

## M. OMAR NAWAZ

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## RESEARCH OVERVIEW

My research program applies climate and air pollution science to public health questions. It explores how climate mitigation and air quality control could benefit public health and ameliorate global inequalities using chemical transport modeling, remote sensing, and inverse methods.

## PROFESSIONAL APPOINTMENTS

### Cardiff University, Cardiff, Wales, UK

2025- Lecturer of Climate Change Science, School of Earth and Environmental Science

### George Washington University, Washington, DC, USA

2024 Professorial Lecturer, Milken Institute School of Public Health

2023-2024 NRDC Health Science Policy Fellow, Milken Institute School of Public Health

2023-2025 Postdoctoral Research Associate, Milken Institute School of Public Health

### University of Colorado Boulder, Boulder, CO, USA

2018-2023 PhD Research Assistant, Department of Mechanical Engineering

### University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

2016-2018 MSc Research Assistant, Gillings School of Global Public Health

## EDUCATION

2023 **PhD**, Air Quality Focus, Mechanical Engineering, CU Boulder, Boulder, CO, USA  
*Research Supervisor:* Professor Daven K. Henze

*Thesis:* An adjoint sensitivity framework for public health: the sources of air pollution and their current and future impacts at the urban and national scale

2018 **MSc**, Environmental Engineering, UNC Chapel Hill, Chapel Hill, NC, USA

*Research Supervisor:* Professor J. Jason West

*Thesis:* Benefits of reduced premature mortality from decreases in PM<sub>2.5</sub> and ozone in the United States from 1999 to 2015

2017 **BSc**, Physics, UNC Chapel Hill, Chapel Hill, NC, USA

2017 **BSc**, Applied Mathematics, UNC Chapel Hill, Chapel Hill, NC, USA

## RESEARCH SUPPORT

**Total Funded:** £636,000; **Total Pending:** £2,110,000

### Current

2026 *Forward and adjoint modeling of transboundary secondary PM<sub>2.5</sub> in response to climate mitigation*, UKRI, (75,000 Node-hrs), **PI**

2025-2026 *Maximizing health benefits from reducing oil and gas emissions*, Wellcome Trust, (£496,000\*), **Institutional PI**

2025-2026 *Health benefits of transitioning to zero emission vehicles by 2050*, International Council on Clean Transportation, (£14,000), **Consultant**

- 2025-2026 *Estimating UK surface-level pollution from satellite data using machine learning and deterministic modeling*, Supercomputing Wales, (100,000 CPU-hrs), **PI**
- 2024-2027 *Application of satellite observations in estimating NO<sub>2</sub> concentrations, mortality burdens, and inequities*, NASA, (£112,000\*), **Collaborator**

#### Pending

- 2026-2032 *ACCEPT: Assessing Climate Change effects on Equity and Public health from Transboundary air pollution*, Wellcome Trust (£2,110,000), **PI**

#### Past

- 2024 *Study of Global Maritime Shipping-Attributable Health Impacts and Policy Benefits*, ICCT, (£5,000), **Consultant**
- 2023-2025 *Study of Global Transportation-Attributable Health Impacts and Policy Benefits*, ICCT, (£9,000\*), **Consultant**

#### Competitive Grants Not Selected for Funding

- 2024 *HEAD-IN: Assessing disaster risk and resilience action benefits associated with compound heat and air quality hazards, exposures, and vulnerabilities*, NASA, (£759,000\*), **PI**
- 2020 *Development of a source attribution and data assimilation framework for MAIA primary and secondary target areas in North America and South America*, NASA, (£112,000\*), **Future Investigator**

\*Funding total converted to GBP from other currency and rounded to nearest thousand

## PUBLICATIONS

**Total citations:** 578; **h-index:** 11 (Google Scholar)

#### Peer-Reviewed Publications (24)

- 2026 **Nawaz, M. O.**; Henze, D. K. National Climate Action Can Ameliorate, Perpetuate, or Exacerbate International Air Pollution Inequalities. *Nature Communications* 2026. <https://doi.org/10.1038/s41467-026-68827-0>.
- 2025 Siu, T. K.; Goldberg, D. L.; Kerr, G. H.; Chen, L.; **Nawaz, M. O.**; Chang, R. Y.-W.; Fong, K. C. Tropospheric NO<sub>2</sub> Patterns in Eastern Canada Using the First Year of TEMPO Observations. *Journal of Geophysical Research: Atmospheres* **2025**, 130 (24), e2025JD044757. <https://doi.org/10.1029/2025JD044757>.
- 2025 Goldberg, D. L.; **Nawaz, M. O.**; Lyu, C.; He, J.; Carlton, A. G.; Kondragunta, S.; Anenberg, S. C. Clear-Sky and Cloudy-Sky Differences in NO<sub>2</sub> Concentrations over the United States: Implications for Satellite Measurement Applications. *Atmospheric Chemistry and Physics* **2025**, 25 (22), 16287–16302. <https://doi.org/10.5194/acp-25-16287-2025>.
- 2025 **Nawaz, M. O.**; Huber, D. E.; Kerr, G. H.; Judd, L. M.; Acker, S. J.; Goldberg, D. L. A Comparative Analysis of TEMPO NO<sub>2</sub> Remote Sensing With Surface-Level Monitoring Through Diurnal and Seasonal Trends, Meteorology, and Monitor Characteristics. *Journal of Geophysical Research: Atmospheres* **2025**, 130 (20), e2025JD043923. <https://doi.org/10.1029/2025JD043923>.
- 2025 Hay, S. I.; Ong, K. L.; Santomauro, D. F.; ... **Nawaz, M. O.**; ... et al. Burden of 375 Diseases and Injuries, Risk-Attributable Burden of 88 Risk Factors, and Healthy Life

Expectancy in 204 Countries and Territories, Including 660 Subnational Locations, 1990–2023: A Systematic Analysis for the Global Burden of Disease Study 2023. *The Lancet* **2025**, 406 (10513), 1873–1922. [https://doi.org/10.1016/S0140-6736\(25\)01637-X](https://doi.org/10.1016/S0140-6736(25)01637-X).

- 2025 Jin, L.; Benoit, J.; **Nawaz, M. O.**; Rodrigues, P. F.; Wiecko, P.; Miller, J.; Alvarez, G.; Henze, D. K.; Osipova, L.; Anenberg, S. C. Global Health Benefits of Policies to Reduce On-Road Vehicle Pollution through 2040. *Environ. Res. Lett.* **2025**. <https://doi.org/10.1088/1748-9326/adcd87>.
- 2025 Wiecko, P.; Henze, D. K.; **Nawaz, M. O.** Sector-, Season-, and Country-Specific NO<sub>2</sub>-Associated Health Benefits from NO<sub>x</sub> Emission Reductions. *ACS EST Air* **2025**, 2 (4), 700–709. <https://doi.org/10.1021/acsestair.5c00012>.
- 2025 **Nawaz, M. O.**; Goldberg, D. L.; Kerr, G. H.; Anenberg, S. C. TROPOMI Satellite Data Reshape NO<sub>2</sub> Air Pollution Land-Use Regression Modeling Capabilities in the United States. *ACS EST Air* **2025**, 2 (2), 187–200. <https://doi.org/10.1021/acsestair.4c00153>.
- 2024 Dyer, G. M. C.; Khomenko, S.; Adlakha, D.; Anenberg, S.; Angelova, J.; Behnisch, M.; Boeing, G.; Chen, X.; Cirach, M.; de Hoogh, K.; Diez Roux, A. V.; Esperon-Rodriguez, M.; Flueckiger, B.; Gasparrini, A.; lungman, T.; Khreis, H.; Kondo, M. C.; Masselot, P.; McDonald, R. I.; Montana, F.; Mitchell, R.; Mueller, N.; **Nawaz, M. O.**; Pereira, E.; Pisoni, E.; Prieto-Curiel, R.; Rezaei, N.; Rybski, D.; Ramasco, J. J.; Schifanella, R.; Shabou, S.; Tatah, L.; Taubenböck, H.; Tonne, C.; Velázquez-Cortés, D.; Woodcock, J.; Zhang, Q.; Nieuwenhuijsen, M. Commentary: A Road Map for Future Data-Driven Urban Planning and Environmental Health Research. *Cities* **2024**, 155, 105340. <https://doi.org/10.1016/j.cities.2024.105340>.
- 2024 Goldberg, D. L.; de Foy, B.; **Nawaz, M. O.**; Johnson, J.; Yarwood, G.; Judd, L. Quantifying NO<sub>x</sub> Emission Sources in Houston, Texas Using Remote Sensing Aircraft Measurements and Source Apportionment Regression Models. *ACS EST Air* **2024**, 1 (11), 1391–1401. <https://doi.org/10.1021/acsestair.4c00097>.
- 2024 Dyer, G. M. C.; Khomenko, S.; Adlakha, D.; Anenberg, S.; Behnisch, M.; Boeing, G.; Esperon-Rodriguez, M.; Gasparrini, A.; Khreis, H.; Kondo, M. C.; Masselot, P.; McDonald, R. I.; Montana, F.; Mitchell, R.; Mueller, N.; **Nawaz, M. O.**; Pisoni, E.; Prieto-Curiel, R.; Rezaei, N.; Taubenböck, H.; Tonne, C.; Velázquez-Cortés, D.; Nieuwenhuijsen, M. Exploring the Nexus of Urban Form, Transport, Environment and Health in Large-Scale Urban Studies: A State-of-the-Art Scoping Review. *Environmental Research* **2024**, 257, 119324. <https://doi.org/10.1016/j.envres.2024.119324>.
- 2024 Choi, J.; Henze, D. K.; **Nawaz, M. O.**; Malley, C. S. Source Attribution of Health Burdens From Ambient PM<sub>2.5</sub>, O<sub>3</sub>, and NO<sub>2</sub> Exposure for Assessment of South Korean National Emission Control Scenarios by 2050. *GeoHealth* **2024**, 8 (8), e2024GH001042. <https://doi.org/10.1029/2024GH001042>.
- 2024 **Nawaz, M. O.**; Johnson, J.; Yarwood, G.; de Foy, B.; Judd, L.; Goldberg, D. L. An Intercomparison of Satellite, Airborne, and Ground-Level Observations with WRF–CAMx Simulations of NO<sub>2</sub> Columns over Houston, Texas, during the September

2021 TRACER-AQ Campaign. *Atmospheric Chemistry and Physics* **2024**, 24 (11), 6719–6741. <https://doi.org/10.5194/acp-24-6719-2024>.

- 2023 Gu, Y.; Henze, D. K.; **Nawaz, M. O.**; Wagner, U. J. Response of the Ozone-Related Health Burden in Europe to Changes in Local Anthropogenic Emissions of Ozone Precursors. *Environ. Res. Lett.* **2023**, 18 (11), 114034. <https://doi.org/10.1088/1748-9326/ad0167>.
- 2023 **Nawaz, M. O.**; Henze, D. K.; Huneus, N. J.; Osses, M.; Álamos, N.; Opazo, M. A.; Gallardo, L. Sources of Air Pollution Health Impacts and Co-Benefits of Carbon Neutrality in Santiago, Chile. *Journal of Geophysical Research: Atmospheres* **2023**, 128 (19), e2023JD038808. <https://doi.org/10.1029/2023JD038808>.
- 2023 Jo, D. S.; Nault, B. A.; Tilmes, S.; Gettelman, A.; McCluskey, C. S.; Hodzic, A.; Henze, D. K.; **Nawaz, M. O.**; Fung, K. M.; Jimenez, J. L. Global Health and Climate Effects of Organic Aerosols from Different Sources. *Environ. Sci. Technol.* **2023**, 57 (37), 13793–13807. <https://doi.org/10.1021/acs.est.3c02823>.
- 2023 Gu, Y.; Henze, D. K.; **Nawaz, M. O.**; Cao, H.; Wagner, U. J. Sources of PM<sub>2.5</sub>-Associated Health Risks in Europe and Corresponding Emission-Induced Changes During 2005–2015. *GeoHealth* **2023**, 7 (3), e2022GH000767. <https://doi.org/10.1029/2022GH000767>.
- 2023 **Nawaz, M. O.**; Henze, D. K.; Anenberg, S. C.; Ahn, D. Y.; Goldberg, D. L.; Tessum, C. W.; Chafe, Z. A. Sources of Air Pollution-Related Health Impacts and Benefits of Radially Applied Transportation Policies in 14 US Cities. *Front. Sustain. Cities* **2023**, 5. <https://doi.org/10.3389/frsc.2023.1102493>.
- 2023 **Nawaz, M. O.**; Henze, D. K.; Anenberg, S. C.; Braun, C.; Miller, J.; Pronk, E. A Source Apportionment and Emission Scenario Assessment of PM<sub>2.5</sub>- and O<sub>3</sub>-Related Health Impacts in G20 Countries. *GeoHealth* **2023**, 7 (1), e2022GH000713. <https://doi.org/10.1029/2022GH000713>.
- 2021 **Nawaz, M. O.**; Henze, D. K.; Harkins, C.; Cao, H.; Nault, B.; Jo, D.; Jimenez, J.; Anenberg, S. C.; Goldberg, D. L.; Qu, Z. Impacts of Sectoral, Regional, Species, and Day-Specific Emissions on Air Pollution and Public Health in Washington, DC. *Elementa: Science of the Anthropocene* **2021**, 9 (1), 00043. <https://doi.org/10.1525/elementa.2021.00043>.
- 2021 Cao, H.; Henze, D. K.; Cady-Pereira, K.; McDonald, B. C.; Harkins, C.; Sun, K.; Bowman, K. W.; Fu, T.-M.; **Nawaz, M. O.** COVID-19 Lockdowns Afford the First Satellite-Based Confirmation That Vehicles Are an Under-Recognized Source of Urban NH<sub>3</sub> Pollution in Los Angeles. *Environ. Sci. Technol. Lett.* **2021**, 9 (1), 3–9. <https://doi.org/10.1021/acs.estlett.1c00730>.
- 2021 Nault, B. A.; Jo, D. S.; McDonald, B. C.; Campuzano-Jost, P.; Day, D. A.; Hu, W.; Schroder, J. C.; Allan, J.; Blake, D. R.; Canagaratna, M. R.; Coe, H.; Coggon, M. M.; DeCarlo, P. F.; Diskin, G. S.; Dunmore, R.; Flocke, F.; Fried, A.; Gilman, J. B.; Gkatzelis, G.; Hamilton, J. F.; Hanisco, T. F.; Hayes, P. L.; Henze, D. K.; Hodzic, A.; Hopkins, J.; Hu, M.; Huey, L. G.; Jobson, B. T.; Kuster, W. C.; Lewis, A.; Li, M.; Liao, J.; **Nawaz, M. O.**; Pollack, I. B.; Peischl, J.; Rappenglück, B.; Reeves, C. E.; Richter,

D.; Roberts, J. M.; Ryerson, T. B.; Shao, M.; Sommers, J. M.; Walega, J.; Warneke, C.; Weibring, P.; Wolfe, G. M.; Young, D. E.; Yuan, B.; Zhang, Q.; de Gouw, J. A.; Jimenez, J. L. Secondary Organic Aerosols from Anthropogenic Volatile Organic Compounds Contribute Substantially to Air Pollution Mortality. *Atmospheric Chemistry and Physics* **2021**, 21 (14), 11201–11224. <https://doi.org/10.5194/acp-21-11201-2021>.

2021 Malley, C. S.; Hicks, W. K.; Kulyenstierna, J. C. I.; Michalopoulou, E.; Molotoks, A.; Slater, J.; Heaps, C. G.; Ulloa, S.; Veysey, J.; Shindell, D. T.; Henze, D. K.; **Nawaz, M. O.**; Anenberg, S. C.; Mantlana, B.; Robinson, T. P. Integrated Assessment of Global Climate, Air Pollution, and Dietary, Malnutrition and Obesity Health Impacts of Food Production and Consumption between 2014 and 2018. *Environ. Res. Commun.* **2021**, 3 (7), 075001. <https://doi.org/10.1088/2515-7620/ac0af9>.

2020 **Nawaz, M. O.**; Henze, D. K. Premature Deaths in Brazil Associated With Long-Term Exposure to PM<sub>2.5</sub> From Amazon Fires Between 2016 and 2019. *GeoHealth* **2020**, 4 (8), e2020GH000268. <https://doi.org/10.1029/2020GH000268>.

#### Manuscripts Under Review (5)

2026 Graffy, P.M., ... **Nawaz, M.O.**, ... et al. Cumulative Air Pollution Exposure Increases the Severity of Acute Respiratory Failure: a U.S. Multicenter Study. *Under Review*.

2025 Morris, S. T., O'Neill, B. C., Msangi, S., **Nawaz, M.O.**, Parker, N., Rao, N., Van Vuuren, D. Modeling the human well-being dimensions of global change: priorities and challenges for research to inform decision-making. *Under Review*.

2025 TOAR-II Health Collaborators, Tropospheric Ozone Assessment Report, Phase II: Changing Health Impacts of Global Ozone Exposure. *Under Review*.

2025 Huber, D.E., Kerr, G.H., **Nawaz, M.O.**, Runkel, S., Anenberg, S.C., Goldberg, D.L. TROPOMI NO<sub>2</sub> trends for urban and polluted areas globally from 2019 to 2024. *Under Review*.

2025 Kerr, G.H., **Nawaz, M.O.**, Anenberg, S.C., Anthoff, D., Burton, C., Carter, T.S., Henze, D.K., Kelley, D.I., Kingdon, C., O'Dell, K., Prest, B.C., Cromar, K.R. Climate-driven surges in public health damages from wildland fire-sourced pollution through 2100. *Under Review*

#### Manuscripts In Preparation (2)

TBD Goldberg, D.L., Johnson, J., **Nawaz, M.O.**, Kerr, G.H., Chen, L., Huber, D.E., Judd, L. M. Contrasting the TEMPO and TROPOMI Views of Tropospheric NO<sub>2</sub>: Implications for Diurnal Variability and Model Evaluation. *In preparation*.

TBD Kim, S.Y., Kerr, G.H., **Nawaz, M.O.**, Anenberg, S.C. Fine-scale spatiotemporal patterns of NO<sub>2</sub> pollution and associated mortality burdens across the continental United States. *In preparation*.

## RESEARCH SUPERVISION

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### Current

2025- Feichi Hu (**PhD**) (Co-supervised with L. Zhuo)  
2025- Kyla Camama (**MSci**)

### Past

2025-2026 Niamh Delamar (**BSc**)  
2025-2026 Alice Gittoes-Davies (**BSc**)  
2025-2026 Carwyn Jones (**BSc**)  
2025-2026 Olivia Pease (**BSc**)  
2023-2024 Katie O'Donnell (**MSc**)  
2023-2024 Erin Campbell (**MSc**)  
2019-2021 Mohammed Alwakeel (**BSc**)

### Informal Supervision

2025 Panel member for 9-month review of PhD Student  
2025- Pastoral mentor for EQUATOR program for MSc student  
2023- Advisor for PhD student on transportation pollution modeling project for the ICCT  
2024 Advisor for PhD student on accepted NASA FINESST proposal  
2024 Supervisor for BSc researcher that supported a NASA proposal

## TEACHING

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### Cardiff University, School of Earth and Environmental Sciences

2026 **Lecturer for Climate Change Adaptation and Resilience**  
Spring Module for ~20 Postgraduate Students

- **Topic:** Methods and approaches for adapting and building resilience to climate change and understanding climate projections
- **Responsibilities:** Develop materials and exercises for class, facilitate seminar discussions, mark posters and writings for class

2025 **Lecturer (Module Leader) for The Ocean-Atmosphere System**  
Fall Module for ~130 Year 2 Undergraduate Students

- **Topic:** Understanding the physical and chemical processes of the atmosphere using analytical lecture-based learning and practical approaches (MATLAB)
- **Responsibilities:** Develop and deliver materials for lectures and practicals, design module curriculum and outcomes, facilitate assessments, marking and feedback, supervise teaching assistants, manage online learning platform, administrative duties (e.g., representing module for board of studies meetings)

### **Lecturer for GIS, Maps, and Analytical Skills**

Module for ~220 Year 1 Undergraduate Students

- **Topic:** Theoretical foundations and practical applications of GIS with skills in map interpretation, data acquisition, and statistical analysis for environmental sciences
- **Responsibilities:** Develop and deliver materials for lectures and practicals, create GIS exercises, manage online learning platform, supervise teaching assistants, facilitate assessments, marking, and feedback

### **Supervisor for Environmental Geography Undergraduate Dissertations**

Course for Year 3 Undergraduate Students

- **Topics:** Supervise undergraduate students on dissertation topics in environmental geography including air quality analyses and flood risk assessments
- **Responsibilities:** Support students in developing their research focus and writing their dissertations, regularly meet with supervisees individually and in groups

### **Tutor for Environmental and Physical Geography Students**

Tutorials for Undergraduate Students (All Years)

- **Responsibilities:** Lead weekly tutorials for Year 1, Year 2, and Year 3 undergraduate students in groups of 4 – 6 students, provide pastoral support, assist students in goal setting, signpost university resources

2025  
Spring

### **Lecturer for Digital Fieldwork Workshop**

Module for ~130 Year 1 Undergraduate Students

- **Topic:** Theoretical foundations in data analysis software (i.e., excel and MATLAB) and applications of analysis skills for large environmental datasets
- **Responsibilities:** Assessment lead, developed, presented, and marked a data analysis climate risk assessment, set-up rubric and collated staff marks for summative assessment

### **George Washington University, Department of Environmental and Occupational Health**

2024  
Fall

### **Professorial Lecturer for Global Climate Change & Air Pollution**

Course for Postgraduate Students

- **Topic:** Linkages between climate change, air pollution, health, and policy; understanding how to assess the health implications of climate change.
- **Responsibilities:** Delivered lectures, led in-class seminars linking class material to research / current events, proctored exams, graded assignments and presentations

### **University of Colorado Boulder, Department of Mechanical Engineering**

2020  
Summer

### **Student Lead and Mentor for Fluid Mechanics and Thermodynamics Exams**

Review for PhD Students

- **Topic:** Fundamental fluid mechanics and thermodynamics topics for PhD students preparing for their oral preliminary exams.
- **Responsibilities:** Assessed students in mock preliminary exams, provided formative feedback on their ability to work through thermodynamics and fluid mechanics exercises, worked through derivations and practice exercises on the white board for PhD students

2019  
Spring

### **Lead Teaching Assistant for Numerical Methods for Engineers**

Course for Undergraduate Students

- **Topic:** Numerical and computational approaches for solving engineering problems using MATLAB.



- **Responsibilities:** Led a team of teaching assistants, marked in-class MATLAB coding exercises, proctored midterm and final exams, provided coding advice and support for a class of ~ 100 undergraduates

2018  
Fall

### **Teaching Assistant for Numerical Methods for Engineers**

Course for Undergraduate Students

- **Topic:** Numerical and computational approaches for solving engineering problems using MATLAB.
- **Responsibilities:** Marked in-class MATLAB coding exercises, proctored midterm and final exams, provided coding advice and support for a class of ~ 100 undergraduates

## **HONORS AND FELLOWSHIPS**

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2026	GW4 Crucible 2026 Cohort
2024-2025	GeoCAFE Scholar
2023-2024	Natural Resources Defense Council Health Science Policy Fellowship
2018	Outstanding Mechanical Engineering Research Potential Fellowship
2018	1 <sup>st</sup> place student poster Award, UNC 5 <sup>th</sup> Climate Change Symposium

## **PROFESSIONAL ASSOCIATIONS**

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### **Current**

2025-	TOAR-II Health Team
2025-	COST Action CliMent Member (CA23113)
2024-	Global Burden of Disease Study Collaborator
2023-	European Geophysical Union
2018-	American Geophysical Union

### **Past**

2025	EQUATOR Mentor
2024-2025	American Chemistry Society (ACS)
2023-2024	American Meteorological Society

## **MEDIA COVERAGE**

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2025	<a href="#">BBC: How air pollution has changed since steelmaking ended in Port Talbot</a>
2025	<a href="#">BBC Radio: Cleaner air in steel town a year since furnace shut</a>
2025	<a href="#">Health benefits of transportation policies</a>
2023	<a href="#">The Global Health Benefits of Going Net Zero</a>
2020	<a href="#">Queimadas na Amazônia aumentam interações</a>

## **DEPARTMENTAL SERVICE**

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### **Cardiff University, School of Earth and Environmental Sciences**

2026	Member of School Promotions Panel for Earth and Environmental Science
2025-	Director of Equality, Diversity, and Inclusivity
2025-	Member of Ethics Committee
2025	Panel Member for School Research Leave Application Review
2025	Student IT Induction Lead for School of Earth and Environmental Science
2025	Volunteer for Open Day for School of Earth and Environmental Science



## ACADEMIC SERVICE

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### Ad-Hoc Peer-Review for Journals (38)

- 2026 *Earth System Science Data* (1); *Geoscience Letters* (1); *Nature Health* (1)
- 2025 *Discover Atmospheres* (1); *Environmental Monitoring & Assessment* (1); *Environmental Research Letters* (1); *Environmental Science Policy Research* (1); *Humanities & Social Science Communication* (1); *Nature Cities* (1); *Nature Communications* (1); *Nature Health* (3); *NPJ Clean Air* (1); *NPJ Climate & Atmospheric Science* (1); *PLOS* (1)
- 2024 *Atmospheric Chemistry and Physics* (1); *Discover Cities* (1); *Environmental Research Letters* (1); *Environmental Science & Technology Air* (1); *GeoHealth* (2); *Health Data Science* (1); *International Geoscience and Remote Sensing Symposium* (6); *Nature Food* (1); *Scientific Reports* (1)
- 2023 *Environmental Science & Technology* (1); *GeoHealth* (1)
- 2022 *Environmental Science & Technology* (1)
- 2021 *Elementa: Science of the Anthropocene* (1); *Lancet Planetary Health* (1)
- 2019 *Environmental Science & Technology* (1); *Journal of the Air and Waste Management Association* (1)

### Ad-Hoc Peer-Review for Proposals (2)

- 2025 *Wellcome Trust Expert Reviewer* (2)

### Other Professional Service

- 2026 Session convener on air quality, climate, health, and equity for EGU 2026 meeting
- 2025 Session convener on air quality, climate, health, and equity for EGU 2025 meeting

## PRESENTATIONS (28)

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### Invited Talks (2)

- 2025 Applying machine learning and statistical modeling approaches to remote sensing observations for inferring surface-level NO<sub>2</sub>. December 15<sup>th</sup>-19<sup>th</sup>. American Geophysical Union. New Orleans, LA, USA.
- 2023 Using satellite data to characterize air pollution and health in cities and countries. April 27<sup>th</sup>. Environmental Defense Fund / Climate and Clean Air Coalition / United Nations Environmental Programme Workshop for Clean Air Solutions in Latin America and the Caribbean. Bogotá, Colombia.

### Oral Presentations (12)

- 2025 **Nawaz, M.O.**, Henze, D.K., Exploring the role of climate action in transboundary air pollution inequality using GEOS-Chem adjoint sensitivities. April 29<sup>th</sup>. European Geophysical Union. Vienna, Austria
- 2024 **Nawaz, M.O.**, Anenberg, S.C., Goldberg, D.L., Kerr, G.H., Kondragunta, S. Development of a Land-Use Regression of Hourly Surface NO<sub>2</sub> in preparation for GeoXO Atmospheric Composition Data. April 17<sup>th</sup>. European Geophysical Union. Vienna, Austria.

- 2024 **Nawaz, M.O.**, O'Dell, K., Anenberg, S.C., Goldberg, D.L., Kerr, G.H., He, J., McDonald, B., Kondragunta, S. Value of GeoXO Atmospheric Composition Data for Estimating Air Pollution-Related Health Impacts. January 30<sup>th</sup>. American Meteorological Society. Baltimore, MD, USA.
- 2023 **Nawaz, M.O.**, Henze, D.K., Anenberg, S.C., Goldberg, D.L., Investigating climate co-benefits using GEOS-Chem adjoint sensitivities. August 15<sup>th</sup>. Second GEOS-Chem Europe Meeting. London, UK.
- 2023 **Nawaz, M.O.**, Henze, D.K., Anenberg, S.C., Tessum, C. Regional vs local sources of municipal air pollution-related health impacts. January 10<sup>th</sup>. American Meteorological Society. (Presented by Henze). Denver, CO, USA.
- 2022 **Nawaz, M.O.**, Henze, D.K., Anenberg, S.C., Huang, T. Developing an interactive tool for characterizing the air pollution-related health impacts in Los Angeles, CA associated with different proposed emission scenarios. July 19<sup>th</sup>. Earth Science Information Partners Meeting. Pittsburgh, PA, USA (Virtual).
- 2022 **Nawaz, M.O.**, Henze, D.K., Anenberg, S.C., Harkins, C., Gallardo, L., Barazza Basoa, K. Leveraging satellite-derived data in GEOS-Chem adjoint simulations to characterize the sources of PM<sub>2.5</sub>-, O<sub>3</sub>-, and NO<sub>2</sub>-related health impacts at multiple spatial scales. June 9<sup>th</sup>. 10<sup>th</sup> International GEOS-Chem Meeting. St. Louis, MO, USA. (Virtual).
- 2022 **Nawaz, M.O.**, Henze, D.K., Braun, C., Miller, J., Pronk, E., Anenberg, S.C. Characterizing the sources of air pollution at the urban- and country-scale: case studies in Santiago, Chile and G20 countries. February 17<sup>th</sup>. Graduate Engineering Annual Research and Recruitment Symposium. Boulder, CO, USA.
- 2021 **Nawaz, M.O.**, D. Henze, S.C. Anenberg, C. Braun, J. Miller. Comparing domestic and extra-regional contributions to pollutant exposures and health impacts in G20 countries through a novel adjoint modeling approach. December 15<sup>th</sup>. American Geophysical Union Fall Meeting. New Orleans, LA, USA (Virtual).
- 2020 **Nawaz, M.O.**, D. Henze, D. Goldberg, S. Anenberg, D. Jo, B. Nault, J.L. Jimenez, H. Cao, C. Harkins, Z. Qu. Characterizing the regional, sectoral and species-specific sources of pollution exposure and its associated health impacts in urban environments: case studies in Washington, D.C. and Santiago, Chile. December 14<sup>th</sup>. American Geophysical Union. (Virtual)
- 2020 **Nawaz, M.O.**, Henze, D.K., Anenberg, S.C., Goldberg, D. Premature deaths in Brazil associated with long-term exposure to PM<sub>2.5</sub> from Amazon fires and development of a nested South American domain for the GEOS-Chem Adjoint. June 23<sup>rd</sup>. 19<sup>th</sup> GEIA Conference. (Virtual)
- 2019 **Nawaz, M.O.**, Henze, D.K. Source attribution of PM<sub>2.5</sub> from sensitivity analyses in the GEOS-Chem adjoint model. October 25<sup>th</sup>. Young Scientists Symposium on Atmospheric Research. Fort Collins, CO, USA.

#### **Poster Presentations (14)**

- 2025 **Nawaz, M.O.**, Goldberg, D.G., Anenberg, S.C., Kerr, G.H. What does low-earth orbiting, geostationary, and airborne remote-sensing reveal about surface NO<sub>2</sub>? September 9<sup>th</sup>. UK Atmospheric Chemistry Conference. York, UK.
- 2025 **Nawaz, M.O.**, Southerland, V.A., Goldberg, D.G. Characterizing the air quality and health impacts from oil and gas emissions in Mexico using GCHP. August 19<sup>th</sup>. GEOS-Chem Europe Meeting 3. London, UK.
- 2024 **Nawaz, M.O.**, Goldberg, D.L., Kerr, G.H., Anenberg, S.C., What can TROPOMI and TEMPO remote sensing reveal about seasonal and diurnal trends in surface-level NO<sub>2</sub>? December 13<sup>th</sup>. American Geophysical Union. Washington, DC, USA.
- 2022 **Nawaz, M.O.**, Henze, D.K., Anenberg, S.C., Harkins, C., Gallardo, L., Barazza Basoa, K. Leveraging satellite-derived data and air quality modeling to characterize source profiles of climate co-benefits at the urban- and country- scale. December 12<sup>th</sup>. American Geophysical Union. Chicago, IL, USA.
- 2020 **Nawaz, M.O.**, Y. Zhang, D. Q. Tong, A. Van Donkelaar, R. Martin, M. L. Serre, J. J. West. Health benefits of decreases in PM<sub>2.5</sub> and ozone in the United States, 1990-2016. July 21<sup>st</sup>. NASA Health and Air Quality Applied Sciences Team Final Showcase. (Virtual).
- 2019 **Nawaz, M.O.**, D.K. Henze, S.C. Anenberg, D. Goldberg, Z. Qu (2019). Source attribution of PM<sub>2.5</sub> and O<sub>3</sub> concentrations and health outcomes from 2010 and 2011 in Washington D.C. using sensitivity analyses in the GEOS-Chem adjoint model. December 19<sup>th</sup>. American Geophysical Union, San Francisco, CA, USA
- 2019 **Nawaz, M.O.**, D.K. Henze, C.S. Malley, J.C.I. Kuylenstierna, H.W. Vallack, Y. Davila, S.C. Anenberg, S. Terry, A. Curry-Brown, N. Fann, E. Lefevre, C. Heaps, S. Penn, H. Roman, J. Neumann. Source attribution of climate and health impacts from aerosols. May 6<sup>th</sup>. 9th International GEOS-Chem Meeting, Cambridge, MA, USA.
- 2019 **Nawaz, M.O.**, Henze, D.K., The use of adjoint modeling to assess the sources of air pollution and its associated health impacts. February 21<sup>st</sup>. Graduate Engineering Annual Research and Recruitment Symposium. Boulder, CO, USA.
- 2018 **Nawaz, M.O.**, D. K. Henze, C. Malley, GH41C-1446: Source Attribution of Climate and Health Impacts from Aerosols. February 14<sup>th</sup>. AGU Fall Meeting. Washington, DC, USA.
- 2018 **Nawaz, M.O.**, Y. Zhang, D. Q. Tong, A. van Donkelaar, R. V. Martin, J. J. West. Health benefits of decreases in PM<sub>2.5</sub> and ozone in the United States, 1990-2015. July 16<sup>th</sup>. NASA Health and Air Quality Applied Sciences Team Meeting. Madison, WI, USA.
- 2018 **Nawaz, M.O.**, Y. Zhang, D. Q. Tong, A. van Donkelaar, R. V. Martin, J. J. West (2018). Health benefits of decreases in PM<sub>2.5</sub> and ozone in the United States, 1990-2015. April 20<sup>th</sup>. Climate Change and Resilience Symposium. Chapel Hill, NC, USA.

- 2017 **Nawaz, M.O.**, Y. Zhang, D. Q. Tong, J. J. West. Health benefits of decreases in PM<sub>2.5</sub> and ozone in the United States from 1990 to 2015. December 11<sup>th</sup>. American Geophysical Union. New Orleans, LA, USA.
- 2017 **Nawaz, M.O.**, Y. Zhang, D. Q. Tong, J. J. West. Health benefits of decreases in PM<sub>2.5</sub> and ozone in the United States from 1990 to 2015. October 23<sup>rd</sup>. Community Modeling and Analysis System Conference. Chapel Hill, NC, USA.
- 2017 **Nawaz M.O.**, Y. Zhang, West, J.J. Impact of regional ozone precursor emissions on global ozone burden. April 12<sup>th</sup>. Celebration of Undergraduate Research. Chapel Hill, NC, USA.