Han Tang (唐漢)

University Department of Marine, Earth and Atmospheric Science
North Carolina State University

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Link ORCID, Google Scholar, ResearchGate, GitHub

Research Interests

Atmospheric Science Understanding the physical mechanism and processes that drive generation and evolution of Arctic storms/cyclones in the decreasing seaice environment through comprehensive data analysis and climate model simulations

Skills and Expertise

Fortran Proficient in Fortran, with experience in maintaining legacy codebases and adept at leveraging modern features to develop efficient parallel scientific applications. Contributed to multiple open-source projects, including the Fortran language server protocl.

WRF, CESM Skilled in the execution and automation of regional and global climate models, including WRF and CESM, on high-performance superclusters such as Perlmutter.

Others Utilizing programming languages/tools, including Python, Julia, LaTeX, C and Matlab in my daily research activities.

Research and Teaching Experience

May 2024 ~ now *Research Assistant* @ Department of Marine, Earth and Atmospheric Science, North Carolina State University

Aug 2023 ~ May 2024 *Teaching Assistant* @ Physics Department, University of Alaska Fairbanks

Aug 2020 ~ May 2023 *Research Assistant* @ Physics Department, University of Alaska Fairbanks

Aug 2016 ~ May 2020 *Teaching Assistant* @ Physics Department, University of Alaska Fairbanks

Education

May 2024 ~ now (in progress) Ph.D. in Atmospheric Science, North Carolina State University

Aug 2020 ~ May 2024 — Pursued Ph.D. in Physics Department, University of Alaska Fairbanks

Aug 2016 ~ May 2020 M.S. in Space Phyics, University of Alaska Fairbanks

Aug 2012 ~ May 2016 B.S. in Physics, New Mexico State University

Aug 2010 ~ May 2012 — Studied music in Music Department, Southeastern Oklahoma State University

Scientific Expedition

Aug 2020 & Aug 2021 Radiosonde observation during Arctic cruises aboard the Ice Breaker Research Vessel (IBRV) Araon.

Award

May 2024 Invited to the 2024 E3SM Tutorial Workshop.

Aug 2023 ~ May 2024 Teaching Assistant of the Year.

Apr 2016 H. Bartel and Doris Williams Undergraduate Physics Award

Publications

Journal

2023 Zhang, X., **Tang, H.**, Zhang, J., Walsh, J., Roesler, E., Hillman, B., Ballinger, T. and Weijer, W. (2023). Arctic Cyclones Have Become More Intense and Longer-Lived Over the Past Seven Decades. *Commun. Earth Environ.* **4**, 348. https://doi.org/10.1038/s43247-023-01003-0

2022 Zhang, X., Fu, Y., Han, Z., Overland, J., Rinke, A., **Tang, H.**, Vihma, T. and Wang, M. (2022). Extreme Cold Events From East Asia to North America in Winter 2020/21: Comparisons, Causes, and Future Implications. *Adv. Atmos. Sci.* **39**, 553-565. https://doi.org/10.1007/s00376-021-1229-1

2021 Solomon, A., Heuze, C., Rabe, B., Bacon, S., Bertinom, L., Heimbach, P., Inoue, J., Iovino, D., Mottram, R., Zhang, X., Aksenov, Y., McAdam, R., Nguyen, A., Raj, R. and **Tang, H.** (2021). Fresh Water in the Arctic Ocean 2010-2019. *Ocean Sci.* **17**, 1081-1102. https://doi.org/10.5194/os-17-1081-2021

2021 Peng, L., Zhang, X., Kim, J., Cho, K., Kim, B., Wang, Z. and **Tang, H.** (2021). Role of Intense Arctic Storm in Accelerating Summer Sea Ice Melt: An in Situ Observational Study. *Geophys. Res. Lett.* **48**, e2021GL092714. https://doi.org/10.1029/2021GL092714

2020 Zhang, X., Fu, Y., Guan, Z., **Tang, H.**, Wang, G., Wang, Z., Wu, P. and Yang, X. (2020). Influence of Arctic Warming Amplification on Eurasian Winter Extreme Weather and Climate: Consensus, Open Questions, and Debates. *J. Meteorol. Sci.* **40**, 596-604. https://doi.org/10.3969/2020jms.0079

Conference

2024 **Tang, H.**, Zhang, X. and Zhang, J. (2024, December 12). Unraveling Arctic Cyclone Dynamics: The Impact of Diabatic Heating. American Geophysical Union 2024, Washington, D.C., United States. https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1649444

2024 Zhang, X., Barsugli, J., Coates, D., Easterling, D., Kunkel, K., Schreck, C., **Tang, H.**, Uehling, J. and Vose, R. (2024, December 10). Intermittent Occurrence and Spatial Variation of CONUS Summer Heatwave Events: Coherent Detection and Driving Mechanisms. American Geophysical Union 2024, Washington, D.C., United States. https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1678729

2023 **Tang, H.**, Zhang, X., Zhang, J. and Kim, J. (2023, December 15). Identifying and Comparing Dynamics Driving Different Types of Arctic Cyclones. American Geophysical Union 2023, San Francisco, CA, United States. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1430823

2023 Zhang, X., Coates, D., Easterling, D., Kunkel, K., Schreck, C. and **Tang, H.** (2023, December 14). Identifying Driving Mechanisms for Recently Increased CONUS Summer Heatwave Events. American Geophysical Union 2023, San Francisco, CA, United States. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1338497

2023 Ballinger, T., Zhang, X., **Tang, H.**, Polyakov, I., Doyle, J. and Finocchio, P. (2023, December 14). Sea Ice-Ocean-Atmosphere Interactions Associated With a Pacific Arctic Cyclone Observed During the ONR THINICE Field Campaign in Late Summer of 2021. American Geophysical Union 2023, San Francisco, CA, United States. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1338497

2022 **Tang, H.**, Zhang, J. and Zhang, X. (2022, December 16). Dynamic Structures and Mechanisms of an Intense Arctic Cyclone in Summer 2016. American Geophysical Union 2023, Chicago, IL, United States. https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1180352

2022 Zhang, X., **Tang, H.**, Zhang, J., Walsh, J., Roesler, E., Hillman, B. and Ballinger, T. (2022, December 13). Continuing Intensification of Arctic Cyclone Activity. American Geophysical Union 2023, Chicago, IL, United States. https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1095296

2022 Zhang, X., **Tang, H.**, Zhang, J., Walsh, J., Roesler, E. and Hillman, B. (2022, December 16). Arctic Cyclones in CMIP6 Historical Simulations. American Geophysical Union 2023, Chicago, IL, United States. https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1095803

2021 Zhang, J., Zhang, X., Walsh, J., **Tang, H.** and Bush, M. (2021, December 13). Sensitivities of Simulated Arctic Cyclone to Different Representations of Model Physics Within WRF. American Geophysical Union 2021, New Orlans, LA, United States. https://agu.confex.com/agu/fm21/meetingapp.cgi/Paper/985686

2021 **Tang, H.**, Zhang, J. and Zhang, X. (2021, December 13). Impacts of Spatial Resolution on an Intense Arctic Cyclone Simulations. American Geophysical Union 2021, New Orlans, LA, United States. https://agu.confex.com/agu/fm21/meetingapp.cgi/Paper/904727

2021 Zhang, X., Hillman, B., Roesler, E., **Tang, H.**, Walsh, J. and Zhang, J. (2021, December 13). Arctic Cyclones in Reanalyses and E3SM Simulations: Changes, Driving Mechanisms, and Ice-Ocean Impacts. American Geophysical Union 2021, New Orlans, LA, United States. https://agu.confex.com/agu/fm21/meetingapp.cgi/Paper/973092

2020 Ng, C. and **Tang, H.** (2020, December 10). Kinetic Flux Rope Solutions With Non-Boltzmann Electron and Ion Distributions. American Geophysical Union 2020, Online. https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/748301

2018 Ng, C. and **Tang, H.** (2018, December 10). Kinetic Flux Rope Solutions for Realistic Election/Ion Temperature Ratios. American Geophysical Union 2018, Washington, D.C., United States. https://agu.confex.com/agu/fm18/meetingapp.cgi/Paper/456428

(All information herein is up-to-date as of *Feb 17th 2025* .)