AMANDA LAURA NORTHCROSS, MS PHD
Associate Professor
University of North Carolina, Chapel Hill
Gillings School of Public Health
Department of Environmental Sciences and Engineering
March 2023

EDUCATION
University of Michigan, BS Chemical Engineering, 1999 Drexel
University, MS Environmental Engineering, 2003
University of North Carolina, PhD Environmental Engineering, 2008
University of California Berkeley, Post-Doctoral Training, 2008-2012

PROFESSIONAL EXPERIENCE
Director of Undergraduate Education and Assured Enrollment, University of North Carolina, Gillings School of Public Health, Department of Environmental Sciences and Engineering 2020-present

Associate Teaching Professor, University of North Carolina, Gillings School of Public Health, Department of Environmental Sciences and Engineering 2020-present

Invited Fully Funded Visiting Professor *Federal University of Bahia, Brazil, Faculty of Medicine, Department of Environmental and Occupational Health.* 2019

Assistant Professor *George Washington University. Dept. Environmental and Occupational Health 2013 – 2019*

Interim Practicum Director *George Washington University. Dept. Environmental and Occupational Health, Global Environmental Health Program 2018-2019*

Research Scientist/Post-Doctoral Scholar *University of California Berkeley: Dept Environmental Health Science, School of Public Health 2008 –2012*

HONORS
- UNC Gillings School of Public Health Student Nominated Teaching Innovation Award 2024
- Recognized as for Excellence in Study Mentoring by Gillings School of Global Public Health
- Master Teaching Academy Fellowship 2018
- Nashman Center for Community Engagement Affiliate Faculty, George Washington University 2018 - present
- Milken Institute School of Public Health Graduate Teaching Excellence Award (2017)
- Inducted into Delta Omega Honorary Society in Public Health (2008)

MEMBERSHIPS
National Society of Black Engineers

BIBLIOGRAPHY

Book Chapters

1. Ramos Machado, L, & Mota, L., Killinger L., Orsi, P., Nascimento, J., Northcross, AL & Rego, R. (2022). Dialogue of knowledge for the assessment of the impacts of the oil spill disaster on the Brazilian coast in 2019. 10.4324/9781003311171-14.

Peer-reviewed publications

1. Pena, P.G.L**., Northcross., A.L.,** Lima,M.A.G., Rego, RCF. The crude oil spill on the Brazilian coast in 2019: the question of public health emergency. Cad. Saúde Pública. 2020, 36:2

2. Carvlin, G.N.; Lugo, H.; Olmedo, L.; Bejarano, E.; Wilkie, A.; Meltzer, D.; Wong, M.; King, G.; **Northcross, A**.; Jerrett, M.; English, P.B.; Shirai, J.; Yost, M.; Larson, T.; Seto, E. Use of Citizen Science-Derived Data for Spatial and Temporal Modeling of Particulate Matter near the US/Mexico Border. Atmosphere 2019, 10, 495.

3. English, P.; Amato, H.; Bejarano, E.; Carvlin, G.; Lugo, H.; Jerrett, M.; King, G.; Madrigal, D.; Meltzer, D.; **Northcross, A.;** Olmedo, L.; Seto, E.; Torres, C.; Wilkie, A.; Wong, M. Performance of a Low-Cost Sensor Community Air Monitoring Network in Imperial County, CA. Sensors 2020, 20, 3031.

4. **Northcross A**, Shizuka Hsieh, Sacoby Wilson, Ebony Roper, Russell R. Dickerson, Parisa Norouzi, and Vernon Morris. Environmental Justice. Apr 2020.27-35.

5. Derek A. Newcomer, Peter LaPuma, Robert Brandys, **Northcross A**. , Abhijit Dasgupta (2019) Measuring airflow through the portable high-efficiency air filtration (PHEAF) device to assess reliability of instrument and sample location, Journal of the Air & Waste Management Association, 69:6, 734-742, DOI: 10.1080/10962247.2019.1576554

6. Wong, M., Bejarano, E., Carvlin, G., Fellows, K., King, G., Lugo, H., Jerrett, M., Meltzer, D., **Northcross, A.**, Olmedo, L., Seto, E., Wilkie, A., English, P. Combining Community Engagement and Scientific Approaches in Next-Generation Monitor Siting: The Case of the Imperial County Community Air Network. International Journal of Environmental Research and Public Health. 15, 523. 2018

7. Newcomer, D.A., LaPuma, P., Brandys, R., **Northcross, A.**, Capture efficiency of portable high- efficiency air filtration devices used during building construction activities. Journal of Occupational and Environmental Hygiene. 15, 285–292. 2018

8. Alexander, D.A., **Northcross, A.**, Karrison, T., Morhasson-Bello, O., Wilson, N., Atalabi, O.M., Dutta, A., Adu, D., Ibigbami, T., Olamijulo, J., Adepoju, D., Ojengbede, O., Olopade, C.O., Pregnancy outcomes and ethanol cook stove intervention: A randomized-controlled trial in Ibadan, Nigeria. Environment International. 111, 152–163. 2018

9. English PB, Olmedo L, Bejarano E, Lugo H, Murillo E, Seto E, Wong M, King G, Wilkie A, Meltzer D, Carvlin G, Jerrett M, and **Northcross AL**. The Imperial County Community Air Monitoring Network: A Model for Community-based Environmental Monitoring for Public Health Action. Environmental Health Perspectives. 125:7: 074501-4:5. 2017

10. Carvlin G, Lugo H, Olmedo L, Bejarano E, Wilkie A, Meltzer D, Wong M, King G, **Northcross AL**, Jerrett M, Seto E, English, PB. Development and field validation of a community-engaged particulate matter air quality monitoring network in Imperial, CA. Journal of the Air & Waste Management Association. Published online: 22 August 2017

11. Alexander D, **Northcross A**, Wilson N, Dutta A, Pandya R, Ibigbami T, Adu D, X Olamijulo J, Morhason-Bello O, Karrison T, and Ojengbede O. Olopade CO. Randomized Controlled Ethanol Cookstove Intervention and Blood Pressure in Pregnant Nigerian Women. American Journal of Respiratory and Critical Care Medicine. 195:12:1629-39. 2017

12. Noth, E.M., Lurmann, F., **Northcross, A**., Perrino, C., Vaughn, D., Hammond, S.K., Spatial and temporal distribution of polycyclic aromatic hydrocarbons and elemental carbon in Bakersfield, CA. Air Quality, Atmosphere & Health. 9, 899–908. 2016

13. Applebaum, K.M., Graham, J., Gray, G.M., LaPuma, P., McCormick, S.A., **Northcross, A**., Perry, M.J., An Overview of Occupational Risks from Climate Change. Current Environmental Health Reports. 3, 13–22. 2016

14. **Northcross, A**. *et al.* Sustained usage of bioethanol cookstoves shown in an urban Nigerian city via new SUMs algorithm. Energy for Sustainable Development. **35,** 35–40 2016

15. Reis S, Seto E, **Northcross A**, Quinn NWT, Convertino M, Jones RL, Maier HR, Schlink U, Steinle S, Vieno M, Wimberl CY. Integrating modelling and smart sensors for environmental and human health. Environmental Modelling and Software. (74) 238–246. 2015

16. Williams KN, **Northcross AL**, Graham JP. Indicators of exposure to household air pollution. WHO Bulletin. 2015

17. **Northcross AL**, Hwang N, Balakrishnan K, Mehta S, Assessing Exposures to Household Air Pollution in Public Health Research and Program Evaluation. EcoHealth. Epub. November 4, 2014

18. Jones IA, St. Helen G, Meyers MJ, Dempsey DA, Havel C, Jacob III P, **Northcross AL**, Hammond SK, Benowitz NL. Biomarkers of secondhand smoke exposure in automobiles. Tobacco Control. 2013; 0:1

19. **Northcross AL**, Edwards RJ, Johnson MA, Wang Z-M, Zhu K, Allen T, Smith KR. A low-cost particle counter as a real-time fine-particle mass monitor. Environmental Science: Processes & Impacts. 2013; (15) 433-39

20. **Northcross AL**, Trinh T, Kim J, Jones IA, Meyers MJ, Dempsey DD, Benowitz NL, Hammond SK. Particulate mass and polycyclic aromatic hydrocarbons exposure from secondhand smoke in the backseat of a vehicle. Tobacco Control. Published online ahead of print 21 November 2012;1-9. DOI: 10.1136/tobaccocontrol-2012-050531. PMID: 23172398

21. **Northcross AL**, Hammond SK, Canuz E, Smith KR. Dioxin inhalation doses from wood combustion in indoor cookfires. Atmospheric Environment. 2012;49:415-8

22. **Northcross AL**, Chowdhury Z, McCracken J, Canuz E, Smith KR. Estimating personal PM2.5 exposures using CO measurements in Guatemalan households cooking with wood fuel. Journal of Environmental Monitoring 2010;12(4):873–8. PMID: 20383368

23. **Northcross AL**, Jang M. Heterogeneous SOA yield from ozonolysis of monoterpenes in the presence of inorganic acid. Atmospheric Environment. 2007;41(7):1483–93

24. Jang M, Czoschke NM, **Northcross AL**, Cao G, Shaof D. SOA formation from partitioning and heterogeneous reactions: Model study in the presence of inorganic species. Environmental Science & Technology. 2006;40(6):3013-22. PMID: 16719105

25. Jang M, Czoschke NM, **Northcross AL**. Semiempirical model for organic aerosol growth by acid-catalyzed heterogeneous reactions of organic carbonyls. Environmental Science & Technology. 2005;39(1):164-74. PMID: 15667091

26. Sihabut T, Ray J, **Northcross A**, McDow SR. Sampling artifact estimates for alkanes, hopanes, and aliphatic carboxylic acids. Atmospheric Environment. 2005;39(37):6945-56

27. Jang M, Czoschke NM, **Northcross AL**. Atmospheric organic aerosol production by heterogeneous acid-catalyzed reactions. ChemPhysChem. 2004;5(11):1647-61

Invited presentations.

3/2023, Invited to lead one day in a week-long international course hosted by Fiocruz Aggeu Magalhães Institute. Course title: The Impacts of the Brazilian Oil Spill: Intersectional strategies and responses in a community context. Presentation Title: *Exposure Assessment Approaches for Artisanal Fishing Communities*

10/2022, UNC Gillings School of Public Health, Alumni Board meeting, resented about the Success the of ECUIPP lab. Presentation Title: *Environmental Health Research Learning Community for Undergraduate Students*

4/2022 Annual Educational Conference for the NC Public Health Association. Conference theme: "Connectedness and Equity: Public Health Creates a Healthier North Carolina". Presentation Title: *Achieving Health Equity through Environmental Justice and Education*

TEACHING ACTIVITIES

Undergraduate:

UNC ENVR 230 – Spring 2023,2024 38 students
UNC ENVR 335/295 Advanced ECUIPP Lab Fall 2022/Spring 2023, 4 students, elective.
UNC ENVR 135 First Year Seminar – Environment-ECUIPP Lab: Connecting with communities through

environmental research for Public Health protection –Spring 2024, 20 students, elective.
SPHG 351 Foundations of Public Health – co-taught, 181 students
UNC ENVR 89 First Year Seminar – Environment-ECUIPP Lab: Connecting with communities through environmental research for Public Health Protection Fall 2022 24 students
UNC ENVR 335 Advanced ECUIPP Lab Spring 2022, 10 students, elective
UNC ENVR 89 First Year Seminar – Environment-ECUIPP Lab: Connecting with communities through environmental research for Public Health protection – Fall 2020, 23 students; Fall 2021 47, students, elective
UNC ENVR 135 First Year Seminar – Environment-ECUIPP Lab: Connecting with communities through environmental research for Public Health protection –Spring 2022, 14 students, elective
UNC ENVR 190 First Year Seminar – Environment-ECUIPP Lab: Connecting with communities through environmental research for Public Health protection – Fall 2020 23, electives
UNC SPHG 351 Foundations of Public Health Fall 2020, 145 students; Fall 2021, 163 students, required

Students Supervised

Julian Golder BSPH, Honors Thesis Committee, 2024
Mercy Neal, MS Thesis Advisor, 2024
Mercy Neal, BSPH Honors Thesis Advisor, 2024
Francie Sentilles, Honors Thesis Committee, 2021
Francie Sentilles, MSPH, Research Advisor, 2022 -23

Practice

The ECUIPP lab is an undergraduate research lab designed to provide students the opportunity to develop and lead environmental health research. This has also created practice opportunities as well.

May 2024 – June 2024. Environmental Justice and Community Leadership Program. 9-week program

March 2023 – present, Providing technical support to the North Carolina Environmental Justice Network and Seven Directions of Services in response to community concerns about a new source of air pollution. Helping to conduct air quality monitoring using low cost sensors.

Jan 2024– present Woodward Estates Neighborhood Association, Pontiac MI, Providing technical and organizing support for a community facing significant noise pollution from a neighboring race track. Consulted on community lead sound survey, assisted with interpretation of results, and on-going technical support.

July 2023 – present Developed and supported low-cost air quality monitoring network in Robseosn County in collaboration with the Lumbee Tribe.

June 2023 Environmental Peace and Justice Summer Camp ECUIPP lab designed a four-day curriculum for a middle school summer camp in Warren County, NC. The module taught the campers about the field of environmental health, drinking water quality and well water. Campers learned how to use low-cost testing kits to assess their own drinking water quality. 15 campers

June 2022 – 40th Anniversary Commemoration of Warren County EJ movement summer camp. ECUIPP lab designed a two-day module for a high school summer camp in Warren County, NC. The module taught the campers about the field of environmental health, drinking water quality and well water. Campers learned how to use low-cost testing kits to assess their own drinking water quality. 15 campers

November 2022 – UNC FEMMES Science Day. The ECUIPP lab developed a 1.5 hour module for 4th grade girls attending the UNC FEMMES Science Day on campus. Our module What's in the Water was an interactive multimedia case study that taught the participants about well water, contamination and testing. 50 4th grade girls participated.

Innovative Course Development and Redesign

SPHG 351 2020, THis course was first offered in Fall 2019, enrolled 120 students and was taught M/W/F for 50 minutes. Dr. Melanie Studer, Assistant Professor in Health Policy and Management and Director of the BSPH program in Health Policy and Management, was the lead instructor, with three collaborating instructors (taught 4-6 class sessions each) and multiple guest speakers bringing diverse expertise and experience into the course. Students completed evaluation surveys at the end of each unit and participated in focus groups at the end of the semester. The results of these evaluations, together with the official course evaluations and the experiences/reflections of the instructor team, identified several opportunities for improvement, with the following rising to the top. The redesign of this course completed in July 2020 before needing to be redesigned again to be offered online was composed of five primary components:

1. Implement approaches that help students understand the relevance of SPHG 351 within their specific major/discipline and for their individual career goals.

2. Develop case studies to support more in-depth exploration of the course content and help students understand how the concepts are interconnected

3. Implement innovative approaches to encourage in-class engagement and assess accountability and attendance.

4. Develop and implement tools and approaches to improve teaching and assessment of communication and information literacy skills within a large class setting.

5. Identify and implement an effective co-teaching model with instructors from two different departments.

ENVR 89/135/335: Environment-ECUIPP Lab: 2020-present Connecting with communities through environmental research for Public Health protection- Students join the Environment-ECUIPP Lab to research pressing environmental health issues with local communities. The ECUIPP Lab (Environmentally-Engaged Communities and Undergraduate students Investigating for Public health Protection) works with local communities that are concerned about the quality of their environment and its impact on their health. Students in this course become members of the Environment-ECUIPP Lab. Collectively as a class, we identify key research questions related to air and water quality within the community. We work in small teams that focus on developing or evaluating monitoring equipment, conducting field sampling, laboratory analysis of environmental samples, data analysis and community engagement over the course of the semester. This hands-on course takes place within the classroom, laboratory space within the Environmental Science and Engineering Department and the BEAM Maker Space. There are also site visits to our local community partner research site. Students can become lab assistants after taking the curse for one semester. ENVR 335 is the advanced version of this course that provides interested students the opportunity to continue the work started in ENVR89/135, and conduct semi-independent research.

SUST 3096: Action-Oriented Community Environmental Monitoring and Assessment 2018– Students learn about air quality, monitoring, health and community based participatory research, through developing a

community-based air quality monitoring network. Course learning objectives:

- Calibrate portable air quality monitors, verify data collection and transmission via LoRaWAN network, and conduct data analysis on field-collected air quality data
- Utilize linkages between toxicology, epidemiology, exposures, populations, and community impacts to construct community-responsive air quality research questions

- Communicate research findings and environmental observations to community partners in written and in-person format to support policy and community action
- Communicate research findings and environmental observations to the GW community through an interdisciplinary panel on urban and community environmental health

PUBH 3132: Health and the Environment – This course explores the broad concept of the environment (its physical, chemical, biological, psychosocial and cultural aspects) as it relates to population health. I co-developed a problem-based learning based on the 85 miles between Baton Rouge and New Orleans along the coast of the Gulf of Mexico in the state of Louisiana. Each week students research the area from an environmental public health perspective in a small group of 4-5. Students work to answer open-ended questions designed to guide the investigation and integrate environmental health concepts covered through the course. At the end of the semester each group gives a formal presentation from the perspective of a specific stakeholder in the region. This learning style provides students the opportunity to lead a self-guided investigation by integrating the tools and topics covered during the lecture portion of the class. This problem-based investigation learning style encourages students to use self-learning techniques.

Education Program Administration

University of California Berkeley, CO-Director STEER program

- STEER is a program designed to expose Undergraduate students to environmental health science and occupational health research by working with faculty mentors for 8 weeks in the summer
- Duties include: admissions, seminars, encouraging students and ensuring they are meeting program requirements, grant writing, recruiting, reporting to NIEHS, and maintaining program statistics

Culminating Experience (Masters' Thesis) Advisor:

I have mentored thirteen students (3 Federal University of Bahia Brazil, 10 George Washington University) as they completed their Masters' thesis work. Two of these projects resulted in peer reviewed publications, one is currently in development for submission to a peer-reviewed journal. Ten projects were presented as either poster or platform presentations at School-wide or international conferences.

Dissertation Committee:

Louise Machado 2020 - present
Derek Newcomer, 2014 –2018

Mentored Research Assistants:

At UNC I have developed the ECUIPP lab an innovative learning community for undergraduate students. As of fall 2020 120 students have been a part of the ECUIPP lab. Currently, 6 students are engaged in advanced research projects through ECUIPP. Spring 2024, five Undergraduate ECUIPP Lab Students present poster presentations at UNC Undergraduate Research Symposium. In addition, one team of students has developed a proposal that was funded through an internal UNC student research innovation grantin 2023.
Three teams of students are preparing manuscripts for publication Spring 2024.

At GW I maintained a small research laboratory and worked with both undergraduate and graduate students as research assistant. All of the graduate students who I have worked with continued on to a PhD program. My first previous student is graduated spring of 2019. It is critical to develop an environment that challenges students but allows room for experimentation and growth.

GRANTS, FELLOWSHIPS and Financial Support

UNC Rural Research, Engagement and Advancement Fund (RREAF)
2024
$15,000

Summer Undergraduate Research Opportunity (REU) – CHEERS
Program Mentor and Collaborator
$230,000

Donor Gift to Support ECUIPP Lab
$50,000

Whole Community Connection - Community-Academic partnerships for a thriving rural NC Collaborators (ECUIPP)
2022-2023
$45,000

Large Course Redesign Award
2020-201 academic year
$5,000

University Seminar
2018-2019 academic year
$3,000
Community-Engaged Air Quality Monitoring Research, Education, and Action
This University Seminar is focused on the development of this new community-based low-cost air quality sensor network. The seminar engages academic researchers, community members, non-profit organizations, small businesses and our local government to address the challenges of developing a community run air

quality monitoring network. The seminar events will be conducted as monthly working meetings, discussions or workshops. The seminar outputs will be disseminated in a series of discussion papers covering each monthly session topic.

School of Public Health Pilot Grant
3/1/2018- 2/28/2020
$50,000
Role: Co-PI
Developing a Mobile Ambient Air Pollution in-Vitro Exposure System. The overall objective of this pilot study is

to design and build an air pollution in vitro exposure system and use it to evaluate the relative toxic differences between biodiesel and petroleum diesel. The rationale for the proposed research is that there is a critical need to better assess the complete mixture of pollutants present in ambient air pollution as well as their bulk impact on health.

Nashman Center Engaged Scholarship Mini-Grant
4/01/2017- 3/31/2018
$5,000
Role: PI
This project is conducted in Leandrinho (pop < 3,000), a close-knit rural community in Bahia, Brazil impacted by high concentrations of sulfur dioxide (SO2) from a nearby (< 1.5 km) industrial complex that includes a paper mill and copper processing plant. The goals of this project are to develop and evaluate odor perception and respiratory health symptoms questionnaires using WhatsApp for data collection, to assess the sensing of sulfurous odors by Leandrinho residents.

OVPR International Research Program
$5,000
4/1/2017- 08-31/2017
Role: PI
There are two primary objectives for this Travel Research Award that build off of the ongoing air quality monitoring being conducted in Bahia, Brasil. (1) Evaluate the use of WhatsApp for data collection using abbreviated validated odor perception questionnaires to assess the sensing of sulfurs odors by the community. (2) Determine if levels of salivary cortisol, a biomarker of stress are increased when community members report sensing a sulfurous odor. This study resulted in a poster presentation at the American Public Health Association National conference in October 2018.

Cookstoves and Child Survival Global Alliance
for Clean Cookstoves 7/01/2013 – 6/30/2015
$28,401.00
Role: Subaward PI
The purpose of this grant was to conduct a randomized control trial with a clean burning cookstove intervention to assess the ability to improve birth outcomes by reducing exposure to biomass woodsmoke.

Reducing Household Air Pollution Exposures and Improving Cardiovascular Disease (REACH) Milken Institute School of Public Health
7/1/2014-6/30/2015
Role: PI
$50,000
This study aimed to understand the relationship between exposures to household air pollution and blood pressure among adults living in Ibadan, Nigeria.

Assessment Flight Attendants' Exposure to Second Hand Smoke for Epidemiologic Studies Sponsor: FAMRI
7/1/2010 – 12/19/2012
Role: Research Scientist 25%

Cook Stove Research Grant Sponsor: Public
Health Institute 12/01/2010 – 12/19/2012
Role: Research Scientist 25%

Estimating Dioxin Exposure from Indoor Woodsmoke & the Burning of Plastics
Sponsor: NIH/ NIEHS
5/01/2010 – 12/19/2012
Role: Research Scientist 75%

PROFESSIONAL SOCIETY MEMBERSHIP

International Society of Exposure Science
National Society of Black Engineers