

Dr. Caroline Kwamboka Onyancha



Senior Lecturer

Department of Civil and Structural Engineering
Faculty of Engineering

About Me

Lecturing at university is my passion.

My research interests include the following: i) subsurface characterization using invasive techniques such as borehole logging and geotechnical laboratory testing and non-invasive geophysical methods for purposes of determining mechanical properties of subsurface materials in areas where data cannot be obtained or can be obtained at extreme cost; ii) investigation of groundwater quality and quantity through exploration and monitoring as well investigation of the feasibility for augmentation by artificial recharge; and, iii) the interaction between the ground/ groundwater and foundations of Civil Engineering structures.

Qualifications

Doctor of Philosophy degree (PhD) in Engineering Geology at the University of Nairobi (2012), sponsored by the Germany Academic Exchange Service (DAAD). Title of thesis: “Geological and Geotechnical Conditions of the Nairobi Subsurface”

Master of Science Degree (M.Sc.) in Engineering Geology at the University of Nairobi (2002), sponsored by the University of Nairobi. Title of Thesis: “Geotechnical Investigation of the River Nzoia Lower Course Floodplain, Western Kenya”

Postgraduate Diploma in Geothermal Energy Technology, University of Auckland, New Zealand (2000), Sponsored by the New Zealand Ministry of Foreign Affairs and Trade under the United Nations Development Programme. Geothermal research project title: “Resistivity Study of the Menengai Geothermal Prospect, Kenya”

Bachelor of Science (B.Sc.) degree in Geology (1998), obtained Second Class Honours Upper Division at the University of Nairobi.

Professional Memberships and Activities

1. Member of Geological Society of Kenya (Registered Geologist) and a member of the technical committee that drafted the new Geology Bill.
2. Member of International Network of Women Engineers and Scientists

3. Member of African Women in Science and Engineering
4. Member of Gender and Diversity, Africa

Expertise

Subsurface investigation using electrical resistivity, seismic acoustic, magneto telluric, ground penetrating radar, wash boring and rotary drilling techniques

Research Interests

Geotechnical site investigation, Foundation failure investigation, Groundwater investigation and management, Artificial groundwater recharge and Geophysical exploration

Selected Publications

1. **Onyancha, C.**, Onchiri, R. (2006): Geotechnical Site Investigation of Sigiri, Lower Nzoia Floodplain, Western Kenya. In Asian Journal of Civil Engineering (Building and Housing) 7 (2): 139-146. www.bhrc.ac.ir/portal/Default.aspx?tabid=626
2. **Onyancha, C.**, Onchiri, R. (2006): Case Study of Subsurface Conditions of Floodplain in Western Kenya. In Asian Journal of Civil Engineering (Building and Housing) 7 (5): 453-459. www.sid.ir/en/VEWSSID/J_pdf/103820060202.pdf
3. **Onyancha, C.**, Khaemba, A., Sabuni, B. (2008): GIS Application in Artificial Groundwater Recharge: Case Study of Kilifi District in the Kenyan Coast. In Journal of Science, Technology, Education and Management 2 (2): 78-87.
4. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2009): Defects in structures in Nairobi City: Causes and mitigative strategies. In International Journal of Disaster Management and Risk Mitigation 3: 11-18.
5. **Onyancha, C.**, Khaemba, A., Sabuni, B. (2010): Aquifer Storage and Recovery and Surface Basins for a Greener Kilifi District. In Nile Water Science and Engineering Journal 3 (3): 26-33. pdf.advanced3.com/Aquifer-Storage-and-Recovery-and.
6. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2011): A study on the engineering behaviour of Nairobi subsoil. In ARPJ Journal of Engineering and Applied Sciences 6 (7): 85-96. www.arpnjournals.com/jeas/volume_07_2011.htm
7. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2011): Dealing with sensitive and variable soils in Nairobi City. In International Journal of Research and Reviews in Applied Sciences 19 (2): 282-291. http://www.arpapress.com/Volumes/Vol9Issue2/IJRRAS_9_2_12.pdf
8. **Onyancha, C.**, Sagi, D., Siriba, D., Sester, M. (2012): Modelling of spatial and temporal variations in groundwater rest levels in Nairobi City using Geographic Information System. In Nile Water Science and Engineering Journal 5 (1): 26-33. www.nilebasin-journal.com/Site/Issue_View.php?Id=9
9. **Onyancha, C.**, Getenga, Z. (2013): Geochemistry of groundwater in the volcanic rocks of Nairobi City. In Global Journal of Science Frontier Research 8 (3) Version 1.0. On line ISSN: 2249-4626. journalofscience.org/index.php/GJSFR/article/view/1006

10. **Onyancha, C.**, Nyamai, C. (2014): Lithology and geological structures as controls in the quality of groundwater in Kilifi County, Kenya. In *British Journal of Applied Science and Technology* 4(25): 3631-43. www.sciencedomain.org/abstract.php?id=5&aid=5180
11. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2014): Effects of drilling deep tube wells in the urban areas of Nairobi City, Kenya. *ARNP Journal of Earth Sciences* 3 (1): 17-24.
12. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2014): Geophysical resistivity survey in subsurface characterization for heavy construction in Nairobi City, Kenya. *International Journal of Scientific & Engineering Research* 5 (7): 1231-39. www.ijser.org/researchpaper/Geophysical-Resistivity...

Conference proceedings

1. **Onyancha, C.** and Mathu, E. (2003): Engineering properties of soils in River Nzoia Lower Course floodplain. Presented at Geological Society of Kenya conference on Sustainable Practices in Geology, 28-31 March 2003, Nairobi, Kenya.
2. **Onyancha, C.** Khaemba, A. and Sabuni, B. (2008): GIS Application in Artificial Groundwater Recharge: Case Study of Kilifi District in the Kenyan Coast. Presented at International conference on water resources development and management (ICWRDM) at Pilani, India on 23-26 October 2008.
3. **Onyancha, C.** Khaemba, A. and Sabuni, B. (2009): Artificial recharge structures for Kilifi District: Design techniques and challenges. Presented at Kenya DAAD Scholars Conference at Kakamega, on 11-12 June 2009.
4. **Onyancha, C.** Khaemba, A. and Sabuni, B. (2009): Aquifer Storage and Recovery and Surface Basins for a Greener Kilifi District. Presented at Women in green technology towards a sustainable Asia at Busan Korea on 27-29 August 2009, sponsored Association of Korean Women Scientists and Engineers and INWES –Asia.
5. **Onyancha, C.** Sagi, D. Siriba, D and Sester, M. (2011): Spatial modelling of groundwater rest levels in Nairobi City using Geographic Information System. Presented at the 15th International Conference for Women Engineers and Scientists, 19-22 July 2011, Adelaide, Australia.
6. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2012): Variation of groundwater rest levels in Nairobi City since 1927. Presented at the Regional Conference of International Network of Women Engineers and Scientists (INWES) 12th -13th October 2012, Delhi, India.
7. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2013): Effects of groundwater abstraction in Nairobi City. Presented at Humboldt Kolleg/Conference on Environmental Monitoring Research, Science and Technology for Sustainable Development in Kenya and the Impact on the National Vision 2030. April 9-12, 2013, Nairobi.
8. **Onyancha, C.**, Mathu, E., Mwea, S., Ngecu, W. (2013): The role of electrical geophysical resistivity in underground excavation in Nairobi City. Presented at 15th International Conference for Women Engineers and Scientists, 19-21 November 2013, Nairobi, Kenya.

Current Teaching

Scientific and Technical Communication

Engineering Geology

Research Methods

Groundwater Abstraction and Recharge

Groundwater Hydrology

Contact Details

Dr. Caroline Onyancha

Department of Civil and Structural Engineering

Masinde Muliro University of Science and Technology

P.O. Box 190-50100 Kakamega

Cell Phone: +254 711 673 437

E-mail: conyancha@mmust.ac.ke or conyanja@yahoo.com