

Curriculum Vitae

Joseph Karanja

Ph.D. Student (GIScience) and Research Assistant
School of Geographical Sciences and Urban Planning, Arizona State University

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EDUCATION

- 2021-Present **Ph.D. GIScience, Arizona State University (ASU)**, Tempe, Arizona.
- Thesis: The Role of Geographical Context, Populational Attributes, and Locational Characteristics in Influencing Heat Vulnerability.
 - Committee: Dr. Matei Georgescu (co-chair), Dr. Amy Frazier (co-chair), Dr. David Hondula, and Dr. Jennifer Vanos.
- 2019-2021 **a) M.S. Geosciences (geography concentration), Georgia State University (GSU)**, Atlanta, Georgia
- Thesis: *Evolution of Composite Heat Vulnerability Indices in Atlanta using Multiple Weighting Mechanics.*
 - Committee: Dr. Lawrence Kiage (chair), Dr. Dajun Dai, and Dr. Ricardo Nogueira.
- b) Postgraduate Certificate in GIS, Georgia State University** Atlanta, Georgia.
- 2014-2017 **M.S. Environmental Science (Climate Change and Sustainability), Kenyatta University (KU)**, Nairobi.
- Thesis: Quality of Geothermal Effluents and Emissions from Climate Change Resilient Technologies in Eburru and Olkaria, Nakuru County.
 - Committee: Dr. Daniel Mang'uriu (chair) and Dr. Ezekiel Ndunda.
- 2009-2013 **Bachelor of Environmental Planning and Management, Kenyatta University**
Attained **First Class Honours**.
- Project: Understanding Settlement Challenges in Kihoto Informal Settlement along the Lake Naivasha Floodplain.
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RESEARCH INTERESTS

- Heat vulnerability: generating metrics for social vulnerability, heat-hazard exposure, and their composites.
 - Geographic Information Science: scale issues, data visualization, spatial data transformations, and the integration of GIS in heat-health studies.
 - Heat-Hazard characterization: comparing satellite and meteorological datasets to study spatial-temporal dynamics associated with heat and resultant health outcomes.
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Google Scholar: <https://scholar.google.com/citations?user=KJ9DFtYAAAAJ&hl=en>

Twitter: <https://twitter.com/sirjoekaranja>

LinkedIn: <https://www.linkedin.com/in/joseph-karanja-36805742/>

PUBLICATIONS (PEER-REVIEWED)

1. **Karanja, J.**, Svoma, B. M., Walter, J., & Georgescu, M. (2023). Southwest US winter precipitation variability: reviewing the role of oceanic teleconnections. *Environmental Research Letters*, 18(5), 053003.
2. **Karanja, J.**, Kiage, L.M. Scale implications and evolution of a social vulnerability index in Atlanta, Georgia, USA. *Nat Hazards* (2022). <https://doi.org/10.1007/s11069-022-05324-9>
3. **Karanja, J.**, Kiage, L., & Wanyama, D. (2021). Weighting Mechanics and the Spatial Pattern of Composite Metrics of Heat Vulnerability in Atlanta, Georgia, USA. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2021.151432>
4. **Karanja, J.**, & Kiage, L. (2021) Perspectives on Spatial Representation of Urban Heat Vulnerability. *Science of the Total Environment*. Vol 774 (220). <https://doi.org/10.1016/j.scitotenv.2021.145634>

MANUSCRIPTS IN PREPARATION

1. Francisco S., Bohumil S., James W., Damian I., Gonzalo M., **Joseph K.**, Matei G. (2023). Modeling Salt-Verde Watershed Winter Precipitation Using Convection-Permitting WRF-Simulations with Water Vapor Tracers. Submitted to the *Journal of Geophysical Research-Atmospheres* (under review).
2. **Karanja, J.**, Vanos, J., Georgescu, M., Frazier, A., & D. Hondula. Methodological Rationale for Heat Vulnerability Indices as Predictor Variables of Heat-Health Outcomes (in-preparation).
3. Garima, J., Malladi, T., & **J. Karanja**. Spatial Vulnerability: Conceptual Positioning and Application for Decision-Making (Accepted).
4. Karanja, J., Vanos, J., Vieira, Jaime. Sheltered from the heat? How tents and shade covers may unintentionally increase air temperature exposures to unsheltered communities. Submitted to the *Journal of Public Health in Practice* (under review).

NON-PEER REVIEWED REPORTS

1. **Karanja, J.**, (2013). Assessing settlement challenge in Kihoto informal settlement along the lake Naivasha flood plain (KU library).
2. Assessing land-use conflicts to the sustainability of land use of Maasai Mara ecosystem. February 2013 (KU library)
3. Assessing the effectiveness of Community Forest Associations (CFAs) in forest management in Kieni East district. October 2012 (KU library).
4. Sustainable spatial plan of Nyahururu municipality to the year 2030. September 2011. (KU library).

GRANTS AND FELLOWSHIPS

- Graduate Student and Professional Student Association travel grant, summer 2023. Amount awarded \$950.
- Research America Civic Engagement Microgrant 2023. Amount awarded \$2,300
- Recipient of the Bill Anderson Fund, fellow cohort 2022-2023
- Graduate College individual travel grant Fall 2022. Award amount \$950.
- ASU FLAGSHIP Program Award 2022. Future Leaders and Geoscience High Road Internship. Award amount \$1300.
- Recipient of Interdisciplinary Enrichment fellowship 2021-2022, ASU. Award amount \$47,925
- ASU graduate college conference award 2021-2022. Award amount \$245

HONORS AND AWARDS

- International Association of Urban Climate/ American Meteorological Association student presentation award during the International Conference on Urban Climate in Sydney, Australia, September 2023.
- Urban Climate Research Center poster competition 2023, third position
- Geography graduate student of the year 2020-2021, GSU
- Geosciences teaching assistant of the year 2020-2021, GSU
- Nominated for International Student of the year 2020-2021, GSU

POSITIONS HELD

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| 2022-2023 | <p>Graduate Research Assistant, Arizona State University</p> <ul style="list-style-type: none"> ▪ Graduate Research Assistant for the Southwest Urban Corridor Integrated Field Laboratory (SWIFL). Coordinated activities for the modeling, observations, geospatial solutions, and resilient solutions teams, Summer 2023. ▪ Part of the team developing Arizona-specific social vulnerability index. ▪ Worked on the National Oceanic and Atmospheric Administration pathfinder project on the intersection of health, air pollution, and heat vulnerability. Also, involved in stakeholder engagement for value chain identification for the next-generation GeoXo satellites, Spring 2022. |
| 2022-2023: | <p>Teaching Assistant, Arizona State University</p> <ul style="list-style-type: none"> ▪ Teaching assistant, Global Change, Fall 2023. ▪ Instructor of Record for Introduction to Meteorology, Fall 2022 |
| 2021-2022 | <p>Graduate Research Assistant, Arizona State University</p> <ul style="list-style-type: none"> ▪ Examined the effects of a warmer climate on future Salt-Verde watershed winter precipitation using convection-permitting regional |

- climate models. A joint project between ASU and Salt River Project (SRP).
- I analyzed precipitation data (1951-2021) to determine contemporary winters for simulations to the year 2100.
 - Worked on a systematic review article as the lead author exploring climate modes in the Pacific and Atlantic oceans and how they impact southwest USA winter precipitation.
- 2020-2021 **Lead Teaching Assistant, Georgia State University**
- In charge of 12 teaching assistants (TAs) and 29 labs (approximately 28 students per lab).
 - Steered the weather and climate **lab innovation plan** for the Department of Geosciences.
 - Aligned the lab modules with culturally responsive pedagogy and transitioned to online delivery during the COVID-19 pandemic.
- 2019-2021 **Teaching Assistant, Georgia State University**
- Courses taught: Weather and climate
Introduction to GIS
Advanced GIS
Introduction to remote sensing
- 2017-2019 **Manager, M&N Enterprises, Naivasha**
- Implemented a business management system, and output grew five-fold under my leadership.
- 2012-2013 **Trainee at Kenya Electricity Generating Company, Naivasha**
- Sections attached: meteorology, occupational safety and health, community liaison, environmental laboratory, and GIS lab.
 - Monitored daily air quality and noise levels, and conducted statutory inspections of worksites and toxicity analysis for geothermal effluents.

LEADERSHIP ROLES

- 2022 - 2023
- Graduate student representative to the faculty committee on graduate affairs, School of Geographical Sciences and Urban Planning, ASU.
 - Student representative for the Urban Climate Research Center.
 - Committee member for the writing group, Bill Anderson Fund Fellowship program
 - Co-chair of the session on Urban Environment and Health Impacts I during the AMS annual meeting, in Denver, Colorado, January 2023.
- 2020-2021
- President, Geosciences Graduate Students Alliance, Georgia State University.
 - Student representative to the Graduate Council, College of Arts and Sciences, GSU.
 - Student member of the curriculum committee. Participated in the review of the college curriculum and voted on committee issues.

PROFESSIONAL PRESENTATIONS (bolded author name presented)

- 2023
- **Karanja, J.**, Vanos, J., Georgescu, M., Frazier, A., & D. Hondula. Relationships between Heat Health Outcomes and the Choice of Input Variables in Heat Studies. *International Conference on Urban Climate*, Sydney, Australia, August 2023. Oral Presentation.
 - **Karanja, J.**, Vanos, J., Vieira, J. Thermal Discomfort for Unhoused Communities using Different Tent Cover Materials, *Natural Hazards Workshop*, Broomfield, Colorado US, July 2023. Oral Presentation.
 - Karanja, J., and Vanos, J. Heat, Air Pollution, and Health Outcomes Nexus. Overview of Current, Future, and Synthetic Data that can Inform Air Quality Coordination and Decision-Making Activities. Presented during the *ASU-NOAA Air Quality Tabletop Exercise* at Skysong, Arizona, June 2023.
 - **Karanja, J.**, Vanos, J., Vieira, J. Thermal Discomfort for Unhoused Communities using Different Tent Cover Materials, *International Conference of Biometeorology*, Tempe, US, April 2023. Oral Presentation.
 - **Karanja, J.**, Georgescu, M., Svoma, B., & J., Walter. Southwest US Winter Precipitation Variability: Reviewing the Role of Oceanic Teleconnections. *American Meteorological Society Annual Meeting January 2023*, Denver, Colorado. Poster Presentation.
- 2022
- **Karanja, J.**, Wanyama, D., Kiage, L. Weighting Mechanics and the Spatial Pattern of Composite Metrics of Heat Vulnerability in Atlanta, Georgia, USA. *International Conference on Urban Climate*, August 2022. Virtual Poster Presentation.
- 2021
- **Karanja, J.**, Vanos, J., Georgescu, M., & D. Hondula. Methodological Rationale for Heat Vulnerability Indices as Predictor Variables of Heat-Health Outcomes. *American Association of Geographers (AAG) Annual Meeting*, February 2022. Virtual Oral presentation.
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PROFESSIONAL CERTIFICATIONS

- Certificate on Policy and Science sponsored by Research America and training offered by the Federation of American Societies for Experimental Biology, March 2023.
- Certified associate expert for environmental impact assessment, Kenya. Certificate issued by National Environmental Management Authority since September 2016.
- Certificate in transformational leadership skills awarded by Kenyatta University, December 2013.

- Certificate on entrepreneurial promotion sponsored by Kenyatta University, University of Lüneburg (Germany), and UNESCO (United Nations Educational, Scientific, Cultural Organization), November 2012.
- Introduction to GIS and remote sensing certification awarded by Regional Center for Mapping of Resources for Development, Nairobi, April 2012.

PROFESSIONAL ASSOCIATIONS

- Member, Board of Urban Environment, American Meteorological Society (AMS)
- Student member, American Association of Geographers (AAG)
- Student member, International Conference of Biometeorology (ICB)
- Student member, International Association on Urban Climate (IAUC)

MEDIA AND SCIENCE COMMUNICATION

- Research highlight on Phoenix's most heat-vulnerable communities
<https://provost.asu.edu/shedding-light-phoenixs-most-heat-vulnerable>
- Environmental injustice and inequality in downtown Phoenix
<https://aaronstigile.weebly.com/articles.html>
- American Association of Geographers (AAG stories) https://www.aag.org/wayfinding-finding-heat-vulnerability-before-its-too-late/?fbclid=IwAR2BAa_yFwEMkDuaRyparDAJvdih1qM5rWBB9EChR8-eigH-8BK7REhSlas

OTHER COMPETENCIES

- Proficiency in ArcMap, ArcGIS Pro, QGIS, Erdas Imagine, and SPSS software
- Python Programming (Introduction)
- R-Programming (Introduction)

COMMUNITY WORK/VOLUNTEERING

- Unibuddy Student Ambassador, ASU.
 - Counselor, Naivasha District Hospital. Volunteered at the comprehensive care center for HIV-infected people and checked their daily progress.
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