

Mbongowo Joseph Mbuh, Ph.D

Geographer and Geospatial Scientist
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Professional Summary

Dedicated and hardworking Geographer, with a solid background in GIS, remote sensing, Unmanned Aerial Systems, and hydrologist with a focus on hydrological processes at the catchment, watershed, and basin scales. My research focus on application of theories, water quality modeling, data assimilation, multispectral and hyperspectral remote sensing, and GIS techniques to geomorphology, hydrology water resources. I have more than 15 years of experience working with ArcGIS software and developing GIS databases, data creation map production and creating vector property maps.

My recent research focuses particularly on flood monitoring, surface water quality modeling, remote sensing and GIS, web and mobile mapping, and visualization and numerical modeling. We also focus on integrated geospatial science for multi-scale mapping, monitoring and modeling of spatial environmental heterogeneity, in the quantification of change in landscape pattern, investigating the linkages between pattern and processes, and understanding the pattern-process dynamic within different environmental management regimes.

Skills

Skilled in the use of, ESRI ArcGIS desktop, ArcGIS Pro, ArcGIS server manager, ArcGIS Gevent server, Geoanalytic server, ENVI, Erdas Imagine, dronedeploy and pix4D for drone data analysis, big data analytic with python using Databricks. Great working knowledge of computers and electronics allows for better project results and quick troubleshooting. Critical thinking and complex problem-solving skills aid in finding workable solutions to problems without expending unnecessary time and money.

CURRENT POSITIONS

University of North Dakota
Geospatial instructor

Grand Forks, ND
August 2016 - Current

Course

GEOG 121: Global Physical environment (Online and face to face)
GEOG 271: The power of maps
GEOG 274: Introduction to Geospatial Technologies
GEOG 374/575: Environmental Remote Sensing
GEOG 474: Introduction to Geographic information systems
GEOG 476: Web GIS
GEOG 378: Global positioning system (GPS)

GEOG 575: Digital Image Processing

PREVIOUS POSITIONS

American Sentinel University

Aurora, CO

Online adjunct faculty

May 2015 – Dec 2016

Teach the following courses:

GIS540- Emerging Topics, Trends, and Technologies in Geospatial Analysis

GIS590-GIS Applications in Environment and Natural Resources

GIS515-Geospatial Data

GIS225 Principles of Cartography

GIS315 Remote Sensing of the Environment

GIS499 Senior GIS Capstone Project

Central Washington University

Ellensburg, WA

Lecturer of Geography

September 2015 – June 2016

Courses Taught

GEOG 107: Our dynamic earth

GEOG 250: Resource exploitation and conservation

GEOG 273: Geography of Rivers

GEOG 303: Introduction to Geographic Information Science

Park University,

Parkville, MO

Online adjunct faculty

Spring 2012 – December 2014

Taught the following courses online:

GGP 350: Introduction to Geographic Information System

GGP 355: Advanced Geographic Information System

GGP 360: Web GIS

GGP 115: Introduction to physical geography

George Mason University

Fairfax, VA

Research assistant /interests

August 2012 – August 2015

Water cycle intensification project: The objective was to develop and test potentially spatially- and temporally-scalable Water Cycle Intensification Indicators (WCI) using NASA observations and model reanalyses in support of the National Climate Assessment (NCA).

Remote sensing of water quality: This research was aimed to demonstrate the feasibility of combining remotely sensed water quality observations with water quality modeling using data fusion techniques for an efficient and effective monitoring of water quality in the Shenandoah River. This study explores the hypothesizes that: Sensitivity and uncertainty from water quality remote sensing and water quality modeling can be improved through data fusion for a better prediction of water quality in the Shenandoah River Basin

Teaching assistant

Spring 2014

GGS 754: Earth Science Data and Advanced Data Analysis

GGS 302: Global Environmental Hazards

Spring 2015

GGIS 311– Introduction to Geographic Information Systems

Missouri State University
Research assistant at the Ozarks Environmental and Water research institute is completing soil sediment analysis.
Springfield, MO
August 2010 – May 2011

Texas Tech University
Research Associate
GIS Database Development of dust sources in areas of the Southern High Plains and Chihuahuah dessert” in New Mexico and Northern Mexico. Extraction of dust source images from MODIS satellite images from 2001 to 2010 in detecting and mapping sources of windblown dust as reported by the weather station and soil sample collection. Also served as a teaching assistant for GEO 1401: Physical geography.
Lubbock, TX
May 2009 – January 2010

National Parks Service, Lake Mead National Recreation Area,
Resource Management Intern
Field surveys of breeding land, marsh and water birds, Monitor vernal pools and conduct amphibian call counts; assist with small mammal trapping. Participated in other Conservation projects as needed, including, but not limited to, fence building or repair, restoration, and native seed collection
Boulder City, NV.
March 2005-July 2005

U.S Fish and Wildlife Service, Imperial National Wildlife Refuge, Yuma – Arizona.
Resource Management Intern
Daily eradication and control of priority invasive plants distributed throughout the refuge with mechanical and chemical means. Exotic plants data collection and treatment and community outreach and education Record locations of invasive and native rare plant populations using Global Positioning Systems (Trimble GPS)
September 2005- December 2005.

University of Yaoundé I,
Research Assistant
Assist major professor in the collection and analysis of data, and supervised undergraduate fieldwork and surveys. Graduate Teaching Assistant for:
Geo 316: Cartography and Remote Sensing
Geo 111: Fundamental of Geomorphology and climatology
Geo 216: Thematic Cartography and quantitative techniques
Yaounde, Cameroon
September 2003- January 2005

Netherlands Development Organization,
Program Advisor
Worked on the conservation of indigenous soils and water in Cameroon. Participated in incident investigation and reporting of environmental issues. Developed and delivered environmental awareness training as well as represented SNV on various corporate and divisional committees and workgroups related to management and support of environmental programs.
SNV-Cameroon
June 1999- September 2001

Fisheries and oceanographic research center,
Coastal management intern
Limbe-Cameroon
August 1998-March 1999

Collecting behavioral and other biological data, erecting and maintaining protective fencing and teaching the beach goers about the threat environmental malpractices are posing to the coastal areas. Assisted in exploring the benthic ecosystem, carrying monthly faunal sampling, measurements of primary production, water column sampling and the maintenance of field enclosures.

EDUCATION/TRAINING

George Mason University Fairfax, VA
Ph.D. in Earth System and Geoinformation Science 2015

Advisor: Professor Paul Houser

Dissertation: Integrating Hyperspectral remote sensing, models and in-situ observations with data merging to estimate nutrient loadings in the Shenandoah River Basin.

Missouri State University Springfield, MO
MS Geospatial Science 2011

Advisor: Professor Robert Pavlowsky

Thesis: spatiotemporal characteristics of dust sources on the Southern High Plains and Eastern New Mexico with MODIS imagery from 2001 to 2009.

University of Yaounde I Yaounde, Cameroon
MPhilin Geomorphology, Hydrology, and Water Resources 2004

Advisor: Professor Paul Tchawa

Thesis: Natural and human processes on the Mount Cameroon coastal landscape

University of Yaounde I Yaounde, Cameroon
MA in Geomorphology, Hydrology, and Water Resources 2001

Advisor: Professor Paul Tchawa

Thesis: The dynamics of the Mount Cameroon coastal landscape

University of Yaounde I Yaounde, Cameroon
BA in Physical Geography 1998

Selected Honors and Awards

Goetz Instrument Program Recipient 2013 (HandHeld 2 Portable Spectroradiometer)

Missouri Outreach Graduate Opportunity Scholarship 2010-2011

GeoEye Scholarship 2009

USGS research fellow 2008-2010

U.S National Park Service Fellowship Award 2005

Cameroon ministry of higher education Dissertation Research Grant 2003

University of Yaoundé I Dean`s award of distinction 1997

Professional societies

American Association of Geographers

American Geophysical Union

American Society of Photogrammetry and Remote Sensing

PUBLICATIONS

- Mbongowo J Mbuh, Ryan Wheeler & Amanda Cook (2019) Spatiotemporal Analysis of Urban Heat Island intensification in the city of Minneapolis -St. Paul and Chicago Metropolitan areas using Landsat data from 1984-2016, *Geocarto International*, <https://doi.10.1080/10106049.2019.1655802>
- Mbongowo Mbuh, Neil Vruno (2018). A habitat suitability analysis for recolonization/reintroduction of Mountain Lions (*Puma concolor*) in Minnesota. *European journal of Ecology*. 4(2), 28-40. doi: <https://doi.org/10.2478/eje-2018-0013>
- Mbongowo Mbuh, Richard Mbih, Comfort Wendi (2018). Water quality modeling and sensitivity analysis using Water Quality Analysis Simulation Program (WASP) in the Shenandoah River Watershed *Physical Geography*. <https://doi.org/10.1080/02723646.2018.1507339>
- Mbongowo Mbuh (2018). Application of data fusion for uncertainty and sensitivity analysis of water quality estimation in the Shenandoah River Basin, Virginia, USA. *International Journal of Applied Geospatial Research* 9(3), 31-54, 2018 <https://www.igi-global.com/gateway/article/204552>
- Mbongowo Mbuh (2017). Optimization of Airborne Real-time Cueing Hyperspectral Enhanced Reconnaissance(ARCHER) imagery, in-situ data with chemometrics to evaluate nutrients in the Shenandoah River, Virginia. *Geocarto International*.<http://www.tandfonline.com/doi/full/10.1080/10106049.2017.1343395>.
- Mbih, Richard A., Steven L. Driever, Stephen K. Ndzeidze, Mbongowo J. Mbuh, Carine S.Bongadzem, Harry M. Wirngo (2017): Fulani pastoralists' transformation process: a sustainable development approach in the Western Highlands of Cameroon. *Environment, Development, and Sustainability* <https://link.springer.com/content/pdf/10.1007%2Fs10668-017-9910-3.pdf>
- Mbongowo Mbuh, Paul Houser, Ako Heildari (2016): Water quality estimation using combined water chemistry and field spectroscopy in the Shenandoah River, Virginia. *International Journal of Applied Geospatial Research* 7(2) <https://www.igi-global.com/article/water-quality-estimation-using-combined-water-chemistry-and-field-spectroscopy-in-the-shenandoah-river-virginia/146546>
- Paul A. Dirmeyer Zaiyu Wang, Mbongowo J. Mbuh, and Holly E. Norton (2014): Intensified land surface control on boundary layer growth in a changing climate. *Geophysical Research Letters* DOI: 10.1002/2013GL058826
- Lee, J.A., Baddock, M.C., Mbuh, M.J.and Gill, T.E., (2012): Geomorphic and Land Cover Characteristics of Aeolian Dust Sources in West Texas and Eastern New Mexico, USA. *Aeolian Research*, v. 3.p. 459-466. doi: 10.1016/j.aeolia.2011.08.001. <http://rupiscencedirect.cjb.net/science/article/pii/S1875963711000656>

Mbongowo Mbuh; Paul Tchawa and Raoul E. Mayer (2011): Nature and rate of coastal erosion on the Mount Cameroon Coastal Landscape: Case of Limbe central Sub Division; South West province- Cameroon. Published in the Journal of coastal research. <http://www.jcronline.org/toc/coas/0/0>

Papers under review

Mbongowo J Mbuh, Ryan Wheeler, Amanda Cook. Spatiotemporal variability of Urban Heat island intensification using Landsat data from 1984-2016. GeoCarto International

Mbongowo J. Mbuh, Peter Metzger, Peter Brandt, Kelli Fika, Jared Hoffman, Yahye Nur and Monica Slinkey: Application of real-time analytics to support intelligent decision-making, and create smart energy, and smart communities. Journal of urban Technology

Mbongowo Mbuh, Matthew Braddock, Jeffrey Lee, Thomas Gill. Spatial and temporal variability of atmospheric dust sources on the Southern High Plains and Eastern New Mexico from 2001 to 2009 using MODIS Satellite imagery and Climate data. In review for publication in the International Journal of Applied Earth Observation and Geoinformation

RESEARCH PRESENTATIONS

Mbongowo Mbuh & Monica Slinkey (2018): Application of real-time GIS for community health resource inventory in the era of big data for a resilient and smart substance abuse management system. Poster presented at the 2018 UND-Midwest Big Data Hub "Smart, Local, Resilient" Meeting at the University of North Dakota, Grand Forks

Mbongowo Mbuh, Neil Vruno: (2017) A habitat suitability analysis for recolonization/reintroduction of Mountain Lions (*Puma concolor*) in Minnesota. Paper presented at the 2017 Great Plains and Rocky Mountains Association of American Geographers meeting in Grand Forks, North Dakota

Mbongowo J Mbuh, Ryan Wheeler, Amanda Cook.(2017) Spatiotemporal variability of Urban Heat island intensification using Landsat data from 1984-2016. : Poster presented at the 2017 Minnesota GIS/LIS Consortium in Bemiji, MN

Mbongowo Mbuh (2015): Optimization of spectroscopy and Hyperion data to evaluate water quality in the Shenandoah River basin: Paper presented at the 2015 Association of American Geographers meeting in Chicago, Illinois

Mbongowo Mbuh, Paul Houser and Ronald Resmini (2014): Optimization of spectroscopy and Hyperion data to evaluate water quality in the Shenandoah River basin: Poster presented at the 2014 Association of American Geophysical Union meeting in San Francisco

Mbongowo J Mbuh, Ako Heildari and Paul Houser (2014): Water quality estimation using combined water chemistry, field Spectroscopy and Hyperspectral remote sensing in the Shenandoah River Basin. Paper presented at the 2014 Association of American Geographers meeting in Tampa, Florida

Mbongowo J Mbuh, Paul Houser, Robert Pavlowsky and Jeffery Lee (2013): Geomorphology and human drivers of dust source prediction on the southern high plains of Texas and eastern New Mexico with MODIS imagery and logistic regression models. Paper presented at the 2013 Association of American Geographers meeting in Los Angeles, California

Mbongowo Mbuh, Robert Pavlowsky, Matthew Baddock, Jeffery Lee, Thomas Gill (2011) Soil influence and geomorphology of dust sources on the Southern High Plains using MODIS imagery from 2001 to 2009. Paper presented at the 2011 Association of American Geographers meeting in Seattle- Washington

Mbongowo Mbuh, Matthew Baddock, Jeffery Lee, Thomas Gill (2010). The spatial and temporal variability of dust sources on the Southern High Plains and eastern New Mexico from MODIS imagery. Paper presented at the Great Plains-Rocky Mountains Division of AAG in 2010 at Lawrence-Kansas

Jeff Lee; Matthew C Braddock; Mbongowo J Mbuh; Thomas E Gill, (2010) Geomorphic Land Cover Characteristics of Aeolian Dust sources in West Texas and eastern New Mexico, USA. Paper presented at the International Conference on Aeolian Research (ICAR VII), Santa Rosa, Argentina, 5-9 July 2010.

T.E. Gill; Mbongowo J. Mbuh; M. Dominguez Acosta; J.A. Lee; M.C. Baddock; C.E. Lee; S.C. Whitehead; N.I. Rivera Rivera; P. Peinado(2009): Geomorphology of MODIS-Visible Dust Plumes in the Chihuahuan Desert – Preliminary Results. Paper presented at the 2009 Geology Society of America meeting.

Mbongowo Mbuh; Mathew Baddock; Jeffery Lee; Thomas Gill; and Sam Whitehead (2009): Spatial and temporal variability of atmospheric dust sources on the Southern High Plains from 2001 to 2009 using MODIS Satellite imagery. Poster presented at the 2010 Association of American Geographers meeting in Washington DC