

FELIX OLUOCH, PhD

Geospatial and Climate-Health Researcher | Satellite Imagery, GIS and Spatial Epidemiology

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PROFILE

Biomedical scientist and spatial epidemiology researcher focused on climate- and environment-sensitive determinants of maternal, newborn, child and community health in East Africa. Current work integrates routine health facility and surveillance data with satellite-derived exposure metrics, geospatial analytics and reproducible computational workflows to identify inequalities, quantify climate risk and translate evidence into decision-ready maps, datasets and policy-relevant outputs.

CURRENT RESEARCH FOCUS

Extreme heat and priority populations	Subnational heat hazard, exposure burden and vulnerability mapping across Kenya, with emphasis on pregnant women, children under five and older adults.
Flood exposure and WASH resilience	Longitudinal Sentinel-1 flood exposure analysis linked to Community Health Unit water and sanitation indicators in Kilifi County.
Peri-urban transition mapping	Multi-proxy classification of rural to peri-urban transitions using publicly available geospatial indicators including Sentinel-2, nighttime lights and WorldPop layers.
Health service accessibility	Travel-time, coverage and geographic catchment modeling for maternity and primary health services using routine health facility data.
Operational analytics and capacity strengthening	Reproducible Python, Google Earth Engine and GIS workflows, dashboard-ready outputs, technical documentation and training support.

TECHNICAL STRENGTHS

Geospatial analysis Satellite imagery interpretation; GIS workflows; geospatial modeling; spatial accessibility; service catchments; hotspot mapping; cartographic outputs.	Remote sensing and exposure mapping Sentinel-1 flood metrics; Sentinel-2 settlement indicators; heat exposure metrics; land cover, elevation and population surfaces.
Analytics and reproducibility Python; Google Earth Engine; longitudinal and mixed-effects models; time-series analysis; data pipelines; transparent workflow documentation.	Health systems and implementation DHIS2-linked analytics; maternal, newborn and child health; WASH resilience; health facility coverage; operational decision support.
Communication and training Maps, datasets, dashboards, analytical reports, technical documentation, applied exercises and stakeholder-facing knowledge products.	

RESEARCH AND APPLIED PROJECT PORTFOLIO

Postdoctoral research in Environment, Climate and Health | Aga Khan University, Nairobi | 2025-Present

Spatial epidemiology, climate exposure mapping, health facility analytics and decision-support products for climate-resilient health systems.

Baseline Public/Environmental Health and Nutrition Longitudinal Cohort | Arusha-Monduli, Tanzania | Co-Investigator | 2025-Present

Supports longitudinal cohort design and analytics linking environmental, public health and nutrition indicators.

Health Systems and Climate Resilience in Conflict Settings | Kenya-Somalia border | Co-Investigator | 2025-Present

Contributes climate-health and health systems analytics in fragile and conflict-affected settings.

Verbal Autopsy Data Management and Analysis | Kaloleni Rabai Demographic and Health Surveillance System | 2025-Present

Supports data management and analytical workflows for mortality surveillance and health systems learning.

PROFESSIONAL EXPERIENCE

Postdoctoral Fellow, Environment, Climate and Health | Aga Khan University, Department of Population Health / Institute for Global Health and Development | Jan 2025-Present | Nairobi, Kenya

- Develop satellite-derived exposure maps and spatial epidemiology analyses for climate-sensitive health systems research.
- Integrate surveillance, routine health facility and geospatial datasets to assess flood exposure, WASH resilience, heat risk, facility accessibility and health service inequalities.
- Build reproducible Python, Google Earth Engine and GIS workflows; produce maps, datasets, reports and decision-support outputs for partners.

Lecturer, Department of Public Health | Jaramogi Oginga Odinga University of Science and Technology | 2022-Present | Kenya

- Teach and mentor in public health, health systems, health informatics and data-driven research methods.
- Support student supervision, analytical capacity building and applied public health research.

Research Fellow, Environmental Exposures and Neurocognition | Multi-institutional research collaboration | 2023-2024

- Supported environmental exposure and health analytics within a multi-institutional research setting.

Geostatistical Consultant | RTI International | 2022-2023

- Provided hotspot mapping, geospatial analytics and dashboard-oriented analytical support.

Spatial Analyst | Impact Research and Development Organization | 2022

- Conducted facility coverage and accessibility analysis to support service planning and supervision.

Earlier roles in M&E, data management and field supervision | The Nest Children's Foundation; World Vision Kenya; Vestergaard Frandsen and related survey programmes | 2012-2018 | Kenya

- Managed monitoring, evaluation, data quality and field coordination workflows across child protection, household survey and public health outreach settings.

EDUCATION

Doctor of Public Health | Public Health | Jaramogi Oginga Odinga University of Science and Technology | Bondo, Kenya | 2018-2022

Master of Public Health (Health Systems Management) | Public Health | Maseno University | Kisumu, Kenya | 2011-2013

Biomedical Sciences and Technology | Biochemistry and Molecular Biology | Egerton University | Njoro, Kenya | 2005-2009

CERTIFICATIONS, TRAINING AND RECOGNITION

- ESRI GIS for Climate Action Specialization, 2025.
- NASA ARSET Remote Sensing for Climate-Sensitive Infectious Diseases, Parts 1-2, 2025.
- WHO Climate Change and Health Specialization, 2024.
- Google Data Analytics Specialization, 2024.
- Manuscript Reviewer, Nature Cities, 2025.
- Participant, Climate Change, Environment and Health System Resilience Sub-Committee activities for Aga Khan University and World Health Summit Regional Meeting 2026.

SELECTED PUBLICATIONS AND PREPRINTS

Oluoch, F. F., Gudda, F., Makena, P., et al. (2026). Thirty-five years of accelerating heat stress in Kenya: subnational patterns of hazard, exposure burden, and vulnerability in priority populations. Preprint. DOI: 10.31235/osf.io/jxrqv_v2.

Makena, P., Oluoch, F. F., Gudda, F., Keter, A., Iseme-Ondiek, R., Das, J., Bhutta, Z., & Ngugi, A. (2026). A longitudinal multi-proxy geospatial classification of peri-urban transitions across Community Health Units in coastal Kenya. Preprint. DOI: 10.21203/rs.3.rs-9231692/v1.

Oluoch, F. F., Gudda, F., Iseme-Ondiek, R. A., Keter, A., Odhiambo, R., Das, J., Bhutta, Z., & Ngugi, A. K. (2025). Longitudinal Assessment of Flood Impacts on Water and Sanitation Resilience: Satellite Based Evidence from Community Health Units in Kilifi, Kenya. Preprint. DOI: 10.21203/rs.3.rs-8318883/v1.

Akoo, T. K., Awandu, S. S., Oluoch, F., Kemunto, L., Ochung, A., & Ayodo, G. (2023). Comorbidities Associated With Increased Risk of Death among Children Aged 2-59 Months with Severe Pneumonia in Western Kenya. African Journal of Health Sciences. DOI: 10.4314/ajhs.v36i1.2.

Oluoch, F., Ayodo, G., Owino, F., & Okuto, E. (2020). Computing the Geographic Extent of Maternity Health Services to Predict the Utilization of Skilled Delivery in Siaya County, Western Kenya. European Scientific Journal, 16(3). DOI: 10.19044/esj.2020.v16n3p489.

Oluoch, F., Ayodo, G., Owino, F., & Okuto, E. (2020). Modeling the Impact of Traveling Time on the Utilization of Maternity Services Using Routine Health Facility Data in Siaya County, Western Kenya. American Journal of Geographic Information System. DOI: 10.5923/j.ajgis.20200901.01.

Oluoch, F., Ayodo, G., Owino, F., & Okuto, E. (2020). The Cost-Implications of Reaching Universal Coverage of Maternity Health Services in Siaya County, Western Kenya. Public Health Research. DOI: 10.5923/j.phr.20201001.01.

LANGUAGES

English: Professional working proficiency.

RESEARCH IDENTITY

Keywords: GIS, spatial analysis, geospatial modeling, interactive maps, health systems research, satellite-derived exposure mapping, climate-resilient health systems.