Joseph P. Clark

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Atmospheric and Oceanic Sciences Program
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Education

The Pennsylvania State University 08/2016-08/2021

- Ph.D., Meteorology and Atmospheric Science

Stony Brook University 08/2012-05/2016

- B.S. with honors, Atmospheric and Oceanic Science
- B.S., Applied Mathematics and Statistics

Publications

In preparation:

[14] Clark, J. P., E. E. Clothiaux, S. B. Feldstein, and S. Lee, 2024: Vertically-Resolved Trends in CO_2, Water Vapor, and Temperature Radiative Forcings over High and Low Latitudes, *to be submitted to J. Climate*

In review:

[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, *submitted to the Journal of Climate*

[12] Clark, J. P., P. Lin, and S. A. Hill, 2023: ITCZ Response to Disabling Parameterized Convection in Global Fixed-SST Aquaplanet Simulations at 50 km and 6 km Resolutions, *submitted to the Journal of Advances in Modeling Earth Systems, (acceptable pending two minor revisions and one major revision)*

Published:

[11] Kim, D. W., S. Lee, **J. P. Clark**, S. B. Feldstein, 2023: Benchmark thermodynamic contributors to the growth and decay of the regional extreme surface temperature, *J. Climate*, https://doi.org/10.1175/jcli-d-23-0368.1

[10] Kim, D. W., S. Lee, **J. P. Clark**, S. B. Feldstein, 2023: Zonal Asymmetry of Summer Surface Temperature Trends, *npj Climate and Atmospheric Science,* 6, 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*, 1-21, 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, *Geophys. Res. Lett*., 49, e2022GL098822, 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? *Geophys. Res. Lett.*, 49, 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. *J. Atmos. Sci.,* 79, 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. *Geophys. Res. Lett*., 48, 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. *J. Climate*, 34, 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. *J. Atmos. Sci*., 77, 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. *J. Atmos. Sci*., 77, 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. *Geophys. Res. Lett.*, 46, 8490-8499, https://doi.org/10.1029/2019gl082714

Teaching Experience

Teaching Assistantships:

- Meteo 003 – Introductory Meteorology: Penn State, January-June, 2020
- Meteo 470 – Climate Dynamics: Penn State, August-December, 2017
- Meteo 411 – Synoptic Meteorology Laboratory, January-June, 2017

Substitute Teaching:

- Meteo 422 – Advanced Atmospheric Dynamics (covered the general circulation): Penn State, October 15, 2019
- Meteo 422 – Advanced Atmospheric Dynamics (covered the QG-Omega eqn.): Penn State, September 30, 2019

Guest Lectures:

- Meteo 436 – Radiation and Climate: Penn State, September 24, 2021
- EMSC 100S – EMS First-year Seminar: The Science of Climate and the History of Climate Change: Penn State, September 24, 2021
- Meteo 421 – Atmospheric Dynamics: Penn State, December 3, 2020

Mentoring:

- Berenize Garcia Nueva – 2023 CIMES Summer Internship Program

Outreach

Workshops:

- iSTEAM NSF-funded outreach workshop for middle and high school teachers: "Now You Sea It, Now You Don't: Investigating Arctic Sea Ice" November 5, 2019, Role: Lecturer
- iSTEAM NSF-funded outreach workshop for middle and high school teachers: "Now You Sea It, Now You Don't: Investigating Arctic Sea Ice" March 20, 2019, Role: Lecturer

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

* Clark, J. P., "The Growth and Decay of Temperature Anomalies Associated with the North Atlantic Oscillation" Woods Hole Oceanographic Institute: Woods Hole, MA, November 28, 2023
- ○ Clark, J. P., "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., "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., "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, 2016

Technical Skills

Languages:

- Slurm, qsub, shell scripting
- Python
- NCAR Command Language (NCL)
- MATLAB
- Fortran 90

Modeling:

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

Professional Memberships

Since 2015: American Meteorological Society
Since 2018: American Geophysical Union
2021-2022: European Geosciences Union

Professional Service

Reviewer for: *Science Advances, The Journal of Climate (4), The Journal of the Atmospheric Sciences, Climate Dynamics (2), The Journal of Geophysical Research: Atmospheres*, *The Journal of Applied Meteorology and Climatology (2)*, *The International Journal of Climatology, Climatic Change*

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