397

Mirin, A., J. Ambrosiano, J. Bolstad, A. Bourgeois, J. Brown, B. Chan, W. Dannevik, P. Duffy, P. Eltgroth, C. Matarazzo, M. Wehner, Climate System Modeling using a Domain and Task Decomposition Message-Passing Approach, *Computer Physics Communications*, 84, (1994), 278.

Wehner, M., A. Bourgeois, P. Eltgroth, P. Duffy, W. Dannevik, Parallel Coupled Oceanic-Atmospheric General Circulation Model, Proceedings of the 6th Workshop on Use of Parallel Processors in Meteorology, ECMWF, Reading, England, (1994) p.512.

Dannevik, W.P., Wehner, M.F., Eltgroth, P.E, Mirin, A.A., Duffy, P., Covey, C. "Coupled Oceanic-Atmospheric General Circulation Modeling at Lawrence Livermore National Laboratory", Proceedings of the Workshop on Global Coupled General Circulation Models, Scripps Institution of Oceanography, La Jolla, CA October 10-12, 1994, World Climate Research Programme, WCRP-87

Wehner, M.F., et al., Toward a high performance distributed memory climate model. Proceedings of the 2nd International Symposium on High Performance Distributed Computing, Spokane, WA, July 20-23, 1993 IEEE Computer Society (1993) p. 102.

Cloutman, L., and Wehner, M.F., Numerical simulation of Richtmyer-Meshkov instabilities, *Physics of Fluids A4* (1992) 1821.

Wehner, M.F., Two and Three dimensional calculations of shock tube Richtmyer-Meshkov instabilities. Proceedings of the 3rd International Workshop on The Physics of Compressible Turbulent Mixing, Abbey of Royaumont (France) June 17-19, 1991, CEA.

Ingber, L., H. Fujio and Wehner, M.F., Mathematical comparison of combat computer models to exercise data, *Mathematical and Computer Modelling*. 15 No. 1 (1991) 65.

Ingber, L., Wehner, M.F., Jabbour, G.M., and Barnhill, T.M., Application of statistical mechanics methodology to term-structure bond pricing models, *Mathematical and Computer Modelling*. 15, No.11, (1991), 77.

Wehner, M.F., A generalization of an Eulerian interface tracking scheme, Proceedings of the 5th Biannual Nuclear Explosives Code Development Conference. November 1988.

Wehner, M.F., and W.G. Wolfer, Numerical evaluation of path integral solutions to Fokker-Planck equations III-Time and functionally dependent coefficients, *Physical Review A* 27 (1987) 1795.

Wehner, M.F., On the radiation-electron coupling coefficients, Proceedings of the 4th Biannual Nuclear Explosives Code Development Conference. October 1986.

Wehner, M.F., and W.G. Wolfer, A new integral equation for the radial distribution function of a hard sphere fluid, *Journal of Statistical Physics* 42 (1986) 493.

Wehner, M.F., and W.G. Wolfer, The pressure of a hard sphere fluid on a curved surface, *Journal of Statistical Physics* 42 (1986) 509.

Wehner, M.F., and W.G. Wolfer, Vacancy cluster evolution in metals under irradiation, *Philosophical Magazine* A52 (1985) 189.

Wolfer, W.G. and Wehner, M.F., Evolution of defect clusters and dislocation density during ion bombardment, *Journal of Metals* 37 (1985) A8

Wehner, M.F., J. Chrostowski and W.J. Mielniczuk, Acousto-optic bistability with fluctuations, *Physical Review A* 29 (1984) 3218.

Wolfer, W.G., Glasgow B.B., Wehner, M.F., Trinkhaus, H., Helium equation of state for small cavities- Recent developments, *Journal of Nuclear Materials* 122 (1984) 565-570

Wehner, M.F., and W.G. Wolfer, Numerical evaluation of path integral solutions to Fokker-Planck equations II-restricted stochastic processes, *Physical Review A* 28 (1983) 3003.

Wehner, M.F., and W.G. Wolfer, Numerical evaluation of path integral solutions to Fokker-Planck equations, *Physical Review A* 27 (1983) 2663.