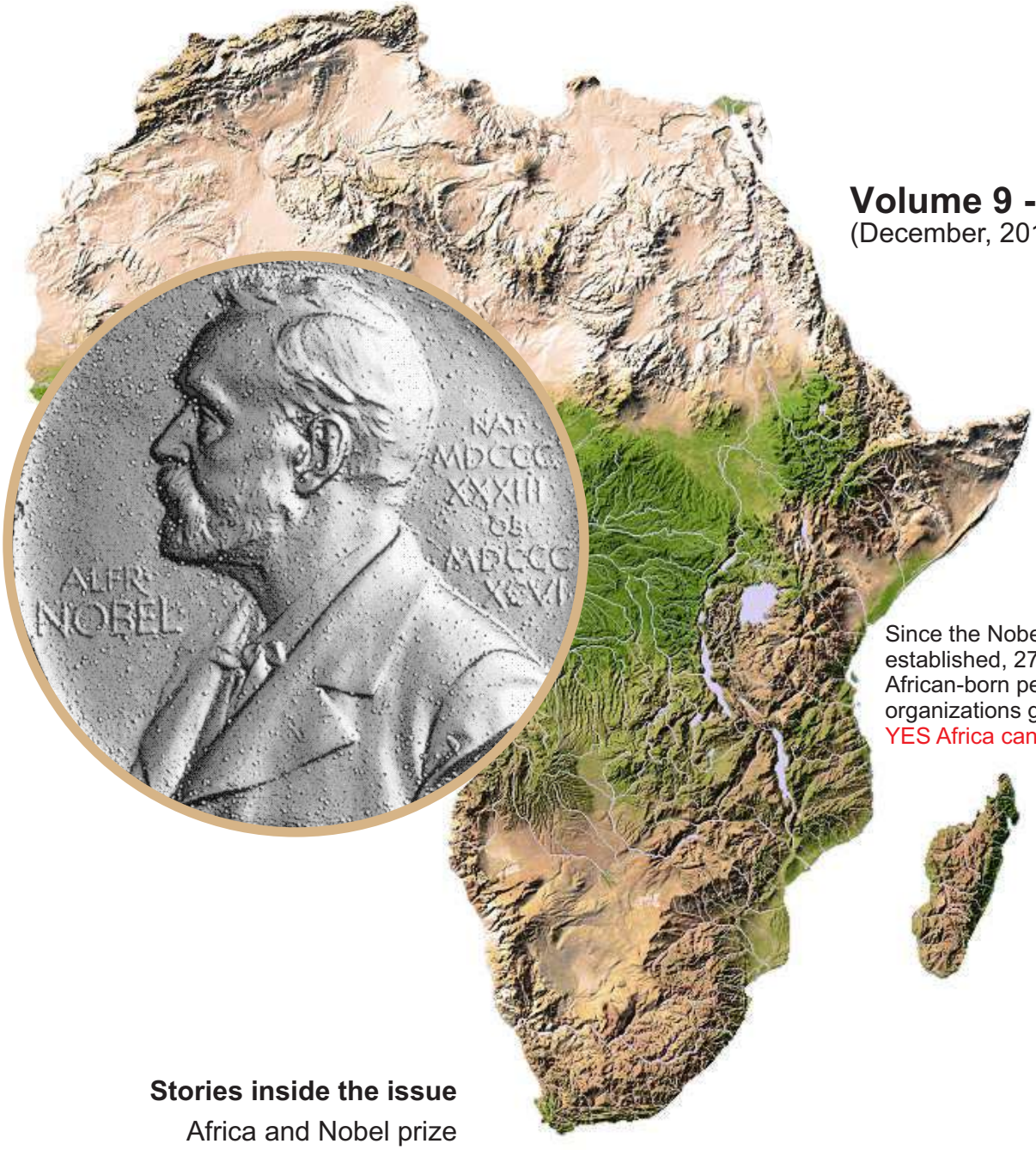
Geological Society of Africa

Newsletter



Volume 9 - Issue 4
(December, 2019)

Since the Nobel prize was established, 27 African and African-born persons and African organizations got it.
YES Africa can do it !!!

Stories inside the issue

Edited by
Tamer Abu-Alam
Editor of the GSAf Newsletter

In the issue

Geological Society of Africa – Newsletter
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GSAf MATTERS

Toward a better and a faster communication among the African community of Geosciences

By Tamer Abu-Alam (GSAf newsletter editor and information officer)

Information and news should be communicated in a faster way than a newsletter. For example, a deadline to apply for a scholarship can be easily missed if it is not posted to the community at a proper time. As a result, and for better and faster communication among the geological society of Africa, the GSAf will use a Gmail group (GSAfr@googlegroups.com) to facilitate the communication between society members.

Some advice and rules:

- Since any member can post and all the members will receive your message, please do not overload the society by un-related news. Post only important news that wants immediate action from members.
- Improper messages can lead its owner to be blocked from posting.
- You can set up the way of receiving the emails from the group. You can receive the emails once by once and take action immediately, receive only one email each period that includes a collection of news and subjects or not to receive any emails but instead use the web version (i.e. http://gsafr.org/fast-news/) of the service to read and comment.

Some technical advice:

- To subscribe to this new service, just send an email to "GSAfr+subscribe@googlegroups.com" and follow the instruction
- Each email will be sent out has information about how to unsubscribe from the group.
- To send an email to the group, send your email to "GSAfr@googlegroups.com"
- To follow the news on web, please visit (http://gsafr.org/fast-news/)

GSAf MATTERS: The 8th edition of mining and oil days of Mali

By Dr. Adama Sangare (GSAf Councillor for Western Africa)

The 8th edition of mining and oil days of Mali (JMP-2019) which focused on "Sustainably develop the mining and Oil in Mali for future generations," has generated a lot of interest by

- The participation of more than four hundred (400) delegates from 20 countries;
- Exhibition of over 90 stalls for mining companies, service providers, mining administrations of the neighboring countries as well as academics and researchers;
- holding a partnership salon which recorded an average of over 100 visitors a day interested in the Malian mining potential and presenting more than ten (10) projects bearing on several substances (gold, lithium, limestone etc.); the discussions will continue in order to build partnerships; and especially
- The conference debate that took place three (3) days with leading experts.

JMP-2019 was an opportunity for GSAfr to advertise about the society as earth scientists from West Africa and abroad were present during the event. GSAfr was represented at the event by Pr. Yao Agbossomounde and Dr. Adama Sangaré, respectively Vice-president and Councilor for West Africa. Advertising on the society and upcoming CAG28 in Fez-Morocco through discussions and flyers. Earth scientists were also invited to submit application for membership of the society. Young geoscientists demonstrated strong interest to the society.

Pr. Yao & Dr Sangaré took part a panel on “Geological Knowledge, the Key to Mining Exploration and Diversification” where they brought experiences on detailed mapping in Togo and Discovery of two deposit in Senegal and Mali using new exploration technics.

Acknowledgements to the ministry of Mines that authorized distributions of flyers during JMP-2019. Special thanks to Nouhoum Koné and OGM (Geological Society of Mali) that kindly exposed and shared GSAfr flyers at its’ booth.

Pr. Yao (Second from left) on the Panel “Geological Knowledge, the Key to Mining Exploration and Diversification”

Pr. Yao & Dr. Adama (third and fourth from left) after discussion with Mr. Keita Cheick and Mrs. Lelenta Hawa Ba, respectively National Geological Survey Head & Ministry of Mines (First & Second from Right).

Dr. Adama advertising on GSAfr with earth scientists visiting OGM booth.

GSAf MATTERS: Report on the AMREC Technical Working Group Meeting held from 10th to 12th September 2019 in Windhoek, Namibia.

By: Maideyi Meck, Gbenga Okunlola, Anna Nguno and Youssef Driouch

The African Union Commission (AUC) organized the meeting whose objective was to finalize the requirements for African Mineral and Energy Resources Classification and Management System (AMREC) as a unifying system for the classification and reporting of energy and mineral resources in Africa and to develop detailed guidance for application of AMREC in Africa in line with the requirements of the African Mining Vision (AVM).

The African Heads of States and Governments adopted the African Mining Vision in 2009 with a long-term goal of "transparent, equitable and optimal exploitation of Africa's Mineral resources to form a basis for sustainable growth and socio-economic development". More specific among its goals the AMV Action Plan aims to improve geological and mineral information systems to underpin investment in exploration and mine development. Harmonization of strategies, policies, instruments and practices is the centre piece of AMV. In this regard the AMREC technical working group has been developing the African Mineral and Energy Resources Classification and Management System and the Pan African Resource Reporting Code (PARC) since 2017. The PARC, will not only be used for the financial reporting of mineral projects, but also intends to support capacity building to create an efficient and internationally recognized African professional workforce.

The meeting was hosted by the Geological Survey of Namibia and attended by more than 40 delegates which consisted of the AMREC Technical Working Group, as well as the members of the Chamber of Mines of Namibia, exploration industry, Departments of Mines and Geological Survey in the Ministry of Mines and Energy. The Geological Society was represented by Prof. Aberra Mogessie (the GSAf goodwill European ambassador and past president of the GSAf,), Prof. Olugbenga Okunlola, (the President of the GSAf), Ms Anna-Karren Nguno (Councillor for Southern Africa of the GSAf,) Prof Youssef Driouch (the Vice President North Africa GSAf) and Dr Maideyi Lydia Meck (Secretary General GSAf).

AMREC working group delegates

The discussions during the week produced useful updates on the status of AMREC- PARC to those who were hearing about it for the first time and gave all attendees an opportunity to contribute ideas on how to further enhance its application. Updates from the different task of the AMREC Working Group which consisted of Thought Leadership; Innovation Leadership; Social Leadership; Learning Leadership groups focused on discussing how AMREC-PARC would complement/ improve existing systems and reporting codes.


The AMREC working group at the minister of Energy and Mines. Windhoek. Namibia.

During the conference, members of the Geological society of Africa had an informal session with Mr Paul Msoma - Africa Minerals Development Centre, AUC to review how GSAf can actively deliver service to AMDC. Prof Youssef Driouch also took the opportunity to present and advertise the upcoming 28th session of the Colloquium of African Geology (CAG 28) at Fez University, Morocco (for more info, please visit the CAG28 website at: http://www.fsdmfes.ac.ma/CAG28/ or http://www.fsdmfes.ac.ma/CAG28/FR). In addition Prof Driouch extended the same information to the participants of the "Geoscientific Knowledge and Skills in African Geological Surveys" (PanAfGeo) project Training Session entitled "WP1-N7" – Field Geological Mapping.

The Geological Society of Africa thanks very much Paul Msoma, AMDC-AU, the United Nations Experts Harikrishnan Tulsidas and Julian Hilton, the AMREC coordinator, Arisekola Tunde and the Geological Survey of Namibia hosting team.

For the next CAG28, we aim to present to the African geology community the final AMREC document that we hope will be adopted throughout continent. Africa will become, via the African Union, the world leader in the classification and management of energy and mineral resources.

GSAf members, meeting Paul Msoma (AMDC-AU)

Some of the AMREC working group with the trainers and trainees of the PanAfGeo project Field Geological Mapping Training Session "Work Package One (WP1 N7)".

GSAf MATTERS: An Unforgettable Traditional Cuisine Evening At Windhoek West Guest House For The AMREC Team

By Anna Nguno & Namafu Amutse

The African Mineral and Energy Resources Classification and Management System (AMREC) Technical Working Group Meeting took place during the 10th – 12th September 2019 in Windhoek, Namibia. The meeting was organised by the African Union Commission and hosted by the Geological Survey of Namibia.

Mrs Ishitile warmly received the AMREC Technical Working Group and the African Union Commission (AUC) delegates, seated them at an elegantly arranged tables/chairs of the Guest house (http://www.wwguesthouse.com). The traditional Namibian cuisine consisted of various dishes such as Okapana (roasted / barbecued meat), Boerewors, Mopane worms, thick porridge made from Cassava flour, Ombidi (local spinach) and the list goes on. The meal was indeed delicious. Thanks to Mr Oscar Shigwana (an Engineer Geologist and Entrepreneur) for sponsoring the traditional cuisine evening at the Windhoek West Guest House for the AMREC team.

For a group of experts, what started out as a regular traditional cuisine eating night out, swiftly turned into an unforgettable evening when the owner of the Windhoek West Guest House, Mr. Abishai Ishitile showed up to greet the guests. He ultimately learnt that amongst the diner, there were two Nigerians (Mr. Tunde M. Arisekola – AMREC Technical Coordinator and Dr Prof. Olugbenga Okunlola –President of the Geological Society of Africa) who happened to come from the Ogun State, South Western Nigeria, where he attended school until A-level during 1981 to 1987.

Having moved to Nigeria in 1981, as part of the SWAPO liberation struggle youth empowerment, he attended one of the best and prestigious Odogbolu Federal Government school and subsequently the College of Advanced Studies in Zaria. Mr. Ishitile stated, "Nigeria is my second home", reminiscing, he says that Nigerian people are excellent at looking after other people and that during his seven year stay there, he was well taken care of.

Mr. Ishitile shared stories about his time in Ogun State, Nigeria. Along the way he learnt that in that part of Nigeria, they are very skilful in scaring people with words ("Hold me back", "I will beat this one up oh") and they hardly fight physically. And beating women is unheard off.

Although he has not been back in Nigeria for more than 32 years, he is still able to remember some Nigerian Pidgin English, Yoruba and Hausa words. " ice water tuture" was some of the words he learnt from sales men walking through the street shouting" ice water tuture" and he had always thought "tuture" probably meant "here" or "for sale". Only to find out later that "tuture" was Yoruba for "ice water". Other words include, Kilorukore, kilode, mashe lesheo, E too cost abeg, No wahala and make we go shayo (let's grab a drink).

After being well equipped by the Nigerian education, both Mr Ishitile and his colleague Mr Shigwana received an opportunity to study mining engineering at the Carborne School of Mines in Cornwall, England. At the end of induction, Mr Ishitile opted not to go on with the course and said to his friend, " The underground mining world is not for me." And instead he went on to study Architecture at the Cardiff University in Wales. Mr Ishitile is currently practicing Architecture and project management, as well as venturing into various business opportunities.

GSAf MATTERS: VLIR-UOS scholarship for the Master of Science in Marine and Lacustrine Science and Management for 2020-2022 are now open!

Deadline of the application: 1 February 2020

VLIR-UOS:

- funds and facilitates academic cooperation and exchange between higher education institutions in Flanders (Belgium) and those in developing countries
- aims at building capacity, knowledge and experience for a sustainable development.

Selection criteria:

- The VLIR-UOS scholarship is particulary designed for people from developing countries with a minimum of professional experience who occupy key or strategic positions at an institution in their native country.
- The opportunities for knowledge application and transfer after the master student returns home are an important scholarship selection criterion.
- Other admission requirements refer to: age, education, motivation, language, gender, financial resources. Only students who are nationals from a country in the VLIR country list can apply.

For more details on the application procedure and forms, please consult the VLIR-UOS website.
http://www.oceansandlakes.be/node/28

GSAf MATTERS: EIGHTH AFRICAN RIFT GEOTHERMAL CONFERENCE (ARGeo-C8)

The Government of the Republic of Kenya will be hosting the Eighth African Rift Geothermal Conference (ARGeo-C8) in partnership with UNEP, GDC, KenGen, GAK, AUC and IGA-ARB. The conference will be held at UNEP headquarters, in Nairobi, Kenya from 26 October – 1 November 2020. The Conference consists of:

26-27 October 2020: The Short Courses.

28-30 October 2020: The Main Conference

31 October -1 November 2020: The Field Trip.

For more details http://theargeo.org/C8/files/First%20Call%20for%20Paper%20ARGeo-C8.pdf

GSAf MATTERS: Geology Research excellence award, Morocco

On July the 3rd, 2019, the National Center for Scientific and Technical Research, Rabat Morocco (CNRST) and the publisher Clarivate Analytics (science web group), under the auspices of the Ministry of National Education, Vocational Training, Higher Education and Scientific Research, organized an Award Ceremony on the theme of excellence in scientific research entitled "Day of Research Excellence".

During the Ceremony, the ministry gave a speech with a vibrant tribute to Moroccan researchers from universities, companies as well as from research centres for the high quality of their scientific output during the last four years (2014-2018).

Professor ***Nasrrddine Youbi***, from Cadi Ayad (UCA) University of Marrakech, received a award as the Best Geology researcher by the Web of Science Clarivate Analytics.

The ministry giving the award to Prof. Nasrrddine Youbi

Dr. ***Nasrrddine Youbi***, is Professor at the Geology Department of Semlalia Faculty of sciences (UCA University). Head of Geology Department from 2014 to 2017, currently director of the Laboratory of Geosciences, Georesources and Geohazards, he is also expert in many national and international committees (Program Hubert Curien Toubkal, CNRST,).

His research focuses on the large Igneous Provinces such as the Central Atlantic Magmatic Province (CAMP) of Morocco and Portugal, the Precambrian of the Anti-Atlas, Moroccan Sahara and Northern Mauritania and Permo-Carboniferous, Jurassic-Cretaceous and Neogene-Quaternary volcanism of Morocco.

The awarded scientific researchers of Morocco

He participated with the Bureau of Geological and Mining Research of France (BRGM) as part of the National Geological Mapping Program to develop six geological maps in the Moroccan Meseta and Anti-Atlas.

He is the author of more than 100 indexed publications including an article published in the prestigious scientific journal Nature Communications on 2017. He is ranked first on the "Top 15" of the most prolific Moroccan researchers in terms of publications in the field of Earth and Universe Sciences on the basis of Scopus data (see link URL http: //barometre.imist .ma; CNRC Survey of IMIST).

The Ceremony at the CNRST. Rabat

Prof ***Nasrrddine Youbi*** is also life member of the Geological Society of Africa and member of the organizing committee of the upcoming colloquium of African Geolgy to be held at Fez University. Through the GSAf, African geologists congratulate warmly Prof. Youbi for this important award.

His works are available online on:

The Researchgate at: https://www.researchgate.net/profile/Nasrrddine_Youbi and

Google Scholar: https://scholar.google.com/citations?user=ZNcoZLoAAAAJ&hl=en

KNOW AFRICA (COVER STORY)

Topographic map of Africa

A digital elevation model (DEM) is a 3D CG representation of a terrain's surface. In most cases the term digital surface model represents the earth's surface and includes all objects on it. DEM is representing height information without any further definition about the surface[1]. Mappers may prepare digital elevation models in a number of ways, but they frequently use remote sensing rather than direct survey data. One powerful technique for generating digital elevation models is interferometric synthetic aperture radar where two passes of a radar satellite (such as RADARSAT-1 or TerraSAR-X or Cosmo SkyMed), or a single pass if the satellite is equipped with two antennas (like the SRTM instrumentation), collect sufficient data to generate a digital elevation map tens of kilometers on a side with a resolution of around ten meters[2].

The cover of this issue is a DEM of Africa shows the topography of the continent.

Modified from:
https://www.baroud.fr/cartes-topo-garmin-afrique/24-carte-topo-map-southern-africa.html

1- Peckham, Robert Joseph; Jordan, Gyozo (Eds.) (2007): Development and Applications in a Policy Support Environment Series: Lecture Notes in Geoinformation and Cartography. Heidelberg

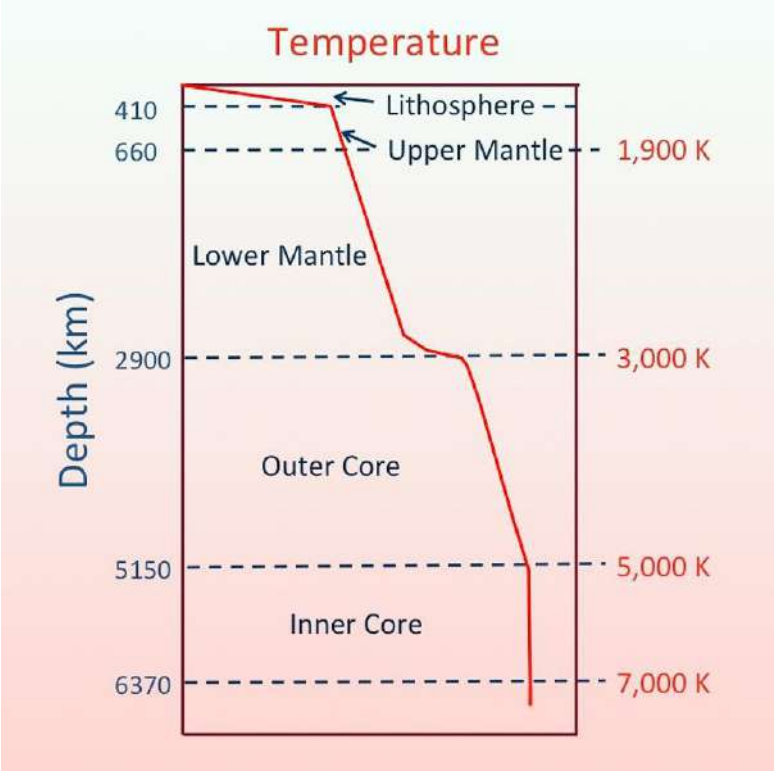
"WorldDEM(TM): Airbus Defence and Space". www.intelligence-airbusds.com

GEOLOGY COMIC

GEOLOGICAL EXPRESSIONS

Geothermal gradient: is the rate of increasing temperature with respect to increasing depth in the Earth's interior. Away from tectonic plate boundaries, it is about 25 °C per km of depth in most of the world. Strictly speaking, geothermal necessarily refers to the Earth but the concept may be applied to other planets. The Earth's internal heat comes from a combination of residual heat from planetary accretion, heat produced through radioactive decay, and possibly heat from other sources. The major heat-producing isotopes in the Earth are potassium-40, uranium-238, uranium-235, and thorium-232. At the center of the planet, the temperature may be up to

7,000 K and the pressure could reach 360 GPa. Because much of the heat is provided by radioactive decay, scientists believe that early in Earth history, before isotopes with short half-lives had been depleted, Earth's heat production would have been much higher (modified from https://educalingo.com/en/dic-en/geotherm).



Geosyncline: is a term still occasionally used for a subsiding linear trough that was caused by the accumulation of sedimentary rock strata deposited in a basin and subsequently compressed, deformed, and uplifted into a mountain range, with attendant volcanism and plutonism. The filling of a geosyncline with tons of sediment is accompanied in the late stages of deposition by folding, crumpling, and faulting of the deposits. Intrusion of crystalline igneous rock and regional uplift along the axis of the trough generally complete the history of a particular geosyncline. It is then transformed into a belt of folded mountains. Thick volcanic sequences, together with greywackes, cherts, and various sediments reflecting deepwater deposition or processes, are deposited in eugeosynclines, the outer deepwater segment of geosynclines. (modified from https://educalingo.com/en/dic-en/geosynclinal).

AFRICAN GEOPARK AND GEOHERITAGE

NGORONGORO LENGAI UNESCO GLOBAL GEOPARK (Tanzania)

"An extra-ordinary volcano, extra-ordinary paleoanthropological sites and extra-ordinary wildlife"

Ngorongoro Lengai UNESCO Global Geopark is located in Northern Tanzania (East Africa). It encompasses the districts of Ngorongoro, Karatu, and Monduli in the Arusha region. The area is confined to the North and North-West by the Serengeti National Park, Lake Natron to the East, the left arm of the Great Rift Valley to the South, and Maswa Game Reserve to the West. Its altitudes range from the lowest areas, the main Crater (600 m) to the highest point, the Oldonyo Lengai (2,962 m).

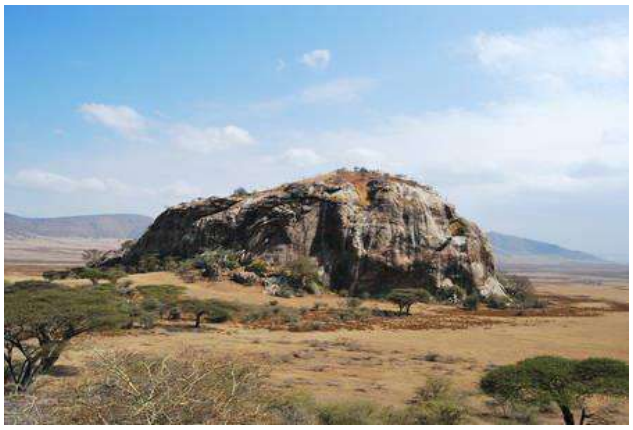
The Oldoinyo Lengai, 'Mountain of God' or 'Holy Mountain' in Maasai language, is the youngest active stratovolcano (2,962 m), situated at the northern end of the Ngorongoro Volcanic Highlands in the East African Rift Valley (EARV), 16 km south of Lake Natron in the Arusha region. It is the first of the volcanic systems of the EARV and uniquely produces natro-carbonatite lava, which is almost completely silicon-free.

The Olduvai Gorge is one of the famous paleontological sites in the world. It is a steep sided, 30 to 100 m deep and 56 km long stream-cut ravine. The exposed volcanic beds were formed in the Pleistocene (40,000 to 2.6 million years ago). These beds yield an unsurpassed record of past environments and fossil hominids attributed to Australopithecus (Paranthropus) Boisei, Homo habilis and Homo erectus, and artefacts from Oldowan, Acheulean to Middle and Late Stone Age; and a wide range of fossilized faunal remains.

The Laetoli is another of the key paleontological and paleoanthropological site in Afric. It is a Plio- to Pleistocene site (2.6 to 5 million years old) located 45 km south of the Olduvai Gorge site museum. It is famous for the Hominids' footprint trail, which best portrays the history of human bipedal mode of locomotion, an important stage of in evolutionary trends.

One of the Geopark's central features, the Ngorongoro Crater, harbors a great diversity of wildlife species, like elephants, black rhinos, lion, gazelles, and other large mammals, living in co-existence with humans.

The Ngorongoro Lengai UNESCO Global Geopark has 230,586 inhabitants (2012), distributed over four districts (Karatu, Ngorongoro, Longido and Monduli). The population consists of several ethnic groups, mainly Irawq, Maasai, Datoga and Hadzabe. The main economic activities in the Ngorongoro Lengai UNESCO Global Geopark include pastoralism, which is deeply embedded in the culture of the Maasai and Datoge, agriculture, tourism and trade.



The area is rich in cultural sites often linked to local traditional rituals, such as the Datoga graves, which are an important pilgrimage site for the Datoga tribe. These graves belonged to a spiritual leader Gitangda and his son who died over 100 years ago (between 1836-1851) while defending their land against the Maasai in Ngorongoro. Currently, most inhabitants of the Geopark belong to the Maasai tribe. This tribe is mostly found in Northern Tanzania. It is assumed they originate from the lower Nile valley and that they started to migrate southward in 15th century, reaching Northern and Central Tanzania between 17th and 18th century. Traditionally, their main economic activity is grazing that makes them live semi-nomadic life as they migrate from one place to another searching for sufficient pastures to feed their livestock. Their traditional way of life has made them famous in the region, in the country and at even worldwide.

Another attraction in the area includes the 'Bao' site. Bao is a Swahili term for a traditional Mancala Game known and played in many parts of East. Unlike the normal Mancala holes made in a wooden board, in the area most of the mancala holes are made in the earth, especially on the hard exposures found in crater floors and on top or around small hills around the area. Players used small rounded stones to play the game.

The Geopark is a popular destination for people who want to visit the geological sites such as the Ngorongoro crater, Lake Natron and Eyasi as well as for people passing through on their way to popular national parks such as Lake Manyara and Serengeti.

Modified from: http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/list-of-unesco-global-geoparks/tanzania/ngorongoro-lengai/

Africa's Nobel Prize winners: A list

A look at the African and African-born Nobel laureates honoured for efforts in peace, chemistry, literature, medicine and physics.

The first Nobel Prizes were awarded in 1901. Since then, the Nobel Prizes and the Prize in Economic Sciences have been awarded 597 times to 950 people and organisations.

Abiy Ahmed

Ethiopian Prime Minister Abiy Ahmed on Tuesday will receive the 2019 Nobel Prize for Peace for his "decisive initiative to resolve the border conflict with neighbouring Eritrea".

Abiy won the 2019 Nobel Prize for Peace for his regional peacemaking efforts, mainly his initiative to resolve a long-running conflict between Ethiopia and Eritrea.

The 43-year-old, who initiated a series of broad changes soon after coming to power in April last year, was recognised by the Norwegian Nobel Committee "for his efforts to achieve peace and international cooperation" and for introducing reforms that gave many Ethiopians hope for a "better life and brighter future".

Denis Mukwege

Abiy succeeded Congolese doctor Denis Mukwege in winning the 2018 Nobel Prize for Peace, who was recognised for his efforts to assist war rape victims "end the use of sexual violence as a weapon of war and armed conflict".

Mukwege is the founder of Panzi Hospital in Bukavu, in the east of the Democratic Republic of the Congo. The facility receives thousands of women each year, many of whom require surgery from sexual violence, and provides HIV/AIDS treatment, as well as free maternal care.

The 64-year-old shared the award with Yazidi rights activist Nadia Murad.

Tunisian National Dialogue Quartet

The Tunisian National Dialogue Quartet was awarded the 2015 Nobel Prize for Peace for "its decisive contribution to the building of a pluralistic democracy" in the period following Tunisia's 2011 revolution.

The consortium of four organisations - the Tunisian General Labor Union; the Tunisian Confederation of Industry, Trade and Handicrafts; the Tunisian Human Rights League; and the Tunisian Order of Lawyers - was recognised for establishing "an alternative, peaceful political process at a time when the country was on the brink of civil war".

Michael Levitt

Michael Levitt, a United States-based scientist who was born in South Africa in 1947, shared the 2013 Nobel Prize in Chemistry with US chemist Martin Karplus and US biochemist Arieh Warshel.

The trio were recognised for their ground-breaking work on computer programmes that simulate complex chemical processes and have revolutionised research in areas from drugs to solar energy.

Levitt, a US and British citizen, carried out research at the Stanford University School of Medicine. Karplus, a US and Austrian citizen, at the University of Strasbourg and Harvard University, while Warshel, a US and Israeli citizen, at the University of Southern California, Los Angeles.

Serge Haroche

Serge Haroche, a Moroccan-born French scientist, was a co-recipient of the 2012 Nobel Prize in Physics, along with US physicist David Wineland.

The two scientists, who worked separately, paved the way for experiments in the field of quantum physics, after showing how individual quantum particles may be observed without being destroyed.

They were recognised by the Royal Swedish Academy of Sciences for developing "ingenious laboratory methods" that allowed them to manage, measure and control fragile quantum states.

"Their ground-breaking methods have enabled this field of research to take the very first steps towards building a new type of superfast computer based on quantum physics," the Academy said in a statement.

"The research has also led to the construction of extremely precise clocks that could become the future basis for a new standard of time."

Haroche, a Casablanca-born professor at the College de France in Paris, won the award at the age of 68.

Leymah Gbowee

Liberian peace activist Leymah Gbowee was one of three recipients, along with her country's President Ellen Johnson Sirleaf and Yemeni journalist and activist Tawakkul Karman, of the 2011 Nobel Prize for Peace.

The winners were honoured for their nonviolent efforts to improve women's safety and their participation in peace-building processes.

Among Gbowee's accomplishments was mobilising Liberian women from "across ethnic and religious dividing lines" to help end Liberia's brutal civil war in 2003.

She was given the award at the age of 39.

Ellen Johnson Sirleaf

Former Liberian President Ellen Johnson Sirleaf was awarded the 2011 Nobel Peace Prize for her "non-violent struggle for the safety of women", along with her compatriot Gbowee and Yemen's Karman.

The first woman freely elected as a head of state in Africa, Johnson Sirleaf took on the leadership of Liberia in 2006 at a time when it was still seeking to heal deep divisions and rebuild infrastructure following a devastating civil war.

Johnson Sirleaf won the award at the age of 73.

Mohamed ElBaradei

Egyptian Mohamed ElBaradei, the former director-general of the International Atomic Energy Agency (IAEA), was awarded the 2005 Nobel Prize for Peace, along with the United Nations' nuclear watchdog.

The winners were recognised for the "efforts to prevent nuclear energy from being used for military purposes ... and for ensuring that nuclear energy is used in the safest possible way".

ElBaradei, who won the award at the age of 63, was also praised for strengthening the watchdog, an organisation he led until 2009.

Wangari Maathai

Kenyan environmentalist Wangari Maathai was awarded the 2004 Nobel Prize for Peace in recognition "for her tireless contribution to "sustainable development, democracy and peace."

In 1977, Maathai founded a grassroots campaign aimed at countering the deforestation that was hurting poor people, especially women, living in rural Kenya. Her so-called "Green Belt Movement", which encouraged women to plant trees, spread to other countries on the continent and contributed to the planting of tens of millions of trees.

According to the Nobel Committee, her project was not just limited to work for sustainable development, but it included "democracy, women's rights and international solidarity".

Maathai, who was born in 1940, was the first black African woman to receive the award, aged 64. She died in Kenya's capital, Nairobi, in 2011.

John Maxwell Coetzee

South African author John Maxwell Coetzee was awarded the 2003 Nobel Prize in Literature.

He was recognised for developing a style that "in innumerable guises portrays the surprising involvement of the outsider".

The Swedish Academy hailed the author as a "scrupulous doubter, ruthless in his criticism of the cruel rationalism and cosmetic morality of western civilisation".

Born in Cape Town in 1940, Coetzee won the Booker Prize for 1983's Life & Times of Michael K before. Over a decade later, he became the first author to win the prestigious British literary award twice with 1994's Disgrace.

A recluse, he shunned both Booker Prize ceremonies but did go to Sweden's capital, Stockholm, to accept the Nobel.

Sydney Brenner

South African-born biologist Sydney Brenner shared the 2002 Nobel Prize in Physiology or Medicine with Howard Robert, of the US, and John E Sulston, of the UK, for their discoveries about how genes regulate tissue and organ development via a mechanism called programmed cell death, or apoptosis.

His work made it possible to link "genetic analysis to cell division and organ formation".

Brenner, who received the Nobel Prize at the age of 75, died on April 5, 2019, in Singapore.

Kofi Annan

Annan: 'Today's real borders are not between nations, but between powerful and powerless, free and fettered, privileged and humiliated' [File: Adam Nadel/AP Photo]

Ghanaian diplomat Kofi Annan was the secretary-general of the United Nations from 1997 to 2006.

He was the co-recipient, along with the UN, of the 2001 Nobel Prize for Peace in the centennial year of the Nobel Committee.

The winners were recognised "for their work for a better organised and more peaceful world".

The Nobel Committee also hailed Annan's commitment to the struggle to contain the spreading of the HIV virus in Africa.

Ahmed Zewail

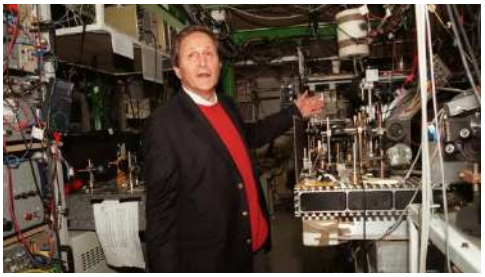
Egyptian Ahmed Zewail was the recipient of the 1999 Nobel Prize in Chemistry for developing a rapid laser technique that helped scientists to study the action of atoms during chemical reactions.

His work led to the development of a new field of physical chemistry known as femtochemistry.

Zewail was the first Arab to win a Nobel Prize in a science category.

He was born in Egypt's Damanhur in 1946 and died in the US in 2016.

Claude Cohen-Tannoudji



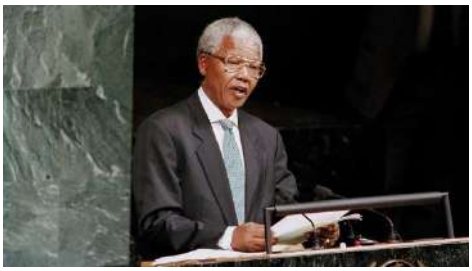
Claude Cohen-Tannoudji, an Algerian-born French scientist, was a co-recipient of the 1997 Nobel Prize in Physics for the "development of methods to cool and trap atoms with laser light".

He shared the award with US physicists Steven Chu and William Phillips.

The winners were praised for developing innovative techniques that use laser light to cool atoms to extremely low temperatures. In these temperatures, the atoms move slowly enough to be studied in detail.

Born in 1933 in Algeria's Constantine, Cohen-Tannoudji was 64 when he won the Nobel.

Nelson Mandela



South African freedom fighter Nelson Mandela was jointly awarded the 1993 Nobel Prize for Peace for his work in ending the country's apartheid system of racial segregation and discrimination and for "laying the foundations for a new democratic South Africa".

He shared the prize with Frederik Willem de Klerk, South Africa's last white president whose negotiations with Mandela in the early 1990s helped end apartheid.

One of the world's most recognisable fighters against inequality and oppression, Mandela spent 27 years in prison for his active opposition to the racist regime.

A year after winning the Nobel, Mandela rose to become South Africa's first democratically elected president - a position that he voluntarily retired from after just one term.

Frederik Willem de Klerk

Born in Johannesburg in 1936, Frederik Willem de Klerk was president of South Africa from 1989 to 1994, when the country's first free election marked the end of white minority rule.

De Klerk released Mandela and other key political prisoners in 1990.

He was a co-recipient for the 1993 Nobel Prize for Peace for overseeing South Africa's transition from apartheid rule.

Nadine Gordimer

South African author Nadine Gordimer received the 1991 Nobel Prize in Literature.

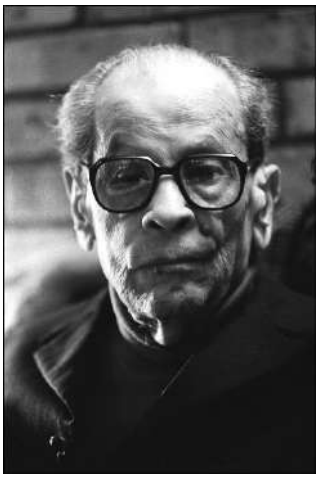
One of the most powerful voices against the injustice of apartheid, Gordimer published novels and short stories steeped in the drama of human life and emotion of a society warped by decades of white-minority rule. Some of her work was banned by the apartheid authorities.

The Swedish Academy referred to her as an author "who through her magnificent epic writing has - in the words of Alfred Nobel - been of very great benefit to humanity".

Some of Gordimer's most notable work includes The Conservationist (1974), Burger's Daughter (1979) and July's People (1981).

Born in 1923, she died in Johannesburg on July 13, 2014.

Naguib Mahfouz



Egyptian author Naguib Mahfouz won the 1988 Nobel Prize in Literature in 1988, the first writer in Arabic to receive the award.

He was recognised for a work "rich in nuance" that "formed an Arabian narrative art that applies to all mankind".

Mahfouz is best known for The Cairo Trilogy, his saga about a modern Egyptian family living under British colonial rule between the two world wars.

His first three novels - published in Arabic in 1939, 1943 and 1944 - were set in ancient Egypt.

Born in Cairo in 1911, he died in the Egyptian capital in 2006.

Wole Soyinka

Nigerian playwright, poet and essayist Wole Soyinka won the 1986 Nobel Prize in Literature.

In its citation, the Academy referred to Soyinka as someone "who in a wide cultural perspective and with poetic overtones fashions the drama of existence."

Born in Abeokuta in 1934, he was the first black African to win a Nobel Prize in Literature and has a long history of fighting for social justice and human rights both in Nigeria and elsewhere.

Some of his most notable work includes The Lion and The Jewel (1959), Poems from Prison (1969) and Death and the King's Horseman (1975).

Claude Simon

Claude Simon was awarded the 1985 Nobel Prize in Literature.

He was born in Madagascar in 1913 but moved to France at a young age.

Upon winning the Nobel, the French author was recognised for his particular writing style "which combines the poet and the painter's creativeness … in the depiction of the human condition."

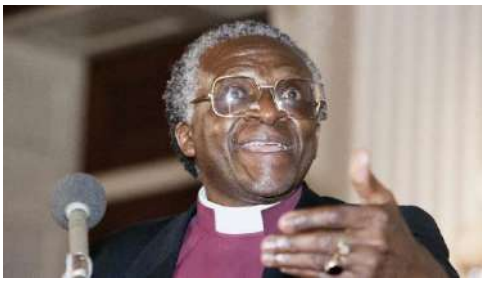
Conflict is a constant theme throughout Simon's work, which drew on his experiences including during the Spanish Civil War and World War II.

Simon is widely hailed as a key figure of the nouveau roman movement that emerged in the 1950s.

Some of his most well-known books are The Grass (1958) and The Flanders Road (1960).

Simon died in Paris in 2005.

Desmond Tutu



Anglican cleric Desmond Tutu won the 1984 Nobel Prize for Peace for his opposition to apartheid in South Africa

Tutu's objective was to see South Africa "as [a] democratic and just society without racial divisions", and despite violent attacks committed against the black population, he would adhere to a nonviolent line and encouraged the application of economic pressure by countries dealing with the apartheid authorities.

After receiving the Nobel, Tutu used his international stature to step up the campaign against apartheid, leading calls for punitive sanctions against South Africa as one of the few strong voices inside the country, while others were imprisoned or forced into exile.

In 1995, Mandela appointed Tutu head of the country's Truth and Reconciliation commission - the body set up to investigate apartheid-era crimes.

Born in 1931, Tutu began his retirement from public life 0n October 7, 2010 - his 79th birthday - after decades of activism.

Allan MacLeod Cormack

Allan MacLeod Cormack was a South African-born US physicist who won the 1979 Nobel Prize in Physiology or Medicine, along with British electrical engineer Godfrey N Hounsfield.

Born in Johannesburg in 1924, Cormack was recognised "for the development of computer-assisted tomography".

Through his work, scientists were able to see cross-sections of the body, while computed tomography also provided the basis for three-dimensional images.

Cormack was an extraordinary choice for a Nobel laureate since he never earned a doctorate degree in medicine or any other scientific field.

Anwar al-Sadat

Former Egyptian President Anwar al-Sadat won the 1978 Nobel Prize for Peace, along with ex-Israeli Prime Minister Menachem Begin.

The winners were recognised for "having taken the initiative in negotiating a peace treaty between the two countries".

Under the leadership of al-Sadat and Begin, Egypt and Israel made peace with each other in 1979.

Al-Sadat was assassinated in 1981.

Dorothy Crowfoot Hodgkin

Dorothy Hodgkin was a Cairo-born English scientist who won the 1964 Nobel Prize for Chemistry.

The chemist was recognised for her "determinations by X-ray techniques of the structures of important biochemical substances", including of penicillin and vitamin B12.

Hodgkin, who received the award aged 54, died in England in 1994.

Albert Luthuli

South African Albert Luthuli was awarded the 1960 Nobel Prize for Peace, the first African to be so honoured.

He has recognised for his "role in the non-violent struggle against apartheid"

Born in 1898, the teacher and religious leader was the president of South Africa's African National Congress from 1952 to 1960.

Luthuli led a campaign of civil disobedience against the apartheid's policy of racial segregation and discrimination that led him to his persecution and imprisonment.

He received the Nobel Prize in 1961.

Luthuli died on July 21, 1967, after being struck by a train near his home in the eastern province known as KwaZulu-Natal.

Albert Camus

Algerian-born French author Albert Camus won the 1957 Nobel Prize in Literature.

He was recognised for his "important literary production, which ... illuminates the problems of the human conscience in our times."

Camus breakthrough novel, The Stranger, was released in 1942.

Other notable work includes 1947's The Plague and 1956's The Fall.

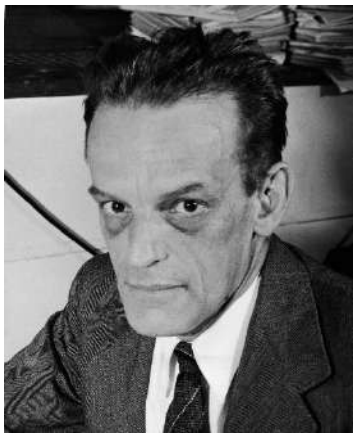
Born in Algeria's Mondovi in 1913, Camus died in 1960 near Sens, in central France.

Max Theiler

Max Theiler was a South African-born US microbiologist who won the 1951 Nobel Prize in Physiology or Medicine for developing a vaccine against yellow fever.

The virologist succeeded in passing the virus to mice, which later allowed him to obtain a variant that became a human vaccine.

Theiler, who was born in Pretoria in 1899, died in 1972 in New Haven, US.



NEWS

About Africa

Africa is Splitting in Two, Creating Dozens of Volcanoes

The process of rifting in Africa means that the continent is slowly breaking apart and with that comes lots of volcanoes, some with the potential for massive explosive eruptions.

By Erik Klemetti (November 19, 2019)

The modern geography of Earth is created by the plate tectonic engine that runs in our planet. What we see as familiar maps today would have looked very different 50 million, 500 million, 3 billion years ago. That's because the continents shift over time at rates of centimeters per year.

This might not seem like much, but over geologic time, that means they can collide and separate multiple times. At some points in Earth's history, we had supercontinents, when all the landmasses were one. Today, we're almost at the opposite end of the spectrum, with many continents far apart.

Currently, we only have one location where a continent is busy splitting itself apart, and that's the East African Rift. This part of the African continent extends to the southwest from Eritrea and represents one part of a three-armed rift system. The other two parts have separated to the point where new ocean crust has formed, creating the Red Sea and the Gulf of Aden. This is the boundary between the African and Arabian plates.

However, the third arm has not produced any new ocean, at least not yet. Instead, we have a valley that extends into the heart of Africa where the continent is spreading apart. This spreading likely started some 25 to 30 million years ago. With the spreading comes volcanism ... and a lot of it. There are only a few places on Earth with as many volcanoes as the East African Rift in Ethiopia and Eritrea.

The East African Rift from Space

The Terra MODIS image above shows just how extensive that volcanism is. Volcanoes start in the Red Sea itself, with islands like Zukur and Hanish. The tiny dot off the coast of Yemen is Jebal Al-Tair, a volcanic island that last erupted in 2007, with lava flows reaching the sea.

Once you head inland, you run into the beast of Erta'Ale, with its active lava lake at the summit. The volcano is almost 60 miles (100 kilometers) from end to end. Lots of smaller cones on its slopes, like Bora Ale and Gada Ale, have produced most of the lava flows. Ale Bagu, on the other hand, is a basaltic volcano with a much more explosive history.

The summit lava lake at Erta'Ale, seen in 2012. Wikimedia Commons.

Just off the shores of the Red Sea is Dubbi, a large stratovolcano that, in 1861, sent lava flows more than a

dozen miles (22km) down its slopes, produced 19 craters at the summit and rained ash 180 miles (300km) from the volcano. To the south at the border with Djibouti, Manda-Inakir formed a new cinder cone during eruptions in 1928-'29.

The dark ash plume from Nabro can be spotted just to the east (right) of Erta'Ale. In 2011, Nabro produced an eruption that unleashed lava flows and a large ash and gas plume. Even with its remote location, the eruption killed seven people and may have played a role in slight atmospheric cooling the following year. Nabro is a bimodal volcano that erupts hot and runny basalt as well as sticky rhyolite, so this eruption was much more passive than previous ones at this large caldera volcano.

The dark smudge below Erta'Ale is Alayta, another basaltic volcano. It last erupted in 1915 and its 1907 eruption sent a large lava flow down its slopes. Yet, right next to Alatya is Afderà, a rhyolite volcano that sits on the nexus of three faults. This is another example of the bimodal character of the East African Rift -- a lot of close volcanoes erupting low silica basalt or high-silica rhyolite and not a lot in between. In 2005, there was an ash-rich eruption from Dabbahu, south of Erta'Ale that caused 6,000 people to be evacuated.

Things Get Explosive

Near the bottom of the image, Alutu sits between two lakes and has over 300,000 people living within less than 20 miles (30km) of the volcano. It has a history of explosive eruptions of rhyolite and obsidian flows. The most recent was only about 2,000 years ago. This is joined by Tullu Moje, another rhyolitic volcano to the north of Alutu, that erupted as recently as 1900.

A 2001 image from the International Space Station of the O'a caldera in Ethiopia. The dark blue caldera lake is the caldera formed by a massive eruption 240,000 years ago. NASA.

Two calderas lurk to the very south of the East African Rift in Ethiopia. The O'a and Corbetti calderas are both rhyolite volcanoes with very large explosive eruptions in their past. They are also some of the most potentially hazardous volcanoes on the planet, with over 450,000 and 1.1 million people living with a couple dozen miles of each of them, respectively. Neither are known to have erupted in historical times, but both are potentially active volcanoes.

This isn't even all the volcanism of the East African Rift. Volcanoes like Ol Doinyo Lengai, Kilimanjaro and Nyiragongo lie to the south of this shot.

The process of splitting a continent -- or even just trying to -- can be incredibly geologically active. The shear number of volcanoes in the East African Rift show just how powerful it can be.

This story originally appeared on https://www.discovermagazine.com/planet-earth/all-the-volcanoes-made-by-a-continent-splitting-in-two?utm_source=dscfb&utm_medium=social&utm_campaign=dscfb&fbclid=IwAR17R4Tjy5xvepONvTYMmMT5aGRSa2IwlLGj_xx2FFjFlv-C0-v_pXcogfY

News: About Africa

One-third of recent global methane increase comes from tropical Africa

Concentrations of methane, a greenhouse gas about 28 times more potent than carbon dioxide, have risen steadily in Earth's atmosphere since 2007. Although several potential explanations, including an increase in methane emissions from the tropics, could account for this upsurge, due to a lack of regional data scientists have been unable to pinpoint the source. Now a study published in the European Geosciences Union (EGU) journal Atmospheric Chemistry and Physics uses satellite data to determine that one-third of the global increase originates in Africa's tropics.

"One of the suggestions for the continued rise in atmospheric methane, based on ground-based data, is that tropical sources have increased," says Mark Lunt, an atmospheric scientist at the University of Edinburgh and

lead author of the study. He and his co-authors used data retrieved from GOSAT, the Japanese Greenhouse gases Observing Satellite, to examine annual—and even seasonal—trends in Africa between the latitudes of 26° N and 26° S.

"There are very few studies that have focused in detail on Africa, primarily because there isn't much atmospheric methane data from there," says Lunt. "Using satellite data gives a unique perspective on the continent that wouldn't otherwise be available."

Previous studies that have included African methane emission estimates have utilised global models, which are run at relatively coarse resolutions and resolve emission changes at continental scales. By instead focusing exclusively on sub-Saharan Africa, Lunt and his co-authors were able to run a regional model at a much higher resolution than would be feasible with a global version. This difference allowed the researchers to focus on changes in individual countries—a level of detail that could not previously be achieved.

The results indicate that about a third of the global atmospheric methane increase observed between 2010-2016 originates in Africa's tropics. Most of this came from East Africa, including a pronounced, short-term boost in emissions from the Sudd, one of the world's largest wetlands, in South Sudan.

"Our research highlights the importance of Africa, and even individual wetlands, in terms of their contributions to the global methane budget," says Lunt. But, he says, it's also important to note that the study period only dates back to 2010, the year GOSAT came online. "Based on this work, we cannot say anything about what started the rise in 2007," says Lunt. The team also cannot yet account for the source of additional increases in methane emissions they observed in East Africa. "Agriculture or other wetlands are likely suspects," says Lunt, "but we need more evidence to prove this."

According to Lunt, the findings could be used to improve wetland models, inform where intensive field campaigns should take place to identify the underlying causes of tropical methane emissions, and ultimately help us understand Earth's future climate. "In order to understand how methane might change in the future, it is essential that we can adequately explain changes in the present and recent past," says Lunt. "Studies such as this can help narrow down the list of possible explanations, and hopefully improve our predictive capabilities for the future."

This story originally appeared on https://www.atmos-chem-phys.net/19/14721/2019/)

News: About the World

Scientists Discover New Form Of Ice Trapped In Diamonds

geologyin.com

A UNLV scientist has discovered the first direct evidence that fluid water pockets may exist as far as 500 miles deep into the Earth's mantle.

Groundbreaking research by UNLV geoscientist Oliver Tschauner and colleagues found diamonds pushed up from the Earth's interior had traces of unique crystallized water called Ice-VII.

The study, "Ice-VII inclusions in Diamonds: Evidence for aqueous fluid in Earth's deep Mantle," was published in the journal Science.

In the jewelry business, diamonds with impurities hold less value. But for Tschauner and other scientists, those impurities, known as inclusions have infinite value, as they may hold the key to understanding the inner workings of our planet.

A diamond the size of tennis ball, at Sotheby's in New York. Seth Wenig

For his study, Tschauner used diamonds found in China, the Republic of South Africa, and Botswana that surged up from

inside Earth. "This shows that this is a global phenomenon," the professor said.

Scientists theorize the diamonds used in the study, were born in the mantle under temperatures reaching more than 1,000-degrees Fahrenheit.

The mantle -- which makes up more than 80 percent of the Earth's volume -- is made of silicate minerals containing iron, aluminum, and calcium among others. And now we can add water to the list.

The discovery of Ice-VII in the diamonds is the first known natural occurrence of the aqueous fluid from the deep mantle.

Ice-VII had been found in prior lab testing of materials under intense pressure. Tschauner also found that while under the confines of hardened diamonds found on the surface of the planet, Ice-VII is solid. But in the mantel, it is liquid.

"These discoveries are important in understanding that water-rich regions in the Earth's interior can play a role in the global water budget and the movement of heat-generating radioactive elements," Tschauner said.

This discovery can help scientists create new, more accurate models of what's going on inside the Earth, specifically how and where heat is generated under the Earth's crust.

In other words: "It's another piece of the puzzle in understanding how our planet works," Tschauner said.

Of course, as it often goes with discoveries, this one was found by accident, explained Tschauner.

"We were looking for carbon dioxide," he said. "We're still looking for it, actually,"

This story originally appeared on https://www.geologyin.com/2018/03/scientists-discover-new-form-of-ice.html?fbclid=IwAR2Qrn00uGZHa5dZ6-qjG1twO6olIB6OaudiODOKHQKoluxMWKGMZoOWgrc#jjO9LgPLEOcAjEIW.99

News: About the World

Scientists have discovered the world's oldest forest—and its radical impact on life

By Colin Barras (Dec. 19, 2019)

Researchers analyzing one of the radial Archaeopteris tree root systems at the Cairo, New York, site

Scientists have discovered the world's oldest forest in an abandoned quarry near Cairo, New York. The 385-million-year-old rocks contain the fossilized woody roots of dozens of ancient trees. The find marks a turning point in Earth's history. When trees evolved these roots, they helped pull carbon dioxide (CO_2) from the air and lock it away, radically shifting the planet's climate and leading to the atmosphere we know today.

"The Cairo site is very special," says team member Christopher Berry, a paleobotanist at Cardiff University in the United Kingdom. The quarry floor, about half the size of a U.S. football field, represents a horizontal slice through the soil just below the surface of the ancient forest. "You are walking through the roots of ancient trees," Berry says. "Standing on the quarry surface we can reconstruct the living forest around us in our imagination."

Berry and colleagues first discovered the site in 2009 and are still analyzing the fossils it contains. Some of the fossilized roots there are 15 centimeters in diameter and form 11-meter-wide horizontal radial patterns spreading out from where the vertical tree trunks once stood. They seem to belong to Archaeopteris, a type of tree with large woody roots and woody branches with leaves that is related in some way to modern trees, the team reports today in Current Biology. Previously, the oldest Archaeopteris fossils were no more than 365 million years old, Berry says, and exactly when the tree evolved its modern-looking features has been unclear.

The Cairo site suggests Archaeopteris did so 20 million years earlier, says Patricia Gensel, a paleobotanist at the University of North Carolina in Chapel Hill who was not

involved with the work. “The size of those root systems—it’s really changing the picture,” she says, adding that, even 20 years ago, researchers assumed trees with such large and complex root systems did not evolve so early in geological time.

Close-up of an Archaeopteris tree root system, viewed from above

Trees like those at Cairo had a big effect on the ancient climate, says Kevin Boyce, a geoscientist at Stanford University in Palo Alto, California. Deep roots penetrate and break up the rocks within and below the soil. Geologists call this processing “weathering,” and it triggers chemical reactions that pull CO_2 from the atmosphere and turn it into carbonate ions in groundwater. This ultimately runs off into the sea and is locked away as limestone.

Partly because of weathering and its knock-on effects, atmospheric CO_2 levels dropped to modern levels soon after the appearance of woody forests. A few tens of millions of years earlier they had been 10 to 15 times higher than today. Some research suggests the removal of so much atmospheric CO_2 led directly to a sustained rise in oxygen levels, with the atmosphere containing about 35% oxygen by 300 million years ago. This, in turn, may have led to the evolution of gigantic insects at that time, some with wing spans of 70 centimeters, which may have lived in the ancient forests.

The trees that grew a few tens of millions of years after the Cairo forest have also had an indirect impact on the modern climate. Berry has previously written about how the fossilized remains of these forests formed the coal that fueled the Industrial Revolution in Europe and North America.

This is not the first time Berry and his colleagues have explored a primitive forest. In the 19th century, researchers discovered a fossil forest in Gilboa, New York, about 40 kilometers from the Cairo site, containing 382-million-year-old specimens. Since 2010, Berry and his colleagues have been examining a quarry at Gilboa that also preserves ancient tree roots. But the Gilboa roots belong to more primitive trees that may be related to ferns and horsetails. They didn’t produce deep, woody roots with much potential for weathering.

This means the trees that grew at the Cairo site were the innovators, Berry says. “Woody trees with leaves that can produce shade—and a big rooting system—is something fundamentally modern that wasn’t there before.”

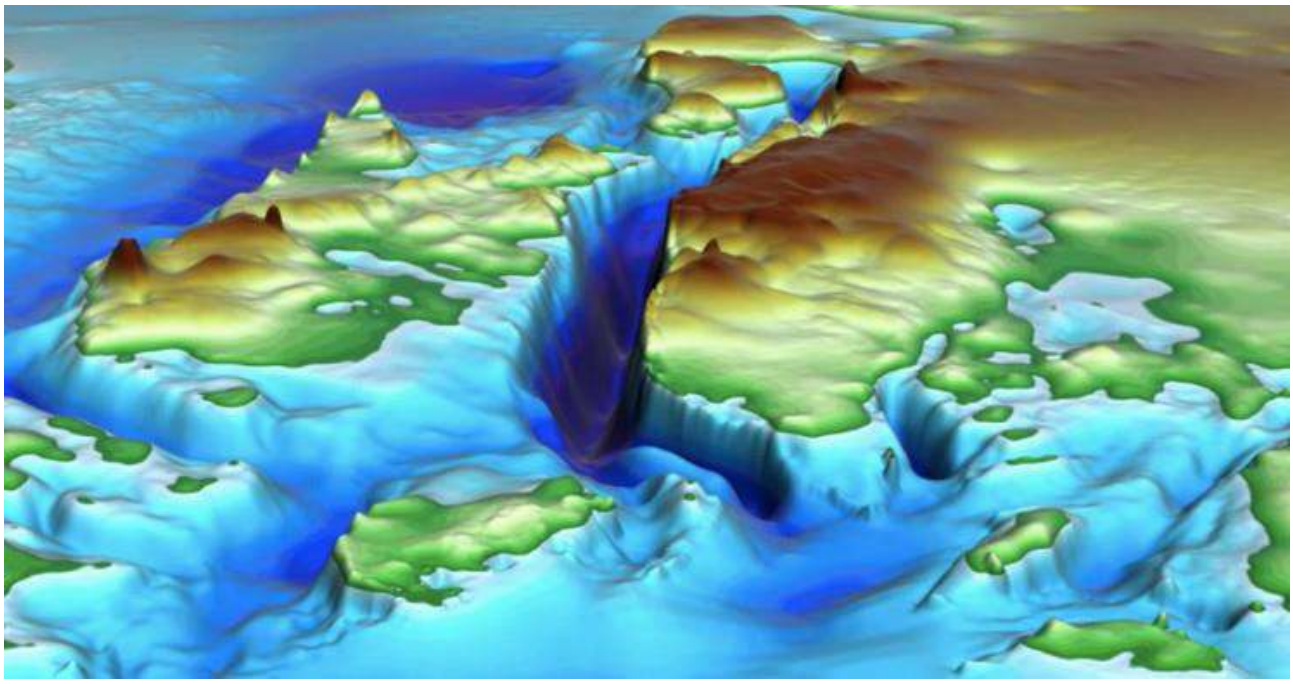
This story appeared on PaleontologyPlants & Animals
doi:10.1126/science.aba6333

News: About the World

World's Deepest Point on Land Was Discovered beneath Antarctica's Ice Sheet

Located in East Antarctica, below the Denman Glacier, scientists used new methods to discover the depth of the land.

By Fabienne Lang (December 18, 2019)



Denman Glacier Canyon in Antarctica

Researchers have discovered the deepest point on Continental Earth, and it sits beneath Antarctica's ice sheet. Located below the Denman Glacier in East Antarctica, the ice-filled canyon reaches as far down as 3.5 km (11,500 ft) below sea level.

The canyon was showcased in a new map, revealing the shape of the bedrock in extremely accurate detail.

Why is this discovery important?

The team discovered that the canyon goes as far as 3.5 km (11,500 ft.) down below the Earth's surface.

Grasping what lies beneath these ice sheets is fundamental for our understanding of how the polar south may change in the future.

These new findings show, for instance, previously unknown ridges that will get in the way of the retreat of melting glaciers in our ever-warming world. On the flip side, they also disclose a few smooth, sloping areas that may accelerate withdrawals.

Dr. Mathieu Morlighem, a researcher at the University of California, Irvine, who's also worked on this project for six years, said "This is undoubtedly the most accurate portrait yet of what lies beneath Antarctica's ice sheet."

How did the team make the discovery?

The technology used to map Antarctica so far has relied on radar instruments that look through the ice through airborne imaging. However, the data still remained relatively incomplete in many areas.

Dr. Morlighem and his team's new map, called BedMachine, has introduced physics — mass conservation — to fill in these holes.

"There have been many attempts to sound the bed of Denman, but every time they flew over the canyon - they couldn't see it in the radar data," said Morlighem.

It has to be noted that trenches in the oceans, such as the Mariana Trench, are deeper. As a comparison to the Denman Glacier, the Mariana Trench goes as far as 11km (36,000 ft.) beneath the sea surface.

BedMachine will be used in climate models, which attempt to project how Antarctica may change with global warming.

Naturally, the more specific and detailed the information, the better the predictions.

This story appeared on in Nature Geoscience on December 12, 2019

News: About Space/Astronomy

Sugar delivered to Earth from space

First evidence of bio-essential sugars in meteorites

geologypage (November 24, 2019)

This is a Murchison meteorite. Sugars are found from this meteorite in this study.. Credit: Yoshihiro Furukawa

Researchers from Tohoku University, Hokkaido University, JAMSTEC, and NASA Goddard Space Flight Center investigated meteorites and found ribose and other sugars. These sugars possessed distinct carbon-isotope compositions, differing from terrestrial biological sugars, indicating their extraterrestrial origin. The results suggest that the sugars formed in the early solar system and made their way to earth via meteorites.

The team analyzed three meteorites with their original protocol and found sugars in two meteorites. “Analysis of sugars in meteorites is so difficult. Over the past several years, we have investigated the techniques of sugar analysis in such samples and constructed our original method” says lead author, Yoshihiro Furukawa of Tohoku University.

Amino acids and nucleobases, other vitally important compounds in the building block of life, have been found in meteorites previously. Scientists have known of the existence of sugars in meteorites. However, research to date has largely revealed sugar-related compounds (sugar acids and sugar alcohols) and the simplest sugar (dihydroxy acetone), compounds not considered essential for life.

Formation of bio-essential sugars, including ribose, on the prebiotic Earth, is considered to have been possible. However, there is no geological evidence of their formation. Furthermore, it is not clear which and how much sugar(s) formed on the prebiotic Earth.

With the current research evidencing the delivery of bio-essential sugars, it is plausible that extraterrestrial sugar contributed to the formation of primordial RNA on the prebiotic Earth. This, in turn, has the possibility of being a factor in the origin of life.

“The next step is to investigate the chirality of the sugars in more meteorites and to investigate how much sugars were provided from space and how the extraterrestrial sugar influenced life’s homochirality” says the team. NASA Jonson Space Center has provided the team other meteorites and

the team will analyze them to see which meteorites contain the sugars and how theses sugars formed.

This story appeared on http://www.geologypage.com/2019/11/sugar-delivered-to-earth-from-space.html#ixzz693XmoPeY

Extraterrestrial ribose and other sugars in primitive meteorites. DOI: 10.1073/pnas.1907169116

LITERATURE

About Africa

Journal of African Earth Sciences (volume 160)

Asma Ben Moussa, Abdelaziz Mridekh, Bouabid El Mansouri, Imane AL. Mazini,
The mio-plio-quaternary Volubilis basin evolution (prerif ridges, NW Morocco):contribution of geophysical imagery,
https://doi.org/10.1016/j.jafrearsci.2019.103601.

Nour El Houda Mezerreg, Farès Kessasra, Youcef Bouftouha, Hamza Bouabdallah, Nicolas Bollot, Abdelmalek Baghdad, Rachid Bougdal,
Integrated geotechnical and geophysical investigations in a landslide site at Jijel, Algeria,
https://doi.org/10.1016/j.jafrearsci.2019.103633.

Saeed Mohammed, Mimonitu Opuwari, Salam Titinchi, Timothy Bata, Mohammed B. Abubakar,
Evaluation of source rock potential and hydrocarbon composition of oil sand and associated clay deposits from the Eastern Dahomey Basin, Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103603.

Wided Ben Bayer, Nathalie Casse, Mohamed Bey Baba Hamed, Françoise Denis, Vanina Pasqualini, Marie Vaugoyeau, Aurore Caruso,
First characterization of physicochemical and biological variables of the salt wetland dayat Morsli in Oran (Algeria),
https://doi.org/10.1016/j.jafrearsci.2019.103652.

A. El Attari, M.F. Pereira, H. Ezzouhairi, M. El Houicha, A. Jouhari, I. Berrada, A. Fekkak, N. Ennih, C.H. Hoepffner, C. Gama, J.B. Silva,
Zircon U-Pb geochronology and geochemistry of Cambrian magmatism in the Coastal Block (Oued Rhebar volcanic complex, Moroccan Meseta): Implications for the geodynamic evolutionary model of North-Gondwana,
https://doi.org/10.1016/j.jafrearsci.2019.103598.

Mostafa Redwan, Abdullah O. Bamousa,
Characterization and environmental impact assessment of gold mine tailings in arid regions: A case study of Barramiya gold mine area, Eastern Desert, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103644.

Farzaneh Mami Khalifani, Abbas Bahroudi, Farhang Aliyari, Maysam Abedi, Mahyar Yousefi, Mahyadin Mohammadpour,
Generation of an efficient structural evidence layer for mineral exploration targeting,
https://doi.org/10.1016/j.jafrearsci.2019.103609.

F. Delpomdor, F. Kant, L. Tack, A. Préat,
Cyclicity and sequence stratigraphy of the Neoproterozoic uppermost Haut Shiloango-Lukala carbonate ramp system in the Lower Congo region (Democratic Republic of the Congo): Example of tectonostratigraphic control versus climatic changes,
https://doi.org/10.1016/j.jafrearsci.2019.103636.

Muhamed F. Omer,
Corrigendum to “Cathodoluminescence petrography for provenance studies of the sandstones of Ora Formation (Devonian–Carboniferous), Iraqi Kurdistan region, northern Iraq” [J. Afr. Earth Sci. (2015) 195–210],
https://doi.org/10.1016/j.jafrearsci.2019.103541.

M.I. Kaniu, I.G. Darby, H.K. Angeyo,
Assessment and mapping of the high background radiation anomaly associated with laterite utilization in the south coastal region of Kenya,
https://doi.org/10.1016/j.jafrearsci.2019.103606.

Hatem El-Desoky, Sherif Farouk, Mohamed Heikal, Medhat El-Mahallawy, Ahmed Wahid,
Geochemical and technical investigation of some clay materials in the Bahariya Oasis, Western Desert, Egypt: Implication in the vitrified clay pipes industry,
https://doi.org/10.1016/j.jafrearsci.2019.103612.

Patrick A. Mainoo, Evans Manu, Sandow M. Yidana, William A. Agyekum, Tibor Stigter, Anthony A. Duah, Kwasi Preko,
Application of 2D-Electrical resistivity tomography in delineating groundwater potential zones: Case study from the voltaian super group of Ghana,
https://doi.org/10.1016/j.jafrearsci.2019.103618.

Parisa Gholami Zadeh, Mohammad Hossein Adabi, Abbas Sadeghi,
Microfacies, geochemistry and sequence stratigraphy of the Sarvak Formation (Mid Cretaceous) in the Kuh-e Siah and Kuh-e Mond, Fars area, southern Iran,
https://doi.org/10.1016/j.jafrearsci.2019.103634.

Safa Mkaouar, Walid Maherzi, Patrick Pizette, Hicham Zaitan, Mourad Benzina,
A comparative study of natural Tunisian clay types in the formulation of compacted earth blocks,
https://doi.org/10.1016/j.jafrearsci.2019.103620.

Shaimaa Ismail Mostafa, H.E. Abdelhafiez, Abd el-aziz Khairy Abd el-aal,
Deterministic scenarios for seismic hazard assessment in Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103655.

Chinotu Franklin George, David I.M. Macdonald, Matteo Spagnolo,
Deltaic sedimentary environments in the Niger Delta, Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103592.

Karim W. Abdelmalik, Karem Abdelmohsen,
GRACE and TRMM mission: The role of remote sensing techniques for monitoring spatio-temporal change in total water mass, Nile basin,
https://doi.org/10.1016/j.jafrearsci.2019.103596.

C.U. Ugwueze, S.A. Ugwu, N.E. Ajaegwu,
Slope fan depositional elements evaluation: Implication for reservoir depositional origin in the deep offshore Niger Delta Basin, Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103638.

Fehmy Belghouthi, Hédi Zouari,
Storm-dominated shallow-marine carbonates of the lower Eocene succession of the northwestern Tunisian domain,
https://doi.org/10.1016/j.jafrearsci.2019.103608.

Yassine Bouslihim, Aicha Rochdi, Namira El Amrani Paaza, Lorena Liuzzo,
Understanding the effects of soil data quality on SWAT model performance and hydrological processes in Tamedroust watershed (Morocco),
https://doi.org/10.1016/j.jafrearsci.2019.103616.

G.M. Saleh, A.M. Afify, B.M. Emad, M.I. Dawoud, H.A. Shahin, F.M. Khaleal,
Mineralogical and geochemical characterization of radioactive minerals and rare earth elements in granitic pegmatites at G. El Fereyid, South Eastern Desert, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103651.

Hamid Bourenane, Youcef Bouhadad, Mohamed Said Guettouche,
Flood hazard mapping in urban area using the hydrogeomorphological approach: case study of the Boumerzoug and Rhumel alluvial plains (Constantine city, NE Algeria).,
https://doi.org/10.1016/j.jafrearsci.2019.103602.

Maher I. El-Soughier, Magdy S. Mahmoud,
Dinoflagellate cysts stratigraphy and paleoecology from some Lower Miocene rocks, GS9-1X well, northern Gulf of Suez, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103650.

Fouepe Takounjou Alain, Ntchantcho Romaric, Saiki Kazuto, Ohba Takeshi, Kamtchueng Brice, Tanyileke Gregory, Fraleu Benoit, Hell Joseph,
New insights into volume estimates and gas contents from the acoustic investigation at Lake Monoun, Cameroon,
https://doi.org/10.1016/j.jafrearsci.2019.103604.

Frederick Tolchard, Sterling J. Nesbitt, Julia B. Desojo, Pia Viglietti, Richard J. Butler, Jonah N. Choiniere,
'Rauisuchian' material from the lower Elliot Formation of South Africa and Lesotho: Implications for Late Triassic biogeography and biostratigraphy,

https://doi.org/10.1016/j.jafrearsci.2019.103610.

Hassan Khozyem, Abdel Aziz Tantawy, Abdullah Mahmoud, Ashraf Emam, Thierry Adatte,
Biostratigraphy and geochemistry of the Cretaceous-Paleogene (K/Pg) and early danian event (Dan-C2), a possible link to deccan volcanism: New insights from Red Sea, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103645.

Wondifraw Nigussie, Binyam Tesfaw Hailu, Tilahun Azagegn,
Mapping of groundwater potential zones using sentinel satellites (−1 SAR and -2A MSI) images and analytical hierarchy process in Ketar watershed, Main Ethiopian Rift,
https://doi.org/10.1016/j.jafrearsci.2019.103632.

Emese M. Bordy, Orsolya Sztanó, Akhil Rampersadh, John Almond, Jonah N. Choiniere,
Vertebrate scratch traces from the Middle Triassic Burgersdorp Formation of the main Karoo Basin, South Africa: Sedimentological and ichnological assessment,
https://doi.org/10.1016/j.jafrearsci.2019.103594.

Zahra Njahi Derbali, Jamel Touir,
Sedimentology and sequence stratigraphy of the middle and upper Eocene succession from Jebel Kabbara (central Tunisia),
https://doi.org/10.1016/j.jafrearsci.2019.103599.

Ahmed Dawelbeit, Etienne Jaillard, Ali Eisawi,
Sedimentary and paleobiological records of the latest Pleistocene-Holocene climate evolution in the Kordofan region, Sudan,
https://doi.org/10.1016/j.jafrearsci.2019.103605.

E.S. Sallam, H.A. Wanas,
Petrography and geochemistry of the Jurassic siliciclastic rocks in the Khashm El-Galala area (NW Gulf of Suez, Egypt): Implication for provenance, tectonic setting and source area paleoweathering,
https://doi.org/10.1016/j.jafrearsci.2019.103607.

Masixole Sihlahla, Hassina Mouri, Philiswa N. Nomngongo,
Uptake of trace elements by vegetable plants grown on agricultural soils: Evaluation of trace metal accumulation and potential health risk,
https://doi.org/10.1016/j.jafrearsci.2019.103635.

Emad Nagm, Sherif Farouk, Fayez Ahmad, Zaineb Elamri,
Ammonite zonal scheme for the upper Cenomanian of the southern Tethys margin from Jordan to Tunisia, with palaeobiogeographic implications,
https://doi.org/10.1016/j.jafrearsci.2019.103641.

Mamadou Thior, Tidiane Sané, El hadj B. Dièye, Oumar Sy, Dramane Cissokho, Boubacar Demba Ba, Luc Descroix,
Coastline dynamics of the northern Lower Casamance (Senegal) and southern Gambia littoral from 1968 to 2017,
https://doi.org/10.1016/j.jafrearsci.2019.103611.

Olawale Olakunle Osinowo, Yusuf Abdulmumin,
Basement configuration and lineaments mapping from aeromagnetic data of Gongola arm of Upper Benue Trough, northeastern Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103597.

Ahmed Awad Abdelhady, Walid Kassab, Mohamed F. Aly,
Shoal environment as a biodiversity hotspot: A case from the Barremian-Albian strata of Gabal Lagama (North Sinai, Egypt),
https://doi.org/10.1016/j.jafrearsci.2019.103643.

Abdellatif Younis, Osman M. Osman, Amin E. Khalil, Mohd Nawawi, Mamdouh Soliman, Elhamy A. Tarabees,
Assessment groundwater occurrences using VES/TEM techniques at North Galala plateau, NW Gulf of Suez, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103613.

Ignacio Díaz-Martínez, Paolo Citton, Silvina de Valais, Carlos Cónsole-Gonella, Santiago N. González,
Late Permian-Early Jurassic vertebrate tracks from patagonia: Biochronological inferences and relationships with southern african realms,
https://doi.org/10.1016/j.jafrearsci.2019.103619.

Younes El Fellah, Ghizlane Bouskri, Mimoun Harnafi, Abd El-Aziz Khairy Abd El-Aal, Youssef Timoulali, Ibrahim Ouchen, Roumaissae Azguet,
Tracking regional heterogeneities through seismic ambient noise constrains: What Rayleigh wave tomography can tell about deep structures in northern Morocco,

https://doi.org/10.1016/j.jafrearsci.2019.103615.

Sophie Billon, Patricia Patrier,
Diagenetic and hydrothermal history of the host rock of the Imouraren uranium deposit (Tchirezrine 2 Formation - Tim Mersoï Basin, Niger),
https://doi.org/10.1016/j.jafrearsci.2019.103637.

Getnet Taye Bawoke, Zelalem Leyew Anteneh, Alebachew Tareke Kehali, Mohammed Seid Mohammedyasin, Gashaw Wudie,
Hydrogeochemical and isotopic signatures of groundwater in the Andasa watershed, Upper Blue Nile basin, Northwestern Ethiopia,
https://doi.org/10.1016/j.jafrearsci.2019.103617.

Open Journal of Geology (volume 9)

J.D. Ndikumana, A.T. Bolarinwa, G.O. Adeyemi,
Neoproterozoic Rare Element Pegmatites from Gitarama and Gatumba Areas, Rwanda: Understanding Their Nb-Ta and Sn Mineralisation
https://doi.org/10.4236/ojg.2019.913106.

Journal of African Earth Sciences (volume 159)

A.S. Akinwumiju, M.O. Olorunfemi,
Development of a conceptual groundwater model for a complex basement aquifer system: The case OF OSUN drainage basin in southwestern Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103574.

R.B.M. Mapeo, M. Wendorff, L.V. Ramokate, R.A. Armstrong, T. Mphinyane, M. Koobokile,
Zircon geochronology of basement granitoid gneisses and sedimentary rocks of the Tsodilo Hills Group in the Pan-African Damara Belt, western Botswana: age constraints, provenance, and tectonic significance,
https://doi.org/10.1016/j.jafrearsci.2019.103576.

Ralf Werneburg, Joerg W. Schneider, Sebastian Voigt, Abouchouaib Belahmira,
First African record of micromelerpetid amphibians (Temnospondyli, Dissorophoidea),
https://doi.org/10.1016/j.jafrearsci.2019.103573.

L. Benhenni, Y. Quesnel, M.C. Berguig, S. Samai, M. Hamoudi,
Joint modeling of potential-field data and geodynamic interpretation for northeast Algeria,
https://doi.org/10.1016/j.jafrearsci.2019.103566.

Mauricio A. Cerroni, Federico L. Agnolin, Federico Brissón Egli, Fernando E. Novas,
The phylogenetic position of Afromimus tenerensis Sereno, 2017 and its paleobiogeographical implications,
https://doi.org/10.1016/j.jafrearsci.2019.103572.

M.A. Mohammed, M.M. Senosy, A.M. Abudeif,
Corrigendum to Derivation of empirical relationships between geotechnical parameters and resistivity using electrical resistivity tomography (ERT) and borehole data at Sohag University site, Upper Egypt [J. Afr. Earth Sci. 158 (2019) 103563],
https://doi.org/10.1016/j.jafrearsci.2019.103593.

A. Moshood Olayiwola, K. Marion Bamford,
Depositional environment and reservoir characterization of the deep offshore Upper Miocene to Early Pliocene Agbada Formation, Niger delta, Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103578.

Mohamed F. Aly, Sherief A. Sadek,
New findings of Eocene nautiloids from north Western Desert, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103580.

Mark B. Goodwin, Randall B. Irmis, Gregory P. Wilson, David G. DeMar, Keegan Melstrom, Cornelia Rasmussen, Balemwal Atnafu, Tadesse Alemu, Million Alemayehu, Samuel G. Chernet,
The first confirmed sauropod dinosaur from Ethiopia discovered in the Upper Jurassic Mugher Mudstone,
https://doi.org/10.1016/j.jafrearsci.2019.103571.

Riadh Abidi, Christian Marignac, Najet Slim-Shimi, Jacques Pironon, Dominique Gasquet, Alireza K. Somarin, Renac Christophe, Christian Hibsch,
P-T-X reconstruction for ore deposits using petroleum-rich fluid inclusions in fluorite: A case study in the Bou Jaber diapir-related Ba–Pb–Zn–F deposit, Northern Tunisia,
https://doi.org/10.1016/j.jafrearsci.2019.103577.

A.M. Abudeif, M.A. Mohammed, A.K. Abd el-aal, Kh.A. Omar,
Single and multi-channel passive source methods for calculating the shallow S-wave velocity structure and site effect parameters at 15th May City, Egypt,
https://doi.org/10.1016/j.jafrearsci.2019.103579.

Kachalla Aliyuda, John Howell, Musa Bappah Usman, Abdulwahab Muhammad Bello, Benjamin Maina, Usman Abubakar,
Depositional variability of an ancient distributive fluvial system: The upper member of the lower cretaceous Bima Formation, Northern Benue Trough, Nigeria,
https://doi.org/10.1016/j.jafrearsci.2019.103600.

Gabriel D. Mulibo,
Investigation of macroseismic intensity of the Mw5.9 September 10, 2016 Kagera earthquake: Implications for site effect amplification,
https://doi.org/10.1016/j.jafrearsci.2019.103568.

Ernest Mbale Ngama, Elisé Sababa, Elie Constantin Bayiga, Armel Z. Ekoa Bessa, Paul-Désiré Ndjigui, Paul Bilong,
Mineralogical and geochemical characterization of the unconsolidated sands from the Mefou River terrace, Yaoundé area, Southern Cameroon,
https://doi.org/10.1016/j.jafrearsci.2019.103570.

Finn Hirslund,
Dynamics of diffusive layering and chemocline formation in Lake Kivu and brine pools,
https://doi.org/10.1016/j.jafrearsci.2019.103520.

Earth-Science Reviews

Ru Wang, Luca Colombera, Nigel P. Mountney,
Quantitative analysis of the stratigraphic architecture of incised-valley fills: A global comparison of Quaternary systems,
Earth-Science Reviews,
Volume 200,
2020,
102988,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102988.

V. Lo Presti, F. Antonioli, M.R. Palombo, V. Agnesi, S. Biolchi, L. Calcagnile, C. Di Patti, S. Donati, S. Furlani, J. Merizzi, F. Pepe, G. Quarta, P. Renda, A. Sulli, S. Tusa,
Palaeogeographical evolution of the Egadi Islands (western Sicily, Italy). Implications for late Pleistocene and early Holocene sea crossings by humans and other mammals in the western Mediterranean,
Earth-Science Reviews,
Volume 194,
2019,
Pages 160-181,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.04.027.

Lalu Das, Jitendra Kumar Meher,
Drivers of climate over the Western Himalayan region of India: A review,
Earth-Science Reviews,
Volume 198,
2019,
102935,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102935.

Qingyong Luo, Goodarzi Fariborz, Ningning Zhong, Ye Wang, Nansheng Qiu, Christian B. Skovsted, Václav Suchý, Niels Hemmingsen Schovsbo, Rafał Morga, Yaohui Xu, Jingyue Hao, Anji Liu, Jin Wu, Weixun Cao, Xu Min, Jia Wu,
Graptolites as fossil geo-thermometers and source material of hydrocarbons: An overview of four decades of progress,
Earth-Science Reviews,
Volume 200,
2020,
103000,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.103000.
Stefano Dominici, Silvia Danise, Simone Cau, Alessandro Freschi,
The awkward record of fossil whales,
Earth-Science Reviews,
2019,
103057,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.103057.

Daniel Garcia-Castellanos, Aaron Micallef, Ferran Estrada, Angelo Camerlenghi, Gemma Ercilla, Raúl Periáñez, José María Abril,
The Zanclean megaflood of the Mediterranean – Searching for independent evidence,
Earth-Science Reviews,
Volume 201,
2020,
103061,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.103061.

Liviu C. Matenco, Bilal U. Haq,
Multi-scale depositional successions in tectonic settings,
Earth-Science Reviews,
Volume 200,
2020,
102991,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102991.

J. Shaw, R.G. Gilbert, D.R. Sharpe, J.-E. Lesemann, R.R. Young,
The origins of s-forms: Form similarity, process analogy, and links to high-energy, subglacial meltwater flows,
Earth-Science Reviews,
Volume 200,
2020,
102994,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102994.

Martin Homann,
Earliest life on Earth: Evidence from the Barberton Greenstone Belt, South Africa,
Earth-Science Reviews,
Volume 196,
2019,
102888,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102888.

Yanrong Li, Wenhui Shi, Adnan Aydin, Mary Antonette Beroya-Eitner, Guohong Gao,
Loess genesis and worldwide distribution,
Earth-Science Reviews,
2019,
102947,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102947.

Manuel Queißer, Mike Burton, Ryunosuke Kazahaya,
Insights into geological processes with CO2 remote sensing – A review of technology and applications,
Earth-Science Reviews,
Volume 188,
2019,
Pages 389-426,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2018.11.016.

Patrick G. Eriksson, Rajat Mazumder,
Preface,
Earth-Science Reviews,
2019,
103058,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.103058.

Luis Gimeno, Marta Vázquez, Jorge Eiras-Barca, Rogert Sorí, Milica Stojanovic, Iago Algarra, Raquel Nieto, Alexandre M. Ramos, Ana María Durán-Quesada, Francina Dominguez,
Recent progress on the sources of continental precipitation as revealed by moisture transport analysis,
Earth-Science Reviews,
2019,
103070,
ISSN 0012-8252,

https://doi.org/10.1016/j.earscirev.2019.103070.

W. Krijgsman, A. Tesakov, T. Yanina, S. Lazarev, G. Danukalova, C.G.C. Van Baak, J. Agustí, M.C. Alçiçek, E. Aliyeva, D. Bista, A. Bruch, Y. Büyükmeriç, M. Bukhsianidze, R. Flecker, P. Frolov, T.M. Hoyle, E.L. Jorissen, U. Kirscher, S.A. Koriche, S.B. Kroonenberg, D. Lordkipanidze, O. Oms, L. Rausch, J. Singarayer, M. Stoica, S. van de Velde, V.V. Titov, F.P. Wesselingh,
Quaternary time scales for the Pontocaspian domain: Interbasinal connectivity and faunal evolution,
Earth-Science Reviews,
Volume 188,
2019,
Pages 1-40,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2018.10.013.

Eduardo Garzanti,
Petrographic classification of sand and sandstone,
Earth-Science Reviews,
Volume 192,
2019,
Pages 545-563,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2018.12.014.

Guangxu Wang, Renbin Zhan, Ian G. Percival,
The end-Ordovician mass extinction: A single-pulse event?,
Earth-Science Reviews,
Volume 192,
2019,
Pages 15-33,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.01.023.

Sanzhong Li, Xiyao Li, Guangzeng Wang, Yiming Liu, Zecheng Wang, Tongshan Wang, Xianzhi Cao, Xiaoyu Guo, Ian Somerville, Yang Li, Jie Zhou, Liming Dai, Suhua Jiang, Hao Zhao, Yu Wang, Gang Wang, Shan Yu,
Global Meso-Neoproterozoic plate reconstruction and formation mechanism for Precambrian basins: Constraints from three cratons in China,
Earth-Science Reviews,
Volume 198,
2019,
102946,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102946.

A. Minissale, A. Donato, M. Procesi, L. Pizzino, S. Giammanco,
Systematic review of geochemical data from thermal springs, gas vents and fumaroles of Southern Italy for geothermal favourability mapping,
Earth-Science Reviews,
Volume 188,
2019,
Pages 514-535,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2018.09.008.

Marjorie D. Cantine, Andrew H. Knoll, Kristin D. Bergmann,
Carbonates before skeletons: A database approach,
Earth-Science Reviews,
2019,
103065,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.103065.

Jorge Ferreira, Emanuela Mattioli, Baptiste Sucherás-Marx, Fabienne Giraud, Luis V. Duarte, Bernard Pittet, Guillaume Suan, Auguste Hassler, Jorge E. Spangenberg,
Western Tethys Early and Middle Jurassic calcareous nannofossil biostratigraphy,
Earth-Science Reviews,
Volume 197,
2019,
102908,
ISSN 0012-8252,

https://doi.org/10.1016/j.earscirev.2019.102908.
Keywords: Biostratigraphy; Calcareous nannofossils; Stable isotopes; Jurassic; Portugal

Neil S. Davies, Anthony P. Shillito, Ben J. Slater, Alexander G. Liu, William J. McMahon,
Evolutionary synchrony of Earth's biosphere and sedimentary-stratigraphic record,
Earth-Science Reviews,
2019,
102979,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.102979.

Gebremedhin Gebremeskel Haile, Qiuhong Tang, Siao Sun, Zhongwei Huang, Xuejun Zhang, Xingcai Liu,
Droughts in East Africa: Causes, impacts and resilience,
Earth-Science Reviews,
Volume 193,
2019,
Pages 146-161,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.04.015.

Huayu Lu, Xianyan Wang, Xiaoyong Wang, Xi Chang, Hanzhi Zhang, Zhiwei Xu, Wenchao Zhang, Haizhen Wei, Xiaojian Zhang, Shuangwen Yi, Wenfang Zhang, Han Feng, Yichao Wang, Yao Wang, Zhiyong Han,
Formation and evolution of Gobi Desert in central and eastern Asia,
Earth-Science Reviews,
Volume 194,
2019,
Pages 251-263,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.04.014.

John P. Craddock, Richard W. Ojakangas, David H. Malone, Alexandros Konstantinou, Arthur Mory, Wilfried Bauer, Robert J. Thomas, Suzanne Craddock Affinati, Kathryn Pauls, Udo Zimmerman, Greg Botha, Anthony Rochas-Campos, Paulo R. dos Santos, Eric Tohver, Claudio Riccomini, Joe Martin, Jonathan Redfern, Matthew Horstwood, George Gehrels,
Detrital zircon provenance of Permo-Carboniferous glacial diamictites across Gondwana,
Earth-Science Reviews,
Volume 192,
2019,
Pages 285-316,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2019.01.014.

Peter D. Roopnarine, K.D. Angielczyk, A. Weik, A. Dineen,
Ecological persistence, incumbency and reorganization in the Karoo Basin during the Permian-Triassic transition,
Earth-Science Reviews,
Volume 189,
2019,
Pages 244-263,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2018.10.014.

Grant M. Young,
Aspects of the Archean-Proterozoic transition: How the great Huronian Glacial Event was initiated by rift-related uplift and terminated at the rift-drift transition during break-up of Lauroscandia,
Earth-Science Reviews,
Volume 190,
2019,
Pages 171-189,
ISSN 0012-8252,
https://doi.org/10.1016/j.earscirev.2018.12.013.

D.R. Mole, C.L. Kirkland, M.L. Fiorentini, S.J. Barnes, K.F. Cassidy, C. Isaac, E.A. Belousova, M. Hartnady, N. Thebaud,
Time-space evolution of an Archean craton: A Hf-isotope window into continent formation,
Earth-Science Reviews,
Volume 196,
2019,
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Sarah Pederzani, Kate Britton,
Oxygen isotopes in bioarchaeology: Principles and applications, challenges and opportunities,
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OPPORTUNITIES

Senior and Project Geophysicists (two posts)	Mold, UK	23/01/20
PhD position (36 months) in the DFG-funded project: The four major Isotopes of Dolomite (C, O, Mg, Ca): Closing the Calcium Isotope (d44/42Ca) Gap	Bochum, Germany	15/01/20
F181 MSc Subsurface Characterisation and Geomodelling	Dublin, Ireland	10/06/20
Master of Science in Petrophysics	Kingsville, TX, USA	01/06/20
Postdoctoral fellowship in the Department of Geology	Bloemfontein, South Africa	29/02/20
PhD and MSc fully funded Studentships in: Tectonochemistry Environmental and Aqueous Geochemistry Geo-Environmental Engineering Microbial Geochemistry/Arctic Landscapes	Kingston, ON, Canada	01/02/20
GIS Developer	Keyworth, UK	31/01/20
IMS-GIS Data Centre Project Off	Stanley, Falklands Islands	08/01/20

Research Fellow in Submarine Lobe Systems	Leeds, UK	19/01/20
PhD position in organic/inorganic geochemistry and South African paleoclimate	Bergen, Norway	20/01/20
2020 Postdoctoral Fellowship Program in the field of Marine Geosciences	Armilla, Spain	15/01/20
Postdoctoral Position in Seismology and Integrated Geophysical-Petrological Modelling	Dublin, Ireland	Until Filled
Scientific Consultancy Opportunity	Oakham, UK	18/01/20
Innovation and Grant Advisor	Espoo, Finland	19/01/20
Open Postdoc position Nano-Geochemistry	Vienna, Austria	21/01/20
Hydrogeologist / Engineer (wissenschaftliche(n) Mitarbeiter_in (w/m/d)) - Smart tracer techniques in hydrogeology / geohydrology	Göttingen, Germany	15/01/20
Petroleum Geoscience (MSc) Pollution and Environmental Control (MSc)	Manchester, UK	17/01/20
Postdoctoral fellow in Geology	Copenhagen, Denmark	01/02/20
PostDoc (m/f/x) Aquifer Thermal Energy Storage	Potsdam, Germany	30/12/19
International Master of Research course in Solid Earth Sciences	Paris, France	16/03/20

3 positions in Seismology	Hutt Valley, New Zealand	28/01/20
MSc in Petroleum Geoscience	Adelaide, Australia	Until Filled
Open PhD Position: Electrical Field Root Sensing	Bonn, Germany	15/01/20
Postdoctoral Research Associate for Two-phase Mechanics of Magmatism in Earth	Oxford, UK	10/01/20
2020 NOAA Climate & Global Change Postdoctoral Fellowship Program	Boulder, CO, USA	10/01/20
Assistant Research Professor - Social Science Research Institute	University Park, PA, USA	09/01/20
Post Doc Experimental Geochemist - GNS Science (2 years) - Thermochemistry of supercritical geothermal systems, Taupo Volcanic Zone New Zealand	Taupo, New Zealand	15/01/20
Faculty Researcher - Natural Resources (Hyperspectral Imaging for Geological Materials)	Newfoundland, Canada	12/01/20
Geomagnetic Electronics Engineer	Edinburgh, UK	10/01/20
2 PhD Scholarships available at the School of Earth and Planetary Sciences	Perth, Australia	06/01/20
Postdoctoral Fellowships in Earth and Space Sciences	Beijing, China	15/01/20

Research Associate (m/f/d) in Sedimentary Geology / Quaternary Geology	Hannover, Germany	15/01/20
MSc in Mineral Resources	St Andrews, UK	01/01/20
PhD and MPhil Scholarships Available at the School of Earth and Planetary Sciences	Perth, Australia	05/01/20
Postdoc position in Numerical Modelling of Fracture Growth	Lyngby, Denmark	31/12/19
Geomagnetic Instrumentation Engineer	Keyworth, UK	10/01/20
PhD positions at GeoPlanet Doctoral School	Warsaw, Poland	31/12/19
2020 Postdoctoral Fellowship Program	Moss Landing, CA, USA	22/01/20
Research Facility Manager	Cambridge, UK	04/01/20
MSc Archaeology MSc Biomolecular Archaeology MSc Bioarchaeological Science MSc Cultural Heritage MSc. Geophysics Msc. Environmental Partnership Management MSc. Geographical Information Systems MSc. Integrated Petroleum Geoscience MSc. Petroleum Data Management MSc. Oil and Gas Enterprise Management MSc. Archaeology of the North MSc. Osteoarchaeology MSc. Land Economy (Rural Surveying/Rural Property Management)	Aberdeen, UK	Apply Now

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Digital Elevation Model of Africa
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