

Peidong Wang

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Education

Doctor of Philosophy (Ph.D.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

- Major: Climate Science
- Advisor: Susan Solomon
- Thesis: Understanding Drivers of Stratospheric Ozone Change and Fingerprinting its Recovery

Cambridge, MA

Sep. 2019 - May. 2025

Bachelor of Science (B.S.)

UNIVERSITY OF WISCONSIN-MADISON

- Major: Atmospheric & Oceanic Sciences
- Major: Applied Mathematics
- Minor (certificate): Computer Science
- Advisor: Tracey Holloway

Madison, WI

Sep. 2015 - May. 2019

Professional Experience

Stanford Science Fellow

Palo Alto, CA

STANFORD UNIVERSITY

Host: Noah Diffenbaugh

Aug. 2025 - Aug. 2028

Postdoctoral Researcher

Cambridge, MA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Host: Susan Solomon

Jun. 2025 - Aug. 2025

Graduate Research Assistant

Cambridge, MA

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Advisor: Susan Solomon

Sep. 2019 - May. 2025

Summer Student Fellow

Woods Hole, MA

WOODS HOLE OCEANOGRAPHIC INSTITUTION

Advisor: Caroline Ummenhofer

May. 2018 - Aug. 2018

Undergraduate Research Assistant

Madison, WI

UNIVERSITY OF WISCONSIN-MADISON

Advisor: Tracey Holloway

Sep. 2016 - May. 2019

Publications

Submitted / Under Review

Peidong Wang, Susan Solomon, Clara Deser, David W. J. Thompson, Noah S. Diffenbaugh. **Antarctic Ozone Loss Shapes Surface Cooling Pattern and Climate Sensitivity.** *Nature* (under review). [Pre-print Link](#)

2025

Peidong Wang, Susan Solomon, Jeffery R. Scott, Shari A. Yvon-Lewis, Paul O. Wennberg, Ray F. Weiss, Matt Rigby, Minde An. **Ocean Outgassing of Methyl Chloroform as an Underestimated Source of Emission.** *Geophysical Research Letters*, 52, e2025GL118618, 2025. [Paper Link](#)

Aodhan Sweeney, Qiang Fu, Susan Solomon, Stephen Po-Chedley, William J. Randel, Andrea Steiner, Pu Lin, Thomas Birner, Sean Davis, Peidong Wang. **Recent Warming of the Southern Hemisphere Subtropical Lower Stratosphere and Antarctic Ozone Healing.** *AGU Advances*, 6, e2025AV001737, 2025. [Paper Link](#)

Peidong Wang, Susan Solomon, Benjamin D. Santer, Douglas E. Kinnison, Qiang Fu, Kane A. Stone, Jun Zhang, Gloria L. Manney, Luis F. Millán. **Fingerprinting the Recovery of Antarctic Ozone.** *Nature*, 639(8055), 2025. [Paper Link](#), [News](#)

2024

Peidong Wang, Susan Solomon. **Contrasting Chlorine Chemistry on Volcanic and Wildfire Aerosols in the Southern Mid-Latitude Lower Stratosphere.** *Geophysical Research Letters*, 51(18), 2024. [Paper Link](#)

Jun Zhang, Peidong Wang, Douglas Kinnison, Susan Solomon, Jian Guan, Yunqian Zhu. **Stratospheric chlorine processing after the unprecedented Hunga Tonga eruption.** *Geophysical Research Letters*, 51(17), 2024. [Paper Link](#)

2023

Glenn Liu, Peidong Wang, Young-Oh Kwon. **Physical Insights from the Multidecadal Prediction of North Atlantic Sea Surface Temperature Variability Using Explainable Neural Networks.** *Geophysical Research Letters*, 50(24), 2023. [Paper Link](#)

Peidong Wang, Susan Solomon, Megan Lickley, Jeffery Scott, Ray Weiss, Ronald Prinn. **On the influence of hydroxyl radical changes and ocean sinks on estimated HCFC and HFC emissions and banks.** *Geophysical Research Letters*, 50(18), 2023. [Paper Link](#)

Peidong Wang, Susan Solomon, Kane Stone. **Stratospheric chlorine processing after the 2020 Australian wild-fires derived from satellite data.** *Proceedings of the National Academy of Sciences*, 120(11), 2023. [Paper Link](#)

Susan Solomon, Kane Stone, Pengfei Yu, Daniel Murphy, Doug Kinnison, AR Ravishankara, Peidong Wang. **Chemical impacts of wildfire smoke on stratospheric chlorine and ozone depletion.** *Nature*, 615(7951), 2023. [Paper Link](#), [News](#)

2022

Peidong Wang, Janni Yuval, Paul A. O’Gorman. **Non-local parameterization of atmospheric subgrid processes with neural networks.** *Journal of Advances in Modeling Earth Systems*, 14(10), 2022. [Paper Link](#)

Peidong Wang, Tracey Holloway, Matilyn Bindl, Monica Harkey, Isabelle De Smedt. **Ambient Formaldehyde over the United States from Ground-Based (AQS) and Satellite (OMI) Observations.** *Remote Sensing*, 14(9), 2022. [Paper Link](#)

2021

Glenn Liu, Peidong Wang, Matthew Beveridge, Young-Oh Kwon, Iddo Drori. **Predicting Atlantic Multidecadal Variability.** *NeurIPS 2021 Workshop on Tackling Climate Change with Machine Learning*, 2021. [Awarded with Best Paper: Pathway to Impact]. [Paper Link](#)

Megan Lickley, Susan Solomon, Doug Kinnison, Paul Krumbel, Jens Mühle, Simon O’Doherty, Ronald Prinn, Matthew Rigby, Kane A Stone, Peidong Wang, Ray Weiss, Dickon Young. **Quantifying the Imprints of Stratospheric Contributions to Interhemispheric Differences in Tropospheric CFC-11, CFC-12, and N₂O Abundances.** *Geophysical Research Letters*, 48(15), 2021. [Paper Link](#)

Peidong Wang, Jeffery R. Scott, Susan Solomon, John Marshall, Andrew R. Babbin, Megan Lickley, David W. J. Thompson, Timothy DeVries, Qing Liang, Ronald G. Prinn. **On the Effects of the Ocean on Atmospheric CFC-11 Lifetimes And Emissions.** *Proceedings of the National Academy of Sciences*, 118(12), 2021. [Paper Link](#), [News](#)

Thesis

Peidong Wang. **Understanding Drivers of Stratospheric Ozone Change and Fingerprinting its Recovery.** *Massachusetts Institute of Technology*, 2025. [Thesis Link](#)

Honors & Awards

2025–2028 **Stanford Science Fellow**, Stanford University

2025 **Carl-Gustaf Rossby Award for the Best PhD Thesis**, PAOC, MIT

2024–2025 **Jule Charney Fellowship**, PAOC, MIT

2022 **Early Career Scientist Best Oral Presentation**, 7th SPARC General Assembly

2021–2022 **Norman C. Rasmussen Fellowship**, EAPS, MIT

2020–2021 **John H. Carlson Fellowship**, EAPS, MIT

2019 **Jule Charney Prize**, PAOC, MIT

2019–2020 **MIT Presidential Fellowship**, MIT

2019 **Herfurth-Kubly Awards for Comprehensive Undergraduate Excellence**, UW–Madison

2019 **University Book Store Excellence Award**, UW–Madison

2018 **Lyle Horn Scholarship Award**, AOS, UW–Madison

2018 **Summer Student Fellowship**, Woods Hole Oceanographic Institution
2017–2018 **Wisconsin Hilldale Undergraduate/Faculty Research Fellowship**, UW-Madison

Teaching

12.003 Introduction to Atmosphere, Ocean, and Climate Dynamics

Fall 2021

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Teaching Assistant

Department of Earth, Atmospheric and Planetary Sciences

CS200 Programming I

Fall 2017

UNIVERSITY OF WISCONSIN–MADISON

Teaching Assistant

Department of Computer Sciences

CS302 Introduction to Programming

Spring 2017

UNIVERSITY OF WISCONSIN–MADISON

Teaching Assistant

Department of Computer Sciences

Selected Presentations

Invited talks

Fingerprinting the Recovery of Antarctic Ozone. **Peking University**, Beijing (virtual), Mar 2025.

Contrasting stratospheric chlorine processes on volcanic and wildfire aerosols. **Jinan University**, Guangzhou, Jan 2024.

Conference presentations

Detecting the Forced Recovery of Antarctic Ozone Amid Internal Variability Using Coupled Chemistry-Climate Ensembles. Oral. **AGU Fall Meeting 2025**, New Orleans, Louisiana, Dec 2025.

Role of Antarctic Ozone Depletion in Explaining Model-Observation Discrepancies in Sea Surface Temperature Trends. Poster. **AGU Fall Meeting 2025**, New Orleans, Louisiana, Dec 2025.

Fingerprinting the Recovery of Antarctic Ozone. Oral. **Atmosphere Model, Chemistry Climate, Earth System Prediction, Climate Variability & Change, and Whole Atmosphere Working Group Meeting 2025**, Boulder, Colorado, Feb 2025.

Assessing HCFC-22 loss to the ocean from observations and high-resolution modeling. Poster. **Quadrennial Ozone Symposium**, Boulder, Colorado, Jul 2024.

Contrasting Stratospheric Chlorine Processes on Volcanic and Wildfire Aerosols in the Mid-latitudes. Oral. **EGU general assembly**, Vienna, Austria, Apr 2024.

On the influence of hydroxyl radical changes and ocean sinks on estimated HCFC and HFC emissions and banks. Oral. **68th Meeting of AGAGE Scientists and Cooperating Networks**, Boston, Massachusetts, Oct 2023.

Stratosphere chlorine processing after a major volcanic eruption or wildfire event. Poster. **VollImpact Summer School, Greifswald**, Germany, Sep 2023.

Chlorine processing after the 2020 Australian wildfire. Oral. **Stratosphere-troposphere Processes And their Role in Climate (SPARC) 7th General Assembly**, Boulder, Colorado, Oct 2022.

Predicting Atlantic Multidecadal Variability. Spotlight talk. **NeurIPS 2021 Workshop on Tackling Climate Change with Machine Learning**, virtual, Dec 2021.

On the effects of the ocean on atmospheric CFCs lifetimes and emissions. Poster. **Quadrennial Ozone Symposium**, virtual, Oct 2021.

Synthesis of Tree-Ring Records and Coupled Climate Model Simulations to Understand North Atlantic Hydroclimate Responses to Volcanic Eruptions in the Last Millennium. Poster. **American Geophysical Union Fall Meeting**, Washington D.C., Dec 2018.

The Role of Volcanic Forcing in the North Atlantic Hydroclimate Over the Last Millennium. Poster. **Understanding and Modeling the Earth's Climate: A Symposium in Honor of Isaac Held**, Princeton University, NJ, Oct 2018.

Formaldehyde Trend Analysis from OMI Satellite Observations and AQS Ground Measurements. Poster. **NASA Health and Air Quality Applied Sciences Team (HAQAST) 3rd. meeting, Columbia University**, NY, Nov 2017.

Academic Services

Committee Member PAOC Colloquium Committee (2021-2025)

Proposal Reviewer NASA ROSES panelist

Journal Reviewer *Advances in Climate Change Research* · *Communications Earth & Environment* · *Earth's Future* · *Environmental Science & Technology* · *Geophysical Research Letters* · *Geoscience Letters* · *Global and Planetary Change* · *Nature Communications* · *Remote Sensing of Environment* · *Science Advances*