

Curriculum Vitae



Dr. Bereket Geberselassie Assa

Hydrological & Computational Earth Observation Scientist

Institution: Wolaita Sodo University, Ethiopia

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Research Profiles

- **ORCID:** <https://orcid.org/0000-0002-5670-2816>
 - **ID:** 58093115300 :[Assa, Bereket Geberselassie - Author details - Scopus Preview](#)
 - [Bereket G Assa \(PhD\) - Google Scholar](#)
 - [SciProfile: Dr. Dr.Bereket Assa | Author](#)
 - [Loop | Bereket Assa \(PhD\)](#)
 - [Bereket Assa \(PhD\) | LinkedIn](#)
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Professional Summary

Dr. Bereket Geberselassie Assa is a hydrologist and computational geospatial scientist specializing in Earth Observation–driven environmental modeling and hydrological system analysis. His research integrates satellite remote sensing, spatial statistics, machine learning, and computational hydrology to investigate rainfall-driven farmland land nutrient transport and water quality dynamics in agricultural watersheds.

His work advances data-driven and computational approaches for understanding hydrological connectivity, nitrate contamination processes, and climate–agriculture interactions in vulnerable environments. He focuses on transforming environmental processes into scalable computational modeling frameworks supporting climate-resilient water and agricultural management.

Research Expertise

- Computational Hydrology and Environmental System Modeling
 - Earth Observation–Based Hydrological Analysis
 - Symbolic & Data-Driven Environmental Modeling
 - Rainfall–Runoff and Nutrient Transport Dynamics
 - Geographically Weighted Regression (GWR)
 - Machine Learning for Environmental Prediction
 - Watershed Hydrological Connectivity Analysis
 - Climate Resilience and Agricultural Water Systems
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Education

Ph.D. in Geo-information and Earth Observation for Hydrology Institute of Water Technology, Arba Minch University, Ethiopia *Completed: June 2025*

PhD Dissertation: *Assessment of Downstream Surface and Groundwater Nitrate Levels from Fertilizer Loss in Upper Croplands of the Bilate Sub-Watersheds Using Coupled Earth Observation and Machine Learning Approaches*

M.Sc. in Geodesy and Geomatics Engineering: Adama Science and Technology University, Ethiopia — 2013

B.Sc. in Surveying Technology: Adama Science and Technology University, Ethiopia — 2008

Academic & Professional Experience : Faculty Member — Hydrology & Geospatial Engineering

Wolaita Sodo University, Ethiopia : April 2015 – Present

- Conduct teaching and graduate supervision in hydrology, GIS, and Earth observation.
 - Lead research on computational watershed modeling and environmental monitoring.
 - Develop geospatial analytical workflows integrating satellite and field datasets.
 - Coordinate interdisciplinary research collaborations in water and climate systems.
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Lecturer — Civil & Water Resources Engineering

Bahir Dar University, Ethiopia

Nov 2008 – March 2015

- Delivered courses in surveying, geomatics, and hydrological measurement systems.
 - Supported engineering research involving spatial data analysis.
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Computational & Technical Skills

Programming & Computational Tools

- Python (scientific computing & EO analysis)
- Google Earth Engine
- Spatial algorithm development
- Statistical modeling workflows

Geospatial & Earth Observation

- MODIS, Landsat, Sentinel datasets
- ArcGIS Pro, QGIS,
- Remote sensing analytics
- Spatial data fusion

Hydrological & Environmental Modeling

- SWAT
- HEC-HMS
- Nitrogen balance modeling
- Runoff and nitrate transport simulation

Data Science & Statistics

- Machine Learning methods
 - Geographically Weighted Regression (GWR)
 - R and SPSS statistical analysis
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Selected Peer-Reviewed Publications

1. Modeling Nitrogen Balance for Pre-Assessment of Surface and Groundwater Nitrate (NO_3-N) Contamination from N-Fertilizer Application Loss: a Case of the Bilate Downstream Watershed Cropland | Water, Air, & Soil Pollution | Springer Nature Link : *Water, Air & Soil Pollution*, Springer, 2023.
2. Modeling canopy water content in the assessment for rainfall induced surface and groundwater nitrate contamination: The Bilate cropland sub watershed: *Heliyon*: Elsevier, 2024.
3. Assessing Nitrate Leaching and Runoff Coefficients in the Dynamic Interplay of Seasonal Crop Biomass: A Study of Surface and Groundwater Nitrate Contamination in the Bilate Cropland Watershed - ScienceDirect : *Environmental Advances*, Elsevier, 2024.
4. Unveiling seasonal nitrate contamination dynamics in cropland sub-watersheds: A geo-morphological analysis of the bilate agricultural watershed - ScienceDirect: *Environmental Advances*, Elsevier, 2024.

Featured Abstract Listings

1. [MODIS Web](#) Nitrogen Balance in Bilate Watershed
2. [MODIS Web](#) Canopy Water Content Assessment
3. cabidigitallibrary.org/doi/full/10.5555/20230393165
4. [orcid:0000-0002-5670-2816 - Astrophysics Data System](#)

Research Interests

- Computational Environmental Science
- Symbolic Hydrological Modeling
- Earth Observation Analytics
- Watershed Nutrient Transport Systems
- Climate–Water–Agriculture Interactions
- Hydro-Environmental Data Science
- Soil Moisture & Groundwater Recharge Modeling
- Remote Sensing for Sustainable Agriculture

Awards & Certifications

- Best Researcher Award — Agricultural Watershed Dynamics, 2024
- URISA Mentoring Network Mentor (2022–2024)
- Microsoft Data Platform Virtual Summit, 2022
- Higher Diploma Program (HDP), Wolaita Sodo University, 2018
- Young Entrepreneurship Exchange Program, Bern University of Applied Sciences, Switzerland, 2015

Professional Memberships

- Editorial Board Member : <https://learning-gate.com/index.php/2576-8484/editorialteam>
Edelweiss Applied Science & Technology Journal
- Frontiers Research Community

Languages

- English — Professional Fluency
- Amharic — Native

Professional Objective

To advance computational environmental science through integration of Earth observation, hydrological modeling, and symbolic computation for sustainable watershed management and climate-resilient agricultural systems.