

# STEPHANIE E. CLELAND, PhD, MSPH

Simon Fraser University  
Vancouver Coastal Health Research Institute  
Vancouver, British Columbia

Email: [stephanie\\_cleland@sfu.ca](mailto:stephanie_cleland@sfu.ca)  
Website: [stephaniecleland.com/](http://stephaniecleland.com/)  
ORCID: [0000-0003-1912-8349](https://orcid.org/0000-0003-1912-8349)

## RESEARCH FOCUS

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

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

## PROFESSIONAL EXPERIENCE

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**Simon Fraser University** – Burnaby, British Columbia

Faculty of Health Sciences

*Assistant Professor (Legacy for Airway Health Chair in Promotion of Lung Health)* 2023 – present

**Vancouver Coastal Health Research Institute** – Vancouver, British Columbia

Legacy for Airway Health

*Research Scientist* 2023 – present

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

Center for Public Health and Environmental Assessment

*Oak Ridge Institute for Science and Education (ORISE) Research Fellow* 2020 – 2023

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

The Climate Health and Air Quality Lab

*Graduate Research Assistant* 2018 – 2020

Department of Environmental Sciences and Engineering

*Graduate Teaching Assistant* 2018 – 2019

**CleanAIRE NC** – Durham, North Carolina

*Advocacy & Education Intern* 2020

**athenahealth** - Watertown, Massachusetts

athenaClinicals Performance & Analytics

*Product Analytics Associate* 2017 – 2018

athenaClinicals Task Awareness

*Product Management Associate* 2016 – 2017

## EDUCATION

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**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, *cum laude*

May 2016

## PEER-REVIEWED PUBLICATIONS

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Cleland, S.E., Steinhardt, W., Neas, L., West, J.J., Rappold, A.G. (2023). Urban heat island impacts on heat-related cardiovascular morbidity: A time series analysis of older adults in US metropolitan areas. *Environment International*. [doi.org/10.1016/j.envint.2023.108005](https://doi.org/10.1016/j.envint.2023.108005).

Interactive dashboard: [shiny.stat.ncsu.edu/Heat-CVD-UHI-Dashboard/](https://shiny.stat.ncsu.edu/Heat-CVD-UHI-Dashboard/)

Wyatt, L.H., Cleland, S.E., Wei, L., Paul, N., Patil, A., Ward-Caviness, C., Henderson, S.B., Rappold, A.G. (2023). Long-term exposure to ambient O<sub>3</sub> and PM<sub>2.5</sub> is associated with reduced cognitive performance in young adults: A retrospective longitudinal repeated measures study in adults aged 18–90 years. *Environmental Pollution*, 320. [doi.org/10.1016/j.envpol.2023.121085](https://doi.org/10.1016/j.envpol.2023.121085).

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/)

☆ Selected for *EHP's* Editor's Choice Collection 2022 [[link](#)]

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.

## **MEDIA & INTERVIEWS**

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*Daybreak North with Carolina de Ryk.* Radio interview about how wildfire smoke affects human health. September 8, 2023. [[link](#)]

*The Conversation:* "Wildfire smoke is an increasing threat to Canadians' health." Ryan Allen and Stephanie Cleland, August 27, 2023. [[link](#)]

*National Geographic*: “How wildfire smoke can permanently damage your brain and body.” Tara Haelle, August 14, 2023. [\[link\]](#)

*UNC Gillings*: “New research finds risk from hot weather depends partly on where you live.” July 31, 2023. [\[link\]](#)

*EPA Science Matters*: “Fighting the Haze: Effects of Wildfire Smoke and Particulate Matter on Brain Function.” May 4, 2023. [\[link\]](#)

*Press Democrat*: “Concerns about long-term health effects grow since 2017 North Bay wildfires.” Martin Espinoza, October 17, 2022. [\[link\]](#)

*UNC Gillings*: “Could an app help scientists understand wildfire smoke’s impact on cognition?” August 16, 2022. [\[link\]](#)

*EHP Science Selection*: “Well Played: Using Game App Data to Assess Wildfire Smoke and Cognitive Performance.” Charles Schmidt, July 13, 2022. [\[link\]](#)

## AWARDS & HONORS

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Gillings School Academic Excellence Award [UNC-Chapel Hill]	2023
Gary G. Koch and Carolyn J. Koch Student Travel Award [UNC-Chapel Hill]	2021
UNC-Chapel Hill’s Three Minute Thesis Competition Finalist	2021
National Institute for Occupational Safety and Health (NIOSH) Training Grant	2020
Department of Environmental Sciences & Engineering’s Environmental Sciences Achievement Award [UNC-Chapel Hill]	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 [UNC-Chapel Hill]	2018
B.B. Parker Fellowship [UNC-Chapel Hill]	2018
Alan and Linda Rimer Endowed Scholarship in Environmental Science [UNC-Chapel Hill]	2018
Gillings Merit Scholarship [UNC-Chapel Hill]	2018

## 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

## PROFESSIONAL & VOLUNTEER SERVICE

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**Skype a Scientist** – United States

*Outreach to K-12 classrooms via talks on climate change and environmental health* 2023 – present

**CleanAIRE NC** – Durham, North Carolina

*Member of the NC BREATHE Conference planning committee* 2020 – 2023

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

*Graduate student representative for Dept. of Environmental Sciences & Engineering* 2019 – 2020

**Science Club for Girls** – Cambridge, Massachusetts

*Mentor for after-school science club for elementary school girls* 2017 – 2018