Debatosh Banik Partha, Ph.D.

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Website | **LinkedIn** | **Google Scholar** | **GitHub**

Professional Experience

Postdoctoral Research Fellow *2025 - Present*

Department of Earth, Environmental & Planetary Sciences

Northwestern University, Evanston, IL, United States.

Graduate Research/Teaching Assistant *2020 – 2024*

Department of Civil & Environmental Engineering

Wayne State University, Detroit, MI, United States.

Undergraduate Researcher *2015 – 2019*

Department of Civil Engineering

Khulna University of Engineering & Technology, Bangladesh.

Education

Ph.D., Civil Engineering, Wayne State University 2024

Dissertation: *Air Quality and Human Health Effects of Global Air Pollution: Model Development & Applications*

Advisor: Dr. Yaoxian Huang

M.S., Civil Engineering, Wayne State University 2023

B.S., Civil Engineering, Khulna University of Engineering & Technology 2019

Research Interests

- Atmospheric chemical mechanisms
- High-resolution numerical and statistical modeling
- Health burden of air pollution
- Emission inventories, sources, and impacts
- Community science and environmental policy

Peer-reviewed Publications

[1] **Debatosh B. Partha**, Sumiya Yasmin, Hrithik Nath, *"Preterm Births Attributable to Criteria Air Pollutant Exposure in Bangladesh During 2015-2019"*, Environmental Pollution, 2025; https://doi.org/10.1016/j.envpol.2025.125742.

[2] **Debatosh B. Partha,** Ying Xiong, Noah Prime, Steven J. Smith, and Yaoxian Huang, "*Long-term Trends of Impacts of Global Solid Biofuel Emissions on Air Quality and Human Health*", AGU GeoHealth, 2025; https://doi.org/10.1029/2024GH001130.

[3] Wenfu Tang, Louisa K. Emmons, Christine Wiedinmyer, **Debatosh B. Partha,** Yaoxian Huang, Cenlin He, Junzhe Zhang, Ben Gaubert, Duseong Jo, Rebecca Buchholz, Simone Tilmes, Kelley Barsanti, Antonin Soulie, Claire Granier, "*Disproportionally large Impacts of wildland-urban interface fire emission on global air quality and human health*", Science Advances, 2025; https://doi.org/10.1029/2024GH001130.

[4] Ying Xiong, **Debatosh B. Partha,** Noah Prime, Steven J. Smith, Noribeth Mariscal, H. Salah, and Yaoxian Huang, "*Long-term Trends of Impacts of Global Gasoline and Diesel Emissions on Air Quality and Human Health for 2000- 2015*", Environmental Research Letter, 2022; http://dx.doi.org/10.1088/1748-9326/ac9422.

[5] **Debatosh B. Partha,** Andrea E. Cassidy-Bushrow, Yaoxian Huang, **"***Global preterm births attributable to BTEX (benzene, toluene, ethylbenzene, and xylene) exposure*", Science of the Total Environment, 2022; http://dx.doi.org/10.1016/j.scitotenv.2022.156390.

[6] Yaoxian Huang, **Debatosh B. Partha**, Kandice Harper, Chris Heyes, "*Impacts of global solid biofuel stove emissions on ambient air quality and human health*", AGU Geo-health 2021; http://dx.doi.org/10.1029/2020GH000362.

[7] Md. Rafizul Islam, **Debatosh B. Partha**, "*Assessment of Contamination Potential of Groundwater Adjacent to the Waste Disposal Site at Khulna: Contamination Indices, Multivariate Statistics and Geostatistical Approach*", Journal of Engineering Science, 2021, http://dx.doi.org/10.3329/jes.v12i1.53096.

Manuscripts in preparation/review

[1] **Debatosh B. Partha,** Haipeng Lin, Becky Alexander, Like Wang, and Yaoxian Huang, "*Impacts of Global Snowpack- induced NO_x Emissions on Atmospheric Chemistry and Air Quality*" (In preparation, 2025).

[2] **Debatosh B. Partha,** Ying Xiong, Noah Prime, Steven J. Smith, and Yaoxian Huang, "*Global Impacts of Coal Emissions on Air Quality and Human Health for 2000-2019*" (In preparation, 2025).

[3] Halima Salah, Ying Xiong, **Debatosh B. Partha**, Noribeth Mariscal, Like Wang, Simone Tilmes, Wenfu Tang and Yaoxian Huang, "*Impact of anthropogenic emission estimates on air quality and human health effects*" (In revision, AGU GeoHealth, 2025).

[4] Ying Xiong, Ke Du, Yong Cheng, Xiaofeng Huang, Jiajue Chai, Noribeth Mariscal, Like Wang, **Debatosh Partha**, Halima Salah, Yaoxian Huang, *"Leveraging Machine Learning Methods to Unlock the Ozone Production Puzzle in Metro Detroit"* (In preparation, 2025).

Research Talks & Conference Presentations

[1] "*Impacts of Global Snowpack-Induced NOx Emissions on Atmospheric Chemistry and Air Quality*", Research Talk, Computation and Data Exchange (CoDEx) Symposium, Northwestern University, 2025.

[2] *"Solid Biofuel Burning Poses Serious Threats to Ambient Air Quality and Human Health: Long-Term Impacts on Global & Regional Scales"*, Research Talk (Seminar), Department of Earth, Environmental & Planetary Science, Northwestern University, 2025.

[3] **Debatosh B. Partha,** Haipeng Lin, Becky Alexander, Like Wang, and Yaoxian Huang. *"Impacts of Global Snowpack- induced NO_x Emissions on Atmospheric Chemistry and Air Quality",* Poster, American Geophysical Union (AGU) Fall Meeting 2023, San Francisco, CA, United States.

[4] **Debatosh B. Partha,** Ying Xiong, Noah Prime, Steven J. Smith, Yaoxian Huang. "*Long-term Trends of Impacts of Global Solid Biofuel Emissions on Air Quality and Human Health during 2000-2019*", Poster, American Geophysical Union (AGU) Fall Meeting 2022, Chicago, IL, United States.

[5] **Debatosh B. Partha,** Yaoxian Huang, Andrea E. Cassidy-Bushrow. "*Global Preterm Births Attributable to BTEX Exposure*". American Geophysical Union (AGU) Fall Meeting 2021, Poster, New Orleans, Louisiana, United States.

Awards & Achievements

[1] 2024 Summer Dissertation Award ($5000) – Wayne State University.

[2] Outstanding Reviewers Awards 2023 – Institute of Physics (*link*).

[3] Graduate Student Professional Travel Award ($4000) – Fall 2023 & Fall 2022, Wayne State University.

[4] Thomas C. Rumble University Graduate Fellowship ($20,000) – Fall 2022 – Winter 2023, Wayne State University.

[5] IOP Trusted Reviewer – Institute of Physics (*link*).

Affiliations

- Member, American Geophysical Union (AGU)
- Member, American Society of Civil Engineers (ASCE)
- Peer-reviewer – Nature Sustainability, Environmental Research Letters, IJERPH, Environmental Research: Health, Environmental Research Communications.

Software And Technical Skills

- <u>Air Quality Models:</u> WRF, WRF-CMAQ, GEOS-Chem, CAM-Chem, AERMOD.
- <u>Programming & Software:</u> Python, Fortran, Interactive Data Language (IDL), ESRI Arc-GIS, HEC-RAS, SPSS.
- <u>Supercomputing Environment:</u> High-performance computing (HPC), Linux, Jupyterhub, Cloud Computing.
- <u>Instruments:</u> Ecotech O_3 Analyzer, Purple Air sensor, Engine Exhaust Particle Sizer (EEPS).
- <u>Advanced & Soft Skills:</u> Atmospheric process parameterization and implementation in high-resolution atmospheric models, processing & preparing emission inventories as inputs for atmospheric modeling, integrated

exposure-response (IER) functioning, exposure assessment & assignment, linear regression analysis, interactive spatial visualization, Linux shell-scripting, atmospheric model evaluation, air quality device calibration & maintenance, expert in project management, leadership, multi-tasking, public interactions, collaboration, and communication skills.

Teaching Experience

- Advanced Air Pollution Engineering – Fall 2021

- Open Channel hydraulics (lab) – Fall 2023.

- Civil Engineering Materials (lab) – Winter/Spring 2024.

- Introduction to Environmental Engineering – Fall 2024.

Leadership Activities, Community & Voluntary Services

- Primary Convener – AGU Fall Meeting 2025, GeoHealth section.
  Session (GH025): *Modern approaches to monitor, model and reduce environmental exposure: Applications for Global Community Preparedness, Policy, and Public Health Improvement*.

- Early Career Convener – AGU Fall Meeting 2025, GeoHealth section.
  Session (GH03): *Advances in Interactions of Air Quality and Public Health Using Integrated Modeling Frameworks*.

- Top 1% IOP outstanding peer-reviewer for performing the highest quality of peer-review activity.

- Data retrieval, calibration, and maintenance lead of EcoTech O_3 analyzer during the Michigan-Ontario Ozone Source Experiment (MOOSE) field campaign in Summer 2021 and Summer 2022.

- Invited speaker at the Wayne State College of Engineering C2 Pipeline Summer Camping (2023).

- Established international research groups and collaborations and mentoring several early-career researchers.

- Served as the Secretary General of the Department of Civil Engineering, KUET (2016-2017).

- Event Coordinator, Bangladeshi Students and Scholars Association, Northwestern University (2025-2026).

References

[1] Daniel Horton, Ph.D., Associate Professor, Northwestern University.
Email: daniel.horton@northwestern.edu.

[2] Yaoxian Huang, Ph.D., Assistant Professor, Wayne State University.
Email: yaoxian.huang@wayne.edu.

[3] Wenfu Tang, Ph.D., Project Scientist I, National Center for Atmospheric Research (NCAR).
Email: wenfut@ucar.edu.

[4] Jiajue Chai, Ph.D., Assistant Professor, SUNY College of Environmental Science & Forestry.
Email: jichai@esf.edu.