



The Global Environmental and Occupational Health (GEOHealth) Hub for Eastern Africa

Quarterly Report: March-May 2023

External Advisory Committee (EAC)

We welcomed two co-chairs and three members to our new External Advisory Committee this cycle.

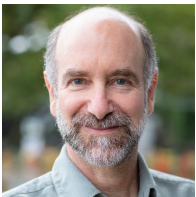
Co-chairs:



Bruce Kirenga, MBChB, PhD

Makerere Lung Institute, Uganda

Dr. Kirenga is the Director of the Makerere University Lung Institute and brings a wealth of experience as a pulmonary medicine physician with over 14 years of pulmonary practice. Given the central role of respiratory health in Hub research and training activities and his engagement with the Uganda based GEOHealth Hub team, his new role will allow him to provide at much broader regional scale.



Jonathan Patz, MD, MPH

University of Wisconsin – Madison, USA

Dr. Patz is the Tony J McMichael Professor and John P Holton Chair of Health and the Environment and the Director of the Global Health Institute at the University of Wisconsin-Madison. He is a world-renowned expert in the health effects of climate change and air pollution and has been extensively involved in developing courses and online curricula on various local and international training activities – including sub-Saharan Africa. Dr. Patz was a key investigator of the Hub in the first cycle and led the training aspect of the work on heat stress and the worker productivity study in Ethiopia. He was also a mentor to a number of Hub Scholars in the first cycle. His past intimate knowledge of the Hub makes him an ideal co-leader of the EAC.

Members:



Jennifer L. Peel, PhD, MPH

Colorado School of Public Health, USA

Dr. Peel is a Professor and Section Head of Epidemiology in the Department of Environmental and Radiological Health Sciences at Colorado State University. Dr. Peel also holds an appointment in the Colorado School of Public Health. Dr. Peel is an environmental epidemiologist with a focus in evaluating the health effects of air pollution, both ambient air pollution and household air pollution from indoor cookstoves in lower- and middle-income countries. She serves as a multiple PI for the Household Air Pollution Intervention Network (HAPIN). Dr. Peel serves on the Environmental Protection Agency PM and Ozone Clean Air Scientific Advisory Committees, is a member of the Health Effects Institute Review Committee, and is a Deputy Editor for Environmental Health Perspectives.



External Advisory Committee (EAC) - continued

Members:



Shem O. Wandiga, PhD

University of Nairobi (Emeritus), Kenya

Dr. Wandiga is retired Professor of Chemistry at the department of Chemistry, University of Nairobi and past Director, Institute for Climate Change and Adaptation. His research interests lie in studying sources and sinks of biogenic gases; persistent organochlorine pesticides in the tropics; trace metals concentration in various environmental media; complexes of Group VB metals with sulfur and oxygen binding ligands; and climate change and health.



Caradee Wright, PhD

South Africa Medical Research Council (SAMRC), South Africa

Dr. Wright is a Chief Specialist Scientist at the SAMRC leading the Climate and Health Research Programme. She is also an Adjunct Lecturer at the University of Pretoria and Research Associate at the University of Johannesburg. Her research is on environmental health in Africa, with a focus on understanding climate change and air pollution on human health and well-being impacts to inform interventions and policy development. Dr. Wright is currently a council member of the American Society for Photobiology, Technical Advisor to the WHO (Air Quality), the International Livestock Research Institute (One Health), the Health Effects Institute (Global Health) and a Review Lead for the National Institute of Health / Nature Collection on Data Science for Health in Africa (Environmental Health / Climate Change).

Support for graduate training

In Cycle II of this project, competitively selected candidates from each of the three partner countries will be supported throughout their training towards their MS/MPH and PhD degrees in the field of environmental health. Degrees will be granted from in-country graduate training programs with co-supervision from US- and Eastern Africa-based senior mentors and will utilize data available from Hub projects. The selected students and their thesis titles are listed below.

Uganda **Arnold Tigaiza** (Master's program)

Caregiver-reported exposure to air pollution, pulmonary functioning and respiratory symptoms among primary school children aged 10 years in Kampala City, Uganda

Kenya **Joshua Nyamondo** (Master's program)

TBD

Noah Adera (PhD Program)

Time series analysis of ambient air quality and disease burden in Nairobi city, Kenya

Ethiopia **Genet Wale Dagne** (Master's program)

Assessment of occupational heat stress-related illness and associated factors among workers in secondary aluminum production factory and water bottling factory around Addis Ababa, Ethiopia

Sisay Shine (PhD Program)

Maternal exposure to fine particulate matter (PM_{2.5}) and pregnancy outcomes in rural Butajira, Ethiopia



Hub Scholars

A central purpose of the GEOHealth Hub is regional capacity-building in environmental and occupational health. To meet this goal, the Hub Scholars program provides an immersion experience in environmental health research and training for carefully selected early- to mid-career scientists from each of the three partner countries to prepare them for careers in research, further curriculum development and training, and policy translation. The first cohort of Cycle II Hub Scholars has been selected, primarily from members of the Hub research team, for a one-year training from July 2023 through June 2024. Two, one from Kenya and one from Uganda, have been confirmed and the third, from Ethiopia, is in process.



Otienoh Oguge, BEd (Sc), MSc, PhD

University of Nairobi, Kenya

Dr. Oguge holds a PhD in Animal Physiology (Lincoln University, NZ, 1992) and an MSc in Conservation Biology (University of Nairobi, 1986). His research and publications span a wide area in environmental health governance. He is the country PI for the GEOHealth Hub in Kenya and oversees the implementation of the GEOHealth project in his country. He will be responsible for the coordination of a new study on cognitive outcomes of air pollution planned for year 4 of the current cycle. Additionally, Professor Oguge was a Coordinating Lead Author for the African Region during the recent Global Assessments of Biodiversity and Ecosystem Services by IPBES. His current research portfolio, outside of GEOHealth include NEWAVE: Next Water Governance (European Union) and Climate Adaptation and Resilience (CLARE) for Drought-Affected (Agro-) Pastoralists in Kenya, supported by the International Development Research Centre.



Felix Walyawula, BEH

Makerere University, Uganda

Felix Walyawula has a Bachelor's Degree in Environmental Health Science and currently finishing his thesis for a Master of Public Health-Monitoring and Evaluation. For the past 20 years, Felix served on various research and community development programs with both local and international institutions. In each role, the generation of timely, clean, and accurate data for programming and policy influence has been core. In 2012/2013, Felix was involved in the implementation of the GEOHealth Hub Planning Grant where he played a key role in the Uganda Situation Analysis and Needs Assessment (SANA) in the three thematic areas of air pollution, occupational health, and climate. From the inception of GEOHealth Hub-Uganda, Felix has served as Co-Investigator and Data Manager and has provided timely data for various presentations and publications. Felix played a key role in customizing Data Management SOPs and setting up the online Research Electronic Data Capture (REDCap) software platform within the Makerere University School of Public Health IT infrastructure. It is a platform that several research programs are using, including The Eastern Africa GEOHealth Hub.

As a GEOHealth Scholar, Felix would like to advance his knowledge and skills in data science in relation to the current and future multiple datasets (air pollution, health, and others).



Working groups

During the first quarter, we spun up several working groups (listed below), each group consisting of members from the both the Eastern Africa and US teams. Given the large scope of this grant, the regular working group meetings have been instrumental in moving the various pieces of the research studies forward, as well as in providing guidance, support, and training to our Eastern Africa members.

<i>Executive committee</i>	Includes the four PIs (from US and Ethiopia), partner country leads from Kenya and Uganda, and project coordinators
<i>Data sharing</i>	Discussions on how to make publicly available all data collected through the Hub studies, including air pollution and health data
<i>Data analysis and management (Initial focus: Electronic data capture)</i>	Discussed how to move towards use of electronic data capture. Meetings have concluded with recommendations to use REDCap, centrally managed in Uganda, and a need for training sessions for those involved
<i>Health data collection</i>	Discussions around hospital data collection (ongoing in Ethiopia, Kenya, and Uganda) and children's health study (relaunching this fall in Ethiopia)
<i>Heat stress study</i>	New study targeted to start in Ethiopia this fall and working on protocol development
<i>Procurement</i>	Discussions on procurement needs for research studies, logistics of procurement, and delivery to Eastern Africa
<i>Air pollution monitoring</i>	Discussions around air pollution monitoring devices (outdoor and personal air) and troubleshooting

Annual GEOHealth network meeting (virtual)

Our Hub participated in the annual network meeting hosted by NIH on May 24-25, 2023. In addition to the overall Eastern Africa GEOHealth Hub presentation given by Drs. Kiros Berhane (US) and Abera Kumie (Ethiopia), five of our Hub members gave presentations on their research:

- Dr. Otienoh Oguge (Kenya): Fine particulate matter air pollution and health implications for Nairobi, Kenya
- Dr. Lynn Atuyambe (Uganda): Air quality and health effect in Kampala City, Uganda: Results from 4 years of continuous PM_{2.5} concentration monitoring using BAM
- Samuel Etajak, (Uganda): Assessment of household air pollution and personal exposure among school children in Kampala Capital City, Uganda
- Dr. Belay Simane (Ethiopia): Occupational heat stress in the floriculture industry of Ethiopia: Health risks and productivity losses
- Dr. Abera Kumie (Ethiopia): Status of particulate matter (PM_{2.5}) pollution and its possible health effect in Addis Ababa: Results from a time series study



Dissemination workshop with hospital liaison officers (Ethiopia)

A time series study of morbidity and mortality data from 6 public hospitals in Addis Ababa, Ethiopia has been ongoing since September of 2016. The field team obtains daily hospital data on admissions, discharges, and emergency department visits from assigned liaison officers at each hospital. To date, we have collected data on 653,486 hospital admissions, discharges, and emergency department visits since 2016.

On March 17, we held a workshop with the liaison officers from all participating hospitals to 1) communicate findings from the time series study from cycle I, 2) provide an update on the progress of data collection as well as recent challenges, and 3) discuss data quality issues and ways to address them. Several plans were put into place to address the challenges and data quality issues, such as collect



Backlog data, arrange visits with a few hospitals to gain access to their newly established electronic medical record system, and increase trainings for the liaison officers. The workshop also provided an opportunity for liaison officers to network and share experiences among parallel staff across the participating hospitals.

Feedback

Please email the Program Coordinator, Haruka Morita, at hm2487@cumc.columbia.edu with questions. For more information on the GEOHealth Hub, please visit our website: <https://geohealth-hub.org/>