# CHOUNNA YEMELE Gergino

**Environmental Engineer; Climate & Water Security Specialist; Climate Risk & Resilience Analyst**
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Online presence: LinkedIn | Personal site |
Research: Google Scholar | ResearchGate | ORCID

## PROFESSIONAL SUMMARY

Impact-oriented Climate & Water Security Specialist with 5+ years of international experience translating geospatial analytics, hydrological modelling, and machine learning into climate-resilient infrastructure and water-security solutions across Sub-Saharan Africa. Experienced in coastal risk assessment, land subsidence analysis, integrated water resources management, and translating scientific evidence into policy-relevant solutions that support sustainable development, water security, poverty reduction, and climate resilience in low- and middle-income countries. Track record includes leading multi-year assessments quantifying climate exposure for over 18 million coastal residents across 7 African cities and co-authoring 7+ peer-reviewed publications, translating climate and environmental evidence into risk-informed development insights. Recognized for building multilateral partnerships and mobilizing global youth and scientific networks to advance groundwater governance and climate policy dialogue. Fluent in **English** and **French**, with intermediate **Italian**.

## EDUCATION

**M.Sc. Public Policy and Management** **2026–2027**
BIRKBECK UNIVERSITY OF LONDON, London, UK
- Relevant Coursework: (1) Economics: Theory, Policy and Institutions; (2) Public Policy: Interests, Ideas, Institutions; (3) Governing Global Capitalism; (4) Emerging Powers In World Politics

**Ph.D. Civil and Environmental Engineering Sciences** **2022–2025**
UNIVERSITY OF PADOVA, Padova, IT
- Curriculum: Risk, Vulnerability, Environment, Health, and Territory
- Dissertation: Vulnerability of low-lying cities of the Eastern Gulf of Guinea to combined land subsidence and sea-level rise.
- Visiting PhD Scholar at Wageningen University & Research, The Netherlands (April - July 2025)

**M.Sc. International Master, Environmental Engineering** *Grade: 108/110* **2019–2021**
UNIVERSITY OF PADOVA, Padova, IT

**M.Eng. Environmental Engineering** *Grade: 3.48/4.00* **2015–2021**
NATIONAL ADVANCED SCHOOL OF PUBLIC WORKS YAOUNDE, Yaounde, CMR

## CORE COMPETENCIES

- **Strategic Sector Expertise**: Climate Risk Assessment & Adaptation Planning, Coastal Infrastructure Resilience, Water Security, Integrated Water Resources Management (IWRM), Disaster Risk Reduction (DRR).
- **Technical & Analytical Tools**: GIS (QGIS, ArcGIS Pro), Earth Observation & InSAR, Hydrological/Hydraulic Modelling (HEC-RAS, HEC-HMS, EPANET), Land Subsidence & Vulnerability Analysis.
- **Data Science & Programming**: Python, MATLAB, Machine Learning (Random Forest, XGBoost, PINN), Predictive & Multivariate Statistical Modelling.
- **Governance, Leadership & Stakeholder Management**: Policy Analysis and Communication, Environmental Impact Assessment (EIA) & Safeguards, Multi-Stakeholder Dialogue, Youth Mobilization, Intergovernmental Cooperation.

## PROFESSIONAL EXPERIENCE

**Environmental Research Fellow & Engineer** **Feb 2026 — Oct 2026**
DICEA, University of Padova *Padova, IT*
- Lead coastal flood risk and land subsidence vulnerability assessments across 7 rapidly urbanizing cities in the Eastern Gulf of Guinea, integrating InSAR subsidence data, sea-level projections, and IPCC climate scenarios to deliver actionable evidence to support climate-resilient planning for over 18 million low-lying residents through 2050.
- Develop exposure and vulnerability maps for critical infrastructure (transport networks, water utilities, urban assets) using advanced GIS and statistical modelling, providing information supporting infrastructure investment prioritization and coastal protection planning.

- Author technical briefs and high-level recommendations bridging complex geophysical data and climate-resilient development policy, translating complex geophysical evidence into actionable recommendations to support climate adaptation and resilient infrastructure planning in Central Africa.

**Research Scientist & Environmental Engineer** **Dec 2022 — Nov 2025**
DICEA, University of Padova *Padova, IT*

- Quantified land subsidence rates and coastal exposure for 18 million residents across 7 major African cities using InSAR analysis, GIS modelling, and multivariate statistics to establish the evidence base for sea-level rise and subsidence impacts along the Eastern Gulf of Guinea including Douala, necessary for national adaptation planning and coastal zone management.
- Developed predictive machine learning models (Random Forest, XGBoost, PINN) projecting land subsidence and coastal exposure through 2050 to improve 30-year forecast reliability, supporting climate-resilient infrastructure design for rapidly urbanizing coastal zones.
- Analysed a 45-year urban growth dataset (GHSL) to quantify infrastructure-load impacts on coastal subsidence, providing key evidence to support land-use planning and risk reduction for over 2 million residents in high-risk zones.
- Co-authored and peer-reviewed scientific publications in high-impact journals (Nature, Natural Hazards and Earth System Sciences), establishing technical credibility and contributing pioneering baselines for international land subsidence discussions.

**Visiting Scientist & Engineer** **April 2025 — July 2025**
Wageningen University & Research *Netherlands*

- Assessed current and 2050-projected exposure of populations and critical infrastructure across 7 fast-growing African coastal cities, integrating Earth observation and statistical modelling to create exposure maps, provided the number and location of population at risk.
- Improved environmental exposure model accuracy by 20% through a novel multivariate framework fusing multi-spectral satellite observations, demographic projections, and climate scenarios. Result: strengthened the reliability of coastal adaptation recommendations for consortium partners.
- Delivered technical reports and GIS-based decision-support tools to European and African research partners, streamlining evidence-based policy design for highly vulnerable coastal ecosystems or deltas.

**Environmental Engineer** **Nov 2021 — Aug 2022**
Green Connexion Environmental Group *Yaounde, CMR*

- Executed Environmental Impact Assessments (EIAs), ecosystem diagnostics, and compliance monitoring as part of the Nachtigal hydropower project and Mpem & Djim reserve park. Supported compliance with international environmental safeguards and national regulatory standards through environmental assessment and monitoring.
- Led environmental data collection and community engagement across remote project sites, optimizing ecological sustainability outcomes; contributed to a waste management audit securing national/international compliance.

**Graduate Water Resources Scientist** **Nov 2019 — April 2021**
National Advanced School of Public Works (ENSTP) *Yaounde, CMR*

- Led water-quality assessments and watershed diagnostics across 2 agricultural watersheds in the Northern Cameroon, providing evidence of poor essential nutrients, and promote sustainable practices. Directly improved livelihoods and climate resilience for over 10,000 rural farmers.
- Conducted hydrogeological investigations and designed a semi-artificial reservoir system for dry-season irrigation, improving agricultural water security and reducing groundwater dependency in semi-arid Northern Cameroon.
- Co-authored peer-reviewed publications on hydrogeology and groundwater quality to create awareness of the quality of soil and water, which affect the population and agricultural productivity; delivered master's thesis presentation with distinction (Excellent).

**Chair of the Communication Committee** **March 2024 — May 2026**
UNESCO Groundwater Youth Network (GWYN) *Global platform*

- Coordinated global communication and stakeholder engagement strategy for a multilateral network of 2,000+ water professionals across 114 countries; led advocacy and policy roundtables linking youth-led science with intergovernmental bodies (UN-IHP, World Bank Water Forward).
- Served as official Rapporteur and Session Moderator at the UN Groundwater Summit 2022, managing expert panels of government, scientific, and civil society representatives. Resulting in advancing the transboundary aquifer management agenda and youth voice.

- Coordinated the drafting, publication, and dissemination of reports, technical newsletters, and action toolkits addressing groundwater vulnerability and sustainable climate adaptation.

## SELECTED INTERNATIONAL DEVELOPMENT ENGAGEMENT & FELLOWSHIPS

1. **International policy engagement**: Engaged in multiple high-level international discussions on water, environment, climate change, and youth across more than ten countries in Africa and Europe, contributing to cross-sector dialogue among scientific, policy, development, and youth communities.
2. **International Organization of Youth Ambassador (2026–2027)**: Selected to champion global youth policy initiatives within international development architectures.
3. **Max Thabiso Edkins Youth Ambassador (2026)**: Recognized by the World Bank Group's Connect4Climate program for excellence in climate communications and local community resilience campaigns.
4. **Aspire Leaders Fellow (2026)**: Selected for a highly competitive global leadership program founded by Harvard University faculty.
5. **World Bank Summit Delegate (2025)**: Participated in high-level policy dialogue, sustainable finance workshops, and civil society forums.
6. **NOVA Global Top Talent (2025–Ongoing)**: A distinction awarded to the top 3% of professionals worldwide following a rigorous selection process that evaluates academic excellence, professional experience, leadership potential, and personal values.
7. **Future Africa Fellow (2023)**: Selected and trained transdisciplinary research networks addressing African climate adaptation and water scarcity, translating complex environmental research into actionable strategies aligned with the AU Agenda 2063.
8. **World Youth Forum Fellow (2022)**: Participated in high-level multilateral simulations and policy roundtables, advising international delegates on youth inclusion in global climate governance and regional disaster risk reduction frameworks.
9. **UN Groundwater Summit Fellow (2022)**: Participated in the UN Groundwater Summit 2022 as a youth leader, junior rapporteur for the session on groundwater in Africa, and moderator for a side event on rural water supply in Africa.

## RESEARCH PUBLICATIONS

1. **Chounna Yemele, G.**, Millevoi, C., and Teatini, P. Machine learning investigation of urbanization-induced land subsidence in rapidly growing African coastal cities: The case of Douala. *Frontiers in Earth Science*. Under review.
2. **Chounna Yemele, G.**, Minderhoud, P. S. J., Ohenhen, L. O., Seeger, K., Shirzaei, M., & Teatini, P. (2026). Land subsidence dynamics and their interplay with spatial and temporal land-use transitions in the Douala coastland, Cameroon. *Natural Hazards and Earth System Sciences*. https://doi.org/10.5194/nhess-26-551-2026.
3. Ohenhen, L., Shirzaei, M., Davis, J., Tiwari, A., Nicholls, R., Dasho, O., Sadhasivam, N., Seeger, K., Werth, S., Chadwick, A., Onyike, F., Lucy, J., Atkins, C., Daramola, S., Ankamah, A., Minderhoud, P., & **Chounna, G.** (2026). The global threat of sinking deltas. *Nature*. https://doi.org/10.1038/s41586-025-09928-6.
4. Ateh Suh, N. N., Roberto, R., Abdou Nasser, N. M., Paula Ngo, F. T., & **Gergino Chounna, Y.** (2024). Material recovery as a strategy for landfill remediation: a case study of Nkolfoulou landfill, Cameroon. *Journal of Material Cycles and Waste Management*. https://doi.org/10.1007/s10163-025-02157-z.
5. Wilson Y. Fantong, **Gergino Chounna**, Therese L. L. Jokam Nenkam, Alain T. Fouepe, Ernest Chi Fru, Yaya Fodoue, Claire Carlier, Sara Vassolo, Yollande Nkwesse, Pierre Nbendah, George E. Nkeng, Nelly Montcoudiol (2023). Hydrogeochemistry of low agricultural soil yield in Sahelian and Sub-Tropical watersheds, Northern Cameroon. *Journal of African Earth Sciences*, 199, 104823. https://doi.org/10.1016/j.jafrearsci.2022.104823.
6. Haman J.B. Didier, Wilson Y. Fantong, Ewodo G. Mboudou, Auguste Ombolo, Therese L.L. Nenkam Jokam, **Gergino Y. Chounna**, Gabriel Messi (2023). Hydrogeochemistry and stable isotopes of groundwater in the Sudano-Sahelian zone: a case of the Mayo Bocki watershed in North Cameroon. *Journal of HydroResearch*, 6, 36-51. https://doi.org/10.1016/j.hydres.2023.01.002.
7. Haman J.B. Didier, Ewodo G. Mboudou, Wilson Y. Fantong, Auguste Ombolo, **Gergino Y. Chounna**, Line Laure N. Jokam, Gabriel Messi (2023). Potentially toxic elements contamination in groundwater and human health risk assessment in the Mayo Bocki watershed, North Cameroon. *Arabian Journal of Geosciences*, 16:479. https://doi.org/10.1007/s12517-023-11576-x.
8. Alain Fouépé Takounjou, Wylliam Foano Dandjio, Yaya Fodoué, Wilson Fantong, Mohamed Ngah, Thérèse Jokam Nenkam, Claire Carlier, Sara Vassolo, Nelly Montcoudiol, Carine Enow Tarkang, **Gergino Chounna**, Robert Kringel (2022). Assessment of water availability for agricultural activities in the Savanna Plateau of Adamawa, Cameroon. *Environ Monit Assess*, 194:813. https://doi.org/10.1007/s10661-022-10476-z.

## SCIENCE COMMUNICATION

1. **Chounna Yemele, G.**, Philip Minderhoud and Pietro Teatini. Will Douala's Coastland sink faster than sea-level rise? Investigating coastal subsidence and relative sea-level rise until 2050? WACA-VAR (West Africa Coastal Areas – Map Vulnerability, Adaptability and Resilience in a Changing Climate) Workshop 2025, Grand-Bassa (Côte d'Ivoire), 30 September to 2 October 2025.
2. **Chounna Yemele, G.**, Caterina Millevoi, Philip Minderhoud and Pietro Teatini. Assessing urbanization-induced land subsidence in Douala (Cameroon): A Deep Learning integration of remote sensing and soil data. Joint SIMP-SGI Congress, Padova (Italy), 16–18 September 2025.
3. **Chounna Yemele, G.**, Philip Minderhoud, Leonard Ohenhen, Katharina Seeger, Manoo Shirzaei, Pietro Teatini. Land Subsidence and Coastal City Vulnerability: Elevation Data Challenges in Douala Coastland, Cameroon. IAG-Urban Geomorphology-2025 Working Group Workshop, Krakow (Poland), 11–16 May 2025.
4. **Chounna Yemele, G.**, Philip Minderhoud, Leonard Ohenhen, Katharina Seeger, Manoochehr Shirzaei, Pietro Teatini. Land Subsidence and Coastal City Vulnerability: Elevation Data Challenges in Douala Coastland, Cameroon. West African International Workshop on Coastal Land Subsidence, Accra (Ghana), 4–10 December 2024.
5. **Chounna Yemele, G.**, Philip Minderhoud, Leonard Ohenhen, Manoochehr Shirzaei, Pietro Teatini. Estimating Land Subsidence Dynamics on Rapidly Developing Coastal Urban Environments: Case of Douala City in Cameroon. AAEES Autumn Summit 2024, Online, 17 October 2024.
6. **Chounna Yemele, G.**, Philip Minderhoud, Leonard Ohenhen, Manoochehr Shirzaei, Pietro Teatini. Estimating Land Subsidence Dynamics on Rapidly Developing Coastal Urban Environments: Case of Douala City in Cameroon. URBIS24, Frascati (Italy), 16–18 September 2024.
7. **Chounna Yemele, G.**, Philip Minderhoud, Leonard Ohenhen, Manoochehr Shirzaei, Pietro Teatini. Vulnerability of coastal cities and mangroves to the combined effects of Land subsidence, relative sea-level rise, and groundwater extraction along the low-lying coastland of Cameroon. European Geosciences Union (EGU) 2024, Vienna (Austria), 14–18 April 2024.
8. **Chounna Yemele, G.**, Philip Minderhoud, and Pietro Teatini. Vulnerability of Coastal cities and Mangroves to the combined effects of Land Subsidence, Relative sea-level rise, and Groundwater extraction along the low-lying coastland of Cameroon. WACA-VAR Workshop, Douala, Cameroon, 4–8 December 2023.

## CERTIFICATIONS (Selected)

- Data Analysis with Python
- GIS & Spatial Analysis for Climate
- Groundwater Resources Management
- International Project Management
- Earth Observation for Humanitarian Applications
- Water, Sanitation, and Hygiene (WASH)
- Strategic Management & Leadership
- Modelling policy and political economy

## AWARDS (Selected)

- Mosaik Master Scholarship (2026): Full tuition fee for a Master program at Birbeck University of London.
- UNIPD PhD Scholarship (2022): Fully funded 3-year (2022-2025) PhD program at the University of Padova, Italy
- E-Fellows.net Scholar (2025)
- My Science Journey Ambassador (2025)
- €1000 Travel grant, DICEA, UNIPD
- €300 IAG Conference grant
- 3rd Best Cameroonian Engineering Student in Italy (2023)

## LANGUAGES & PROFESSIONAL AFFILIATIONS

- **Languages**: English (Fluent) | French (Fluent) | Italian (Intermediate, B1)
- **Affiliations**: Rural Water Supply Network (RWSN) | UNESCO Groundwater Youth Network (GWYN) | American Society of Civil Engineers (ASCE) | American Academy of Environmental Engineers & Scientists (AAEES) | Association of Italian Geologists (SGI) | World Youth Parliament for Water (WYPW) | Global Ambassadors of Sustainability (GAoS) | Cameroon Association of Geomorphologists (ACG) | Open Dreams Educational NGO.