James D. East

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Email: jeast@g.harvard.edu Website: https://eastjames.github.io

Education

Ph.D., Environmental Engineering 2023
North Carolina State University, Raleigh, NC
Faculty Advisor: Fernando Garcia Menendez, Associate Professor

B.S., Environmental Engineering 2015
North Carolina State University, Raleigh, NC

Experience

Postdoctoral Fellow Harvard University
2023 - present Cambridge, MA
School of Engineering and Applied Sciences
Faculty Mentor: Daniel Jacob, Professor

ORISE Research Fellow U.S. Environmental Protection Agency
2020 - 2023 Research Triangle Park, NC
Office of Research and Development
Mentors: Barron H. Henderson, Sergey Napelenok

Graduate Research Assistant NC State University
2017 - 2020 Raleigh, NC
Department of Civil, Construction, and Environmental Engineering
Faculty Advisor: Fernando Garcia Menendez, Associate Professor

Designer I John R. McAdams Company
2015 - 2017 Durham, NC
Design engineer

Undergraduate Research Assistant NC State University
2014-2015 Raleigh, NC
Department of Civil, Construction, and Environmental Engineering
Faculty Advisor: Emily Berglund, Professor

First-author Publications

(n=5)
Google Scholar

7 James D. East, E Monier, RK Saari, and F Garcia-Menendez. Projecting changes in the frequency and magnitude of ozone pollution events under uncertain climate sensitivity. *Earth's Future*, 12(6):e2023EF003941, 2024. https://doi.org/10.1029/2023EF003941

Media: AAMC | NC State News | Earth.com | The Daily Guardian (India)

6 James D. East, DJ Jacob, N Balasus, AA Bloom, LP Bruhwiler, Z Chen, JO Kaplan, LJ Mickley, TA Mooring, E Penn, B Poulter, MP Sulprizio, JR Worden, RM Yantosca, and Z Zhang. Interpreting the seasonality of atmospheric methane. *Geophysical Research Letters*, 51(10):e2024GL108494, 2024. https://doi.org/10.1029/2024GL108494

4 James D. East, E Monier, and F Garcia-Menendez. Characterizing and quantifying uncertainty in projections of climate change impacts on air quality. *Environmental Research Letters*, 17(9), 2022. https://doi.org/10.1088/1748-9326/ac8d17

3 James D. East, BH Henderson, SL Napelenok, SN Koplitz, G Sarwar, R Gilliam, A Lenzen, DQ Tong, RB Pierce, and F Garcia-Menendez. Inferring and evaluating

satellite-based constraints on NO_x emissions estimates in air quality simulations. *Atmospheric Chemistry and Physics*, 22(24):15981–16001, 2022. https://acp.copernicus.org/articles/22/15981/2022/

1 James D. East, JS Montealegre, JE Pachon, and F Garcia-Menendez. Air quality modeling to inform pollution mitigation strategies in a Latin American megacity. *Science of The Total Environment*, 776(145894), 2021. https://doi.org/10.1016/j.scitotenv.2021.145894

Media: NC State News | Environmental News Network

Co-author Publications

(n=7, ∗Submitted)

∗**12** LH Yang, DJ Jacob, H Lin, R Dang, KH Bates, **East, JD**, KR Travis, DC Pendergrass, and LT Murray. Model underestimates of OH reactivity cause overestimate of hydrogen's climate impact. *arXiv:2408.05127*, 2024. https://doi.org/10.48550/arXiv.2408.05127

∗**11** LA Estrada, DJ Varon, MP Sulprizio, H Nesser, Z Chen, N Balasus, SE Hancock, M He, **East, JD**, TA Mooring, AO Alonso, JD Maasakkers, I Aben, S Baray, KW Bowman, JR Worden, FJ Cardoso-Saldaña, E Reidy, and DJ Jacob. Integrated Methane Inversion (IMI) 2.0: an improved research and stakeholder tool for monitoring total methane emissions with high resolution worldwide using TROPOMI satellite observations. *EGUsphere*, 2024. https://doi.org/10.5194/egusphere-2024-2700

∗**10** E Penn, DJ Jacob, Z Chen, **East, JD**, MP Sulprizio, L Bruhwiler, JD Maasakkers, H Nesser, Z Qu, Y Zhang, and W Worden. What can we learn about tropospheric OH from satellite observations of methane? *EGUsphere*, 2024. https://doi.org/10.5194/egusphere-2024-2260

∗**9** SE Hancock, DJ Jacob, Z Chen, H Nesser, A Davitt, DJ Varon, MP Sulprizio, N Balasus, LA Estrada, **East, JD**, E Penn, CA Randles, J Worden, I Aben, RJ Parker, and JD Maasakkers. Satellite quantification of methane emissions from South American countries: A high-resolution inversion of TROPOMI and GOSAT observations. *EGUsphere*, 2024. https://doi.org/10.5194/egusphere-2024-1763

∗**8** Q Zhu, DJ Jacob, K Yuan, F Li, BRK Runkle, M Chen, AA Bloom, B Poulter, **East, JD**, WJ Riley, G McNicol, J Worden, C Frankenberg, and M Halabisky. Advancements and opportunities to improve bottom-up estimates of global wetland methane emissions. 2024

5 Matt S. Sparks, I Farahbakhsh, M Anand, CT Bauch, KC Conlon, **JD East**, T Li, M Lickley, F Garcia-Menendez, E Monier, and RK Saari. Health and equity implications of individual adaptation to air pollution in a changing climate. *Proceedings of the National Academy of Sciences*, 121(5):e2215685121, 2024. https://doi.org/10.1073/pnas.2215685121

2 Daiwen Kang, C Hogrefe, S Golam, **JD East**, JM Madden, R Mathur, and BH Henderson. Assessing the Impact of Lightning NOx Emissions in CMAQ Using Lightning Flash Data from WWLLN over the Contiguous United States. *Atmosphere*, 13(8), 2022. https://www.mdpi.com/2073-4433/13/8/1248

Additional Publications

• **James D. East** and F Garcia-Menendez. *Internal climate variability and initial condition ensembles in air quality projections.* In: C. Deser and K. Rodgers (guest

eds) New research on climate variability and change using initial-condition Large Ensembles. Special issue of US CLIVAR VARIATIONS. Volume 18, Number 2, Summer 2020. http://dx.doi.org/10.5065/0DSY-WH17

• Fernando Garcia-Menendez, **JD East**, BD Pienkosz, and E Monier. Climate model response uncertainty in projections of climate change impacts on air quality. In Wanmin G Mensink C and Hakami A, editors, *Air Pollution Modeling and its Application XXVI*, pages 433–437. Springer International Publishing, 2020. https://doi.org/10.1007/978-3-030-22055-6_69

• Juan S. Montealegre, J Vanegas, JE Pachon, A Rojas, **JD East**, and F Garcia-Menendez. Air quality modeling as a tool for adjusting emission inventories. In *2019 Congreso Colombiano y Conferencia Internacional de Calidad de Aire y Salud Pública (CASAP)*, pages 1–4, 2019. https://doi.org/10.1109/CASAP48673.2019.9364063

Invited Talks

2024 Air & Waste Management Association - RTP Chapter. April 2024.

2024 Harvard University SEAS Cross Area Seminar. Cambridge, MA. March 2024.

2024 NASA Jet Propulsion Laboratory. Pasadena, CA. January 2024.

2023 AGU Atmospheric and Space Electricity Early Career seminar. June 2023.

2023 NASA Atmospheric Chemistry and Dynamics Lab Seminar. January 2023.

2022 HAQAST Update22 speaker and panelist (link). January 2022.

Selected Conference Presentations

2024 AGU24, Washington, DC. December 12, 2024 (*accepted*) B43K-03

2024 11th International GEOS-Chem Meeting. St. Louis, MO. June 13, 2024.

2023 Task Force on Hemispheric Transport of Air Pollution. April 21, 2023.

2022 AGU Fall Meeting, Chicago, IL. December 13, 2022. AE13A-08

2022 CMAS Conference, Chapel Hill, NC. October 18, 2022.

2022 Environmental Engineering Symposium at NC State. March 4, 2022.

2022 HAQAST Update22. January 20, 2022.

2021 CMAS Conference, Chapel Hill, NC. November 2, 2021.

2021 Science on Earth Day "ScED" Talks, U.S. EPA, ORD. April 22, 2021.

2021 Early Career Seminar. NLTO. U.S. EPA. March 25, 2021.

2020 CMAS Conference, Chapel Hill, NC. October 27, 2020.

2019 CASAP Conference. Barranquilla, Colombia. August 14, 2019.

2019 NC Breathe Conference. Wilmington, NC. April 11, 2019.

Selected Poster Presentations

2023 AGU Fall Meeting, San Francisco, CA. December 12, 2023. B21K-2111

2022 AGU Fall Meeting, Chicago, IL. December 16, 2022. A52N-1166

2022 11th International GEOS-Chem Conference. June 8, 2022.

2022 TEMPO Science Team Meeting. June 1, 2022.

2021 AGU Fall Meeting, New Orleans, LA. December 13, 2021. A15B-1625

2021 Environmental Engineering Symposium at NC State. February 26, 2021.

2020 AGU Fall Meeting. December 10, 2020. GC060-0006

2020 AAAR Conference. October 5, 2020.

2020 HAQAST Showcase. July 21, 2020.

2019 NC State University Latin American Research Symposium. February 2019.

2018 111th Air & Waste Management Association, Hartford, CT. June 25, 2018.

2015 108th Air & Waste Management Association, Raleigh, NC. June 22, 2015.

Teaching & Mentoring

Teaching Assistant

Fundamentals of Environmental Engineering. NC State University. Spring 2018.

- Weekly office hours. Graded tests and assignments. Solutions for class site.

Guest Lecturer

Environmental Modeling. NC State University. Spring 2022.

- Lecture and active learning jupyter notebook activity.

Research Mentoring

Grace Gould, undergraduate, NC State University

- NC State University REU Summer Program.
- "Impact of climate change on U.S. ozone air quality." Research symposium poster.

Sophie Farr, undergraduate, Vassar College

- Harvard University SPHEER, Summer Program at Harvard in Earth and Environmental Research.
- "Quantifying National Methane Emissions from Oman Using Satellite Observations." AGU24 abstract.

Awards & Fellowships

Fellowships

U.S. Environmental Protection Agency ORISE Fellowship. 2020-2023. $180,000

Grants

East, JD and Jacob, DJ. "Construction of Jacobian matrices for inversion of satellite methane observations." Harvard FAS Research Computing. January 2023. 870,912 core-hours.

Awards

Finalist. Three Minute Thesis. University level. NC State University. 2022.
Talk video | Dept. News Article

1st Place. Three Minute Thesis. Department level. NC State University. 2022.
Dept. News Article

1st Place. Masters student poster competition. AWMA ACE. 2018.
Dept. News Article

Honorable Mention Poster. EWC Symposium, NC State University. 2018.

1st Place. Undergrad student poster competition, AWMA ACE. 2015.
Dept. News Article

Academic Recognition

Sustainability Research and Study Related to Air Quality and Waste Management Award. Air & Waste Management Association. 2019.

Graduate Merit Award. Dept. of Civil, Construction, and Environmental Engineering. NC State University. 2017.

Travel Funding

NC State Graduate School competitive funding award. Summer 2019.

Synergistic Activities

Peer-review *Environmental Pollution; Environmental Science & Technology; JGR: Atmospheres; Biogeosciences; Atmospheric Chemistry & Physics*

Session Convener AGU24 Fall Meeting. Atmospheric Sciences Section. Targeting Methane Mitigation: Quantification of Anthropogenic Methane Sources at All Scales Through Atmospheric Measurement (Session).

Seminar Coordinator Atmospheric & Environmental Chemistry Seminar. Harvard University. Spring 2024.

Participant EPA Methane Inverse Modeling Technical Workshop. Research Triangle Park, NC. July 2024.

Guest instructor Boy Scouts Merit Badge College. NC State University. Spring 2018. Taught about global air pollution.

A&WMA Student Chapter NC State University. Secretary, 2019-2020. President, 2018-2019.

Professional Memberships

American Geophysical Union

Air & Waste Management Association

N.C. Engineering Intern Certification A-28871 – Environmental Engineering