Dr. Tunde Olarinoye

Water Resources Scientist & International Advisor

Academic & Scientific Curriculum Vitae

Germany
olarinoyetunde@gmail.com
tundeham.github.io
ORCID 0000-0002-1763-8903
ResearchGate
LinkedIn

PROFILE

Dr. Tunde Olarinoye is a water resources scientist and hydrologist with a PhD from the University of Freiburg, specialising in groundwater and karst hydrology, soil moisture observation and large-sample hydrological data. As Scientific Officer at the International Centre for Water Resources and Global Change (ICWRGC), a UNESCO Category 2 Centre at the German Federal Institute of Hydrology, Dr. Olarinoye works on the International Soil Moisture Network, a global open data service. Earlier work led the development of WoKaS, the first global open database of karst spring discharge, published in Scientific Data. Educated in Nigeria, the Netherlands, Portugal and Germany, Dr. Olarinoye convenes international conference sessions and workshops, contributes to IAHS and European research networks, and is open to advisory, consulting and research collaboration on water resources and environmental data.

EDUCATION

2018 – 2022

Ph.D. in Hydrology
University of Freiburg, Freiburg, Germany

Thesis: Unravelling the hydrodynamic behavior of karst aquifer systems through comparative hydrology

2015 – 2017

Erasmus Mundus Joint M.Sc. in Groundwater and Global Change (GroundwatCh)
IHE Delft · Instituto Superior Técnico Lisbon · TU Dresden, the Netherlands · Portugal · Germany

European Union full scholarship

Thesis: Assessing impacts of urbanisation and climate change on present and future water availability in Arusha, Tanzania

- M.Sc. Water Science and Engineering, IHE Delft Institute for Water Education
- M.Sc. Environmental Engineering, Instituto Superior Técnico, University of Lisbon
- M.Sc. Hydro-Science and Engineering, Technische Universität Dresden

2006 – 2011

B.Sc. Agricultural and Environmental Engineering (First Class Honours)
Olabisi Onabanjo University, Nigeria

Best graduating student, Department of Agricultural Engineering

Thesis: Impact of wastewater on crop and soil biodiversity

RESEARCH AND PROFESSIONAL EXPERIENCE

Dec 2021 – Present

Research Scientist

International Centre for Water Resources and Global Change (ICWRGC), UNESCO, Koblenz, Germany

- Acquire in-situ soil moisture data from an international portfolio of data providers and develop ISMN data products, reporting and quality-controlled services.
- Lead strategic outreach, public relations and communication for ISMN and the Centre, including contributions to the Centre's PR strategy and front-end web development.
- Initiated and lead-convened a data-services session at the EGU General Assembly (2023) with ISMN, GRDC, GWDC, IGRAC and GTN-H as co-conveners.
- Proposed and have since organised the annual ISMN splinter meeting at EGU (since 2023), bringing soil moisture data providers, users and product developers into one community.
- Run the virtual ISMN data-provider workshop series (since February 2022).
- Led the joint ISMN / IAHS HELPING side event and workshop at the IAHS Scientific Assembly, Roorkee, India (2025).
- Co-convened the Large Sample Hydrology session at EGU, the largest hydrological sciences session at the assembly.
- Contributed to a catalogue documenting six decades of German contributions to hydrology and the UNESCO International Hydrological Programme, produced for the programme's 50th anniversary.
- Engage with WMO, UNESCO and GCOS (TOPC) structures and events on behalf of ISMN and the Centre.

2018 – 2021

Scientific Employee / Doctoral Researcher

Chair of Hydrological Modelling and Water Resources, University of Freiburg, Freiburg, Germany

- Led the development of WoKaS, the first global open karst-spring hydrograph database (400+ springs), published in Scientific Data.
- Developed automated recession-extraction and classification methods for karst springs (Hydrology and Earth System Sciences, 2022).
- Contributed to the GloW project on global water stress in karst regions.
- Secured a DAAD research-exchange grant with a self-written proposal (University of Victoria, Canada, 2021).
- Co-supervised Bachelor's, Master's and intern projects; co-organised a PhD workshop on hydrological modelling across landscapes (2019).

2017 – 2018

Graduate Researcher

IHE Delft Institute for Water Education (UNESCO-IHE), T-GroUP project, Delft, the Netherlands

- Assessed the impacts of land-use and land-cover change and climate change on present and future water availability in Arusha, Tanzania (Water International, 2020).
- Ground-truthed land-use maps classified from Landsat 5 and Sentinel-2 imagery and mapped water utilities during fieldwork in Arusha.

Aug 2016 – Sep 2016 **Research Intern**
Deltares, Utrecht, the Netherlands

- Assisted in developing a global hydrological database for groundwater resource modelling in delta areas.

2014 – 2015 **Assistant Technical Supervisor**
Slabmark Nigeria Limited, Nigeria

- Supervised the management of water utilities and drainage systems.

2013 – 2014 **Project Supervisor**
Bukevic Hydrological Services, Nigeria

- Managed regional groundwater projects and maintained hydrological and meteorological databases.

SCIENTIFIC PUBLICATIONS

Book Chapter

1. Frank Kaspar, Simon A. Mischel, Stephan Dietrich, Lena Fay Boehmer, Moritz Heinle, Rainer Hollmann, Tunde Olarinoye, Hannes Konrad, Wolfgang Korres, Dmytro Lisniak et al. (2026). **Beiträge zur Beobachtung des globalen Wasserkreislaufs.** Warnsignal klima: Die Landwirtschaft, Wissenschaftliche Auswertungen - in Kooperation mit GEO, Hamburg, Hamburg, pp. 50-56. https://doi.org/10.25592/uhhfdm.18844

Journal articles

1. Abraham, T., **Olarinoye, T.**, Hartmann, A., Hendricks Franssen, H.J., Liu, Y. (2026). **Towards cooperation on transboundary rivers: achieving a win–win balance between upstream hydropower generation and downstream water demand under climate change.** Journal of Hydrology. https://doi.org/10.1016/j.jhydrol.2026.135111
2. Berthelin, Romane, **Olarinoye, Tunde**, Rinderer, Michael, Mudarra, M., Demand, Dominic, Scheller, Mirjam, Hartmann, Andreas (2023). **Estimating karst groundwater recharge from soil moisture observations – a new method tested at the Swabian Alb, southwest Germany.** Hydrology and Earth System Sciences, 27. 385-400. https://doi.org/10.5194/hess-27-385-2023
3. **Olarinoye, T.**, Gleeson, T., Hartmann, A. (2022). **Karst spring recession and classification: efficient, automated methods for both fast- and slow-flow components.** Hydrology and Earth System Sciences, 26, 5431–5447. https://doi.org/10.5194/hess-26-5431-2022
4. Hartmann, A., Liu, Y., **Olarinoye, T.**, Berthelin, R., Marx, V. (2021). **Integrating field work and large-scale modeling to improve assessment of karst water resources.** Hydrogeology Journal, 29, 315–329. https://doi.org/10.1007/s10040-020-02258-z
5. **Olarinoye, T.**, Foppen, J. W., Veerbeek, W., Morienyane, T., Komakech, H. (2020). **Exploring the future impacts of urbanization and climate change on groundwater in Arusha, Tanzania.** Water International. https://doi.org/10.1080/02508060.2020.1768724
6. **Olarinoye, T.**, Gleeson, T., Marx, V., et al. (2020). **Global karst springs hydrograph dataset for research and management of the world's fastest-flowing groundwater.** Scientific Data, 7, 59. https://doi.org/10.1038/s41597-019-0346-5

Theses

1. **Olarinoye, T.** (2022). **Unravelling the hydrodynamic behavior of karst aquifer systems through comparative hydrology.** Ph.D. thesis, University of Freiburg.

Submitted / in review

- Mirgol, B., Dogulu, N., Dieppois, B., **Olarinoye, T.**, et al. (in review). **Artificial intelligence and machine learning in hydrology: global perspectives on adoptions, trust, challenges, and future directions.** Nature Communications (in review).
- **Olarinoye, T.**, Rinderer, M., Gleeson, T., Hartmann, A. (in review). **Redefining karst hydrograph recession analysis; introducing variable matrix fractions and parameters uncertainty.** Water Resources Research (in review), preprint. https://doi.org/10.22541/essoar.15006809/v1

RESEARCH PROJECTS

2018–2020	**World Karst Spring Hydrographs (WoKaS)** (Lead). 400+ springs; published in Scientific Data (2020), the primary reference for comparative karst research.
2021–present	**Soil moisture monitoring and global observation networks** (Scientific Officer, data acquisition and products). As presented at IAHS 2025, more than 80 data providers and 3,000 stations, with time series from 1952 to near real time.
2021–present	**Hydrological data integration and information systems** (Science and data-services development). A recurring forum for hydrological data services and new links between global data centres.
2019–2022	**Hydroclimatic processes and water resources** (First author). Replaces manual, subjective analysis and makes large-sample studies feasible (HESS, 2022).
2017–2018	**Groundwater under urbanisation and climate change, Arusha** (Lead author). Published in Water International (2020).
2026	**Transboundary river cooperation** (Co-author). Published in the Journal of Hydrology (2026).
Since 2018	Global assessment of water stress in karst regions in a changing world (GloW)
2017	Experimenting with practical Transitional Groundwater Management Strategies for the Urban Poor in Sub-Saharan Africa (T-GroUP)
2016	Mitigating groundwater salinity impacts for improved water security in coastal areas under socio-economic and climate change (SALINPROVE)

CONFERENCE CONTRIBUTIONS

2025	ISMN: a global data hub for in-situ soil moisture observations. IAHS Scientific Assembly (IAHS 2025), Roorkee, India (talk).
2024	Data acquisition and analysis in karst systems. 31st International Karstological School "Classical Karst, Postojna, Slovenia (keynote speaker).
2024	The International Soil Moisture Network. Drought resilience +10 conference, WMO, Geneva, Switzerland (poster).
2023	A new framework for karst hydrograph recession modeling: introducing variable initial storage conditions and parameter uncertainty. AGU Fall Meeting, San Francisco, USA (talk and poster).
2022	The International Soil Moisture Network: supporting and advancing EO research through open source in-situ soil moisture observations. EGU General Assembly, Vienna, Austria (talk).

2020	An automatic recession extraction and parameter estimation method for large-sample karst spring analysis. AGU Fall Meeting (interactive presentation), Online (talk).
2020	A new approach for automatic extraction of karst conduit and matrix recession coefficients. Workshop on sustainability and community in support of UNESCO science programs, Kentucky, USA (talk).
2019	Applicability of automatic recession extraction methods to a large number of karst spring hydrographs. International Karstological School "Classical Karst", Postojna, Slovenia (talk).
2019	Comparative analysis of karst spring hydrographs using automatic recession methods. 46th IAH Congress, Málaga, Spain (talk).
2019	The first global database of karst spring discharge observations. EGU General Assembly, Vienna, Austria (talk).
2018	Unravelling the hydrodynamic behavior of karst systems through comparative hydrology. EuroKarst, Besançon, France (talk).
2017	Mapping and evolution of hydrochemical water types in the Maputo coastal aquifer. 44th IAH Congress, Dubrovnik, Croatia (poster).

Sessions and events convened or organised

2025	Joint ISMN / IAHS HELPING side event and workshop, IAHS Scientific Assembly, Roorkee, India (lead).
2023	Data services in hydrological research and management, EGU General Assembly, Vienna (with ISMN, GRDC, GWDC, IGRAC and GTN-H as co-conveners) (initiator and lead convener).
Since 2023	Annual ISMN splinter meeting for soil moisture data providers, users and product developers, EGU General Assembly, Vienna (organiser).
Since 2022	Virtual ISMN data-provider workshop series, Online (since February 2022) (organiser).
2022	Large-sample hydrology: characterizing and understanding hydrological diversity and catchment organization, EGU General Assembly, Vienna (co-convener).
2019	46th International Association of Hydrogeologists Congress, Málaga, Spain (organising team).
2019	PhD workshop on hydrological modelling across landscapes, University of Freiburg (co-organiser).

TEACHING, SUPERVISION AND MENTORING

2021	Guest lecturer, MSc module "Groundwater adaptation to global change impacts", IHE Delft Institute for Water Education.
2018–2021	Co-supervision and mentoring of Bachelor's and Master's students, Chair of Hydrological Modelling and Water Resources, University of Freiburg.
	Master's: Marvin Lorff, Deciphering the impact of climate and hydrology on recession-based discharge analysis.
2020	Bachelor's: Larissa Bulka, Estimation of karst aquifer drainage properties in Puerto Rico.
2019	Bachelor's: Simon Fahrländer, Karst springs characterisation in contrasting climates.
2019	Bachelor's: Tamara Leins, Characterisation of karst systems in Africa and the Middle East.
2018	Intern: Kübra Özdemir, Applicability of traditional recession analysis approaches to karst spring hydrographs.

TECHNICAL SKILLS AND LANGUAGES

Hydrology & water resources

	Hydrological and groundwater modelling · Karst & groundwater hydrology · Recession & hydrograph analysis · Climate & land-use impact assessment
Data & digital	Programming & large-data analysis · Database management, SQL · Machine learning · GIS & remote sensing
Communication & engagement	Science communication & public relations · Stakeholder engagement · Workshop & event convening · Web development (Django, WordPress, HTML/CSS/JS)
Languages	English (professional proficiency) · German (basic)

Field experience

2018	Hydrogeological investigations and installation of 270 soil moisture probes at three sites in Spain, the UK and Germany (90 probes per site).
2017	Ground-truthing of land-use maps classified from Landsat 5 and Sentinel-2; hydrological investigation and water-utility mapping in Arusha, Tanzania.
2016	Hydrogeological field campaign in Digne-les-Bains, France: infiltration and tracer tests, discharge measurement, geophysical investigation.

AFFILIATIONS, SERVICE AND AWARDS

Memberships	European Geosciences Union (EGU) · American Geophysical Union (AGU) · International Association of Hydrogeologists (IAH)
Networks	IAHS HELPING working groups · EURO-FRIEND · European Groundwater Drought Initiative (EGDI) · Integrated Drought Monitoring Programme (IDMP)
Peer review	Water Resources Research · Journal of Hydrology · Earth System Science Data

Awards and scholarships

2021	DAAD research-exchange scholarship, University of Victoria, Canada, German Academic Exchange Service.
2015–2017	Full scholarship, Erasmus Mundus Joint Master's, Groundwater and Global Change, European Union.
2011	Best graduating student, Department of Agricultural Engineering, Olabisi Onabanjo University, Nigeria.

Short courses and certificates

2019	Advanced Hydrogeological Studies, University of Málaga and Spanish Geological Survey.
2017	Advanced class in Translating Science to Application, UNESCO-IHE, the Netherlands.
2016	Project management in water management contexts, UNESCO-IHE, the Netherlands.
2016	Scientific writing and communication, Technische Universität Dresden.
2016	WASH in humanitarian and development projects, TU Dresden and Arche Nova.
2016	Public participation theory and methodology for sustainable management of groundwater, Instituto Superior Técnico, Portugal.
2015	Remote sensing and GIS applications in hydrology, Instituto Superior Técnico, Portugal.

Referees available on request. Last updated November 2026 · Online: https://tundeham.github.io/cv/