UNIVERSITY OF GHANA

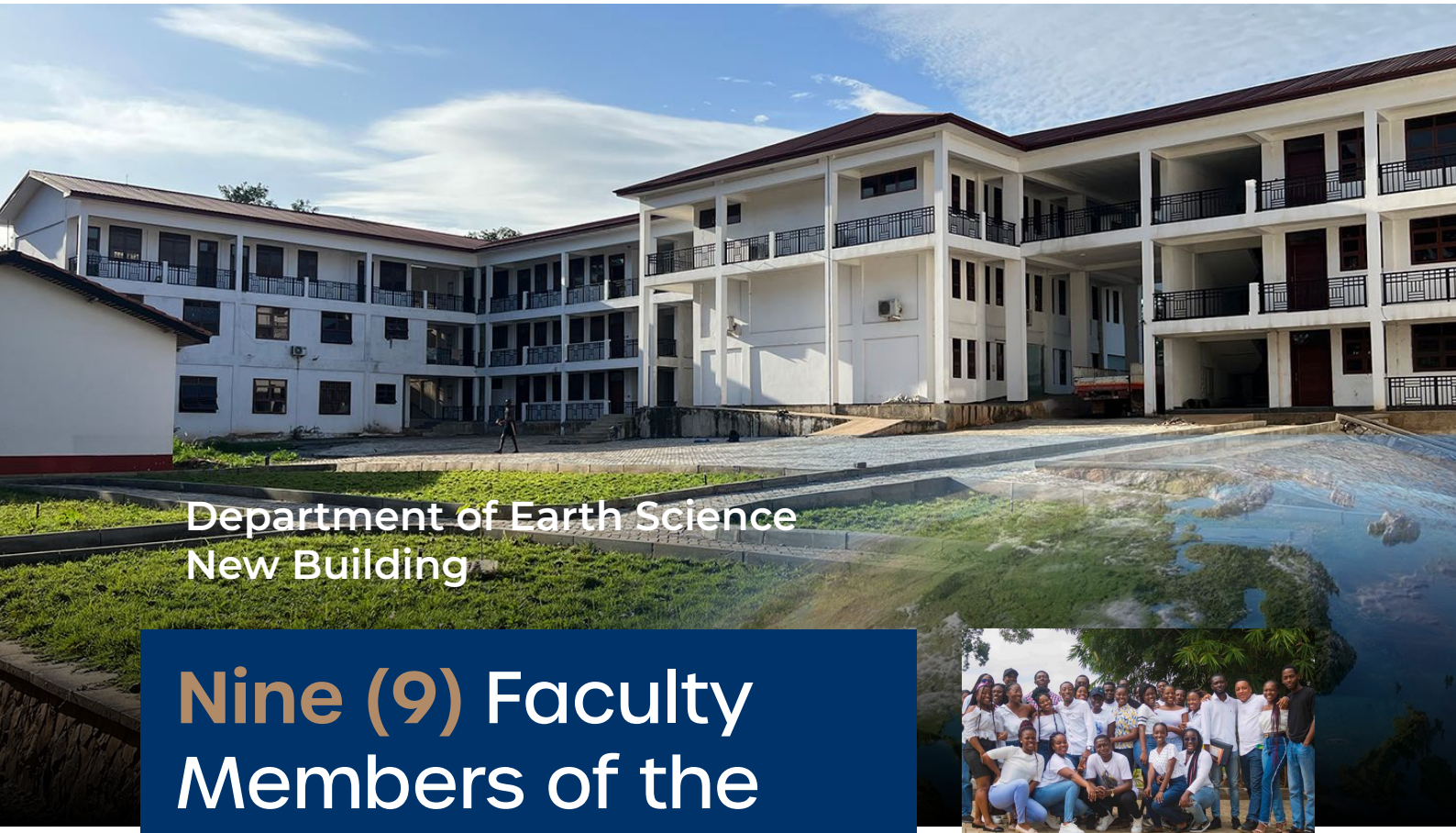
DEPARTMENT OF EARTH SCIENCE (DES)

Training Geoscientists since **1948**

NEWSLETTER

FIRST EDITION

NOV. 2023 - MAR. 2024



Department of Earth Science
New Building

Nine (9) Faculty Members of the Department of Earth Science, UG Win Top Grants

Special Class of 2022

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WHERE ARE THEY NOW?

Get to know where our alumni are now. This section highlights where our alumni are and what they have been up to. It's always worthy to tell our stories, and therefore it's important to share in the success of what our precious alumni are doing.

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CONFERENCES

DES has been contributing their quota to international and national development through conferences, seminars, training, workshops, and talks on various platforms.

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PUBLICATIONS

This section highlights some papers our Faculty have written within the year 2023.

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MESSAGE FROM THE HOD

Welcome to the Department of Earth Science (DES) under the College of Basic and Applied Sciences (CBAS), University of Ghana (UG), Legon. The department is one of the six (6) units of the School of Physical and Mathematical Sciences (SPMS) of our great university. The Department of Earth Science (formerly Department of Geology), founded in 1948, is one of the earliest departments to move from Achimota to the current Legon main campus.It has since evolved with time in line with the current challenges dictated by global and national interests to a leading trainer of geoscientists in West Africa and beyond.

Prof. Larry Pax Chegbeleh
(HOD, Department of Earth Science)

The department is the only academic establishment in Ghana currently offering courses leading to the award of degrees in Geology. We offer a variety of courses and programs in the broad field of Earth Science, leveraging on our several years of experience. Generally, the department undertook a comprehensive review of its programs. All the revised and rolled out programs have been accredited and duly certified.

The undergraduate Earth Science program was revised to give students the opportunity to graduate in any of the following degrees, depending on elective courses taken in Level 300 and Level 400;

1	Geology	2	Applied Geology	3	Applied Geophysics

The Applied Geology program covers areas such as Mineral Exploration and Management, Engineering Geology, Water Resources, Environmental Geoscience, Petroleum Geoscience.
The revised graduate programs are made up of 8 Masters Programs and 1 PhD program as follows;

1	MSc/MPhil Geology	2	MSc/MPhil Hydrogeology	3	MSc/MPhil Engineering Geology
4	MSc /MPhil Economic Geology	5	MSc/MPhil Applied Geochemistry	6	MSc/MPhil Applied Geophysics
7	MSc Mineral Exploration	8	MSc Petroleum Geoscience	9	PhD Earth Science

The department's faculty members are of diverse fields of expertise who are in active teaching combining the state-of-the-art class room pedagogy with daily and inter-semester field exercises thus, offering some of the exhilarating student experiences available anywhere. Faculty members are also in very active research; and have collaborated extensively with peers worldwide, and with research findings well published in very good publication outlets. These publications have been widely cited by peers all over the world.

Students-Lecturers relationship is very cordial, thus giving students the opportunity to interact and network effectively and confidently. The department has a broad base of industry stakeholders who offer opportunities for internships to students at all levels on the graduate and undergraduate programs. On an annual basis, the department holds career fairs which provide platforms for all industry stakeholders to converge and interact with students on career opportunities. Such programs offer avenues for industries to identity and nurture talents. The department is also developing a data base of its alumni for the purpose of tracking their wellbeing and creating strong cohesion among them for their mutual benefits; and in the long run, the composite benefit of the department.

You are invited to visit the rest of our website to find information about the details of our programs, our students' achievements and activities, our research groups as well as faculty members' research activities. It is my fervent hope and prayer that, prospective students, potential collaborators and researchers will be encouraged to join / be aligned to the DES, UG leveraging on our diverse strengths for our mutual benefits. May the peace of browsing our website be with you.

NINE (9) FACULTY MEMBERS OF THE DEPARTMENT OF EARTH SCIENCE, UG WIN TOP GRANTS

1 AGATE RESEARCHERS' GRANT: CARBONATES ROCKS IN THE VOLTAIAN BASIN

(2023 – 2024)

PROJECT: The Carbonate Rocks of the Voltaian Basin: Implications for Paleoclimatic Change During the Neoproterozoic Era.

WINNERS: Dr. Naa Afi Agra (Project Lead), Dr. Daniel Kwayisi

2 AGATE RESEARCHERS' GRANT: GEOCHEMISTRY OF THE TARKWAIAN, KIBI-WINNEBA BELT

(2023 – ONGOING)

PROJECT: Petrography, Geochemistry, and Provenance of the Paleoproterozoic Tarkwaian Sediments in the Kibi-Winneba Greenstone Belt of Ghana.

WINNER: Dr. Marian Selorm Sapah

3 AGATE RESEARCHERS' GRANT: GEOPHYSICS OF THE VOLTAIAN BASIN

(2021 – ONGOING)

PROJECT: Geophysical Investigation of Palaeo-Geomorphic Elements in the Voltaian Sedimentary Basin, Central Ghana, and Their Preservation Potential

WINNERS: Ms. Abigail Ayikwei (Project Lead), Dr. Elikplim A. Dzikunoo, Ms. Jennifer Edzordzinam Agbetsoamedo

4 METSOC ENDOWMENT FUND

(2023-2024)

PROJECT: Planetary and Space Science Outreach for Senior High Schools in Ghana

WINNER: Dr. Marian Selorm Sapah

5 AGATE RESEARCHERS' GRANT: PAN-AFRICAN BELTS

(2021 – ONGOING)

PROJECT: Petro-Structural, and Hydrogeological Characterisation of Crystalline Basement Rocks of Southeastern Ghana: Assessment of Groundwater Potentials

WINNERS: Dr. Yvonne Sena Akosua Loh (Project Lead), Dr. Daniel Kwayisi, Dr. Prince Ofori Amponsah

6 AGATE RESEARCHERS' GRANT: TARKWAIAN SEDIMENTS IN GHANA

(2021 – ONGOING)

PROJECT: Gold-Bearing Conglomerates, Localized Structures, and Alteration Assemblages: Insight into the Geological Controls for the Paleoproterozoic Tarkwaian Gold. A Case Study Within the AngloGold Ashanti Iduapriem Mine, Tarkwa.

WINNERS: Dr. Prince Ofori Amponsah (Project Lead), Dr. Samuel Nunoo, Dr. Marian Selorm Sapah

7 FEED THE FUTURE INNOVATION LAB FOR SMALL SCALE IRRIGATION

(2022 - 2023)

PROJECT: Strengthening Groundwater Governance Amid Increasing Small Scale Irrigation in Ghana

WINNERS: Dr. Yvonne Sena Akosua Loh (Project Lead), Dr. Obed Fiifi Fynn

*This is a sub-project under the Global Hunger and Food Security Research Strategy: Climate Resilience, Nutrition, and Policy - Feed the Future Innovation Lab for Small Scale Irrigation.

8 INTERNATIONAL ASSOCIATION OF SEDIMENTOLOGISTS (IAS) INSTITUTIONAL GRANT

AWARDED TO PURCHASE EQUIPMENT

WINNER: Ms. Jennifer Edzordzinam Agbetsoamedo

9 METSOC RESEARCH GRANT

(2023 – 2024)

PROJECT: (U-Th)/He Thermochronology of the Bosumtwi Impact Crater

WINNER: Dr. Marian Selorm Sapah

10 PROVISION OF POTABLE WATER TO COMMUNITIES IN NORTH-EASTERN GHANA

(2023 – 2024)

PROJECT: Geoscientists Without Borders. Society of Exploration Geophysicists

WINNER: Dr. Elikplim A. Dzikunoo

11 WEST AFRICAN EXPLORATION INITIATIVE 4 (WAXI-4) BASIN RESEARCH GROUP

(2023 – 2025)

PROJECT: Basin-Basement Architecture of Neoproterozoic to Paleozoic Basins in the West African Craton

WINNERS: Dr. Prince Ofori Amponsah (Project Lead), Ms. Abigail Ayikwei, Dr. Samuel Nunoo, Dr. Daniel Kwayisi

FACULTY

75 YEARS ON, CURRENT FACULTY OF THE DEPARTMENT OF EARTH SCIENCE, UG

The Department of Earth Science, University of Ghana, started its courses in 1948 with a few lecturers. This department was formerly known as the Department of Geology, where students offered Geology as one of their two courses for the Bachelor of Science General Degree Programme. What began as a small drop of sediment has now grown into many courses, programmes and higher degrees. Here is a collection of our current faculty members, showing their various ranks, educational background, and specific research interests.

ASIEDU, Daniel Kwadwo
[BSc (Ghana), MSc, PhD (Okayama)]
Professor
dasiedu@ug.edu.gh

- Sedimentary environments, facies, and provenance of the sedimentary rocks of Ghana
- Geoeducation, Geoconservation and Geoheritage studies
- Radiometric dating of sedimentary rocks.

D. Atta-Peters
[BSc, MPhil, PhD (Ghana)]
Professor
datta@ug.edu.gh

- Palynology, palynofacies analysis
- Organic geochemistry
- Sedimentology of sedimentary basins

BANOENG-YAKUBO, Bruce Kofi
[BSc (Ghana), MSc (Ife), MPhil, PhD (Ghana)]
Professor
bbruce@ug.edu.gh

- Hydrogeology and Hydrochemistry of Groundwater in Ghana
- Application of Remote Sensing and GIS in structural geology and groundwater investigations
- Tectonic and Petroleum systems studies in Ghana's Sedimentary Basins

NUDE, Prosper Mackenzie
[BSc, MPhil, PhD (Ghana)]
Professor
pmnude@ug.edu.gh

- Pan African Belt and the Birimian of West Africa - Evolution, Tectonics and Metallogeny
- Precambrian Geology
- Developmental, Strategic and Critical Minerals
- Exploration and Regolith Geology

NYAME, Frank Kwakyi
[BSc (Ghana), MSc, PhD (Okayama)]
Professor
fnyame@ug.edu.gh

- Geology and geochemistry of mineral (ore) deposits
- Mining, development and environment
- Precambrian geology and geochemistry
- Waste management
- Water resources management

SAKYI, Patrick Asamoah
[BSc, MPhil (Ghana), MSc (DTU), PhD Okayama)]
Professor
pasakyi@ug.edu.gh

- Geochemistry, geochronology, and petrology igneous rocks of the Paleo-proterozoic Birimian greenstone belts of Ghana
- Hydrochemistry of surface and groundwater resources
- Provenance studies of sedimentary rock using petrography, geochemistry and isotope studies.

YIDANA, Sandow Mark
[BSc (Ghana), PhD (Montclair)]
Professor
smyidana@ug.edu.gh

- Integrated Water Resources Management in the context of climate change
- Groundwater flow and solute transport modelling
- Economics of water resources allocation and management
- Application of remote sensing to the study of groundwater storage variations in large basins
- Water quality modelling and assessment.

AKABZAA, Thomas Mba
[BSc, PhD (Ghana), MEng (McGill)]
Associate Professor
takbzaa@ug.edu.gh

- Energy Transition and Technology Minerals
- Regional and country level mining investment attractiveness
- Environmental implications of oil and gas development in the Voltaian basin
- Mining and National Economic Development
- Small -scale mining efficiency;
- Mining, Environment and the SDGs
- Water Quality and Climate change and climate resilience studies
- Global Initiatives in the Oil and Gas and Mining Sectors

ANANI, Chris Yao
[BSc (Ghana), MSc (Shinshu), PhD (Niigata)]
Associate Professor
cyanani@ug.edu.gh

- Provenance of siliclastic sedimentary rocks
- Petrology, geochemistry of sandstones in the Voltaian Group
- Transport and depositional processes of sediments

CHEGBELEH, Larry Pax
[BSc (Ghana), PhD (Okayama)]
Associate Professor
lpchegbeleh@ug.edu.gh

Head of Department [08/2022 – TILL DATE]

- Fully automated-gravity based rainwater harvesting system for potable use
- Study on the protection of groundwater resource from the impacts of waste
- Management and disposal practices for sustainable livelihoods.
- Study on geomaterials for sustainable environment

MANU, Johnson
[BSc MBA(Ghana), MSc, PhD (Bonn)]
Associate Professor
jmanu@ug.edu.gh

- Constraints on fluid composition and physical-chemical factors for the formation of the Birimian gold deposits in Ghana
- Development of gold exploration planning in Ghana for Ghanaians using the decision tree concept
- Geochemical evidence for base metals mineralization in Southwestern Ghana
- Planning and management modelling for small scale concessions

AMPONSAH, Prince Ofori
[Bsc, MPhil (Ghana), PhD (Toulouse)]
Senior Lecturer
pamponsah@ug.edu.gh

- Birimian metallogeny and geology
- Basin-Basement architecture and metallogeny of the Voltaian
- Spatial mathematics and geoStatistics predictive models (in groundwater, mineral prospectivity and geohazards)
- Air quality
- Critical minerals
- Sustainability geoscience in solving humanitarian needs

ARMAH, Thomas Kaku Enyimah [BSc, MPhil, PhD (Ghana)]
Senior Lecturer
tekarmah@ug.edu.gh

- Earthquake hazards assessment
- Groundwater vulnerability assessment
- Modelling in near surface geophysics

FIEBOR, Ben [BSc (Ghana), MSc, PhD (Alabama)]
Senior Lecturer
bfiebor@ug.edu.gh

- Research Instrumentation (Analytical Instruments) (Teaching at Grad. Level).
- Computer-based Data Acquisition and Control Systems.
- Crystallography and Mineralogy (Teaching at Undergrad. Level).
- Materials Testing and Characterization.
- Software Applications and Networking of Lab Equipment.

KWAYISI, Daniel
[BSc, MPhil (Ghana), PhD (Johannesburg)]
Senior Lecturer
dkwayisi@ug.edu.gh

- Orogenic belts and crustal evolution
- Granitoid magmatism and mineralization
- Ophiolites
- Evolution of passive margins

LOH, Yvonne Sena Akosua
[BSc, MPhil, PhD (Ghana)]
Senior Lecturer
sloh@ug.edu.gh

- Hydrogeology and hydrochemistry
- Irrigation water management
- Groundwater governance
- GeoEducation, GeoConservation and GeoHeritage studies

NUNOO, Samuel
[BSc, MPhil (Ghana), PhD (Johannesburg)]
Senior Lecturer
snunoo@ug.edu.gh

- Metallogeny of greenstone rocks, petrochemical and isotopic approach
- Structural controls on ore-bearing fluid migration and deposition
- The sequestration of metals and incorporation into potential mineral carriers

THOMPSON, Joseph Offei
[BSc (Ghana), MSc (Renne), PhD (Brest)]
Senior Lecturer
jthompson@ug.edu.gh

- Earth structuration, geological structures, earth deformational processes, plate tectonic movements and their effect on the evolutionary and biological changes on the earth.
- Integrating both geophysical and geological data to constrain the geodynamic evolution of passive continental margins and oceanic basins.
- Evolution of the lithosphere; the vertical and horizontal movement, the structure and morphology of the lithosphere on conjugate continental margins.

AGRA, Naa Afi
[Bsc, MPhil (Ghana), PhD (Johannesburg)]
Lecturer
ntaki@ug.edu.gh

- Igneous and Metamorphic petrology
- Geochemistry

DZIKUNOO, Elikplim Abla
[BSc, MPhil, PhD (Ghana)]
Lecturer
eadzikunoo@ug.edu.gh

- Application of near surface and airborne geophysical data in characterizing subsurface geology for hydrogeologic, mineral exploration and structural geology applications.
- Borehole geophysical logging
- Remote sensing including the applications of GIS; drone mapping, etc.

SAPAH, Marian Selorm
[BSc (Ghana), PhD (Australia)]
Lecturer
msapah@ug.edu.gh

- Cosmochemistry
- Geochemistry
- Geohazards
- Geoscience Education

ACKOM, Edward Kofi
[BSc (Ghana), MSc (Stuttgart), MBA (GIMPA), PhD (Kumasi)]
Lecturer
ekackom@ug.edu.gh

- Catchment Hydrological Studies (Hydrological Modelling, Flood Modelling)
- Urban hydraulics and Sanitary Engineering (Drainage and Sewer Designs)
- Design and Assessment of the Hydraulic Performance of Water supply systems
- Stochastic Hydrology
- Land use change analysis and impact studies Water Resources
- Climate change analysis and impact studies on Water Resources
- Risk Assessment Studies for Water Resources Management
- Applied Engineering Geology for Civil Engineering Projects

AGBETSOAMEDO, Jennifer Edzordzinam
[(BSc, M.Phil (Ghana)]
Assistant Lecturer
Jagbetsoamedo@ug.edu.gh

- Sedimentary facies analysis
- Provenance of siliclastic sedimentary rocks
- Siliclastic and carbonate diagenesis
- Geochemistry and Isotopic studies

AYIKWEI, Abigail Enyonam
[Bsc, MPhil (Ghana)]
Assistant Lecturer
aayikwei@ug.edu.gh

- Application of airborne geophysical data in understanding the architecture of sedimentary basins.
- Application of reflection seismic data in sedimentary basins.
- Modelling of potential field data.
- GIS

GRADUATING CLASS

UNDERGRADUATE CLASS OF 2022

GRADUATE CLASS OF 2022

All too soon, what seemed to be a long road has come to a successful end with your class completing the undergraduate journey to embark on a new chapter of your lives. The future holds good things for you. The fortitude, togetherness, teamwork, and tenacity that were displayed by all during this journey are truly remarkable. I know you are asking a lot of questions about what the future holds for you, as it's a journey none of you have ever made, but do not despair; the same GRACE that saw you through your undergraduate studies will be the same GRACE that will lead you. If you trust your heart and instincts and play by the rules of life, success will surely come. The Department of Earth Science encourages you to live life and be courageous, and the education we have given you will expose you to endless possibilities. We say AYEKOO!
















MASTERS GRADUATES

Fuseini Atanga, MPhil

Master of Philosophy (MPhil) in Structural Geology & Metallogeny

PROJECT TITLE: Structural and alteration controls of gold mineralization in the Rhyacian rocks of the Josephine Deposit, NW Ghana

BRIEF DESCRIPTION: The project was designed to study the Josephine deposit, which is part of the Azumah Resource Wa Gold exploration Project. The overarching objective of the project was to investigate and resolve the structural and alteration controls of the Rhyacian rocks hosting the gold mineralization in the Josephine deposit and to address the following specific questions: What is the relative timing between deformation and gold mineralization, and how the hydrothermal plumbing system affect the alteration associated with the mineralization.

SUPERVISORS: Dr. Prince Ofori Amponsah & Prof. Prosper Mackenzie Nude

FUTURE PLANS: My immediate goal is to pursue a PhD in Economic Geology (which I have already started at CODES, University of Tasmania), leveraging the expertise and research experience gained during my MPhil. I am passionate about delving deeper into this field, particularly focusing on using geochemistry in targeting ore deposit. Simultaneously, I aim to actively contribute as a research scientist in economic geology. I find immense joy and fulfilment in uncovering geological insights and addressing the critical challenges associated with resource exploration and extraction. Collaboration with fellow experts, interdisciplinary projects, and disseminating my findings through publications and presentations are integral to my vision. Ultimately, I aspire to be an impactful researcher, addressing real-world geological and environmental issues.

Alberta Afua Yentumi, MPhil

Master of Philosophy (MPhil) in Engineering Geology

PROJECT TITLE: Engineering characteristics of compressed earth blocks stabilized with lime and coconut husk ash.

BRIEF DESCRIPTION: This research was aimed at investigating the engineering characteristics of compressed earth blocks stabilized with lime and coconut husk ash. Laterite blocks of size 300mm×125mm×200mm were prepared using the mix ratios: 0%, 5%,10%lime and 0%, 2%, 4% coconut husk ash. The block samples were tested for density, compressive strength, water absorption and abrasion resistance in order to observe their performance after 7, 14, 21 and 28 days of curing. The properties of the blocks were improved by the introduction of lime and coconut husk ash with blocks stabilized with 10% lime and 4% coconut husk ash reporting the highest improvements.

SUPERVISORS: Dr. Francis Achampong & Dr. Edward Kofi Ackom

FUTURE PLANS: I currently work with the National Schools Inspectorate Authority as an Assistant Inspector. I aspire to become a lecturer in future and as such I am working towards enrolling in a PhD.

Wear UG Day

PhD GRADUATE

Christopher Alirah Achaegakwo, PhD

Doctor of Philosophy (PhD) in Earth Science with specialization in Biostratigraphy and Petroleum Geochemistry.

PROJECT TITLE: Palynology, palynofacies and organic geochemical analyses of Cretaceous and Early Paleogene sediments, Offshore Tano Basin, Western Ghana.

BRIEF DESCRIPTION: My PhD project involved palynological analyses of three wells (Lynx-1X, Dzata-1 and Dzata-2A) of the Deepwater Cape Three Points Offshore Tano revealed rich and well preserved stratigraphic significant palynomorphs. These palynomorphs were used to date samples from the various wells based on the First Appearance Datum (FAD) and Last Appearance Datum (LAD) of stratigraphic significant species. The palynomorphs in combination with palynofacies analyses enabled the determination of the environment of deposition of wells. Rock-Eval pyrolysis and TOC results for the wells were used to evaluate the organic richness and hydrocarbon potential of source rocks in wells studied.

SUPERVISORS: Prof. David Atta-Peters, Prof. Daniel K. Asiedu, Prof. Chris Y. Anani

WHAT NEXT? Dr. Chris Alirah Achaegakwo is a visiting researcher/fellow at Utrecht University, in Utrecht Netherlands. He works under the supervision of Assistant Professor of Marine palynology & palaeoceanography, Bas van de Schootbrugge.

ALUMNI ACTIVITIES

1 UGESSA DINES WITH ALUMNI

2 ALUMNI MEMBERSHIP DRIVE

Are you on our database yet?

Scan QR code to Join

UG | DEPARTMENT OF EARTH SCIENCE

University of Ghana, Department of Earth Science (Formerly, Geology Department)
Alumni Database

Scan QR code

3 ALUMNI ONLINE MEETING

Thursday, 30th November 2023, At 2pm

Visit our social media pages for registration link

Follow Us

Department of Earth Science
University of Ghana

EarthScienceUG

For more information:
Dr. Yvonne Sena Akosua Loh
sloh@ug.edu.gh

WHERE ARE THEY CURRENTLY?

1. SHEENA OWUSU-ANSAH [ENI]

FULL NAME: SHEENA OWUSU-ANSAH POSITION: Operations Geologist at ENI Ghana

a. What is your current job/employment and your work responsibilities?

In my current role, I coordinate all geological activities, before, during and after the drilling of hydrocarbon wells. These include planning of personnel (Wellsite Geologists, Wireline & Surface Logging personnel) and managing the movement of equipment to and from the rig. My role includes ensuring the appropriate tools for the specific data. We intend to gather are brought in-country in a timely manner to be transported offshore for the needed data acquisition.

I also work closely with the Well Operations teams and together, we work hand-in-hand in achieving our set target for each well.

Additionally, I do various aspects of contract management; from evaluation of bidders, to contract award and execution. Furthermore, I provide training and mentorship to newly hired wellsite Geologists within the team.

b. What are the things you enjoy most about this role?

What I enjoy most about this role is, whenever the set geological target for the drilling of a well is achieved. At the end of the day, companies invest substantial resources in drilling operations primarily to obtain high-quality data. It's this quality data that's subsequently analyzed to determine the presence of hydrocarbons downhole and assess its economic viability. I always get excited whenever the reservoir is as anticipated or exceed expectations.

Additionally, I have a deep appreciation for the constantly evolving nature of the industry; the learning never stops. New high technology tools are always being brought up by service companies and this enables smarter and more efficient ways of data acquisition. For individuals who have an insatiable thirst for knowledge, this industry offers endless opportunities for intellectual. There's a constant influx of fascinating innovations, making it imperative to remain on a continuous quest for knowledge to fully immerse oneself in the captivating realm of technology.

c. How did you get there/your past roles and how they shaped your path?

Immediately after my national service, I got hired as a Geoscientist with oilfield service company, Baker Hughes, where I worked for various clients across Sub-Sahara Africa. My primary responsibility at that time was to process and interpret borehole imaging data. Additionally, I took on the role of being the focal point for quality control of Wireline and LWD data, coming from the field before being sent to clients. This experience gave me a good knowledge base of the LWD and Wireline data quality which proved to be highly advantageous when I interviewed for the position of a Wellsite Geologist (WSG). One of the key responsibilities as a WSG was supervising primary service providers offshore. My background and training, including taking the full MWD academy training course and also crush courses in Wireline operations, combined with my offshore work on a rotation schedule of 28 days on and 28 days off, collectively contributed to shaping me into the professional I am in my current role. Altogether, I have been working in this industry for thirteen years and counting.

Wear UG Day

2. KOFI NKUM EGHAN-EKUBAN [GNPC]

FULL NAME: KOFI NKUM EGHAN-EKUBAN
POSITION: Senior Geophysicist/Asset head: Deep Water Cape Three Points West Block

a. What is your current job/employment and your work responsibilities?

My current job is divided into two parts. First, I supervise the assistant geophysicist and officer geophysicist to meet their departmental and projectile requirements for the year. It is my responsibility that they apply correct knowledge and industry-standard workflows to their geophysical and geological analysis in their respective exploration and development teams. My second role asset requires me to lead and coordinate all exploration and appraisal activities on the DWTCPW Block. I work with a team of geologists, geophysicists, engineers, strategists, and lawyers to add more petroleum resources and reserves to the nation's resource portfolio. I also work with the block operator to work towards spudding exploration and appraisal wells and the development of petroleum or crude oil resources to rake in revenue for Ghana.

b. What are the things you enjoy most about this role?

I enjoy bringing together great minds to get results and bring project milestones and targets to completion. I also love to teach, so I quite enjoy the supervisory job and the opportunity to impart knowledge and also learn new ideas and approaches from my younger colleagues.

c. How did you get there/your past roles and how they shaped your path?

I have a degree in geology and a master's in exploration geoscience. After both my first degree and masters, I apprenticed with different startups, both for gold

and iron ore. I then started a career with Schlumberger Seaco Limited, where I was a geophysicist engineer for 4.5 years. This period was where I was exposed to a huge part of my knowledge base and experience. I then moved on to join GNPC Explorco, a subsidiary of the GNPC. Currently, I work for the mother corporation. It's been a journey of learning, excitement, and hard work.

3. MAGDALENE AGOE [AZUMAH RESOURCES LIMITED]

FULL NAME: MAGDALENE ADJEKAI AGOE
POSITION: Exploration Geologist/Database Geologist at Azumah Resources Ghana Ltd.

a. What is your current job/employment and your work responsibilities?

As an exploration geologist my work generally spans from various settings in the office to field sites. I rose from ranks as an intern supervising the auger rigs to diamond drilling rigs to resource modeling and data interpretations. My duties include: Planning mapping and drilling programs in various concessions and prospects; generation of Maps/Sections using designated software; traversing and surveying mapping sites; drill rig supervisions which include auger drilling, reverse circulation drilling, diamond drilling and Aircore; detailed observations of rocks of interest and taking structural measurements, rock sampling, data collation, chips and core logging and software modeling and interpretations; preparing and presenting technical reports for an area with prospective advantage; data analysis and interpretation; QAQC analysis on samples in the field and from laboratory; validation of data entries; modeling and interpretation of logged and relogged drill holes.

b. What are the things you enjoy most about this role?

I enjoy geology so much! What I enjoy the most is the excitement that comes with making huge discoveries to expand our deposits. Every day is an opportunity to learn and I love the fact that I get to feed my curiosities in understanding rocks. My role as a geologist also affords me the opportunity to work with great minds both in office work (technology) and field work experience.

c. How did you get there/your past roles and how they shaped your path?

I could literally write a book on my career progression from a research student through my internship to my current position and how it has built me to be the best in every aspect of my work. After my BSc in geology at the University of Ghana, Legon. I had the opportunity to pursue an MPhil degree under the guidance of Dr. Prince Ofori Amponsah (a senior lecturer, university of Ghana), where I acquired core samples for my project work from Azumah Resources Ltd. After a successful completion of my degree, I had the opportunity to work in Azumah Resources as an intern. I developed a stronger passion for geology when I got better understanding for the work and developed a deeper appreciation for earth science when everything I ever learnt in school became more practical.
I spent a year as an intern developing maps, field mapping, supervising drill rigs (auger, Rc, DD), log-ging rock chips and cores. A year later I was employed as a staff geologist, with additional roles and much more responsibilities. To succeed in this environment as an exploration geologist, one needs to keep learning and acquiring knowledge daily. You would have to keep developing technical skills, communication skills, problem solving skills, leadership skills as well as industry knowledge. It's been quiet challenging being the only female geologist in the company and in the technical team. However, the passion outweighed the challenges making it bearable through dedication and hard work. Everything became possible with GOD! Every circumstance shapes us, both the good and the bad, however it is your decision to choose wisely!

4. KENNETH LARYEA [GNPC]

FULL NAME: KENNETH LARYEA
POSITION: Geophysicist at Ghana National Petroleum Corporation (GNPC)

Role Description: I am privileged to work on the Expanded Shallow Water Tano Project within the Tano Basin offshore Ghana. The project is in the exploration and development phases of the upstream value chain.

a. What is your current job/employment and your work responsibilities?

My primary responsibilities include interpretation of Seismic data, to identify Leads and Prospects by integrating geological, geophysical and petrophysical data, as well as selecting a well location for drilling. As part of the seismic interpretation process, I perform multi-trace attribute analysis and spectral decomposition of the seismic data which reveals the presence or otherwise of hydrocarbons. Additionally, I work in an integrated team with geologists to map out reservoirs and develop static models for reservoir simulation. Sometimes I am also involved in parameter selection and design of Seismic data Acquisition. During Seismic Data Acquisition and processing, I am usually involved in monitoring and Quality Control of the acquisition process and data collected. By collaborating with geologists, engineers, and environmental scientists, I contribute to making informed decisions about resource extraction or subsurface infrastructure development.

b. What are the things you enjoy most about this role?

The role is quite challenging as it presents a number of complex geophysical and geological

situations to be solved. However, it is mentally stimulating and rewarding as well especially where my efforts contribute directly or indirectly to discovering new oil and gas reserves. It's also heartwarming to know that the whole country benefits from revenues from discovered petroleum resources. The job also presents exciting learning experiences especially with the incorporation of new cutting-edge technology in seismic imaging.

c. How did you get there/your past roles and how they shaped your path?

I had the opportunity to work at GNPC after passing through a competitive interview process following which I was offered employment as an Assistant Geophysicist. The MSc in Petroleum Geoscience course which I took in the university of Ghana really equipped me and helped prepare me for a career in the oil industry. However, throughout the years I have had opportunities to work with and learn from experienced people and companies in the oil industry. That, coupled with trainings sponsored by GNPC has given me exposure and helped me build experience and skillsets which is helping me develop an outstanding profile as an experienced professional.

5. SERAPHINA ALORMENEY [ANGLOGOLD ASHANTI GHANA]

FULL NAME: SERAPHINA ALORMENEY
POSITION AND ORGANIZATION: Mapping Geologist – Anglogold Ashanti Ghana (Obuasi Mine)

I graduated with a BSc in Earth Science from the University of Ghana-Legon. I am currently enrolled in the University of Mines and Technology, Tarkwa, where I am pursuing an MSc in Geological Engineering and was recently selected as a beneficiary of the Ghana Chamber of Mines Tertiary Education Fund (GCM-TEF) for the 2023/24 Academic year. I am a member of the Australasian Institute of Mining and Metallurgy (AusIMM), the Ghana Institute of Geoscientists (GhIG) and the West African Institute of Mining and Metallurgy (WAIMM), where I am a council member of the Young Professionals Group (YPG).

I currently work as a Mapping Geologist for AngloGold Ashanti's Obuasi Mine, however, I am attached with the Exploration Section of the Geology department. In my current position, I am responsible for a variety of duties, including but not restricted to underground mapping, updating geological plans to boost confidence in geological data, drill hole design, logging, and data interpretation, monthly and quarterly reporting on Exploration activities, supervising drilling contractors, and mentoring junior geologists.

Working in the field, carrying out geological mapping, locating drill collars or taking quick logs of drilled core is an aspect of my job that I appreciate. Despite how boring and tedious it may appear, there is a lot of satisfaction in knowing that these tasks serve as the beginning of the birth of any mine. I use advanced software to carry out my day-to-day activities, such as drill hole planning, monitoring, and plotting, data query and analysis, and so on, which has increased my technical skills as a Geologist. Liaison with other stakeholders from the mine's many departments may appear to be a simple undertaking. However, it teaches me how to develop strong work relationships and supports interpersonal growth, which is an essential soft skill for my job.

My position has also allowed me to travel and learn from sister mines about their best practices and how those methods might be incorporated into how we function as a section. Being able to work as a team to find significant gold deposits can be intellectually interesting and professionally gratifying.

I have spent over five years learning about establishing exploration drilling protocols, database administration, quality control quality assurance and grade control procedures, and mine planning and geotechnical operations.

I began my career at Chirano Gold Mines as a National Service Person, after which I was employed as an Exploration Geologist. At Chirano, I championed the use of analytical spectrum instruments that allowed for the data collection of alteration minerals and their interpretation with subsequent drilling that produced fruitful outcomes and resulted in a considerable increase in resource. These responsibilities have assisted in clarifying my long-term professional goal and direction, resulting in the desire to obtain additional education to advance my geochemistry as a second degree. Finally, on- the-job training and experience are guiding my way to become a better geologist.

6. ATANGA, FUSEINI [CENTRE FOR ORE DEPOSIT AND EARTH SCIENCES (CODES), UNIVERSITY OF TASMANIA, 2023]

POSITION & ORGANIZATION: PhD Student at CODES
PHD PROJECT TITLE: AKYEM GOLD DEPOSIT CHARACTERISATION

BRIEF DESCRIPTION OF THE PROJECT: This project aims to investigate and record the paragenesis of the Akyem orogenic gold deposit, with the goal of comparing it to other established orogenic gold deposits within the Ashanti Belt. This research will also play a significant role in advancing the exploration efforts for similar orogenic gold mineralization in West Africa.

a. What does your current PhD work entail and how are you going about it?

The project will involve bench and geological mapping, hyperspectral imagery analysis, drill core logging, and various laboratory analysis. I have already done some initial field familiarization and drill core logging. Data collected from this initial field campaign will be analyzed in the lab at CODES. The next stage is

to review available data from Newmont and plan for a more comprehensive field work somewhere next year.

b. What do you/will enjoy most about this PhD journey?

Embarking on this PhD program is a culmination of my academic goals. It aligns perfectly with the research I pursued during my master's, providing a natural progression for my academic journey. I get to delve into a research area that I love in a more comprehensive and detailed manner. What truly excites me is the abundance of expertise available at CODES. The prospect of learning from seasoned professionals is invaluable. It presents a unique opportunity to not only refine my existing skills but also to broaden my horizons significantly within this field.

c. How have your past roles and works shaped your path?

My educational journey, from my undergraduate studies to my MPhil degree at the University of Ghana, has played a pivotal role in shaping my academic foundation and research aspirations for my current PhD program. During my MPhil, I had the privilege of working closely with a dedicated supervisor who provided invaluable guidance and support. This experience not only enriched my research skills but also instilled in me a deep appreciation for rigorous scholarly work. My role as a graduate assistant further augmented my academic development, exposing me to multifaceted responsibilities, including field work, teaching, research assistance, and laboratory work. These experiences not only honed my knowledge in geology and communication skills but also broadened my perspective on academia. In sum, my past roles have not only equipped me with the essential knowledge and skills required for a successful academic journey but have also fueled my passion for research and the pursuit of scholarly excellence, making me well-prepared for the challenges and opportunities that lie ahead in my PhD program.

7. EWURA AMA AGYEMAN [NEWMONT GHANA]

FULL NAME: EWURA AMA TWUMWAA AGYEMAN
POSITION & ORGANIZATION: Production Geologist and Chairperson for Women and Allies at Newmont Africa, Akyem Mine

Role Description: In summary, my role as a Production Geologist involves a comprehensive range of tasks from strategic planning and team management to hands-on geological activities, emphasizing quality control, safety, and continuous improvement in mining operations.

a. What is your current job/employment and your work responsibilities?

As a Production Geologist, I coordinate activities between the Ore Control Modelling and Grade Control functions to ensure seamless operations. I am responsible for the planning, execution, and data analysis of production geology activities, contributing to efficient mining processes. I develop Standard Operating Procedures (SOPs) for Mine Geology, establishing guidelines for consistent and effective practices. I perform reserve conversion drilling, playing a key role in assessing and converting potential resources into proven reserves. I conduct periodic sampling studies to identify areas for continuous improvement in geological processes and practices. I coordinate the design and processing of blast movement parameters, optimizing blasting for enhanced mining outcomes. Utilizing 3D modeling software, I construct geological models, define contacts, and build confidence in geological features on a deposit. I schedule and allocate work for team members, ensuring tasks are distributed efficiently and deadlines are met.

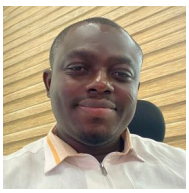
b. What are the things you enjoy most about this role?

In the dynamic role of a Production Geologist, several aspects bring immense joy and satisfaction to my professional journey. Firstly, my unwavering commitment to health and safety is a cornerstone of my responsibilities. The role's diversity is a constant source of motivation. From engaging in fieldwork that brings me closer to geological features to conducting data analysis and strategic planning, this mix keeps the job consistently interesting and intellectually stimulating. It's this collective effort and collaboration that make the production geologist role both rewarding and enjoyable.
As the Chairperson for Women and Allies (BRG), my purpose is to foster connection and empowerment among women in both the workplace and the broader community. What I find most enjoyable about this role is witnessing the positive impact on individual women and the collective strength that emerges from a supportive network.

c. How did you get there/your past roles and how they shaped your path?

I have navigated a dynamic and fulfilling career path marked by continuous growth, evolving roles, and a commitment to excellence. My journey began as a National Service Personnel, after my service period, I was given an opportunity to contribute as an ore control geologist through a contract position. This initial exposure ignited my passion for geological work and set the foundation for my subsequent career trajectory. Recognizing the importance of diversifying my experience, I seized the chance to collaborate with the exploration team. This stint expanded my skill set and deepened my understanding of the broader geological landscape. Subsequently, I transitioned to the mine geology team, where I became a grade control geologist. This phase not only honed my technical proficiency but also provided insights into the operational aspects of mining. Throughout this journey, I maintained a steadfast focus on my work and a personal commitment to excellence. I embraced challenges, learned from experi-

ences, and continually sought opportunities for growth. This dedication did not go unnoticed, and over time, it led to the culmination of my efforts—earning the role of a production geologist. Simultaneously, recognizing the importance of championing diversity and empowerment, I assumed the position of Chairperson for Women and Allies a Business Resource Group on site. My journey to the current role has been shaped by a combination of hands-on experience, a proactive approach to skill development, and a genuine desire to contribute to a workplace where diversity is celebrated. The dual responsibility as the Chairperson for Women and Allies on site underscores my holistic approach to professional growth, where technical competence and advocacy for inclusivity go hand in hand. This journey is a testament to the power of hard work, adaptability, and a continual pursuit of excellence.



8. GERALD WEMAZENU ADDA [PETROLEUM COMMISSION]

FULL NAME: GERALD ADDA
POSITION AND ORGANIZATION: Senior Officer at Petroleum Commission

MSc Project Title: Hydrocarbon generation and migration from Jurassic source rocks in the northern North Sea.

Role Description: The project combined 3D basin and petroleum systems modelling and geological knowledge to establish the burial history, thermal maturity, petroleum generation history and migration from the Jurassic source rocks in the northern North Sea.

a. What is your current job/employment and your work responsibilities?

I am currently a Senior Geologist with responsibilities including promoting Ghana's hydrocarbon potential to investors, monitoring the exploration operations of the various E&P companies to ensure compliance, and providing technical advice/support in geology related matters in support of the Petroleum Commission's regulatory functions.

b. What are the things you enjoy most about this role?

The Petroleum Commission has oversight of all upstream oil and gas activities and thus has many stakeholders. My role and responsibilities require that I often work with multi-disciplinary teams on various projects. I enjoy the variety that comes with the role and the challenge of learning new disciplines including law, local content, engineering, HSE, policy.

c. How did you get there/your past roles and how they shaped your path?

My entry level role was Assistant Geologist. I moved to the role of Geologist five years later and then to my current role in 2020. I am very dependent on my strong support system comprising family, mentors, and co-workers. I am probably one of the fortunate handful of oil and gas professionals to have mentors with decades of expertise and knowledge in Ghana's upstream oil and gas industry. On my part, I have been willing to learn and put in the hours required for my growth and development.

9. SOPREYE OGAREE [ExxonMobil]

FULL NAME: SOPREYE OGAREE
POSITION AND ORGANIZATION: Contract Manager, ExxonMobil

a. What is your current job/employment and your work responsibilities?

I am a contract manager with ExxonMobil. I manage several high-value contracts related to geoscience and drilling. This includes overseeing the entire contract lifecycle and ensuring compliance with legal and company standards, negotiating terms, drafting agreements, and monitoring the execution of contracts.

b. What are the things you enjoy most about this role?

Being a geoscientist, branching out into contract management has enabled me to get a more holistic view of the business. What I love most about this role is the acquisition of business skills outside of my primary function. I think it's amazing to combining my geoscience expertise with contract management.

c. How did you get there/your past roles and how they shaped your path?

The first ten years of my career was spent as a geoscientist, doing seismic and well log interpretations and integrating data to generate drilling opportunities for my company.
About a year ago, a contract manager position opened up within my company, and they wanted someone who knew the technical geoscience aspect of the job to manage the contracts. I took up this offer, and it's been a year of learning on the job, acquiring new skills, and applying my past experiences to deliver high-value work.
Being a geoscientist and then a contract manager has definitely broadened my view of the business. As the saying goes "the future belongs to those who learn more skills and combine them in creative ways".

Aerial view, University of Ghana

CONFERENCES

1. 5TH COLLOQUIUM OF THE INTERNATIONAL GEOSCIENCE PROGRAMME (December 5 – 7, 2022)

The Department of Earth Science of the University of Ghana has organized the 5th Colloquium of the International Geoscience Programme, IGCP 638.

This feat sets Ghana as the first-ever anglophone west African country to hold the top-level conference.
The past four episodes were held, first in Dakar (Senegal) in December 2016, followed by Casablanca (Morocco) in November 2017, Abidjan (Cote d' Ivoire) in October 2018, and lastly in Algiers (Algeria) from late October to early November 2019.

The outbreak of the COVID-19 pandemic in 2020, however, fuelled the cancellation and postponement of the coveted conference then.

Speaking at the opening ceremony on the theme, Geodynamics and mineralization of the Paleoproterozoic formations for sustainable development, Dean of the School of Physical and Mathematical Sciences, Prof. Sandow Mark Yidana seized the opportunity to welcome international guests, academics, industry players and graduates to the conference.

He highlighted the leadership role of the premier University in spearheading Geoscience research and capacity building for the past decade in Ghana.

Delivering a message on behalf of the Vice Chancellor of the University and the provost of the College of Basics and Applied Sciences, Prof. Sandow reiterated the blessings of geological resources as part of the nation's economic growth.

"We cannot underestimate the role of a Geoscientist in the discussion of sustainable development using geological resources. For over a century now, the economic development in this country has been fed by the exploitation of Gold, bauxite, manganese, Diamond and other geological resources and recent discovery of hydrocarbons resources in commercial quantity. After many years of exploitation Ghana is yet to reap the full benefit of the economic development. This has been aggravated by unfavourable policies over the years," **he stated on December 5, 2022 at ISSER auditorium, University of Ghana.**

In a welcoming address, President of the local organising committee, Dr. Prince Ofori Amponsah noted that the programme serves as a knowledge hub of UNESCO to facilitate international scientific cooperation in the geosciences.

According to him, the conference is expected to, among others, generate active exchanges between the actors of the field and produce scientific knowledge on the geology of the West African Craton for the benefit of academia and facilitate mining exploration.

Head of Department of Earth Science (UG) and chairperson for the event, Prof. Larry Pax Chegbeleh urged participants to network since the conference brings together a wide range of academics and industry players.

Vice President of the Local Organising Committee, Dr. Daniel Kwayisi shared a sincere apologetic letter from international convenor and Project coordinator for the West African Exploration Initiative (WAXI), Professor Mark Walker Jessell who could not physically attend the conference due to reasons beyond control.

"I am very sorry that I am not able to attend this important event and listen to the impressive family of thoughts that will be presented here. I am even more disappointed that i will not be able to meet up with friends and colleagues from across west Africa and indeed across the globe. Now that the world is able to travel again, I am sure there will be many opportunities for us to meet up in the near future. Yours sincerely," **part of the** letter reads.
On his part, National General Secretary of the Ghana Institution of Geoscientists (GhIG), Crisler Akwei Ankrah revealed that the institution is at the finishing stage of an Act to regulate the practice of Geoscience, the development and welfare of its members in the country.

He added that GhIG is undergoing all necessary processes to secure a parliamentary approval of the Act for subsequent implementation.
The IGCP 638 Accra 2022 was sponsored by UNESCO, Agate Project and Atlantic Lithium.

The conference was held in partnership with the West African Exploration Initiative (WAXI), Université de Rennes 1, International Union of Geological Sciences and University of Ghana's Department of Earth Science.

2. TRAINING ON THE INTEGRATED DECISION SUPPORT SYSTEM (May 15 – 19, 2023)

The Department of Earth Science at the University of Ghana organized a training workshop on the Integrated Decision Support System (IDSS) from May 15-19, 2023, in Ghana. The training was conducted under the Feed the Future Innovation Lab for Small Scale Irrigation (ILSSI) under the leadership of the Texas A&M University.

The IDSS is part of the research conducted under this program in Ghana in collaboration with Texas A&M University, the CGIAR and national universities.
The training was conducted by a team of practicing scientists from Texas A&M University and emphasized application of the IDSS models to analyse crop production and natural resources management.

Participants in the training were graduate students and scientists with backgrounds in economics, agronomy, water resources, hydrology and engineering. Trainees were introduced to three models that make up the IDSS, which are integrated to provide a holistic assessment of the impact of alternative interventions in food and agriculture.

The model in this training included:

- **Agricultural Policy/Environmental eXtender Model (APEX)** - a farm/field scale model for hydrologists, agronomists, and soil scientists to evaluate crop production and environmental sustainability.

- **Farm Income Simulator (FARMSIM)** - a socio-economic model for agricultural economists or people seeking an economic understanding.

- **Soil and Water Assessment Tool (SWAT)** - a watershed scale model for hydrologists, agricultural engineers, and other related water resource professionals.

The training on each model was conducted in parallel, except on the morning of the 1st and the entire 5th day, where all participants assembled to understand the model integration and learn from case studies.

Participants are encouraged to consider real world case studies related to their studies or professional focus.

3. FIELD EXPEDITION TO MANKOADZE, APAM AND OTHERS WITH BRITISH GEOLOGICAL SOCIETY, GHANA GEOLOGICAL SURVEY SOCIETY, ATLANTIC LITHIUM, UMaT AND UNIVERSITY OF GHANA (November 20 - December 3, 2022)

As Geologists, we find more excitement in practising the theory on the field. That's the most fulfilling part of what we do!

The Department of Earth Science, University of Ghana in collaboration with the British Geological Survey, Ghana Geological Survey Society, Atlantic Lithium and the University of Mines and Technology held a field expedition to Mankoadze, Apam, Abandze and coastal towns from November 20 to December 3, 2022, in Ghana. The field expedition was conducted to map lithium deposits.

British Geological Survey: Led by Dr. Kathryn Goodenough

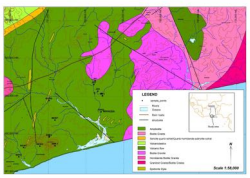
IRD France: Marieke Van Lichtervelde

Atlantic Lithium: Led by Iwan Williams and Abdul-Razak Shaibu Ballah

UMaT: Led by Dr. Kofi Adomako-Ansah and Elizabeth Agyekum

University of Ghana: Led by Dr. Prince Ofori Amponsah, Dr. Samuel Nunoo, Dr Daniel Kwayisi, Abdul Salaam Jansbaka, and Dr Ibrahim Kwabena

Ghana Geological Survey Authority: Led by Michael Prempeh and Emmanuel William Kobby Adu.



EVENTS

1. 5TH WAIMM ANNUAL INDUSTRY CONFERENCE 2023

DATE: Jan 17-20, 2023
LOCATION: GHANA SHIPPERS AUTHORITY, ACCRA-GHANA

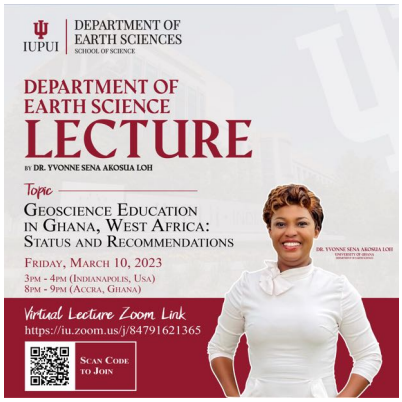
SPECIAL GUEST: PROF. JOHNSON MANU
TITLE: SUSTAINABLE DEVELOPMENT OF LITHIUM RESOURCES IN GHANA

2. DEPARTMENT OF EARTH SCIENCES LECTURE (IUPUI)

GEOSCIENCE EDUCATION IN GHANA, WEST AFRICA: STATUS AND RECOMMENDATIONS

DATE: March 10, 2023
LOCATION: VIRTUAL LECTURE (ZOOM)

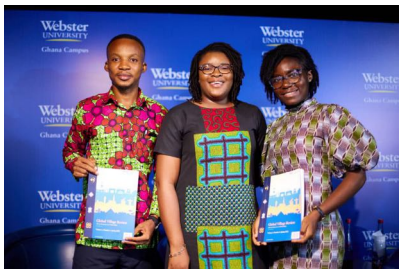
SPECIAL GUEST: DR. YVONNE SENA AKOSUA LOH



3. THE 'OUTDOORING' OF GLOBAL VILLAGE REVIEW - AFRICANA PERSPECTIVES ON GLOBAL AFFAIRS

DATE: April 20, 2023
LOCATION: WEBSTER UNIVERSITY GHANA CAMPUS, EAST LEGON, ACCRA

SPECIAL GUEST: DR. MARIAN SELORM SAPAH
TITLE: THE IMPORTANCE OF STUDYING THE IMPACT OF CLIMATE CHANGE IN AFRICA



4. EVERYTHING ASTRONOMY - FREE ONLINE ASTRONOMY SESSION

DATE: May 27, 2023
LOCATION: VIRTUAL LECTURE

SPECIAL GUEST: DR. MARIAN SELORM SAPAH
THEME: AN INTRODUCTION TO COSMOCHEMISTRY

5. RADIO UNIVERS TALK SHOW - GENERAL EDUCATION ABOUT EARTHQUAKES

DATE: July 20, 2023
LOCATION: Radio Univers 105.7fm

SPECIAL GUESTS: DR. PRINCE OFORI AMPONSAH AND DR. SAMUEL NUNOO

Watch on YouTube @EarthscienceUG or Scan QR code

6. SOUTH AMERICA EXPLORATION INITIATIVE 2 RESEARCHERS MEETING

DATE: August 17-25, 2023
LOCATION: Aubenas, France

PARTICIPANT: DR. PRINCE OFORI AMPONSAH

7. RESOURCING THE GREEN TRANSITION

DATE: August 26 - 29, 2023
LOCATION: London, United Kingdom

PARTICIPANT:NEWMAN TETTEH ODONKOR
TITLE OF PRESENTATION: STRUCTURAL CONTROLS OF GOLD MINERALIZATION IN SOUTHWEST GHANA: THE IDUAPRIEM GOLD MINE (PIT 5)

8. NKABOM PROJECT (UNDER THE AUSPICES OF THE FRENCH EMBASSY, ACCRA): AIRGEO PROJECT

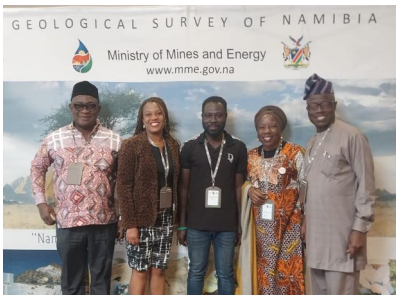
DATE: August 26 - September 03, 2023
LOCATION: Toulouse, France

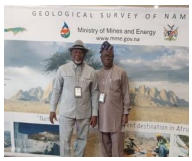
PARTICIPANTS: DR. PRINCE OFORI AMPONSAH, DR. MARIAN SELORM SAPAH

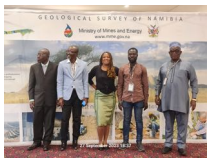
9. 29TH COLLOQUIUM OF AFRICAN GEOLOGY (CAG29)

DATE: September 26 - 29, 2023
LOCATION: Namibia

PARTICIPANTS: PROF. PROSPER M. NUDE, PROF. JOHNSON MANU, NAA PROF. BANO-ENG-YAKUBO BRUCE KOFI, DR. YVONNE SENA AKOSUA LOH, DR. DANIEL KWAYISI







10. GEOPHYSICAL AND STRUCTURAL APPROACH TO LITHOTECTONIC MAPPING OF SEDIMENTARY BASINS - AGATE/WAXI TRAINING

DATE: October 2 - 6, 2023
LOCATION: ISSER, University of Ghana
FACILITATORS: DR. PRINCE OFORI AMPONSAH, DR. SAMUEL NUNOO, Ms. ABIGAIL ENYONAM AYIKWEI

11. WAXI 4 RESEARCHERS' AND SPONSORS' MEETING

DATE: October 9 - 13, 2023
LOCATION: ABIDJAN, IVORY COAST

PARTICIPANTS: DR. PRINCE OFORI AMPONSAH, Ms. ABIGAIL ENYONAM AYIKWEI

12. EARTH – OCEAN LINKS INTERNATIONAL SCHOOL & FIELD TRIP TO TAKORADI AND SURROUNDING AREAS TO STUDY COASTAL SEDIMENTARY ROCKS (SEKONDIAN GROUP)

DATE: October 9 – 17, 2023
LOCATION: ADZEI BEKOE CONFERENCE ROOM, UG

LEADERS: DR JOSEPH OFFEI THOMPSON (FOR SCHOOL), DR. MARIAN SELORM SAPAH (FOR THE FIELD TRIP) & Ms. JENNIFER EDZORDZINAM AGBETSOAMEDO (FOR THE FIELD TRIP)

13. MODERN TECHNIQUES OF GEOCHEMICAL ANALYSIS AND GEOPHYSICAL PROSPECTING FOR MINERAL DEPOSITS

DATE: October 9 - 29, 2023
LOCATION: CHINA
PARTICIPANT: DR. SAMUEL NUNOO

14. AMIRA AFRICA WORKSHOP AND TECHNICAL SESSIONS - SKILLS TRANSFER SERIES
COMPETENCY BASED SKILLS TRANSFER IN ENGINEERING , MINING & ESG

DATE: October 17 - 19, 2023
LOCATION: ACCRA

PARTICIPANTS: DR. PRINCE OFORI AMPONSAH, DR. NAA AFI AGRA, DR. ERIC DOMINIC FORSON, ALBERT K. A. TETTEH, MICHAEL DELA BLAVO, SELORM NUMADZI
TITLE OF PRESENTATION: FIRST-HAND EXPERIENCE AND COLLABORATIVE PLATFORM BENEFITS

15. 5G INTERNATIONAL CONGRESS

DATE: October 24 - 28, 2023
LOCATION: MOROCCO
PARTICIPANTS: DR. MARIAN SELORM SAPAH & DR. YVONNE SENA AKOSUA LOH
TITLE OF PRESENTATIONS:
1. THE NEED FOR GEOCONSERVATION FOR GEOEDUCATION IN GHANA
2. PROMOTING GEOHERITAGE SITES IN GHANA FOR GEOTOURISM

OUR LECTURERS' CONTRIBUTION TO NATIONAL ISSUES

1. 'BAUXITE MINING IN THE ATEWA FOREST IS A NO-GO AREA' - PROF. SANDOW MARK YIDANA TELLS COURT

Professor Sandow Mark Yidana, a lecturer at the University of Ghana has told an Accra High Court that, the place designated for bauxite mining in the Atewa forest is a no-go area because it would affect groundwater recharge. Prof Yidana was in court last Monday to witness a statement he submitted on behalf of A Rocha Ghana based on his research in the Atewa Forest and its surrounding areas.

A Rocha Ghana and 10 other plaintiffs are challenging the government's move to mine bauxite in the Atewa Range Forest contending that the government is undertaking mining activities in the Forest without mineral rights.
Under cross-examination by Leona Johnson-Abassah, Principal State Attorney, the lecturer who has specialized in hydrology explained that, all hydro-geologist knows the Atiwa Forest in the sub-region as a Regional groundwater recharge area and hydrologically sensitive area. *"Any activity there no matter how limited it is would have a far-reaching impact on communities nearby and others far away from the area and that is why we call it the Regional Recharge Area"*, he added. He said, there are also three main rivers which are the Birim, Ayensu, and the Densu Rivers which draw their recharge from Atewa Mountain and that is a very unique area.

"I have done my research in the Volta Basin and the Volta Basin covers a very large area including Ghana, Burkina Faso and certain parts of, Cote d'Ivoire. The research indicates an increasing trend in the groundwater recharge however, in this particular area of Atiwa Forest and its surroundings, we observed a decline which is attributed to the local human-induced activities in the area. My Lord the Atiwa Forest serves as a crucial buffer that should be protected at all cost", he told the court.

The Principal State Attorney however suggested to him that, the human-induced activities he mentioned do not include bauxite mining. He answered, "That is correct but even with that the fact that these human activities are taking place in areas not regarded as sensitive hydrologically as the top of the Atewa Mountain, their effects are being felt so the impact will be more severe or graver when they take place at the top of the mountain because they would more widespread and my Lord think of what would probably happen if in the dry season the Densu River ceases to flow, it is benefiting significantly from this flow which happens because we have appreciable groundwater recharge at the top of the mountain".

According to him, bauxite mining would expose the area to severe impact of evaporation because the trees would be gone, the bare lands would be open and the shallow aquifers would no longer be protected because the vegetation cover is taken off no matter how small the area is. He said, currently in the Atewa area, Ghana is losing 78 percent of the annual precipitation to evapotranspiration and even in the current situation it would get worse.
The Principal State Attorney asked again "I am suggesting it to you modern technology has made it possible to mine Bauxite sustainably and reclaim the forest between 98 and 100 percent and we have places like the Amazon Forest, the Jara Forest where reclamation has been successful". *"My lord I totally disagree. My Lord the examples are irrelevant in this current discourse of the Atewa Forest because the climatic conditions are very different. The hydrogeology is different, the geology is different, the level of sensitivity is different so if for instance another area in Ghana other than the Atewa Forest were earmarked for this activity, my professional advice would have been completely different"*, Prof Yidana answered.
The High Court Judge, Justice John Nyante Nyadu adjourned the case to the 19th of October 2023.

Reliefs

The plaintiffs are seeking the following reliefs; A declaration that the right to life and dignity as enshrined in the Constitution of Ghana, 1992 include (a) the right to a clean and healthy environment and (b) the right to have the environment protected for the benefit of present and future generations. A declaration that mining of bauxite in the Atewa Range Forest violates the right to life and dignity as enshrined under articles 13 and 15 of the Constitution of Ghana (1992).
An order, compelling the Government of Ghana and its agents to take the necessary steps to protect Atewa Range Forest in accordance with its constitutional obligations as contained under article 36(9) of the Constitution (1992). An order, restraining the Government of Ghana, its assigns and agents, servants, workmen, allottees, and guarantees whatsoever and howsoever described from undertaking mining and its related activities in the Atewa Range Forest.

Source: GhanaWeb 2023, GhanaWeb website, published 22 August 2023, accessed 25 October 2023, <https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Bauxite-mining-in-the-Atewa-forest-is-a-no-go-area-Prof-Sandow-Yidana-tells-court-1829324>

2. GEOLOGIST ATTRIBUTES FALLING ROCKS ON ABURI MOUNTAIN TO HEAVY CONSTRUCTION WORKS - DR. PRINCE OFORI AMPONSAH

A geologist at the University of Ghana, Dr. Prince Ofori Amponsah, has attributed the falling of rocks from the Aburi mountains to heavy construction works. There were reports that some rocks were falling off the Aburi hills onto the road, causing some discomfort to motorists who ply the road.
According to Dr. Amponsah, even though a wire mesh has been used to protect the rocks, human activities leading to the loss of vegetation cover of the rocks have further exposed the weak materials.

"These rocks are not quite stable. Initially, they shouldn't have been a problem because we have vegetation cover on them. However, due to the construction that we have done, we have exposed these weak materials. And these weak materials that we have exposed over time are still going to come out of where they are originally, because of the initial weakness they have. I can say that some level of mesh solution has been put on those rocks. There is a wire mesh that we use to protect sections of the rocks. However, once we have the road there and then we have degradation of land and people continuously building on top of the mountain and exposing these weak rocks to the surface," Dr. Ofori Amponsah explained. He is therefore calling for the government's immediate intervention to forestall any future disaster. *"This problem is not going to stop until there is an intervention by the government, so that when people are building, they will follow building codes and standards. Also taking into account the kind of geology we have there, this problem is going to persist,"* the geologist stated.

Source: Citi Newsroom (2023), *Citi Newsroom website*, published 07 July 2023, accessed 25 October 2023, <https://citinewsroom.com/2023/07/geologist-attributes-falling-rocks-on-aburi-mountain-to-heavy-construction-works/>

FIELD TRIPS

LEVEL 100

Areas visited:

- Gud Heart Quarry and Construction Limited, Industrial Area (Accra)
- Osikan Beach, Jamestown
- AESL, Weija




LEVEL 200

Areas visited:

Tarkoradi and its environs, Western Region




LEVEL 300

Areas visited:

Tsito Awudome and its environs, Volta Region








LEVEL 400 and Masters

Areas visited:

Tarkwa and its environs, Western Region








PUBLICATIONS FROM OUR FACULTY (2023)

1. Addai Obeng, M., Fynn, O. F., Loh, Y. S. A., Chegbeleh, L. P., Alo, C., & Yidana, S. M. (2023). Climate and irrigation scenario analyses using three-dimensional numerical modelling: a case study of the Nasia sub-basin in the White Volta Basin, Ghana. Hydrogeology Journal, 1-19.

2. Amponsah, P. O., Forson, E. D., Sungzie, P. S., & Loh, Y. S. A. (2023). Groundwater prospectivity modeling over the Akatsi Districts in the Volta Region of Ghana using the frequency ratio technique. Modeling Earth Systems and Environment, 9(1), 937-955.

3. Abu, M., Nunoo, S., & Kazapoe, R. W. (2023). Geochemical and multivariate statistical characterization of shales of the Oti– Pendjari Group of the Neoproterozoic Basin of Ghana: implication of paleoweathering, climatic conditions, and provenance. Journal of Sedimentary Environments, 1-21.

4. Yidana, S. M., Dzikunoo, E., Adams, R. M., & Tetteh, J. D. (2023). Multiple Conceptual Model Approach for Assessing Groundwater Resources Sustainability Under Multiple Stresses.

5. Kazapoe, R. W., Dzikunoo, E. A., Amuah, E. E. Y., & Dankwa, P. (2023). Understanding the Etiology of Trace Element-Related Noncommunicable Diseases–Reviewing the Ghanaian Situation. Medical Geology: En route to One Health, 315-324.

6. Fynn, O. F., Dzikunoo, E. A., Chegbeleh, L. P., & Yidana, S. M. (2023). Enhancing adaptation to climate change through groundwater-based irrigation. Sustainable Water Resources Management, 9(1), 36.

7. Kazapoe, R. W., Okunlola, O., Arhin, E., Olisa, O., Kwayisi, D., Dzikunoo, E. A., & Amuah, E. E. Y. (2023). Compositional characteristics of mineralised and unmineralised gneisses and schist around the Abansuoso area, southwestern Ghana. Applied Earth Science, 132(1), 36-51.

8. Afrifa, G. Y., Ansah-Narh, T., Ibrahim, K., Loh, Y. S., Sakyi, P. A., Chegbeleh, L. P., & Yidana, S. M. (2023). A Monte Carlo simulation approach for the assessment of health risk from NO 3-N perturbation in groundwater. Modeling Earth Systems and Environment, 1-17.

9. Atanga, F., Amponsah, P. O., Nunoo, S., Kwayisi, D., Forson, E. D., Akabzaa, T. M., & Nude, P. M. (2023). The geology and geochemistry of the Rhyacian Josephine gold deposit, Northwest Ghana. Applied Earth Science, 1-19.

10. Nzulu, G. K., Högberg, H., Eklund, P., Hultman, L., Nude, P. M., Yaya, A., & Magnuson, M. (2023). Pathfinder elements and indicator minerals of Au from the Kubi Gold ore deposits in Ghana. Environmental Earth Sciences, 82(16), 386.

11. Amponsah, P. O., Kwayisi, D., Awunyo, E. K., Sapah, M. S., Sakyi, P. A., Su, B. X., ... & Nude, P. M. New evidence for crustal reworking and juvenile arc-magmatism during the Palaeoproterozoic Eburnean events in the Suhum Basin, South-east Ghana. Geological Journal.

12. Agra, N. A., Elburg, M. A., & Vorster, C. (2023). Constraints on Paleoproterozoic crustal growth from Birimian Supergroup lavas of the Bui belt (Ghana) in the West African Craton. Precambrian Research, 384, 106926.

13. Yeboah, F., Ackom, E. K., Yidana, S. M., & Awotwi, A. (2023). Hydrologic Modelling for Flood Threshold and Hazard Prediction in the Black Volta River Basin, West Africa.

14. Forson, E. D., & Amponsah, P. O. (2023). Mineral prospectivity mapping over the Gomoa Area of Ghana's southern Kibi-Winneba belt using support vector machine and naive bayes. Journal of African Earth Sciences, 206, 105024.

15. Amponsah, P. O., & Forson, E. D. (2023). Geospatial modelling of mineral potential zones using data-driven based weighting factor and statistical index techniques. Journal of African Earth Sciences, 206, 105020.

16. Forson, E. D., Amponsah, P. O., Hagan, G. B., & Sapah, M. S. (2023). Frequency ratio-based flood vulnerability modeling over the greater Accra Region of Ghana. Modeling Earth Systems and Environment, 9(2), 2081-2100.

17. Adissin Glodji, L., Bascou, J., Paquette, J. L., Yessoufou, S., Ménot, R. P., & Amponsah, P. O. (2023). Geochronology and geochemistry of igneous rocks of the Dassa region, Central-Benin: evidence of an Ediacaran emplacement of alkali-calcic and alkaline plutonic and volcanic magmas. International Journal of Earth Sciences, 1-30.

18. Adams, J.S., Van Lichtervelde, M., Amponsah, P.O., Nude, P.M., Asiedu, D.K., Dampare, S.B. (2023). Characterisation and rare-metal potential of the Winneba-Mankoadze pegmatites, southern Ghana: Evidence of two pegmatite fields. Journal of African Earth Sciences, 207, 105049

19. Sapah, M. S., Asiedu, D. K., & Loh, Y. S. A. Geoscience education in Ghana: status and recommendations. Episodes Journal of International Geoscience.

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OUR ALUMNI MAKING US PROUD

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