

## M. OMAR NAWAZ

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School of Earth and Environmental Sciences  
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### Professional Appointments

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2025-Current **Lecturer of Climate Change Science**, Cardiff University, Cardiff, UK  
2024 **Professorial Lecturer**, GWU, Washington, DC  
2023-2024 **NRDC Health Science Policy Fellow**, GWU, Washington, DC, USA  
2023-2025 **Postdoctoral Research Associate**, GWU, Washington, DC, USA  
2018-2023 **PhD Research Assistant**, CU Boulder, Boulder, CO, USA  
2016-2018 **MS Research Assistant**, UNC Chapel Hill, Chapel Hill, NC, USA

### Education

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2023 **PhD**, Mechanical Engineering, Air Quality Focus, 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 Funding

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#### Current

2025-2026 *Maximizing health benefits from reducing oil and gas emissions*, Wellcome Trust, (\$665,000), **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 Support, (100k CPU-hrs), **PI**  
2026 *Forward and adjoint modeling of transboundary secondary PM<sub>2.5</sub> in response to climate mitigation*, UKRI, (75,000 Node-hrs), **PI**  
2024-2027 *Application of satellite observations in estimating NO<sub>2</sub> concentrations, mortality burdens, and inequities*, NASA, (\$150,000), **Collaborator**

#### Pending

2025-2028 *Societal benefits of TEMPO NO<sub>2</sub>: Applications for air quality management and environmental justice*, NASA, (\$550,000), **Other Personnel**

2026-2028 *Estimating 8-hour Maximum Ozone and Related Precursors for Health and Regulatory Applications*, HEI, (\$500,000), **Consultant**

#### **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, (\$12,000), **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, (\$1,016,525), **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, (\$150,000), **Future Investigator**

## **Teaching Experience**

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

2025 **Lecturer for The Ocean-Atmosphere System\***

Fall *Cardiff University, School of Earth and Environmental Sciences*  
Course for Year 2 Undergraduate Students

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

*Cardiff University, School of Earth and Environmental Sciences*  
Course for Year 1 Undergraduate Students

2025 **Lecturer for Digital Fieldwork Workshop**

Spring *Cardiff University, School of Earth and Environmental Sciences*  
Course for Year 1 Undergraduate Students

- Taught digital fieldwork workshop introducing approximately 150 Year-1 undergraduate students to programming for the geosciences
- Developed and presented a climate risk assessment MATLAB coding exercise
- Set-up and collated staff and demonstrator marks on summative assessment

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

2024 **Professorial Lecturer for Global Climate Change & Air Pollution**

Fall *George Washington University, Environmental and Occupational Health Department, Milken Institute School of Public Health*  
Course for Postgraduate Students

- Developed and delivered lectures on the linkages between climate change, air pollution, and health for a class of postgraduate students
- Proctored exams and graded assignments and presentations
- Led in-class discussions connecting class material to research and current events

## University of Colorado Boulder, Department of Mechanical Engineering

### 2019 **Lead Teaching Assistant for Computational Methods**

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

Course for Undergraduate Students

- Led a team of teaching assistants marking in-class MATLAB coding exercises and proctoring midterm and final exams
- Advised a class of ~100 undergraduate students on MATLAB practicals providing coding advice and support

### 2018 **Teaching Assistant for Computational Methods**

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

Course for Undergraduate Students

- Marked in-class MATLAB coding exercises and proctored midterm and final exams
- Advised a class of ~100 undergraduate students on MATLAB practicals providing coding advice and support

*\*Indicates upcoming teaching for which planning has started*

## Mentoring Experience

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

2025- Review panel member for a PhD student on methane remote sensing estimation

2025- Mentored MS student with pastoral support as part of the EQUATOR program

2025- Mentored 4 undergraduate students for their dissertations

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

2023-2024 Supervised 2 MS researchers as a NRDC Science Policy Fellow

2023-2024 Advised PhD student on transportation pollution research with the ICCT

2024 Advised PhD student on accepted NASA FINESST proposal

2024 Advised undergraduate student on research that contributed to NASA proposal

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

2020 Student lead/mentor for fluid mechanics and thermodynamics PhD prelim exams

2019-2021 Supervised undergraduate student on GEOS-Chem modeling for Saudi Arabia

## Research Experience

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

*Lecturer (Assistant Professor) in Climate Change Science, Mar. 2025 – Current*

- Co-I for Wellcome Trust Award (\$665,000) leveraging remote sensing of methane to estimate the health benefits of reducing oil and gas emissions
- Convened and presented at the European Geophysical Union 2025 Meeting
- Mentor for the EQUATOR program working towards equity in postgraduate geosciences research and better outcomes for minoritized groups
- PI for UKRI project to investigate secondary air pollution using computing resources from Isambard3 (75k Node-hrs)

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

*Postdoctoral Research Associate, NRDC Health Science Policy Fellow, Feb. 2023 – Feb. 2025*

- Organized consulting projects (\$12,000 and £5,000) with the International Council on Clean Transportation to investigate the air quality and health benefits of transport policy
- Supervised team of researchers to integrate health and equity in climate policy modelling for the Natural Resources Defense Council as a Health Science Policy Fellow
- Developed multiple satellite-derived (TEMPO and TROPOMI) datasets of surface-level NO<sub>2</sub> including estimates featured in the Global Burden of Disease Study 2023
- Invited speaker at UNEP / EDF workshop in Bogotá, Colombia on clean air strategies to improve public health and advance climate goals

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

*PhD Research Assistant, Aug. 2018 – Jan. 2023*

- Developed novel method to integrate satellite remote sensing with adjoint modelling to identify air pollution sources, biomass burning impacts, and climate policy co-benefits
- Used adjoint modelling approach to develop reduced form tools: NASA AQACF (NPO-52578-1), the ICCT FATE tool, and the SEI LEAP-IBC tool and for studies by other researchers: Choi et al 2024; Gu et al. 2023a,b

## **University of North Carolina at Chapel Hill, Gillings School of Global Public Health**

*MS Research Assistant, Nov. 2016 – Jul. 2018*

- Developed GIS approach to integrate US CDC county-level disease rates, with remote sensing derived pollution, and population data to estimate air pollution health impacts in the United States (won 1<sup>st</sup> place student poster award at Climate Change symposium)

## **Honors and Fellowships**

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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-	EQUATOR Mentor
2024-	GeoCAFE Scholar
2024-	American Chemistry Society (ACS)
2024-	Global Burden of Disease Study Collaborator
2023-	European Geophysical Union
2018-	American Geophysical Union

### **Past**

2023-2024	American Meteorological Society
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## Media Coverage

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2023      [The Global Health Benefits of Going Net Zero](#)  
2020      [Queimadas na Amazônia aumentam interações](#)

## Academic Service

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### Ad-Hoc Peer-Review for Journals (32)

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

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

*Wellcome Trust Expert Reviewer*: 2025 (2)

## Department Service

- Member of the Equality Diversity and Inclusivity leadership team (*Cardiff University*)
  - Development of poster campaign on microaggressions
  - Contributed to the monthly EDI newsletter
- Member of the School Ethics Committee (*Cardiff University*)
- Volunteer for the School open days to recruit prospective undergraduate students (*Cardiff University*)
- Seminar series coordinator for the “Collaborative for Air Quality Research” (CAQR) (*University of Colorado Boulder*)
- Volunteer presenter for “Mechanical Engineering as a Profession” (MCEN 2000) research round tables (*University of Colorado Boulder*)

- Student presenter and volunteer for the “Graduate Engineering Annual Research & Recruiting Symposium” (GEARRS) (*University of Colorado Boulder*)

### Professional Service

- Session convener on air quality, climate, health, and equity at the European Geophysical Union 2025 meeting
- Student coordinator for the Community Modeling and Analysis System (CMAS) conference, Chapel Hill, NC

## Publications (29)

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### Refereed Journal Articles (19)

- 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, 700–709, doi:[10.1021/acsestair.5c00012](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, 187–200, doi:[10.1021/acsestair.4c00153](https://doi.org/10.1021/acsestair.4c00153).
- 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**, doi:[10.1088/1748-9326/adcd87](https://doi.org/10.1088/1748-9326/adcd87).
- 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, 6719–6741, doi:[10.5194/acp-24-6719-2024](https://doi.org/10.5194/acp-24-6719-2024).
- 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, 1391–1401, doi:[10.1021/acsestair.4c00097](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.; ... **Nawaz, M.O.** ...; et al. 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, doi:[10.1016/j.envres.2024.119324](https://doi.org/10.1016/j.envres.2024.119324).
- 2024 Dyer, G.M.C.; Khomenko, S.; Adlakha, D.; Anenberg, S.; Angelova, J.; Behnisch, M.; Boeing, G.; Chen, X.; Cirach, M.; de Hoogh, K.; ... **Nawaz, M.O.** ...; et al. Commentary: A Road Map for Future Data-Driven Urban Planning and Environmental Health Research. *Cities* **2024**, 155, 105340, doi:[10.1016/j.cities.2024.105340](https://doi.org/10.1016/j.cities.2024.105340).

- 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*, e2024GH001042, doi:[10.1029/2024GH001042](https://doi.org/10.1029/2024GH001042).
- 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*, e2023JD038808, doi:[10.1029/2023JD038808](https://doi.org/10.1029/2023JD038808).
- 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*, doi:[10.3389/frsc.2023.1102493](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*, e2022GH000713, doi:[10.1029/2022GH000713](https://doi.org/10.1029/2022GH000713).
- 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*, 13793–13807, doi:[10.1021/acs.est.3c02823](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*, e2022GH000767, doi:[10.1029/2022GH000767](https://doi.org/10.1029/2022GH000767).
- 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*, 114034, doi:[10.1088/1748-9326/ad0167](https://doi.org/10.1088/1748-9326/ad0167).
- 2022 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.* **2022**, *9*, 3–9, doi:[10.1021/acs.estlett.1c00730](https://doi.org/10.1021/acs.estlett.1c00730).
- 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*, 00043, doi:[10.1525/elementa.2021.00043](https://doi.org/10.1525/elementa.2021.00043).
- 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.; ... **Nawaz, M.O.** ...; et al.

Secondary Organic Aerosols from Anthropogenic Volatile Organic Compounds Contribute Substantially to Air Pollution Mortality. *Atmospheric Chemistry and Physics* **2021**, 21, 11201–11224, doi:[10.5194/acp-21-11201-2021](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.; ... **Nawaz, M.O.** ...; et al. 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, 075001, doi:[10.1088/2515-7620/ac0af9](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, e2020GH000268, doi:[10.1029/2020GH000268](https://doi.org/10.1029/2020GH000268).

### Manuscripts Under Review (8)

- Submitted **Nawaz, M.O.** & Henze, D.K., Climate action can ameliorate, perpetuate, or exacerbate geopolitical air pollution inequities. *In Revision*.
- Submitted **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. *In Revision*.
- Submitted Goldberg, D.L., **Nawaz, M.O.**, Lyu, C., He, J., McDonald, B., Kondragunta, S., Carlton, A.G., Anenberg, S.C. NO<sub>2</sub> concentrations are different under clear versus cloudy skies and its implications for satellite measurements. *In Revision*.
- Submitted GBD 2023 Disease Injury and Risk Factor Collaborators. 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. *In Revision*.
- Submitted 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. *In Revision*.
- Submitted 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 TEMPO Observations. *Under Review*.
- Submitted 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*.
- Submitted 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)

- In Prep. TOAR-II Health Collaborators: TOAR-II Health Assessment. *In preparation.*
- In Prep. 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.*

## Presentations (28)

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### Invited (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 Presentation (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 (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.

*\*Indicates upcoming presentations that have been accepted*