

VICTORIA LANG

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RESEARCH INTEREST

Air pollution meteorology, chemical transport modeling, emission inventory development, anthropogenic emissions, atmospheric chemistry, machine learning, climate and air pollution mitigation solutions

EDUCATION

Ph.D.	Earth, Environmental, and Planetary Science, Northwestern University	June 2026
MS	Atmospheric Science, University of Wisconsin-Milwaukee	May 2022
BS	Meteorology, Northern Illinois University	May 2020
BS	Business Administration, Illinois State University	May 2009

REFEREED PUBLICATIONS

[8] K. Shlipak, S.F. Camilleri, **V.A. Lang**, A. Montgomery, J.L. Schnell & D.E. Horton (2026). Despite limited usage residential wood combustion PM_{2.5} has profound impact on U.S. health, *Science Advances*. <https://doi.org/10.1126/sciadv.adz0189>

[7] **Lang, V.A.**, Camilleri, S.F., Montgomery, A., Schnell, J.L., Adelman Z., Janssen, M., Grubert, E.A., Anenberg, S.C., & Horton, D.E. (2025). Watts-to-Wheel Comparison of Light- v. Heavy-Duty Vehicle Electrification in the U.S. Midwest on air quality, public health, and equity, *Environmental Research: Health*. <https://doi.org/10.1088/2752-5309/ae16c8>

[6] **Lang, V.A.**, Camilleri, S., van der Lee, S., Rowangould, G., Atonczak, B., Thompson, T., Harris, M., Harkins, C., Tong, D., Janssen, M., Adelman, Z., Horton, D (2025). Intercomparison of modeled urban-scale vehicle NO_x and PM_{2.5} emissions – implications for equity assessments. *Environmental Science and Technology*. <https://doi.org/10.1021/acs.est.4c09777>

[5] **Lang, V.A.**, Camilleri, S., Deylami, N., Harris, M., Koehler, L., Urbaszewski, B., Horton, D. (2025). Assessing the air quality, public health, and equity implications of the Advanced Clean Trucks policy for Illinois, *Special Issue of Frontiers of Earth Science Commemorating the Contributions of Prof. Donald James Wuebbles*. <https://doi.org/10.1007/s11707-024-1144-8>

[4] Kahl, J. D, Zaprzalka, K. J., Brezovar, D. S., **Lang, V.A.**, Selbig, B.R., Harris, A.R. (2024). Investigating the potential of using mixdown altitudes to forecast peak wind gusts, *Weather and Forecasting*. <https://doi.org/10.1175/WAF-D-23-0092.1>

[3] **Lang, V. A.**, & Kahl, J. D. (2023). Minimal PM_{2.5} Impact Observed in Communities Near Large, Recurring, Non-Independence Day Festivals with Fireworks Displays. *Air*, 1(1), 1-13. DOI: <https://doi.org/10.3390/air1010001>

[2] **Lang, V. A.**, Turner, T. J., Selbig, B. R., Harris, A. R., & Kahl, J. D. W. (2022). Predicting Peak Wind Gusts during Specific Weather Types with the Meteorologically Stratified Gust Factor Model, *Weather and Forecasting*, 37(8), 1435-1446. DOI: <https://doi.org/10.1175/WAF-D-21-0201.1>

[1] Fritzen, R., **Lang, V.**, & Gensini, V. A. (2021). Trends and Variability of North American Cool-Season Extratropical Cyclones: 1979–2019, *Journal of Applied Meteorology and Climatology*, 60(9), 1319-1331. DOI: <https://doi.org/10.1175/JAMC-D-20-0276.1>

MANUSCRIPTS IN PREPARATION

[2] K. Shlipak, **Lang, V. A.**, Santiago, M., Tessum, C., Horton, D.E., (*In-prep*) Propagation of simulated on-road vehicle emissions uncertainty on downstream air quality, health, and equity assessments. *Environmental Research Letters*.

[1] **Lang, V. A.**, Partha, D., Goldberg, D., Nawaz, O., Anenberg, S., Kerr, G., Janssen, M., Adelman, Z., Horton, D.E., (*In-prep*). Improving representation of medium and heavy-duty vehicle emissions in regulatory-grade models at equity-relevant spatial scales. *Environmental Science and Technology*.

FELLOWSHIPS AND FUNDING

Presidential Fellowship, Northwestern University - Awarded 2025

\$110,000 stipend and tuition support for two years

Data Science Fellowship, Northwestern University - Awarded 2022

\$10,000 stipend award

AWARDS AND HONORS

Horace A. Scott Graduate Award for Outstanding Research, Northwestern University 2026

First Place Societal Applications Symposium Student Oral Presentation, 2026

American Meteorological Society Annual Meeting

Marion Sloss Award for Outstanding Graduate Teaching Assistant, Northwestern University 2024

First Place Student New Researcher Poster Competition, 2023

International Society of Exposure Sciences Annual Meeting

Chancellor's Graduate Award, University of Wisconsin-Milwaukee 2020 & 2021

College of Liberal Arts and Sciences Dean's Award, Northern Illinois University 2020

RESEARCH EXPERIENCE AND APPOINTMENTS

Postdoctoral Scholar, Northwestern University, Evanston, IL June 2026-Present

Graduate Research Assistant, Northwestern University, Evanston, IL 2022–2026

Advisor: Dr. Daniel E. Horton

Advance Study Program Colloquium, National Center for Atmospheric Research July 2024

Integrating atmospheric and social approaches to improve urban air quality (AEROPOLIS)

Student Intern, U.S. Naval Research Laboratory, Monterey, CA June–August 2022

Advisor: Dr. Jeffery Reid

Graduate Research Assistant, University of Wisconsin-Milwaukee, Milwaukee, WI 2020–2022

Advisor: Dr. Jonathon Kahl

Summer Research Intern, Lake Michigan Air Directors Consortium, Rosemont, IL June–August 2021

Advisor: Dr. Angela Dickens

Meteorologist, Innovative Weather, Milwaukee, WI 2021

Student Volunteer, National Weather Service, Romeoville, IL 2020

Student Research Intern, *University of North Dakota*, Grand Forks, ND
 Advisor: Dr. David Dalene & Alena Kubatova
Visiting Research Scientist, *National Center for Atmospheric Research*
 In-Cloud Icing and Large-Drop Experiment (ICICLE) Field Observations

June–August 2019

January–March 2019

TEACHING EXPERIENCE

Electrify Everything , Northwestern University <i>Guest Lecture</i>	January 2025 & 2026
Environmental Systems and Processes , Northwestern University <i>Guest Lecture</i>	October 2025
Earth Systems Modeling , Northwestern University <i>Grader</i>	Spring 2025
Earth Systems History , Northwestern University <i>Graduate Teaching Assistant</i>	Fall 2024
Ocean, the Atmosphere and Climate , Northwestern University <i>Graduate Teaching Assistant</i>	Fall 2023
Survey of Meteorology , University of Wisconsin-Milwaukee <i>Graduate Teaching Assistant</i>	Fall 2020–May 2022

LEADERSHIP AND PROFESSIONAL SERVICE

Illinois Vehicle Pollution Action Team , Union of Concerned Scientists <i>Member</i>	Feb 2026–Present
Board of Societal Impacts , American Meteorological Society <i>22nd Societal Symposium Planning Committee</i> <i>Engagement Committee</i> <i>Outreach Committee</i>	2025–Present
Pen-Pal , Letters to a Pre-Scientist	2021–Present
Presidential Fellowship Interview Committee , Northwestern University <i>Interview Committee Member</i>	May 2026
Graduate Undergraduate Peer Mentoring Program , University of Wisconsin-Milwaukee <i>Graduate Mentor</i>	2021–2022
The Climate Consensus , University of Wisconsin-Milwaukee <i>Board member</i>	2021–2023
American Meteorological Society Student Chapter , Northern Illinois University <i>President</i>	2019–2020
University Committee , Northern Illinois University <i>College of Liberal Arts Student Representative</i>	2019–2020
College of Liberal Arts Student Advisory Committee , Northern Illinois University <i>Atmospheric Sciences Student Representative</i>	2019–2020

Peer Reviewer

<i>IOP Publishing Trusted Reviewer</i>	(2026)
<i>Environmental Research Communications</i>	(2)
<i>Environmental Research Health</i>	(1)
<i>Environmental Science and Technology</i>	(3)
<i>Journal of Geophysical Research: Atmospheres</i>	(1)

Conference Session Chairing

Interdisciplinary Research Methods and Perspectives I, American Meteorological Society January 2026
Modern approaches to monitor, model and reduce environmental exposure:
Applications for Global Community Preparedness, Policy, and Public Health Improvement,
American Geophysical Union December 2025

FIRST AUTHOR CONFERENCE PRESENTATIONS

- [11] **Lang, V. A.**, Camilleri, S. F., Deylami, N., Harris, M., Koehler, L., Urbaszewski, B., & Horton, D. E. (2026, July 8th). *Community-engaged Science for Cleaner Air in the Freight-Impacted Neighborhoods of Chicago, IL*. Center for Community Health's 3rd Annual Community Engaged Research Conference. Chicago, IL, United States [**Poster presentation**]
- [10] **Lang, V.A.**, Horton, D.E. (2026, April 26-28). *Improving characterization of freight-related emissions within regulatory emission models at equity-relevant spatial scale*. Health Effect Institute Annual Meeting. Chicago, IL, United States [**Poster presentation**]
- [9] **Lang, V. A.**, Partha, D., Camilleri, S. F., Montgomery, A., Urbaszewski, B., Adelman, Z. E., & Horton, D. E. (2026, January 25–29). *Community-engaged science for cleaner air in freight-impacted neighborhoods of Chicago, IL*. 21st Symposium on Societal Applications: Policy, Research and Practice, American Meteorological Society Annual Meeting, Houston, TX, United States. [**Oral presentation**].
- [8] **Lang, V. A.**, Camilleri, S. F., Montgomery, A., Schnell, J. L., Adelman, Z., Janssen, M., Grubert, E. A., Anenberg, S. C., & Horton, D. E. (2025, December 15–19). *From watts to wheels: Comparing electrification pathways of light- and heavy-duty vehicles in the U.S. Midwest—assessing air quality, public health, and equity outcomes*. American Geophysical Union Fall Meeting, New Orleans, LA, United States. [**Poster presentation**].
- [7] **Lang, V. A.**, Camilleri, S. F., van der Lee, S., Rowangould, G., Antonczak, B., Thompson, T., Harris, M., Harkins, C., Tong, D., Janssen, M., Adelman, Z., & Horton, D. E. (2025, January 5–9). *Intercomparison of modeled urban-scale vehicle NO_x and PM_{2.5} emissions: Implications for equity assessments*. Transportation Research Board Annual Meeting, Washington, DC, United States. [**Poster presentation**].
- [6] **Lang, V. A.**, Camilleri, S. F., Janssen, M., & Horton, D. E. (2024, December 9–13). *Leveraging machine learning to improve the characterization of heavy-duty vehicle idling activity for emission modeling applications*. American Geophysical Union Fall Meeting, Washington, DC, United States. [**Poster presentation**].
- [5] **Lang, V. A.**, Camilleri, S. F., Deylami, N., Harris, M., Koehler, L., Urbaszewski, B., & Horton, D. E. (2024, December 4–5). *Assessing the air quality, public health, and equity implications of the Advanced Clean Trucks policy for Illinois*. Air & Waste Management Association Environmental Justice: Policy, Practice, and Progress Conference, Rosemont, IL, United States. [**Oral presentation**].
- [4] **Lang, V. A.**, Camilleri, S. F., Harkins, C., Rowangould, G., Antonczak, B., Ma, S., Tong, D., van der Lee, S., & Horton, D. E. (2023, December 11–15). *Modeled vehicle NO_x emission intercomparison: FIVE vs. NEMO vs. NU CCRG vs. UVM*. American Geophysical Union Fall Meeting, San Francisco, CA, United States. [**Poster presentation**].

[3] **Lang, V. A.**, Camilleri, S. F., Montgomery, A., Adelman, Z., Janssen, M., Harris, M., & Horton, D. E. (2023, August 27–31). *Characterizing air quality and health impacts of heavy-duty vehicle idling in warehouse settings using neighborhood-scale WRF-CMAQ simulations*. International Society of Exposure Sciences Annual Meeting, Chicago, IL, United States. **[Poster presentation]**.

[2] **Lang, V. A.**, Reid, J., Peng, X., Chen, G., Ziemba, L., Shook, M., Ferrare, R., Holz, R., & Eck, T. (2022, December 5–9). *Navy Aerosol Analysis Prediction System reanalysis error propagation for anthropogenic air pollution in boundary layer environments using global NASA airborne campaign observations*. American Geophysical Union Fall Meeting, Chicago, IL, United States. **[Poster presentation]**.

[1] **Lang, V. A.**, Turner, T. J., Selbig, B. R., Harris, A. R., & Kahl, J. D. W. (2021, January 10–15). *Predicting peak wind gusts during specific weather types with the meteorologically stratified gust factor model*. 31st Conference on Weather Analysis and Forecasting, American Meteorological Society, Houston, TX, United States. **[Oral presentation]**.

CO-AUTHORED CONFERENCE PRESENTATIONS

[9] Oehlerking, A.E., **Lang, V.A.**, Becker, S., Weinstock, R.A., Horton, D.E. (2026, April 26-28). *Development of an Emissions Inventory for Illinois Warehouses for Modeling the Implementation of an Indirect Source Rule*. Health Effect Institute Annual Meeting. Chicago, IL, United States **[Poster presentation]**

[8] Stathopoulos, A., Pougala, J., Edward, D., **Lang, V.A.**, Oehlerking, A.E., Partha, D., Johnson, B., Horton, D.E. (2026, April 26-28). *Assessing Air Quality and Health Benefits of MHDV Fleet Conversion in Chicago Using Enhanced Emissions Modeling and Stakeholder Insights*. Health Effect Institute Annual Meeting. Chicago, IL, United States **[Poster presentation]**

[7] Horton, D.E., **Lang, V.A.**, Oehlerking, A.E., Partha, D., Kerr, G.H., Goldberg, D. L., Omar Nawaz, M., Chen, L., Anenberg, S. C., Urbaszewski, B., Chavez, G., Mimuche, M., Deylami, N., Janseen, M., Adelman, Z. (2026, April 26-28) *Efficacy of Vehicle Emission Control Interventions in Ameliorating Air Pollution Exposure and Health Burdens in Marginalized Communities*. Health Effect Institute Annual Meeting. Chicago, IL, United States **[Poster presentation]**

[6] Omar Nawaz, M., Southerland, V., Horton, D. E., **Lang, V. A.**, Anenberg, S., Goldberg, D., & Kerr, G. (2025, December 15–19). *Applying machine learning and statistical approaches to remote sensing observations for inferring surface-level NO₂*. American Geophysical Union Fall Meeting, New Orleans, LA, United States. **[Oral presentation]**.

[5] Horton, D.E., **Lang, V.A.**, Partha, D. (2025, December 15–19). *Exploring solutions to heavy-duty vehicle air pollution using the SMOKE-MOVES-WRF-CMAQ modeling framework at high resolution*. American Geophysical Union Fall Meeting, New Orleans, LA, United States. **[Oral presentation]**.

[4] Wang, J., Li, Y., **Lang, V. A.**, Horton, D. E., & Van der Lee, S. (2025, December 15–19). *Identification of idling heavy-duty trucks based on geophone data*. American Geophysical Union Fall Meeting, New Orleans, LA, United States. **[Oral presentation]**.

[3] Santiago, M., **Lang, V. A.**, & Horton, D. E. (2025, December 15–19). *Intercomparison of simulated PM_{2.5} and NO_x concentrations over the Greater Chicago Region using four different on-road emission estimates*. American Geophysical Union Fall Meeting, New Orleans, LA, United States. **[Poster presentation]**.

[2] Chirino-Segura, A., **Lang, V. A.**, & Horton, D. E. (2025, January 12–16). *Investigating lake breeze arrival delays in the Weather Research and Forecasting–Community Multiscale Air Quality Model: Implications for ozone regulation and public health*. American Astronomical Society Meeting, Anchorage, AK, United States. **[Poster presentation]**.

[1] Fritzen, R., **Lang, V. A.**, & Gensini, V. (2019, October 1–2). *Trends and variability of North American extratropical cyclones 1979–2019*. Midwest Student Conference on Atmospheric Research, Champaign, IL, United States. **[Poster presentation]**.

SCHOLARSHIPS

Dhirenda Sikdar Scholarship, University of Wisconsin-Milwaukee	2021
Lake County Women’s Coalition Scholarship, College of Lake County	2017

PROFESSIONAL EXPERIENCE

Social Media Coordinator , Self-employed, Central Illinois Market	2017- 2023
Assistant Manager , Gap Inc, Gurnee, IL	2016
Visual Merchandising Manager , Target, Lake Bluff, IL	2015-2016
Assistant Manager , Pandora, Anchorage, AK	2011–2014
Manager , Udry Jewelers Inc, Pekin, IL	2009-2011
Help Desk Technician , Illinois State University, Normal, IL	2007–2009

PROFESSIONAL ORGANIZATIONS

American Meteorological Society	2019 – Present
American Geophysical Union	2022 – Present
International Society of Exposure Sciences	2023 – Present
Air and Waste Management Association	2024 – Present
Transportation Research Board	2024 – 2025

TECHNICAL SKILLS

Atmospheric and air quality models: WRF-CMAQ, SMOKE-MOVES, HYSPLIT, Spatial Surrogate Tool

Programming and software: Python, R, MATLAB, C++, Visual Basic, Jupyter Lab, GIS software (QGIS), Machine learning (e.g., Random Forest, K-Nearest Neighbor, Gradient Boosting Machines, K-Means clustering, DBSCAN)

High-performance computing: HPC, Unix/Linux systems, Slurm workload manager, NetCDF Operators (NCO), Climate Data Operators (CDO)

Weather forecasting tools: NWP models (e.g., ECMWF, HRRR, NAM, GFS), GR2 Analyst, GRLevel3, NWS AWIP, BUFKIT

Related graduate courses: Numerical weather prediction, Air pollution modeling, Inverse methods, Air pollution meteorology, Earth system modeling, Micrometeorology, Environmental justice, GIS Level 1, Scientific coding in Python

PRESS

Chicago Tribune - "[Rollbacks likely to increase health disparities in Chicago’s Black and brown neighborhoods](#)"

October 2025

The Chicago Reporter - " Chicago's New Air Sensor Network Targets Pollution Inequities "	September 2025
Northwestern TGS - Victoria Lang selected as Northwestern University Presidential Fellow	April 2025
WBEZ Chicago - The Morning News: Monday, March 24, 2025	March 2025
WBEZ Chicago - " Cracking down on diesel truck emissions could save 500 lives in Chicago, new study shows "	March 2025
Northwestern - " Adopting zero-emission trucks and buses could save lives, prevent asthma in Illinois "	March 2025
Chicago Tribune - " Stricter truck pollution rule would prevent 500 deaths a year in Chicago region, study shows "	March 2025
The Daily Northwestern - " Data removal from government websites concerning scientists, including NU researchers "	February 2025