

Paridhi Rustogi

RESEARCHER · DEPARTMENT OF GEOSCIENCES · PRINCETON UNIVERSITY

✉ prustogi@princeton.edu | 🏠 paridhirustogi.github.io | 📄 ORCID | 🎓 Scholar

Education

Doctor of Philosophy and Masters in Arts in Earth Sciences

PRINCETON UNIVERSITY

2021–2026

United States

- Advisor: Prof. Laure Resplandy. Committee: Prof. Luc Deike, Prof. Curtis Deutsch, Prof. Daniel Sigman
- Thesis: Evaluating the impact of bubble-mediated air-sea gas exchange on carbon dioxide and oxygen in the ocean

Masters in Integrated Climate System Sciences

UNIVERSITY OF HAMBURG

2018–2021

Germany

- Advisor: Prof. Dr. Johanna Baehr, Dr. Peter Landschützer, Dr. Sebastian Brune
- Thesis: Seasonal analysis of atmosphere-ocean carbon flux variability in the North Atlantic and the Southern Ocean

Bachelor of Technology in Environmental Engineering

DELHI TECHNOLOGICAL UNIVERSITY

2013–2017

India

- Advisor: Prof. Anil Kumar Haritash
- Thesis: Comparative analysis of air quality in major cities of India

Publications

PEER-REVIEWED

1. **P Rustogi**, L Resplandy, S Bushinsky, and L Deike (2026). The influence of waves and bubbles on oxygen in the ocean interior. *Environmental Research Letters*.
2. **P Rustogi** and SK Singh (2017). Ecological benefits of reviving urban water bodies using rainwater harvesting. *Int. J. Adv. Res. Innov. 5* (2). doi:10.51976/ijari.521713
3. **P Rustogi**, P Landschützer, S Brune, and J Baehr (2023). The impact of seasonality on the annual air-sea carbon flux and its interannual variability. *npj Clim. Atmos. Sci.* 6(1). doi:10.1038/s41612-023-00378-3 [Blog][News]
4. **P Rustogi**, L Resplandy, E Liao, B G Reichl, and L Deike (2025). Influence of wave-induced variability on ocean carbon uptake. *AGU Global Biogeochemical Cycles* 39. doi:10.1029/2024GB008382 [Highlight Paper]
5. L Deike, X Zhou, **P Rustogi**, R Stanley, S Bushinsky, B G Reichl, and L Resplandy (2025). A universal wind-wave-bubble formulation for air-sea gas exchange and its impact on oxygen fluxes. *PNAS* 122 (38) e2419319122, doi:10.1073/pnas.2419319122. [News]
6. **P Rustogi**, L Resplandy, E Liao, B G Reichl, and L Deike (2025). Influence of wave-induced variability on ocean carbon uptake. *AGU Global Biogeochemical Cycles* 39. doi:10.1029/2024GB008382 [Highlight Paper]
3. **P Rustogi**, P Landschützer, S Brune, and J Baehr (2023). The impact of seasonality on the annual air-sea carbon flux and its interannual variability. *npj Clim. Atmos. Sci.* 6(1). doi:10.1038/s41612-023-00378-3 [Blog][News]
2. **P Rustogi** and SK Singh (2017). Ecological benefits of reviving urban water bodies using rainwater harvesting. *Int. J. Adv. Res. Innov. 5* (2). doi:10.51976/ijari.521713
1. **P Rustogi** and SK Singh (2017). Revival and rejuvenation strategy of water bodies in a metropolitan city: a case study of Najafgarh lake, Delhi, India. *Int. J. Adv. Res. 5* (2). doi:10.21474/IJAR01/3131

NON-AUTHOR CONTRIBUTIONS

Contributing analyst and model user/developer, acknowledged in the following Global Carbon Budget (GCB) reports:

- GCB 2025: Friedlingstein et al. (2025). *Earth Syst. Sci. Data*. doi:10.5194/essd-2025-659.
- GCB 2024: Friedlingstein et al. (2024). *Earth Syst. Sci. Data*. doi:10.5194/essd-17-965-2025.
- GCB 2024: Friedlingstein et al. (2023). *Earth Syst. Sci. Data*. doi:10.5194/essd-15-5301-2023.

Reviewer, Intergovernmental Panel on Climate Change Sixth Assessment Report (AR6) – Second draft:

- Working Group II – Chapter 3: Ocean and Coastal Ecosystems and their Services (2021)
- Working Group I – Chapter 2: Changing State of the Climate System (2020)

POLICY & APPLIED RESEARCH CONTRIBUTIONS

5. **P Rustogi**, A Pervaiz (2018). Integrated Water Resources Management Practices in Greater and Lesser Cholistan, Pakistan. GWP Knowledge Resources #497. [Link]
4. **P Rustogi**, K Wangdi, U Lhendup (2018). Siphon Irrigation for Farmer Communities in Lingmuty-Chu Basin in Bhutan. GWP Knowledge Resources #496. [Link]
3. **P Rustogi**, K Athukorala (2017). Disaster Risk Reduction through Climate Change Adaptation in Aranayake, Sri Lanka. GWP Knowledge Resources #495. [Link]
2. **P Rustogi**, P Amir (2017). IWRM Practices to Alleviate Poverty – A Model of Desert Development in Tharparkar, Pakistan. GWP Knowledge Resources #493. [Link]
1. **P Rustogi**, V Khanduri, A Gurnathan (2017). Augmenting Water Security and Food Security of Small Farmers in Andhra Pradesh, Karnataka and Tamil Nadu. GWP Knowledge Resources #491. [Link]

Teaching

Spring 2024 **GEO 202: Ocean, Atmosphere and Climate, Princeton University**
Teaching Assistant: Led precept sections, in-charge of grading and supporting coursework.

Skills & Professional Development

PROGRAMMING: Python (Advanced), Linux (Advanced), Fortran (Basic)

CLIMATE MODELLING: Modifying, running and/or analyzing ocean biogeochemical models (e.g., MOM6-COBALT) and Earth System Models (ESMs, e.g., MPI-GE)

CLIMATE DATA: World Ocean Database, SOCOM flux products, BGC Argo, GLODAP

LANGUAGES: Hindi and English (Native), German (Limited proficiency - B2 Level)

SERVICE AND OUTREACH

April 2025 **Princeton's Science Outreach 3rd Annual Spring Into Science Event**, Volunteer [Blog post]
2024-2025 **Princeton Geosciences Graduate Student Seminars**, Organizer
August 2019 **Initiative für Wissensaustausch, Empowerment und Kultur in Ukraine**, Volunteer

SUMMER SCHOOLS

Nov 2025 **GOOD-OARS International Summer School**, Universiti Sains Malaysia, Malaysia.
August 2020 **EaSyMS Earth System Modeling School**, Max Planck Institute for Meteorology (MPI-M), German Climate Computing Centre (DKRZ), Germany.
July 2020 **Climate-KIC Journey**, European Institute of Innovation & Technology (EIT), Estonia, Sweden, and Hungary.

INVITED TALKS

3. **Schmidt Futures Integration Across Models and Observations (InMOS) Fortnightly Meeting**. Influence of wind-wave-bubble variability on air-sea CO₂ exchange: Insights from a high-frequency observation-based product. January 2026.
2. **Schmidt Futures Integration Across Models and Observations (InMOS) Fortnightly Meeting**. Influence of wind-wave-bubble variability on air-sea gas exchange. March 2025.
1. **Stockholm Environmental Institute**. Women, Water, Climate: Tackling the Challenges Webinar. November 2020. [Link]

Professional Experience

Princeton University

DEPARTMENT OF GEOSCIENCES

- Postdoctoral researcher

USA

2026-

University of Hamburg (UHH)

INSTITUTE OF OCEANOGRAPHY

- Applied statistical analyses of air-sea CO₂ fluxes using MPI's ESM (MPI-ESM) Grand Ensemble (MPI-GE) output and assimilation (EnKF), benchmarking against an observation-based pCO₂ flux product (SOM-FFN). [Interview]

Germany

2019 - 2021

International Water Management Institute (IWMI)

RESOURCE RECOVERY AND REUSE GROUP

- Curated and systematized a global database of educational resources on waste resource, recovery, and reuse, supporting capacity-building initiatives in higher education.

Sri Lanka

2018

Global Water Partnership (GWP)

SOUTH ASIA REGIONAL Office

- Authored five case studies on climate adaptation and water security across South Asia, disseminated through GWP's international Water and Climate Development Program (WACDEP) initiative to inform regional policy and practice. [Blog post]

Sri Lanka

2017-2018

Indian Institute of Technology Delhi (IIT-D)

CENTRE OF EXCELLENCE IN CLIMATE MODELING

- Contributed to manuscript preparation of model-based projections of India's hydrological cycle with geoengineering.

India

2017

Awards

2024-2026 **Fellow for Climate & Environmental Sciences and Engineering**, High Meadows Environmental Institute

2021-2026 **Centennial Fellow in the Natural Sciences and Engineering**, Princeton University

2025 **Best Presentation by Student Vote & Best Group Report Award**, GOOD-OARS International Summer School
[News]

2020-2021 **International Student Merit Scholar**, The German Academic Exchange Service (DAAD)

2015-2017 **Cargill Global Scholar**, Cargill & Institute of International Education (IIE)

2017 **Winner of Telenor Youth Forum**, Telenor [Link]

2016 **Ministry of Environment Excellence Award Recipient**, Republic of Korea