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EDITORIAL

Editorial for *Advances in Geological and Geotechnical Engineering Research*: Vol. 5 Issue 2 (2023)

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1. Introduction

Earth scientists aid to guarantee a supply of clean water, explore for oil, gas, and coal, map the oceans, track severe weather, and discover the Earth materials we need to build our homes and roads, and the minerals and nutrients we need to farm the land. Environmental geologists help prevent and repair damage to our nation's wetlands, streams, rivers, and shorelines. Environmental geologists similarly support building new wetlands and stream channels to replace those lost to development. Healthy streams and rivers support endangered salmon and other wildlife. By studying geological issues, geologists, along with other scientists, can anticipate Earth's future and examine any changes that may need to be made. A key example of this is the study of climate change and how society needs to change to improve the earth's future. The scope of *Advances in Geological and Geotechnical Engineering Research* journal covers a variety of geology and environmental earth sciences. This journal is preparing to rivet a diversity of research and support the Earth in the imminent future. A total of 5 papers finally were revised, accepted, and published in Vol. 5, Issue 2, which are characteristically dedicated to geology and environmental earth sciences. The achievements of articles presented in this volume are summarized in the following section.

2. Summary of paper presented in Vol. 5, Issue 2 (2023)

Olusola A. OlaOlorun et al. [1] investigated the petrology and geochemical characteristics of crystalline basement rocks in Ora-Ekiti, Southwestern

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Nigeria. Results of the investigation show that the study area is underlain by migmatite, banded gneiss, granite gneiss and biotite gneiss. Migmatite occupies western and northern parts, banded gneiss underlies Ora-Ekiti town and extends towards the northeast. Granite gneiss underlies the eastern and southwestern corners of the area while biotite gneiss occurs towards the south. Petrographic study shows the rocks are mainly dominated by quartz, plagioclase, biotite and opaque each contributing slightly varying percentages to the modal composition. The rocks have high alumina content with pronounced enrichment in Ba, Sr and Rb. The rocks are dominantly peralkaline in nature. The rocks experienced either crystal fractionation before metamorphic remobilization or partial melting in the precursor rocks. The chemical composition of the rocks depicts them are metaluminous granitoids of calc-alkaline affinity. The rocks consist of gneisses of no economic minerals, but the petrology reveals them as common rocks typical of metamorphic terrains and geochemical features of the rocks reveal they are felsic and of granitic composition.

U. Stanley Eze et al. [2] applied 2-D and 3-D Geo-Electrical Resistivity Tomography and Geotechnical soil *e*valuation for *e*ngineering site investigation in Okerenkoko Primary School, Warri-Southwest, Delta State, Nigeria. In this study, an integrated methodology employed DC resistivity tomography involving 2-D and 3-D techniques and geotechnical-soil analysis was used to evaluate subsoil conditions for engineering site investigation to adduce the phenomena responsible for the visible cracks/structural failure observed in the buildings. The results obtained brought to light the geological structure beneath the subsurface, which consists of four geoelectric layers identified as topsoil, dry/lithified upper sandy layer, wet sand (water-saturated) and peat/clay/sandy clayey soil (highly water-saturated). The results obtained brought to light the geological structure beneath the subsurface, which consists of four geoelectric layers identified as topsoil, dry/lithified upper sandy layer, wet sand (water-saturated) and peat/clay/sandy clayey soil (highly water-saturated). The deeply-seated peat/clay materials were delineated in the study area to the depths of 17.1 m and 19.8 m from 2-D and 3-D tomography, respectively. 3-D images presented as horizontal depth slices revealed the dominance of very low resistivity materials i.e. peat/clay/sandy clay within the fourth, fifth and sixth layers at depths ranging from 8.68-12.5 m, 12.5-16.9 m and 16.9-21.9 m respectively. The dominance of mechanically unstable peat/clay/sandy clay layers beneath the subsurface, which are highly mobile in response to volumetric changes, is responsible for the noticeable cracks/failure detected on structures within the study site. These observations were validated by a geotechnical test of soil samples in the study area.

Abubakar Saidu Bako et al. [3] investigated the radon content, its related toxicity, and its risk to human health in the groundwater of the Keana in Nasarawa, Nigeria. Several borehole and well samples were collected. The results showed that the average radon concentration in water samples from Keana was 2.25 Bq/L. The radon concentration is less than the benchmark of 11.1 Bq/L established in 1991 by the Nigerian Standard Organization and the US Environmental Protection Agency. Accordingly, this study designates that the level of radon is safe and people can continue farming and other activities. To reduce the risk of cancer, however, more research could be done in the area. The future investigation could be executed during the dry and wet seasons because radon concentrations in groundwater alter over time due to dilution by recharge from rainfall.

Valentino Straser et al. [4] proposed the Radio Direction Finding method for the detection of electromagnetic signals, in the VLF band, to anticipate the occurrence of potentially destructive geophysical events such tsunami. The area of investigation is Sierra Leone, whose coastline is subjected to tidal wave hazards triggered by earthquakes generated in the Mid-Atlantic Ridge. Although Sierra Leone is not affected by recurrent earthquakes, there is nevertheless a low probability, estimated at 2 percent, of the occurrence of destructive earthquakes in the next 50 years. The Radio Direction Finding experiment

has revealed a close relationship between increased radio-anomalies, in the frequencies of 6,000 Hz, a time window between electromagnetic anomaly detection and the imminence of an earthquake, and higher frequency times for the risk of earthquake occurrence in the Mid-Atlantic Ridge.

Danusa Mayara de Souza et al. [5] correlated the sedimentary strata imaged by the ground penetration radar (GPR) method through numerical modeling with the mapping of sedimentary strata acquired through geotechnical surveys in Reduto Case Study, Belém-PA, Brazil. Additionally, the study exposed how obtaining subsoil information through noninvasive/destructive electromagnetic waves is beneficial, as they are reliable and less costly than drilling holes. Subsequently, physical-geological modeling was applied. The information on the type of sediments is attained using simple recognition surveys executed in the city of Belém-PA, which is facilitated to create of a model of a sedimentary package with its respective intrinsic physical properties. The result demonstrates that the GPR recovered with good vertical and horizontal resolution at the beginning and end of the layers of the sedimentary units. The technique proved to be very effective for locating geotechnical sounding points and reducing costs.

3. Concluding remarks

The considerate and thoughtful comments conveyed by the reviewers enriched each of the papers published in this volume. We would like to express our appreciation to the Editorial Office, all authors and reviewers who contributed their time, research, and specialty for this volume. We hope to receive a variety of manuscripts from different fields in the coming future.

Conflict of Interest

There is no conflict of interest.

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