

HARRIETTE ADHIAMBO OKAL
Hydrology & Water Resources Expert

Contact details:

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Email: harrietteadhiambo@gmail.com, LinkedIn: [Profile](#), Twitter: @OkalHarriette

EXECUTIVE SUMMARY

With over 6 years of experience in hydrology and integrated water resources management, I specialize in leveraging data and innovative methodologies to address climate change and water-related challenges. My work spans hydroclimatic modelling, remote sensing, and the application of the Water-Energy-Food (WEF) Nexus, with a particular focus on ecosystem-based adaptation. I am deeply committed to advancing the sustainable management of water resources across and beyond Africa, advocating for strategic investments in climate resilience and fostering partnerships that drive impactful change.

CORE COMPETENCIES

- Hydro(geo)logical Modelling
- Remote Sensing /Earth Observation
- Climate Change and Climate Action
- Early Warning Systems and Disaster Risk Reduction
- Water-Energy-Food (WEF) Nexus
- Watershed Management
- Data and Information Systems Management
- Integrated Water Resources Management
- Environmental Impact Assessment
- Biodiversity Conservation
- Geo-spatial analysis
- Multi-lingual (English, French, and Swahili)
- Data analysis (R, Stata, SPSS, Spatsim, Atlas.ti)
- Database management
- Technical and academic writing
- Results oriented
- Development and sharing of knowledge
- Collaboration, inclusivity and partnerships
- Adaptability
- Leadership and innovation
- Analytical thinking and decision making

PROFESSIONAL EXPERIENCE

1. Associate Scientist - Water Systems (Full time)

📍 *Stockholm Environment Institute*

📅 *2024–Present*

Roles and Responsibilities

a. Research, Policy, and Capacity Development Tasks:

- Water Systems Modelling and Analysis
- Integrated Water Planning and Policy Coordination
- Capacity Building Initiatives
- Annual Workplan Contribution
- Outreach and Communication
- Supervision and Teaching

b. Centre Development:

- Project Management
- Guidance and Development
- Partnership Strengthening

c. Project-Specific Tasks:

- Coordinate the project “Applying the Water-Energy-Food Nexus to Promote Ecosystem-Based Adaptation in the Ewaso Ng’iro North River Catchment, Kenya.”
- Support the implementation of the EU-funded project “Open source Nexus modeling tools for Planning Sustainable Energy Transition in Africa.”
- Support the project “Integrated Management of Natural Resources for Resilience in the ASALs (IMARA).”.

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- Supported the implementation of Gatsby Africa-funded project on “Assessing Water Resource Management and River Basin Governance in Kenya”

2. Climate Mobility Delegate (Seasonal)

📍 *Global Centre for Climate Mobility*

📅 2023 – Present

Roles and Responsibilities

- a. Research and Analysis:
 - Conduct research and analysis on climate-induced migration and mobility.
 - Identify and assess the impacts of climate change on migration patterns.
- b. Policy Development:
 - Contribute to the development of policies and strategies that address climate-induced migration.
 - Support the integration of climate mobility considerations into broader climate and migration policies.
- c. Capacity Building:
 - Organize and conduct training sessions and workshops for stakeholders on climate mobility issues.
 - Provide technical support and capacity building to governments, NGOs, and other organizations.
- d. Project Management:
 - Monitor and evaluate the progress and outcomes of projects
- e. Advocacy and Outreach:
 - Engage in advocacy efforts to raise awareness about climate mobility issues.
 - Represent the organization at conferences, forums, and other public events.
 - Prepare and disseminate information materials, such as reports, articles, and presentations.
- f. Partnership and Collaboration:
 - Foster partnerships with international, regional, and national stakeholders.
 - Collaborate with other UN agencies, NGOs, and research institutions to advance the agenda on climate mobility

3. Community Outreach Campaign Volunteer (Part time)

📍 *Rhodes University*

📅 2023

- Taught and mentored Grade 6 and 7 students from Nathaniel Palma High School, Peddie, South Africa, significantly improving their academic advancement in Mathematics and Physical Sciences.

4. Website Management and Youth Work Support (Seasonal)

📍 *World Meteorological Organization*

📅 2022 – Present

- Support the Integrated Drought Management Programme (IDMP) and Associated Programme on Flood Management (APFM)

5. Student Mentor (Full time)

📍 *Institute for Water Research, Rhodes University*

📅 2021 – 2023

- Mentored a Master of Science (Hydrology) student (Mr. Peter Waswa) on his thesis project ‘Application of the Modified Pitman and SWAT models for groundwater recharge estimation in the upstream of Uitenhage Artesian Basin, South Africa’ to a successful defence in November 2023 and graduation in April 2024

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6. Visiting Researcher (Full time)

📍 *Institute of Environmental Engineering (IfU), ETH Zürich*
📅 2022 - 2023

- Mentored 4 students pursuing the Advanced Master of Science in Water Resource Management during their Winter 2023, providing guidance on research and coursework as a Doctoral Mentee under the ETH4D Doctoral Mentorship Programme

7. Representative – Kenya (Seasonal)

📍 *World Youth Parliament for Water*
📅 2022 - 2023

- Advocacy

8. Research Assistant (Full time)

📍 *University of Embu*
📅 2020

- Supported the implementation of 'Towards Achieving Land Degradation Neutrality for Enhanced Food Security and Resilience to Climate Change In Tharaka-Nithi County, Kenya' Project that led to one scientific paper, one technical paper and one conference presentation

9. Assistant GIS Officer (Full time)

📍 *Embu Water and Sanitation Company Ltd.*
📅 2016

10. Intern (Full time)

📍 *Embu Water and Sanitation Company Ltd.*
📅 2015

ACADEMIC QUALIFICATIONS

Doctor of Philosophy in Hydrology	📍 Rhodes University	📅 2021 – Present
Master of Science in Land and Water Management	📍 University of Embu	📅 2017 - 2019
Bachelor of Science in Water Resource Management	📍 University of Nairobi	📅 2013 – 2016

PUBLICATIONS, FEATURES, AND PERSPECTIVES

1. **Okal, H. A.**, Ngetich F. K., & Okeyo J. M. (2019). Spatial Evaluation of Droughts Using Selected Satellite-based Indices in the Upper Tana River Watershed, Kenya. *International Journal of Plant & Soil Science*, 30(1), 1-13.
2. **Okal H. A.**, Ngetich F. K., & Okeyo J. M. (2020). Spatio - Temporal Evaluation of Meteorological Droughts Using Selected Indices in the Upper Tana River Watershed, Kenya. *Scientific African*, 7, e00275.
3. **Okal H. A.**, Hughes D & Tanner J (2022). Investing in Sub-Saharan Africa Water Resources; Technology vs People. WCC-OFW Joint Publication: Climate Resilient Water Resources Management-Driving the Conversation Forward. <https://www.water-climate-coalition.org/2022/10/20/collaborative-wcc-members-publication/>.
4. Okeyo J. M & **Okal H. A** (2023). Land Cover Change as an Indicator of Land Degradation Neutrality at Sub-National Level in Eastern Kenya: A case of Tharaka Nithi County. *International Journal of Remote Sensing* (Under Review)
5. **Okal H. A.**, Mantel S. K., Hughes D. A., & Tanner J. (2023). Global vs. Local: A Review of Sub-Saharan Africa Hydrological Modelling Landscape. *Advances in Water Resources* (Under Review)
6. **Okal H. A.**, Molnar P., Molnar D., Mantel S. K., Hughes D. A., & Tanner J. (2024). ERA5-Land Data: New Possibilities in Hydrological Modelling and Water Resources Assessment in the Data-Scarce Regions of Sub-Saharan Africa. *Hydrology and Earth System Sciences* (Submitted)
7. **Okal H. A.**, Kehbila A., & Osano P. (2024). Enhancing Water Security in Africa Through Improved Policies. Policy Brief. *SEI Publications* (Intention to submit)

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8. **Okal H. A**, Ogeya C. M., Waswa R., Lutta A., Kehbila A., & Osano P. (2024). Mapping the Challenges: A Participatory Approach to the Water-Energy-Food Nexus in Ewaso Ng'iro North. Working Paper. *SEI Publications* (Intention to Submit).
9. **SEI Feature** (2024): Role of in Fostering Peace. Find it [here](#)
10. **Media Coverage** (2024): Expert Opinion on Water Scarcity is Directly Linked to Economic Instability. **CGTN Africa**. Find it [here](#)
11. **Media Coverage** (2024): Utilizing Water's Potential to attain Sustainable Development Goals. **CGTN Africa**. Watch the interview [here](#)
12. **SEI Feature** (2024): Balancing Act: applying the Water-Energy-Food Nexus to promote ecosystem-based adaptation in the Ewaso Ng'iro North Catchment, Kenya. Find it [here](#)
13. **Featured Interview** (2024): **United Nations Office of Outer Space Affairs – Space4Water**. Find it [here](#)

COURSES AND TRAININGS (2022-2024)

1. Remote Sensing and GIS for the Water Sector (In-person, *October-November 2023*). ITC- Faculty of Geo-information Science and Earth Observation, University of Twente.
2. Introduction to Biology: Ecology, Evolution, & Biodiversity (*Sept 2023*). Rice University
3. Integrated Drought Management: Monitoring and Early Warning (*June 2023*). Integrated Drought Management Programme, WMO, GWP, and UNEP-DHI
4. Efficacy on Nature-Based Solutions for Disaster Risk Reduction in Africa (*Feb 2023*). UNESCO, and OPERANDUM

PROFESSIONAL ENGAGEMENTS (2022-2024)

1. *31st Institution of Engineers of Kenya (IEK) Convention, 2024, Mombasa, Kenya*. **Keynote Speaker:** The Water-Energy-Food Nexus: A Catalyst for Sustainable Industrialization and Climate Resilience
2. *7th Cairo Water Week, 9th Africa Water Week & the Inaugural Africa Hydrological Conference, 2024, Cairo, Egypt*. **Panellist & Speaker:**
 - Policy and Technical Solutions for Water Data Diplomacy and Exchange Session: Integrating Data into Diplomacy and Diplomacy into Data (Panellist)
 - Plenary Session: Actions for Water and Climate Adaptation and Resilience. Speaker on the Role of the Youth in Enhancing Hydrological Services Delivery
 - Leveraging Hydrological Data for Integrated Water-Energy-Food Nexus Solutions: Socioeconomic and Resilience Benefits Across Africa (Moderator and Speaker)
3. *Drought Resilience + 10 Conference – High-Level Meeting on National Drought Policy, 2024, World Meteorological Organization, Geneva, Switzerland*. **Panellist** in the Workstream 8 Session on Private-Public-Civil Society Partnerships (PPCSPs) organised and convened by WMO, GWP and World Bank and conference **coordinator** (IDMP).
4. *United Nations/Costa Rica/PSIPW - Sixth conference on the use of space technology for water management, 2024, San Jose, Costa Rica: Assessing ERA5-Land Performance for Hydrological Modelling in Data-Scarce Sub-Saharan Africa Regions*. **HA Okal**, DA Hughes, S. Mantel, J. Tanner (Oral Presentation) and **Moderator**.
5. *United Nations Climate Change Conference, 28th Conference of Parties (COP28), Dubai, United Arab Emirates, 2023*. **Panellist** in various high-level panel sessions and side events including 'Data, Research

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and Science to Catalyse Action on Sea Level Rise and its Challenges' organized by Rising Nations Initiative, Global Center for Climate Mobility, and NASA.

6. *Rhodes University, Centre for Postgraduate Studies (CPGS), 2023 Conference. Theme: Shaking the Table.* Hydrological Signatures in Sub-Saharan Africa: Drivers, Patterns, and Applications. **HA Okal** (Oral Presentation)
7. *SIWI World Water Week, 2023, Stockholm, Sweden.* **Guest Speaker** for the 'Cooperation for Drought Resilience' session convened by WMO, GWP, UNCCD, FAO, IWMI, NOAA, TNC, and NDMC.
8. *European Geosciences Union (EGU) General Assembly, 2023, Vienna, Austria.* ERA5-Land Data: New Possibilities in Hydrological Modelling and Water Resources Assessment in the Data-Scarce Regions of Sub-Saharan Africa. **HA Okal**, P. Molnar, D. Molnar, S. Mantel, DA Hughes, J. Tanner (Poster Presentation)
9. *South Africa Hydrological Society (SAHS) - Inaugural Symposium, 2022, Pretoria, South Africa.* Comparison and Validation of Outputs from Global Hydrological Models against Local Hydrological Data: A Southern Sub-Saharan Africa Context. **HA Okal**, DA Hughes, S. Mantel, J. Tanner (Oral Presentation)
10. *The 11th Scientific Assembly of the International Association of Hydrological Sciences (IAHS 2022), Montpellier, France.* Comparison and Validation of Outputs from Global Hydrological Models against Local Hydrological Data in Sub-Saharan Africa. **HA Okal**, DA Hughes, S. Mantel, J. Tanner (Oral Presentation)
11. *9th World Water Forum, 2022, Dakar, Senegal* (Talks and Sessions Coordination)
12. *Dushanbe Water Process Children's and Youth Forum, 2022* (Online Participation)
13. *Africa Climate Mobility Initiative Forum, 2022* (Online Participation).

PROFESSIONAL AFFILIATION

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|---|---|---|
| 1. Water and Climate Coalition | 2. International Association for Hydrological Sciences | 3. Young Hydrological Scientists (Africa) |
| 4. Early Career Scientists (Hydrological Sciences, EGU) | 5. International Water Association Young Water Professionals | 6. Kenya Climate Change Working Group |
| 7. Water Youth Network | 10. World Food Forum – Observer and Youth Representative of the WMO | 12. South African Hydrological Society |
| 8. IDMP Community of Practice | 11. World Youth Parliament for Water (Kenyan Representative, 2022) | 13. AGNES Africa |
| 9. Young Professional, United Nations Office of Outer Space Affairs – Space for Water | | |

REFEREES

- | | | |
|---|--|--|
| 1. Prof. Felix Ngetich
Associate Professor of Agricultural Sciences,
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