

Ministry of Education Key Laboratory for Earth System Modeling
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Education

Ph. D., Georgia Institute of Technology
Earth and Atmospheric Sciences, 2006

B. S., Gettysburg College
Summa Cum Laude, Mathematics, 2001

Research Experience

Associate Professor January 2012 to present
Tsinghua University, Department of Earth System Science. I study the atmospheric water and energy cycles, atmospheric transport, and atmospheric composition in the troposphere and lower stratosphere, with a secondary focus on large-scale climate dynamics. With tenure from January 2018.

Research Scientist V August 2011 to December 2011
University of Texas at Austin, Jackson School of Geosciences. I conducted and contributed to research on atmospheric transport and composition in the tropical troposphere and stratosphere.

Postdoctoral Research Associate November 2009 to May 2011
University of Cambridge, Department of Applied Mathematics and Theoretical Physics. I worked within the Atmospheric Dynamics Group to characterize influences of clouds on the transport of water vapor and other constituents into the stratosphere.

Postdoctoral Research Scientist October 2006 to September 2009
Columbia University, Department of Applied Physics and Applied Mathematics. I worked with Prof. Adam Sobel to diagnose water vapor transport in climate model simulations.

Graduate Research Assistant August 2001 to August 2006
Georgia Institute of Technology, School of Earth and Atmospheric Sciences. Supervised by Prof. Rong Fu, I studied influences of tropical deep convection and Rossby wave breaking on upper tropospheric and lower stratospheric composition.

Graduate Research Assistant June 2004 to August 2004
Goddard Earth Science and Technology Center, Graduate Student Summer Program in Earth Systems Science. I worked with Dr. Andrew Dessler at the Goddard Space Flight Center on relationships between deep convection and upper tropospheric water vapor.

Teaching and Mentoring Experience

Associate Professor January 2012 to present
Tsinghua University, Department of Earth System Science. I developed and currently teach the graduate-level courses "Atmosphere–Ocean Interactions" (a lecture course with a secondary focus on scientific programming in python) and "Climate Dynamics Seminar" (a discussion course). I supervise doctoral and masters students.

Guest Lecturer 2012–2013
Tsinghua University, Center for Earth System Science. I contributed guest lectures to the graduate-level courses "Stable Isotope Ecology: Principles and Applications", "Frontiers in Global Change Ecology", and "Earth System Science Seminar Series".

Invited Lecturer

July 2013

International Seminar on Climate System and Climate Change, China Meteorological Administration. I contributed two invited lectures to this summer school for graduate students and early career scientists.

Research Scientist V

August 2011 to December 2011

University of Texas at Austin, Jackson School of Geosciences. I worked directly with graduate students and assisted with organizing group meetings and activities.

Graduate Teaching Assistant

August 2005 to December 2005

Georgia Institute of Technology, School of Earth and Atmospheric Sciences. I directed and graded two weekly labs for EAS 1601: How to Build a Habitable Planet.

Graduate Teaching Assistant

January 2003 to May 2003

Georgia Institute of Technology, School of Earth and Atmospheric Sciences. I was selected by faculty to assist in the teaching of EAS 4610/6130: Earth Systems Modeling. I assisted students during open office hours and graded assignments.

Service and Editorial Experience

Associate Editor

January 2014 to April 2016

Journal of Meteorological Research. I provided editorial services and helped to manage the review process for submitted manuscripts.

Invited Editor

April 2012 to December 2013

Acta Meteorologica Sinica. I edited manuscripts for the English-language edition.

Freelance Editor

June 2011 to February 2012

Stallard Scientific Editing. I provided professional editing services for manuscripts in the areas of meteorology, climatology, and numerical modeling.

Research Funding

[7] Beijing Natural Science Foundation (2023.10–2025.09)

“A new coupled heat-moisture attribution method for compound hydrometeorological extremes and application to urban heat waves in China”

中文：基于新的热量-水汽归因算法对复合极端事件的研究及其对中国城市热浪的应用

Grant number IS23121

Principal Investigator, CNY180,000

[6] National Natural Science Foundation of China (2023.01–2026.12)

“Assessment and attribution of aerosol effects on dynamics and troposphere-to-stratosphere transport in the Asian monsoon anticyclone”

中文：气溶胶对亚洲季风反气旋动力和向平流层传输的影响评估和归因

Grant number 42275053

Principal Investigator, CNY550,000

[5] Ministry of Science and Technology (2018.01–2021.12)

气溶胶对流云降水相互作用机理研究及京津冀区域模式应用示范

Grant number 2017YFC1501404

Co-Investigator, CNY680,000 (Total to Tsinghua University: CNY1,500,000)

[4] National Natural Science Foundation of China (2018.01–2020.12)

Joint NSFC–DFG Cooperative Project (自然科学基金国际合作项目)

“Climate variability in the upper troposphere and stratosphere over Asia and its representation in modern reanalysis products”

中文：亚洲对流层上层和平流层气候变率及其在现代再分析产品中的表现

Grant number 20171352419

Co-Investigator, CNY1,340,000 (Total to Tsinghua University: CNY1,340,000)

- [3] **Ministry of Science and Technology** (2017.11–2022.10)
 基于共形映射的海洋模式与海气耦合网格协同设计
 Grant number 2017YFA0603902
 Co-Investigator, CNY800,000 (Total to Tsinghua University: CNY11,000,000)
- [2] **青年千人计划 (Young Thousand Talents Plan)** (2013.01–2015.12)
 Fellowship Recipient, CNY2,000,000
- [1] **Research Fund for International Young Scientists** (2013.07–2013.12)
 “Stable Water Isotopes in the GAMIL Atmospheric General Circulation Model”
 National Natural Sciences Foundation of China
 Grant number 41350110225
 Principal Investigator, CNY100,000

Refereed Publications

- [74] Li, Z. P. Ciais, **J. S. Wright**, Y. Wang, S. Liu, J. Wang, L. Z. X. Li, H. Liu, X. Wang, L. Zhu, D. S. Goll and W. Li (2023): [Increased precipitation over land due to climate feedback of large-scale bioenergy cultivation](#), *Nat. Commun.*, **14**, 4096, doi:10.1038/s41467-023-39803-9.
- [73] Sun, D., W. Huang, Z. Yang, Y. Luo, J. Luo, **J. S. Wright**, H. Fu and B. Wang (2023): [Deep learning improves GFS wintertime precipitation forecast over southeastern China](#), *Geophys. Res. Lett.*, **49**, e2023GL104406, doi:10.1029/2023GL104406.
- [72] Chen, Y., X. Huang, J. Luo, Y. Lin, **J. S. Wright**, Y. Lu, X. Chen, H. Jiang and P. Lin (2023): [Prediction of ENSO using multivariable deep learning](#), *Atmos. Ocean. Sci. Lett.*, **16**, 100350, doi:10.1016/j.aosl.2023.100350.
- [71] Gao, J., Y. Huang, Y. Peng and **J. S. Wright** (2023): [Aerosol effects on clear-sky short-wave heating in the Asian monsoon tropopause layer](#), *J. Geophys. Res. Atmos.*, **128**, e2022JD036956, doi:10.1029/2022JD036956.
- [70] Sun, J., K. Yang, H. Lu, X. Zhou, X. Li, Y. Chen, W. Guo and **J. S. Wright** (2023): [Land–atmosphere feedbacks weaken the cooling effect of soil organic matter property toward deep soil on the eastern Tibetan Plateau](#), *J. Hydrometeorol.*, **24**, 105–117, doi:10.1175/JHM-D-22-0074.1.
- [69] Sun, D., W. Huang, Z. Yang, Y. Luo, J. Luo, **J. S. Wright**, H. Fu and B. Wang (2022): [A deep learning-based bias correction method for predicting ocean surface waves in the Northwest Pacific Ocean](#), *Geophys. Res. Lett.*, **49**, e2022GL100916, doi:10.1029/2022GL100916.
- [68] Konopka, P., M. Tao, F. Ploeger, D. F. Hurst, M. L. Santee, **J. S. Wright** and M. Riese (2022): [Stratospheric moistening after 2000](#), *Geophys. Res. Lett.*, **49**, e2021GL097609, doi:10.1029/2021GL097609.
- [67] Qiu, T., W. Huang, **J. S. Wright**, Z. Yang and B. Wang (2022): [Impacts of Western Disturbances on Wintertime Precipitation Over the Southeastern Tibetan Plateau](#), *J. Geophys. Res. Atmos.*, **127**, e2021JD035789, doi:10.1029/2021JD035789.
- [66] **Wright, J. S.**, M. Fujiwara, C. Long, J. Anstey, S. Chabrillat, G. P. Compo, R. Dragani, W. Ebisuzaki, Y. Harada, C. Kobayashi, W. McCarty, A. Molod, K. Onogi, S. Pawson, A. Simmons, D. G. H. Tan, S. Tegtmeier, K. Wargan, J. S. Whitaker, and C.-Z. Zou (2022): [Chapter 2: Description of the Reanalysis Systems](#). In M. Fujiwara, G. Manney, L. Gray, & **J. S. Wright** (Eds.), SPARC Report No. 10, WCRP Report 6/2021 (pp. 15–80). Munich: SPARC. doi: 10.17874/800DEE57D13.

- [65] Davis, S. M., M. Hegglin, R. Dragani, M. Fujiwara, Y. Harada, C. Kobayashi, C. Long, G. L. Manney, E. R. Nash, G. L. Potter, S. Tegtmeier, T. Wang, K. Wargan, and **J. S. Wright** (2022): [Chapter 4: Overview of Ozone and Water Vapour](#). In M. Fujiwara, G. Manney, L. Gray, & **J. S. Wright** (Eds.), SPARC Report No. 10, WCRP Report 6/2021 (pp. 123–164). Munich: SPARC. doi: 10.17874/800DEE57D13.
- [64] Monge-Sanz, B., T. Birner, S. Chabrilat, M. Diallo, F. Haenel, P. Konopka, B. Legras, F. Ploeger, T. Reddmann, G. Stiller, **J. S. Wright**, M. Abalos, H. Boenisch, S. Davis, H. Garny, P. Hitchcock, K. Miyazaki, H. K. Roscoe, K. Sato, M. Tao, D. Waugh (2022): [Chapter 5: Brewer-Dobson Circulation](#). In M. Fujiwara, G. Manney, L. Gray, & **J. S. Wright** (Eds.), SPARC Report No. 10, WCRP Report 6/2021 (pp. 165–220). Munich: SPARC. doi: 10.17874/800DEE57D13.
- [63] Tegtmeier, S., K. Krüger, T. Birner, N. A. Davis, S. Davis, M. Fujiwara, C. R. Homeyer, I. Ivanciu, Y.-H. Kim, B. Legras, G. L. Manney, E. Nishimoto, M. Nützel, R. Pilch Kedzierski, J. S. Wang, T. Wang, and **J. S. Wright** (2022): [Chapter 8: Tropical Tropopause Layer](#). In M. Fujiwara, G. Manney, L. Gray, & **J. S. Wright** (Eds.), SPARC Report No. 10, WCRP Report 6/2021 (pp. 309–389). Munich: SPARC. doi: 10.17874/800DEE57D13.
- [62] Dai, L. and **J. S. Wright** (2021): [Long-term variability of relationships between potential large-scale drivers and summer precipitation in North China in the CERA-20C reanalysis](#), *Atmosphere*, **12**, 81, doi:10.3390/atmos12010081.
- [61] von Hobe, M., F. Ploeger, P. Konopka, C. Kloss, A. Ulanowski, V. Yushkov, F. Ravegnani, C. M. Volk, L. L. Pan, S. B. Honomichl, S. Tilmes, D. E. Kinnison, R. R. Garcia and **J. S. Wright** (2021): [Upward transport into and within the Asian monsoon anticyclone as inferred from StratoClim trace gas observations](#), *Atmos. Chem. Phys.*, **21**, 1267–1285, doi:10.5194/acp-21-1267-2021.
- [60] Lu, C., S. Venevsky, X. Shi, L. Wang, **J. S. Wright** and C. Wu (2021): [Econometrics of the environmental Kuznets curve: advancement to carbon intensity-oriented sustainability for eight economic zones in China](#), *J. Clean. Prod.*, **283**, 124561.
- [59] Duan, S. Q., K. L. Findell and **J. S. Wright** (2020): [Three regimes of temperature distribution change over dry land, moist land and oceanic surfaces](#), *Geophys. Res. Lett.*, doi:10.1029/2020GL090997.
- [58] Dai, L., **J. S. Wright** and R. Fu (2020): [Moisture and energy budget perspectives on summer drought in North China](#), *J. Climate*, **33**, 10149–10167, doi:10.1175/JCLI-D-20-0176.1.
- [57] He, X., W. Huang, Z. Yang, T. Qiu, B. Wang, X. Li, J. Liao and **J. S. Wright** (2020): [Favorable circulation patterns and moisture sources for wintertime extreme precipitation events over the Balkhash-Junggar region](#), *J. Geophys. Res. Atmos.*, **125**, e2019JD032275, doi:10.1029/2019JD032275.
- [56] **Wright, J. S.**, X. Sun, P. Konopka, K. Krüger, B. Legras, A. Molod, S. Tegtmeier, G. J. Zhang and X. Zhao (2020): [Differences in tropical high clouds among reanalyses: origins and radiative impacts](#), *Atmos. Chem. Phys.*, **20**, 8989–9030, doi:10.5194/acp-20-8989-2020.
- [55] Jin, X. and **J. S. Wright** (2020): [Contributions of Indonesian Throughflow to eastern Indian Ocean surface variability during ENSO events](#), *Atmos. Sci. Lett.*, **21**, e979, doi:10.1002/asl.979.
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- [51] Qiu, T., W. Huang, **J. S. Wright**, Y. Lin, P. Lu, X. He, Z. Yang, W. Dong, H. Lu and B. Wang (2019): [Moisture sources for wintertime intense precipitation events over the three snowy subregions of the Tibetan Plateau](#), *J. Geophys. Res. Atmos.*, **124**, 12708–12725, doi:10.1029/2019JD031110.
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- [47] Tao, M., P. Konopka, F. Ploeger, X. Yan, **J. S. Wright**, M. Diallo, S. Fueglistaler and M. Riese (2019): [Multi-timescale variations of modelled stratospheric water vapor derived from three modern reanalysis products](#), *Atmos. Chem. Phys.*, **19**, 6509–6534, doi:10.5194/acp-19-6509-2019.
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- [45] Yu, C., X. Huang, H. Chen, H. C. J. Godfray, **J. S. Wright**, J. Hall, P. Gong, S. Ni, S. Qiao, G. Huang, Y. Xiao, J. Zhang, Z. Feng, X. Ju, P. Ciais, N. C. Stenseth, D. O. Hessen, Z. Sun, L. Yu, W. Cai, H. Fu, X. Huang, C. Zhang and J. Taylor (2019): [Managing nitrogen to restore water quality in China](#), *Nature*, **567**, 516–520.
- [44] Dong, W., Y. Lin, **J. S. Wright**, Y. Xie, X. Yin and J. Guo (2019): [Precipitable water and CAPE dependence of rainfall intensities in China](#), *Clim. Dyn.*, **52**, 3357–3368.
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- [41] Lin, D., W. Huang, Z. Yang, X. He, T. Qiu, B. Wang and **J. S. Wright** (2019): [Impacts of wintertime extratropical cyclones on temperature and precipitation over northeastern China during 1979–2016](#), *J. Geophys. Res. Atmos.*, **124**, 1514–1536.
- [40] Yang, Z., W. Huang, X. He, Y. Wang, T. Qiu, **J. S. Wright** and B. Wang (2019): [Synoptic conditions and moisture sources for extreme snowfall events over East China](#), *J. Geophys. Res. Atmos.*, **124**, 601–623.

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- [37] Yang, Z., W. Huang, T. Qiu, X. He, **J. S. Wright** and B. Wang (2018): [Interannual variation and regime shift of evaporative moisture sources for wintertime precipitation over southern China](#), *J. Geophys. Res. Atmos.*, **123**, 13,168–13,185.
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- [35] Liang, J., **J. S. Wright**, X. Cui, W. Gan, L. Sternberg and G. Lin (2018): [Leaf anatomical traits determine the \$^{18}\text{O}\$ enrichment of leaf water in coastal halophytes](#), *Plant Cell Environ.*, **41**, 2744–2757.
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