

CURRICULUM VITAE

DR. JOHN MWANZIA MUSAU, PhD

Lecturer, Department of Environmental Sciences
School of Agriculture, Environment & Health Sciences,
Machakos University

Personal Data

Name: John Mwanzia Musau
Date of Birth: 1st October, 1987
Place of Birth: Machakos County
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Career objective

My research aims to promote better understanding of biophysical interactions and feedbacks in the soil-vegetation-atmosphere interface in water limited ecosystems. My research interests focus on three main themes: (i) assessment of potential effects of climate and land use changes on water and energy balance across different spatial and temporal scales, (ii) quantification of ecosystem services resilience to environmental changes, and (iii) application of remote sensing and geographic information systems in assessment of environmental systems. Particularly, I am interested in application of models driven by Earth observation and other geospatial data to investigate the spatial and temporal patterns and impacts of past and future environmental changes.

Academic qualifications

September 2015- December 2020: **PhD. Environmental Science**

Bangor university, United Kingdom (UK).

Research topic: "Land Use/Cover Change Impacts on Water and Energy Balance in East Africa Region".

May 2012- 2015: **Msc. Environmental Engineering and Management**

Jomo Kenyatta University of Agriculture and Technology (JKUAT).

Thesis title: "Assessment of Hydrological Responses to Climate Change in Mt. Elgon Watersheds, Kenya".

2007- 2011: **Bachelor of Environmental Planning and Management (First Class Honors)**

Kenyatta University.

Professional Experience

October 2021 – **Lecturer;** Department of Environmental sciences; School of Agriculture,

Environment and Health Sciences; Machakos University.

- 2017- 2021 **Tutorial Fellow;** Department of Environmental sciences; School of Environment and Natural Resource Management; Machakos University.
- July- sept 2014 **Visiting Research scholar** at the NASA Jet Propulsion Laboratory (JPL) in Pasadena, California, USA. Responsibilities focused on:
- Assimilation of satellite data in hydrological modelling using the Variable Infiltration Capacity (VIC) model for drought assessment and prediction in East Africa region
 - Automatic calibration of VIC model to optimize regional soil parameters
- 2013- 2017 **Research Fellow;** World Agroforestry Centre (ICRAF); Nairobi. Responsibilities/ activities focused on:
- Assessment of land cover change impacts on water and energy balance in East Africa;
 - Remote sensing data processing and analysis;
 - Assimilation of remote sensing data in land surface modelling.
- Feb- June 2012 **Consultant,** Somalia Water and Land Information Management (SWALIM), FAO Somalia. Responsibilities included:
- High resolution satellite image classification
 - Mapping of cultivated areas in southern Somalia using medium and high-resolution satellite images

Research and Development projects

- 2022 **Co-researcher:** Assessment of the impacts of COVID-19 on community conservation and nature-based tourism enterprises in the Amboseli ecosystem in Kenya.
- 2022 **Co-researcher:** Kenya Rangelands Ecosystem Services pRодукtivity (RangER) Programme funded by the European Union. The collaborating partners are: Northern Rangelands Trust (NRT), European Union (EU) in Kenya, E4Impact, World Agroforestry (ICRAF), Jomo Kenyatta University of Agriculture and Technology (JKUAT), Community Safety Initiative (CSI), and AMAYA Triangle Initiative (ATI) counties of Baringo, Laikipia, Samburu and Isiolo.
- 2021 **Remote Sensing, spatial data modelling and analysis specialist:** Water Productivity Improvement in Practice (WaterPIP) for Kenya based on open access and remote sensing data. The project is implemented by The Association of Irrigation Acceleration Platform (AIAP) with funding from the IHE Delft Institute for Water Education (IHE Delft).

Membership to Professional bodies

- Lead expert,** National Environment Management Authority (NEMA) – 12275
- Member,** Association of Irrigation Acceleration Platform (AIAP)
- Member,** International Association of Hydrological Sciences
- Member,** Association for Geographic Information

Relevant Publications in refereed journals

1. **Musau, J.**, Patil, S., Sheffield, J., and Marshall, M. (2018) Vegetation dynamics and responses to climate anomalies in East Africa, *Earth Syst. Dynam. Discuss.*, <https://doi.org/10.5194/esd-2017-123>.
2. **Musau, J.**, Patil, S., Sheffield, J., and Marshall, M. (2016) Spatio-temporal vegetation dynamics and relationship with climate over East Africa, *Hydrol. Earth Syst. Sci. Discuss.*, <https://doi.org/10.5194/hess-2016-502>.
3. Coulibaly, Y.J., Mbow, C., Sileshi, G.W., Beedy, T., Kundhlande, G. and **Musau, J.** (2015) Mapping Vulnerability to Climate Change in Malawi: Spatial and Social Differentiation in the Shire River Basin. *American Journal of Climate Change*, 4, 282- 294. <http://dx.doi.org/10.4236/ajcc.2015.43023>
4. **Musau, J.**, Sang, J., Gathenya, J., Luedeling, E. (2015), Hydrological responses to climate change in Mt. Elgon watersheds. *Journal of Hydrology: Regional Studies*, <http://dx.doi.org/10.1016/j.ejrh.2014.12.001>
5. **Musau, J.**, Sang, J., Gathenya, J., Luedeling, E. and Home, P. (2014), SWAT model parameter calibration and uncertainty analysis using the HydroPSO R package in Nzoia Basin, Kenya, *Journal of Sustainable Research in Engineering* 1 (3) 2014, 17-29

Publications in conference proceedings

1. **Musau, J.**, Sang, J., Gathenya, J. (2013). General Circulation Models (GCMs) Downscaling Techniques and Uncertainty Modeling for Climate Change Impact Assessment, *Proceedings of 2013 Mechanical Engineering Conference on Sustainable Research and Innovation*, Volume 5, 24th - 26th April 2013

Referees

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