Geological Society of Zimbabwe

Newsletter

June 2024 No. 2 of 3 of 2024

This is the way to do field work. *Musankwa* was our mode of transport, floating laboratory and accommodation for two field excursions along the Kariba lakeshore in 2017 and 2018 when we investigated the potential for exposed fossil vertebrate remains at a time with low water levels.
Photo: Jonah Choiniere

www.geologicalsociety.org.zw
The Geological Society of Zimbabwe, P.O. Box CY 1719, Causeway, Harare

Contents

Editorial

Geoheritage has taken the limelight so far this year. The initiative was taken by the outgoing Committee to invite Darlington Munyikwa, palaeontologist and now Acting Director for Museums and Monuments in Zimbabwe, to be the guest speaker at their AGM held on 8th March. His presentation entitled *Zimbabwe Geoheritage: Untapped Tourism Avenue* can be downloaded from the Geological Society of Zimbabwe website under their News record for the AGM 2024. The talk gives a broad outline of the potential and value of Zimbabwe's wide variety of geosites for the enhancement of special interest tourism and the need for their protection and documentation. These range from the obvious wonders of Victoria Falls, Great Zimbabwe and the topographic expression of the Matobo Hills with their caves and human heritage to hot springs, fossil sites, mining memorabilia and many more. Emphasis was laid as to the need for documentation, communication (especially to local inhabitants who must understand the value of sites as custodians), preservation and legislation. There are far reaching challenges in Darlington's delivery.

The Herald >> Friday 14 June 2024

PERSPECTIVES

Zimbabwe's rich fossil finds should drive heritage tourism

THE dinosaurs — the prehistoric creatures — are long gone, but the recent discovery of a 210-million-year-old dinosaur leg unearthed at Spurwing Island on Lake Kariba, north of the country has elicited a lot of interest among scholars and researchers globally. *The Herald* Innovations Editor Sifelani Tsiko (ST), speaks to Darlington Munyikwa (DM), acting executive director of the National Museums and Monuments of Zimbabwe and local lead researcher of the international team of scientists that conducted the study, leading to the findings, on how the latest discovery could offer a glimpse into ancient creatures and promote heritage tourism in Zimbabwe.

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ST: Mr Munyikwa you were the local lead researcher of the international team of scientists that conducted the study in 2018, leading to the uncovering of the dinosaur fossil. How many researchers were there and from which institutions?

DM: In this research expedition there were 12 participants — local and international. Researchers were drawn from National Museums and Monuments of Zimbabwe (NMMZ), local tour companies, University of Witwatersrand (Wits) and the Natural History Museum of London.

ST: Can you tell us briefly about the expedition on the shores of Spurwing Island on Lake Kariba? What led you to choose this particular site?

DM: Lake Kariba lies within the Zambezi Karoo basin, which is famous for fossil remains. A new dinosaur named Vulcanodon karibaensis was found in the late 1960s on an island on Lake Kariba. The pulling factor was the earlier fossil discovery on Lake Kariba as well as reports of fossils around the area. Our first target was the island, where earlier fossils were found. We then prospected most of the islands in the area including exposed rock surfaces along the shorelines. Spurwing is one of the islands we surveyed. The islands and shorelines were accessed through a boat called Musankwa, which was our house during the two 10-day trips.

ST: How do you feel about the latest discovery of a new species of sauropodomorph dinosaur from Zimbabwe? What does it mean to you palaeontologists, the research fraternity and the country as a whole?

DM: It was a fantastic discovery. It [illegible] to come up with something new in science, hence such discoveries are important. This new discovery comes barely a year after the discovery of yet another new dinosaur in the Dande area in Mbire. The discovery, after a small area had been explored, indicates that there are opportunities of finding more fossils. It should be noted that dinosaurs were not living alone, hence there were more animals and plants in the then ecosystem. There were also other forms of animals — reptiles, fish, mammals, insects and plants.

ST: Musankwa sanyatiensis is the fourth dinosaur of its kind from Zimbabwe. Can you tell us briefly about the other three and the years they were unearthed?

DM: The other three dinosaur species (new dinosaur) from Zimbabwe include Syntarsus rhodesiensis (1969), Vulcanodon karibaensis (1969), Mbiresaurus rathi (2022) and Syntarsus rhodesiensis. It is the first new dinosaur to be found in Zimbabwe. The bones of Syntarsus were first discovered in Nyamandlovu in 1963 by students from Northlea High School, Bulawayo. Later remains were found in the Mana Pools Area, Lower Zambezi valley. The foot (tarsal) bones were fused, for that reason it was named Syntarsus and rhodesiensis because it was from the then Rhodesia. It was a small carnivorous dinosaur, which walked on two legs and lived in a desert.

Vulcanodon karibaensis is the second dinosaur species to be found in Zimbabwe and it was found in Forest Sandstone, on an island in Lake Kariba in 1969. It is an early sauropod dinosaur, which walked on four legs, but also exhibited rudimentary features. It was a herbivore. Mbiresaurus rathi, currently regarded as the oldest African dinosaur, was discovered in 2022 following research, which started in 2017 in Dande, Mbire District. It is a bipedal dinosaur which ate plants.

ST: What could the existence of dinosaurs in the mid-Zambezi Valley tell us about this rich hidden heritage and life a million years ago?

DM: Dinosaurs evolved and went to extinction during the Mesozoic Era about 220 - 65 million years ago. The presence of dinosaurs in the mid-Zambezi Valley shows that the sedimentary rock formation, from which the fossils are found, were formed during the existence of dinosaurs in the Mesozoic Era. These rocks were formed during the Gondwana landmass. Similar rock formations with closely related flora and fauna are found in other African countries, South America (Brazil and Argentina) and India.

ST: Historically, there have been few expeditions in search of dinosaurs in Zimbabwe and the region. Why has there been less interest? What are the limiting factors?

DM: Dinosaur fossil remains are found in rocks in the Zambezi and Limpopo sedimentary basins, which are not easily accessible, particularly during the 1960s when dinosaurs [illegible] country. The fossils were discovered during colonial times and the valleys were poorly developed and inaccessible. The liberation war worsened the accessibility matter. Lack of publicity on the existence of dinosaurs from Zimbabwe results in lack of interest in research on dinosaurs, leading to the limited number of local professionals as well as funding opportunities.

The discipline is overshadowed by archaeology. Currently fossil research, preservation and presentation is only done at the Natural History Museum, Bulawayo, and only taught at the Midlands State University, yet other heritage disciplines are done at many universities.

ST: With the discovery of Musankwa Sanyatiensis, do you think there could be more interest to conduct palaeontological research expeditions now?

DM: Recent research findings in the Zambezi and Limpopo Valley are encouraging. A considerable number of fossil sites have been found at Sentinel Ranch, Beitbridge, Dande, Mana Pools, Gokwe, Hwange and Lake Kariba. Similar rock formations in countries like South Africa, Lesotho, Brazil and Argentina have yielded a considerable number of dinosaurs and their contemporaries. Through more research, Zimbabwe has a potential of yielding more dinosaur material. This is buttressed by the presence of pristine and good exposure to sedimentary rock formations and recent discoveries of new dinosaurs in Zimbabwe.

ST: Why was the fossil named Musankwa Sanyatiensis? How is the naming done?

DM: Naming of new species follows the binomial naming system, which includes the generic and species name (two names) all in italics. Iconic features in the research area such as landforms, names, cultural beliefs and [illegible] researchers are considered. In this instance, the local significance of Musankwa, which led to the naming of the boat and the role the boat played, was recognised to deserve the generic name. The proximity of the mighty Sanyati Gorge to the Spurwing Island was honoured in the species name as it gives sense of the provenance area.

ST: All the four dinosaur fossils are now kept at the Natural History Museum of Zimbabwe in Bulawayo, the country's second largest city. Why were they not kept at the sites on which they were found or at new sites closer to the location on which they were found?

DM: Fossil recovery is the reversal of the burial process, which takes place when, for example, a dinosaur dies leading to the fossilisation. When an animal dies it should be buried to allow the fossilisation process to take place. Exposure of a fossil is through erosion. Once exposed, just like the disintegration of rock it is coming from, it will further breakdown due to continued weathering processes. The exposed fossils should be collected for preservation and study or else it will be lost. Because of its inherent values the world over, fossils are collected as souvenirs hence, if left in the open, they will be lost from science and consequently enjoyment by the public. That's why the National Museums and Monuments Act (cap 25:11) protects fossils. There is an exception where removal of fossils can be discouraged as it may lead to their damage. In such circumstances in-situ preservation is recommended. The remains can be properly exposed to allow the public to appreciate the fossilisation process as well to enjoy them. A good example is a dinosaur skeleton properly prepared in-situ at the Sentinel Range in Beitbridge.

ST: One local heritage scholar says our paleontological heritage adds to the attractiveness of Zimbabwe as a tourist destination. What potential is there for these fossils to grow our dinosaur science tourism? Can Zimbabwe be an important dinosaur tourist attraction destination?

DM: Heritage centres such as museums and sedimentary basins are important tourism destinations. Dinosaur collections at the museums and fossil sites therefore contribute to tourism attractions of this country. International researchers spend considerable time in the country doing fieldwork and studies, by so doing bring foreign currency. Research done at Lake Kariba is a good example.

ST: Looking ahead, what do you think Zimbabwe needs to unravel its rich and hidden paleontological, geological and archaeological heritage? Is security and modern documentation adequate?

DM: More publicity on the dinosaurs from Zimbabwe should be prioritised, mostly through research publications and exhibitions. There is a need to do more research work at the local level. This can be achieved through recruitment of more palaeontologists and increased funding for capacity development, research, equipment and visits to other museums and universities at global level. The local academic institutions should also include palaeontology in their curriculum. The country needs to put more resources into this category of science research as a priority. Zimbabwe heritage tourism is definitely poised for growth with adequate funding. Given the interest from both foreign and local enthusiasts after the publication of these dinosaurs it's obvious that if enough resources are there, enabling enough marketing effort, great results will be achieved.

Mr Darlington Munyikwa

Then Forbes Mugumbate's passion for geoheritage showed through with his publication by The Geological Society of London's Special Publication 543 on *Geology's Significant Sites and their Contributions to Geoheritage*, 2024 on *The value of the Belingwe Greenstone Belt, Zimbabwe, as a national geoheritage site.* https://doi.org/10.1144/SP543-2022-244. Forbes' interest in the area stems from a time when he was appointed judicial manager at the closure of the Shabanie Mine, a time which allowed him the spare moments to explore the fascination that the area provides. With the Midlands State University's Earth Sciences faculty being based at their Zvishavane Campus, this region offers research opportunities for students and staff to document the true heritage that our premier greenstone belt has to offer.

Then on the fossil vertebrate front, Zimbabwe has yet again hit the World headlines with the description and naming of *Musankwa sanyatiensis,* a new early dinosaur that was discovered along the shoreline of Spurwing Island.

ACTA PALAEONTOLOGICA POLONICA

A new Late Triassic sauropodomorph dinosaur from the Mid-Zambezi Basin, Zimbabwe

Paul M. Barrett, Kimberley E.J. Chapelle, Lara Sciscio, Timothy J. Broderick, Michel Zondo, Darlington Munyikwa, and Jonah N. Choiniere

Acta Palaeontologica Polonica 69 (2), 2024: 227-241
doi:https://doi.org/10.4202/app.01100.2023

Photo: Lara Sciscio

Picture here shows Tim Broderick, Kathleen Dollman and Kimi Chapelle during the excavation and recovery phase of the articulated hind limb of *Musankwa sanyatiensis* on Spurwing Island, 2018.

Read more here: https://www.nhm.ac.uk/.../new-species-dinosaur-zimbabwe...
and here: https://www.genus.africa/.../meet-musankwa-sanyatiensis.../
Read the paper here: https://www.app.pan.pl/article/item/app011002023.html
An article also published by https://theconversation.com/africa
And an interview with Darlington Munyikwa published in *The Herald* newspaper of 14th June 2024.

Then the third international expedition to the *Mbiresaurus raathi* site in Dande Communal Land was led by, now Associate Professor, Chris Griffin during April and May of this year. This was made possible through the auspices of Princeton University in New Jersey. Lots of new bone material was recovered to the Natural History Museum collection in Bulawayo, which heralds bone preparation and research for years to come with new species in the known biodiversity to be described and named.

The Dande 'dino' team 2024 – L to R: Sandra Karira (MSU), George Malunga (NHM), Tim Broderick, Edward Mbambo (NHM), Chris Griffin (Yale/Princeton), Pehlogence Magatsi (MSU), Steve Tolan (Chipembele Trust, Luangwa, Zambia), Mike Zondo (NHM), Pricilla Chima (MSU). *Photo: Lucy Broderick*
Mike Raath on the presentation of his personalized T-shirt. *Photo: Jono Waters*

Now – the question of Mentorship for our young and emerging geoscientists is being championed by Tenyears Gumede though his portfolio on the Geological Society Committee. A form has been designed for prospective mentees to complete that will be available on *Google Forms.* Details will be circulated and posted on our website. There is also a call for experienced geoscientists who are in good standing with the Society to put their names forward as prospective mentors to assist with the broader-based establishment of our young professionals.

In this issue of the Newsletter we welcome our new members, thank and encourage those regular members who have paid their annual subscription and acknowledge the support of our Institutional Members. Note should be taken of the announcement for members and student members to take advantage of the sponsorship offered to support attendance and participation at the Society for Economic Geologists' Conference to be held in Windhoek, Namibia in September 2024. Note should also be made for us to participate in the Society's Annual Symposium to be staged in Bulawayo in November.

Caston Musa shares with us details of the epic hike by a Mimosa Mine's team to Kilimanjaro's Uhuru Peak in December 2022, whilst citations and abstracts relating to the award-wining contributions for 2023 as announced at the AGM are shared for your interest. News updates us for the Geology Section at UZ, the Mennell Society activities, Midlands State University's visit to the Belingwe Greenstone Belt and to the Zimbabwe School of Mines, for which thanks are extended to all contributors. Ernest Mugandani records happenings at the Zimbabwe Geological Survey and Kennedy Mtetwa provides his gleanings from the mining world.

Tim Broderick (Icositet)

Chairperson's Chat

Ernest Tafumenei Mugandani etmugandani@gmail.com

Allow me to thank all Geological Society Members most sincerely for showing their confidence by entrusting me with the onerous and noble task of taking the lead in running the affairs of our Geological Society for the period 2024 into 2025.

I welcome all members of the incoming committee, particularly Caston Musa and Melusi Hlambelo who were not in the previous committee, to the challenging responsibility that has been bestowed on us. As a team we shall deliver!!

May I also take this opportunity to thank the outgoing executive committee under the leadership of Tenyears Gumede for the splendid work accomplished during the period 2023/2024. Special thanks go to Kudzi Musiwa who has served the Society as Honorary Secretary for many years, and for his continued support to the incoming committee. Tim Broderick deserves a special mention and thanks for his continued support to the incoming committee as the Newsletter editor.

Thanks to the outgoing committee for the successful hosting of the Annual General Meeting of the Society held on 8th March 2024. The event was well attended and was given media coverage courtesy of *Mining Zimbabwe*. We hope to maintain the momentum and deliver memorable events during the tenure of this committee. Professional Registration, Mentorship and Geoheritage/Geotourism will remain high on the agenda.

The Society of Economic Geologists (SEG) will be holding a conference from 27th-30th September 2024 in Windhoek, Namibia. Zimbabwe has been selected to host two of the conference field trips to some of the lithium mining projects in the country and to the Great Dyke. The field trip participants will also mix business with leisure as they will also visit Great Zimbabwe, Matobo Hills and Victoria Falls in the context of Geotourism. The Geological Society of Zimbabwe will therefore endeavor to sponsor one or two members who would have had their abstract/poster accepted for this prestigious conference.

In the local space, GSZ will also be holding the Summer Symposium and the 13th A.M. Macgregor Memorial Lecture in early November 2024 in Bulawayo. Do not miss out on

these events on this year's calendar. We continue to thank our usual and new sponsors for the Summer Symposium who continue to support the Society to make this a memorable event.

The Society thrives on membership subscriptions all year round i.e Ordinary, Associates, Foreign, and Institutional. Therefore, we encourage all our members to make their annual subscriptions in time. The Society is our home as Geoscientists, so we should strive to drive its growth.

The new committee will endeavour to grow the membership of the Society back to its 1999 level. One of the strategies is to increase visibility of the Society across a number of media platforms.

Lastly may I take this opportunity to congratulate the Geological Society of Korea for being the hosts as a country for the 2024, 37th International Geological Congress in Busan. We wish them and all of our members who will be able to join from 25-31 August 2024 a successful event.

PROFILE

Melusi Timothy Hlambelo, Hon. Treasurer

Melusi Timothy Hlambelo was born in Harare, Zimbabwe, in 1984. He completed his high school at Fletcher High School in Gweru in 2003. Melusi holds a BSc degree in Geology obtained from the University of Zimbabwe in 2007.

He has over 17 years of experience in mineral exploration and the mining industry, including more than 5 years at middle to senior management levels.

He has worked on several multi-disciplinary projects across the Great Dyke of Zimbabwe, spanning the mining value chain from conceptual to feasibility and then execution. His expertise includes management of geological inputs to produce the right data for effective resource evaluation and estimation, hydrogeology, geometallurgy, geotechnical and ore control processes.

Melusi is currently employed by Anglo American Platinum, Unki Mines as a Resource Geologist. He previously served as acting Geology Manager in 2022-2023. He has been a member of the Geological Society of Zimbabwe (GSZ) since 2008 and is presently our Honorary Treasurer.

MEMBERSHIP UPDATE

Gayle Hanssen, Membership Secretary gaylehanssen@gmail.com

Institutional Membership Contribution

Institutional Membership is an important part of the Geological Society of Zimbabwe' support profile. In 2023, a decision was made to put their income contributions towards empowering and elevating Zimbabwean geologists on the International stage. This was done by funding two geologists to attend important regional conferences.

The GSZ would like to continue to form bonds with International Institutions and would like to fund further presentations at International Conferences in 2024.

Paid-up Membership as at 6th June 2024

Institutional Members

Caledonia Mining Corporation Plc Blanket Mines

Chamber of Mines, Zimbabwe

DALLAGLIO Dallaglio

GEOASSOCIATES GeoAssociates (Pvt) Limited

maxgeo MaxGeo

Prospect Resources Prospect Resources

AngloAmerican Unki Mines (Pvt) Ltd (Anglo American)

ZIMPLATS Zimbabwe Platinum Mines Limited

Honorary Members

Blenkinsop, Tom; Broderick, Tim; Colvine, Sandy; Eriksson, Ken; Jelsma, Hielke; Jones, Dai; Kramers, Jan; Martin, Tony; Master, Sharad; Mugumbate, Forbes; Nisbet, Euan; Park, Graham; Podmore, Francis; Prendergast, Martin; Wilson, Allan; Zengeni, Teddy.

Ordinary Members

We would like to welcome the following new Members to the Society:

Samuel Mpala
Darlington Munyikwa
Ammiel Manyumbu
Munashe Mugwagwa
Zvikomborero Mutyambizi
Bernard Siachingoma
Tanatsiwa Shumba

Bingandadi	Muslin		Kanyezi	Pardon		Mpofu	Priviledge
Blair	Dale		Kasambira	Langton		Mtetwa	Kennedy
Botes	Andre		Kashiri	Tendai		Muchingami	Dereck
Bouammar	Houda		Macdonald	Fiona		Mugandani	Ernest
Chadwick	Peter		Machokoto	Catherine		Munyaradzi	Jabulani
Chikumba	Most		Magagula	Mathew		Muoneka	Benefit
Chingobo	Owen		Mandingaisa	Omberai		Mupwanda	Never
Chinheya	Brian		Manenji	Nhamo		Musa	Caston
Chitsungo	Blessing		Mangezi	Mukai		Musengezi	Valentine
Chituri	Owen		Mapengo	Oswald		Musiwa	Kudzai
Demo	Aaron		Mapingire	Brian		Mutika	Metrinah
du Toit	Andrew		Marazani	Tarisai		Ndebele	Fyrence
Dube	David		Masuku	Tendai		Nemahwe	Billmore
Duma	Steven		Mateveke	Martin		Nyachuru	Nation
Gerema	Nyasha		Matewo	Charity		Nyamukondiwa	Irvin
Gumede	Tenyears		Matsanga	Miriam		Rusike	George
Hanssen	Gayle		Matsheza	Tinyashe		Rusike	Charles
Hlambelo	Melusi		Mbiri	Esau		Sithole	Onesmas
Hlasi	Fredrick		Moodley	Adam		Wedu	Simbarashe
Hwata	Joseph		Mpala	Samuel			
Jones	Tim		Mpofu	Trust			

Associate Members

Dzimbanhete	Dzimbanhete		Mathe	Sithole		Wunda	White
Nago	Rodney		Chamunorwa	Daniel			

Student Members

BAMHAMIRE	MICHAEL		MATENGA	RUDO MAKANAKA		MWONZORA	JOHN
CHATAMUK	BRIDGET		MAVHENYENGWA	RUMBIDZAI		NDENGA	KUNDAINASHE
CHIBAYA	PHARISIE		MHLANGA	ERNEST		NDIRAYA	LEON
CHIHOMA	YOLANDA		MHOWA	LIAN		RUKANZAKANZA	REJOICE
DHAU	WILBERT		MUNONGWA	K		SAMATANDA	ATHUR

GWITIRA	BEAUTY		MUNYIRA	JULIA		SANDI	KUMBIRAI
MADUKU	GETRUDE		MUNYONGA	NOMSA		SHAVA	BLESSING
MAHANYA	MOVAN		MUPFUKUDZWA	LILIAN		SIBANDA	MAKHOSI
MAKORE	MELODY		MUPUNGA	HENRY		TIENGA	MUNASHE
MAKUNGUWO	FANUEL		MUSASA	PRIDE			WALTER
MANGANI	SHALOM		MUTINGWENDE	TINASHE			RUTENDO
MAPINGURE	SHEUNESU		MUWORI	RUTENDO			
MATAMBO	PRECIOUS		MUYAMBI	LAURA			

- **Honorary:** This membership has been bestowed on all presenters of the A.M. Macgregor Memorial Lecture, and to those who have made outstanding contributions to the Society over the years. Currently we have 16 such members.
- **Ordinary:** Professional membership by application for geologists who have a registered degree. To apply for this category, we need a copy of your degree certificate, a form sponsored by 2 current Ordinary Members, and your CV.
- **Foreign:** As above, but for those not resident in Zimbabwe.
- **Associate:** For interested parties not holding a degree but who are interested in participation.
- **Institutional:** Corporate membership and ardent supporters of the Zimbabwe Mining Industry.
- **Student:** Members of a recognized Student Body by the GSZ. Student body to submit members names and their number. For a Student Body to be recognized, the Constitution and current Committee to be submitted to GSZ.

http://www.geologicalsociety.org.zw/membership

The Membership Application Form can be down-loaded from the Membership Page of the website.

MEMBERSHIP SUBSCRIPTION FEES & RENEWAL REMINDER

(The first year's fee is the joining fee. If your application is rejected this joining fee will be forfeited)

Members (including Associate Members) US$30 annually
(or ZWL equivalent at the bank rate on the day of payment if US$ unobtainable)

Institutional Member US$500 annually
(invoices have been sent to existing members, but if your organisation is interested – please get hold of Gayle Hanssen, Membership Secretary, for an invoice - gaylehanssen@gmail.com)

Note: Foreign Members are classified as such on the basis of postal address. There is a different NOSTRO account for external payments, details for which will be provided on request.

Banking Details **OR** **Ecocash**

Geological Society of Zimbabwe
First Capital Bank (Barclays)
Kurima House Branch

Merchant Number 82758

USD Nostro FCA Domestic: 21573779436
OR
RTGS Account Number: 21576533195
OR
FOR EXTERNAL FOREX TRANSACTIONS
Account Name: Geological Society of Zimbabwe
Branch Name: NGO Centre
Account Numbers: Nostro FCA: 21573779533
Swift Code BARCZWHX

THE OFFICE IS OPEN
University of Zimbabwe – Geology Department – First Floor – Room 20
Mondays and Wednesdays from 9am to 4pm

Geological Society of Zimbabwe

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SOCIETY OF ECONOMIC GEOLOGISTS WINDHOEK CONFERENCE, NAMIBIA
27th-30th SEPTEMBER 2024
Registration Deadline: Early 22nd July 2024; Regular 12th September 2024

The GSZ would like to sponsor two speakers from Zimbabwe to the SEG Conference in Windhoek in September. The aim is to assist speakers who will highlight aspects of the geology of Zimbabwe. This sponsorship is funded from Institutional Membership subscriptions.

The sponsorship towards attending the conference includes:-

1. $1000 to a paid-up Member who has had an abstract accepted for the SEG conference.
2. $600 to a registered Student Member. Priority will be given to a person who has indicated their participation in the poster session at the conference.

Please submit your applications prior to 30th June 2024 to the GSZ Secretariat to allow for early registration and to take advantage of the discounts offered. Your application should highlight what involvement you will have in the conference and how you intend to showcase Zimbabwean Geology. Please also indicate how you plan to fund the remainder of the costs associated with attendance at the conference.

The GSZ would like to acknowledge the following Institutional Members who have paid their subscriptions to allow availability of funds for this sponsorship:

Blanket Mines ; The Chamber of Mines, Zimbabwe ; Dallaglio ; GeoAssociates (Pvt) Limited ; MaxGeo ; Prospect Resources ; Unki Mine (Anglo American Corporation) ; Zimbabwe Platinum Mines Limited.

* The GSZ will be using part of the Institutional Membership subscription in 2024 to fund the invited Keynote Speaker for the A.M. MacGregor Memorial Lecture.

Join the Geological Society of Zimbabwe Facebook Group

Articles and Reports

The Kilimanjaro Hike – 8-20 December 2022

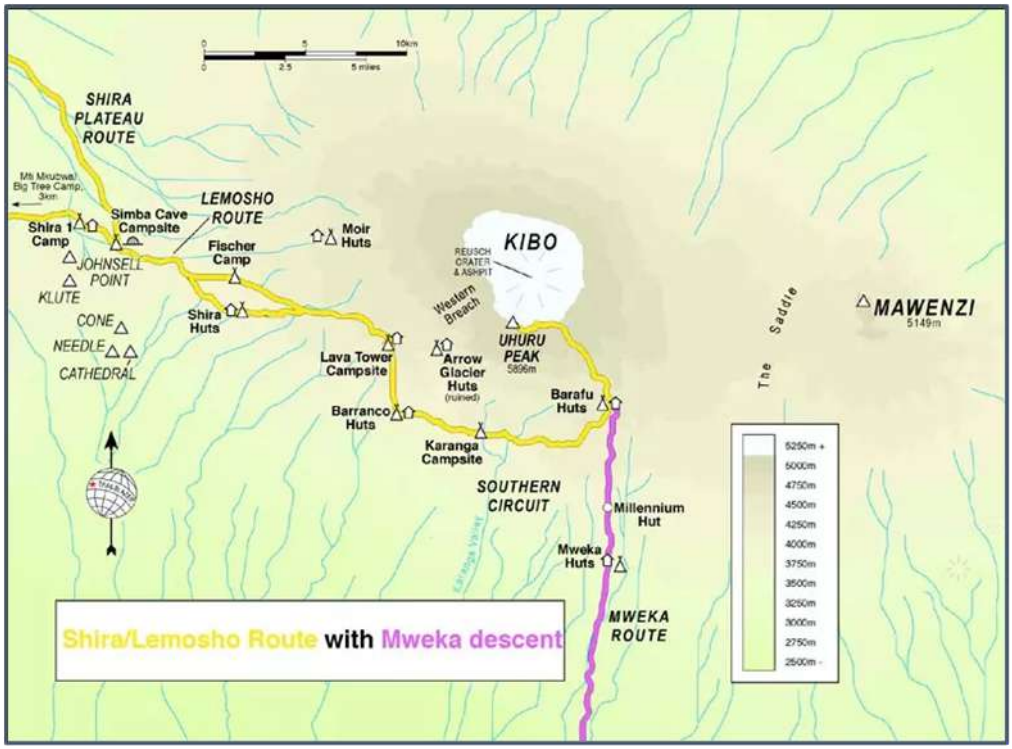
Caston Musa

Steve Ndiyama, General Manager at Mimosa Mines, provided the inspiration for staff to band together in a quest to climb Africa's highest mountain, Kilimanjaro's Uhuru Peak at 5895 metres above mean sea level (masl). This was to be a team-building exercise of note. Kilimanjaro does not immediately strike aspiring hikers as an intimidating peak – it is said to be a 'shy' mountain that frequently hides its summit in the clouds. One of the critical strategies in planning a hike up Kilimanjaro is learning from those who have experience of scaling beyond the clouds. *Fullmoon Safaris*, led by Emmanuel Tesha and his team of experienced guides, was an obvious choice to plan and lead our hike of 20 teammates.

Team (L to R) Beaven Ngara; Nelson Mukuri, Faith Maipisi, Caston Musa, Chris Msipa, Tafireyi Nyamazana(front) George Nyambiya, Blessing Garamumhango, Evonne Mudzingwa(front), Kuthula Phiri; Steve Ndiyamba, Sam Chimhanda(front), Walter Nemasasi, Lloyd Shamhu, Elijah Msipa(front) Beki Nyathi (back row), Anesu Kondo, and Stan Kudenga (not in Picture Marylyn Mosha & Chido Chizondo)

The first three days on the Lemosho route consists of long walks in the pleasant climate of the tropical rainforest, which later progresses to grasslands and moorlands. The journey commenced on 11 December 2022 from Lemosho Gate to Mti Mukubwa (*big tree)* camp. The Shira plateau stretches out for about 13km and is a relatively pleasant, flat hike in a montane grassland and shrubland ecoregion. The team walked 24km, starting at an elevation of 2100 masl, to Shira 1 camp at an elevation of 3610 metres, and then to Shira 2 at an elevation of 3850 masl.

Traversing the 13km Shira plateau



The eight-day Lemosho route including the Mweka descent

Shira, together with Mawenzi and Kibo, were formed by extensive volcanic eruption that occurred some 360,000 years ago during the late-Pleistocene Period. This immense mass of the present-day mountain is, in fact, a product not of two but three volcanoes, of which Shira was the first and Mawenzi the second – erupting as separate volcanoes with their tops nearly 30 kilometres apart. Kibo, the most recent, is a central vent between the two, from which emissions covered the eastern side of Shira and the western side of Mawenzi with new lava layers, welding the mountain into a single structure of oval shape. The Shira volcanic crater later collapsed into a caldera whilst Kibo's crater is raised high and well above its neighbours.

We entered a high-altitude desert on day four along the Lemosho Route. There is virtually no vegetation – only pools of rock on talus cliffs and volcanic ash dust stretching out as far as one can see. Upon this desolate heath is the lava tower – a massive and imposing rock structure rising to 4635 metres. The climb to the top of the lava tower takes at least an hour

and altitude sickness took its toll on almost all members, before we descended and snaked our was to Barranco hut camp. The lava tower experience and response to the altitude as an environment stressor was a deliberate acclimatisation strategy by the guides to evoke co-ordinated development of individuals to the changes, thus allowing our bodies to maintain fitness across this range of conditions. It is not often that we are told to eat extra carbohydrates, but long walks and high altitudes require more calories. The idea is to take it easy and climb at a pace that's comfortable to you.

Lava tower conquered

The thought of climbing the seemingly vertical Barranco cliff made us fearful, but much of the journey through this infamous place is just slow walking with a couple of scrambling sections. The notorious 'kissing wall' is a narrow section of the trail, where extra care and attention are required as one hugs the rock to pass it. The Karanga hut campsite derives its name from the Karanga valley, which cuts across Kibo's southern flank. This is a transit resting point as climbers traverse from the west side of the mountain towards Barafu in the east. At Barafu (ice) camp the trek converges with various other routes before ascending Kibo. Karanga camp is relatively low-lying at 3963 masl. The Barafu camp is located at 4673 metres elevation and is rocky, dusty, and cold, but acclimatisation was largely achieved by most members. Just after midnight we were assembled for the hike. The march was challenging, worsened by the cold and sometimes windy conditions, but the guides maintained a close eye on us all. As one approaches Stella Point on the edge of Kibo crater, after several hours of walking, the exhaustion starts to set in, together with light-headiness. Everyone who embarked on the summiting adventure made it to Stella Point, and from this point onward the ground becomes more level and freer from the gravel and scree that characterises the slopes. It took an additional hour of steady walking to get to Uhuru Peak, one of the most sought-after mountain summits in the world and the dream of every team member.

Caston Musa at Uhuru Peak – mission accomplished

The first part of the descent took us back to Barafu campsite where we spent the night. Continuing down through the climatic zones from our high altitude desert, we entered the heath and moorland zone as we descended the punishing nine-hour Mweka descent route into rainforest below 2800 masl to the main gate.

The experience taught me many life lessons, including the importance of team cohesion, how critical it is to trust teammates and to be a dependable team player. The importance of correct tempo in whatever one does came home to me.

The Mutare–Fingeren dyke swarm: the enigma of the Kalahari Craton's exit from supercontinent Rodinia

Ashley P. Gumsley, Michiel de Kock, Richard Ernst, Anna Gumsley, Richard Hanson, Sandra Kamo, Michael Knoper, Marek Lewandowski, Bartłomiej Luks, Antony Mamuse and Ulf Söderlund

A.E. Phaup Award for 2023

Abstract

The Rodinia supercontinent broke apart during the Neoproterozoic. Rodinia break-up is associated with widespread intraplate magmatism on many cratons, including the c. 720–719 Ma Franklin large igneous province (LIP) of Laurentia. Coeval magmatism has also been identified recently in Siberia and South China. This extensive magmatism terminates ~1 myr before the onset of the Sturtian Snowball Earth. However, LIP-scale magmatism and global glaciation are probably related. U–Pb isotope dilution–thermal ionization mass spectrometry (ID-TIMS) baddeleyite dating herein identifies remnants of a new c. 724–

712 Ma LIP on the eastern Kalahari Craton in southern Africa and East Antarctica: the combined Mutare–Fingeren Dyke Swarm. This dyke swarm occurs in northeastern Zimbabwe (Mutare Dyke Swarm) and western Dronning Maud Land (Fingeren Dyke Swarm). It has incompatible element-enriched mid-ocean ridge basalt-like geochemistry, suggesting an asthenospheric mantle source for the LIP. The Mutare–Fingeren LIP probably formed during rifting. This rifting would have occurred almost ~100 myr earlier than previous estimates in eastern Kalahari. The placement of Kalahari against southeastern Laurentia in Rodinia is also questioned. Proposed alternatives, invoking linking terranes between Kalahari and southwestern Laurentia or close to northwestern Laurentia, also present challenges with no discernible resolution. Nevertheless, LIP-scale magmatism being responsible for the Sturtian Snowball Earth significantly increases.

From: van Schijndel, V., Cutts, K., Pereira, I., Guitreau, M., Volante, S. and Tedeschi, M. (eds) 2024. *Minor Minerals, Major Implications: Using Key Mineral Phases to Unravel the Formation and Evolution of Earth's Crust.* Geological Society, London, Special Publications, **537**, 359–380.
First published online May 3, 2023, https://doi.org/10.1144/SP537-2022-206

The 2023 A.E. Phaup Award Citation

Forbes Mugumbate
With Houda Bouammar, Tim Broderick and Andrew du Toit

Eleven eligible papers referring to Zimbabwe geology published during 2023 were considered for the annual Albert Edward Phaup Award. One was judged as having made the most significant contribution towards the further understanding of geology in the country. The paper selected was:

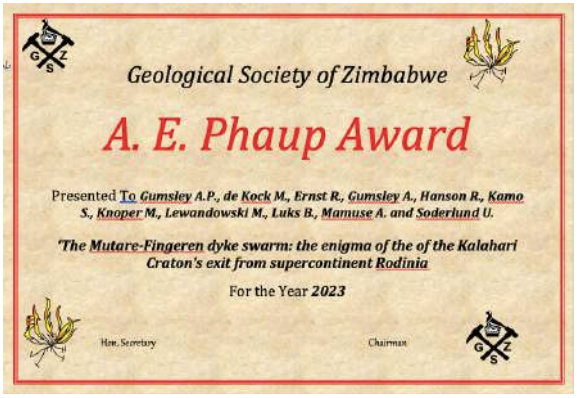
> **Gumsley A.P., de Kock, M., Ernst, R., Gumsley, A., Hanson, R., Kamo, S., Knoper, M., Lewandowski, M., Luks, B., Mamuse, A. and Soderlund U. 2023.** The Mutare-Fingeren dyke swarms: the enigma of the of the Kalahari cratonic exit from supercontinent Rodinia. *Geological Society, London, Special Publication*, vol. 537, 359-380.

- A team of geoscientists from various institutions identified a new Large Igneous Province (LIP), the Mutare – Fingeren Dyke Swarm dated at 724-712 Ma using U-Pb isotope dilution – thermal ionization mass spectrometry (ID-TIMS) baddeleyite dating.
- They described the NE Zimbabwe (Mutare Dyke Swarm) and western Dronning Maud Land, Antarctica (Fingeren Dyke Swarm) and found their origins to be coeval.
- The LIP is believed to be the result of rifting now documenting the effects of the dispersion of Rodinia supercontinent.
- Thus, the LIP helps in the reconstruction of Rodinia.
- The position of the Zimbabwe Craton within Rodinia has always been difficult to assess due to a lack of markers such as palaeomagnetics, fossils, and LIPs.
- The discovery of the Mutare Dyke Swarm coeval with the Fingeren Dyke Swarm is now used to show the connection point between segments of the Grunehogna Craton in western Dronning Maud Land and southern Africa.
- The Mutare Dyke Swarm presents a new magmatic barcode for Zimbabwe, and will now help to open up a new area of research.
- It is interesting to note that Sharad Master (2010) presented

The Zimbabwe-Antarctica link: a Foreland Basin model for the Late Mesoproterozoic Umkondo-Ritcherflya Basin, prior to its Pan-African Deformation.

- They argue that similarities between the Umkondo Group and Ritscherflya Supergroup indicate that they may have been part of the same large basin, and
- They interpreted these as foreland basins developed in the late Mesoproterozoic during the formation of the Rodinia supercontinent.

By writing a paper with such far-reaching local and regional geological consequences, the authors deserve the A.E Phaup Award for 2023. *Congratulations.*



3D Geological Modelling of the Ngulube Kimberlite, southern Zimbabwe

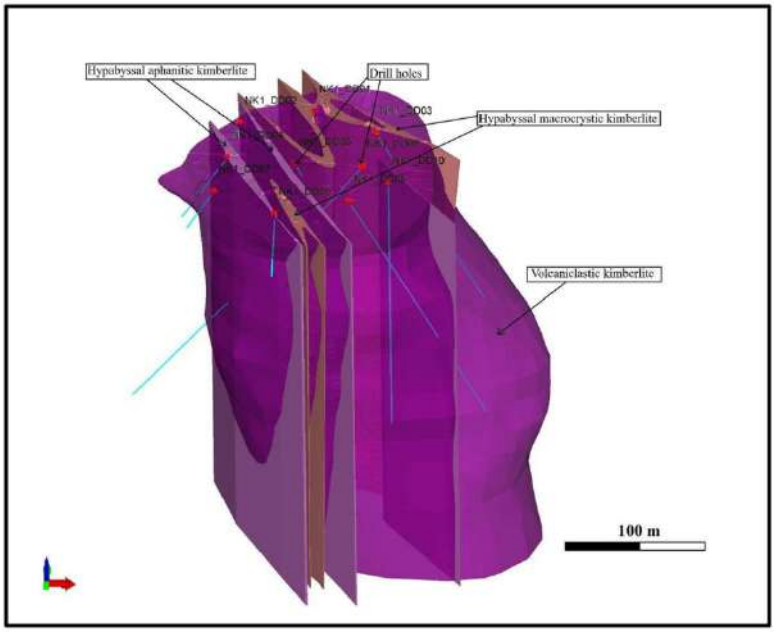
Munashe Mugwagwa

The Jim Wilson Award winner for the best Honours Degree Geology Project presented at MSU for 2023

Abstract

The Ngulube Kimberlite, emplaced into the granite-gneiss complex in the southwestern extremity of the Zimbabwe Archaean Craton close to the Limpopo Mobile Belt, was discovered 25 years ago by Cratonic Resources Zimbabwe. The geometry of the kimberlite and its emplacement mechanism have hitherto remained unresolved. The emplacement mechanism partly controls the diamond endowment of these kimberlitic magma pulses, and the geometry of the different lithofacies influences the mineability and mine design of kimberlite-hosted diamond mining operations.

This study generates a drill core-supported 3D model of the Ngulube kimberlite pipe and presents an emplacement model based on the 3D geometry and textural variations. The steep-sided, irregularly-shaped kimberlite pipe has three main lithofacies, namely: (i) volcaniclastic kimberlite, (ii) hypabyssal macrocrystic kimberlite dykes, and (iii) hypabyssal aphanitic kimberlite dykes.



Based on the textural variations of these lithological units, the following set of processes is envisaged to have culminated in the emplacement of the Ngulube kimberlite: (i) emplacement of vertical Ngulube hypabyssal macrocrystic kimberlite dykes along structural discontinuities such as faults and shear zones, (ii) *en masse* crystallization, which is evident by the Ngulube hypabyssal aphanitic kimberlite, and (iii) fluidization, which is depicted by the Ngulube volcaniclastic kimberlite.

Such an emplacement sequence shares parallels with the magmatic (bottom-up embryonic) model that proposes that the hypabyssal macrocrystic kimberlite is likely to host a greater portion of the diamond reserves relative to the hypabyssal aphanitic kimberlite. Volcaniclastic kimberlite has the potential to host diamonds larger in size than any other facies because the bigger clast sizes, such as kimberlite lapilli, kimberlite bombs, and mantle-derived material (including diamonds), are concentrated during the fluidization process that occurs during the emplacement of this lithofacies.

Citation for Takudzwa Mwagura on receipt of the Geoffrey Bond Award for 2023

F.B. Mupaya

Takudzwa Mwagura is a geologist who graduated from the University of Zimbabwe in December 2023 with a 2.1 class Honours Degree in Geology. He became an Ordinary Member of the Geological Society of Zimbabwe in January 2024.

He joined the university in August 2019 and established himself as a diligent and enthusiastic student in the field. His major interests during his studies were mineralogy, economic geology, petrology, geostatistics, ore deposit studies and environmental geology. He actively engaged in various academic and extracurricular activities, which included being a member of the Mennell Society of Student Geologists with active participation in

field trips when he gained hands-on experience in geological mapping, rock identification and mineral analysis.

His exceptional analytical skills and attention to detail earned him recognition from both his peers and lecturers. One of the highlights of Takudzwa's academic journey was his research project, which focused on the main sulphide zone in the Selukwe sub-chamber of the Great Dyke in Zimbabwe. His project involved extensive fieldwork, core logging, petrography and mineral grade per tonnage analysis. The project was awarded the prestigious Geoffrey Bond Award for the best Honour's year research project by the Geology Department at the University of Zimbabwe in association with the Geological Society of Zimbabwe.

Takudzwa has worked with two companies under short-term contracts for his industrial attachment, namely the Ministry of Mines and Mining Development and Anglo-American Unki Mines. From November 2021 to March 2022, he was with the Ministry of Mines and Mining Development in Gweru where his main focus was to provide technical, consultative and advisory services in applied geology and mineral exploration, mostly to small-scale miners. He conducted fieldwork and disseminated geological maps, survey reports, exploration reports whilst monitoring activities at mine sites in the Midlands Province. With Unki Mines, from April to October 2022, he applied principles of grade control in underground mining to mitigate grade dilution and waste control and conducted the collection of structural and lithological data through mapping exercises both underground and on the surface. He also developed a strong background and knowledge of Platinum Group Metals mining, core logging, geological sampling, supervision of diamond drilling teams, rock mechanics and ground control.

The Effect of the Paarl Fault on the Main Sulphide Zone, Selukwe Sub-chamber, Great Dyke

Takudzwa Mwagura

Abstract

Platinum group elements (PGEs) are amongst the very valuable resources in the world and as such every effort in ensuring their profitable extraction is a necessity. The mining of low-grade PGEs is damaging to any economic system. The drive for optimum and profitable grades can, however, be affected by geological structures.

This research project concentrated on assessing the impact of the Paarl Fault on the Main Sulphide Zone (MSZ) in the Selukwe Sub-chamber of the Great Dyke. The main objectives of the study were to assess the effect of the Paarl Fault on the MSZ, to assess the PGE concentration and distribution in the Paarl block and to assess the alteration mineral assemblages associated with the fault. The lithological units that were identified include gabbronorite, websterite, orthopyroxenite, pegmatoidal pyroxenite and websterite, xenolith exposures and serpentinite. The serpentinite and pegmatoidal pyroxenite were associated with alteration processes that affected the overall PGE grade (g/t). Assay results from sampled drill cores were analysed and grouped into two datasets based on the distance from the fault namely Dataset Paarl A (254m away from the fault) and Dataset Paarl B (448m away from the of fault). PAR49 in dataset Paarl A had the highest PGE grade of 5.28g/t. In dataset Paarl A, the average grade was 4.38g/t and the standard deviation was 0.556g/t. The lowest grade was obtained in dataset Paarl B in PAR42, which had a grade

of 3.64g/t. Dataset Paarl B had an average grade of 3.83g/t and a standard deviation of 0.196g/t. The petrographic analyses indicated the presence of alteration in the MSZ. Within the MSZ, clinopyroxene, orthopyroxene and olivine showed alteration patterns, with the formation of serpentine, observed mainly in PAR40 drill core thin sections.

Stratigraphic offsets in peak concentrations of PGEs that occur in the MSZ have in part been attributed by Li *et.al* (2008) to the interaction between magmatic PGE-bearing base metal sulphide assemblages and hydrothermal fluids. With the assay values obtained in this project, the evaluation of the results suggested that the Paarl Fault could have acted as a conduit for mineralizing fluids which resulted in high PGE values (g/t) in proximity to the fault. Alteration assemblages show consistency with the effects of faulting on host rocks, whereby the hydrothermal fluids from the fault could have promoted alteration processes resulting in the formation of secondary minerals such as serpentine and the presence of different textures as observed in pegmatoidal pyroxenite, which could result in PGE-barren zones that may impact mining.

An Investigation of the Geo-mechanical Classification Systems used at Shamva Gold Mine

Josiah K. Chakawa

The 2023 Mike Vinyu Award winner for the best final-year student at the Zimbabwe School of Mines

Having been moved by the safety talk “USARASE TEA", referring to the ‘Total Elimination of Accidents’, I embarked on a project on the investigation of the geomechanical classification systems used at Shamva Gold Mine with the idea of maximizing safety. The aim of the project was to come up with an effective rock mass rating system and support system suitable for the Cymric Section at Shamva Gold Mine. The section is run from 6 to 7-level with the surface at 4-level where numerous activities can easily impact upon ground conditions. The problem statement was that rock fall incidents were experienced where people where working resulting in the injury of workers as well as stope closure during blast-induced rock falls. e.g CYM 8E24 MSL Trail and Underhand where a bad hanging of approximately 67.5kg with an average grade of 2.14g/t fell from the hanging wall injured a worker from a height above 2m. Also at the CYM 8E24 Stope Catwalk a blast-induced rock fall of approximately 90t and an average stope grade of 2.73g/t resulted in loss of stope functionality. Costs were incurred through the need to mine new developments to regain access to the area.

To justify all this, with mining continuously increasing in depth, the safety of workers and machinery has now been compromised at the mine where falls of ground (FoG) represent high risk. Precautions are taken when entering underground but do not offer full protection. Thus the project aims to generate and document updated geotechnical information that will be applied in managing ground conditions at Shamva Gold Mine. The objectives of this research were to identify structures affecting ground condition; to carry out rock mass classification; to determine the type of support to be used; to create a structural plan; and to achieve a geotechnical database for the section. For data capture and processing, the methods used were :

1. Structural mapping by recording orientation of discontinuities, spacing of discontinuities, the persistence of dominant discontinuities in an area, the aperture of discontinuities and the filling within discontinuities.
2. Construction of stereo-plots to determine wedges.
3. Geotechnical logging
4. Rock mass classification, including recording Rock Quality Designation (RQD) and creating a Rock Mass Rating (RMR) system and a Barton's Q system.
5.Pull testing on support rock bolts (maximum of 30t).

Results

1. Rock Mass Rating system for the section,
2. Structural plans,
3. Geotechnical database,
4. New design for supporting roof bolts,
5. Geotechnical Stereo nets.

From the analysis of results, l concluded that structural mapping and rock mass rating should be done on every active end as geological structure failure is the major cause of FoG incidents. Support remedies should be continuously monitored.

Recommendations

1.Support installation procedure must be adhered to and standards should be reviewed on a regular bases such that they suit current developmental changes.
2. Underground diamond drilling should be made a permanent tool for underground evaluation of ore body geotechnical parameters.
3. When mining across faults associated with bad ground, blasting of these ends must be in such a way that it does not trigger falls of ground.
4. In the major joint formations, which form sub-parallel planes, 3m cable anchor bolts should be used to effectively pin the joints.
5. If three ends are drilled in a single end for each sub-level they should not be blasted at the same time thus reducing the potential for rock falls.
6. A geotechnical logging sheet should be introduced so that geotechnical information can be captured and areas can be classified using both log sheets and information gathered through mapping.
7. Routine rock mass quality assessments should be carried out in areas observed to have potential for failure.
8. A rock mechanics software such as DIPS should be used for modelling structures to determine critical intersections and wedge sliding zones.

The Keith Viewing Award for 2023

Godfrey Chagondah - Citation for the best paper delivered at the Summer Symposium

Tony Martin

The Granite '71 symposium was one of the first international conferences devoted entirely to granites, gneisses and related rocks. It was held at the then University of Rhodesia and attended by 250 delegates from eleven countries around the world. One of the papers presented was that by Ian Robertson who mapped an area around Mt Towla, which was described in Geological Survey Bulletin 68. At that time age determinations of rocks had error ranges of plus-minus tens of millions of years and sometimes even hundreds of millions of years. Nevertheless, based on field evidence and petrography, Robertson proposed that the Razi Suite of granites, situated along what is now known as the North Limpopo Thrust Zone of the Limpopo Belt, was related to the extensive Chilimanzi Granites to the north.

Fast forward 50 years to an era where technological advances have reduced errors in age determinations to a few million years and has also allowed insights into the genesis of magmatic events using detailed geochemistry and in particular, the behaviour of rare earth elements.

Using these modern techniques, Godfrey Chagondah and co-workers Axel Hoffman and Alan Wilson, have confirmed that these late-stage granites are derived from the reworking of older crust and in particular that their likely protoliths are tonalite-trondhjemite gneisses, themselves of possible sedimentary origin.

Furthermore, the geochemistry and mineralogy of the Razi Suite suggests that it is less evolved and lies closer to the source of partial melting than the Chilimanzi Suite magmas, which are more evolved and emplaced at a higher crustal level. So, Ian Robertson's suggestion has been shown to be correct and with advances in technology we now have a much better understanding of the origins and mechanism of emplacement of the granites that cover much of the Zimbabwe Craton.

In terms of the scientific content and clarity of the presentation, the Keith Viewing Award for 2023 goes to Godfrey S. Chagondah, Axel Hofmann and Allan H. Wilson for their paper entitled "*The mineralogy and geochemistry of Archaean late-granite suites along the southern extent of the Zimbabwe Craton*".

News

Geology Section: Department of Chemistry and Earth Science, University of Zimbabwe

Dr Maideyi Meck with a contribution from Fadzanai Mupaya

The Department in General

The department continues to function well. We, and the university at large, have been running lectures under the block system whereby examinations are written at the end of each month for the 4-year duration. From the week ending 26 May 2024, we started block 4 of the semester.

The thin section-making unit is now completely operational. If you require these services, don't hesitate to reach out to either Ms Hama or Mr Mupambo using the numbers listed below.

The Department, through the University of Zimbabwe, has now received funds from UNESCO to initiate establishment of a National Centre for Groundwater Research and Training.

The Department has received 100 hard copies donation of a publication "Dambo Farming in Zimbabwe" by Dr Richard Owen. If you need a personal copy, get in touch with Ms Hama.

Teaching in the Department

- Teaching at the university is now fully modularized (3 weeks learning one week exam). Thus industry personnel who would like to join a particular module are welcome to participate.

- The department is happy that geologists from the mining industry usually come forward to assist in the teaching of some subjects. In this regard, Mr Mhindu could not take up the teaching of 'Geological Evolution of Southern Africa' this year. Our thanks are extended to Dr Chagondah and Mr Mapingire, who are teaching the Archaean and Proterozoic parts of this course, whilst Dr Oliver Maponga teaches the Phanerozoic.

- Our first cohort for the new degree, "Geological Sciences", under the auspices of the Department of Chemistry and Earth Science will be graduating this year.

- The department continues to run tailor-made courses and is currently running one for Stanbic Bank staff in the "Training on Rocks and Minerals Identification" and "Mining Projects Evaluation".

- The Pan-African Minerals University of Science and Technology (PAMUST) has advertised for a second intake of students under UZ and those students who are accepted will commence in August.

Staff update
Prince Mandingaisa has completed his PhD and he becomes Dr Mandingaisa as of April 2024.

Dr Meck has been promoted to Associate Professor with effect from 1st February 2024.

Research in the Department
Ongoing projects in the department where industry partners are welcome to join are:

1. Geo-Hydraulic Properties and Aquifer Vulnerability of the Middle Sabi aquifer.
2. Genesis and provenance of the diamondiferous sediments at the Chimanimani Deposits: implications for exploration in the Umkondo Basin, Zimbabwe.
3. Re-appraisal of the Umkondo basin, southeast of the Zimbabwe Craton: Implication to landslides initiation.
4. An assessment of geothermal wellhead power generation potential of wells and the nexus with the local seismic activity and geotechnology.
5. Coal appraisal in the Zambezi Valley.
6. Critical raw materials appraisal.

60 Years of Honours Degree Graduates

Vernon Stocklmayer reminds us that it is 60 years since the first group of Special Honours Degree students graduated at our university under the mentorship of Prof Geoffrey Bond. He has kindly sent some comparative photographs.

University College of Rhodesia & Nyasaland inaugural 1964 Special Honours Degree in Geology Graduates L-R: Ian Robertson (now in Perth, WA), Dr Tony Gifford (Petrology Lecturer), Nigel Rowlands (now in Queensland), Muffin Samuels (she became Mrs Rowlands), Vernon Stocklmayer (now in Perth), Craig Smith (moved to Italy), Angela Betts (undergraduate) and Pat Stidolph (now in Queensland).

A windy 2024 ZGS/UZ Reunion along the Swan River, Perth. L-R: Vernon Stocklmayer (UZ/ZGS), Peter Fey (ZGS), Brian Varndell (Rio Tinto), Nick Lockett (UZ/ZGS), Ian Robertson (UZ/ZGS), Susan Stocklmayer nee Warner (UZ/ZGS), Bev Wahl (UZ), Sue Belstead, Paddy Belstead (ZGS), Gill Robertson, Maxine Fey, Jean, Nick Winell. *Photo: Ian Robertson*

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The Mennell Geological Society

Fadzanayi Mupaya (Patron)
fomupaya@gmail.com

The Mennell Society made major progress in that they are registering members into the student chapter of the Society of Economic Geology. There are many benefits, including assistance with international field trips and participation in research projects.

The students have been busy with examinations but have held frequent on-line discussions on various geological issues. This mostly included sampling and grade control. They are planning a field trip to the Mutare Greenstone Belt for this mid-year.

Mutorashanga Field Trip, 23 March 2024

This field excursion involved students from both UZ and MSU and touched on the East Dyke, The Great Dyke, the May Claims east of Muriel Mine within a section of the Chinhoyi/Guruve Greenstone Belt, elluvial chrome mining at Mutorashanga and the 'Green Pool', which is the abandoned pit of the old Ethel asbestos mine.

STOP 1: The East Dyke, which is a parallel satellite to the Great Dyke, is exposed as quartz gabbro boulders just before the Nyabira toll gate *en route* to Chinhoyi along the Lomagundi Road. It's twin, the Umvimeela Dyke, runs parallel to the Great Dyke trend to the west and is exposed in castle koppie form along the same road west of the Mutorashanga turn-off.

STOP 2: Pyroxenite or Bronzitite of the P3 horizon was examined at the top of the Great Dyke Pass where the layer is well exposed. The Great Dyke is associated with an important array of minerals including PGM's, chromite, asbestos, nickel and gold.

STOP 3: The May Claims are east along the strong shear trend from Muriel gold mine and lie in the western shadow of the Great Dyke. The greenstone lithologies observed include metabasalt, diorite, Shamvaian-age quartzite and schist, feldspar porphyry and serpentinite. Porphyritic potassic granite occurs to the north and tonalitic granite is present to the south of this attenuated greenstone belt. With a strong easterly shear direction, most foliation planes dip steeply north, but locally to the south. Gold/copper mineralization is associated with quartz veins in which the sulphide minerals include chalcopyrite, pyrrhotite and pyrite. Magnetite is present in some instances according to Goredema, 2023. Students followed a traverse line across the May Claims to observe the changing lithologies and to examine there contact zones.

Goredema, B. 2023. An analysis of alteration styles associated with Au-Cu mineralization at May Mine, Chinhoyi-Guruve Greenstone Belt. Abstract. Geological Society of Zimbabwe 2023 Summer Symposium, Mwatahwa Candidate, UZ, pp. 12.

STOP 4: The deep 'Green Pool' at the old Ethel asbestos mine north of the Mutorashanga chrome mining camp demarcates the cross trend of a major fault, which offsets the Great Dyke and acts as host to the chrysotile and actinolite fibres derived from the host serpentinite.

STOP 5: Chrome seam mining activities were observed along the road from Mpinga to Mutorashanga, as was the common stripping of ground for eluvial chrome with associated environmental impacts.

Conclusion

The field trip was considered successful and an eye-opener, which exposed a further appreciation of Zimbabwe geology to students who improved their skills in field observation, rock mapping and aspects of the economic geology observed.

Movan Mahanya, Chairman and Pharisie Chibaya, Vice Chairperson

The Mennell Geological Society Executive – May 2024

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MIDLANDS STATE UNIVERSITY

FACULTY OF ENGINEERING & GEOSCIENCES
ZVISHAVANE CAMPUS

Updates from the Department of Geosciences

The Belingwe Greenstone Belt Report

Midlands State University representatives from Geosciences recently had the honour of being invited by Dr Anthony Martin, representing the Geological Society of Zimbabwe and Prof Axel Hofmann, from the University of Johannesburg, on an educative field trip exercise around the Belingwe Greenstone Belt. This trip was facilitated by Doctor Antony Mamuse with four of the Geosciences Department's staff-development personnel namely Tinotenda Gwavuya, Karen Moyo, Ayanda Gumbo and Trisha Paraziva together with geo-technicians Liberty Ndlovu and Farai Zihanzu.

The Belingwe Greenstone Belt is divided into 2 parts - the Upper Greenstone Belt (Mtshingwe Group) and the Lower Greenstone Belt (Ngezi Group). The Lower Greenstone Belt is the older and comprises four formations, namely Hokonui Formation, Bend Formation, Brooklands Formation and Koodoovale Formation. The Upper Greenstone Belt is the younger, higher assemblage also with four formations, namely Manjeri Formation, Reliance Formation, Zeederbergs Formation and Cheshire Formation. The first stop of the field trip was within the Cheshire Formation, which hosts a sedimentary succession of shales, sandstones and conglomerates. The most notable exposures in the Cheshire are the domical limestone stromatolites. They formed due to a photosynthetic process whereby algae released oxygen in the presence of carbon dioxide. The algae fixes the carbon with calcium forming the stromatolite.

Figure 1: Domical Stromatolites

The next stop was to see the Zeederbergs Formation. These rocks are basaltic in nature comprising pillow basalt, massive lava flows, tuffs and volcanic breccia. The outcrop that was of interest in this formation was an exposure of pillow basalts, probably one of the best expressions of Archaean pillow basalt in the world. They formed when the lava flows came into contact with marine waters, which instantly cooled the outside crust of lava with the inner layer still molten.

Figure 2: Pillow Basalts

The Reliance Formation was the next stop on this educational trip. This formation is ultramafic in origin, high in magnesia, with the preservation of komatitic basalts, komatiites, dunite, gabbro and serpentinite. In an exposure showing the rock sequence, dark green olivine-rich dunite was followed by serpentinite, probably as altered dunite, which gave way to more feldspathic gabbro. The traverse progressed across komatitic pillow basalts into massive, fine-grained komatitic basalt , which displays a spinifex texture of distinctive quenched and bladed crystals of olivine or pyroxene. This layer culminates as komatiite, with a high magnesium content of at least 18%. The komatiites are characterized by spinifex texture comprising dendritic plates of olivine and pyroxene.

Figure 3: Dunite of the Reliance Formation

A foray into the Lower Greenstones was next, with a visit to the Brooklands Formation. This formation consists of a sequence of sedimentary and volcanic rocks. The sediments include clastic rocks including conglomerate and sandstone whilst the volcanics consist of aglomerate and tuffs. The exposure that was of interest in this formation was an expanse of conglomerate. This conglomerate hosts multiple rock types from various formations including quartz, basalt, sandstone, quartz conglomerate and various other lithologies and is clast-supported with more clasts than matrix.

Figure 4:Conglomerate in the Brooklands Formation

The final stop of the trip was a return to the Upper Greenstones into the Manjeri Formation. This formation is sedimentary in origin suggesting deposition in a shallow water environment but exhibiting a range of lithology from conglomerate to non-clastic precipitates expressed as banded iron-formation. The famous unconformity exposure was the focus as it showcases rock layers that tell a clear story of the geological events that took place around the time of formation. The rock layers start with a basal coarse conglomerate and pure quartz sandstone. One moves upwards into a mix of sandstone and silty mudstone

deposited between high and low tides. The upper layers preserve flaser bedding and ripple marks, likely formed by currents and wave action. As the sandstone layer was compressed, it was expelled upwards cutting across the siltstone in soft-sediment deformation. Between the siltstone beds is a dolomite cement, indicating an alternation of chemistry in the marine environment due, possibly, to volcanic activity. Above this layer is the jasperlite, which is a deep water precipitate. Another chaotic sandstone horizon my, conceivably be a result of slumping due to earthquake activity. The sandstone layer is followed upwards by banded iron-formation.

Figure 5: Jasperlite layer, Manjeri Formation

Unfortunately, due to time constraints, the Belingwe Greenstone Belt could not be explored extensively. Nevertheless this was an amazing opportunity to plant the seed of appreciation of the geological treasure that the Belingwe Greenstone Belt is to our younger staff. What is more, the area is on our doorstep and offers innumerable opportunities for further research and field excursions.

Submitted by Pricilla Chima, Chairperson, Geosciences Department chimap@staff.msu.ac.zw

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ZIMBABWE SCHOOL OF MINES

Serving the SADC mining industry

It has been a busy and eventful semester for the Zimbabwe School of Mines Geology Department. The gemstone industry in Zimbabwe holds immense potential for economic growth and development. To unlock this potential, the department received a generous donation of lapidary equipment from the Minerals Marketing Corporation of Zimbabwe. The donation aims to empower the school and the gemstone industry at large by providing

the necessary tools and resources for the local processing of gems, ultimately enhancing the value chain and fostering economic benefits. The lapidary laboratory was officially opened on the 25th April 2024 by the Deputy Minister of Mines and Mining Development, Honourable Dr. P Kunaka, MMMD officials, MMCZ board members and the Zimbabwe School of Mines Principal, Eng. Gwaze, the Geology Department Head of department, F. Ndebele and other school personnel. The first class for the Certificate in Gemstone cutting and polishing has eight students while the Diploma in Gemology class has sixteen students. This is a positive move towards capacitating the gemstone manufacturing industry.

The theme for this year's Zimbabwe International Trade Fair was "Entrepreneurship: The catalyst for Industrialization and Trade". In line with the theme, the school exhibited lapidary equipment. The cabbing and faceting machines were on show and Cutting and Polishing students demonstrated the use of these machines by polishing various gemstone specimens. On the 24th April, the then Minister of Mines and Mining Development, Honourable Zhemu Soda and his Deputy visited the stand. A presentation was made by one of the department's lecturers, Nomasiko Mpofu, on the differences between transparent and opaque gemstones that can be polished using the above-mentioned machines.

Also, the department has managed to have successful field trips - the 3rd year students went for a mine visit to Freda Rebecca whilst the 1st year students carried out a short mapping excursion on the Bulawayo Greenstone Belt. The 3rd years are scheduled to go for their yearly mapping field camp to the Great Dyke and Belingwe Greenstone Belt in the second semester. The first years are scheduled to go for their Hwange field camp in the second week of May.

The department also started a club known as The ZSM Geological Club that has an inaugural membership of twenty-four. The club is yet to hold its first talk, which will be in the 2nd semester. The club appeals to members of the Geological Society for support in the form of talks and lectures.

It has indeed been an exciting semester for us in the department.

Submitted by Fyrence Ndebele

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Department of Mining and Processing Engineering

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Are there any aspiring correspondents from Manicaland State and NUST willing to participate in news gathering from their Departments? We would be grateful to have you on board. Enquiries to Shephard Mabhanga at UZ - smabhanga@gmail.com

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Geological Survey Department

Ernest T. Mugandani
etmugandani@gmail.com

- Staff at the Zimbabwe Geological Survey congratulate the Director, Forbes Mugumbate, for the successful publication of an article entitled "***The Value of the Belingwe Greenstone Belt, Zimbabwe, as a National Geoheritage Site***". This was published in a Special publication of the Geological Society of London at the end of April 2024. It is one of the manifestations of Forbes' passion for Geoheritage.

- **Ernest Mugandani** attended the Zimbabwe Chamber of Mines Annual General Meeting (AGM) and Conference held at the Victoria Falls and the Elephant Hills hotels from 28 to 31 May 2024. The theme for the Conference was *"Unlocking Growth Potential for the Zimbabwe Mining Industry"*. The conference included a Critical Minerals Symposium and the Platinum Group Metals (PGMs) Indaba amongst some of the key discussions and presentations.

- **Mangwiro Sibanda** attended the 64th Zimbabwe International Trade Fair (ZITF) held in Bulawayo from 23 to 27 April 2024. The theme of the ZITF was "*Innovation: The Catalyst for Industrialisation and Trade"* with organisers saying that the theme recognises that innovation and entrepreneurship are complementary forces, which work together to open pathways to economic growth and progress.

- **Ms Tatenda Tavarera** attended the PanAfGeo training course on *Mineral Resources Assessment* from 11 to 21 March 2024, which was held in Kitwe, Zambia. The purpose was to provide theoretical and in-the-field training aimed at integrating the concepts relating to stratabound Cu-Co mineralization within the Copperbelt region of Zambia, a part of the Lufilian Arc.

- **Ms Diana Mugadza** attended the second quarter *Gold Mobilization Exercise* held by the Ministry of Mines and Mining Development from 20 to 27 May 2024. The

aim of the exercise is to encourage gold miners to deliver gold to Fidelity Gold Refinery and to curb gold leakages.

- **Sicelo Makhaza**, a geologist for Matabeleland North Province, resigned for greener pastures from the Ministry of Mines and Mining Development during the week ending 24 May 2024. We wish him well in his new endeavours.

- The Provincial Mining Directors for Midlands and Mashonaland West Provinces, **Tariro Ndhlovu** and **Sibongubuhle Mpindiwa,** have been transferred to Matabeleland South and Manicaland Provinces respectively with effect from March 2024. We wish them well at their new stations.

MINING NEWS

gleaned from https://www.mining.com/

by Kennedy Mtetwa

Zimbabwe takes full control of controversial state miner

Bloomberg News **February 8, 2024** Africa Gold Lithium Platinum

Zimbabwe's state sovereign wealth fund has now acquired all of state mining company Kuvimba Mining House Ltd, in a bid to end speculation about its ownership. Kuvimba holds some of Zimbabwe's best mining assets, which were once owned by a company controlled by US- and UK-sanctioned tycoon Kudakwashe Tagwirei, an adviser to Zimbabwe's President Emmerson Mnangagwa. The government has never given details of how they came to fall under its control other than to say they were acquired for an undisclosed amount.

Kuvimba was, in 2021, said by the government to be 65% state-owned with 35% of it being held by private investors, later described as a management consortium. Mutapa Investment Fund, the sovereign wealth fund, initially took over the 65% held by the government and has now bought the rest, said Simba Chinyemba, Kuvimba's chief executive officer.

"The speculation was unhelpful and the fact that that speculation did not die out despite us presenting the evidence of the structure of Kuvimba" complicated its dealing, Chinyemba said in an interview in Cape Town on Thursday. "If there are questions about your shareholding then potential investors would want to think a little bit deeper about investing."

Chinyemba said he was one of the beneficiaries of the buyout and that Tagwirei had never benefited from its operations, which include nickel and gold mines and lithium and platinum deposits. He would not disclose the amount paid for the 35% or when the transaction was completed, but said it was "very fresh."

In 2021 *Bloomberg* reported on a trove of emails, documents and *WhatsApp* messages that delineated the links between Tagwirei and his company, Sotic International Ltd., and the *Financial Times* and *The Sentry* followed with reports giving details of the relationship later that year.

Kuvimba said at the time it planned to hold an initial public offering. Its assets include Darwendale, Zimbabwe's biggest platinum deposit, that was previously partly owned by Russian investors.
Tagwirei, known in Zimbabwe as "Queen Bee" because of his political and economic influence, was sanctioned by the US in 2020 for alleged corruption and the UK followed suit in 2021.
(By Matthew Hill, William Clowes and Antony Sguazzin)

Implats' Zimbabwe unit plans voluntary job cuts to contain costs

Bloomberg News **March 18, 2024** Top Companies Africa Palladium Platinum

Impala Platinum Holdings Ltd's Zimbabwean unit is offering staff voluntary redundancy packages to cut costs because of anemic metal prices. Weak platinum group metal prices are projected to last for the next 12 to 18 months, Zimplats Holdings Ltd chief executive officer Alex Mhembere said in a staff circular dated March 18 that was confirmed by the company. The producer is beginning "a voluntary retrenchment exercise for all employees wishing to be considered," which may "mitigate the need for a compulsory retrenchment," the circular said.
Impala, known as Implats, and its PGM mining peers have already cut thousands of jobs in neighbouring South Africa – which accounts for about 70% of global platinum output. The four largest producers have all recently released sobering earnings reports, with profits battered by a sharp slump in metals prices since the start of last year.
Employees at Zimplats – Zimbabwe's biggest producer of PGMs – are being offered a minimum of three months' pay and must have submitted their application forms by March 22, according to the circular.
"We have been working with all teams across the board in implementing various cost containment and cash preservation programs," Mhembere said. "I am confident that as a team we will successfully navigate through the headwinds."
(By Godfrey Marawanyika)

African development banks expected to fund Caledonia's new Zimbabwe mine, CEO says

Reuters **April 3, 2024** Intelligence Africa Gold

African development banks are seen as the most likely funders of Caledonia Mining Corporation's planned $250 million gold mine in Zimbabwe, the mining company's CEO Mark Learmonth said on Wednesday. Caledonia, which already owns the Blanket gold mine in Zimbabwe, is updating a feasibility study ahead of the planned construction of a new mine at Bilboes to produce at least 170,000 ounces annually, making it potentially the country's biggest gold mine.
The southern African country has significant mineral resources, including platinum group metals, gold and lithium, but has struggled to attract investment due to economic instability and jitters over property rights after the government seized white-owned farms at the turn of the century.
Caledonia, backed by investors including BlackRock and Cape Town-based fund manager Allan Gray, is one of the few foreign investors – along with Anglo American Platinum and Impala Platinum – to brave Zimbabwe's tough economy marked by foreign currency shortages and episodes of hyperinflation. The company is in preliminary talks with the "most likely lenders", Learmonth said during a conference call.

"They are going to be African development banks who have indicated a high degree of interest in this project," he said.
Learmonth said debt would form the bulk of the funding for the Bilboes project.
"We will not be approaching the market for any non-debt funding until we've got a better idea of what the debt capacity is because, frankly, nothing is going to be as cheap as debt funding," Learmonth said.
He said once funding was in place, "optimistically" a year from now, construction of the mine would likely take two years after financial close.
Caledonia's operating profit plunged 62% to $15.18 million in 2023, from $40.28 million a year earlier, mainly due to higher administrative and production costs.
(By Nyasha Chingono; Editing by Nelson Banya and Kirsten Donovan)

Zimbabwe launches "gold-backed" currency to replace dollar

Cecilia Jamasmie **April 5, 2024** News Africa Gold

Zimbabwe said on Friday that it will launch a new currency backed by the country's gold reserves, the latest move by President Emmerson Mnangagwa's government to stabilize its rapidly devaluing currency. Zim Gold (ZiG), to be introduced on April 8, will also be backed by foreign currencies and other precious minerals, the new central bank governor John Mushayavanhu told local press, adding that it would circulate alongside a basket of other currencies.
The ZiG currency will be introduced at a rate of 13.56 per dollar, along with a new interest rate of 20%, a monumental cut from the previous 130% rate, which stood as the highest central bank rate globally. Banks are expected to convert their existing Zimbabwean dollar balances into the ZiG.
Analysts and economists have suggested that this situation highlights more fundamental issues, including the government's practice of printing money to finance its expenditures. For BMO Global Commodities expert Colin Hamilton the new currency strategy could have potentially wider implications, particularly regarding trade. "We expect that many of Zimbabwe's exports to China might now be paid for in Chinese Yuan (rather than US dollars), which can be converted into gold through the Shanghai Gold Exchange," Hamilton wrote in a note to investors.
"We expect this to become a growing trend in China's trade with developing countries, amid the wider push to grow the international influence of the CNY, which would also bring more gold back into the global monetary system," Hamilton said.
Mnangagwa's government decision to put in place a "structured currency" comes almost a year after introducing a gold-backed digital currency for peer-to-peer and peer-to-business transactions. The product was expected to act as a legal tender and a store of value as the country's currency continues to lose ground against major currencies.
Previous to these attempts, the government had tried multiple strategies to stabilize the Zimbabwean dollar, which was reintroduced in 2018. It had been scrapped a decade earlier due to hyperinflation of 5 billion percent, according to the International Monetary Fund, nearly a world record. The IMF has criticized the unconventional methods favoured by Zimbabwean officials to address the depreciation of the local currency.
Since the beginning of the year, the official value of the current Zimbabwean dollar has dropped by four-fifths, making it the world's second worst-performing currency.

Africa to play 'huge role' in US critical mineral strategy, says Treasury's No. 2

Reuters **March 14, 2024** Battery Metals Africa Russia and Central Asia USA Cobalt Copper Palladium Platinum

The United States is looking to Africa to help loosen a Chinese stranglehold on battery metals and reduce Russia's influence over the market for other minerals, US Deputy Treasury Secretary Wally Adeyemo said on Thursday. Coronavirus pandemic fallout and Moscow's war in Ukraine have sent Western governments scrambling to reduce their reliance on Chinese supply chains and disentangle their economies from Russia. But as Washington plots a course for its energy transition it is lagging behind China, which has spent the past decade securing access to minerals needed for the production of products like electric vehicle batteries and solar panels.

"We don't want to be overly reliant on any one country or any one company for global supply chains for critical minerals," Adeyemo told *Reuters* during a visit to a platinum mine in Marikana, South Africa, owned by Sibanye-Stillwater.

While the US government has launched a raft of measures to incentivize increased production of strategic and critical minerals at home, notably under the Inflation Reduction Act, Adeyemo acknowledged that overseas resources were also vital.

"Africa is going to play a huge role," he said. "A lot of critical minerals are located here."

Chinese assets in Africa already include massive copper and cobalt projects in Democratic Republic of Congo and Zambia as well as lithium in Zimbabwe, where companies are assisted by heavy Chinese state investment in accompanying infrastructure. Adeyemo said the United States was working with G7 allies to close that infrastructure gap.

The US International Development Finance Corporation is, meanwhile, aiming to de-risk private investment in Africa. And the deputy secretary said Washington was incentivizing US manufacturing to boost demand for those minerals and create favourable market conditions for miners. But he added that the White House also stood ready to ensure a level playing field.

"We are talking to our European allies … about some of the actions we can take using trade tools to make sure that a country like China can't flood the market with things like electric vehicles and solar panels," he said.

Regarding Russia, Adeyemo said countries like South Africa also had a role to play. In the wake of Moscow's 2022 full-scale invasion of Ukraine, the US government slapped sanctions on a number of Russian miners and mineral exports. But it left Russian platinum group metals (PGM) largely untouched. The United States is a major consumer of palladium, a PGM used in catalytic converters, with 32% of its imports of the metal coming from Russia between 2019 and 2022, according to the US Geological Survey.

"South Africa has a real opportunity to help supply the global economy," Adeyemo said. "And it gives us the ability to take other actions to hold Russia accountable."

South Africa is a major palladium producer, and Sibanye-Stillwater mines the metal both in Marikana and at a US project in Montana.

"Between what comes out of South Africa and what's produced in the US, the US does not need to be dependent on sources from any other country," CEO Neal Froneman told *Reuters*.

However, he said companies like his needed US government support.

"You can provide loans or introduce tariffs or whatever it might be," he said. "That is a role that they need to think very differently about and help companies that are trying to source and provide these critical metals into those ecosystems."

(By Joe Bavier; Editing by Mark Potter)

India's NMDC looking at lithium assets in Africa and Australia

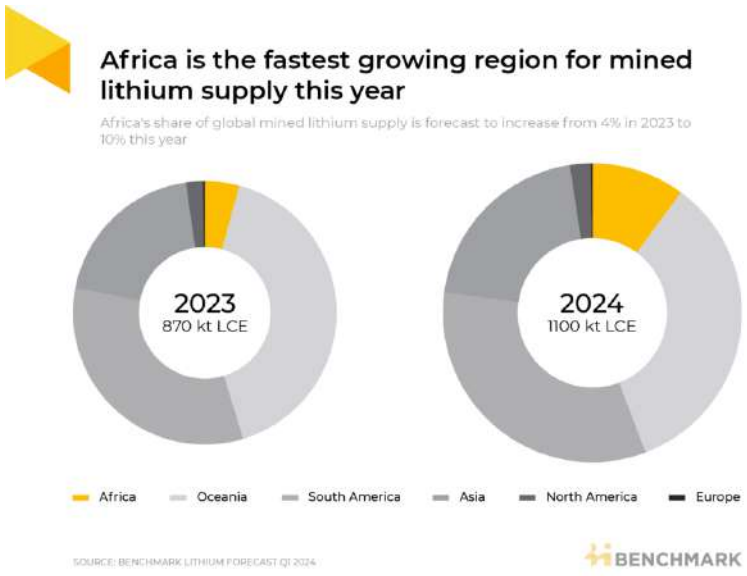
Reuters **March 22, 2024** Battery Metals Africa Asia Australia Lithium

Indian iron ore miner NMDC Ltd said on Friday it is looking at lithium assets in Africa and Australia, according to a statement. The company also said that it has so far not applied for lithium blocks on a nomination basis from the Indian government.
In June last year, *Reuters* reported that NMDC's unit Legacy Iron Ore had signed a lithium exploration pact with Australia's Hancock Prospecting Pty Ltd.
NMDC shares were down 1.7% on Friday.
(By Neha Arora, Ashna Teresa Britto and Navamya Ganesh Acharya; Editing by Sonia Cheema)

Africa's lithium supply to almost triple this year – Benchmark Mineral Intelligence

Staff Writer April 18, 2024 Battery Metals Intelligence Africa Lithium

Lithium production from Africa is projected to almost triple in 2024 compared to the previous year, according to Benchmark Mineral Intelligence. In 2023, the region contributed 4% to global lithium production, but this year it is expected to reach 10% of the global supply. This significant surge is largely due to increased Chinese investment in the continent.



Chinese companies hold a virtual monopoly on lithium extraction in Africa, with over 90% of the continent's projected lithium supply for this decade stemming from projects partly owned by Chinese entities, as estimated by Benchmark. Most of the increased supply is expected to come from Zimbabwe. It is estimated that the country produced 3,400 tonnes in 2023, placing it among the seven largest producers globally. The country is home to Zhejiang Huayou Cobalt's Arcadia lithium mine, one of the world's largest lithium-producing operations with a capacity of up to 450,000 tonnes of lithium concentrate per year.
Chinese interest in Africa reflects its strategy to secure critical minerals necessary for clean energy technologies. Despite China possessing only 11% of global lithium reserves, it refines 60-70% of the metal, according to the US Geological Survey.

African critical minerals output could reach $2 trillion by 2050

Bloomberg News April 19, 2024 Battery Metals Intelligence Africa Cobalt Lithium Nickel

Sub-Saharan Africa could produce almost $2 trillion of metals required for the energy transition by 2050, according to the International Monetary Fund. Global revenue from mining copper, cobalt, lithium and nickel could reach $16 trillion in current dollar terms over the next quarter century under a demand scenario estimated by the International Energy Agency, the IMF said in a paper on Friday. Output from sub-Saharan Africa will account for about 12% of that total, according to the report.

As demand for the minerals used in electric vehicles and renewable energy equipment is expected to soar, the Democratic Republic of Congo already produces more than 75% of the world's cobalt and is the second-largest source of copper. Countries including Zimbabwe, Ghana and Mali plan to become significant producers of lithium.

The "boom bodes well for sub-Saharan Africa," the IMF said, noting that the region will benefit more by investing in domestic processing capacity. However, the report also warned that fast-paced technological changes, especially in EV batteries, "could render certain minerals obsolete."

Sub-Saharan Africa's share of revenue from fossil fuel sales will be $625 billion over the same period, according to the IMF.

(By William Clowes)

SEG Timothy Nutt Memorial Fund

This fund will be available to provide financial support for geology students and young economic geologists located in Zimbabwe or in southern Africa with ties to Zimbabwe. The fund may be used to support SEG student chapter activities, travel to meetings, field trips, for research or study grants, technical lectures or any other activities approved by the SEG Regional Vice President for Africa.

Strong preference will be given to those applicants who are SEG Student Members.

To become an SEG Student member visit www.segweb.org/join

Applicants must describe what the project is, why the research is important and how it is to be done.

An estimate of expenses for the project must be included with the application.

Grants are expected to be fully utilized by April 30 following the calendar year in which they are awarded / dispersed.

Grant recipients are required to provide a year-end accounting of how the money was spent together with a suitable progress report or final abstract.

A 2018 Research Grant application form may be downloaded from www.segweb.org/StudentResearchGrants

Student Research Grants Committee c/o Assistant for Student Affairs, Society of Economic Geologists Foundation 7811 Shaffer Parkway, Littleton, CO 80127-3732 USA

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GSZ Research and Development Fund

Enquiries relating to the distribution of funds through this facility should be made with the standing Chairperson.

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Please contact Andrew du Toit at andrewdutoitzim@gmail.com, or the Honorary Secretary at geol.soc.zimbabwe@gmail.com, for more information.

You can also advertise in this Newsletter through these contacts, where the cost for an A4 page size will be $50 in any one issue.

Conferences

Geological Society Of South Africa **2024 Events**

DATE	EVENT	LOCATION
20-Feb	UNFC	Workshop Online
12-Mar	CPD	Workshop Online
09-Apr	3D Geological Modelling (TECT)	Online
16-Apr	Advanced Excel for Geoscientists (Earthlab)	Online
26-Apr	of Industry	Jhb
02-03 May	Sampling & Data Management	Online
25-26 May	KZN Brittle Deformation Field trip	KZN North Coast
04-Jun	GIS for Exploration	Online
23-Jun	Project Management for Geologists	Online
2-3 Jul	Map Making (MINROM)	Online
16-Jul	Review of Developments in Impact Geology	Hybrid
20-Jul	Marine Geology of Southern Africa	TBD
06-Aug	Intro to Drilling workshop	Online
12-Aug	Vertical trip through the bushveld	Online
15-18 Aug	100yr Merensky (Roger Scoon)	Rustenburg
19-23 Aug	100yr Merensky Main Event	Hunters Rest (Rustenburg)
3-24 Sep (4 x ½ days)	Drilling Methods and Techniques (Colin Rice)	Online
3 Sep	Professionalism & Ethics	Online
Sep	Data Analytics / Machine learning Hybrid	(Jhb)
01-Oct	ESG Update Workshop	Online
08-Oct	New SACNASP Bill (Webinar)	Online
23-24 Oct	Mineral Economics (MR Classification, financial valuation, sustainability)	Online
07-Nov	Mineralogical Instrumentation (MINSA)	Hybrid (Jhb)
21-22	Nov African Exploration Showcase	Jhb

For further information on specific events see https://www.gssa.org.za/
or email info@gssa.org.za

12th International Kimberlite Conference

30 Years of Diamonds in Canada

8-12 July 2024, Yellowknife

https://12ikc.ca/

Colloquium of African Geology

Nairobi, Kenya – 2025

Biennial Conference organized by the Geological Society of Africa

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Geological Society of Zimbabwe

Summer Symposium 2024

Date: Friday 1 November 2024
Venue: Natural History Museum, Bulawayo

The Geological Society of Zimbabwe cordially invites you to our annual Summer Symposium, which this year will be taking place in Bulawayo. The Symposium will be followed by a 1-day field trip **(2 November)** around Bulawayo, details to follow.

We are therefore starting to allocate speaking slots. If you would like to present, please let us know (brianmapingire7@gmail.com or andrewdutoitzim@gmail.com). We welcome presentations on a broad range of subjects of general interest to geologists.

We look forward to seeing you in Bulawayo!

Society of Economic Geologists

SEG conference 27 to 30 September 2024
Windhoek, Namibia

SEG 2024 Namibia September 27-30, 2024

Field Trip Summary Newsletter June 2024

As part of the Society of Economic Geologists (SEG) Annual conference being held in Namibia in late September 2024 – there will be 2 field trips in Zimbabwe. The GSZ in association with the SEG is organising these trips: one being to the iconic Great Dyke and the other being to some of Zimbabwe's important lithium projects and mines. The Lithium trip is pre-conference and was sold out about two months prior to the closing date, but there are still a few spots on the Great Dyke trip, which will be post-conference. Booking for these trips is through the SEG website. Both trips traverse Zimbabwe over respective periods of 4 days.

The lithium trip will showcase Arcadia, Bikita and Kamativi mines along and will visit exploration projects on the way. Visits will also be made to Zimbabwe's most well-known tourist destinations – Great Zimbabwe and Victoria Falls. The Great Dyke trip will traverse the Dyke from north to south – covering *inter alia* the lower chromite seams and the platinum zones in the Ngezi, Unki and Mimosa mine areas. This trip will also examine the more recent eluvial chromite mining and features a trip to the world=famous Tengenenge

Sculpture Park. A taste of Zimbabwe's wild life will be experienced during a late afternoon game drive.

Zimbabwe will be host to academics and industry leaders visiting from China to the USA on these trips. This is considered to be an important interaction with some of the world leaders in their field and Zimbabwe can only benefit from the interest in scientific research on these geological sites.

GEOLOGICAL SOCIETY OF ZIMBABWE: CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE COMMITTEE FOR 2024

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