Debatosh Banik Partha, Ph.D.

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CAREER SUMMARY

Dynamic atmospheric scientist with 5 years of experience in atmospheric chemistry, air pollution & public health. Expertise in atmospheric interactions and climate dynamics, chemistry-climate and chemistry-transport modeling & development, emission inventory analysis, exposure-response modeling, epidemiological study, biostatistical analysis & Linux-based high-performance computing. Proficient in high-level Python, Fortran, and IDL programming, automated health burden quantification, atmospheric data analysis as well as for ground-level & satellite data retrieval, processing, and visualization.

EDUCATION

Ph.D. in Civil Engineering (2024) – Department of Civil & Environmental Engineering, Wayne State University, Detroit, Michigan, USA.
Dissertation: Air Quality and Human Health Effects of Global Air Pollution: Model Development & Applications.

M.S. in Civil Engineering (2023) – Department of Civil & Environmental Engineering, Wayne State University, Detroit, Michigan, USA.

B.S. in Civil Engineering (2019) – Department of Civil Engineering, Khulna University of Engineering & Technology, Khulna, Bangladesh.

PROFESSIONAL EXPERIENCE

Postdoctoral Fellow   *2025 - Present*
Department of Earth, Environmental & Planetary Sciences, Northwestern University.

Graduate Research/Teaching Assistant   *2019 – 2024*
Department of Civil & Environmental Engineering, Wayne State University.

PUBLICATIONS

[1] **Debatosh B. Partha**, Sumiya Yasmin, Hrithik Nath, Md. Arif Hossen, *"Preterm Births Attributable to Criteria Air Pollutant Exposure in Bangladesh During 2015-2019"* (In revision, Environmental Pollution, 2025).

[2] **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).

[3] **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*" (In revision, AGU GeoHealth, 2025).

[4] **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).

[5] H. Salah, Ying Xiong, **Debatosh B. Partha**, Noribeth Mariscal, Like Wang, Simone Tilmes, Wenfu Tang and Yaoxian Huang,, "*Comparing global emissions of CEDS, CAMS, and ECLIPSEv6b and their effects on air quality and human health using CESM CAM6-Chem*" (In revision, AGU GeoHealth, 2025).

[6] 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"* (In revision, Science Advances, 2025).

[7] 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).

[8] **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.

[9] **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.

[10] 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.

CONFERENCE AND ORAL PRESENTATIONS

[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".* American Geophysical Union (AGU) Fall Meeting 2023, San Francisco, CA, United States (*link*).

[2] **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*". American Geophysical Union (AGU) Fall Meeting 2022, Chicago, IL, United States (*link*).

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

SOFTWARE AND TECHNICAL SKILLS

- Air Quality Models: GEOS-Chem, CAM-Chem, WRF-Chem, CMAQ, AERMOD.
- Programming & Software: Python, Fortran, Interactive Data Language (IDL), ESRI Arc-GIS, HEC-RAS, SPSS.
- Supercomputing Environment: High-performance computing (HPC), Linux, Jupyterhub, Cloud Computing.
- Instruments: Ecotech O_3 Analyzer, Purple Air sensor, Engine Exhaust Particle Sizer (EEPS).
- Advanced & Soft Skills: 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 mapping (GAMAP, TVMAP, TVPLOT), Linux shell-scripting, model evaluation, in-situ air quality device calibration & maintenance, effective project management, leadership, multi-tasking, public interactions, collaboration, and communication skills.
- Related Courses taken: Advanced Air Pollution Engineering; Big Data Applications in Environmental Engineering.

AWARDS, ACHIEVEMENTS & LICENSE/CERTIFICATION

[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] Introduction to Title V Permitting (issued: 11/2023)

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

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

INTERPERSONAL SKILLS & VOLUNTARY/LEADERSHIP ACTIVITIES

- Active peer-reviewer for over 5 renowned journals including *Environmental Research Letters*, *IJERPH*, *Environmental Research: Health*.

- Provided technical assistance on the EcoTech O_3 analyzer and performed data retrieval, calibration, and maintenance during the Michigan-Ontario Ozone Source Experiment (MOOSE) field campaign in Summer 2021 and Summer 2022.

- Invited speaker on tropospheric and stratospheric O_3 at the Wayne State College of Engineering C2 Pipeline Summer Camping (2023).

- Guided research lab tours and site visits for high school students during the College of Engineering C2 Pipeline Summer Camping (2023).

- Mentored early-career researchers in technical paper writing, research design, and pursuing higher education abroad.

- Served as Secretary General of the Department of Civil Engineering, KUET (2016-2017), organizing sports and cultural events for over 200 students and 30 faculty members.

REFERENCES

[1] Yaoxian Huang, Ph.D., Assistant Professor, Wayne State University.

   Email: yaoxian.huang@wayne.edu.

[2] Wenfu Tang, Ph.D., Project Scientist I, National Center for Atmospheric Research (NCAR).

   Email: wenfut@ucar.edu.

[3] Jiajue Chai, Ph.D., Assistant Professor, SUNY College of Environmental Science & Forestry.

   Email: jichai@esf.edu.