Gebremedhin G. Haile

Curriculum Vitae

Department of Earth and Environmental Sciences
Wesleyan University
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Professional Employment

7/2025–Present: Frank B. Weeks Visiting Professor, *Department of Earth and Environmental Sciences, Wesleyan University*, Middletown, Connecticut, USA.
Non-tenure track

7/2023–6/2025: Visiting Assistant Professor, *Department of Earth and Environmental Sciences, Wesleyan University*, Middletown, Connecticut, USA.
Non-tenure track

1/2023–6/2023: Postdoctoral Research Associate, *Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences*, Beijing, China.
Supervisor: Prof. Qiuhong Tang

7/2020–12/2022: Research Scientist, *Hydrology and Water Resources Management, Tigray Agricultural Research Institute, Mekelle Center,* Mekelle, Ethiopia.

7/2015–8/2017: Research Associate, *Irrigation Water Management, Tigray Agricultural Research Institute, Mekelle Center,* Mekelle, Ethiopia.

7/2009–8/2014: Research Assistant, *Soil and Water Management, Tigray Agricultural Research Institute, Abergelle Center,* Yechila, Ethiopia.

11/2006–6/2009: Supervisor and Technical Expert, *Soil and Water Conservation, Tigray Bureau of Agriculture, Atsbi district,* Atsbi, Ethiopia.

Education

9/2017–6/2020: Ph.D., Physical Geography, *University of Chinese Academy of Sciences,* Beijing, China.
Dissertation: Understanding the impacts of historical and future droughts over East Africa.
Advisor: Prof. Qiuhong Tang
CGPA: 3.83/4

9/2013–6/2015: M.Sc., Irrigation Engineering, *Haramaya University*, Dire Dawa, Ethiopia.
Thesis: Spatial Estimation of Groundwater Recharge and Potentials under Changing Climate in Werii Watershed, Tekeze River Basin, Ethiopia.
Advisor: Dr. Asfaw Kebede
CGPA: 3.9/4

9/2003–6/2006: B.Sc., Soil and Water Engineering and Management, *Haramaya University*, Dire Dawa, Ethiopia.
CGPA: 3.09/4

Professional/Specialization Certification

Summer 2025: Google Data Analytics Professional Certificate, Google LLC.

Summer 2025: Geographic Information Systems (GIS) Specialization Certificate, University of California, Davis.

Professional Service

2023–Present: Associate Deputy Editor, *Climatic Change*, Springer Nature.
2023–Present: Academic Editor, *PLOS Water*, Public Library of Science.
2024 – 2025 Guest Editor, Special Issue on "Linking Hydrological Function and Landscape Dynamics," *Land,* MDPI,
2022–Present: Review Editor, *Frontiers in Climate*, Frontiers Media.
2023–Present: Lead Grant Writer, *Water to Thrive* — Writing grants to fund wells and borehole projects for rural communities in East Africa.
2020-2022: Consultant, *UN-WFP* and *GIZ-Germany* on development and humanitarian work in Ethiopia.
2020–2022: Part-time Lecturer, Mekelle University, Mekelle, Ethiopia.
2020–2022: Guest Lecturer, Haramaya University, Dire Dawa, Ethiopia.

Honors and Awards

Spring 2025: Co-Leader, online 10-Week Seminar on Natural and Manmade Hazards Under Changing Environments, The New University in Exile Consortium & The New School for Social Research (Awarded $5,000).
2019–2021: Best Paper Awards (4 papers), Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (Awarded $3500).
9/24/2020: Excellent International Graduate Award, University of Chinese Academy of Sciences (Awarded $1,000).
7/16/2019: Excellent International Student Award, University of Chinese Academy of Sciences (Awarded $800).
9/2017–6/2020: CAS-TWAS President's Fellowship, University of Chinese Academy of Sciences (Awarded $53,760).

Research Interests

- Hydrology, water resources engineering, hydrological system analysis, and hydrometeorology.
- Climate change impacts on regional water availability, hydroclimatic variability, and hydrologic extremes.
- Distributed hydrologic and land-surface modeling, integrated watershed and basin management.
- Geographic Information Systems (GIS), remote sensing, geospatial analysis, ArcGIS Online, story maps for water and environmental applications.
- Natural hazards and disaster research related to extreme drought risk assessment.
- Irrigation and agricultural water management, including surface, sprinkler, and drip irrigation, as well as salinity management.
- Watershed hydrology; soil and water conservation; soil erosion and land degradation assessment and mitigation.

Teaching Experience

Fall 2025: Hydrology (E&ES 246-01), Wesleyan University, Middletown, Connecticut, USA.
Fall 2025: Global Climate Change (E&ES 359-01), Wesleyan University, Middletown, Connecticut, USA.
Spring 2025: Introduction to GIS (E&ES 280-01), Wesleyan University, Middletown, Connecticut, USA.
Fall 2024: Hydrology (E&ES 246-01), Wesleyan University, Middletown, Connecticut, USA.
Spring 2024: Introduction to GIS (E&ES 280-01), Wesleyan University, Middletown, Connecticut, USA.
Spring 2021: Advanced Drainage Engineering (IENG-6032), Haramaya University, Dire Dawa, Ethiopia.
Fall 2020: Irrigation Systems Management (CENG 7206), Mekelle University, Mekelle, Ethiopia.

Teaching Interests

Hydrology, Irrigation, GIS, Environmental Science, Earth Sciences, Hydraulics Engineering, Open Channel Hydraulics, Water Resources Management, Watershed Management, Hydrological & Climate

Modelling, Natural Hazards, Global Climate Change, Hydrogeology, Drainage Engineering, Remote Sensing, Ecology, Environmental Engineering, Geospatial Science, Soil & Water Conservation, Statistical Data Analysis, Scientific Research Methods, Seminars, Capstones, and other upper-level courses.

Mentoring Experience

2020–Present: Advised 3 Ph.D. students and 7 Master's students.

Research Grants (PI and Co-PI)

2018–2023: Uncertainty of water resources and prediction of future scenarios, Strategic Priority Research Program of the Chinese Academy of Sciences (XDA20060402) (Awarded Budget: $1,000,000).

2023-2024: Flood and drought abrupt alternation analysis in the Mekong River Basin, International Economic and Technical Cooperation and Exchange Center (INTCE), Ministry of Water Resources, China (Awarded Budget: $4,200).

Summer 2019: Travel Grant Summer School on the Natural Hazards in the Anthropocene, Centre of Natural Hazards and Disaster Science (CNDS), Uppsala University, Sweden (Awarded Budget: $900).

2014-2015: Thesis grant, International Livestock Research Institute (ILRI), Addis Ababa, Ethiopia (Awarded Budget: $1,500).

Proposed Grants

2026-2031: Unravelling flash drought-flood alternations in the contiguous United States (Proposed Budget: $0.7 million).

2026-2031: Development of an Integrated Drought Gauge Station (IDGS) for real-time drought monitoring and early warning (Proposed Budget: $1,000,000).

2026-2031: Drought-wildfire dynamics in the contiguous United States: patterns, processes, and projections (Proposed Budget $0.5 million).

2026-2031: Assessing tripartite threats to water security: urban growth, irrigation demand, and climate change (Proposed Budget $0.9 million).

2026-2031: Restoring children's right to safe water in Tigray schools, Ethiopia (proposed budget $120,000).

2026-2031: Wells for irrigation: securing food for women-headed households in Ethiopia (Proposed Budget $0.5 million).

Publications

Peer-Reviewed Journal Articles (Citations: 3177; h-index: 23; i10-index: 29)

2026 Haile, G. G., Islam, S., Tang, Q., & Wood, D. Unravelling global patterns of drought-flood alternations. *Journal of Hydrology*, 135718. IF: 6.3

2025 Gebresellase, S. H., Wu, Z., Muhammad, W. I., & Haile, G. G., Projected Impacts of Climate and Land Use Changes on Streamflow Extremes in the Upper Awash Basin, Ethiopia. *Weather and Climate Extremes*, 100806. IF: 6.9

2025 Seka, A. M., Guo, H., Zhang, J., Ambaye, M. G., & Haile, G. G., A significant increasing drought risk over African transboundary basins from 2000 to 2022. *Journal of Cleaner Production*, 525, 146529. IF: 10.0

2025 Reda, K. W., Yongdong, W., Yuan, Y., Na, Z., Bora, Z., Haile, G. G., & Gebrewahid, Y., Spatiotemporal characteristics of drought events in Africa's Great Green Wall region during 1950–2022. *Journal of Geophysical Research: Biogeosciences*, 130(4), e2024JG008313. IF: 3.5

2025 Reda, K. W., Liu, X., Tang, Q., Haile, G. G., Wang, Y., & Seka, A. M., Intensified atmospheric aridity in East Africa under future climate change. *Journal of Arid Environments*, 229, 105402. IF: 2.5

2025 Sulamo, M. A., Kassa, A. K., & Haile, G. G., Understanding land-use land-cover change dynamics using machine learning algorithms in the Abelti Watershed, Omo-Gibe Basin, Ethiopia. *Water Practice & Technology*, wpt2025123. IF: 1.8

2024 Haile, G. G., Tang Q., Reda K.W., Banya B., He L., Wang Y., & Gebrechorkos S. H., Projected impacts of climate change on global irrigation water withdrawals. *Agricultural Water Management*, 305, 109144. IF: 6.5

2024 Gebremedhn, H., Gebrewahid, Y., Haile, G. G., Hadgu, G., Atsbha, T., Hailu, T.G. & Bezabih, G., Projecting the impact of climate change on honey bee plant habitat distribution in Northern Ethiopia. *Scientific Reports*, 14(1), 15866. IF: 3.9

2024 Baniya, B., Tang, Q., Adhikari, T.R., Zhao, G., Haile, G. G., Sigdel, M., & He, L., Melamchi extreme flood in response to climate change in the Central Himalaya of Nepal. *Natural Hazards*. IF: 3.7

2023 Wang, J., Yun, X., Chen, A., Gaffney, P.P.J, Haile, G. G., & Tang, Q., Impacts of large-scale climatic circulation on flood through precipitation and temperature in the Lancang-Mekong River Basin. *Science of the Total Environment*, 168082. IF: 8.0

2023 Gebremedhin, T., Haile, G. G., Gebremicael, T.G., Libsekal, H., & Reda, K.W., Balancing crop water requirements through supplemental irrigation under rainfed agriculture in a semi-arid environment. *Heliyon*, 9(8), e18727. IF: 3.9

2023 Gebremicael, T.G., Haile, G. G., Kifle, M., Gebremedhin, T., Deitch, M.J., Reda, K.W., & Reda, A., Effects of irrigation methods and scheduling on water and onion productivity in semi-arid areas of Ethiopia. *Applied Engineering in Agriculture*, 39(3), 291-301. IF: 0.8

2022 Reda, K.W., Liu, X., Haile, G. G., Sun, S., & Tang, Q., Hydrological evaluation of satellite and reanalysis-based rainfall estimates over the Upper Tekeze Basin, Ethiopia. *Hydrology Research*, 53(4), 584-604. IF: 2.4

2022 Gebremicael, T.G., Deitch, M.J., Gancel, H.N., Croteau, A.C., Haile, G. G., Beyene, A.N., & Kumar, L., Satellite-based rainfall estimates evaluation using a parsimonious hydrological model in the complex climate and topography of the Nile River Catchments. *Atmospheric Research*, 266 (105939). IF: 4.4

2021 Liu, Y., Zhang, C., Tang, Q., Hosseini-Moghari, S.M., Haile, G. G., Li, L., Li, W., Yang, K., van der Ent, R.J. & Chen, D., Moisture source variations for summer rainfall in different intensity classes over Huaihe River Valley, China. *Climate Dynamics*, 57, 1121-1133. IF: 3.7

2020 Haile, G. G., Tang, Q., Leng, G., Jia, G., Wang, J., Cai, D., Sun, S., Banya, B., & Zhang, Q., Long-term spatiotemporal variation of drought patterns over the Greater Horn of Africa. *Science of the Total Environment*, 704, 135299. IF: 8.0

2020 Haile, G. G., Tang, Q., Li, W., Liu, X., & Zhang, X.,. Drought: Progress in broadening its understanding. *Wiley Interdisciplinary Reviews: Water*, 7(2), e1407. IF: 5.8

2020 Haile, G. G., Tang, Q., Hosseini-Moghari, S.M., Liu, X., Gebremicael, T.G., Leng, G., Kebede, A., Xu, X., & Yun, X., Projected impacts of climate change on drought patterns over East Africa. *Earth's Future*, 8(7). IF: 8.2

2020 Ndehedehe, C.E., Haile, G. G., Agutu, N.O., Ferreira, V.G., Getirana, A., & Okwuashi, O., Hydrological hotspots of climatic influence in Brazil: A two-step regularization approach. *Atmospheric Research*, 246, 105116. IF: 4.4

2020 Hamal, K., Sharma, S., Khadka, N., Haile, G. G., Joshi, B. B., Xu, T., & Dawadi, B., Assessment of drought impacts on crop yields across Nepal during 1987–2017. *Meteorological Applications*, 27(5), e1950. IF: 2.5

2019 Haile, G. G., Tang, Q., Sun, S., Huang, Z., Zhang, X., & Liu, X., Droughts in East Africa: Causes, impacts and resilience. *Earth-Science Reviews*, 193, 146–161. IF: 10.0

2019 Zhang, C., Tang, Q., Chen, D., van der Ent, R.J., Liu, X., Li, W., & Haile, G. G., Moisture Source Changes Contributed to Different Precipitation Changes over the Northern and Southern Tibetan Plateau. *Journal of Hydrometeorology*, 20(2), 217-229. IF: 2.9

2019 Baniya, B., Tang, Q., Xu, X., Haile, G. G., & Chhipi-Shrestha, G., Spatial and temporal variation of drought based on Satellite Derived Vegetation Condition Index in Nepal from 1982–2015. *Sensors*, 19(2), 430. IF: 3.5

2019 Gebremicael, T. G., Mohamed, Y. A., Zaag, P. V. D., Gebremedhin, A., Gebremeskel, G., Yazew, E., & Kifle, M., Evaluation of multiple satellite rainfall products over the rugged topography of the Tekeze-Atbara basin in Ethiopia. *International Journal of Remote Sensing*, 40(11), 4326-4345. IF: 2.6

2018 Gebremeskel, G., Gebremicael, T. G., Kifle, M., Meresa, E., Gebremedhin, T., & Girmay, A., Salinization pattern and its spatial distribution in the irrigated agriculture of Northern Ethiopia: An integrated approach of quantitative and spatial analysis. *Agricultural Water Management*, 206, 147-157. IF: 6.5

2018 Gebremeskel, G., Gebremicael, T.G., & Girmay, A., Economic and environmental rehabilitation through soil and water conservation, the case of Tigray in northern Ethiopia. *Journal of Arid Environments*, 151, 113–124. IF: 2.5

2018 Gebremeskel, G., & Kebede, A., Estimating the effect of climate change on water resources: Integrated use of climate and hydrological models in the Werii watershed of the Tekeze river basin, Northern Ethiopia. *Agriculture and Natural Resources*, 52(2), 195-207. IF: 0.8

2017 Gebremeskel, G., Gebremicael, T.G., Hagos, H., Gebremedhin, T., & Kifle, M., Farmers' perception towards the challenges and determinant factors in the adoption of drip irrigation in the semi-arid areas of Tigray, Ethiopia. *Sustainable Water Resources Management*, 4, 527–537. IF: 2.1

2017 Gebremeskel, G., & Kebede, A., Spatial estimation of long-term seasonal and annual groundwater resources: application of WetSpass model in the Werii watershed of the Tekeze River Basin, Ethiopia. *Physical Geography*, 38(4), 338-359. IF: 1.4

2017 Gebremicael, T. G., Mohamed, Y. A., van der Zaag, P., Berhe, A. G., Haile, G. G., Hagos, E. Y., and Hagos, M. K., Comparison and validation of eight satellite rainfall products over the rugged topography of Tekeze-Atbara Basin at different spatial and temporal scales, *Hydrol. Earth Syst. Sci. Discuss*. IF: 5.47

2015 Haile, G.G., & Kassa, A.K., Investigation of precipitation and temperature change projections in Werii watershed, Tekeze River Basin, Ethiopia; application of climate downscaling model. Journal of Earth Science and Climate Change, 6, 300. IF: 1.66

2015 Haile, G.G., & Kassa, A.K., Irrigation in Ethiopia: A review. *Academia Journal of Agricultural Research*, 3(10), 264-269.

2015 Gebremeskel, G., Brhane, H., & Berhe D., Verification of soil test based phosphorus fertilizer recommendation for yield and yield components of wheat in Hintalo-wajirat District, Ethiopia, *Journal of Natural Sciences Research*, 5, 17.

2015 Gebremedhin, G. H., Haileselassie B, Berhe D, & Belay, T., Effect of biochar on yield and yield components of wheat and post-harvest soil properties in Tigray, Ethiopia. *Journal of Fertilizers and Pesticides*, 6, 158. IF: 0.2

2014 Haileselassie, B., Habte, D., Haileselassie, M., & Gebremeskel, G., Effects of mineral nitrogen and phosphorus fertilizers on yield and nutrient utilization of bread wheat (Tritcum aestivum) on the sandy soils of Hawzen District, Northern Ethiopia. *Agriculture, Forestry and Fisheries*, 3 (3), 189-198. IF: 0.2.

Book Chapters

2022 Haile G.G., Tang Q., Baniya B., Spatial drought patterns in East Africa; In Tang, Q., & Leng, G. (Eds.), 2022. Climate Risk and Sustainable Water Management, Cambridge University Press, Shaftesbury Road, Cambridge CB2 8BS, UK. 490 pp.

2022 Baniya B., Tang Q., Chhipi-Shrestha G., Baniya H.B., Haile G.G., Vegetation dynamics, land use and ecological risk in response to NDVI and climate change in Nepal; In Tang, Q., & Leng, G. (Eds.), 2022. Climate Risk and Sustainable Water Management, Cambridge University Press, Shaftesbury Road, Cambridge CB2 8BS, UK. 490 pp.

Book Under Preparation

2023 Haile, G.G., Water and Society in Drylands: Science, Policy, and Societal Transformation

Manuscripts Under Review

2024 Haile G. G., Darcha G., Meaza H., Hadgu G., Gebremedhn H., Haile M., Societal resiliencies in Tigray, Ethiopia: the fight for survival amidst war and siege. *World Development Perspectives*. Under Review.

2025 Gebresellase, S. H., Wu, Z., Muhammad, W. I., & Haile, G. G., Performance of gridded precipitation datasets in East Africa: Assessing statistical accuracy, extreme indices, and drought characteristics, *npj Climate and Atmospheric Science.* Under Review.

2025 Gebremedhn, H., Gebrewahid, Y., Haile, G. G., Hadgu & Bezabih, G., Modeling the effects of climate change on the potential distribution of the endemic and endangered major honeybee plant, *Becium grandiflorum* (Tebeb), in Northern Ethiopia, *Scientific Reports*, Under Review.

Conference Proceedings

2023 Haile, G. G. and Tang, Q., Understanding drought-flood quick transformations over global environments. *AGU Annual Meeting* 2023 (AGU23).

2023 Rashid S., Tang Q., Baniya B., Haile, G. G., Maryam A., Estimating the probability of anthropogenic land use/cover change as a driving force for conflict of interest in Bakhtegan National Park, Iran, Topical Issues of National Use of Natural Resource, May 27-28, 2023, Moscow, Russia.

2019 Haile, G. G., Tang, Q., Leng, G., Jia, G., Wang, J., Cai, D., Sun, S., Banya, B., & Zhang, Q., Half-century spatiotemporal drought patterns analysis over East Africa, *AGU Fall Meeting*, San Francisco, USA.

2019 Haile, G. G., and Tang, Q., Drought in the East African region, Water Security: New Technologies, Strategies, Policies, and Institutions. International Specialty Conference, Sep. 16-18, 2019, *American Water Resources Association and Chinese Academy of Sciences*, Beijing, China.

2018 Gebremicael, T.G., Mohamed, Y., Berhe, A., Haile G. G., Yazew, E., Kifle M., Comparative evaluation of multiple satellite rainfall products over the complex terrains of Tekeze-Atbara sub-basin, Nile River basin, *EGU General Assembly Conference*, Vienna, Austria.

Workshops & Internships

Fall 2023 Faculty Seminar on Teaching Academic Writing, Wesleyan University, Middletown, Connecticut, USA.

Aug. 19-23, 2019: Summer School on the Natural Hazards in the Anthropocene, Centre of Natural Hazards & Disaster Science (CNDS), Uppsala University, Sweden.

Sep. 16-18, 2019: Water Security: New Technologies, Strategies, Policies, and Institutions, American Water Resources Association and Chinese Academy of Sciences, Beijing, China.

May 13-19, 2018: Spring School on Frontier and Interdisciplinary Sciences, University of Chinese Academy of Sciences, Wuhan, China.

Jan. 11-18, 2016: Spatial data gathering and analysis, Tigray Bureau of Planning and Finance, Adigrat, Ethiopia.

Sep. 22-25, 2015: GIS, Remote Sensing, and SWAT Modelling, Tigray Agricultural Research Institute, Wuqro, Ethiopia.

Field Experiences

Fall 2025: Geological field excursion, East Hartford, Connecticut, Geological Society of Connecticut.

Spring 2024: GPS surveying using ArcGIS Online and field maps of the Connecticut River Basin.

Fall 2024: Water quality sampling and flow-net measurement along the Connecticut River.

Fall 2024: Meteorological data measurement at the Meriden NOAA weather station in Connecticut.

Fall 2023: Coastal field expedition on shoreline environment on Long Island Sound, Atlantic Ocean.
Fall 2023: Reconnaissance geological survey, Deep River, Geological Society of Connecticut.
Spring 2018: Field expedition on land-use dynamics and grassland systems in Inner Mongolia, China.

Computer Skills

- Programming languages: R, Python.
- Hydrological modeling: MODFLOW, SWAT, HEC-HMS, WetSpa, MIKE SHE, WetSpass, HEC-RAS.
- Irrigation water management: CROPWAT, NewLocCLim, AquaCrop.
- Drought assessment: SPI, SPEI, PDSI.
- Climate models: SDSM, INSTAT.
- GIS software: ArcGIS Pro, QGIS, ArcGIS Online, Story Maps, Google Earth Engine.
- Data analysis: SPSS, GenStat, SAS, Excel.
- Graphical packages and visualization: OriginPro, Panoply, Tableau.
- Referencing and Citation: EndNote, Zotero, Mendeley.
- Engineering: AutoCAD.

Reviewing Responsibilities

Reviewer: Nature Communications (1), Water Resources Research (1) , Hydrological Processes (1), irrigation and Drainage (1), Land Degradation and Development (2), Environmental Research Letters (1), Science of The Total Environment (1), International Journal of Climatology (3), Journal of Environmental Management (1), Global and Planetary Change (1), Theoretical and Applied Climatology (3), Hydrological Sciences Journal (1), Modeling Earth Systems and Environment (3), Natural Hazards (1).

Memberships

- American Geophysical Union, United States.
- Geological Society of Connecticut, United States.
- International Water Resources Association (IWRA).
- Water to Thrive, Austin, Texas, United States.
- New University in Exile Consortium, The New School, United States.
- International School of Education-Scholar Rescue Fund (IIE-SRF), New York, United States.

Referees

Dr. Suzanne O'Connell (Prof.), Department of Earth and Environmental Sciences, Wesleyan University, USA.
Email: soconnell@wesleyan.edu

Dr. Anthony Cummings (Prof.), Department of Earth and Environmental Sciences, Wesleyan University, USA.
Email: arcummings@wesleyan.edu

Dr. Solomon Gebrechorkos (Research Scientist) School of Geography and the Environment, University of Oxford, Oxford, UK.
Email: solomon.gebrechorkos@ouce.ox.ac.uk

Dr. Qiuhong Tang (Prof.), Department of Earth System Science, Tsinghua University, China.
Email: tangqh@tsinghua.edu.cn

Dr. James Greenwood (Associate Prof.), Chair, Department of Earth & Environmental Sciences, Wesleyan University, USA.
Email: jgreenwood@wesleyan.edu

Dr. Raquel Bryant (Assistant Prof.), Department of Earth and Environmental Sciences, Wesleyan University, USA. Email: rbryant@wesleyan.edu

Dr. Sanaz Vajedian (Assistant Prof.), Department of Earth and Environmental Sciences, Wesleyan University, USA. Email: svajedian@wesleyan.edu

Dr. Tesfay Gebremicael (Senior Hydrologist), St. Johns River Water Management District, Palatka, USA. Email: TGGebrem@sjrwmd.com