Felix Kasiti Isundwa

Doctoral Researcher | Remote Sensing & Hydrology

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LinkedIn: linkedin.com/in/kasitif   Location: Stirling, Scotland, UK

Professional Summary

Doctoral researcher with over eight years' experience in hydrology, remote sensing, and geospatial analysis. Expertise in Synthetic Aperture Radar (SAR) data processing, machine learning for environmental applications, and community-based flood early warning systems. Strong track record of stakeholder engagement across East Africa and published research in IEEE journals. Currently developing novel SAR-based flood mapping methodologies at the University of Stirling.

Education

PhD Environmental Science (SAR Flood Mapping)   *2022–2026 (expected)*
University of Stirling   Scotland, UK

- Funded by UK Natural Environment Research Council (NERC)
- Thesis: Detecting and monitoring floods using satellite radar and simulating floods and detection using ground radar n
- Developing field-tested methodologies for floodplain and wetland management

MSc Water Science (Policy and Governance)   *2016–2018*
Pan-African University (PAUWES)   Algeria

- African Union fully-funded scholarship

BSc Earth Science   *2009–2013*
Maseno University   Kenya

Professional Experience

Doctoral Researcher   *Oct 2022–Present*
University of Stirling, NERC-funded   Scotland, UK

- Developing novel polarimetric SAR methodologies for flood extent mapping
- Processing satellite data from Sentinel-1, ALOS-2, SAOCOM, and Ground Radar
- Publishing findings in peer-reviewed IEEE journals and international conferences
- Collaborating with Scottish Environment Protection Agency on operational flood monitoring

Placement Researcher   *Feb 2025–Jul 2025*
Scottish Environment Protection Agency (SEPA)   Stirling, UK

- Designing deep learning models integrating real-time social media data for disaster response
- Developing geotagged data pipelines for floods, droughts, and storms early warning
- Supporting impact assessment and early action decision-making

Graduate Teaching Assistant   *Sep 2024–Jul 2025*
University of Stirling   Scotland, UK

- Supporting practical sessions for postgraduate students in GIS and remote sensing

Research Assistant   *Nov 2022–Mar 2023*
University of Stirling   Scotland, UK

- Analysed satellite data for aquatic vegetation mapping in Lake Victoria

- Co-authored publication on water hyacinth monitoring using polarimetric radar

Assistant Hydrologist *Aug 2019–Sep 2022*
SERVIR Eastern & Southern Africa, RCMRD Nairobi, Kenya

- Led development of operational hydrological model for Tanzania using VIC model (streamflowmonitor.rcmrd.org)
- Implemented community-based flood early warning systems (CBFEWS) across Malawi
- Conducted flood risk assessments, hydraulic modelling, and stakeholder training
- Assessed flood damages in Western Kenya (2020) using Google Earth Engine
- Managed geospatial data for EF5, VIC, and CREST hydrological models

Junior Hydrologist *Dec 2013–Dec 2018*
Hydrosan Limited Kakamega, Kenya

- Conducted hydrological and hydrogeological assessments for 300+ water points
- Developed catchment management plans for Water Resources Users' Associations
- Led Environmental Impact Assessments and community engagement activities

Selected Consultancies

- **Ministry of Water and Sanitation, Malawi** (2023): Establishment of CBFEWS
- **Climate Action Callander, Scotland** (2023): Flood resilience review for River Teith
- **UNDP Malawi** (2020–2022): Community-based flood early warning systems implementation
- **SNV** (2021): Water quality and quantity mapping in Laikipia, Isiolo, and Samburu Counties

Publications

[1] **Isundwa, F.K.**, et al. (2024). Mapping and Monitoring of Water Hyacinth in Lake Victoria Using Polarimetric Radar Data. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. DOI: 10.1109/jstars.2024.3476938

[2] **Isundwa, F.K.**, et al. (2024). Mapping Floods Using SAR Polarimetry in Imola, Italy. *IGARSS 2024 - IEEE International Geoscience and Remote Sensing Symposium*, pp. 10799–10802. DOI: 10.1109/igarss53475.2024.10640708

[3] **Isundwa, F.K.**, et al. (2024). Monitoring temporal trends to assess infestation of water hyacinth in Lake Victoria using PolSAR. *EUSAR 2024; 15th European Conference on Synthetic Aperture Radar*, Munich.

[4] **Isundwa, F.K.**, et al. (2023). Using PolSAR to Assess Temporal Trends of Water Hyacinth Infestation in Lake Victoria. *2023 IEEE India Geoscience and Remote Sensing Symposium (InGARSS)*. DOI: 10.1109/ingarss59135.2023.10490369

[5] Macharia, D., Mugabo, L., **Kasiti, F. I.**, Noriega, A., MacDonald, L., Thomas, E. (2023). Streamflow and flood prediction in Rwanda using machine learning and remote sensing. *Frontiers in Climate*. DOI: 10.3389/fclim.2023.1158186

[6] **Isundwa, F.K.**, et al. (2019). The potential for water stewardship partnership in Kenya. *Arabian Journal of Geosciences*. DOI: 10.1007/s12517-019-4506-x

Awards & Funding

- **ESA/CONAE PUMAS Programme** (2025–2027): Global satellite data access and tasking
- **NERC PhD Studentship** (2022–2026): Fully-funded doctoral research, University of Stirling
- **African Union Scholarship** (2016–2018): Fully-funded MSc at Pan-African University

Technical Skills

Programming:	Python, R, JavaScript, Google Earth Engine, Git
Remote Sensing:	SAR processing (PolSARpro, SNAP), optical imagery, drone data analysis
GIS:	ArcGIS, QGIS, spatial data analysis, cartography
Modelling:	Hydrological modelling (SWAT, VIC, CREST), hydraulic modelling
Machine Learning:	Deep learning, TensorFlow, PyTorch, scikit-learn
Data Collection:	Field surveys, KoboToolbox, ODK, hydrological sampling

Professional Training

- IEEE GRSS PolSAR School 2024, University of Stirling (Dec 2024)
- 6th ESA/DLR PolInSAR Course (Nov 2023–Feb 2024)
- Climate Change and Water Systems, University of Bonn/UNU-EHS (Jul 2017)

Professional Memberships

- IEEE Student Member
- UN-Space Space4Water Network Young Professional – space4water.org/person/kasiti
- Hydrological Society of Kenya – Elected Official, Programs Committee (2021-2025)

References

Available upon request.