

Yaoxian Huang

Department of Civil and Environmental Engineering
Wayne State University, 5050 Anthony Wayne Dr
Detroit, MI 48202, USA

Phone: +01-313-577-7829
Email: yaoxian.huang@wayne.edu
Web: www.huanglabwayne.com

EDUCATION

PhD Michigan Technological University, Environmental Engineering, 2014/12

BS/MS East China University of Science and Technology, Environmental Engineering, 2006/2009

PROFESSIONAL EXPERIENCE

Assistant Professor 2019/08-present

Wayne State University, Department of Civil and Environmental Engineering

Postdoctoral Research Fellow, University of Michigan 2017/09-2019/08

Postdoctoral Research Associate, Yale University 2016/03-2017/08

Postdoctoral Research Fellow, NOAA/Colorado State University 2015/01-2016/01

Graduate Research Assistant, Michigan Technological University 2010/08-2014/12

FUNDED RESEARCH GRANTS (>\$1.38M; PI Huang's portion: >\$600K)

1. Improving chemical mechanisms of reactive nitrogen from snowpack and transportation in a global chemical transport model; 08/15/2021-07/31/2024; **National Science Foundation**; PI: **Yaoxian Huang (sole PI)**; \$332,689.
2. Tracking urban nitrous acid (HONO) emissions and secondary production in the Great Lakes region during Michigan-Ontario Ozone Source Experiment (MOOSE); 06/01/2021-05/31/2024; **National Science Foundation**; co-PI: **Yaoxian Huang** (PI: J. Chai); \$754,830.
3. Data platform expansion and transition: Huron to Erie corridor and watershed; 06/01/2021-05/16/2022; **Great Lakes Observing System**; co-PI: **Yaoxian Huang** (PI: C. Miller); \$83,946.
4. Timeseries of column density of nitrogen dioxide and methane over Detroit using OMI and TROPOMI satellite observations; 5/01/2020-4/30/2021; **Michigan Space Grant Consortium**; PI: **Yaoxian Huang (sole PI)**; \$10,000.
5. Using satellite observations and an Earth system model to quantify the impacts of air pollution and meteorological conditions on ozone air quality in metropolitan Detroit, Michigan; 5/01/2021-4/30/2022; **Michigan Space Grant Consortium**; PI: **Yaoxian Huang**; \$5,000.
6. Investigating air quality and health effects of regional and global air pollution; 08/01/2021-07/31/2023; **Wayne State University Office of Vice President for Research**; PI: **Yaoxian Huang (sole PI)**; \$60,000.

7. Improving our understanding of the impacts of air pollution on air quality over metropolitan Detroit through measurements and modeling; 10/01/2021-04/30/2022; **Wayne State University Richard Barber Interdisciplinary Research Program**; PI: **Yaoxian Huang**; \$15,000.
8. Effects of urban air pollution on neurodevelopmental markers of anxiety risk during adolescence; 10/01/2021-03/31/2023; **Wayne State University CURES (Center for Urban Responses to Environmental Stressors) Pilot Project Program**; co-I: **Yaoxian Huang** (PI: H. Marusak); \$65,000.
9. PM_{2.5} forecasting utilizing graph convolutional and LSTM neural networks; 05/01/2021-07/30/2021; **Wayne State University Richard Barber Interdisciplinary Research Program**; PI: **Yaoxian Huang**; \$29,000.
10. Exploring the physical and chemical processes of black carbon aerosols using a 3-D numerical model and aircraft campaign observations; 05/01/2020-04/30/2021; **Wayne State University Research Grant**; PI: **Yaoxian Huang (sole PI)**; \$10,000.
11. A collaborative research to investigate air pollution in Detroit using big data approach; 10/1/2019-9/30/2020; **Wayne State University Provost's Office**; PI: **Yaoxian Huang**; \$14,656.

STUDENT GRANTS/FELLOWSHIPS (>\$178K)

1. Noribeth Mariscal, **National Center for Atmospheric Research (NCAR) Advanced Study Program Fellowship**, 05/16/2022-08/31/2022, \$10,000.
2. Noribeth Mariscal, **National Science Foundation Research Traineeship (NRT) T-RUST Graduate Fellowship**, 05/16/2022-08/17/2022, \$8,500.
3. Halima Salah, **National Center for Atmospheric Research (NCAR) Ralph Cicerone Fellowship**, 05/01/2022-08/31/2023, \$14,000.
4. Halima Salah, **National Science Foundation Research Traineeship (NRT) T-RUST Graduate Fellowship**, 08/18/2021-08/17/2022, \$55,000.
5. Noribeth Mariscal, **National Science Foundation Research Traineeship (NRT) T-RUST Graduate Fellowship**, 08/17/2020-08/17/2021, \$55,000.
6. Noribeth Mariscal, **Michigan Space Grant Consortium Fellowship**, 09/01/2021-04/30/2022, \$5,000.
7. Marisa O'Dea, **Wayne State University Richard Barber Interdisciplinary Research Program**, 10/01/2021-04/30/2022, \$2,500.
8. Noribeth Mariscal, **Wayne State University Office of Vice President for Research Award for Graduate Students Who Obtain External Support**, 10/2021, \$2,000.
9. Marisa O'Dea, **Wayne State University Provost's Office Undergraduate Research Opportunities Program**, 01/2021-04/2021, \$2,300.
10. Marisa O'Dea, **Wayne State University College of Engineering Research Opportunities for Engineering Undergraduates (ROEU)**, 01/2021-04/2021, \$1,000.

PEER-REVIEWED PUBLICATIONS (Huang group members are denoted as bold)

1. **Xiong, Y., D. B. Partha**, N. Prime, S. Smith, **N. Mariscal, H. Salah**, and **Y. Huang**, Long-term trends of impacts of global gasoline and diesel emissions on ambient PM_{2.5} and O₃ pollution and the related health burden for 2000-2015, *Environ. Res. Lett.*, 17(10), 104042, doi:10.1088/1748-9326/ac9422, 2022.
2. **Xiong, Y., Y. Huang**, and K. Du, Health risk-oriented source apportionment of hazardous volatile organic compounds in eight Canadian cities and implications for prioritizing mitigation strategies, *Environ. Sci. Technol.*, 56(17), doi:10.1021/acs.est.2c02558, 2022.
3. **Partha, D. B.**, A. E. Cassidy-Bushrow, and **Y. Huang**, Global preterm births attributable to BTEX (benzene, toluene, ethylbenzene and xylene) exposure, *Sci. Total Environ.*, 838, doi:10.1016/j.scitotenv.2022.156390, 2022.
4. Zundel, C. G., P. Ryan, C. Brokamp, A. Heeter, **Y. Huang**, J. R. Strawn, and H. A. Marusak, Air pollution, depressive and anxiety disorders, and brain effects: a systematic review, *NeuroToxicology*, 93, 272-300, doi:10.1016/j.neuro.2022.10.011, 2022.
5. Zundel, C. G., D. Daher, C. Brokamp, P. Ryan, **Y. Huang**, J. R. Strawn, and H. A. Marusak, P395. Environmental risk of psychiatric disease: a systematic review on air pollution, mental health, and frontolimbic brain regions, *Biol. Psychiatry*, 91(9), S247, doi:10.1016/j.biopsych.2022.02.631, 2022.
6. O'Leary, B. F., A. B. Hill, K. G. Akers, H. J. Esparra-Escalera, A. Lucas, G. Raoufi, **Y. Huang**, **N. Mariscal**, S. K. Mohanty, C. M. Tummala, and T. M. Dittrich, Air quality monitoring and measurement in an urban airshed: contextualizing datasets from the Detroit Michigan area from 1952-2020, *Sci. Total Environ.*, 809, doi:10.1016/j.scitotenv.2021.152120, 2022.
7. Kamali Mohammadzadeh, A., **H. Salah**, A. Hussain, S. Masoud, and **Y. Huang**, Spatiotemporal forecasting of PM_{2.5} AQI using GCN and LSTM networks, under review, 2022.
8. Zhu, M., S. Berri, **Y. Huang**, and S. Masoud, Enhancing computer science and engineering students' self-directed learning and satisfaction with online learning, under review, 2022.
9. **Huang, Y., D. B. Partha**, K. Harper, and C. Heyes, Impacts of global solid biofuel stove emissions on ambient air quality and human health, *GeoHealth*, 5(3), doi:10.1029/2020GH000362, 2021.
10. Barbero, A., J. Savarino, R. Grilli, C. Blouzon, M. Frey, **Y. Huang**, and N. Caillon, New estimation of the NO_x snow-source on the Antarctic Plateau, *J. Geophys. Res. Atmos.*, 126, doi:10.1029/2021JD035062, 2021.
11. Masoud, S., **N. Mariscal, Y. Huang**, and M. Zhu, A sensor-based data driven framework to investigate PM_{2.5} in the Greater Detroit Area, *IEEE Sensors Journal*, 21(14), doi:10.1109/JSEN.2021.3076041, 2021.
12. **Huang, Y.**, N. Unger, K. Harper, and C. Heyes, Global climate and human health effects of the gasoline and diesel vehicle fleets, *GeoHealth*, 4(3), doi:10.1029/2019GH000240, 2020.

13. **Huang, Y.**, E. A. Kort, S. Gourdji, A. Karion, K. Mueller, and J. Ware, Seasonally resolved urban methane emissions from the Baltimore/Washington, DC metropolitan region, *Environ. Sci. Technol.*, 53, 11285-11293, doi:10.1021/acs.est.9b02782, 2019.
14. **Huang, Y.**, N. Unger, T. Storelvmo, K. Harper, Y. Zheng, and C. Heyes, Global radiative effects of solid fuel cookstove aerosol emissions, *Atmos. Chem. Phys.*, 18, 5219-5233, doi:10.5194/acp-18-5219-2018, 2018.
15. **Huang, Y.**, J. E. Hickman, and S. Wu, Impacts of enhanced fertilizer applications on tropospheric ozone and crop damage over sub-Saharan Africa, *Atmos. Environ.*, 180, 117-125, doi:10.1016/j.atmosenv.2018.02.040, 2018.
16. Kumar, A., S. Wu, **Y. Huang**, H. Liao, and J. O. Kaplan, Mercury from wildfires: global emission inventories and sensitivity to 2000-2050 global change, *Atmos. Environ.*, 173, 6-15, doi:10.1016/j.atmosenv.2017.10.061, 2018.
17. **Huang, Y.**, S. Wu, L. J. Kramer, D. Helmig, and R. E. Honrath, Surface ozone and its precursors at Summit, Greenland: comparison between observations and model simulations, *Atmos. Chem. Phys.*, 17, 14661-14674, doi:10.5194/acp-17-14661-2017, 2017.
18. Hickman, J. E., **Y. Huang**, S. Wu, W. Diru, P. M. Groffman, K. L. Tully, and C. A. Palm, Nonlinear response of nitric oxide fluxes to fertilizer inputs and the impacts of agricultural intensification on tropospheric ozone pollution in Kenya, *Glob. Change Biol.*, 23, 3193-3204, doi:10.1111/gcb.13644, 2017.
19. **Huang, Y.**, S. Wu, and J. O. Kaplan, Sensitivity of global wildfire occurrences to various factors in the context of global change, *Atmos. Environ.*, 121, 86-92, doi:10.1016/j.atmosenv.2015.06.002, 2015.
20. Zhang, H., S. Wu, **Y. Huang**, and Y. Wang, Effects of stratospheric ozone recovery on photochemistry and ozone air quality in the troposphere, *Atmos. Chem. Phys.*, 14, 4079-4086, doi:10.5194/acp-14-4079-2014, 2014.
21. **Huang, Y.**, S. Wu, M. K. Dubey, and N. H. F. French, Impact of aging mechanism on model simulated carbonaceous aerosols, *Atmos. Chem. Phys.*, 13, 6329-6343, doi:10.5194/acp-13-6329-2013, 2013.

TEACHING EXPERIENCE

Wayne State University

- CE 5240 Air Pollution Engineering
- CE 6160 Principles of Atmospheric Chemistry and Applications
- CE 7160 Advanced Principles of Atmospheric Chemistry and Applications
- CE 7240 Advanced Air Pollution Engineering
- CE 7270 Big Data Applications in Environmental Engineering

MENTORING

- **Postdoctoral Fellows:** Dr. Ying Xiong (2021/09-present)
- **PhD graduate students:** Debatosh Partha (2020/01-present); Noribeth Mariscal (2021/01-present); Halima Salah (2021/09-present); Like Wang (2021/09-present).
- **MS students:** Komal Masih (2020-2022); Robert Devuyst (2021-present); Halima Salah (2019-2021); Marisa O’Dea (2022/09-present)
- **Undergraduate students:** Marisa O’Dea; Erin Browne; Ben Feld.
- **High school student:** Sonnet Xu.

UNIVERSITY, COLLEGE AND DEPARTMENTAL SERVICES

- College of Engineering Faculty Executive Assembly Committee, 2020-present
- University Sustainability Strategy Committee, 2021
- CEE Budget Committee, Faculty Search Committee, 2021

PROFESSIONAL SERVICE

- American Geophysical Union Fall Meeting **Convening Session Chair:** Advances in interactions of air quality and public health using integrated modeling frameworks (12/2020-12/2022).
- *Journal article reviewer:* ACS Earth and Space Chemistry; GeoHealth; Environmental Research Letters; Nature Scientific Reports; Atmospheric Chemistry and Physics; Journal of Geophysical Research-Atmospheres; Atmospheric Environment; Science of the Total Environment; Climatic Change; One Earth; Aerosol and Air Quality Research.
- *Proposal reviewer:* DoE ASR Panelist; NASA ROSES Panelist; NSF Atmospheric Chemistry program; UK NERC; Yale YIBS small grant program.

HONORS AND AWARDS

- Wayne State University Research Award, 2020
- Wayne State University Consultation Funder Program, 2021
- Wayne State University Faculty Competition for Postdoctoral Fellows Award, 2021