Gaige Hunter **Kerr**

ASSISTANT RESEARCH PROFESSOR

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Experience

George Washington University, Department of Environmental and Occupational Health	*Washington, DC*
ASSISTANT RESEARCH PROFESSOR	*July 2024–Present*
SENIOR RESEARCH SCIENTIST	*July 2023–June 2024*
RESEARCH SCIENTIST	*July 2021–June 2023*
POSTDOCTORAL SCIENTIST	*July 2020–June 2021*

Advisor: Susan Anenberg

NASA Goddard Space Flight Center	*Greenbelt, MD*
STUDENT RESEARCH COLLABORATOR	*June 2017–May 2020*

Education

Johns Hopkins University, Department of Earth & Planetary Sciences	*Baltimore, MD*
Ph.D., M.A.; Earth & Planetary Sciences	*2015–2020*

Advisor: Darryn Waugh

Cornell University, Department of Earth and Atmospheric Sciences	*Ithaca, NY*
B.Sc. (*cum laude* with distinction); Atmospheric Sciences	*2011–2015*

Advisors: Art DeGaetano, Gang Chen

Publications

Pending

Zimmer, A., Tuholske, C., **Kerr, G. H.**, Kim, S.-Y., & Anenberg, S. C. (in prep.). Changing urban demographic exposure to extreme heat and air pollution.

Ward, R. X., Baliaka, H. D., Schulze, B. C., **Kerr, G. H.**, Crounse, J. D., Hasheminassab, S., Bahreni, R., Dillner, A., Russell, A., Ng, N. L., Wennberg, P. O., Flagan, R. C., & Seinfeld, J. H. (in prep.). The persistence and pathologies of ammonium nitrate smog in Los Angeles.

Nawaz, M. O., Goldberg, D. L., **Kerr, G. H.**, & Anenberg, S. C. (submitted). TROPOMI satellite data reshape NO_2 air pollution land-use regression modeling capabilities in the United States.

Croft, D. P., Chapman H., Lee, A., Nordgren, T. M., Jackson, C. L., Bayram H., Balmes, J., Nassikas, N., Ewart, G., Rice, M., Benmarhnia, T., Celedon, J. C., Holm, S. M., **Kerr, G. H.**, Anenberg, S., Mendez-Lazaro, P., Ambri, P., Goobie, G. C., Rebuli, M. E., Wilson, S., Annesi-Maesano, I., Balakrishnan, K., Cromar, K., Jasper, I., Harkema, J. R., Kapil, V., Lai. P., Maccarone, J., Noel, A., Paulin, L., Pinkerton, K., Teherani, A., Ahn, E., Thurston, G., & Thakur, N. (submitted). Climate change and respiratory health: Opportunities to contribute to environmental justice. An official American Thoracic Society workshop report.

Kim, S.-Y., **Kerr, G. H.**, van Donkelaar, A., Martin, R. V., West, J. J., & Anenberg, S. C. (submitted) Tracking air pollution and CO_2 emissions in 13,189 urban areas worldwide using large geospatial datasets.

Refereed

[28] **Kerr, G. H.**, Meyer, M., Goldberg, D. L., Miller, J. & Anenberg, S. C. (2024). Air pollution impacts from warehousing in the United States uncovered with satellite data. *Nat. Commun.*, *15*, 6006. [link]

[27] Dobkin, F., & **Kerr, G.** (2024). Demographic disparities in Clean Air Act $PM_{2.5}$ attainment counties: Assessing population living in nonattainment conditions. *J. Environ. Stud. Sci.* [link]

[26] **Kerr, G. H.**, Stedman, R. A., & Anenberg, S. C. (2024). Disproportionate Clean Air Act violations occur in communities of color throughout the United States. *Environ. Res. Lett.*, *19*(5), 054052. [link]

[25] **Kerr, G. H.**, Martin, R. V., van Donkelaar, A., Brauer, M., Bukart, K., Wozniak, S., Goldberg, D. L., & Anenberg, S. C. (2024). Increasing racial and ethnic disparities in ambient air pollution-attributable morbidity and mortality in the United States. *Environ. Health Perspect.*, *132*(3), 037002. [link]

[24] Sayyed, T. K., Ovienmhada, U., Kashani, M., Vohra, K., **Kerr, G. H.**, O'Donnell, C., Harris, M., Gladson, L., Titus, A., Adamo, S., Fong, K., Gargulinski, E., Soja, A., Anenberg, S., & Kuwayama, Y. (2024). Satellite data for environmental justice: A scoping review. *Environ. Res. Lett.*, *19*(3), 033001. [link]

[23] O'Dell, K., Kondragunta, S., Zhang, H., Goldberg, D. L., **Kerr, G. H.**, Wei, Z., Henderson, B. H., & Anenberg, S. C. (2024). Public health benefits from improved identification of severe air pollution events with geostationary satellite data. *GeoHealth*, *8*(1), e2023GH000890. [link]

[22] Goldberg, D. L., Tao, M., **Kerr, G. H.**, Ma, S., Tong, D., Fiore, A. M., Dickens, A. F, Adelman, Z., & Anenberg, S. C. (2024). Evaluating the spatial patterns of NO_X emissions in polluted areas with TROPOMI NO_2. *Remote Sens. Environ.*, *300*, 113917. [link]

[21] Gohlke, J. M., Harris, M. H., Roy, A., Thompson, T. M., DePaola, M., Alvarez, R. A., Anenberg, S. C., Apte, J. S., Demetillo, M. A. G., Dressel, I. M., **Kerr, G. H.**, Marshall, J. D., Nowlan, A. E., Patterson, R. F., Pusede, S. E., Southerland, V. A., & Vogel, S. A. (2023). State-of-the-science data and methods need to guide efforts to reduce air pollution inequity. *Environ. Health Perspect.*, *131*(12), 125003. [link]

[20] **Kerr, G. H.**, Goldberg, D. L., Harris, M. H., Henderson, B., Hystad, P., Roy, A., & Anenberg, S. C. (2023). Ethnoracial disparities in nitrogen dioxide pollution in the United States: Comparing datasets from satellites, models, and monitors. *Environ. Sci. Technol.*, *57*(48), 19532–19544. [link]

[19] Camilleri, S. F., **Kerr, G. H.**, Anenberg, S. C. & Horton, D. E. (2023). Disparities in U.S. all-cause NO_2-attributable mortality rates. *Environ. Sci. Technol. Lett.*, *10*(12), 1159–1164. [link]

[18] Carter, T. S., **Kerr, G. H.**, Amini, H., Martin, R., Ovienmhada, U., Schwartz, J., van Donkelaar, A., & Anenberg, S. C. (2023). $PM_{2.5}$ data inputs alter identification of disadvantaged communities. *Environ. Res. Lett.*, *18*(11), 114008. [link]

[17] Badr, H. S., Zaitchik, B. F., **Kerr, G. H.**, Nguyen, N.-L. H., Chen, Y.-T., Hinson, P., Colston, J. M., Kosek, M. N., Dong, E., Hongru, D., Marshall, M., Kristen, N., Mohegh, A., Goldberg, D. L., Anenberg, S. C., & Gardner, L. M. (2023). Unified real-time environmental-epidemiological data for multiscale modeling of the COVID-19 pandemic. *Sci. Data*, *10*, 367 [link]

[16] **Kerr, G. H.**, Badr, H. S., Barbieri, A. F., Colston, J. M., Gardner, L. M., Kosek, M. N., & Zaitchik, B. F. (2023) Evolving drivers of Brazilian SARS-CoV-2 transmission: A spatiotemporally disaggregated time series analysis of meteorology, policy, and human mobility. *GeoHealth*, *7*(3), e2022GH000727. [link]

[15] Colston, J. M., Hinson, P., Nguyen, N.-L. H., Chen, Y. T., Badr, H. S., **Kerr, G. H.**, Gardner, L. M., Martin, D. N., Quispe, A. M., Schiaffino, F., Kosek, M. N., & Zaitchik, B. F. (2023). Effects of hydrometeorological and other factors on SARS-CoV-2 reproduction number in three contiguous countries of Tropical Andean South America: A spatiotemporally disaggregated time series analysis. *Int. J. Infect. Dis. Regions*, *6*, 29–41. [link]

[14] Zhang, X., Waugh, D. W., **Kerr, G. H.**, & Miller, S. M. (2022). Surface ozone-temperature relationship: The meridional gradient ratio approximation. *Geophys. Res. Lett.*, *49*(13), e2022GL098680. [link]

[13] **Kerr, G. H.**, Goldberg, D. L., Knowland, K. E., Keller, C. A., Oladini, D., Kheirbek, I., Mahoney, L., Lu, Z. & Anenberg, S. C. (2022). Diesel passenger vehicle shares influenced COVID-19 changes in urban nitrogen dioxide pollution. *Environ. Res. Lett.*, *17*(7), 074010. [link]

[12] Anenberg, S. C., Mohegh, A., Goldberg, D. L., **Kerr, G. H.**, Brauer, M., Burkart, K., Hystad, P., Larkin, A., Wozniak, S., & Lamsal, L. (2022). Long-term trends in urban NO_2 concentrations and associated pediatric asthma incidence: Estimates from global datasets. *Lancet Planet. Health*, *6*(1), E49–E58. [link]

[11] Goldberg, D. L., Anenberg, S. C., **Kerr, G. H.**, Lu, Z. & Streets, D. G. (2021). TROPOMI: A revolutionary new satellite instrument measuring NO_2 air pollution. *EM (Pittsburgh Pa)*. [link]

[10] Anenberg, S. C., **Kerr, G. H.**, & Goldberg, D. L. (2021). Leveraging satellite data to address air pollution inequities. *EM (Pittsburgh Pa)*. [link]

[9] **Kerr, G. H.**, Goldberg, D. L. & Anenberg, S. C. (2021). COVID-19 pandemic reveals persistent disparities in nitrogen dioxide pollution. *Proc. Natl. Acad. Sci. U.S.A.*, *118*(30), e2022409118. [link]

[8] Gorris, M. E., Anenberg, S. C., Goldberg, D. L., **Kerr, G. H.**, Stowell, J. D., Tong, D., & Zaitchik, B. F. (2021). Shaping the future of science: COVID-19 highlighting the importance of GeoHealth. *GeoHealth*, *5*(5), e2021GH000412. [link]

[7] Goldberg, D. L., Anenberg, S. C., **Kerr, G. H.**, Mohegh, A., Lu, Z., & Streets, D. G. (2021). TROPOMI NO_2 in the United States: A detailed look at the annual averages, weekly cycles, effects of temperature, and correlation with surface NO_2 concentrations. *Earths Future*, *9*(4), e2020EF001665. [link]

[6] **Kerr, G. H.**, Badr, H. S., Gardner, L. M., Perez-Saez, J, & Zaitchik, B. F. (2021). Associations between meteorology and COVID-19 in early studies: Inconsistencies, uncertainties, and recommendations. *OneHealth*, *12*, 100225. [link]

[5] **Kerr, G. H.**, Waugh, D. W., & Miller, S. M. (2021). Jet stream-surface tracer relationships: Mechanism and sensitivity to source region. *Geophys. Res. Lett.*, *48*(1), e2020GL090714. [link]

[4] **Kerr, G. H.**, Waugh, D. W., Steenrod, S. D., Strode, S. A., & Strahan, S. E. (2020). Surface ozone-meteorology relationships: Spatial variations and the role of the jet stream. *J. Geophys. Res. Atmos.*, *125*(21), e2020JD032735. [link]

[3] **Kerr, G. H.**, Waugh, D. W., Strode, S. A., Steenrod, S. D., Oman, L. D., & Strahan, S. E. (2019). Disentangling the drivers of the summertime ozone-temperature relationship over the United States. *J. Geophys. Res. Atmos.*, *124*(19), 10503–10524. [link]

[2] **Kerr, G. H.**, & Waugh, D. W. (2018). Connections between summer air pollution and stagnation. *Environ. Res. Lett.*, *13*(8), 084001. [link]

[1] **Kerr, G. H.**, DeGaetano, A. T., Stoof, C. R., & Ward, D. (2018). Climate change effects on wildland fire risk in the Northeastern and Great Lakes states predicted by a downscaled multi-model ensemble. *Theor. Appl. Climatol.*, *131*, 625–639. [link]

Datasets

[1] Badr, H. S., Zaitchik, B. F., **Kerr, G. H.**, Colston, J. M., Hinson, P., Chen, Y., Nguyen, N. H., Kosek, M., Du, H., Dong, E., & Gardner, L. M. (2020). Unified COVID-19 Dataset. GitHub. [link]

Non-Refereed

[9] Huang, C. H., Alwan, A. K., **Kerr, G. H.**, Olvera, A. J., & Johnson, E. T. (2024). Empowering genderqueer geoscientists: Being and building the change. *Eos*, *105*. [link]

[8] **Kerr, G.** & Anenberg, S. (2023). Comments to EPA on Climate Pollution Reduction grants. [link]

[7] Anenberg, S., Brauer, M., Goldman, L., Hystad, P., & **Kerr, G.** (2022). Comments to EPA on proposed rule and related materials for control of air pollution from new motor vehicles: Heavy-duty engine and vehicle standards [link]

[6] Anenberg, S., Xiao, Q., **Kerr, G.**, & Chakraborty, J. (2022). Using data to mitigate inequitable environmental burdens, *Eos*, *103*. [link]

[5] **Kerr, G. H.** (2020). Elucidating the relationships between surface-level ozone and meteorology, (PhD thesis). Retrieved from JScholarship. (`jhir.library.jhu.edu/handle/1774.2/63465`). Baltimore, MD: Johns Hopkins University.

[4] Krocak, M. J., **Kerr, G. H.**, & Flournoy, M. D. (2019). Diversity, equity, and inclusion in the atmospheric sciences. An interview with Kevin Petty. *Bull. Amer. Meteor. Soc.*, *100*(6), 1126.

[3] Flournoy, M. D., Krocak, M. J., & **Kerr, G. H.** (2018). An introvert's guide to networking. *Bull. Amer. Meteor. Soc.*, *99*(11), 2379.

[2] **Kerr, G. H.**, Krocak, M. J., Flournoy, M. D., & Knox, J. A. (2018). Weathering together: Building a climate of diverse community perspectives. *Bull. Amer. Meteor. Soc.*, *99*(10), 2150.

[1] **Kerr, G. H.** (2015) Climate change effects on fire risk in the U. S. Northeast, (undergraduate honors thesis). Ithaca, NY: Cornell University.

Research Grants

Current

Institutional PI *(Daniel Horton is PI)*: "Efficacy of vehicle emission control interventions in ameliorating air pollution exposure and health burdens in marginalized communities," Health Effects Institute (HEI) (2024–2027; $800,000).

PI: "Assessing environmental justice, air quality, and health co-benefits of transport interventions in U.S. urban areas," National Aeronautics and Space Administration (NASA) (2024–2027; $1,174,329).

Pending

Co-I *(Susan Anenberg is PI)*: "Strengthening U.S. interagency air quality management with geostationary satellites to benefit public health and environmental justice," NASA (2025–2028; $600,000).

Co-I *(Dan Goldberg is PI)*: "Using satellite NO_2 and low-cost sensor data to understand $PM_{2.5}$ disparities," Environmental Protection Agency (EPA) (2025–2029; $1,250,000).

Co-I *(M. Omar Nawaz is PI)*: "HEAD-IN: Assessing disaster risk and resilience action benefits associated with compound heat and air quality hazards, exposures, and vulnerabilities," NASA (2024–2027; $986,525).

Co-I *(Caitlin Grady is PI)*: "Capital greening: A collaborative mission for a sustainable Washington, DC," EPA (2024–2027; $19,999,883).

PI: "Quantifying hyperlocal variations in traffic-related pollution: A citizen science approach from New York to Nairobi," NASA (2024–2027; $897,410).

Co-I *(Anenberg is PI)*: "Research and Engagement for Action on Climate and Health (REACH) Center," National Institutes of Health (NIH) (2024–2027; $2,550,000).

Completed

Co-I *(Anenberg is PI)*: "Value of GeoXO atmospheric composition data for estimating air pollution-related health impacts," National Oceanic and Atmospheric Administration (2021–2024; $599,416).

Competitive grants not selected for funding

PI: "Probing air quality and health impacts of oil and gas extraction in the United States: A satellite remote sensing and epidemiological study of a climate-health relevant industry," NIH (2024–2025; $19,771).

Co-I *(Anenberg is PI)*: "Estimating long-term NO_2 exposures and associated asthma incidence burdens for the GBD 2022 Study and beyond," HEI (2023–2024; $552,371).

PI: "Improving human health and community resilience to air pollution and climate change-driven extremes in the Gulf of Mexico region," National Academies of Sciences, Engineering, and Medicine Gulf Research Program Early Career Fellowship (2023–2025; $76,000).

Co-I *(Sacoby Wilson is PI)*: "Addressing environmental racism through GIS mapping and community science," NIH (2022–2027; $3,872,900).

Co-I *(Anenberg is PI)*: "From space to the street: using satellite remote sensing to address environmental injustice from transportation-related air pollution," NASA (2022–2024; $1,049,809).

Presentations

Selected invited talks

[17] **Kerr, G. H.** (2024). *Air pollution inequity in the United States: The view from space.* Department of Environmental Studies, University of Colorado Boulder, Boulder, CO.

[16] **Kerr, G. H.** (2024). *Air pollution inequity in the United States: The view from space.* EAS Seminar Series, Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY.

[15] **Kerr, G. H.** (2024). *Air pollution inequity in the United States: The view from space.* Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA.

[14] **Kerr, G. H.** (2023). *Investigating injustices in warehousing-driven air pollution and Clean Air Act compliance.* Air Quality Planning & Science Division (AQPSD), California Air Resources Board (virtual).

[13] **Kerr, G. H.** (2023). *From Space to the Streets: Leveraging Satellite Data for Air Pollution, Health, and Justice.* Sustainability Seminar Series, Montclair State University, Montclair, NJ.

[12] **Kerr, G. H.** (2022). *Disparities in air pollution and attributable health burdens in the United States: Who, why, and what to do?* Center for Public Health and Environmental Assessment/Public Health and Environmental Systems Division Seminar Series, Environmental Protection Agency (virtual).

[11] **Kerr, G. H.** (2022). *From space to the streets: Using satellite data to track neighborhood-scale air inequality.* Earth Science Applications Week 2022, NASA (virtual).

[10] **Kerr, G. H.** (2022). *Trends and environmental justice implications of air pollution in the United States.* International Visitor Leadership Program, U.S. Department of State Bureau of Educational and Cultural Affairs, Washington, DC.

[9] Southerland, V. A, & **Kerr, G. H.** (2022). *Health and justice implications of urban air pollution on regional to global scales.* Air Pollution Inequity Series, Environmental Defense Fund (virtual).

[8] Goldberg, D. L, & **Kerr, G. H.** (2022). *Using NO_2 satellite data for urban environmental justice applications and lessons learned during the COVID-19 lockdowns.* Bureau of Air Quality Analysis and Research Seminar Series, NYS Department of Environmental Conservation (NYSDEC) Division of Air Resources (virtual).

[7] **Kerr, G. H.**, Goldberg, D. L., Kheirbek, I., Mahoney, L., Anenberg, S. C. & Oladini, D. (2021). *The COVID-19 natural experiment: Insights into trends, drivers, and impacts of nitrogen dioxide pollution.* Fall Meeting of the American Geophysical Union, New Orleans, LA.

[6] **Kerr, G. H.** (2021). *Lessons learned from changes in nitrogen dioxide pollution during COVID-19.* CSL Seminar Series, NOAA Chemical Sciences Laboratory (virtual).

[5] **Kerr, G. H.** (2021). *COVID-19 pandemic reveals persistent disparities in NO_2 pollution.* Online Summer Workshop in Environment, Energy, and Transportation (virtual).

[4] **Kerr, G. H.** (2021). *Transportation impacts on NO_2 pollution and racioethnic disparities during COVID-19.* Environmental Sciences Graduate Program, University of California, Riverside (virtual).

[3] **Kerr, G. H.** (2021). *Elucidating the relationship between O_3 and meteorology & COVID-19 pandemic reveals persistent NO_2 disparities.* Atmospheric Chemistry Modeling Group, Harvard University (virtual).

[2] **Kerr, G. H.** (2020). *Elucidating the relationship between surface ozone and meteorology.* University of Maryland, College Park, MD.

[1] **Kerr, G. H.** (2019). *What controls the ozone-temperature relationship? Results from the GMI CTM over the United States.* CCM Meeting, NASA Goddard Space Flight Center, Greenbelt, MD.

Conference talks

[30] Nawaz, M. O., O'Dell, K., Anenberg, S., Goldberg, D. L., **Kerr, G. H.**, He, J., McDonald, B., & Kondragunta, S. (2024). *Value of GeoXO atmospheric composition data for estimating air pollution-related health impacts.* 15th Conference on Environment and Health, American Meteorological Society, Baltimore, MD.

[29] Goldberg, D., Nawaz, M. O., Judd, L. M., de Foy, B., Johnson, J., **Kerr, G. H.**, Runkle, S., Huber, D., & Yarwood, G. (2024). *Investigating hyper-local NO_X emissions in Houston and New York City using GCAS, TROPOMI, and sub-kilometer model simulations.* 26th Conference on Atmospheric Chemistry, American Meteorological Society, Baltimore, MD.

[28] Anenberg, S., Goldberg, D., **Kerr, G.**, Kim, S.-Y., & Runkle, S. (2023). *Urban NO_2: Concentrations, health and equity impacts, and mitigation opportunities .* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[27] Camilleri, S. F., **Kerr, G.**, Anenberg, S., Harris, M. & Horton, D. (2023). *Inequitable all-cause NO_2-attributable mortality burdens across racial and ethnic population subgroups in the U.S..* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[26] Kondragunta, S., O'Dell, K., Zhang, H., Wei, Z., **Kerr, G. H**, Goldberg, D. L. & Anenberg, S. (2023). *GeoXO air quality value assessment studies.* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[25] **Kerr, G.**, Meyer, M., Goldberg, D., Miller, J., & Anenberg, S. C. (2023). *Satellite data uncover nationwide air pollution impacts from warehousing.* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[24] Kim, S.-Y., **Kerr, G.**, & Anenberg, S. C. (2023). *Tracking CO_2 emissions and air pollution in 13,000 cities worldwide using large geospatial datasets.* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[23] Ovienmhada, U., Kashani, M., Vohra, K., Sayyed, T., **Kerr, G.**, O'Donnell, K., Harris, M., Gladson, L., Titus, A., Adamo, S., Fong, K., Gargulinski, E., Soja, A., Anenberg, S. C. & Kuwayama, Y. (2023). *Satellite data for environmental justice: A scoping review.* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[22] Kondragunta, S., O'Dell, K., Zhang, H., Wei, Z., **Kerr, G.**, Goldberg, D., & Anenberg, S. C. (2023). *GeoXO air quality value assessment studies.* Fall Meeting of the American Geophysical Union, San Francisco, CA.

[21] **Kerr, G. H.**, Henderson, B. H., Hystad, P., Goldberg, D. L., & Anenberg, S. C. (2022). *Leveraging novel high-resolution NO_2 datasets to fill blind spots from NO_2 monitors and address environmental (in)justice.* Fall Meeting of the American Geophysical Union, Chicago, IL.

[20] Goldberg, D. L., **Kerr, G. H.**, O'Dell, K., Richardt, E., Tao, M., Ma, S., Tong, D., Harkey, M., Johnson, J., Yarwood, G., de Foy, B., Judd, L. M., Holloway, T., & Anenberg, S. C. (2022). *Applications of TROPOMI NO$_2$ to understand urban NO$_2$ and NO$_x$ emissions.* Fall Meeting of the American Geophysical Union, Chicago, IL.

[19] O'Dell, K., Goldberg, D. L., **Kerr, G. H.**, Henderson, B. H., Zhang, H., Kondragunta, S., & Anenberg, S. C. (2022). *Exploring the value of future geostationary satellite-based atmospheric composition data for improving health and air pollution injustice.* Fall Meeting of the American Geophysical Union, Chicago, IL.

[18] **Kerr, G. H.**, Goldberg, D. L., & Anenberg, S. C. (2022). *Nitrogen dioxide-attributable pediatric asthma in the United States: Burden, trends, and environmental justice concerns.* 24rd Conference on Atmospheric Chemistry, American Meteorological Society (virtual).

[17] **Kerr, G. H.**, Goldberg, D. L., Harris, M., Roy, A., & Anenberg, S. C. (2021). *Nitrogen dioxide-attributable pediatric asthma in the United States: Burden, trends, and environmental justice concerns.* Fall Meeting of the American Geophysical Union, New Orleans, LA.

[16] Goldberg, D. L., Anenberg, S. C., **Kerr, G. H.**, McDuffie, E. E., Smith, S., Lu, Z., & Streets, D. G. (2021). *Reconciling differences between satellite-inferred NO$_x$ emissions and inventories in global cities.* Fall Meeting of the American Geophysical Union, New Orleans, LA.

[15] Anenberg, S., Goldberg, D., & **Kerr, G. H.** (2021). *Inconsistent NO$_2$ during COVID-19 lockdowns: Lessons for protecting near-term public health and designing longer-term environmental policies.* MARAMA Mobile Sources Workshop (virtual).

[14] Goldberg, D.L., Anenberg, S., Griffin, D., McLinden, C. A., **Kerr, G. H.**, Lu, Z., Streets, D. G. (2020) *Using TROPOMI and re-analysis meteorology to disentangle the impact of the COVID-19 lockdowns on urban NO$_2$ from natural variability.* Fall Meeting of the American Geophysical Union (virtual).

[13] **Kerr, G. H.**, Goldberg, D. L. & Anenberg, S. C. (2021). *Impact of coronavirus lockdowns on NO$_2$: Successes and challenges for environmental inequality in the United States.* 23rd Conference on Atmospheric Chemistry/12th Conference on Environment and Health, American Meteorological Society (virtual).

[12] Anenberg, S., Goldberg, D. L., **Kerr, G. H.**, Lu, Z., Griffin, D., McLinden, C. A., Duncan, B. N., Miller, J., Minjares, R. J., & Dreessen, J. (2020). *Inconsistent NO$_2$ drops during COVID-19 lockdowns: Lessons for protecting near-term public health and designing longer-term environmental policies.* Fall Meeting of the American Geophysical Union (virtual).

[11] **Kerr, G. H.**, Goldberg, D. L. & Anenberg, S. C. (2020). *Environmental injustices associated with coronavirus-related changes in NO$_2$ pollution.* Fall Meeting of the American Geophysical Union (virtual).

[10] **Kerr, G. H.**, Goldberg, D. L. & Anenberg, S. C. (2020). *COVID-19 lockdowns reveal pronounced disparities in nitrogen dioxide pollution levels.* Urban Air Quality Breakout, Keck Institute for Space Studies, Caltech (virtual).

[9] Goldberg, D., Anenberg S., **Kerr, G.**, Lu, Z., McLinden, C., & Griffin, D. (2020). *Disentangling the impact of COVID-19 lockdowns on urban NO$_2$ from natural variability.* Community Modeling and Analysis System Conference (virtual).

[8] **Kerr, G. H.**, Waugh, D. W. (2020). *Connections between the surface-level ozone-temperature relationship and the eddy-driven jet stream.* 22nd Conference on Atmospheric Chemistry, American Meteorological Society, Boston, MA.

[7] **Kerr, G. H.**, Waugh, D. W., Steenrod, S. D., & Strode, S. A. (2019). *Sensitivity of surface-level ozone to temperature-related processes.* 21st Conference on Atmospheric Chemistry, American Meteorological Society, Phoenix, AZ.

[6] **Kerr, G. H.**, & Waugh, D. W. (2018). *Impacts of emission variability on CTM pollutant representation.* 20th Joint Conference on the Applications of Air Pollution Meteorology with the A&WMA, American Meteorological Society, Austin, TX.

[5] **Kerr, G. H.**, & Waugh, D. W. (2017). *Connections between air pollution and stagnation.* Fall Meeting of the American Geophysical Union, New Orleans, LA.

[4] **Kerr, G. H.**, & Waugh, D. W. (2017). *Modeling of regional air pollution events.* Meteorology And Climate–Modeling for Air Quality Conference, Davis, CA.

[3] **Kerr, G. H.**, & Waugh, D. W. (2017). *Air pollution in the Northeastern United States: Elucidating drivers of PM$_{2.5}$ and O$_3$ events.* 19th Conference on Atmospheric Chemistry, American Meteorological Society, Seattle, WA.

[2] **Kerr, G. H.**, & DeGaetano, A. T. (2016). *Climate change effects on wildland fire risk in the Northeastern United States and Great Lakes region.* 28th Conference on Climate Variability and Change, American Meteorological Society, New Orleans, LA.

[1] **Kerr, G. H.**, DeGaetano, A. T., & Flannigan, M. D. (2015). *Climate change effects on fire risk in the Northeast U.S.* Northeastern Storms Conference, Saratoga Springs, NY.

Conference posters

[10] Kim, S. Y., **Kerr, G. H.**, & Anenberg, S. C. (2024). *Estimating global trends of air pollution, air pollution-attributable disease burdens, and CO_2 emissions in 13,000 cities using large geospatial datasets.* 36th Annual Conference of the International Society for Environmental Epidemiology, Santiago, Chile.

[9] Nawaz, M. O., Goldberg, D. L., **Kerr, G. H.**, Kondragunta, S., Anenberg, S. (2024). *Development of a land-use regression of hourly surface NO_2 in preparation for GeoXO atmospheric composition data.* European Geosciences Union, Vienna, Austria.

[8] **Kerr, G. H.**, Burton, C., Carter, T. S., Kelley, D. I., Nawaz, M. O., O'Dell, K., & Anenberg, S. C. (2024). *Incorporating air pollution-related health damages from wildland fires into the Social Cost of Carbon.* 15th Conference on Environment and Health, American Meteorological Society, Baltimore, MD.

[7] Kim, S. Y., **Kerr, G. H.**, & Anenberg, S. C. (2024). *Tracking CO_2 emissions and air pollution in 13,000 cities worldwide using large geospatial datasets.* 15th Conference on Environment and Health, American Meteorological Society, Baltimore, MD.

[6] Anenberg, S. C, Brauer, M., Burkart, K., Goldberg, D., Hystad, P., **Kerr, G.**, Larkin, A. & Wozniak, S. (2022). *Integrating satellites, ground monitoring, and modeling to estimate long-term NO_2 exposures and associated pediatric asthma impacts.* Health Effects Institute Annual Conference, Washington, DC.

[5] **Kerr, G. H.**, Badr, H. S., Perez-Saez, J., & Zaitchik, B. F. (2020). *Bridging the worlds of modeling the spread of COVID-19 and meteorology.* Climatological, Meteorological and Environmental factors in the COVID-19 pandemic of the World Meteorological Organization (virtual meeting).

[4] **Kerr, G. H.**, Badr, H. S., Gardner, L. M., Perez-Saez, J., & Zaitchik, B. F. (2020). *Consequences of modeling assumptions and scope of analysis on connections between meteorology and COVID-19.* Japan Geoscience Union-American Geophysical Union Joint Meeting (virtual meeting).

[3] **Kerr, G. H.**, & Waugh, D. W. (2019). *What causes the observed surface ozone-temperature relationship? Effect of the eddy-driven jet on surface-level transport.* Meteorology And Climate–Modeling for Air Quality Conference, Davis, CA.

[2] **Kerr, G. H.**, & Waugh, D. W. (2018). *Temperature-dependent drivers of summer surface-level ozone: Insights from a chemical transport model within the Eastern United States.* iCACGP-IGAC Science Conference, Takamatsu, Kagawa, Japan.

[1] **Kerr, G.**, Chaubey, J. P., O'Neill, N. T., Hayes, P., & Atkinson, D. E. (2014). *Identification of absorbing organic (brown carbon) aerosols through sun photometry: Results from AEROCAN/AERONET stations in high Arctic and urban locations.* Fall Meeting of the American Geophysical Union, San Francisco, CA.

Fellowships, Honors & Awards

2024	**American Meteorological Society Award for Early-Career Professional Achievement** [link] *"For advancing representation, accessibility, inclusion and diversity within atmospheric sciences, fostering exceptional contributions linking atmospheric science to public health and environmental justice causes."*
2022	**Awardee,** AGU GeoHealth Elevator Pitch Competition
2021	**Selected to participate in ACCESS XVI,** Brookhaven National Laboratory
2021	**Jane Warren Trainee Conference Award,** Health Effects Institute
2020–2021	**Air Quality Fellow,** Greening Diplomacy Initiative, U.S. Department of State
2020	**Postdoc Appreciation Day Research Symposium Award,** George Washington University
2020	**ASP Postdoctoral Fellowship,** National Center for Atmospheric Research (declined)
2020	**Earth Institute Postdoctoral Fellowship,** Columbia University (declined)
2018	**Best Student Presentation,** Department of Earth & Planetary Sciences, Johns Hopkins University
2018	**J. Brien Key Travel Award,** Johns Hopkins University
2018	**Jay Fein Scholarship,** American Meteorological Society
2017	**Travel Award,** UC Davis Air Quality Research Center/California Air Resources Board
2017	**Committee on Atmospheric Chemistry Travel Award,** American Meteorological Society
2016–2018	**Water, Climate, and Health Integrative Graduate Education and Research Traineeship (IGERT) Program,** NSF

Teaching & Outreach

Instructor:

Global Climate Change and Air Pollution (PUBH 6140), George Washington University–2023 (11 students), 2024 (10 students)

Python for Beginners (BIOF 020), National Institutes of Health Foundation for Advanced Education in the Sciences–2021

Invited panelist:

Earth Day Discussion on Climate and Environmental Justice, Morgan Stanley Capital International (MSCI) Inc., April 2023

Voices of Climate Justice, SatSummit 2022, September 2022

Satellite Perspectives on Environmental Justice, Air & Waste Management Association's 115th Annual Conference & Exhibition, June 2022

Integrating NASA Satellite Data in Cross-cutting Applications in Respiratory Health, American Thoracic Society Conference, May 2022

Environmental Justice Series, Georgetown University School of Medicine, August 2021

Invited guest lecturer:

Environmental and Occupational Epidemiology (PUBH 6121), George Washington University, Fall 2021, 2022, 2023, & 2024

Global Environmental Justice: Issues and Places (GEOG 3195/IAFF 3190), George Washington University, Spring 2023

Sustainable Energy and Environmental Health (PUBH 3150), George Washington University, Spring 2023 & 2024

The Environment and Human Health (ENVS3400), Dalhousie University, Winter 2023

Introduction to Air Quality (ENVIR ST/ATM OCN 355), University of Wisconsin-Madison, Fall 2021

Global Climate Change and Air Pollution (PUBH 6140), George Washington University, Summer 2021 & 2022

Teaching assistant:

Oceans & Atmospheres (AS.270.224), Johns Hopkins University, 11 students, Spring 2019

Introduction to Global Environmental Change (AS.270.103), Johns Hopkins University, 45 students, Fall 2018

Atmospheric Thermodynamics and Hydrostatics (EAS 3410), Cornell University, Fall 2014

Grader:

Climate Change and Global Warming (EAS 2680), Cornell University, Spring 2015

Johns Hopkins Teaching Academy: Completed a three-phase professional development program to learn an overview of pedagogy, acquire teaching and assessment skills, and serve as an apprentice with faculty mentors (August 2018–April 2019).

Engineering Innovation: Developed and taught an intensive, two-week curriculum reviewing Algebra, Physics, Trigonometry, and Computer Science for ~20 Baltimore City high school students (Summers 2016–2019).

Leadership

Ad-hoc reviewer: *Atmospheric Chemistry and Physics*, *Atmospheric Environment*, *Environmental Research Letters*, *Environmental Science & Technology Letters*, *Elementa: Science of the Anthropocene*, *Geophysical Research Letters*, *International Journal of Environmental Research and Public Health*, *Journal of Climate*, *Journal of Geophysical Research: Atmospheres*, *Lancet Planetary Health*, *OneHealth*, *PLOS One*, *Public Health Reviews*, *Remote Sensing of Environment*, *Science Advances*, *Weather and Climate Dynamics*

Guest editor: *GeoHealth* "Geospatial data applications for environmental justice" special collection

Coordinating lead author: Second Tropospheric Ozone Assessment Report (TOAR-II) Health Assessment (2023–present)

Chair: American Meteorological Society (AMS) Coriolis LGBTQ+ affinity group (2020–2024)

Trainer: NASA Applied Remote Sensing Training Program (ARSET) on "Satellite data for air quality environmental justice and equity applications" (2023) [link]

Member: AMS Overall Planning Committee (2021–2024)

Member: AMS Annual Meeting Oversight Committee (2020–2022)

Member: AMS Board on Representation, Accessibility, Inclusion, and Diversity (2017–2023)

Member: AMS Charles Anderson Award Committee (2019), AMS Louis J. Battan Author's Award Committee (2020–2022)

Student presentation judge: AMS Student Conference poster session (2020, 2021), American Geophysical Union (2020–2022)

Co-chair: AMS Student Conference (responsible for organizing an annual two-day conference for 800+ students and overseeing a budget of ~$120,000) (2018–2020)

Student member: AMS Task Force on Professional Conduct (2019–2020)

Student member: AMS Committee on Meteorological Aspects of Air Pollution (2016–2019)

Public Spotlights & Highlights

The New York Times "Looking from space, researchers find pollution spiking near e-commerce hubs" [link]

The Verge "E-commerce is driving up pollution near warehouses" [link]

Grist "Deal of the day: New study links online shopping to air pollution" [link]

Wisconsin Public Radio "Languishing, WHO air quality report, favorite board games" [link]

WFYI Indianapolis "Air quality improved but racial and ethnic disparities in deaths and disease widened, study finds" [link]

The GW Hatchet "Milken researchers find widened racial disparities in pollution-related illnesses" [link]

The New York Times "One thing most countries have in common: Unsafe air" [link]

Stat "As respiratory diseases rise, EPA tightens air quality standards" [link]

European Geosciences Union blogs "Nitrogen dioxide disparities in the time of COVID-19: How satellite data can facilitate environmental justice studies during this natural experiment and beyond" [link]

Politico "Activists fear EPA's truck pollution rule will miss the mark" [link]

Popular Science "Low-carbon energy minimizes racial disparities in neighborhoods with air pollution" [link]

Chemical & Engineering News "Satellite data reveal that diesel trucking drives US air pollution inequality" [link]

Stat "The pandemic made clear who doesn't get to breathe clean air. Now what?" [link]

ABC News "Air pollution remained higher in minority communities during the pandemic, revealing persistent health disparities" [link]

NASA "Q&A: Scientists analyze how the pandemic affected air quality" [link]

Chemical & Engineering News "Air pollution disparities persisted during COVID-19 lockdowns" [link]

PNAS Science Sessions Podcast "Racial disparities in air pollution" [link]

National Geographic "Does everyone need to wear a mask outside? Experts weigh in" [link]

Scripps Media, Inc. "What environmental changes from COVID-19 will stick around after pandemic?" [link]

The Weather Channel [link]

Baltimore Daily Sun "Crude oil shipments threaten city neighborhoods" [link]