

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](#)

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

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 \(NO₃--N\) 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: *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 geomorphological 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](https://orcid.org/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.