CURRICULUM VITAE

PERSONAL INFORMATION

Name: Emmanuel Quansah
Nationality: Ghanaian
Marital Status: Married
Number of Children: Three (3)

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https://webapps.knust.edu.gh/staff/dirsearch/profile/summary/4f4a0a62cf75.html
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Current Position: Head, Department of Meteorology and Climate Science, KNUST, Kumasi-Ghana.

ACADEMIC EDUCATION

2012 – 2015: PhD Meteorology and Climate Science, Federal University of Technology, Akure, Nigeria.
2005 – 2007: Diploma in Management of Information Systems, IMIS, UK.
2002 – 2004: MSc Environmental Physics, University of Bremen, Germany.
1994 – 1999: BSc Physics, University of Cape Coast, Ghana.

FELLOWSHIPS HELD (WITH DATE)

2012 – 2015: Doctoral Fellowship from the German Ministry of Education and Research (BMBF) under the West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL).

2003 – 2004: MSc Scholarship from Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany.

PROJECT EXPERIENCE

2025 – Present: Cloud Observation and Monitoring Equipment (COME) Project. Funded by KRef, KNUST, Ghana.

2024 – 2026: Wellcome Trust Climate Impact Study (Funded by the Wellcome Trust): This project established a climate cohort in Ghana to assess the health impacts of climate change, developed climate-health data systems, supported field data collection, and informed public health and climate adaptation policies.

CURRICULUM VITAE

2023 – 2025: Air Quality and Pollution Prevention (Funded by the Clean Air Fund): This project delivered three phased training schools for participants from Ghana, West Africa, and across Africa, combining field observations, data analysis, hands-on training, and stakeholder engagement to support evidence-based air quality management.

2021 – 2024: WASCAL II CONCERT Project (2021–2024) (Led by West African Science Service Centre on Climate Change and Adapted Land Use; funded by the German Federal Ministry of Education and Research): This project quantified greenhouse gas emissions in West Africa using integrated observations and regional modelling, assessed climate and land-use impacts, and identified mitigation and sustainable land management options to inform policy.

2012 – 2019: WASCAL WRAP1.0 Project: Estimation of Carbon and Energy Fluxes over Contrasting Ecosystems in the Sudanian Savanna Region of West Africa. Funded by BMBF.

GRANTSMANSHIP

2025 – 2026: KRef, KNUST, Kumasi

2023 – 2026: WELLCOME TRUST Climate Impact Award.

2021 – 2024: WASCAL II: CONCERT-West Africa Project.

MEMBERSHIP IN PROFESSIONAL BODIES /ASSOCIATIONS

2015 – Present: **Hall Fellow**, Unity Hall of Residence, KNUST, Kumasi, Ghana.

2008 – Present: **Member**, Ghana Science Association.

2007 – Present: **Licentiate Member**, Institute for the Management of Information Systems (IMIS), England, United Kingdom.

TEACHING AND RESEARCH EXPERIENCE (WITH DATES)

i. **Associate Professor**, Meteorology and Climate Science, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana (2022).

ii. **Senior Lecturer**, Meteorology and Climate Science, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana (2018).

iii. **Part-Time Lecturer**, Africa Centre of Excellence in Coastal Resilience (ACECOR), University of Cape Coast, Ghana (2020).

iv. **Lecturer**, Physics/Meteorology and Climate Science, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana (2008).

v. **Research Scientist**, Institute of Meteorology and Climate Research KIT/IMK-IFU, Garmisch-Partenkirchen, Germany (2013).

vi. **Research Scientist**, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany (2003).

vii. **Physics and Mathematics teacher**, Koforidua, Secondary Technical School, Koforidua Ghana (1999).

SUBJECTS TAUGHT/TEACHING AT THE UNIVERSITY BSC / MPHIL / PHD LEVELS

Experimental Physics, Introduction to Nuclear Physics, Classical Mechanics, Atmospheric and Ocean Dynamics, Introduction to Oceanography, Atmosphere and Ocean Climate Processes, Control of air pollution/Dispersion Meteorology, Environmental Pollution, Climate Change: Science, Policy and Management, Applied Meteorology, Atmospheric Dynamics, Advanced Boundary-Layer Meteorology, Scientific Writing, and Presentation Techniques, and Environmental Measurement Techniques.

CONTRIBUTION TO CAPACITY BUILDING

2008 – Present: **Supervised and mentored** 13 PhD and 11 MPhil Students at KNUST.
I have also supervised over forty-five (45) BSc Project Works.

PHD THESIS SUPERVISION

i. **Patrick Davies** (2025). Estimation of Soil Moisture Using Cosmic Ray Neutron Sensing Technology over the Savanna Ecosystem. KNUST, Kumasi, Ghana

ii. **Afi Amen Christèle ATTIOGBE** (2025). Drought Resilience of Cocoa Agroforest Systems in the Togo-Ghana Transboundary Cocoa Belts. WASCAL CCLU Centre, KNUST, Kumasi, Ghana. KNUST, Kumasi, Ghana

iii. **Cosmos Womegah** (2025). Heatwaves and Urban Heat Islands at Climate Crossroads: Evidence from Ghana's Urban Environments. KNUST, Kumasi, Ghana.

iv. **Martin Add**i (2025). Hydrological Drought Characteristics and Projected Changes over the Pra River Basin. KNUST, Kumasi, Ghana.

v. **Samuel Kyei-Manuh** (2025). Water Resources Modelling in the Pra Basin from a Multi-Objective Optimisation Perspective. KNUST, Kumasi, Ghana.

vi. **Samuel Guug** (2025). Measurement of CO_2, CH_4, and H_2O Fluxes from the Sudanian Savanna Ecosystem of West Africa. KNUST, Kumasi, Ghana.

vii. **Jacob Agyekum** (2023). The Changing Climate: Assessment of present-day and future changes of Extreme Climate Events over the Volta Basin using CMIP6 models. KNUST, Kumasi, Ghana.

viii. **Kwabena Fosu-Amankwah** (2023). Assessment of Aerosol Burden and Dynamics over Ghana. KNUST, Kumasi, Ghana.

ix. **Osei Marian Amoakowaah (**2021**)**. Influence of Atmospheric Dynamics on Wet and Dry Spells over the Pra Catchment, Ghana.

x. **Francis Kudjoe** (Ongoing). Satellite and Ground-Based Remote Sensing of Aerosol Loading in West Africa: Causes, Effect, and Assessment of Environmental and Climatic Impacts. KNUST, Kumasi, Ghana.

xi. **Mubarick Raj Salifu** (Ongoing). Dynamic Modelling of Storm and Coastal Flooding along the Coast of Ghana, UCC, Cape Coast, Ghana.

xii. **Lamin Barrow** (Ongoing). Prediction and Scenario Simulation of Soil Organic Carbon under Millet, Maize, and Groundnut Systems in the North Bank Region of the Gambia. WASCAL CCLU Centre, KNUST, Kumasi, Ghana

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MPHIL THESIS SUPERVISION

i. **Richard Boateng Bonsu** (2025). Development of an Enhanced Reference Evapotranspiration Dataset for Ghana. KNUST, Kumasi, Ghana.

ii. **Felicia Dogbey** (2025). Mapping High-resolution Actual Evapotranspiration in the Vea Wetland Agroecosystem. KNUST, Kumasi, Ghana.

iii. **Abigail Kafui Adu** (2024). Assessment of West African Rainfall Predictability from QBO Pattern and Dynamics. KNUST, Kumasi, Ghana.

iv. **Odoom Ebenezer** (2022). Estimation of Surface Energy and Carbon Dioxide Fluxes over a Grassland Savanna Ecosystem in Ghana using a Land Surface Model. KNUST, Kumasi, Ghana.

v. **Patrick Davies** (2021). Variability of Surface Radiation Fluxes over West Africa. KNUST, Kumasi, Ghana.

vi. **Kwakye Samuel Kwabena** (2019). Overview of the Atmospheric Environment using Radiosonde Measurements over Coastal and Inland Stations: A Case Study of Accra and Kumasi. KNUST, Kumasi, Ghana.

vii. **Nii Ayi Christian** (2019). Estimation of Carbon Dioxide Sequestrations and Effluxes over a Mixture of Fallow and Cropland Savanna Ecosystems in Ghana. KNUST, Kumasi, Ghana.

viii. **Prince Asilevi Junior** (2016). Estimating the Spatial Distribution of Monthly Mean Global Solar Radiation over Ghana using the Angstrom-Prescott Model. KNUST, Kumasi, Ghana.

ix. **David Aboagye** (Ongoing). Validation of MODIS GPP Across Contrasting Ecosystems in the Sudanian Savanna. KNUST, Kumasi, Ghana.

CURRICULUM VITAE

SELECTED INTERNAL AND EXTERNAL ASSESSOR / EXAMINER FOR PHD, MPHIL AND MSC THESES

PHD THESES

i. **Reuben Acheampong Asamoah** (2026): The Stratosphere as a Coupling Layer: Linking Tropical Rainfall Variability and Mesosphere-Lower Thermosphere Dynamics. ***PhD Thesis***, Department of Physics, College of Natural and Computational Sciences, Addis Ababa University, Ethiopia.

ii. Aboubakar Ouattara (2025): Assessment of Climate Change Impacts on Internal Migration in Burkina Faso. ***PhD Thesis***, WASCAL CCLU Centre, KNUST, Kumasi, Ghana.

iii. **Barrett Samuel Teye Wussah** (2025): Calibration of Sunshine Duration And Air Temperature Empirical Models For Estimation of Global Solar Radiation in Ghana. ***PhD Thesis***, Department of Physics, University of Cape Coast, Ghana.

iv. **Godfred Abbey Torsah** (2024) Drivers of Extreme Rainfall and Intensity-Duration-Frequency (IDF) Curves for Ashanti Region, Ghana. ***PhD Thesis***, Department of Meteorology and Climate Science, KNUST, Kumasi, Ghana.

v. **Felix Kpenekuu** (2024): Climate-Smart Agricultural Adaptation in Vulnerable Agro-ecological Zones of Ghana. ***PhD Thesis***, Department of Environmental Science, KNUST, Ghana.

vi. **Frank Baffour-Atta** (2022): Addressing the Effects of Climate Variability in Food Systems using Climate Information Services in Northern Ghana, ***PhD Thesis***, Department of Environmental Science, KNUST, Kumasi, Ghana.

MPHIL THESES

i. **Louisa Boakye** (2025): Gender-Just Climate Solutions used by Men and Women Smallholder Farmers in Rural Ghana: Perspectives from Ejura Sekyedumase Municipality. ***MPhil Thesis***, Department of Environmental Science, KNUST, Kumasi, Ghana.

ii. **Anyigire Achagiwe Killian** (2025): Perceived Effects of Climate Variability on Ecosystem Service Dependence in Riparian Communities in Ghana's Upper East Region. ***MPhil Thesis***, Department of Environmental Science, KNUST, Kumasi, Ghana.

iii. Owusu Abebrese (2025): Evaluating the Effectiveness of Conservation Agriculture as A Climate Change Adaptation Strategy for Smallholder Farmers in the Atwima

Mponua District, Ghana. ***MPhil Thesis***, Department of Environmental Science, KNUST, Kumasi, Ghana.

iv. **Danso Owusua Charity Jnr** (2024): Utilizing Machine Learning to Assess Climate-Crop Yield Nexus in the Akyemansa District of Ghana, ***MPhil Thesis***, Department of Meteorology and Climate Science, KNUST, Kumasi, Ghana.

v. **Rebecca Naa Merley Larbi** (2024): Smallholder Cashew Farmers' Perceptions and Adaptation Practices to Climate Variability in the Bono Region, Ghana, ***MPhil Thesis***, Department of Environmental Science, KNUST, Kumasi, Ghana.

vi. **Yusif Owusu** (2024): Wave Conditions in West Africa: Comparison of ERA5 Reanalysis and CMENS Reanalysis to Estimate Wave Climate. ***MPhil Thesis***, University of Cape Coast, Ghana.

vii. **George Raymond Eshun** (2023): An Assessment of the Contribution of Traditional Fish Smoking to Greenhouse Gas Emissions in Selected Communities of Coastal Ghana. ***MPhil Thesis***, University of Cape Coast, Ghana.

viii. **Vincent Antwi Asante** (2023): Impact of EL-Nino Southern Oscillation on Meteorological Drought in Ghana. ***MPhil Thesis***, Department of Atmospheric and Climate Sciences, University of Energy and Natural Resources, Sunyani, Ghana.

ix. **Enock Yeleliere** (2023): The Effects of Climate Variability on the Yields of Cowpea, Groundnut and Soybeans in the Wa East District of the Upper West Region, Ghana. ***MPhil Thesis***, Department of Environmental Science, KNUST, Kumasi, Ghana.

x. **Leonard Addae** (2023): Estimating the Inter-Annual Gross Primary Productivity of Tropical Moist Forest Over South-Western Ghana Using Joint UK Land Environment Simulator (JULES)" ***MPhil Thesis***, Department of Atmospheric and Climate Sciences, University of Energy and Natural Resources, Sunyani, Ghana.

MSC THESIS

Kuzipa Nampemba (2025): Estimation of Global Horizontal Irradiance in Zambia using Machine Learning Models from Meteorological Variables and Solar Geometry. ***MSc Thesis***, Department of Sustainable Natural Resources, Botswana International University of Science and Technology, Palapye, Botswana (2025).

CURRICULUM VITAE

SELECTED MANAGERIAL AND OTHER PROFESSIONALLY RELATED EXPERIENCE

i. **External Assessor** for Academic Promotions, Department of Physics, University of Cape Coast, Cape Coast, Ghana (2025).

ii. **External Assessor** for Promotions, CSIR–Science and Technology Policy Research Institute, Accra, Ghana (2024).

iii. **External Assessor** for Academic Promotions, Department of Atmospheric and Climate Science, University of Energy and Natural Resources, Sunyani, Ghana (2024).

iv. **Interview Panellist,** WASCAL International Research Programme in Informatics for Climate Change and Climate Change and Marine Science in Burkina Faso and Cabo Verde, respectively (2024).

v. **Facilitator**, Network of Clusters Training Workshop on Transdisciplinary and Capacity Building for Early Career Researchers in Africa, June 26 – 28, 2024, IDL Conference Centre, KNUST, Kumasi, Ghana.

vi. **Member**, College of Science Strategic Plan Review Committee, KNUST, Kumasi, Ghana (2024).

vii. **External Moderator**, Department of Atmospheric and Climate Science, University of Energy and Natural Resources, Sunyani, Ghana (2024 – Present).

viii. **Chairman**, Organising Committee, CS4RRA Webinar on Climate-Smart Agriculture and Sustainable Landscapes, Amonoo-Neizet (IDL Conference Centre), May 15, 2024, KNUST, Kumasi, Ghana.

ix. **Head**, Department of Meteorology and Climate Science, KNUST, Kumasi, Ghana (2023 – Present).

x. **Board Member**, Training of Trainers Curriculum Development, RUFORUM and WASCAL, 19 - 21 September 2023, FM HOTELS, Rue L155 Abidjan, Cote d'Ivoire.

xi. **Postgraduate Coordinator**, Department of Meteorology and Climate Science, KNUST, Kumasi, Ghana (2022 – 2023).

xii. **Examinations Officer**, Meteorology and Climate Science Programme, Department of Physics, KNUST, Kumasi, Ghana (2020 – 2023).

xiii. **Member**, AICCRA Training Workshop Planning Committee on Mainstreaming CSA and CIS into Universities' Curricula:, 13 – 15 September 2023, KNUST, Kumasi, Ghana.

xiv. **Member**, Seminar and Conference Committee, College of Science, KNUST, Kumasi, Ghana (2023).

xv. **Reviewer**, *Scientific Africa* Journal (2023).

xvi. **Reviewer**, *Heliyon* (2023 – 2025).

xvii. **Member**, SDG (13) – Climate Action Committee, KNUST, Kumasi, Ghana (2022 – Present).

xviii. **Coordinator**, Meteorology and Climate Science Programme, Department of Physics, KNUST, Kumasi, Ghana (2019 – 2022).

xix. **Reviewer**, Office of Grant and Research, KNUST, Kumasi, Ghana (2015 – Present).

xx. **Member**, Committee to Draft Development of Sustainability Strategy and Policy for KNUST, Ghana (2021).

xxi. **Assistant Examinations Officer**, Meteorology and Climate Science Programme, Department of Physics, KNUST, Kumasi, Ghana (2016 – 2020).

xxii. **Mentor**, WASCAL CCLU PhD Programme, KNUST, Kumasi, Ghana (2020 – 2023).

xxiii. **Coordinator**, School Science Laboratory Apparatus Production Unit (SSLAPU) of the Physics Department, KNUST, KNUST, Kumasi, Ghana (2019 – 2023).

xxiv. **Member**, College of Science Seminar and Conference Committee, KNUST, Kumasi, Ghana (2019 – 2023).

SELECTED TRAINING WORKSHOPS / POSTERS / CONFERENCES / SEMINARS / SYMPOSIUM ATTENDED (WITH DATES)

i. Kick-off meeting of the Advancing Knowledge for Long-Term Benefits and Climate Adaptation through Holistic Climate Services and Nature-Based Solutions (ALBATROSS) Project at the Impact Building, August 29, 2024, KNUST, Ghana.

ii. Afi A. C. Attiogbe; **E. Quansah**; U. Nehren; S. Salack; E. Bessah; JM Sogbedji; Sampson Agodzo Navigating the drought's grip: Cocoa yield dynamics in Agroforestry Systems in Ghana and Togo. The Annual Interdisciplinary Conference on research in tropical and subtropical agriculture, natural resource management and rural development (Tropentag), September 11 - 13, 2024, Vienna (BOKU), Austria.

iii. Cocoa Farmers Perceptions of Drought and Adaptive Models in the Ghana-Togo Transboundary Cocoa Belt, Network of Clusters Training Workshop on Transdisciplinarity and Capacity Building for Early Career Researchers in Africa, June 26 – 28, 2024, IDL Conference Centre, KNUST, Kumasi, Ghana.

iv. Workshop on Carbon Zero Transport Plan for Lumasi, June 19, 2024, Golden Bean Hotel, Kumasi, Ghana.

v. Stakeholders Workshop on Current and Future Risks of Urban and Rural Flooding in West Africa, June 18, 2024, IDL Conference Centre, KNUST, Kumasi, Ghana.

vi. Inception and Stakeholder Consultation Workshop of the AI4PEP Project, Monday, May 20, 2024, at the Impact Building, KNUST, Kumasi, Ghana.

vii. Regional Technical Workshop on Greenhouse Gas Emission and Mitigation Options under Climate and Land Use Change in West Africa: A Concerted Regional Modelling and Observation Assessment (Concert-West Africa Project. 6 – 7th May 2024, True Vine Hotel, Kumasi, Ghana.

viii. Davies, P., Baatz, R., Bogena, H., **Quansah**, **E**., and Amekudzi, L.: Revisiting the barometric effect on cosmic-ray neutron soil moisture sensing, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-16814, https://doi.org/10.5194/egusphere-egu24-16814, 2024.

ix. Bliefernicht, J., Guug, S., Steinbrecher, R., Neidl, F., Spangenberg, I., Amekudzi, L. K., **Quansah**, **E**., et al: Developments and Challenges in Operating a Hydrometeorological Research Observatory in the Western Sudanian Savanna - Ten Years of WASCAL Observatory Experience, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-6712. https://doi.org/10.5194/egusphere-egu24-6712, 2024.

x. Training Workshop on Enhancing Publication Impact and Research Visibility by the Office of Grants and Research in Collaboration with the Library, at the Impact Building, KNUST, Kumasi, Ghana, March 14, 2024.

xi. Workshop on Understanding the Factors Driving Land Use, Land Use Change and Forestry Impacts in Sub-Saharan Africa, September 25 – 26, 2023, University of Energy and Natural Resources, Sunyani, Ghana.

xii. Bliefernicht J., Guug S., Steinbrecher, R., Neidl, F., Spangenberg, I., Amekudzi, L. K., **Quansah, E**., Davies P. et al….Current Developments and Challenges in Operating an Environmental Research Observatory in the Sudan Savanna in West Africa -Ten Years of WASCAL Observatory Experience. September 28, 2023, 2nd TERENO-OZCAR Conference, Bonn, Germany.

xiii. Davies, P., Baatz, R. Bogena, H. R., **Quansah, E** and L. K Amekudzi. Optimal Temporal Filtering of the Cosmic-Ray Neutron Signal to Reduce Soil Moisture Uncertainty. September 28, 2023, 2nd TERENO-OZCAR Conference, Bonn, Germany.

xiv. Davies, P., Baatz, R. Bogena, H. R., **Quansah, E** and L. K Amekudzi. Improving Soil Moisture Monitoring from Cosmic Ray Neutron Sensors under Various Climate Conditions. Galileo conference A European vision for hydrological observations and experimentation: GC8-Hydro-130, June 12 – 15, 2023.

xv. Guug, S., **Quansah**, **E**., Davies, P., Spangenberg, I., Bliefernicht, J., Berger, S., Steinbrech, R., Salack, S., Neidl, F., Diallo, B., Amekudzi, L. K., Ogunjobi, K. O., and H. Kunstmann. Greenhouse Gas (GHG) Observation Network in the Sudanian Savanna Zone: General Overview of Equipment, Data, and Results. WASCAL 2022 Science Symposium, December 6 – 9, 2022, Ouagadougou, Burkina Faso.

xvi. Davies, P., Baatz, R., Bogena, H. R., **Quansah**, **E**., and L. K. Amekudzi. Optimal Temporal Filtering of the Cosmic-Ray Neutron Signal to Reduce Soil Moisture Uncertainty. WASCAL 2022 Science Symposium December 6 – 9 2022, Ouagadougou, Burkina Faso.

xvii. WASCAL@10 Alumni Homecoming Conference on Climate Change Education and Research for Ghana's Development, November 29 – 30, 2022, KNUST, Kumasi, Ghana.

xviii. Davies P., Mamadou O., **Quansah E**., Aryee J. N. A, Atiah W. A., Amekudzi L. K, Sam F., Galle S., and J. Demarty, Variability of Surface Radiative fluxes over West Africa using Wavelet and Principal Component Analysis, BSUIII, October 4 – 5, 2022, IDL Conference Centre-KNUST, Kumasi, Ghana.

xix. Davies P., Mamadou O., **Quansah E**., Aryee J. N. A, Atiah W. A., Amekudzi L. K, Sam F., Galle S., and J. Demarty, Variability of Surface Radiative fluxes over West Africa using Wavelet and Principal Component Analysis, Eleventh Ghana Science Association Research Seminar and Poster Presentation on " The role of Basic Science for Sustainable Development", June 7 – 8, 2022, Aboagye Menyeh Complex KNUST, Kumasi, Ghana.

xx. Agyekum J., Annor T., **Quansah E**., and L. K. Amekudzi: Future Changes in Extreme Precipitation Indices over the Volta Basin Using CMIP6 Models, BSUIII, 4 – 5th October 2022, KNUST, Kumasi, Ghana.

xxi. Consolidating Climate Change Research and Enhancing Collaborative Actions for a Sustainable Future, BSUIII, October 4 – 5, 2022, KNUST, Kumasi, Ghana.

xxii. Training and Stakeholders Consultation Event for the "Accelerating Impacts of CGIAR Climate Research for Africa" (AICCRA) Project Cluster in Ghana, 24 May – 02 June 2022, Airport View Hotel, Accra, Ghana.

xxiii. Seminar Series for Senior Members on Education Assessment Measurements and Curriculum Development, organised by the Faculty of Biological Sciences, KNUST on 2nd and 9th February 2022.

xxiv. Davies, P., O. Mamadou, **E. Quansah**, J.N.A. Aryee, W. Atiah, L.K. Amekudzi, F. Sam, S. Galle, and J. Demarty Variability in Surface Radiative Fluxes over West Africa using Wavelet and Principal Component Analyses, GSA Research Seminar and Poster Presentations, 7 – 8th June 2022.

xxv. Osei, M. A., Amekudzi, L. K., Ferguson, C.R., Padi, M., Aryee, J. N. A., Agyekum, J., and **E. Quansah**. The environment of West African MCSs from a recent case study analysis. SWIFT Seminar, February 7 – 11, 2022.

xxvi. **Quansah E**., Mauder M., Annor T., Balogun A. A., Amekudzi L. K., Bliefernicht J., Heinzeller D., Berger S., Guug S., and H. Kunstmann. Effects of land use on the net ecosystem carbon dioxide (CO_2) exchange and its components in the West African Sudanian Savanna. June 19 – 21, 2018, Accra, Ghana.

DETAILS OF RESEARCH WORK UNDERTAKEN (WITH DATES)

2025 – Present: Use of Ground-Based Cloud Observation Equipment to Enhance Aviation Weather Nowcasting in Ghana.

2024 – Present: Development of a High-Resolution Reference Evapotranspiration Dataset for Improved Climate and Water Resource Assessment in Ghana.

2023 – Present: Establishing a Climate Cohort for Monitoring the Health Impacts of Climate Change in Ghana: A Longitudinal Approach to Assess Vulnerability and Adaptation Strategies.

2023 – 2025: Integrated Satellite and Rainwater-Based Assessment of Nitrogen Dioxide Hotspots, Meteorological Controls, and Atmospheric Pollution in Southern Ghana (Accra and Kumasi).

2020 – 2024: Integrated assessment of soil fertility, drought vulnerability, and farmer adaptation for sustainable cocoa production in the Ghana-Togo transboundary region

2019 – 2025: Characterisation and Impacts of Lightning and Thunderstorms as Drivers of Severe Weather in Ghana, West Africa.

2019 – 2025: Assessment of Heatwave Characteristics and Long-Term Trends in Selected Ghanaian Cities.

2021 – 2025: Impact of Climate Change on Cocoa Production at the Ghana-Togo Transboundary Belt.

2021 – 2025: Impact of Climate Change on Cocoa Yield Dynamics in :Agroforestry Systems in Ghana and Togo.

2021 – 2024: E:stimation of Greenhouse Gas (CO_2, CH_4, N_2O) Concentrations over the Sudanian Savanna Zone in West Africa using the Eddy Covariance Method.

2021 – 2024: Impact of Soil Moisture on Land-Atmosphere-Vegetation Dynamics within the West African Sudanian-Sahelian Zone.

2017 – 2021: Impact of Land Use Change on the Rainfall Pattern over the Pra Catchment of Ghana.

2012 – 2020: Impact of Meteorological Variables on CO_2 Emissions and Surface Energy Fluxes over the Sudanian Savanna Region of West Africa.

2018 – 2019: Estimation of the Spatial Distribution of Rainfall over Ghana.

CURRICULUM VITAE

2018 – 2019: Modelling the Spatial Distribution of Global Solar Radiation over Ghana.

2018 – 2019: Impact of the Variability of Meteorological Variables on Maize in Ghana.

2015 – 2023: Air pollution, Aerosol-Particle Transports and their Effects on Climate over Ghana.

COMPUTATIONAL SKILLS

Windows and Linux (Ubuntu) Operating Systems; MATLAB; database and information systems management; research data handling and curation; data processing and analysis workflows.

EXPERTISE

Climatology and climate variability; micrometeorology; environmental monitoring; eddy covariance measurements of greenhouse gases and flux analysis; land–atmosphere interactions; land surface modelling; gas chromatography and trace gas analysis; cosmic-ray neutron soil moisture sensing; climate-health interactions and environmental health impacts.

PUBLICATIONS

i. Oussou, F.E., Kiese, R., Sy, S., Bliefernicht, J., Spangenberg, I., Guug, S., Schäfler-Schmid, A., Steinbrecher, R., Neidl, F., Ayamba, M., Hingerl, L., **Quansah**, **E**., Frempong, A. et al. (2026). Soil nitrous oxide and methane emissions in contrasting land use of the West African Sudanian savanna. *Scientific Reports.* https://doi.org/10.1038/s41598-026-36221-x.

ii. Davies, P., Baatz, R., Schattan, P., **Quansah**, **E**., Amekudzi, L. K., & Bogena, H. R. (2026). On the variability of the barometric effect and its relation to cosmic-ray neutron sensing. *Sensors*, 26(3), 925. https://doi.org/10.3390/s26030925.

iii. Attiogbé, A. A. C., Nehren, U., Agodzo, S. K., **Quansah**, **E**., Bessah, E., Salack, S., Parkoo, E. N., & Sogbedji, J. M. (2026). Soil Fertility Status and Its Implications for Sustainable Cocoa Cultivation in Ghana and Togo. *Land*, *15*(1), 127. https://doi.org/10.3390/land15010127.

iv. Asilevi, P.J., Boakye, P., **Quansah**, **E**., Ablerdu, A.K., & Ampomah, W. (2026). Satellite-Detected Nitrogen Dioxide (NO_2) Hotspots in the Greater Accra Region, Ghana. *Nitrogen*, *7*(1), 4. https://doi.org/10.3390/nitrogen7010004.

v. Asilevi, P.J., Boakye, P., Owusu, S.Y., **Quansah**, **E**., Toku M., & Ampomah, W. (2026): Using pre-monsoon rainwater chemistry to monitor local atmospheric pollution in Kumasi, Ghana. *Environmental Science: Atmospheres,* **6**, 273 - 285. https://doi.org/10.1039/d5ea00071h.

vi. Kyei-Manuh, S., Osei, M.A., Aryee, J.N.A., **Quansah**, **E**., Obuobie, E., Amekudzi, L.K. (2025): Lightning and thunderstorms, the source of severe weather over Ghana, West Africa. *PLOS Clim* 4(9): e0000703. https://doi.org/10.1371/journal.pclm.0000703.

CURRICULUM VITAE

vii. Wemegah, C.S., Amekudzi, L.K., Yamba, E.I., **Quansah**, **E**., and E.K. Nyantakyi (2025): Evidence of Heatwaves: Characteristics and Trends in Selected Ghanaian Cities. *International Journal of Climatology*, https://doi.org/10.1002/joc.8889.

viii. Guug, S., Sy, S., **E. Quansah** et al. (2025): Methane emissions from rice cultivation in West Africa and compensation options from nature reserve forests. *Environ. Res. Lett*. 20 044050. https://doi.org/10.1088/1748-9326/adc28c.

ix. Asilevi, P.J., Dzidzorm, E.N., Boakye, P. and **E. Quansah** (2025): Nitrogen dioxide (NO_2) Meteorology and predictability for air quality management using TROPOMI. *npj Clean Air* 1, 3. https://doi.org/10.1038/s44407-024-00003-4.

x. Attiogbé, A. A. C., Bessah, E., **Quansah**, **E**., Nehren, U., & Agodzo, S. K. (2025). Spatial analysis of drought vulnerability in cocoa agroforestry systems across the Ghana-Togo border. Geomatics, *Natural Hazards and Risk*, 16(1). https://doi.org/10.1080/19475705.2025.2467406.

xi. Afi A. C. Attiogbe; **E**. **Quansah**; U. Nehren; S. Salack; E. Bessah; JM Sogbedji; Sampson Agodzo (2024) Navigating the drought's grip: Cocoa Yield Dynamics in Agroforestry Systems in Ghana and Togo. Tropentag 2024, Vienna, Austria September 11-13, 2024

xii. Attiogbé, A.A.C., Nehren, U., **Quansah**, **E**., Bessah, E., Salack, S., Sogbedji, J.M., Agodzo, S.K. Cocoa Farmers' Perceptions of Drought and Adaptive Strategies in the Ghana–Togo Transboundary Cocoa Belt. *Land* 2024, 13, 1737. https://doi.org/10.3390/land13111737.

xiii. Asilevi, P. J, Dogbey, F., Boakye, P., Aryee J. N. A., Yamba E. I., Owusu, S. Y., Peprah**,** D. K., and **Quansah E**, NAB Klutse et al. (2024): Bias-corrected NASA data for aridity index estimation over tropical climates in Ghana, West Africa. *Journal of Hydrology: Regional Studies*, 21(101610). https://doi.org/10.1016/j.ejrh.2023.101610.

xiv. Yamba EI, Aryee JNA, **Quansah E**, Davies P, Wemegah CS, Osei MA, et al. (2023) Revisiting the agro-climatic zones of Ghana: A re-classification in conformity with climate change and variability. *PLOS Clim* 2(1): e0000023. https:// doi.org/10.1371/journal.pclm.0000023.

xv. Osei M. A., Ferguson C. R., **Quansah E**., Padi M., Amekudzi L. K., and S. Danuor (2022): West Africa's moist convective environment as observed by the Atmospheric InfraRed Sounder (AIRS), *International Journal Climatology*, 1–21. DOI: 10.1002/joc.7983.

xvi. Davies, P., Baatz, R., Bogena, H.R., **Quansah**, **E**., Amekudzi, L.K. Optimal Temporal Filtering of the Cosmic-Ray Neutron Signal to Reduce Soil Moisture Uncertainty. *Sensors* 2022, *22*, 9143. https://doi.org/10.3390/s22239143.

xvii. Agyekum, J., Annor, T., Quansah, E. et al. Extreme temperature indices over the Volta Basin: CMIP6 model evaluation. Clim Dyn (2022). https://rdcu.be/cZv8l

CURRICULUM VITAE

xviii. Osei M. A., Padi M., Yahaya B., Baidu M., **Quansah E**. et al. The Dynamics of the Dry and Wet Monsoon MCS Formation over West Africa: Case assessment of 13th February 2018 and 18th June 2018. https://doi.org/10.1002/qj.4399.

xix. Jacob Agyekum, J., Annor, T., **Quansah**, **E**., Benjamin Lamptey, B., and G., Okafor (2022): Extreme Precipitation Indices over the Volta Basin: CMIP6 model evaluation *Scientific African* (2022). https://doi.org/10.1016/j.sciaf.2022.e01181.

xx. Asilevi, P. J., Opoku, N. K., Martey, F., Setsoafia, E., Ahafianyo, F., **Quansah, E**., Dogbey, F., Amankwah, S., and M. Padi (2022): Development of High-Resolution Cloud Cover Climatology Databank Using Merged Manual and Satellite Datasets over Ghana, West Africa, *Atmosphere-Ocean*. https://doi.org/10.1080/07055900.2022.2072266.

xxi. Asilevi, P. J., **Quansah, E**., and F. Dogbey (2022): Satellite-based estimates of photosynthetically active radiation for tropical ecosystems in Ghana-West Africa. *Tropical Ecology.* https://doi.org/10.1007/s42965-022-00234-0

xxii. Osei M. A, Amekudzi, L. K., and **E**. **Quansah** (2021). Characterisation of wet and dry spells and associated atmospheric dynamics at the Pra River catchment of Ghana, West Africa. *Journal of Hydrology: Regional Studies*, Vol. 34, 100801. https://doi.org/10.1016/j.ejrh.2021.100801

xxiii. Osei M. A., Amekudzi L. K, Omari-Sasu A. Y, Yamba E. I., **Quansah E.**, Aryee J. N. A., and K. Preko (2021): Estimation of the return periods of maxima rainfall and floods at the Pra River Catchment, Ghana, West Africa using the Gumbel extreme value theory. *Heliyon* 7 (2021) e06980. https://doi.org/10.1016/j.heliyon.2021.e06980

xxiv. Fosu-Amankwah, K., Bessardon, G. E. Q., **Quansah**, **E**., Amekudzi, L. K., Brooks, B. J., and R. Damoah (2021): Assessment of aerosol burden over Ghana, *Scientific African*, 14 (2021) e00971. https://doi.org/10.1016/j.sciaf.2021.e00971

xxv. Atiah, W.A., Amekudzi, L.K., Akum R. A., **Quansah**, **E**, Antwi-Agyei P., and S. K. Danuor (2021): Climate Variability and Impacts on Maize (Zea Mays) Yield in Ghana, West Africa, *Quarterly Journal of the Royal Meteorological Society*. https://doi.org/10.1002/qj.4199

xxvi. Berger, S., Bliefernicht, J., Linstädter, A., Canak, K., Guug, S., Heinzeller, D., Hingerl, L., Mauder, M., Neidl, F., **Quansah, E**., Salack, S., Steinbrecher, R., and H., Kunstmann (2019): The impact of rain events on CO_2 emissions from contrasting land use systems in semi-arid West African Savannas, *Science of the Total Environment* 647 (2019) 1478–1489. https://doi.org/10.1016/j.scitotenv.2018.07.397.

xxvii. Asilevi PJ, **Quansah E**, Amekudzi LK, Annor T, Klutse NAB (2019): Modelling the spatial distribution of Global Solar Radiation (GSR) over Ghana using the Ångström-Prescott sunshine duration model. Scientific Africa 4: e00094. https://doi.org/10.1016/j.sciaf.2019.e00094.

CURRICULUM VITAE

xxviii. Atiah, W.A., Amekudzi, L.K., **Quansah**, **E**, and Preko, K. (2019). The Spatio-Temporal Variability of Rainfall over the Agro-Ecological Zones of Ghana. *Atmospheric and Climate Sciences*, 9, 527-544. DOI: 10.4236/acs.2019.93034.

xxix. Agyekum J., Annor T., Lamptey B., **Quansah E**., and R. Y. K. Agyeman (2018): Evaluation of CMIP5 Global Climate Models over the Volta Basin: Precipitation *Advances in Meteorology* Vol. 2018, Article ID 7505321, 15 pages. https://doi.org/10.1155/2018/4853681.

xxx. Bliefernicht, J., Berger, S., Salack, S., Guug, S., Hingerl, L., Heinzeller, D., Mauder, M., Steinbrecher, R., Steup, G., Bossa, A. Y., Waongo, M., **Quansah**, **E**., Balogun, A. A., Yira, Y., et al. (2018): The WASCAL Hydro-meteorological Observatory in the Sudan Savanna of Burkina Faso and Ghana. *Hydrological Observatories.* https://doi.org/10.2136/vzj2018.03.0065.

xxxi. **Quansah E**., Katata G., Mauder M., Annor T., Amekudzi L. K., Bliefernicht J., Heinzeller D., Balogun A. A., and H. Kunstmann (2017): Numerical Simulation of Surface Energy and Water Balances over a Semiarid Grassland Ecosystem in the West African Savanna. *Advances in Meteorology*, vol. 2017, Article ID 6258180, 11 pages. https://doi.org/10.1155/2017/6258180.

xxxii. Aryee, J. N. A., Amekudzi, L. K., **Quansah**, **E**., Klutse, N. A. B., Atiah W. A., and C. Yorke (2017): Development of High Spatial Resolution Rainfall Data for Ghana. *International Journal of Climatology*. https://doi.org/10.1002/joc.5238.

xxxiii. Agyeman R. Y. K., Annor T., Lamptey B., **Quansah E**, Agyekum J., and S. A. Tieku (2017). Optimal Physics Parameterization Scheme Combination of the Weather Research and Forecasting (WRF) model for seasonal precipitation forecast over Ghana. *Advances in Meteorology* Vol. 2017, Article ID 7505321, 15 pages. doi.org/10.1155/2017/7505321. https://doi.org/10.1155/2017/7505321.

xxxiv. Amekudzi, L. K., Osei, M. A., Atiah, W. A., Aryee, J. N. A., Ahiataku, M. A., **Quansah**, **E**., Preko, K., Danuor, S. K. and A. H. Fink (2016): Validation of TRMM and FEWS Satellite Rainfall Estimates with Rain Gauge Measurement over Ashanti Region, Ghana. *Atmospheric and Climate Sciences*, 6, 500 – 518. https://doi.org/10.4236/acs.2016.64040.

xxxv. N'Datchoh E. Toure, A. Konaré, A. Diedhiou, A. Diawara, **Quansah E**., and P. Assamoi (2015): Effects of climate variability on savannah fire regimes in West Africa. *Earth Syst. Dynam*., 6, 1–13. https://doi.org/10.5194/esd-6-161-2015.

xxxvi. **Quansah**, **E**., Mauder, M., Balogun, A. A., Amekudzi, L. K., Hingerl, L., Bliefernicht, J., and H. Kunstmann (2015): Carbon dioxide fluxes from contrasting ecosystems in the Sudanian Savanna in West Africa. *Carbon Balance and Management*, 10(1):1 – 17. https://doi.org/10.1186/s13021-014-0011-4.

xxxvii. **Quansah**, **E**., Amekudzi, L. K., Preko, K., Aryee, J., Boakye, O. S., Boli, D., and M. R. Salifu (2014): Empirical Models for Estimating Global Solar Radiation over the Ashanti Region of Ghana. *Journal of Solar Energy* Volume 2014, Article ID 897970, 6 pages. https://doi.org/10.1155/2014/897970.

xxxviii. Bliefernicht J., Kunstmann H., Hingerl L., Rummler T., Andresen S., Mauder M., Steinbrecher R., Frieß R., Gochis D., Gessner U., **Quansah E**., Awotuse A., Neidl F., Jahn C., and B. Boubacar (2013): Field and simulation experiments for investigating regional land-atmosphere interactions in West Africa: Experimental setup and first results, In E. Boegh, et al., editors, Climate and land surface changes in hydrology. RedBook Ser. 359. *Int. Assoc. Hydrol. Sci*., London. p. 226–232.

xxxix. **Quansah E**., Amekudzi L. K., and K. Preko (2012), The influence of temperature and relative humidity on indoor ozone concentrations during the Harmattan period. *Journal of Emerging Trends in Engineering and Applied Sciences* 3(5): 863 – 867.

xl. **Quansah E**., K. Preko, and L. K. Amekudzi (2011), First performance assessment of blends of Jatropha, palm oil and soya bean biodiesel with kerosene as fuel for domestic purposes in rural Ghana. *International Journal of Energy and Environment* 2(2), 331 – 336. http://www.ijee.ieefoundation.org/.

xli. Jacobi, H. W., Annor, T., Kwakye-Awuah, B., Hilker, B., and **E**. **Quansah** (2007). A mechanism for photochemical reactions in the quasi-liquid layer of snow crystals in polar regions*, Physics and chemistry of ice*: [the proceedings of the 11th International Conference on the Physics and Chemistry of Ice held in Bremerhaven, Germany on 23 – 28 July 2006]/ ed. by Werner F. Kuhs Cambridge: RSC Publishing, 241 – 248. https://doi.org/10.1016/j.jphotochem.2006.06.039.

xlii. Jacobi, H. W., Annor, T., and **E**. **Quansah (**2006). Investigation of the photochemical decomposition of nitrate, hydrogen peroxide, and formaldehyde in artificial snow, *Journal of photochemistry and photobiology a-chemistry*, 179(3), 330-338. https://doi.org/10.1016/j.jphotochem.2005.09.001.

xliii. Blunier, T., Floch, G., Jacobi, H. W., and **E**. **Quansah** (2005). Isotopic view on nitrate loss in Antarctic surface snow, *Geophysical research letters*, 32, L13501. https://doi.org/10.1029/2005GL023011.

REFERENCES

Available on Request