

# Curriculum Vitae

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## Nafyad Serre Kawo

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## EDUCATION

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**Jan/2020- present** Ph.D. Student, University of Nebraska Lincoln, School of Natural Resources, Nebraska, USA

Ph.D. Research Title: Integrating Geophysical Aquifer Characterization into a Groundwater Model to Improve Model Performance

Advisor: Dr. Jesse Korus, co-advisor: Dr. Erin Haacker

2013 – 2015 M.Sc. in Water Science and Engineering, Specialization in Hydrology and Water Resources, UNESCO-IHE, Institute for Water Education, Delft, Netherlands

Thesis Research Title: Optimization of an artificial recharge-pumping system for water supply in the Maghaway valley, Cebu, Philippines

Advisor: Dr. Yangxiao Zhou

2011- 2013 M.Sc. in Physical Land Resources, Specialization in Land Resources Engineering, Vrije Universiteit Brussels (VUB), Brussels, Belgium

Thesis Research Title: Model-based evaluation of the protection zones around the Water group public drinking water well field in Huiskens (Korbeek-Lo), Belgium

Advisor: Professor Marijke Huysmans

2003 – 2007 B.Sc. in Applied Geology, Mekelle University, Mekelle, Ethiopia

B.Sc. Project Title: Effect of Geology and Geochemistry on groundwater quality, Tigray, Ethiopia

Advisor: Professor Nata Tedessa

## SHORT COURSE TRAINING

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- Short course training on Digital water management and water-related agroecosystem services: Geostatistics, Hydroinfractics, and groundwater flow numerical modeling 3<sup>rd</sup> to 14<sup>th</sup> September 2018, Pisa, Italy
- Refreshment course Towards Sustainable Intensification of Agriculture for Food Security, 18 April 2017- 25 April 2017, Jomo Kenyatta, Kenya

## PROFESSIONAL EXPERIENCE

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- 2020- Present:** Research assistant, school of natural resources, university of Nebraska  
Lincoln
- 2015- Jan/2020      Lecturer, Adama Science and Technology University, P.O. Box  
1888, Adama, Ethiopia
- May-Sep.2015      Lecturer, Haramya University, Institute of Technology, P.O.BOX  
138, Haramaya, Ethiopia,
- 2008-2010      Assistant Lecturer and Program coordinator, department of Water  
Resources and Environmental Engineering (WREE), Haramaya  
University, P.O.BOX 138, Haramaya, Ethiopia
- 2007-2008      Geologist, West Arsi Zone Water Resources, Mineral, and Energy  
Office, shashamane, Oromia, Ethiopia

## SCHOLARSHIP & AWARDS

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### **Milton E. Mohr Awards 2021, University of Nebraska Lincoln, USA**

Research outstanding performance as principal investigator: 2nd best among research granted in 2018 by the school of Applied Natural Sciences, Adama Science and Technology University, Ethiopia

1st International LIFE REWAT Summer School scholarship on Digital water management and water-related agroecosystem services: Geostatistics, Hydroinfractics, and groundwater flow numerical modeling 3<sup>rd</sup> to 14<sup>th</sup> September 2018, Pisa, Italy

Membership fee award from International Association of Hydrogeologist (IAH) January 2018- December 2022

Netherlands Fellowship Programmes (NFP), Refreshment course Towards Sustainable Intensification of Agriculture for Food Security, 18 April 2017- 25 April 2017, Jomo Kenyatta, Kenya

Registration fee award (250 USD) from International Groundwater Conference to attend 7<sup>th</sup> International Groundwater Conference (IGWC-2017), 11-13 December 2017, New Delhi, India

Travel, registration fee, and accommodation award from Geohost for 35<sup>th</sup> International Geological Congress, 28 August 2016 - 4 September 2016, Cape Town, South Africa

Netherlands Fellowship Programmes (NFP), M.Sc. Scholarship in Water Science and Engineering, Specialization in Hydrology and Water Resources, October 2013- April 2015

The Flemish Interuniversity (VLIR-UOS), M.Sc. Scholarship in Physical Land Resources, Specialization in Land Resources Engineering, September 2011- September 2013

## PEER-REVIEWED PUBLICATIONS

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Mubialiwo, A., Abebe, A., **Kawo, N. S.**, Eklou, J., Nadarajah, S., & Onyutha, C. (2022).

Hydrodynamic Modelling of Floods and Estimating Socio-economic Impacts of Floods in Ugandan River Malaba Sub-catchment. *Earth Systems and Environment*, 1-23. <https://link.springer.com/article/10.1007/s41748-021-00283-w>

Hordofa, A. T., Leta, O. T., Alamirew, T., **Kawo, N. S.**, & Chukalla, A. D. (2021).

Performance evaluation and comparison of satellite-derived rainfall datasets over the Ziway lake basin, Ethiopia. *Climate*, 9(7), 113. <https://www.mdpi.com/2225-1154/9/7/113>

**Kawo, N. S.**, Hordofa, A. T., Karuppnanan, S. (2021), Performance evaluation of GPM-

IMERG early and late rainfall estimates over Lake Hawassa catchment, Rift Valley Basin, Ethiopia. *Arabian Journal of Geosciences*, 14(4), 1-14 <https://doi.org/10.1007/s12517-021-06599-1>

Haji, M., Karuppnanan, S., Qin, D., Shube, H., **Kawo, N. S.** (2021), Potential Human

Health Risks Due to Groundwater Fluoride Contamination: A Case Study Using Multi-Techniques Approaches (GWQI, FPI, GIS, HHRA) in Bilate River Basin of Southern Main Ethiopian Rift, Ethiopia. *Arch Environ Contam Toxicol* **80**, 277–293. <https://doi.org/10.1007/s00244-020-00802-2>

Gebere, A., **Kawo, N. S.**, Karuppnanan, S., Hordofa, A. T., Paron, P. (2021), Numerical

modeling of groundwater flow system in the Modjo River catchment, Central Ethiopia. *Model. Earth Syst. Environ.* **7**, 2501–2515 (2021). <https://doi.org/10.1007/s40808-020-01040-0>

Karuppnanan, S., **Kawo, N. S.** (2019), Groundwater quality assessment using geospatial techniques and WQI in northeast of Adama Town, Oromia region, Ethiopia.

*Hydrosp Anal*, 3(1), 22-36. <https://doi.org/10.21523/gcj3.19030103>

- Kawo, N. S.,** Karuppattan, S. (2018), Groundwater quality assessment using water quality index and GIS technique in Modjo River Basin, central Ethiopia. *Journal of African Earth Sciences*, 147, 300-311 DOI: <https://doi.org/10.1016/j.jafrearsci.2018.06.034>
- Kawo, N.S.,** Zhou, Y., Magalso, R., Salvacion L., (2018), Optimization of an artificial-recharge–pumping system for water supply in the Maghaway Valley, Cebu, Philippines. *Hydrogeology Journal*, 26(3), 963-977. DOI: <https://doi.org/10.1007/s10040-017-1693-y>

### **CONFERENCE ABSTRACTS**

- Kawo N.S,** Korus J (2021) Hydrostratigraphic Modeling using Airborne Electromagnetic (AEM) data: Comparisons of Different Inversion Models – American Society of Agricultural and Biological Engineers (ASABE)- 2020 Annual International Meeting
- Kawo N.S,** Korus J. (2021) Modeling Glacial-Aquifer Heterogeneity using Multiple-Point Statistics (MPS)- 47th IAH Congress – IAH 2021 Brazil
- Kawo N.S,** Korus J. (2021) Multiple-point statistical simulation of glacial aquifer heterogeneity for improved groundwater management- 2021 Nebraska Water Center Conference: The Shape of Water in Western Nebraska
- Kawo N.S,** Korus J., Haacker E (2021) Streambed and aquifer connectivity revealed by 3D MPS modeling of AEM resistivity data: A glacial aquifer case study, AGU 2021 Fall Meeting, New Orleans, LA
- Boreshu, A.G, **Kawo, N.S,** Hordofa A.T, Shankar K (2019), Numerical Simulation of Aquifer Responses to the Recharge Changes and Pumping Stress: The case of Modjo River Catchment, Central Ethiopia, page 381, Proceedings of IAH2019, the 46th Annual Congress of the International Association of Hydrogeologists, <https://www.scribd.com/document/436140921/Iah-2019-Proceedings>
- Kawo, N.S.,** Boreshu, A.G., Shankar K., (2017), Groundwater Flow Modeling in Modjo River Catchment, Central Ethiopian, Abstract of International Groundwater Conference (IGWC-2017), New Delhi, India
- Kawo, N. S.,** Zhou Y., Magalso R. (2016) Optimization of an Artificial Recharge-Pumping System for Water Supply in the Maghaway Valley, Cebu, Philippines, Abstract of 35th International Geological Congress, Cape Town, South Africa.

## RESEARCH GRANTS

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**Title:** Simulation-Optimization modeling for the Management of Groundwater Resources in Modjo River catchment, Modjo, Ethiopia

**Role:** **Principal Investigator**

**Amount:** \$10,000

**Source:** Adama Science and Technology University, Ethiopia

**Duration:** April 2016-Oct.2018

## RESEARCH EXPERIENCE

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**Title:** Simulation-Optimization modeling for the Management of Groundwater Resources in Modjo River catchment, Modjo, Ethiopia, ASTU, 10<sup>th</sup> cycle research grant (**Principal Investigator**).

- groundwater budget and ground flow system.
- aquifer system to increased groundwater pumping rates.
- optimizations of the pumping rate of wells were conducted under imposed constraints.
- groundwater water suitability for drinking and irrigation uses was investigated.

**Postgraduate Research:** Water Science and Engineering. UNESCO-IHE, Institute for Water Education), September 2014 to April 2015, (Supervisor: Yangxiao Zhou (Ph.D.), Associate Professor in Hydrogeology ([y.zhou@un-ihe.org](mailto:y.zhou@un-ihe.org)))

**Title:** Optimization of an artificial recharge-pumping system for water supply in the Maghaway valley, Cebu, Philippines

- simulate groundwater flow and budget
- maximize the total pumping rate through a system of artificial recharge and pumping while meeting constraints such as groundwater-level drawdown and bounds on pumping rates at each well

**Postgraduate Research:** Department of Physical Land Resources, University of Ghent and Free University of Brussels (VUB), September 2011 to September 2013.

**Title:** Model-based evaluation of the protection zones around the Water group public drinking water well field in Huiskens (Korbeek-Lo), Belgium

- groundwater flow system, and groundwater budget
- backward particle tracking analysis
- tracer arrival time, and
- calculated fixed radius (CFR) methods

**Undergraduate Research:** Department of Applied Geology, August 2006 to June 2007

Research Adviser: (Professor Nata Tedessa, Nata.Tafesse@mopipi.ub.bw)

**Title:** Geology and Geochemistry of Maychew area: Its effect on groundwater quality, Tigray, Ethiopia

- groundwater quality for irrigations and drinking water purposes
- rock chemistry and groundwater chemistry

## CONFERENCE PARTICIPATION

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International workshop - Digital water and nature-based solutions: innovative tools for sustainable water management, 10<sup>th</sup> September 2018, Pisa, Italy,

International Groundwater Conference (IGWC-2017), 11-13 December 2017, New Delhi, India

2<sup>nd</sup> International symposium, Adama Science and Technology University, 8-10 June 2017, Abagada convention, Adama, Ethiopia

35<sup>th</sup> International Geological Congress, 28/08/2016-4/09/2016, Cape Town, South Africa  
Comparative Research of Groundwater Management in the coastal areas of Southeast Asia, October 25-29/2014, Cebu, Philippines

Small scale mining and experience sharing, Adola Gold Mine P.L.C and Mine and Energy Minister, November 20-23/2007, Shakiso, Ethiopia

## SERVICE

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### Department Service

Type: Member of Examination Approval Committee of Applied Geology, Adama Science and Technology University, Ethiopia

Duration: 2016-2017

## COMPUTER and SOFTWARE SKILLS

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Application Models and Tools:

Aarhus workbench, Geoscene3-D, SWAT, MODFLOW, WetSpa, TopoDrive, and Particle Flow, River and Stream Water Quality Model (QUAL2K), NAM Model and HBV Model, MIKE Zero and MIKE SHE - integrated catchment modeling  
Working knowledge of ArcGIS, ILWIS, ArcView, DREAM, IDRISI 32, Adobe Photoshop and Mendeley

## RESEARCH INTERESTS

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Catchment processes modeling

climate variability and groundwater drought

aquifer and streambed heterogeneity

Groundwater-surface water interaction modeling

Groundwater resources management and protection

Artificial recharge for groundwater management and water supply: site selection, vadose zone characterization, simulation, and optimization

GIS /Remote sensing applications for hydrological process modelling

## PROFESSIONAL MEMBERSHIPS

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2018- Present      International Association of Hydrological Science (IAHS)  
2018- Present      International Association of Hydrogeologist (IAH)  
2017- Present      Africa Groundwater Network

## REFERENCES

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### **Dr. Jesse Korus**

Conservation and Survey Division, School of Natural Resources  
University of Nebraska-Lincoln, Lincoln, NE, USA  
Email: [jkorus3@unl.edu](mailto:jkorus3@unl.edu)

### **Dr. Erin Haacker**

UNL Earth and Atmospheric Sciences  
University of Nebraska-Lincoln, Lincoln, NE, USA  
**Email:** [ehaacker2@unl.edu](mailto:ehaacker2@unl.edu)

**Yangxiao Zhou** Ph.D., Associate Professor in Hydrogeology  
Water Engineering Department UNESCO-IHE Institute for Water Education  
Delft, The Netherlands  
E-mail: [y.zhou@un-ihe.org](mailto:y.zhou@un-ihe.org)

### **Prof. dr. Ir. Kristine Walraevens**

Ghent University, Department of Geology, Gent, Belgium  
E-mail: [kristine.walraevens@ugent.be](mailto:kristine.walraevens@ugent.be)

**Nata Tadesse**, Ph.D., Professor in Hydrogeology

University of Botswana  
Department of Geology  
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