

Joseph P. Clark, Ph.D.

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Program in Atmospheric and Oceanic Sciences
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Education	
2016-2021	Ph.D. , Meteorology and Atmospheric Science, The Pennsylvania State University, University Park, PA
2012-2016	B.S. with honors , Atmospheric and Oceanic Science, Stony Brook University, Stony Brook, NY
	B.S. , Applied Mathematics and Statistics, Stony Brook University, Stony Brook, NY
Research Experience	
08/2023-present	Postdoctoral Research Associate (supervised by Dr. Nathaniel Johnson) Princeton University, Princeton, NJ <i>Seasonal Predictability of Atmospheric Rivers over North America</i>
08/2021-08/2023	Postdoctoral Research Associate (supervised by Dr. Pu Lin) Princeton University, Princeton, NJ <i>ITCZ Response to Disabling Parameterized Convection in GFDL AM4 Aquaplanet Simulations</i>
08/2016-08/2021	Graduate Research Assistant (advised by Dr. Steven B. Feldstein) The Pennsylvania State University, University Park, PA <i>Drivers of Temperature Changes on Intraseasonal to Interdecadal Timescales</i>
05/2015-08/2015	Undergraduate Research Assistant (advised by Dr. Edmund K. M. Chang) Stony Brook University, Stony Brook, NY <i>Modulation of Winter Precipitation by Extratropical Cyclone Activity over Midlatitude Regions</i>
Teaching Experience	
09/24/2021	Guest Lecturer The Pennsylvania State University, University Park, PA <i>Radiation and Climate</i>
09/24/2021	Guest Lecturer The Pennsylvania State University, University Park, PA <i>The Science of Climate and History of Climate Change</i>
12/03/2020	Guest Lecturer The Pennsylvania State University, University Park, PA <i>Atmospheric Dynamics</i>
01/2020-06/2020	Graduate Teaching Assistant The Pennsylvania State University, University Park, PA <i>Introductory Meteorology</i>
10/15/2019	Substitute Teacher The Pennsylvania State University, University Park, PA <i>Advanced Atmospheric Dynamics (covered the general circulation)</i>
09/30/2019	Substitute Teacher The Pennsylvania State University, University Park, PA <i>Advanced Atmospheric Dynamics (covered the QG omega equation)</i>
08/2017-12/2017	Graduate Teaching Assistant The Pennsylvania State University, University Park, PA <i>Climate Dynamics</i>
01/2017-06/2017	Graduate Teaching Assistant The Pennsylvania State University, University Park, PA <i>Synoptic Meteorology Laboratory</i>
Mentoring Experience	
06/2024-08/2024	Mayumi Liz de Andrade Miyazato 2024 CIMES Summer Internship Program (co-mentored with Mingyu Park and Nat Johnson) <i>Evaluating the Impacts of Climate Mitigation on Southern Hemisphere Atmospheric Rivers</i>
06/2023-08/2023	Berenize Garcia Nueva 2023 CIMES Summer Internship Program (co-mentored with Veeshan Narinesingh) <i>The Dynamics and Thermodynamics of Heat Extremes in California's Central Valley</i>

Outreach Activities

11/07/2023	Guest Lecturer CUNY Graduate Center (with Veeshan Narrinesingh, Glen Chua and Emmanuelle Gentile) <i>The History, Usefulness and Future of Modeling Earth Systems</i>
11/05/2019	Workshop Lecturer iSTEAM NSF-funded outreach workshop for middle and high school teachers <i>Now You Sea It, Now You Don't: Investigating Arctic Sea Ice</i>
04/20/2019	Workshop Lecturer iSTEAM NSF-funded outreach workshop for middle and high school teachers <i>Now You Sea It, Now You Don't: Investigating Arctic Sea Ice</i>

Publications**Submitted:**

- [14] **Clark, J. P.**, N. C. Johnson, M. Park, M. Fernandez, and T. Delworth, 2024: Predictable Patterns of Seasonal Atmospheric River Variability Over North America During Winter, *submitted to Geophysical Research Letters*

Published:

- [13] Lee, S., P. R. Bannon, M. Park, and **J. P. Clark**, 2024: Zonal Contrasts of the Tropical Pacific Climate Predicted by a Global Constraint. *The Asia-Pacific Journal of Atmospheric Sciences*, 1-10, <https://doi.org/10.1007/s13143-024-00373-5>
- [12] **Clark, J. P.**, P. Lin, and S. A. Hill, 2024: ITCZ Response to Disabling Parameterized Convection in Global Fixed-SST GFDL-AM4 Aquaplanet Simulations At 50 km and 6 km Resolutions, *The Journal of Advances in Modeling Earth Systems*, 16(6), e2023MS003968, <https://doi.org/10.1029/2023ms003968>
- [11] Kim, D. W., S. Lee, **J. P. Clark**, and S. B. Feldstein, 2023: Benchmark Thermodynamic Contributors to the Growth and Decay of the Regional Extreme Surface Temperature, *The Journal of Climate*, 37(7), 2347-2359, <https://doi.org/10.1175/jcli-d-23-0368.1>
- [10] Kim, D. W., S. Lee, **J. P. Clark**, and S. B. Feldstein, 2023: Zonally Asymmetric Component of Summer Surface Temperature Trends Caused by Intraseasonal Time-Scale Processes, *npj Climate and Atmospheric Science*, 6(1), 197, <https://doi.org/10.1038/s41612-023-00522-z>
- [09] Zhou, L., W. Hua, S. E. Nicholson, and **J. P. Clark**, 2023: Interannual Teleconnections in the Sahara Temperatures Associated with the North Atlantic Oscillation (NAO), *Climate Dynamics*, 62(2), 1123-1143, <https://doi.org/10.1007/s00382-023-06962-w>
- [08] **Clark, J. P.**, S. B. Feldstein, and S. Lee, 2023: Reply to Comment on “Moist Static Energy Transport Trends in Four Global Reanalyses: Are They Downgradient?” By Clark et al. (2022), *Geophysical Research Letters*, 50(15), e2023gl104020, <https://doi.org/10.1029/2023gl104020>
- [07] **Clark, J. P.**, S. B. Feldstein, and S. Lee, 2022: Moist Static Energy Transport Trends in Four Global Reanalyses: Are They Downgradient? *Geophysical Research Letters*, 49(20), e2022GL098822, <https://doi.org/10.1029/2022gl098822>
- [06] **Clark, J. P.**, and S. B. Feldstein, 2022: The Temperature Anomaly Pattern of the Pacific-North American Teleconnection: Growth and Decay. *The Journal of the Atmospheric Sciences*, 79(5), 1237-1252, <https://doi.org/10.1175/jas-d-21-0030.1>
- [05] **Clark, J. P.**, E. E. Clothiaux, S.B. Feldstein, and S. Lee 2021: Drivers of Clear Sky Global Surface Downwelling Longwave Irradiance Trends From 1984 Through 2017. *Geophysical Research Letters*, 48(22), e2021GL093961, <https://doi.org/10.1029/2021gl093961>
- [04] **Clark, J. P.**, V. Shenoy, S. B. Feldstein, S. Lee, and M. Goss, 2021: The Role of Horizontal Temperature Advection in Arctic Amplification. *The Journal of Climate*, 34(8), 2957-2976, <https://doi.org/10.1175/jcli-d-19-0937.1>
- [03] **Clark, J. P.**, and S. B. Feldstein, 2020: What Drives the North Atlantic Oscillation's Temperature Anomaly Pattern? Part II: A Decomposition of the Surface Downward Longwave Radiation Anomalies. *The Journal of the Atmospheric Sciences*, 77(1), 199-216, <https://doi.org/10.1175/jas-d-19-0028.1>
- [02] **Clark, J. P.**, and S. B. Feldstein, 2020: What Drives the North Atlantic Oscillation's Temperature Anomaly Pattern? Part I: The Growth and Decay of the Surface Air Temperature Anomalies. *The Journal of the Atmospheric Sciences*, 77(1), 185-198, <https://doi.org/10.1175/jas-d-19-0027.1>
- [01] **Clark, J. P.**, and S. Lee, 2019: The Role of the Tropically Excited Arctic Warming Mechanism on the Warm Arctic Cold Continent Surface Air Temperature Trend Pattern. *Geophysical Research Letters*, 46(14), 8490-8499, <https://doi.org/10.1029/2019gl082714>

Presentations (* denotes award winner; * invited; • oral; ○ poster)

- **Clark, J. P.**, P. Lin, and S. A Hill, “ITCZ Response to Disabling Parameterized Convection in Global Fixed-SST GFDL-AM4 Aquaplanet Simulations at 50 km and 6 km Resolutions” American Meteorological Society Atmospheric and Oceanic Fluid Dynamics Conference: Burlington, VT, June 24-28, 2024
- * **Clark, J. P.**, “The Growth and Decay of Temperature Anomalies Associated with The North Atlantic Oscillation” Woods Hole Oceanographic Institution Physical Oceanography Seminar, Woods Hole, MA, November 28, 2023
- **Clark, J. P.**, and P. Lin, “Investigating the Impact of the Convective Parameterization Scheme in GFDL AM4” Joint Cloud Forcing Model Intercomparison Project-Global Atmospheric System Studies Meeting: Paris, France, July 9-13, 2023
- **Clark, J. P.**, and P. Lin, “Investigating the Impact of The Convective Parameterization Scheme in GFDL AM4” American Geophysical Union Fall Meeting: Chicago, IL, December 12-16, 2022
- * **Clark, J. P.**, “The Growth and Decay of Temperature Anomalies Associated with the North Atlantic Oscillation and Pacific-North American Teleconnection Patterns” Topics in Atmospheric and Oceanic Sciences (TAOS) Seminar: School of Marine and Atmospheric Sciences, Stony Brook University, Stony Brook, NY, October 19, 2022
- **Clark, J. P.**, and P. Lin, “Investigating the Impact of Shallow Convection on Precipitation in The GFDL AM4 Climate Model” American Meteorological Society Atmospheric and Oceanic Fluid Dynamics Conference: Breckenridge, CO, June 13-17, 2022
- * **Clark, J. P.**, “The Temperature Anomaly Pattern of The Pacific-North American Teleconnection: Growth and Decay” S2S/MJO and Teleconnections Sub-Project: Online, February 24, 2022
- **Clark, J. P.**, “Drivers of Surface Downwelling Longwave Irradiance Changes From 1984 Through 2017” European Geosciences Union General Assembly, Earth Radiation Budget, Radiative Forcing and Climate Change: Online, April 28, 2021
- **Clark, J. P.**, E. E. Clothiaux, S. B. Feldstein, and S. Lee., “Drivers of Surface Downwelling Longwave Irradiance Changes From 1984 Through 2017” Frank Talk: Penn State, Dept. of Meteorology and Atmospheric Science (Online), April 1, 2021
- **Clark, J. P.**, S. B. Feldstein, and S. Lee., “Is Arctic Amplification an Average of Externally-Forced Changes in the Weather?” American Meteorological Society Annual Meeting: Online, January 11-15, 2021
- **Clark, J. P.**, S. B. Feldstein, and S. Lee., “The Role of Horizontal Temperature Advection on Arctic Amplification.” Earth System Science Center (ESSC) / Climate Dynamics Seminar: Online, October 14, 2020
- **Clark, J. P.**, and S. B. Feldstein, “The Processes That Drive the Temperature Anomalies of the Pacific/North American Teleconnection Pattern.” American Meteorological Society Annual Meeting: Boston, MA, January 12-16, 2020
- **Clark, J. P.**, and S. Lee., “The Role of The Tropically Excited Arctic Warming Mechanism on the Warm Arctic Cold Continent Surface Air Temperature Trend Pattern.” American Meteorological Society Annual Meeting: Boston, MA January 12-16, 2020
- **Clark, J. P.**, and S. B. Feldstein, “What Drives the North Atlantic Oscillation's Surface Air Temperature and Skin Temperature Anomaly Patterns?” American Meteorological Society Atmospheric and Oceanic Fluid Dynamics Conference: Portland, ME, June 24-28, 2019
- **Clark, J. P.**, and S. B. Feldstein, “The Relationship of The North Atlantic Oscillation’s Vertical Temperature Structure and Water Budget to The Surface Downward Longwave Radiation Anomaly Pattern.” American Meteorological Society Atmospheric and Oceanic Fluid Dynamics Conference: Portland, ME, June 24-28, 2019
- **Clark, J. P.**, and S. B. Feldstein, “What Drives the North Atlantic Oscillation's Surface Air Temperature and Skin Temperature Anomaly Patterns?” Frank Talk: Penn State, Dept. Of Meteorology and Atmospheric Science, April 17, 2019
- **Clark, J. P.**, and S. B. Feldstein. “What Drives the North Atlantic Oscillation’s Surface Air Temperature Anomaly Pattern?” American Meteorological Society Annual Meeting: Phoenix, AZ, January 6-10, 2019
- * **Clark, J. P.**, Feldstein, S. B., and S. Lee, “On the Role of Horizontal Temperature Advection For The Inter-Decadal Arctic Warming Trend.” American Meteorological Society Annual Meeting: Phoenix, AZ January 6-10, 2019
- **Clark, J. P.**, and S. B. Feldstein, “What Drives the North Atlantic Oscillation’s Surface Air Temperature Anomaly Pattern?” American Geophysical Union Fall Meeting: Washington D.C., December 10-14, 2018
- **Clark, J. P.**, and S. B. Feldstein, “What Drives the North Atlantic Oscillation’s Surface Air Temperature Anomaly Pattern?” First-Year Graduate Student Symposium: Penn State, Dept. of Meteorology And Atmospheric Science, August 18, 2017
- **Clark, J. P.**, and E. K. M. Chang, “Modulation of Winter Precipitation by Extratropical Cyclone Activity over Mid-Latitude Regions.” American Meteorological Society Annual Meeting Student Conference: New Orleans, LA, January 10-14, 2017

Technical Skills

Languages:

- slurm, qsub, shell scripting, nco, cdo
- python (xarray, matplotlib, cartopy, numpy)
- NCAR Command Language (NCL)
- MATLAB
- fortran

Modeling:

- Rapid Radiative Transfer Model for GCMs (RRTMG)
- Held-Suarez Idealized GFDL Dynamical Core
- Community Earth System Model (CESM)

Professional Memberships and Service

Memberships:

American Meteorological Society (2015-present)
 American Geophysical Union (2018-present)
 European Geosciences Union (2020-2021)

Service Activities:

GFDL Diversity Equity Inclusion and Accessibility
 Committee (2023-present)

Reviewer Service:

Nature Communications Earth and Environment, Nature Communications, Science Advances, The Journal of Climate (4), Geophysical Research Letters (2), The Journal of the Atmospheric Sciences, Climate Dynamics (2), The Journal of Geophysical Research: Atmospheres (2), The Journal of Applied Meteorology and Climatology (2), The International Journal of Climatology, Climatic Change, The Asia-Pacific Journal of Atmospheric Sciences

Awards and Recognitions

01/2019: Outstanding Student Presentation Award, AMS Annual Meeting
05/2016: Undergraduate Recognition Award for Academic Excellence
06/2016: America East All-Academic Team for Outdoor Track & Field
03/2016: America East All-Academic Team for Indoor Track & Field
11/2015: America East All-Academic Team for Cross Country