

# STEPHANIE E. CLELAND

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## RESEARCH FOCUS

**Topic:** Human health impacts of exposure to climate change-influenced environmental hazards

**Tools:** Environmental epidemiology, geostatistical exposure assessment, health impact assessment

## EDUCATION

**University of North Carolina-Chapel Hill** – Chapel Hill, North Carolina

**Gillings School of Global Public Health**

Doctor of Philosophy, Environmental Sciences & Engineering

May 2023

*Advisors:* Dr. Ana Rappold and Dr. Jason West

Master of Science in Public Health, Environmental Sciences & Engineering

May 2020

*Advisors:* Dr. Marc Serre and Dr. Jason West

Graduate Certificate in Global Health

May 2020

**Tufts University** – Medford, Massachusetts

Bachelor of Science, Computer Science and Community Health

May 2020

Honors: *cum laude* (GPA: 3.64, Dean's List for 7 of 8 semesters)

## PROFESSIONAL EXPERIENCE

**United States Environmental Protection Agency** - Chapel Hill, North Carolina

Center for Public Health and Environmental Assessment

August 2020

*Oak Ridge Institute for Science and Education (ORISE) Research Fellow*

– present

- Studying the acute and chronic health effects of hourly and daily exposure to wildfire smoke and extreme heat among vulnerable populations
- Developing exposure surfaces using geostatistics, conducting complex epidemiological analyses, and performing health impact assessments
- Collaborating on research with a diverse team of scientists at government agencies and academic institutions

**University of North Carolina-Chapel Hill** - Chapel Hill, North Carolina

The Climate Health and Air Quality Lab

August 2018

*Graduate Research Assistant*

– June 2020

- Member of the NASA Health and Air Quality Applied Sciences Team Tiger Team: Air Quality and Health Burden of 2017 California Wildfires
- Researched the air quality and human health impacts of wildfires using geospatial exposure modeling and health impact assessment methods

Department of Environmental Sciences and Engineering

August 2018

*Graduate Teaching Assistant*

– May 2019

- Graded assignments and worked one-on-one with students for 'Temporal GIS & Space/Time Geostatistics for the Environment and Public Health' (ENVR 468) and 'Space/Time Exposure Mapping & Risk Assessment' (ENVR 765)

**CleanAIRE NC** – Durham, North Carolina*Advocacy & Education Intern*

February 2020

– May 2020

- Engaged in science communication activities to promote health and equity
- Developed county-specific and community-focused environmental health and climate change fact sheets to share with stakeholders across North Carolina

**athenahealth** - Watertown, MassachusettsathenaClinicals Performance & Analytics

October 2017

– June 2018

*Product Analytics Associate*

- Developed metrics and synthesized complex data to understand performance, adoption, and usage to inform and solve business decisions and problems
- Performed data-driven research and analysis and applied knowledge of the internal database to drive strategic product development and performance

athenaClinicals Task Awareness

September 2016

– October 2017

*Product Management Associate*

- Generated streamlined solutions and executed customer-centric projects to enhance clinicians' experience using patients' electronic health records
- Conducted analyses and end user interviews to inform feature requirements

**Tufts University School of Medicine** – Boston, MassachusettsThe Community Assessment of Freeway Exposure and Health Study

January 2016

– May 2016

*Undergraduate Research Assistant*

- Investigated the impact of ultrafine particle exposure and HEPA filtration on adverse health outcomes among the Puerto Rican community living near highways in Boston
- Conducted statistical analyses to link concentrations to blood biomarker data

**Tufts University** – Medford, MassachusettsDepartment of Computer Science

January 2014

– May 2016

*Lab Leader & Teaching Assistant*

- Led 2-3 lab sections a week, held regular office hours, and graded student projects for 'Introduction to Computer Science' (CS 11)
- Organized and led workshops to provide students with additional practice

**PEER-REVIEWED PUBLICATIONS**

Cleland, S.E., Wyatt, L.H., Wei, L., Paul, N., Serre, M.L., West, J.J., Henderson, S.B., Rappold, A.G. (2022). Short-term exposure to wildfire smoke and PM<sub>2.5</sub> and cognitive performance in a brain-training game: A longitudinal study of US adults. *Environmental Health Perspectives*, 130(6). [doi.org/10.1289/EHP10498](https://doi.org/10.1289/EHP10498).

*Interactive dashboard:* [ehs-bccdc.shinyapps.io/PMSmoke\\_Attention\\_Dashboard/](https://ehs-bccdc.shinyapps.io/PMSmoke_Attention_Dashboard/)

*Press:* [EHP Science Selection](#), [UNC Press Release](#), [Press Democrat Article](#)

Cleland, S.E., Serre, M.L., Rappold, A.G., West, J.J. (2021). Estimating the acute health impacts of fire-originated PM<sub>2.5</sub> exposure during the 2017 California wildfires: Sensitivity to choices of inputs. *GeoHealth*, 5(7). [doi.org/10.1029/2021GH000414](https://doi.org/10.1029/2021GH000414)

Delang, M.N., Becker, J.S., Chang, K.L., Serre, M.L., Cooper, O.R., Schultz, M.G., Schröder, S., Lu, X., Zhang, L., Deushi, M., Josse, B., Keller, C.A., Lamarque, J., Lin, M., Liu, J., Marécal, V., Strode, S.A., Sudo, K., Tilmes, S., Zhang, L., Cleland, S.E., Collins, E.L., Brauer, M., West, J.J. (2021). Mapping yearly fine resolution global surface ozone through the Bayesian Maximum Entropy data fusion of

observations and model output for 1990-2017. *Environmental Science and Technology*, 55. [doi.org/10.1021/acs.est.0c07742](https://doi.org/10.1021/acs.est.0c07742)

**Cleland, S.E.,** West, J.J., Jia, Y., Reid, S., Raffuse, S., O'Neill, S., Rappold, A.G., Serre, M.L. (2020). Estimating wildfire smoke concentrations during the October 2017 California fires through BME space/time data fusion of observed, modeled, and satellite-derived PM<sub>2.5</sub>. *Environmental Science and Technology*, 54 (21). [doi.org/10.1021/acs.est.0c03761](https://doi.org/10.1021/acs.est.0c03761)

Brugge, D., Simon, M.C., Hudda, N., Zellmer, M., Corlin, L., **Cleland, S.E.,** Liu, E.Y., Rivera, S., Byrne, M., Chung, M., Durant, J.L. (2017). Lessons from in-home air filtration intervention trials to reduce urban ultrafine particle number concentrations. *Building and Environment*, 126. [doi.org/10.1016/j.buildenv.2017.10.007](https://doi.org/10.1016/j.buildenv.2017.10.007)

## PRESENTATIONS

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**Cleland, S.E.,** Wyatt, L.H., Wei, L., Paul, N., Serre, M.L., West, J.J., Henderson, S.B., Rappold, A.G. (2022 November). Daily and hourly exposure to wildfire smoke and PM<sub>2.5</sub> and cognitive performance in a brain-training game: A longitudinal study of US adults [Oral presentation]. 2022 Wildland Fire Canada Conference, Edmonton, Alberta, Canada.

**Cleland, S.E.,** Steinhardt, W., Neas, L., Rappold, A.G. (2022 September). Urban heat islands and heat-related cardiovascular morbidity in older adults: A time series study of US metropolitan areas [Poster presentation]. 34<sup>th</sup> Annual Conference of the International Society for Environmental Epidemiology, Athens, Greece.

**Cleland, S.E.** (2022 July). Daily and hourly exposure to PM<sub>2.5</sub> and wildfire smoke and cognitive performance in a brain-training game: A longitudinal study of US adults [Invited webinar]. National Collaborating Centre for Environmental Health: Environmental Health Seminar Series, Virtual.

**Cleland, S.E.,** Wyatt, L.H., Wei, L., Paul, N., Patil, A., Henderson, S.B., Rappold, A.G. (2021 December). The cognitive performance effects of short-term PM<sub>2.5</sub> and wildfire smoke exposure [Oral presentation]. American Geophysical Union Fall Meeting 2021, New Orleans, Louisiana, United States of America.

**Cleland, S.E.,** West, J.J., Jia, Y., Reid, S., Raffuse, S., O'Neill, S., Serre, M.L. (2021 September). Fusing observed, modeled, and satellite-derived concentrations to produce fine-resolution estimates of PM<sub>2.5</sub> during the 2017 California wildfires [Invited oral presentation]. 2021 Meteorology and Climate - Modeling for Air Quality Conference, Virtual.

**Cleland, S.E. & Wyatt, L.H.** (2021 September). The impacts of short and long-term exposure to air pollution on cognitive performance [Invited webinar]. University of British Columbia: Occupational and Environmental Hygiene Friday Seminars, Virtual.

**Cleland, S.E.,** Wyatt, L.H., Wei, L., Paul, N., Patil, A., Henderson, S.B., Rappold, A.G. (2021 August). Short-term PM<sub>2.5</sub> exposure impacts cognitive performance: A longitudinal repeated measures study of the Western US 2017-2018 [Lightning talk presentation]. 33<sup>rd</sup> Annual Conference of the International Society for Environmental Epidemiology, Virtual.

**Cleland, S.E.,** West, J.J., Jia, Y., Reid, S., Raffuse, S., O'Neill, S., Rappold, A.G., Serre, M.L. (2020 September). A data fusion approach for evaluating smoke exposure: Estimating PM<sub>2.5</sub> during the 2017 California wildfires [Oral presentation]. International Society of Exposure Science 30<sup>th</sup> Annual Meeting, Virtual.

**Cleland, S.E.,** West, J.J., Jia, Y., Reid, S., Raffuse, S., O'Neill, S., Serre, M.L. (2020 August). A space/time data fusion method for estimating smoke concentrations during the October 2017 California

fires to inform population-level exposure [Oral presentation]. 32<sup>nd</sup> Annual Conference of the International Society for Environmental Epidemiology, Virtual.

**Cleland, S.E., West, J.J., Serre, M.L.** (2020 April). Evaluating the acute health impact of PM<sub>2.5</sub> exposure during the October 2017 California wildfires [Oral presentation]. 3<sup>rd</sup> International Smoke Symposium, Virtual.

**Cleland, S.E., Serre, M.L., Becker, J., DeLang, M., West, J.J.** (2019 October). Fusing CMAQ with observations to estimate the air quality and health impacts of the October 2017 California wildfires [Poster presentation]. 18<sup>th</sup> Annual Community Modeling and Analysis System Conference, Chapel Hill, North Carolina, United States of America.

**Cleland, S.E., Serre, M.L., Becker, J., DeLang, M., West, J.J.** (2019 October). Estimating the hospital admissions attributable to the 2017 California wildfires [Poster presentation]. 2019 Triangle Global Health Annual Conference, Durham, North Carolina, United States of America.

## SCHOLARSHIPS & AWARDS

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Gary G. Koch and Carolyn J. Koch Student Travel Award	2021
UNC-Chapel Hill's Three Minute Thesis Competition Finalist	2021
National Institute for Occupational Safety and Health (NIOSH) Training Grant	2020
UNC-Chapel Hill Department of Environmental Sciences & Engineering's Environmental Sciences Achievement Award	2020
Best Student Poster at the 18 <sup>th</sup> Annual Community Modeling and Analysis System Conference	2019
Triangle Global Health Annual Conference Student Scholarship	2019
Weiss Urban Livability Fellowship	2018
B.B. Parker Fellowship	2018
Alan and Linda Rimer Endowed Scholarship in Environmental Science	2018
Gillings Merit Scholarship	2018
Best in Show at the 2016 Tufts GIS Poster Expo	2016

## TECHNICAL SKILLS

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**Programming Languages:** R, MATLAB, Python, SQL, C++, Java, HTML, CSS, JavaScript

**Software:** RStudio, MATLAB, ArcGIS, STATA, Jupyter, Adobe Creative Suite, Microsoft Office Suite

## RELEVANT COURSEWORK

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Fundamentals of Epidemiology (EPID 710)	Advanced Environmental Epidemiology (EPID 787)
Environmental Epidemiology (EPID 785)	Environmental Exposure Assessment (ENVR 640)
Environmental Risk Assessment (ENVR 470)	Health Effects of Environmental Agents (ENVR 430)
Advanced Remote Sensing (GEOG 577)	Proposal Writing for Environmental Research (ENVR 703)
Temporal GIS & Geostatistics (ENVR 468)	Critical Analysis of Environmental Research (ENVR 704)
Global Climate Change (ENVR 775)	Environmental Crisis Management (ENVR 989)
Statistics for Environmental Scientists (BIOL 562)	Space/Time Exposure Mapping & Risk Assessment (ENVR 765)

## PROFESSIONAL & VOLUNTEER SERVICE

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<b>CleanAIRE NC</b> – Durham, North Carolina	August 2020
<i>Member of the NC BREATHE Conference planning committee</i>	– present
<b>University of North Carolina-Chapel Hill</b> – Chapel Hill, North Carolina	August 2019
<i>Graduate student representative for Department of Environmental Sciences &amp; Engineering</i>	– May 2020
<b>Science Club for Girls</b> – Cambridge, Massachusetts	January 2017
<i>Mentor for after-school science club for elementary school girls</i>	– May 2018
<b>TEDxTufts</b> – Medford, Massachusetts	October 2014
<i>Organizer and speaker coach for independently organized TED event</i>	– May 2016
<b>Peer Health Exchange</b> – Boston, Massachusetts	September 2012
<i>Educator for health-related workshops for public high school students</i>	– May 2014