

## CURRICULUM VITA

### Minghua Zhang

School of Marine and Atmospheric Sciences  
Stony Brook University, State University of New York  
Stony Brook, NY 11794-5000

Tel: 631-632-8318

Fax: 631-632-8915

Email: [minghua.zhang@stonybrook.edu](mailto:minghua.zhang@stonybrook.edu)

<http://www.somas.stonybrook.edu/people/faculty/minghua-zhang/>

#### Employment:

- 1990-present     Assistant Professor (1990-1996), Associate Professor (1997-2001),  
Full Professor (2001-present), Distinguished Professor (2019-)  
School of Marine and Atmospheric Sciences  
Stony Brook University, State University of New York
- 2010-2016     Dean and Director  
School of Marine and Atmospheric Sciences  
Stony Brook University, State University of New York
- 2010-present     Affiliated Professor, Institute of Atmospheric Physics /CAS (2010);  
Institute of Advanced Computational Sciences (IACS) (2015) and Department of  
Applied Mathematics and Statistics (2018) of Stony Brook University
- 2003-2010     Associate Dean  
School of Marine and Atmospheric Sciences  
Stony Brook University, State University of New York
- 2001-2010     Director  
Institute for Terrestrial and Planetary Atmospheres  
Stony Brook University, State University of New York
- 1998-1999     Visiting Fellow  
Laboratory for Atmospheres  
NASA Goddard Space Flight Center
- 1988-1990     Post-doc Visiting Scholar  
Institute for Terrestrial and Planetary Atmospheres  
Stony Brook University, State University of New York
- 1984-1988     Research Assistant  
Institute of Atmospheric Physics  
Chinese Academy of Sciences

## Education:

Ph.D., 1987	Institute of Atmospheric Physics Chinese Academy of Sciences
M.S., 1984	Nanjing Institute of Meteorology
B. S., 1982	Nanjing Institute of Meteorology

## Research Interests:

- Climate modeling and climate feedback processes
- Climate change and analysis
- Development of physical parameterizations of clouds and convection in General Circulation Models (GCMs)
- Variational integration and synthesis of field experimental data
- Atmospheric Dynamics

## Honors

- Fellow, American Meteorological Society (2015)
- Elected Member, International Eurasian Academy of Sciences (2013)
- Nobel Peace Prize, shared with the Intergovernmental Panel on Climate Change (IPCC) and Al Gore (2007)
- National Science Foundation Career Award (1996)
- Young Scientist Achievement Award of the Year, Beijing Association of Science and Technology (1989)
- Outstanding Ph.D Award, Chinese Ministry of Education (1988)

## Professional Activities

- Editor-in-Chief, *Journal of Geophysical Research-Atmospheres* (2016 - present)
- Co-Chairman, Atmospheric Model Working Group (AMWG) of the NCAR Community Climate System Model (CCSM) (2006-2016)
- Advisory Committee of the DOE Energy Exascale Earth System Model (E3SM) (2014-present)
- DOE Biological and Environmental Research Advisory Committee (BERAC) (2010-2017)
- Director, New State Resilience Institute for Storms and Emergencies (NYS-RISE)
- Executive Board of Governors of the New York Sea Grant (NYSG) (2013-2016)
- Steering Committee Member, International Global Water and Energy Experiment (GEWEX) (2011-2015)
- Chairman, Committee of Visitors to Review the Climate and Environmental Sciences Program for the DOE Office of Science (2010)
- Associate Editor and Editor, *Journal of Advances in Modeling Earth Systems (JAMES)* (2008-2015)

- Associate Editor, *Journal of Climate* (2008-2017)
- Member, NSF Climate Simulation Laboratory (CSL) Advisory Committee (2007-2014)
- Co-Chairman, Atmospheric Radiation Measurement (ARM) Working Group on Cloud Modeling and Parameterization (CPM), U. S. Department of Energy (1999-2005)
- Lead Author, US Climate Change Science Program (CCSP) Assessment and Synthesis Product (SAP3.1) (2006-2008)
- Contribution Author, Second Report of the Climate Assessment Report of the Inter-Governmental Panel for Climate Change (IPCC): The Scientific Basis (1996).
- Member, DOE ARM Science Team Executive Committee (2002-2004)

### Teaching Activities

- Taught Atmospheric Dynamics, Atmospheric Physics, Atmospheric Radiation, and Numerical Modeling courses at graduate and undergraduate levels.
- Supervised 18 Ph.D students, 2 MS students. Served on 40+ Ph.D thesis committees.

### Publications of Minghua Zhang (as of Dec 2018)

#### [\(Google scholar profile\)](#)

- Yu, H. Y., and M. H. Zhang, 2018: Explaining the year-to-year variability of the eastern Pacific intertropical convergence zone in the boreal spring. *J. Geophys. Res. Atmos.*, <https://doi.org/10.1002/2017JD028156>
- Zhang, T., Zhang, M., Lin, W., Lin, Y., Xue, W., Yu, H., He, J., Xin, X., Ma, H.-Y., Xie, S., and Zheng, W.: Automatic tuning of the Community Atmospheric Model (CAM5) by using short-term hindcasts with an improved downhill simplex optimization method, *Geosci. Model Dev.*, 11, 5189-5201, <https://doi.org/10.5194/gmd-11-5189-2018>, 2018.
- Zhu, Jiawen, Minghua Zhang et al. 2018: Response of Tropical Terrestrial Gross Primary Production to the Super El Niño Event in 2015. *J. Geophys. Res. – Biogeosciences* <https://doi.org/10.1029/2018JG004571>
- Zhang, M., A. Mariotti, Z. Lin, V. Ramasmamy, J. Lamarque, Z. Xie, and J. Zhu, 2018: Coordination to Understand and Reduce Global Model Biases by U.S. and Chinese Institutions. *Bull. Amer. Meteor. Soc.*, 99, ES109–ES113, <https://doi.org/10.1175/BAMS-D-17-0301.1>
- Smirnov, O., Steinwand, M.C., Xiao, T. , M. Zhang, 2018: Climate Impacts, Political Institutions, and Leader Survival: Effects of Droughts and Flooding Precipitation, *EconDisCliCha*. <https://doi.org/10.1007/s41885-018-0024-7> Economics of Disasters and Climate Change
- Chen, J., Liu, Y., Zhang, M., & Peng, Y. (2018). Height dependency of aerosol-cloud interaction regimes. *Journal of Geophysical Research: Atmospheres*, 123. <https://doi.org/10.1002/2017JD027431>
- Tang, S., M. Zhang, and S. Xie (2017), Investigating the dependence of SCM simulated precipitation and clouds on the spatial scale of large-scale forcing at SGP, *J. Geophys. Res. Atmos.*, 122, 8724–8738, doi:[10.1002/2017JD026565](https://doi.org/10.1002/2017JD026565).

- Lin, Y., Dong, W., Zhang, M., Xie, Y., Xue, W., Huang, J., & Luo, Y. (2017). Causes of model dry and warm bias over central US and impact on climate projections. *Nature Communications*, 8. doi:10.1038/s41467-017-01040-2
- Xie, J., & Zhang, M. (2017). Role of internal atmospheric variability in the 2015 extreme winter climate over the North American continent. *Geophysical Research Letters*. 10.1002/2017GL072772
- Jin, J., Zeng, Q., Wu, L., Liu, H., & Zhang, M. (2017). Formulation of a new ocean salinity boundary condition and impact on the simulated climate of an oceanic general circulation model. *Science China Earth Sciences*, 60(3), 491-500.
- Li, Y., & Zhang, M. (2017). The Role of Shallow Convection over the Tibetan Plateau. *Journal of Climate*, 30(15), 5791-5803.
- Liu, Ping and Zhu, Yuejian and Zhang, Qin and Gottschalck, Jon and Zhang, Minghua et al. (2017) , Climatology of tracked persistent maxima of 500-hPa geopotential height. *Climate Dynamics*, <https://doi.org/10.1007/s00382-017-3950-0>
- Zhang, M., S. Xie and RCJ Somerville (2017), The SCM Concept and Creation of ARM Forcing Datasets, *Meteorological Monographs* 57, 24.1-24.12, American Meteorological Societ, <https://doi.org/10.1175/AMSMONOGRAPHS-D-15-0040.1>
- Chen, J., Liu, Y., Zhang, M., & Peng, Y. (2016). New Understanding and Quantification of the Regime Dependence of Aerosol-Cloud Interaction for Studying Aerosol Indirect Effects. *Geophysical Research Letters*, 43(4), 1780-1787, doi:10.1002/2016GL067683.
- Li, Y., & Zhang, M. (2016). Cumulus over the Tibetan Plateau in the Summer Based on CloudSat-CALIPSO Data. *Journal of Climate*, 29 (3):1219-1230; 10.1175/JCLI-D-15-0492.1 FEB 2016.
- Liu, P., Zhang, Q., Zhang, C., Zhu, Y., Khairoutdinov, M., Kim, H. M., ... & Zhang, M. (2016). A Revised Real-Time Multivariate MJO Index. *Monthly Weather Review*, 144 (2):627-642; 10.1175/MWR-D-15-0237.1 FEB 2016
- Smirnov, O., Zhang, M., Xiao, T. et al. 2016: The relative importance of climate change and population growth for exposure to future extreme droughts. *Climatic Change* (2016) 138: 41. doi:10.1007/s10584-016-1716-z
- Tang, S., Xie, S., Zhang, Y., Zhang, M., Schumacher, C., Upton, H., ... & Feng, Z. (2016). Large-scale vertical velocity, diabatic heating and drying profiles associated with seasonal and diurnal variations of convective systems observed in the GoAmazon2014/5 experiment. *Atmospheric Chemistry and Physics*, 16(22), 14249-14264.
- Tang, S., M. Zhang, and S. Xie (2016), An ensemble constrained variational analysis of atmospheric forcing data and its application to evaluate clouds in CAM5, *J. Geophys. Res. Atmos.*, 121, 33–48, doi:10.1002/2015JD024167.
- Wu, C., Lin, Z., He, J., Zhang, M., Liu, X., Zhang, R., & Brown, H. (2016). A process-oriented evaluation of dust emission parameterizations in CESM: Simulation of a typical severe dust storm in East Asia. *Journal of Advances in Modeling Earth Systems*, 8(3), 1432-1452.
- Yu, H., Zhang, M., Lin, W., & Zhang, X. (2016). Cloud transitions: comparison of temporal variation in the southeastern Pacific with the spatial variation in the northeastern Pacific at low latitudes. *International Journal of Climatology*. 2016, 14, DOI: 10.1002/joc.4889
- Lin, P., H Liu, W Xue, H Li, J Jiang, M Song, Y Song, F Wang, M Zhang, 2016, A Coupled Experiment with LICOM2 as the Ocean Component of CESM1, *Journal of Meteorological Research* 30 (1), 76-92

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- Xie, X., and M. Zhang (2015), Scale-aware parameterization of liquid cloud inhomogeneity and its impact on simulated climate in CESM, *J. Geophys. Res. Atmos.*, 120, 8359–8371, doi:10.1002/2015JD023565.
- Hye-Mi Kim, Edmund K. M. Chang, and Minghua Zhang, 2015: Statistical–Dynamical Seasonal Forecast for Tropical Cyclones Affecting New York State. *Wea. Forecasting*, 30, 295–307. doi: <http://dx.doi.org/10.1175/WAF-D-14-00089.1>
- Tang, S., M. Zhang, and S. Xie (2015), An ensemble constrained variational analysis of atmospheric forcing data and its application to evaluate clouds in CAM5, *J. Geophys. Res. Atmos.*, 120, doi:10.1002/2015JD024167.
- Wang, X., and M. Zhang (2015), The coupling of mixed Rossby-gravity waves with diabatic heating during the TRMM-KWAJEX field campaign, *Geophys. Res. Lett.*, 42, 8241–8249, doi:10.1002/2015GL065813.
- Tang, S., and M. Zhang (2015), Three-dimensional constrained variational analysis: Approach and application to analysis of atmospheric diabatic heating and derivative fields during an ARM SGP intensive observational period, *J. Geophys. Res. Atmos.*, 120, doi:10.1002/2015JD023621.
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- Zhang, M., 2015. Coupled Ocean-Atmosphere Models: Physical Processes. P144-152, In: Gerald R.North (editor-in-chief), John Pyle and Fuqing Zhang (editors). *Encyclopedia of Atmospheric Sciences*, 2nd edition, Vol 4, pp. 144–152. ISBN: 9780123822253, 2998pp, Copyright © 2015 Elsevier Ltd.
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- Li, Z., S. Feng, Y. Liu, W. Lin, M. Zhang, T. Toto, A. M. Vogelmann, and S. Endo (2015), Development of fine-resolution analyses and expanded large-scale forcing properties: 1. Methodology and evaluation, *J. Geophys. Res. Atmos.*, 120, 654–666, doi:10.1002/2014JD022245.
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- Zhang, Yi, Rucong Yu, Jian Li, Weihua Yuan, Minghua Zhang, 2013: Dynamic and thermodynamic relations of distinctive stratus clouds on the lee side of the Tibetan Plateau in the cold season *Journal of Climate*. doi: <http://dx.doi.org/10.1175/JCLI-D-13-00009.1>
- Colle, Brain A., Zhenhai Zhang, Kelly A. Lombardo, Edmund Chang, Ping Liu, Minghua Zhang 2013: Historical evaluation and future prediction of eastern North America and western Atlantic

- extratropical cyclones in the CMIP5 models during the cool season. *J. Climate*, doi: <http://dx.doi.org/10.1175/JCLI-D-12-00498.1>
- Zhang, He, Minghua Zhang, Qing-cun Zeng, 2013: Sensitivity of Simulated Climate to Two Atmospheric models: Interpretation of Differences between Dry Models and Moist Models. *Monthly Weather Review*, doi: <http://dx.doi.org/10.1175/MWR-D-11-00367.1>
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- Liu P., T Li, B. Wang, M. Zhang, J.-J. Luo, Y. Masumoto, X. Wang and E. Roeckner. 2012. MJO change with A1B global warming estimated by the 40-km ECHAM5. *Climate Dynamics* DOI: 10.1007/s00382-012-1532-8
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