

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

STANFORD UNIVERSITY

Host: Noah Diffenbaugh

Palo Alto, CA

Aug. 2025 - Aug. 2028

Postdoctoral Researcher

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Host: Susan Solomon

Cambridge, MA

Jun. 2025 - Aug. 2025

Graduate Research Assistant

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Advisor: Susan Solomon

Cambridge, MA

Sep. 2019 - May. 2025

Summer Student Fellow

WOODS HOLE OCEANOGRAPHIC INSTITUTION

Advisor: Caroline Ummenhofer

Woods Hole, MA

May. 2018 - Aug. 2018

Undergraduate Research Assistant

UNIVERSITY OF WISCONSIN-MADISON

Advisor: Tracey Holloway

Madison, WI

Sep. 2016 - May. 2019

Publications

Submitted / Under Review

Jian Guan, Benjamin D. Santer, Peidong Wang, Qiang Fu, Rolando R. Garcia, Yaowei Li, Kane Stone, Douglas Kinison, Jun Zhang, Gabriel Chiodo, Jean-Francois Lamarque, Susan Solomon. **Human Influence on the Ozone Layer Detectable by the 1960s**. *Proceedings of the National Academy of Sciences* (under review).

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 Krummel, 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 **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
Department of Earth, Atmospheric and Planetary Sciences

Teaching Assistant

CS200 Programming I

Fall 2017

UNIVERSITY OF WISCONSIN-MADISON
Department of Computer Sciences

Teaching Assistant

CS302 Introduction to Programming

Spring 2017

UNIVERSITY OF WISCONSIN-MADISON
Department of Computer Sciences

Teaching Assistant

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* · *Environmental Science & Technology* · *Geophysical Research Letters* · *Geoscience Letters* · *Global and Planetary Change* · *Nature Communications* · *Remote Sensing of Environment* · *Science Advances*