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EDUCATION

University of Michigan, Ann Arbor, MI	Atmospheric Science	Ph.D.	2009
Peking University, Beijing, China	Atmospheric Science	M.S.	2002
Nanjing University, Nanjing, China	Atmospheric Science	B.S.	1999

APPOINTMENTS

2015.12 - present **Head**, Department of Atmospheric Physics, Nanjing University, China

2014 - present **Professor**, School of Atmospheric Sciences, Nanjing University, China

2013-2014 **Scientist level III**, Pacific Northwest National Laboratory, Richland, U.S.

2011-2012 **Scientist level II**, Pacific Northwest National Laboratory, Richland, U.S.

2009-2011 **Post-doctoral Research Associate**, Pacific Northwest National Laboratory, Richland, U.S.

RESEARCH INTERESTS

- Aerosol and cloud modeling
- Aerosol-cloud interactions
- Multi-scale modeling

HONORS AND AWARDS

- **Jiangsu specially-appointed Professor, November, 2014**
- **Exceptional Contributions Program (ECP) award**, Pacific Northwest National Laboratory, **December, 2011; December, 2013**
- **Outstanding Performance Award**, Pacific Northwest National Laboratory, **June, 2010; December, 2010**

PROFESSIONAL SERVICES

- **Associate Editor**, *Journal of Geophysical Research – Atmospheres*, 2016.01 – present
- **Co-convener**, Session A079, “Process-oriented evaluation of climate model physics using observations and high-resolution models”, the AGU Fall meeting, December, 2015, San Francisco, CA, USA
- **Member, Scientific Steering Committee**, iLEAPS, Aerosols, Clouds, Precipitation and Climate (ACPC) initiative, 2015.04 - present
- **Co-leader** (with Steve Ghan), AeroCOM aerosol indirect effects intercomparison project on applying rain frequency susceptibility metric proposed in Wang et al. (2012) to

evaluate and constrain aerosol effects on liquid water amount in global climate models, 2013-present

- **Panelist**, NASA Modeling, Analysis and Prediction (MAP) Review Panel, November, 2012, Baltimore, Maryland; NASA Energy and Water Cycle Study (NEWS) Review Panel, December, 2011, Columbia, Maryland
- **Member**, UN Intergovernmental Panel on Climate Change (IPCC), co-winner, Nobel Peace Prize, 2007
- Mail-in reviewer for NSF proposals
- Peer reviewer for more than 10 journals, including *Atmospheric Chemistry and Physics*, *Journal of Climate*, *Journal of Geophysical Research*, *Tellus*, *Environmental Research Letters*, *Atmospheric Environment*, *Geophysical Research Letter*, *Climate Dynamics*, *Monthly Weather Review*

GRANTS AND PROPOSALS

2018-2021, The roles of aerosol-weather/climate interactions on winter severe haze pollution in China, National Science Foundation of China (NSFC), ¥3.5 M (**PI**)

2017-2022, Parameterization development for turbulence, low clouds and shallow convection, Ministry of Science and Technology of China, ¥4.62 M (**Task PI**)

2016-2019, Observational constraints on the aerosol indirect effects, National Science Foundation of China (NSFC), ¥800K (**PI**)

2014-2017, Jiangsu Specially-appointed Professor grant, Nanjing University Dengfeng Plan grant, ¥2.50 M (**PI**)

2014-2017, Expanding the computational frontier of multi-scale atmospheric simulation to

advance understanding of low cloud/climate feedbacks, DOE Climate and Earth System Modeling Program, PI, Michael Pritchard (University of California, Irvine), \$1.26M (**Co-I**).

2014-2017, Evaluation of NCAR CAM5 simulated marine boundary layer cloud properties using a combination of satellite and surface observations, DOE Climate and Earth System Modeling Program, PI, Zhibo Zhang (University of Maryland – Baltimore), \$742K (**Co-I, and PNNL-PI**)

2013-2016 *Absorptive aerosols and clouds: application of the PNNL-MMF*, NASA, PI, Steven Massie (NCAR), \$480K (**Co-I and PNNL-PI**)

Key Investigator in multiple DOE projects (*Atmospheric System Research*, 2012-2015; *Multi-scale methods for accurate and scale-aware models of the Earth system*, 2012-2015; *Multi-scale modeling of aerosol indirect effects on decadal timescales*, 2011-2015; *Accelerated climate modeling for energy*, 2014-2017)

JOURNAL PUBLICATIONS (* indicates as a corresponding author; ISI Web of Science citations > 2100 times, with h-index 26)

63. Rosenfeld, D.(*), Zhu Y., **Wang M.(*)**, Zheng Y., Goren T., Yu S.(*), Aerosol-driven droplet concentrations dominate coverage and water of oceanic low level clouds, *Science*, 363, 6427, doi:10.1126/science.aav0566, 2019.

62. Zhang, Z., Song, H., Ma, P.-L., Larson, V. E., **Wang, M.**, Dong, X., and Wang, J.: Subgrid variations of the cloud water and droplet number concentration over the tropical ocean: satellite observations and implications for warm rain simulations in climate models, *Atmos. Chem. Phys.*, 19, 1077-1096, <https://doi.org/10.5194/acp-19-1077-2019>, 2019.
61. Zhang, H., **Wang, M. (*)**, Guo, Z., Zhou, C., Zhou, T., Qian, Y., et al.: Low-cloud feedback in CAM5-CLUBB: Physical mechanisms and parameter sensitivity analysis. *Journal of Advances in Modeling Earth Systems*, 10, 2844–2864, <https://doi.org/10.1029/2018MS001423>, 2018.
60. Li, S., Wang, T. J., Huang X., Pu. X., L. MM, Chen, PL, Yang, XQ, **Wang, MH**, Impact of East Asian Summer Monsoon on Surface Ozone Pattern in China, *Journal of Geophysical Research – Atmospheres*, 123, 2, 1401-1411, doi: 10.1002/2017JD027190.
59. Song, H., Z. Zhang, P. Ma, S. Ghan, and **M. Wang**: The importance of considering sub-grid cloud variability when using satellite observations to evaluate the cloud and precipitation simulations in climate models, *Geoscientific Model Development*, 2018, in press.
58. Lin, G., S. Ghan, **M. Wang**, P. Ma, R. Easter, M. Ovchinnikov, D. Chand, J. Fan, K. Zhang, H. Wang, and Y. Qian: A multi-scale modeling framework (MMF) model with aerosols explicitly resolved at cloud scale, *Journal of Advances in Modeling Earth Systems*, doi: 10.1029/2018MS001287, 2018.
57. Zhang, R., H. Wang, Q. Fu, A. Pendergrass, **M. Wang**, Y. Yang, P. Ma, and P. Rasch: Local radiative feedbacks over the Arctic based on observed short-term climate variations, *Geophysical Research Letters*, doi: [10.1029/2018GL077852](https://doi.org/10.1029/2018GL077852), 2018.
56. Bai, H., Gong, C., **Wang, M. (*)**, Zhang, Z., and L'Ecuyer, T.: Estimating precipitation susceptibility in warm marine clouds using multi-sensor aerosol and cloud products from A-Train satellites, *Atmos. Chem. Phys.*, 18, 1763-1783, <https://doi.org/10.5194/acp-18-1763-2018>, 2018.
55. Song, H., Z. Zhang, P. Ma, S.J. Ghan, and **M. Wang**, 2018: An Evaluation of Marine Boundary Layer Cloud Property Simulations in the Community Atmosphere Model Using Satellite Observations: Conventional Subgrid Parameterization versus CLUBB. *J. Climate*, **31**, 2299–2320, <https://doi.org/10.1175/JCLI-D-17-0277.1>, 2018.
54. Zhang, K., Fu, R., Shaikh, M. J., Ghan, S., **Wang, M.**, Leung, L. R., ... Marengo, J. (2017). Influence of superparameterization and a higher-order turbulence closure on rainfall bias over Amazonia in Community Atmosphere Model version 5. *J. Geophys. Res. Atmos.*, 122, 9879–9902, doi: [10.1002/2017JD026576](https://doi.org/10.1002/2017JD026576).
53. Takahashi, H., M. Lebsock, K. Suzuki, G. Stephens, **M. Wang**, An Investigation of Microphysics and Sub-grid Scale Variability in Warm Rain Clouds using The A-Train Observations and A Multi-Scale Modeling Framework, *J. Geophys. Res. Atmos.*, 122, doi: [10.1002/2016JD026404](https://doi.org/10.1002/2016JD026404), 2017.
52. Jiang, Y., X.-Q. Yang, X. Liu, D. Yang, X. Sun, **M. Wang**, A. Ding, T. Wang, and C. Fu, Anthropogenic aerosol effects on East Asian winter monsoon: The role of black carbon-induced Tibetan Plateau warming, *J. Geophys. Res. Atmos.*, 122, 5883–5902, doi: [10.1002/2016JD026237](https://doi.org/10.1002/2016JD026237), 2017.
51. E. Gryspeerdt, J. Quaas, S. Ferrachat, A. Gettelman, S. Ghan, U. Lohmann, H. Morrison, D. Neubauer, D. Patridge, P. Stier, T. Takemura, H. Wang, **M. Wang**, K. Zhang,

- Constraining the instantaneous aerosol influence on cloud albedo, *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1617765114, 2017.
50. C. Zhou, J. E. Penner, G. Lin, X. Liu, and **M. Wang**, What controls the low ice number concentration in the upper troposphere? *Atmos. Chem. Phys.*, 16, 12411-12424, doi:10.5194/acp-16-12411-2016, 2016.
 49. Elliott, E. J., S. Yu, G. Kooperman, H. Morrison, **M. Wang** and M. S. Pritchard, 2016. Sensitivity of summer ensembles of superparameterized US mesoscale convective systems to cloud resolving model microphysics and grid configuration, *Journal of Advances in Modeling Earth Systems*, 08, doi:[10.1002/2015MS000567](https://doi.org/10.1002/2015MS000567), 2016.
 48. X. Huang, A. Ding, L. Liu, Q. Liu, K. Ding, X. Niu, W. Nie, Z. Xu, X. Chi, M. Wang, J. Sun, W. Guo, and C. Fu: Effects of aerosol-radiation interactions on precipitation during biomass-burning season in East China, *Atmos. Chem. Phys.*, 16, 10063-10082, 10.5194/acp-16-10063-2016, 2016.
 47. Huang, X., Zhou, L., Ding, A., Qi, X., Nie, W., **Wang, M.**, Chi, X., Petäjä, T., Kerminen, V.-M., Roldin, P., Rusanen, A., Kulmala, M., and Boy, M.: Comprehensive modelling study on observed new particle formation at the SORPES station in Nanjing, China, *Atmos. Chem. Phys.*, 16, 2477-2492, doi:10.5194/acp-16-2477-2016, 2016
 46. Ding, A. J., X. Huang, W. Nie, J. N. Sun, V.-M. Kerminen, T. Petäjä, H. Su, Y. F. Cheng, X.-Q. Yang, **M. H. Wang**, et al., Enhanced haze pollution by black carbon in megacities in China, *Geophys. Res. Lett.*, 43, 2873–2879, doi:[10.1002/2016GL067745](https://doi.org/10.1002/2016GL067745), 2016.
 45. S. Ghan, **M. Wang**, S. Zhang, et al., Constraining Anthropogenic Aerosol Effects on Cloud Radiative Forcing Using Present-day Spatiotemporal Variability, *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1514036113, 2016.
 44. Zhang S., **Wang, M. (*)**, Ghan, S. J., Ding, A., Wang, H., Zhang, K., Neubauer, D., Lohmann, U., Ferrachat, S., Takeamura, T., Gettelman, A., Morrison, H., Lee, Y., Shindell, D. T., Partridge, D. G., Stier, P., Kipling, Z., and Fu, C.: On the characteristics of aerosol indirect effect based on dynamic regimes in global climate models, *Atmos. Chem. Phys.*, 16, 2765-2783, doi:10.5194/acp-16-2765-2016, 2016.
 43. Thayer-Calder, K., Gettelman, A., Craig, C., Goldhaber, S., Bogenschütz, P. A., Chen, C.-C., Morrison, H., Höft, J., Raut, E., Griffin, B. M., Weber, J. K., Larson, V. E., Wyant, M. C., **Wang, M.**, Guo, Z., and Ghan, S. J.: A unified parameterization of clouds and turbulence using CLUBB and subcolumns in the Community Atmosphere Model, *Geosci. Model Dev.*, 8, 3801-3821, doi:10.5194/gmd-8-3801-2015, 2015.
 42. H. Yan, Y. Qian, C. Zhao, H. Wang, **M. Wang**, B. Yang, X. Liu, and Q. Fu, A new approach to modeling aerosol effects on East Asian climate: parametric uncertainties associated with emissions, cloud microphysics and their interactions, *Journal of Geophysical Research*, 120, 8905-8924, doi:10.1002/2015JD023442, 2015.
 41. Suzuki, K., A. Bodas-Salcedo, **M. Wang**, J. Golaz, T. Yokohata, and G. Stephens: Evaluation of the warm rain microphysical processes in global models using the CloudSat/A-Train multi-sensor satellite observations, *Journal of Atmospheric Science*, 72, 3996-4014, doi:10.1175/JAS-D-14-0265.1, 2015.
 40. Ma, P., P. Rasch, **M. Wang**, H. Wang, S. Ghan, R. Easter, W. Gustafson, X. Liu, Y. Zhang, H. Ma: How Does Increasing Horizontal Resolution in a Global Climate Model Improve the

- Simulation of Aerosol-Cloud Interactions?, *Geophysical Research Letters*, 42, 5058-5065, doi:10.1002/2015GL064183, 2015.
39. Guo, Z., **M. Wang***, Y. Qian, V. Larson, S. Ghan, P. Bogenschutz, A. Gettelman: Parametric behaviors of CLUBB in simulation of low clouds in the Community Atmosphere Model CAM5, *Journal of Advances in Modeling Earth Systems*, 7, 1005-1025, doi:[10.1002/2014MS000405](https://doi.org/10.1002/2014MS000405), 2015.
 38. Wong, M., M. Ovchinnikov, **M. Wang**, Evaluation of subgrid-scale hydrometeor transport schemes using a high-resolution cloud-resolving model, *Journal of Atmospheric Sciences*, 72, 3715-3731, doi:10.1175/JAS-D-15-0060.1, 2015.
 37. Guo, Z., T. Zhou, **M. Wang**, Y. Qian: Impact of cloud radiative heating on east Asian summer monsoon circulation, *Environmental Research Letters*, 10, 7, 074014, doi: 10.1088/1748-9326/10/7/074014, 2015.
 36. Qian Y., H. Yan, C. Zhao, Z. Hou, H. Wang, **M. Wang**, and P. Rasch: Parametric sensitivity analysis of precipitation at global and local scales in the Community Atmosphere Model Cam5, *Journal of Advances in Modeling Earth Systems*, 7, 382-411, doi:10.1002/2014MS000354, 2015.
 35. **Wang, M.**, V. Larson, S. Ghan, M. Ovchinnikov, D. Schanen, H. Xiao, X. Liu, Z. Guo, and P. Rasch: A multiscale modeling framework model (superparameterized CAM5) with a higher-order turbulence closure: Model description and low-cloud simulations, *Journal of Advances in Modeling Earth Systems*, 7, 484-509, doi:10.1002/2014MS000375, 2015.
 34. Storer, R., B. M. Griffin, J. Hoft, E. Raut, V. E. Larson, **M. Wang**, and P. J. Rasch: Parameterizing deep convection using the assumed probability density function method, *Geosci. Model Dev.*, 8, 1-19, doi:10.5194/gmd-8-1-2015, 2015.
 33. Zhang, C., **M. Wang**, H. Morrison, R. Somerville, K. Zhang, X. Liu, and J. Li: Investigating Ice Nucleation in cirrus clouds with an aerosol-enabled multi-scale modeling framework, *Journal of Advances in Modeling Earth Systems*, 6, doi: 10.1002/2014MS000343, 2014.
 32. **Wang, M.**, X. Liu, K. Zhang, and J. Comstock: Aerosol indirect effects on cirrus through ice nucleation in CAM5 with a statistical cirrus cloud scheme, in press, *Journal of Advances in Modeling Earth Systems*, 6, doi:10.1002/2014MS000339, 2014.
 31. Guo, Z, **M. Wang***, Y. Qian, V. Larson, P. Bogenschutz, G. Lin, S. Ghan, M. Ovchinnikov, C. Zhao, and T. Zhou: A sensitivity analysis of cloud properties to CLUBB parameters in the Single Column Community Atmosphere Model (SCAM5), *Journal of Advances in Modeling Earth Systems*, 6, doi:10.1002/2014MS000315, 2014.
 30. Wang Y., **M. Wang**, R. Zhang, S. Ghan, Y. Lin, J. Hu, B. Pan, M. Levy, J. Jiang, and M. Molina: Assessing the effects of anthropogenic aerosols on Pacific storm track using a multi-scale global climate model, *Proceedings of the National Academy of Sciences*, 111, doi: 10.1073/pnas.1403364111, 2014.
 29. Randall D., M. Branson, **M. Wang**, SJ Ghan, C Craig, A Gettelman, and J Edwards: A Community Atmosphere Model with superparameterized clouds, *Eos*, 94(25), 221-228, 2013.
 28. Wang H, RC Easter, Jr, PJ Rasch, **M. Wang**, X Liu, SJ Ghan, Y Qian, JH Yoon, PL Ma, and V Vinoj: Sensitivity of remote aerosol distributions to representation of cloud-aerosol interactions in a global climate model, *Geoscientific Model Development*, 6(3), 765-782,

- doi:10.5194/gmd-6-765-2013, 2013.
27. Zhang, K., X. Liu, **M. Wang**, J. M. Comstock, D. L. Mitchell, S. Mishra, and G. G. Mace, Evaluating and constraining ice cloud parameterizations in CAM5 using aircraft measurements from the SPARTICUS campaign, *Atmospheric Chemistry and Physics*, 13(9), 4963-4982, 2013.
 26. Ghan, S. J., S. J. Smith, **M. Wang**, K. Zhang, K. Pringle, K. Carslaw, J. Pierce, S. Bauer, and P. Adams: A simple model of global aerosol indirect effects, *Journal of Geophysical Research-Atmospheres*, 118(12), 6688-6707, 2013.
 25. Jiang, Y., X. Liu, X. Yang, and **M. Wang**: Effects of anthropogenic aerosols on East Asian summer monsoon with Community Atmospheric Model Version 5, *Atmospheric Environment*, 70, 51-63, 2013.
 24. Yang B., Y Qian, G. Lin, R. Leung, P. Rasch, G. Zhang, S. McFarlane, C. Zhao, Y. Zhang, H. Wang, **M. Wang**, and X. Liu: Uncertainty quantification and parameter tuning in CAM5 Zhang-McFarlane convective scheme and physical impact of improved convection on the global circulation and climate, *J. Geophys. Res.*, 118(2), 395-415, 2013.
 23. Shi, X., B. Wang, X. Liu, and **M. Wang**: Two-moment bulk stratiform cloud microphysics in the Grid-point Atmospheric Model of IAP LASG (GAMIL), *Advances in Atmospheric Sciences*, 30(3), 868-883, 2013.
 22. Kooperman G., M. Pritchard, S. Ghan, **M. Wang**, R. Somerville, and L. Russell: Constraining the influence of natural variability to improve estimates of global aerosol indirect effects in a nudged version of the Community Atmosphere Model 5, *J. Geophys. Res.*, 117, D23204, doi:10.1029/2012JD018588, 2012.
 21. Yang, Q., Gustafson Jr., W. I., Fast, J. D., Wang, H., Easter, R. C., **Wang, M.**, Ghan, S. J., Berg, L. K., Leung, L. R., and Morrison, H.: Impact of natural and anthropogenic aerosols on stratocumulus and precipitation in the Southeast Pacific: a regional modelling study using WRF-Chem, *Atmos. Chem. Phys.*, 12, 8777-8796, 2012.
 20. Chand D., R. Wood, S. Ghan, **M. Wang**, M. Ovchinnikov, P. Rasch, S. Miller, B. Schichtel, T. Moore: Aerosol optical depth enhancement in partly cloudy conditions, *J. Geophys. Res.*, 117, D17207, doi:10.1029/2012JD017894, 2012.
 19. **Wang, M.**, S. Ghan, X. Liu, T. L'Ecuyer, K. Zhang, H. Morrison, M. Ovchinnikov, R. Easter, R. Marchand, D. Chand, Y. Qian and J. Penner, 2012, Constraining cloud lifetime effects of aerosols using A-Train Satellite observations, *Geophys. Res. Lett.*, 39, L15709, doi:10.1029/2012GL052204, 2012. (**Highlighted in Science**, 337, 1150, 2012)
 18. Larson V., D. P. Schanen, **M. Wang**, M. Ovchinnikov, and S. Ghan: PDF parameterization of boundary layer clouds in models with horizontal grids from 2 to 16 km, *Mon. Wea. Rev.*, 140, 285-306, 2012
 17. Penner, J. E., C. Zhou, L. Xu, and **M. Wang**, Reply to Quaas et al.: Can satellites be used to estimate indirect climate forcing by aerosols? *Proceedings of the National Academy of Sciences*, 108, E1100-E1101, doi: 10.1073/pnas.1116135108, 2011
 16. Penner, J. E., L. Xu, and **M. Wang**, Satellite methods underestimate indirect climate forcing by aerosols, *Proceedings of the National Academy of Sciences*, 108, 13404-13408, doi: 10.1073/pnas.1018526108, 2011
 15. **Wang, M.**, Ghan, S., Ovchinnikov, M., Liu, X., Easter, R., Kassianov, E., Qian, Y., and

- Morrison, H.: Aerosol indirect effects in a multi-scale aerosol-climate model PNNL-MMF, *Atmos. Chem. Phys.*, 11, 5431-5455, doi:10.5194/acp-11-5431-2011, 2011
14. **Wang, M.**, S. Ghan, R. Easter, M. Ovtchinnikov, X. Liu, E. Kassianov, Y. Qian, W. Gustafson, V. Larson, D. Schanen, M. Khairoutdinov, and H. Morrison: The multi-scale aerosol-climate model PNNL-MMF: model description and evaluation, *Geosci. Model Dev.*, 4, 137-168, doi:10.5194/gmd-4-137-2011, 2011. (This article is featured in a **“Nowcast” article in *Bulletin of the American Meteorological Society***, 92, 963, 2011)
 13. Shi, X., B. Wang, X. Liu, **M. Wang**, L. Li and L. Dong: Aerosol indirect effects on warm clouds in the Grid-Point Atmospheric Model of IAP LASG (GAMIL), *Atmospheric and Oceanic Science Letters*, 3(4), 237-241, 2010
 12. **Wang, M.** and J. E. Penner, Cirrus clouds in a global climate model with a statistical cirrus cloud scheme, *Atmos. Chem. Phys.*, 10, 5449-5474, doi:10.5194/acp-10-5449-2010, 2010
 11. Quaas, J., Ming, Y., Menon, S., Takemura, T., **Wang, M.**, Penner, et al., Aerosol indirect effects – general circulation model intercomparison and evaluation with satellite data, *Atmos. Chem. Phys.*, 9, 8697-8717, 2009
 10. Graversen, R. G. and **M. Wang**, Polar amplification in a coupled climate model with locked albedo, *Climate Dynamics*, 33, 629-643, doi: 10.1007/s00382-009-0535-6, 2009. (Featured in *New Scientist*, February 18, 2009)
 9. **Wang, M.**, J. E. Penner, and X. Liu, The coupled IMPACT aerosol and NCAR CAM3 model: evaluation of predicted aerosol number and size distribution, *J. Geophys. Res.*, 114, doi: d063020.1029/2008jd010459, 2009
 8. Penner, J. E., Y. Chen, **M. Wang**, and X. Liu, Possible influence of anthropogenic aerosols on cirrus clouds and anthropogenic forcing, *Atmos. Chem. Phys.*, 9, 879-896, 2009
 7. Liu, X., J. E. Penner and **M. Wang**, Influence of anthropogenic sulfate and black carbon on upper tropospheric clouds in the NCAR CAM3 model coupled to the IMPACT global aerosol model, *J. Geophys. Res.*, 114, doi: d0320410.1029/2008jd010492, 2009
 6. **Wang, M.**, and J. E. Penner, Aerosol indirect forcing in a global model with particle nucleation, *Atmos. Chem. Phys.*, 9, 239-260, 2009
 5. Lee, S. S., J. E. Penner, and **M. Wang**, Comparison of a global-climate model simulation to a cloud-system resolving model simulation for long-term thin stratocumulus clouds, *Atmos. Chem. Phys.*, 9, 6497-6520, 2009
 4. Liu, X., J.E. Penner, S. Ghan, and **M. Wang**, Inclusion of ice microphysics in the NCAR community atmospheric model 3 (CAM3), *Journal of Climate*, 20, 4526-4547, 2007
 3. Rotstajn, Leon D., W. Cai, D. R. Martin, F. D. Graham, Y. Feng, G. Paul, M. Herzog; A. Ito, J. E. Penner, R. L. Michael, and **M. Wang**, Have Australian rainfall and cloudiness increased due to the remote effects of Asian anthropogenic aerosols?, *J. Geophys. Res.*, 112, doi: d0920210.1029/2006JD007712, 2007. (Featured in a **“News Focus” article in *Science***, 315, 1217, 2007)
 2. Liu, X., J. E. Penner, B. Das, D. Bergman, J. M. Rodriguez, S. Strathan, **M. Wang**, and Y. Feng, Uncertainties in global aerosol simulations: Assessment using three meteorological data sets, *J. Geophys. Res.*, 112, doi: d1121210.1029/2006JD008216, 2007.
 1. **Wang, M.**, and B. Tan: Characteristics of baroclinic wave packets in GCM data, *Acta Scientiarum Natrualium Universitatis Pekinensis*, 39, 1, 2003 (in Chinese).

CONFERENCE PROCEEDINGS AND BOOK CHAPTERS

- Kassianov EI, D Chand, and **M. Wang**: Assessment of MODIS Aerosol Optical Depth over Oceans using One-year Data from Maritime Aerosol Network, In *Proceedings of the SPIE: Remote Sensing of Clouds and the Atmosphere XVI*, September 21, 2011, Prague, Czech Republic, vol. 8177, ed. EI Kassianov, et al, p. Paper No. 81770K. SPIE, Bellingham, WA. doi:10.1117/12.897410, 2011.
- Penner, J.E., **M. Wang**, A. Kumar, L. Rotstayn, and B. Santer, Effect of Black Carbon on Mid-Troposphere and Surface Temperature Trends, in *Human-Induced Climate Change: An Interdisciplinary Assessment*, ed. by M. Schlesinger, M. Schlesinger, H. Kheshgi, J. Smith, F. de la Chesnaye, J. Reilly, C. Kolstad, and T. Wilson, Cambridge University Press, pp. 18-33, 2007.
- Wang, M.** and J. E. Penner, The effect of including aerosol nucleation and coagulation in a global model, *the Proceeding of the 17th International Conference on Nucleation and Atmospheric Aerosols*, Galway, Ireland, Springer, pp. 494-498, 2007.
- A contributing author to Understanding and Attributing Climate Change, Chapter 9 in: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2007.

INVITED PRESENTATIONS, PLENARY TALKS, AND SEMINARS

- 12/2015** Multi-scale modeling of aerosols, clouds and precipitation, **the International Conference on Aerosol Modeling and Algorithms**, University of California – Davis (Davis, California, USA)
- 04/2015** On the characteristics of aerosol indirect effect based on dynamic regimes in global climate models, **Aerosols, Clouds, Precipitation and Climate (ACPC) initiative workshop, iLEAPS**, GISS/Columbia Univ. (New York, USA)
- 01/2014** Multi-scale modeling of aerosols, clouds, and precipitation, a seminar at School of Atmospheric Sciences, Nanjing Univ. (Nanjing, China)
- 10/2013** Multi-scale modeling of aerosols, clouds, and precipitation in the super-parameterized NCAR CAM5, **Future Directions in Land-surface and Earth System Modeling Workshop**, jointly hosted by the University of Helsinki, Finnish Meteorological Institute and iLEAPS (Helsinki, Finland)
- 08/2012** SPCAM5: Multi-scale modeling of aerosols, clouds, and precipitation, a 45-minute open **plenary** presentation at **the 13th Center for Multiscale Modeling of Atmospheric Processes (CMMAP) Bi-annual Meeting** (Fort Collins, CO).
- 11/2011** Multi-scale modeling of cloud response to aerosol perturbation, **the second workshop on Monitoring of Geoengineering Effects and their Natural and Anthropogenic Analogues**, Keck Institute for Space Sciences at the California Institute of Technology (Pasadena, CA).
- 11/2008** Aerosol indirect effects in a global climate model, a seminar at **the MIT Joint**

- Program on the Science and Policy of Global Change** (November, 2008, Boston, MA).
10/2008 Aerosol indirect effects in a global climate model, **Yuk L. Yung Lunch Seminar at Caltech** (Pasadena, CA).
10/2008 Aerosol indirect effects in a global climate model, **Atmospheric Sciences Division Seminar Series at Brookhaven National Laboratory** (Upton, New York).

SELECTED PRESENTATIONS

- 09/2014** Parametric behaviors of CLUBB in simulation of low clouds in the Community Atmosphere Model CAM5, the DOE SciDAC team meeting (**oral**, Denver, CO)
12/2013 A multi-scale aerosol-climate model with a third-order turbulence closure, the AGU Fall Meeting (**oral**, San Francisco, CA)
09/2013 Uncertainty Quantification applied to a unified cloud parameterization (CLUBB), the DOE SciDAC team meeting (**oral**, Denver, CO)
08/2013 SP-CAM5 with CLUBB: progress and remaining issues, the 15th Center for Multiscale Modeling of Atmospheric Processes (CMMAP) bi-annual meeting (**oral**, Fort Collins, CO)
02/2013 SP-CAM5 with CLUBB: progress and remaining issues, the NCAR CESM AMWG winter working group meeting (**oral**, Boulder, CO)
12/2012 Aerosol effects on precipitation in a multi-scale aerosol-climate model PNNL-MMF, the AGU Fall meeting (**poster**, San Francisco, CA)
07/2012 Breakout session report on the multi-scale modeling at the NSF/DOE/USDA EaSM PI meeting (**oral**, Arlington, Va)
12/2011 Aerosol-cloud-precipitation interactions in the PNNL-MMF multi-scale aerosol-climate model, the AGU Fall meeting (**oral**, San Francisco, CA).
10/2011 Aerosol-Cloud-precipitation interactions in the PNNL-MMF multi-scale aerosol-climate model, the America Association for Aerosol Research (AAAR) 30th Annual Conference (**oral**, Orlando, FL)
03/2011 Aerosol indirect effects in the PNNL-MMF multi-scale aerosol-climate model, an **oral** presentation (**plenary session**) at the Atmospheric System Research Science Team Meeting (San Antonio, TX)
02/2011 Multi-scale modeling of cloud-aerosol interactions in CAM, the NCAR CESM AMWG winter working group meeting (**oral**, Boulder, CO)
01/2011 Aerosol effects on precipitation in the PNNL-MMF multi-scale aerosol-climate model, at the AMS annual meeting (poster, Seattle, WA)
08/2010 Toward simulating aerosol-cloud interactions in the MMF model, the 8th biannual CMMAP team meeting (**oral**, Fort Collins, CO)
08/2010 Aerosol-cloud interactions in a multi-scale aerosol-climate model, the 13 AMS Conference on Atmospheric Radiation (**oral**, Portland, OR)
02/2008 Aerosol 1st indirect forcing in the coupled CAM-IMPACT model: effects from primary-emitted particulate sulfate and boundary layer nucleation, CCSM chemistry-climate winter working group meeting (**oral**, Boulder, CO)
08/2007 The effect of including aerosol nucleation and coagulation in a global model, the 17th ICNAA meeting (**oral**, Galway, Ireland)

05/2006 Anthropogenic aerosol's effect on the water vapor flux into stratosphere, AGU Spring meeting (**oral**, Baltimore, MD)

SUPERVISED/MENTORED STUDENTS, POSTDOCTORAL SCHOLARS

- Iqra Munawar, Nanjing Univ., PhD student, 09/2017-present
- Yi Zeng, Nanjing Univ., Master student, 09/2017-present
- Weiyang Feng, Nanjing Univ., Master student, 09/2017-present
- Haipeng Zhang, Nanjing Univ., Master student, 09/2016-present
- Heming Bai, Nanjing Univ., PhD student, 09/2015-present
- Zhoukun Liu, Nanjing Univ., PhD student, 09/2015 - present
- Shipeng Zhang, Nanjing University, China, Master student, 09/2013 – 06/2017
- Yawen Liu, Nanjing Univ., post-doctoral research associate, 07/2018-present
- Rudong Zhang, Nanjing Univ., post-doctoral research associate, 07/2015-06/2018
- Zhun Guo, Visiting scholar, Institute of Atmospheric Physics, Beijing, China, 03/2013 – 08/2015
- Chengzhu Zhang, Univ. of California – San Diego, 09/2012-09/2014

SOCIETIES

- American Geophysical Union (AGU)
- American Meteorological Society (AMS)
- European Geosciences Union (EGU)