

Haijun Yang

Personal information

Male, Born in Jan. 1972 in Songzi city, Hubei province, China.
Work address: Department of Atmospheric and Oceanic Sciences,
Fudan University, 2005 Songhu Road, Yangpu District, Shanghai, China 200438.
Email: yanghj@fudan.edu.cn



Professional

2020.3 – Professor, Department of Atmospheric Science, Fudan University, Shanghai, China
2009.8 – 2020.2 Bo-Ya Professor, Department of Atmospheric Science, School of Physics, Peking University, Beijing, China
2007.9 – 2008.6 Visiting scientist, Department of Meteorology, Stockholm University, Stockholm, Sweden
2003.8 – 2009.7 Associate Professor, Department of Atmospheric Science, School of Physics, Peking University, Beijing, China
1999.1 – 2003.7 Research associate, the Center for Climatic Research and Department of Atmospheric and Oceanic Sciences, University of Wisconsin-Madison, Madison, Wisconsin, USA

Education

1996.9 – 2000.7 Ph.D, Physical Oceanography, Institute of Physical Oceanography, Ocean University of Qingdao, Qingdao, China
1993.9 – 1996.7 M.S, Synoptic Dynamics, Lanzhou Institute of Plateau Atmospheric Physics, Chinese Academy of Science, Lanzhou, China
1989.9 – 1993.7 B.S., Synoptic Dynamics, Department of Earth Science, Yunnan University, Kunming, China

Teaching

2020 – Undergraduate course: Descriptive Physical Oceanography (Fudan University)
2020 – Undergraduate course: Marine Meteorology (Fudan University)
2004 – 2020 Graduate course: Geophysical Fluid Dynamics II (Peking University)
2005 – 2020 Undergraduate course: Descriptive Physical Oceanography (Peking University)
2004 – 2007 Undergraduate course: Ocean, Climate and our Planet (Peking University)
2005 – 2020 Graduate course: Physical Oceanography (Graduate School of CAS; University of Chinese Academic Sciences)
2013 – 2020 Undergraduate course: Introduction to Oceanography (Peking University)

Research

Global climate change and global warming since Mid-Holocene; Ocean-Atmosphere interaction
Oceanic thermocline and thermohaline circulation dynamics and modeling
Regional ocean dynamics, South China Sea circulation

Students

Ph.D: Lu Wang **2011**, Fuyao, Wang **2011**, Yuxing Wang **2013**, Haijin Dai **2015**, Kun Wang **2017**, Yingying Zhao **2018**, Xingchen Shen **2020**, Qianzi Yang **2020**, Qin Wen **2020**, Jiaqi Shi **2021**, Yang Li **2022**, Rui Jiang **2023**, Liping Wang **2024**, Kunpeng Yang **2025**, Mingjun Tong **2026**, Xiangying Zhou **2027**, Fengli An **2027**, Shuxiang Wang **2028**

M.S: Ji Lei **2007**, Yuntao Zhang **2008**, Wei Yuan **2009**, Changming Chen **2009**, Jiang Zhu **2011**, Qing Li **2013**, Xinrong Li **2013**, Yu Sun **2014**, Daoxun Sun **2014**, Jie Yin **2017**, Jie Yao **2018**, Xing Shao **2020**, Zhihong Chen **2021**, Ya Liu **2022**, Yibo Kang **2023**, Shuxiang Wang **2024**, Chuqiao Yan **2025**, Mengyu Liu **2026**

Note: Year with dark black shows the actual graduated year; year with grey color shows the anticipated year

Grants

Mechanism and modeling studies on the multi-centennial variability of the Atlantic thermohaline circulation. NSFC No. 42230403, 2023.01-2027.12.

Ocean-Atmosphere Interaction and Global Climate Change. NSFC No. 41725021, 2018.01-2022.12

Exploring the Role of Tibetan Plateau in Shaping the Global Ocean Meridional Overturning Circulation. NSFC No. 91737204, 2018.01-2021.12.

Investigating the mechanisms and structures of meridional atmosphere and ocean heat transports. NSFC No. 41376007, 2014.01-2017.12.

Coupled modeling studies on the effect of Tibet Plateau on the Intertropical Convergence Zone. NSFC No. 91337106, 2014.01-2016.12.

Mechanism and Prediction Studies on Interannual-Interdecadal Climate Variability in the East Asian Monsoon Region. National Basic Research Program of China (973 Program) No. 2012CB955200, 2012.01-2016.08.

Investigating the Response Timescale and Reversibility of Climate System. NSFC No.: 41176002, 2012.01-2015.12

Assessing the Meridional Atmosphere and Ocean Heat Transport in a Varying Climate. NSFC No.: 40976007, 2010.01-2012.12

Estimating the influences of the extratropical climate changes on the tropical mean state and ENSO variability, NSFC No.: 40576004, 2006.01-2008.12

Modeling studies of the decadal variability of the tropical Pacific thermocline, NSFC No.: 40306002, 2004.01-2006.12

Studying the regional dynamics of the seasonal variability in the South China Sea using 1.5-layer reduced gravity model and Princeton Ocean Model (POM), Key NSFC No.: 49636230, 1997.01-2000.12

Publications

2023-2027

1. *Tong, M., **H. Yang**, R. Jiang, and P. Wu, 2024: Determinant Role of the Tibetan Plateau and the Antarctic in the AMOC Formation. *J. Climate*, in press.
 2. *Zhou, X., K. Yang, and **H. Yang**, 2024: Self-sustained multicentennial oscillation of the AMOC in global box models. *J. Climate*, in press.
 3. 王铨祥, **杨海军**, 2024: 大西洋经圈翻转流多百年际变率的 2 维海洋模式研究. 北京大学学报 (自然科学版), 已接受.
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4. 亢一博, 杨海军, 2024: 定量研究地球轨道参数和温室气体浓度变化对全新世气候的影响. 北京大学学报(自然科学版), 已接受.
 5. *Yang, H., R. Jiang, Q. Wen, and co-authors, 2024: The role of mountains in shaping the global meridional overturning circulation. *Nat. Commun.*, **15**, 2602, <https://doi.org/10.1038/s41467-024-46856-x>.
 6. *Yang, K., H. Yang, Y. Li, and Q. Zhang, 2024: North Atlantic Ocean-originated multicentennial oscillation of the AMOC: a coupled model study. *J. Climate*, **37**(9), 2789-2807, doi: 10.1175/JCLI-D-23-0422.1.
 7. *Yang, K., H. Yang, and Y. Li, 2024: A theory for self-sustained multicentennial oscillation of the Atlantic meridional overturning circulation. Part II: Role of Temperature. *J. Climate*, **37**(3), 913-926, doi: 10.1175/JCLI-D-22-0755.1.
 8. *Wang, L., and H. Yang, 2023: Tibetan Plateau increases the snowfall in southern China. *Scientific Reports*, **13**: 12796, <https://doi.org/10.1038/s41598-023-39990-x>.
 9. *Kang, Y., and H. Yang, 2023: Quantifying effects of Earth orbital parameters and greenhouse gases on Mid-Holocene climate. *Climate of Past*, **19**, 2013-2026, <https://doi.org/10.5194/cp-19-2013-2023>.
 10. 刘亚, 杨海军, 2023: 夏季热带印度洋季节内振荡的北向传播特征. 北京大学学报(自然科学版), **59** (4), 569-580, doi: 10.13209/j.0479-8023.2023.044.
 11. 杨海军, 石佳琪, 李洋, 周湘莹, Qiong ZHANG, 2023: 多百年际气候变率: 观测、理论与模式研究. 科学通报. **68**: 1-9, doi: 10.1360/TB-2022-1026.
 12. *Wang, L., H. Yang, Q. Wen, Y. Liu and G. Wu, 2023: The Tibetan Plateau's far-reaching impacts on Arctic and Antarctic climate: seasonality and pathways. *J. Climate*. **36**(5), 1399-1414, doi: 10.1175/JCLI-D-22-0175.1.
 13. *Wu, G. X., X. Zhou, X. Xu, and co-authors, 2023: An integrated research plan for the Tibetan Plateau land-air coupled system and its impacts on the global climate. *Bulletin of the American Meteorological Society*. **104**(1), E158-E177, doi: 10.1175/BAMS-D-21-0293.1.
 14. Yan, C., X. Shen, H. Yang, and Z. Liu, 2023: Investigating the effect of Tibetan Plateau on the ITCZ using a coupled Earth system model. *Atmospheric and Oceanic Sciences Letter*, **16**, 100294, <https://doi.org/10.1016/j.aosl.2022.100294>.

2018-2022

15. *Askjar, T. G., Q. Zhang and co-authors, 2022: Multi-centennial Holocene climate variability in proxy records and transient model simulations. *Quaternary Science Reviews*. **296**, 107801.
 16. *Li, Y., and H. Yang, 2022: A theory for self-sustained multi-centennial oscillation of the Atlantic meridional overturning circulation. *J. Climate*, **35**(18), 5883-5896. doi: 10.1175/JCLI-D-21-0685.1.
 17. *Yang, H., X. Zhou, Q. Yang, and Y. Li, 2022: Roles of climate feedback and ocean vertical mixing in modulating global warming rate. *Climate Dynamics*, doi: 10.1007/s00382-022-06374-2.
 18. *Wen, Q., H. Yang, and co-authors, 2022: Possible thermal effect of Tibetan Plateau on the Atlantic meridional overturning circulation. *Geophys. Res. Lett.*, **49**, e2021GL095771. doi: 10.1029/2021GL095771.
 19. *Shi, J., and H. Yang, 2021: Bjerknes compensation in a coupled global box model. *Climate Dynamics*. doi: 10.1007/s00382-021-05881-y.
 20. 邵星, 杨海军, 2021: 青藏高原对北大西洋深水形成影响机制的季节差异. 北京大学学报(自然科学版). <https://doi.org/10.13209/j.0479-8023.2021.062>.
 21. *Wen, Q., Z. Han, H. Yang, J. Cheng, Z. Liu, and J. Liu, 2021: Influence of Tibetan Plateau on the North American summer monsoon precipitation. *Climate Dynamics*. doi: 10.1007/s00382-021-05857-y.
 22. *Wen, Q., C. Zhu, Z. Han, Z. Liu, and H. Yang, 2021: Can the Tibetan Plateau affect the Antarctic Bottom Water? *Geophys. Res. Lett.*, **48**, e2021GL092448. doi: 10.1029/2021GL092448.
 23. *Chen, Z., and H. Yang, 2021: Impact of the Tibetan Plateau on North African precipitation. *Climate Dynamics*. doi: 10.1007/s00382-021-05837-2.
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24. *Jiang, R., and **H. Yang**, 2021: Roles of the Rocky Mountains in the Atlantic and Pacific meridional overturning circulations. *J. Climate*, **34** (16), 6691-6703, doi: 10.1175/JCLI-D-20-0819.1.
 25. *Wen, Q., K. Doos, Z. Lu, Z. Han, and **H. Yang**, 2020: Investigating the role of the Tibetan Plateau in ENSO variability. *J. Climate*, **33**, doi: 10.1175/JCLI-D-19-0422.1.
 26. 邵星, **杨海军**, 李洋, 姜睿, 姚杰, 杨千姿, 2020: 不同分辨率下青藏高原对大西洋经向翻转流影响的耦合模式研究. 北京大学学报 (自然科学版), <https://doi.org/10.13209/j.0479-8023.2020.092>
 27. 陈志宏, **杨海军**, 2020: 青藏高原对非洲北部降水影响的模拟研究. 北京大学学报 (自然科学版), <https://doi.org/10.13209/j.0479-8023.2020.063>.
 28. *Liu, Y., M. Lu, **H. Yang**, A. Duan, B. He, S. Yang and G. Wu, 2020: Land-Atmosphere-Ocean coupling associated with the Tibetan Plateau and its climate impact. *National Science Review*, **7**, 534-552, doi: 10.1093/nsr/nwaa011.
 29. *Wen, Q., and **H. Yang**, 2020: Investigating the role of the Tibetan Plateau in the formation of Pacific meridional overturning circulation. *J. Climate*, **33**(9), 3603-3617, doi: 10.1175/JCLI-D-19-0206.1.
 30. ***Yang, H.**, and Q. Wen, 2020: Investigating the role of the Tibetan Plateau in the formation of Atlantic meridional overturning circulation. *J. Climate*, **33**(9), 3585-3601, doi: 10.1175/JCLI-D-19-0205.1.
 31. ***Yang, H.**, X. Shen, J. Yao and Q. Wen, 2020: Portraying the impact of the Tibetan Plateau on global climate. *J. Climate*, **33**(9), 3565-3583, doi: 10.1175/JCLI-D-18-0734.1.
 32. *Wen, Q., J. Yao, K. Doos, and **H. Yang**, 2018: Decoding the hosing and heat effects on global temperature and meridional circulations in a warming climate. *J. Climate*, **31**(23), 9605-9623, doi: 10.1075/JCLI-D-18-0297.1.
 33. ***Yang, Q.**, Y. Zhao, Q. Wen, J. Yao, and H. Yang, 2018: Understanding Bjerknes compensation in meridional heat transports and the role of freshwater in a warming climate. *J. Climate*, **31**(12), 4791-4806, doi: 10.1175/JCLI-D-17-0587.1.

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34. ***Yang, H.**, Q. Wen, J. Yao, and Y. Wang, 2017: Bjerknes compensation in meridional heat transport under freshwater forcing and the role of climate feedback. *J. Climate*, **30**(14), 5167-5185, doi: 10.1175/JCLI-D-16-0824.1.
 35. *Dai, H., **H. Yang**, and J. Yin, 2017: Roles of energy conservation and regional climate feedback in Bjerknes compensation: a coupled modeling study. *Climate Dynamics*, **49**, 1513-1529, doi: 10.1007/s00382-016-3386-y.
 36. *Zhao, Y., **H. Yang**, and Z. Liu, 2016: Assessing Bjerknes compensation for climate variability and its timescale dependence. *J. Climate*, **29**(15), 5501-5512.
 37. ***Yang, H.**, Y. Zhao, and Z. Liu, 2016a: Understanding Bjerknes compensation in atmosphere and ocean heat transports using a coupled box model. *J. Climate*, **29**(6), 2145-2160, doi: 10.1175/JCLI-D-15-0281.1.
 38. ***Yang, H.**, K. Wang, H. Dai, Y. Wang, and Q. Li, 2016b: Wind effect on the Atlantic meridional overturning circulation via sea ice and vertical diffusion. *Climate Dynamics*, **46**(11), 3387-3403, doi: 10.1007/s00382-015-2774-z.
 39. *Liu, Z., **H. Yang**, C. He, and Y. Zhao, 2016: A theory for Bjerknes compensation: the role of climate feedback. *J. Climate*, **29**(1), 191-208. doi: 10.1175/JCLI-D-15-0227.1.
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41. ***Yang, H.**, and H. Dai, 2015: Effect of wind forcing on the meridional heat transport in a coupled model: equilibrium response. *Climate Dynamics*, **45**(5): 1451-1470, doi: 10.1007/s00382-014-2393-0.
 42. ***Yang, H.**, Q. Li, K. Wang, Y. Sun and D. Sun, 2015: Decomposing the meridional heat transport in the climate system. *Climate Dynamics*, doi: 10.1007/s00382-014-2380-5, 44: 2751-2768.
 43. *Wang, L., and **H. Yang**, 2014: The role of atmospheric teleconnection in the subtropical thermal forcing on the equatorial Pacific. *Adv. Atmos. Sci.*, **31**(4), 985-994, doi: 10.1007/s00376-013-3173-1.
 44. *Huang, B., J. Zhu, and **H. Yang**, 2014: Mechanisms of Atlantic meridional overturning circulation (AMOC) variability in a coupled ocean--atmosphere GCM. *Adv. Atmos. Sci.*, **31**(2), 241-251, doi: 10.1007/s00376-013-3021-3.
 45. Wang, Y. X., **H. Yang**, and T. Furevik, 2013: What determines the amplitude of ENSO events? *Atmospheric and Oceanic Science Letters*. **6**(2), 90-96.
 46. ***Yang, H.**, 2013: Assessing the meridional atmosphere and ocean energy transport in a varying climate. *Chinese Science Bulletin*, **58**(15), 1737-1740, doi: 10.1007/s11434-01305665-x.
 47. ***Yang, H.**, Y. Wang, and Z. Liu, 2013: A modeling studies of the Bjerknes compensation in the meridional heat transport in a freshening ocean. *Tellus A*, **65**, 18480, <http://dx.doi.org/10.3402/tellusa.v65i0.18480>.

2008-2012

48. ***Yang, H.**, and L. Wang, 2011: Tropical Oceanic Response to Extratropical Thermal Forcing in a Coupled Climate Model: A Comparison between the Atlantic and Pacific Oceans. *J. Climate*, **24**, 3850-3866.
49. ***Yang, H.**, and J. Zhu, 2011: Equilibrium Thermal Response Timescale of Global Oceans. *Geophys. Res. Lett.*, **38**, L14711, doi:10.1029/2011GL048076.
50. ***Yang, H.**, and F. Wang, 2009: A Revisit on the Thermocline Depth in the Equatorial Pacific. *J. Climate*, **22**, 3856-3863.
51. ***Yang, H.**, F. Wang, and A. Sun, 2009: Understanding the Ocean Temperature Change in Global warming: the Tropical Pacific. *Tellus*, **61A**(3), 371-380.
52. *Zhang, Q., Y. Guan, and **H. Yang**, 2008: ENSO Amplitude Change in Observation and Coupled Models. *Adv. Atmos. Sci.*, **25**(3), 361-366.
53. ***Yang, H.**, and L. Wang, 2008: Estimating the nonlinear response of tropical ocean to extratropical forcing in a coupled climate model. *Geophys. Res. Lett.*, **35**, L15705, doi:10.1029/2008GL034256.
54. ***Yang, H.**, and Q. Zhang, 2008: Anatomizing the Ocean Role in ENSO Changes under Global Warming. *J. Climate*, doi: 10.1175/2008JCLI2324.1., **21**(24), 6539-6555.
55. *Su, J., H. Wang, **H. Yang**, H. Drange, Y. Gao, and M. Bentsen, 2008: Role of the meridional overturning circulation in the tropical SST changes. *J. Climate*, **21**, 2019-2034.

2003-2007

56. *Zhang, Q., **H. Yang**, Y. Zhong, and D. Wang, 2005: An Idealized Study of the Impact of Extratropical Climate Change on ENSO. *Climate Dynamics*, **25**, 869-880, doi: 10.1007/s00382-005-0062-z.
 57. ***Yang, H.** and Z. Liu, 2005: Tropical-Extratropical Climate Interaction as Revealed in Idealized Coupled Climate Model Experiments. *Climate Dynamics*, **24**, 863-879, doi: 10.1007/s00382-005-0021-8.
 58. ***Yang, H.**, H. Jiang, and B. Tan, 2005: Asymmetric impact of the North and South Pacific on the Equator in a coupled climate model. *Geophys. Res. Lett.*, **32**(5), L05604, doi: 10.1029/2004GL021925.
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59. ***Yang, H.**, Q. Zhang, Y. Zhong, S. Vavrus, and Z. Liu, 2005: How does Extratropical Warming Affect ENSO? *Geophys. Res. Lett.*, **32**(1), L01702, doi: 10.1029/2004GL021624.
 60. ***Yang, H.**, Z. Liu and Q. Zhang, 2004: Tropical Ocean Decadal Variability and Resonance of Planetary Wave basin Modes: II. Numerical Study. *J. Climate*, **17**, 1711-1721.
 61. ***Yang, H.**, Z. Liu and H. Wang, 2004: Influence of Extratropical Thermal and Wind Forcing on Equatorial Thermocline in an Ocean GCM. *J. Phys. Oceanogr.*, **34**(1), 174-187.
 62. ***Yang, H.** and Z. Liu, 2003: Basin Modes in a Tropical-Extratropical Basin. *J. Phys. Oceanogr.*, **33**(12), 2751-2763.
 63. ***Yang, H.** and Q.Y. Liu, 2003: Forced Rossby Wave in the Northern South China Sea. *Deep Sea Res.*(I), **50**, 917-926.
 64. **杨海军**, 刘秦玉, 2003: 缓变风场驱动下正压环流中的多涡结构. *热带海洋学报*, 22(4), 51-59.
 65. ***Yang, H.** and Q. Zhang, 2003: On the Decadal and Interdecadal variability in the Pacific Ocean. *Adv. Atmos. Sci.*, **20**(2), 173-184.
 66. *Liu, Z. and **H. Yang**, 2003: Extratropical Control on Tropical Climate, the Atmospheric Bridge and Oceanic Tunnel. *Geophys. Res. Lett.*, **30**(5), 1230, doi: 10.1029/2002GL016492.

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67. ***Yang, H.**, Q.Y. Liu, Z. Liu, D.X. Wang and X.B. Liu, 2002: A GCM Study of the Dynamics of the Upper Ocean Circulation of the South China Sea. *J. Geophys. Res.*, **107**, 10.1029/2001JC001084.
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75. Liu, Q.Y., **H. Yang**, W. Li and K. Nishiyama, 2000: Subtropical Countercurrent and Intraseasonal Oscillation in the North Pacific. *Proceedings of China-Japan Joint Symposium on Cooperative Study of Subtropical Circulation System*. China Ocean Press, 125-134.
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77. **Yang, H.**, Q.Y. Liu and W. Li, 1998: An Influence of Bottom Topography on the Western Boundary Current. *Acta Oceanographica Taiwanica*, **37**(1), 77-88.
78. **杨海军**, 刘秦玉, 1998: 南海上层水温分布季节特征. *海洋与湖沼*, **29**(5), 501-507.
79. **杨海军**, 刘秦玉, 1998: 南海海洋环流研究综述. *地球科学进展*, **13**(4), 364-368.