

# STEPHANIE E. CLELAND, PhD, MSPH

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Vancouver Coastal Health Research Institute  
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## 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

**British Columbia Centre for Disease Control** – Vancouver, British Columbia

Environmental Health Services

*Affiliate Investigator* 2024 – present

**University of British Columbia** – Vancouver, British Columbia

Faculty of Medicine, Division of Respiratory Medicine

*Affiliate Assistant Professor* 2024 – 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)

## RESEARCH FUNDING

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<b>Canadian Institutes of Health Research - Project Grant</b>	October 2024 – September 2027
Early Life Exposures to Wildfire Smoke and Respiratory Health Outcomes During Childhood	
<i>Role:</i> Principal Investigator	<i>Amount:</i> \$294,526
<i>Co-Principal Investigator:</i> S.B. Henderson	
<i>Co-Investigators:</i> E.P. Brigham, E. Lavigne, A-M. Nicol, T. To	
<b>Canadian Institutes of Health Research - Team Grant in Lung Health</b>	April 2024 – March 2029
Lungs on Fire: Wildfire Smoke, Incident Diseases, Susceptible Populations, and Community Values in Canada	
<i>Role:</i> Co-Principal Investigator	<i>Amount:</i> \$1,999,990
<i>Principal Investigator:</i> C. Carlsten	
<i>Co-Principal Investigators:</i> N. Bansback, M. Brauer, E.P. Brigham, P. Camp, S.B. Henderson, N. Mookherjee	

## CONFERENCE PRESENTATIONS

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- Cleland, S.E.** (2024 January). The cognitive and mental health impacts of wildfire smoke exposure [Invited oral presentation]. Annual Cascadia Symposium on Environmental, Occupational, and Population Health, Blaine, Washington, United States of America.
- Cleland, S.E., Paul, N., Coker, E., Henderson, S.B.** (2024 January). Population-level exposure to co-occurring wildfire smoke and extreme heat events in British Columbia, 2010 – 2022 [Oral presentation]. Annual Cascadia Symposium on Environmental, Occupational, and Population Health, Blaine, Washington, United States of America.
- Cleland, S.E., Rosman, L., Hill, K.L., Mazzella, A.J., Ward-Caviness, C., Rappold, A.G.** (2023 September). The impact of temperature and relative humidity on ventricular arrhythmias in patients with implanted cardiac devices in North Carolina, 2010-2021 [Oral presentation]. 35<sup>th</sup> Annual Conference of the International Society for Environmental Epidemiology, Kaohsiung, Taiwan.
- 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., 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., 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.

## INVITED TALKS

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**Cleland, S.E.** (2024 June). The health impacts of wildfire smoke and exposure mitigation strategies. BC Municipal Safety Association Regular General Meeting, Virtual.

**Cleland, S.E., Whitehead, J., Nelson, A., Freeman, R.** (2024 May). The wildfire crisis. SFU Vancouver Lunch 'n' Learn, Vancouver, British Columbia, Canada.

**Cleland, S.E., Yao, A., Barn, P., Coker, E., Brigham, E., Pawlovich, J., Newton, C.** (2024 May). Protecting patients through wildfire Season: What you need to know. University of British Columbia Continuing Professional Development Webinar, Virtual.

**Cleland, S.E.** (2024 April). The impacts of wildfire smoke exposure on cognitive health. Oregon Smoke Ready Communities Group Meeting, Virtual.

**Cleland, S.E., Lan, J., Brauer, M., Henderson, S.B.** (2023 October). Diverse health impacts of wildfire smoke [Webinar]. Cascadia Wildfire Webinar, Virtual.

**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. National Collaborating Centre for Environmental Health: Environmental Health Seminar Series, Virtual.

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

## TEACHING EXPERIENCE

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### Instructor:

*Environmental Health Exposure Assessment and Analysis*  
HSCI 471/846, Simon Fraser University

Spring 2024

### Teaching Assistant:

*Space/Time Exposure Mapping and Risk Assessment*  
ENVR 765, University of North Carolina-Chapel Hill

Spring 2019

*Temporal GIS and Space/Time Geostatistics for the Environment and Public Health*  
ENVR 468, University of North Carolina-Chapel Hill

Fall 2018

## KNOWLEDGE TRANSLATION

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*The Conversation*: “As wildfires become more frequent and intense, how will persistent smoke exposure affect long-term health?” Stephanie Cleland and Ryan Allen, July 26, 2024. [\[link\]](#)

*The Conversation*: “These tips can help keep you safe during a potentially severe 2024 wildfire season.” Stephanie Cleland, May 23, 2024. [\[link\]](#)

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

## MEDIA OUTLET INTERVIEWS

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*NBC News*: “Wildfire smoke is probably harming your brain.” Aria Bendix. July 30, 2024. [\[link\]](#)

*Healthline*: “Long-Term Exposure to Wildfire Smoke May Raise Your Risk of Dementia.” Shawn Radcliffe. July 30, 2024. [\[link\]](#)

*Science News*: “Wildfire smoke may cause tens of thousands of premature deaths.” Aimee Cunningham. June 7, 2024. [\[link\]](#)

*SFU Engage Magazine*: “Addressing the urgent human health impacts of B.C. wildfires.” Summer 2024. [\[link\]](#)

*CFNR Network*: “Expert advises precautions as wildfire season begins in BC.” Sabrina Spencer. May 17, 2024. [\[link\]](#)

*CKPG Today*: “Prince George Emergency Operation Centre in need of a permanent facility says city official.” Chris Koo. April 29, 2024. [\[link\]](#)

*SFU Faculty of Health Sciences*: “New assistant professor brings creative, collaborative quantitative approaches to planetary health research.” Sharon Mah. November 6, 2023. [\[link\]](#)

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

*Freerail*: “Running Through Smoke.” Keegan Sentner, September 7, 2023. [\[link\]](#)

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

*UNC Gillings School of Global Public Health*: “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 School of Global Public Health*: “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

## PROFESSIONAL & VOLUNTEER SERVICE

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### Professional:

<i>Member of the Tenure and Promotion Committee</i> Simon Fraser University, Faculty of Health Sciences	2024 - present
<i>Member of Network Advisory Committee</i> BC Respiratory Health Network (RespNetBC)	2024 - present
<i>Graduate Student Representative at Faculty Meetings</i> UNC-Chapel Hill, Department of Environmental Sciences & Engineering	2019 - 2020

### Ad Hoc Reviews:

<i>Journals</i> : GeoHealth, Nature Climate Change, Scientific Reports	2023 - present
<i>Grants</i> : SSHRC Insight Grants	2024
<i>Institutional</i> : Applications for MPH Program (Simon Fraser University)	2024

### Volunteer:

<i>Skype a Scientist</i> , Science communication outreach to K-12 classrooms	2023 - present
<i>CleanAIRE NC</i> , Member of planning committee for NC BREATHE Conference	2020 – 2023
<i>Science Club for Girls</i> , Mentor for after-school science club for elementary school girls	2017 – 2018

## RELATED SKILLS & MEMBERSHIPS

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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

**Memberships:** International Society of Environmental Epidemiology, International Society of Exposure Science