GSSA
Geological Society of South Africa

geobulletin

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news

- Where are the young explorers?
- Farewell to Craig Smith
- Migmatites of northern Namaqualand
- Tsumeb Mine calcite


GSSA
Geological Society of South Africa

contents

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guest editorial

Steffen Büttner

Where have all the young explorers gone?

Field exploration appears to be on an upward trajectory elsewhere in Africa and worldwide, with major recent discoveries in China (gold), Scandinavia (REE), Australia (iron ore) and the United States (lithium), and plenty exploration projects targeting small and medium-sized ore deposits in most parts of the world. South Africa seems to be the exception, perhaps taking the cautious approach, preserving much of its undiscovered mineral wealth for future generations. But we still are a country with significant tradition and expertise in greenfield mineral exploration that serves successful companies as a basis for their operations elsewhere in Africa and beyond.

In order to keep it that way, and ideally, to expand, the exploration industry requires a steady supply of qualified young geologists, eager and able to carry out field campaigns and to find the raw materials for the industries and policies of the future. Much of this work happens in remote places and often under adverse conditions. Mineral exploration is physically demanding and, in politically unstable parts of the world, sometimes dangerous. But it promises adventure and an experience of nature, wilderness and different cultures that few, if any, other professions can offer. The work is not family friendly, and many exploration geologists leave the industry in their thirties or forties to live a quieter or more predictable life. Hence, much of mineral exploration is a young man's, and increasingly young woman's, game. This causes a significant staff turnover, creating opportunities for recent graduates to get their share in the adventure.

Mineral exploration, although a key sector of the global economy, does not necessarily offer jobs or careers in very large numbers. One might expect that 14 geoscience departments at South African universities should be able to produce more than enough graduates to meet the needs of the industry. And indeed, there appear to be plenty of higher-degree-holders seeking opportunities in mineral exploration. RES (Remote Exploration Services), one of the leading mineral exploration consulting businesses in Africa, recently advertised a small number of half-year internships for 2026 and received more than 350 applications, mainly from South Africa, numbering significantly more than the annual output of BSc Honours and MSc graduates from all universities in the land. Surely, it should be a tough choice among dozens of qualified and suitable candidates to fill four or five intern positions.

Or should it?

In recent conversations with a senior team member at RES, who had the unique pleasure to plough through the 350 plus internship applications, I learned that after whittling down the list checking some *must-have* criteria, the remaining pool of suitable candidates is surprisingly small. Most applicants hold the required BSc Honours or even MSc degrees, often with good academic performance. But many lack secondary key attributes and skills, critical for productive work in mineral exploration, including some that geology students may not be sufficiently aware of during their tertiary education phase.

Beyond at least very solid academic performance, three essential attributes are required when joining the exploration industry as a geologist: (i) the ability *to drive,* (ii) the ability *to travel,* and (iii) the ability *to undertake arduous, physically demanding fieldwork*. Field exploration is practically always carried out in rough terrain and geologists are required to drive on- and off-road. A class-B license and sufficient previous driving experience are critical. Holding a valid passport is equally non-negotiable. An aspiring exploration geologist must be able to travel across borders right from the start and, while they may have excelled academically, if they are not physically up to the task of working in challenging remote environments, their employability will be severely hampered.

About two thirds of the applicants dropped out, for the lack of driver's licenses or not meeting any of the other basic selection criteria. In the next step, RES evaluated the CVs of the remaining applicant pool. At this stage the

company looks for candidates who understand the key job requirements and can offer a realistic assessment to what extent their abilities and skills match. Skilled recruiters can easily spot AI-generated platitudes. Industry understands that it will take 18 to 24 months until the graduate, no matter how sterling their academic record, will actually be able to add real value in the business. That first year or two is just investment in the individual by the company; dedicating staff to show them the ropes, paying for further training on things like first aid, advanced driving, snake handling and firefighting, as well as paying for gear and equipment, work visas and specialist courses. Accordingly, CVs communicating inflated perceptions of job readiness are unlikely to impress the reader.

Thirty-three applicants passed the evaluation of CVs, less than 10% of the initial applicant pool. The further selection process will include technical tests and in-person interviews. One can expect that beyond appropriate subject knowledge, physical fitness and important personality traits (communication skills, team spirit, grit) will be high on RES' agenda when adding new staff to their exploration teams.

Being able to deploy and field-test recent graduates is critical for exploration companies since, while someone may present well in an interview, have great academic credentials and seems to tick every box, the real test is to see how they function on a real-world exploration project. Understanding a recent graduate's abilities early on not only informs how they should be mentored and developed as potential junior geologists, but it also allows the company to determine if further investment in the candidate is warranted.

After teaching geology students at Rhodes University for more than 20 years I cannot hide my consternation about the disconnect between what mineral exploration needs and what the majority of recent graduates are able to offer. Yet, the news does not come entirely unexpected. Field exploration needs geologists with qualities reaching beyond having command of the necessary subject knowledge. They must be happy to find their personal comfort zone in an intrinsically uncomfortable work environment, with long work hours, sometimes for months at a time. This requires resilience, goal-driven attitude, and, from time to time, the ability to put personal needs aside to the benefit of the team effort. Such attributes are also useful in higher education, but hardly essential to obtain a higher university degree. One can get by without them and still pass our tests and exams.

As educators we find ourselves teaching an increasing proportion of students who spend their years in higher education without specific career objectives in mind, and our degree structures do not help much to develop professional identity either. University education often resembles curricula in secondary education, with a number of different academic subjects that are taught concurrently and which, from the perspective of most students, are equally important in obtaining the desired degree certificate. In fact, many students feel compelled "to keep their options open" and procrastinate deciding and planning their professional future and their lives after university for as long as possible. Very few choose their career path early on and investigate what else is required beyond a framed degree parchment.

What could be done in academia to produce more graduates meeting the needs of field exploration? Several things. The obvious measure would be better communication of post-degree job opportunities and requirements. One way of doing that would be designing field schools that expose students to work conditions similar to field exploration. This should include extended periods of field mapping in open terrain, supporting the development of spatial orientation skills, navigation using maps, satellite imagery, compass and GPS receivers, time planning and management, and the self-discipline to carry out fieldwork all day long irrespective of weather conditions. Data collation and interpretation in evening sessions can provide a measure of success of daytime activities. Camping instead of roofed housing will expose students to another piece of reality awaiting in mineral exploration. Rhodes University used to run such field schools between 2013 and 2019, with financial support from RES and in the good company of a junior RES exploration geologist. The opportunity to work alongside an early career geologist, not much older than our Honours students, had a profound positive impact on group dynamics, performance, and student motivation in the field and in the camp. Several of our graduates joined RES and other exploration companies as junior geologists in the 2010s and started successful careers.

We further could rethink our recruitment strategies and admission criteria to our BSc Honours programs. The decisive admission criterion is commonly set in the form of a minimum performance level in undergraduate programs, and the high pass rates at Honours level seem to justify the selection method. However, the admission criterion evaluates *academic aptitude* only, disregarding secondary skills and attributes that are important in the exploration industry. Rhodes graduates who have become successful exploration geologists over the last two decades loved outdoors activities. Many grew up in rural areas, or were hunters or fishermen. They were rock climbers, avid hikers, members of mountain clubs and Scouts South Africa. They loved camping. Some had medical aid training. Such attributes speak about attitude and extra-curricular interests of people, which count for little or nothing in an *academic aptitude*-based admission system. As educators we have effective tools to improve our students' aptitude, but very few to change attitudes or interests. Perhaps we should consider applicants who perform academically somewhat below our expectations but meet the secondary skill sets and interests required for field exploration.

Lastly, we may find more effective ways of attracting suitable high school learners to study geology. The bush kids and outdoor enthusiasts, historically abundant in our classes, must still be out there, and they should know there are career options that are well aligned with their pastime passions. It appears in the last decade or so we have failed to attract sufficiently large numbers of students who are goal-driven, adventurous, curious, and aim for a career in mineral exploration right from the beginning of their academic education.

Meanwhile, some of our industry stakeholders find their own ways to select new recruits and improve their quality in field exploration. RES' internship program is only a part of the company's response to the declining abundance of ready-to-go junior mineral explorers. As a non-profit offshoot, RES established RES PRIME (**P**rofessional **R**igor in **M**ineral **E**xploration) in 2023, an organisation offering learning opportunities, internships and field schools in collaboration with academic institutions in South Africa, Botswana, Namibia and Zambia, and with industry partners. In addition, RES has also established *Geoficient*, a training service provider delivering practical training aimed at addressing the disconnect between education and experience. The courses are open to postgraduate students, junior geologists and company interns, and aim to develop practical skills relevant to field exploration.

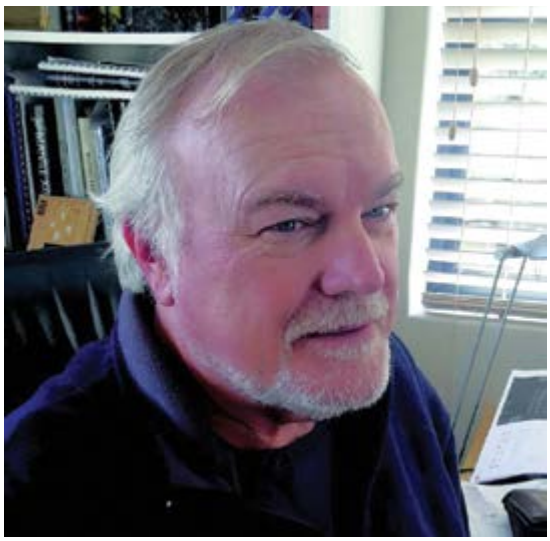
Until academia adapts and once again produces a steady supply of capable exploration geologists in need of no more than on-the-job training, we should wish them well.

Steffen Büttner
Rhodes University

Junior geologists honing their structural geology skills on a RES PRIME field school.

executive manager's corner

Craig Smith



I am retiring as the Executive Manager of the GSSA on December 31, so this will be my last Manager's Corner column after close to 16 years. Tania Marshall will take over as Executive Manager from January 1, and I wish her all the best. I am sure that she will take the Society forward while maintaining the core values and mission. Expect some innovative changes in future.

It is definitely a time of change for the Society. In addition to passing the management baton, the year has seen the introduction of a new website, new Manco members, a new focus on delivering sponsorship value, addition of new events and courses, a new President, a new full-time staff member (Kate) and a return to face-to-face events where and when appropriate. Sally Nienaber has for years been the face of the Society and has retired, but is contracting part-time to the GSSA. In the last few years we have made radical changes to the office location—now 'officially' operating from an office park in Midrand—but in reality, staff are working remotely from their homes in Cape Town, Somerset West, Midrand, Johannesburg, and the KZN South Coast.

Over the years that I've penned this column, I have used it as both an information platform and as an editorial mouthpiece. I hope that readers have found it interesting, informative—and most of the time—brief. It is tempting to use the space to look back on the achievements and failures during my time as the second Executive Manager following in the footsteps of Leopold Bosch, the first professional manager of the GSSA. However, I would much rather look ahead to what might develop over the next few years, or in some instances, decades. What will the concerns be for geologists in future? What will we be losing sleep over?

Science and Society (Geoheritage) will command greater attention. Communication with the general public about earth science on a level the public can appreciate will improve because it must. Science and Society in the broadest sense covers everything from geotourism, to South Africa's mining heritage, to outreach, to the protection of important geological sites, to the history of geology, and more. There are many great projects being addressed now on a localised scale. But there is no national strategy for addressing the issues because up to now there has not been enough attention paid to it from government. Some critics point to the GSSA for failing to take a leadership role. With the best of intentions, the GSSA or other societies and interest groups do not have the financial resources to champion (for example) a UNESCO Geopark (of which several have been proposed). The Astronomers and Palaeontologists have captured the public imagination and interest; the geological community will follow when geology is linked to the flora and fauna of a landscape. It needs an organisation with deep pockets, long-term commitment, and a bold strategic plan. That does not come from an REI or Legacy Fund grant of R20,000.

Climate Science will be a major driver attracting youth interest. Like it or not, fossil fuel use is a proven major contributor to climate change, and this will open career paths as battery storage and renewable energy becomes cheaper than fossil fuels. But perversely, South Africa will rely on coal for many years or decades to come, even though moving to renewable energy is inevitable. Coal geologists will command record salaries because there will be fewer of them.

The extractive industries will prosper because South Africa is one of the leading repositories

of metals in the world, including the so-called 'critical metals'. With exploration largely stalled due to poor policy, economic geology and the research going into it should increase over the next decade or so, because the current state of affairs cannot continue. In Africa, industry will remain the main employer of geoscientists for the foreseeable future. The Society membership differs substantially from professional societies in the US and Europe, in that most geologists in those countries are employed in academia or government. Professional standards and competence will be all-important in the industry space—and it will be policed much more stringently than it is now. Do not think that you will be able to start a consultancy or work as a resource modeler without being registered.

Water stress is a reality in South Africa. Geohydrology and groundwater management will increase in importance in much of southern Africa. I am no expert, but South Africa has more than its fair shar of fractured rock aquifers, and this will attract international expertise, as I suspect is already happening. Increasing resources in geohydrology is a no-brainer—it has to happen.

This leaves Artificial Intelligence (AI). I have no idea what the future holds for AI in the earth sciences. Personally, I'm a bit of a luddite (maybe a better word is sceptic), but I suspect that there is a direct positive correlation between age of the observer and AI scepticism. There needs to be some serious breakthroughs in energy efficiency of AI before I'll invest. But I can picture combining Big Data (remember that buzzword?) with Robotics (not nearly as cool as it was 10 years ago) on an AI-capable platform cheap enough to mine at 6 km where humans cannot go. I can also visualise a captain of industry who has come up through financial or legal ranks using AI to target, thereby replacing all the geologists and engineers. Investing on the JSE might never be the same…

This column is not AI enhanced or AI proofed. AI has not been anywhere near this. It probably shows. *(Remember to verify with editor…)*

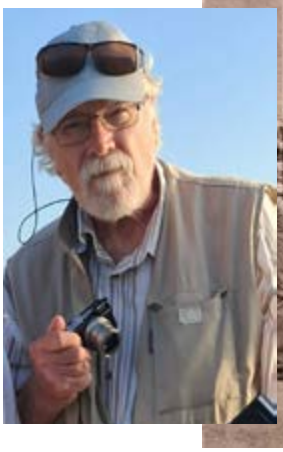
Farewell readers, have a good one!

So much for brevity.

Craig Smith

the president's profiles

Find the future Executive Manager—taken around 1975 or '76.



From Serendipity to Stewardship: A Conversation with Dr Craig Smith on a Life in Geology

As the Geological Society of South Africa's long-serving Executive Manager, **Dr Craig Smith**, steps down, we pause to celebrate a career defined by integrity, insight, and unwavering dedication to the geosciences. Over the years, Craig has been a pillar of leadership within the Society—steering it through times of transition, modernisation, and renewal. His knowledge of both the geological and professional landscapes has left a lasting impact on the organisation and on generations of geoscientists who have benefited from his mentorship and vision.

We extend our heartfelt thanks to Craig for his exceptional service and wish him every success and happiness in this next chapter. We know that Craig will continue to be a part of the GSSA—just in other roles.

As he retires, I caught up with Craig to reflect on his journey—past, present, and future.

A Serendipitous Start

Looking back, Craig admits his path into geology—and diamond geology in particular—was driven as much by chance as by curiosity.

"My youth was spent in a small northern Illinois farming community," he recalls. "I didn't see an actual outcrop of rock until my late teens—it was all glacial till, with the hill north of town being a terminal moraine."

Like many students of his generation, opportunity came through a state-funded scholarship that allowed him to attend university. "Several of my classmates and I used the opportunity mainly to get away from small-town America. Few of us had any idea what we wanted to study," he says with a smile.

On registration day at the University of Illinois, he scanned the list of possible majors and stopped at G for Geology. "It looked interesting—and indeed it was."

Those early years were not without challenge. Financial constraints meant taking on part-time jobs—making thin sections at the Illinois State Geological Survey and washing dishes at a local Chinese restaurant—but his enthusiasm for the subject never wavered.

Graduate school came next, with offers from several institutions, but it was Colorado State University that provided both an opportunity and a stipend. "They offered me an MSc research programme in a very odd rock type called *kimberlite*, just discovered in the Front

Range," he explains. His field area near Iron Mountain, Wyoming, was voted by classmates as the "worst field area" two years running—but he loved every minute of it.

That project led to work at the Carnegie Institution in Washington, D.C., and then to the Second International Kimberlite Conference in New Mexico—where a casual conversation over a beer would change the course of his life. "Jan Kramers and Barry Hawthorne offered me a PhD opportunity at Wits, funded by De Beers. I said yes after the second beer, figuring I'd be in South Africa for two years tops. That was in 1978."

Shortly after arriving in Johannesburg, he met his future wife, Meryl—"a further inducement to stay," he adds warmly.

"Looking back, the impact of being part of an international network of top scientists, both personally and professionally, is hard to overestimate. If there's one takeaway for young scientists, it's this: *your networks are something to develop and grow*."

Diamonds, Discoveries and Adventures in the Field

From those early kimberlite studies emerged a career defined by discovery and collaboration. "There's a general thrill in discovering something for the first time," Craig says. "That ranges from identifying thirty or so previously unrecognised kimberlite occurrences at Iron Mountain to contributing to the global age distribution of kimberlite emplacement."

His postdoctoral work took him to Wits (under Hugh Allsopp), UCT (with John Gurney), and the Max Planck Institute in Mainz with Emil Jagoutz. "Some of the work I've done is probably overrated, but some is also underrated—so it balances out," he says with characteristic humility.

Fieldwork, always central to his career, provided countless memorable moments. Two trips in particular stand out.

"One was a visit to China in the early 1980s with Barry Hawthorne, John Gurney, Steve Haggerty, Jeff Harris and others—China was a very different place then. The other was a trip to Lesotho that Keith Whitelock, Deon de Bruin and I organised for the 7th International Kimberlite Conference. It was a great success—and we got everyone back to Bloemfontein in reasonably good health. The same couldn't be said for the morning after the end-of-trip dinner!"

From Research to Leadership

The transition from researcher to leader, Craig explains, was gradual.

"When Hugh Allsopp passed away, I took on the management of the BPI Isotopes Group at Wits. After ten years in academia, I moved into industry with Anglo American Research Laboratories, managing one of the best industry-based geology laboratories in the world."

Later roles included managing laboratory services at Mineral Services in Cape Town, before the 2008 financial crisis reshaped the landscape for geologists worldwide. By that stage, Craig was already closely involved with the GSSA, serving as VP Finance and managing the Research, Education and Investment (REI) Fund.

When the Society's first professional manager, Leopold Bosch, stepped down, Craig took up the role of Executive Manager—one he has held for many years.

"There were many changes and challenges, but the constant has been the small, dedicated GSSA staff who make everything possible. They've made my job much easier, and I'd like to acknowledge their contribution."

Reflecting on his tenure, he notes two standout aspects:

- Working with a diverse and passionate stakeholder group across Council, the Management Committee, and staff.
- Keeping a finger on the pulse of southern African earth sciences. "A great deal of what's happening in government, academia, and industry crosses my desk at some point," he says.

Looking Ahead: Challenges and Hopes for the Profession

The geological profession, he believes, is evolving rapidly. "The landscape will only become more complex, with heritage, water and environmental aspects increasingly intertwined with traditional geology."

He notes that greenfields exploration has been underfunded for over a decade, largely due to policy constraints—something he hopes will change. "In the meantime, the demand for mine geologists will continue to grow, while new fields like Big Data, geohydrology, environmental earth science, and geophysics are emerging strongly."

On technology, he remains pragmatic but cautious. "AI will be useful if it's used to augment and assist—but if non-geologists let AI make their exploration decisions, I'd hesitate to invest in that company".

Words for the Next Generation

Having mentored countless geologists over the years, Craig's advice to young professionals is simple and timeless:

"Embrace change. You won't end your career the way you started it, and you'll probably work for several organisations in different roles. Learn to communicate with all stakeholders—that skill will serve you everywhere."

He also emphasises flexibility and passion:

"Do something you want to do—not just what pays best. And remember, geology is full of surprises."

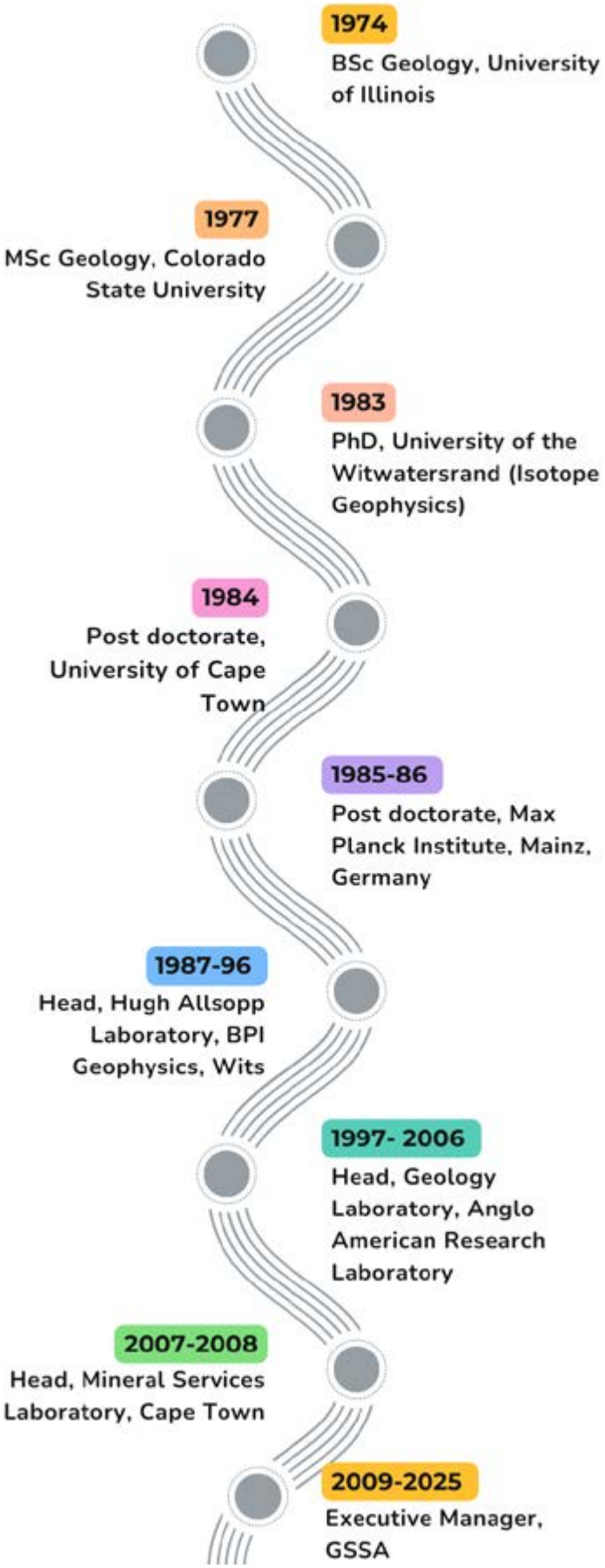
A New Chapter

As he prepares to close this chapter, Craig admits: "I have no idea what comes next!"

Whatever that next step may be, the GSSA—and the wider geological community—will surely miss his steady leadership, sharp insight, and enduring enthusiasm for the science that began, quite by chance, with a small-town student scanning a list of university majors and stopping at the letter G.

Noleen Pauls

Milestones - Dr Craig Smith



professional affairs

Reflecting on 2025: Strengthening Professional Practice in a Shifting Landscape

As 2025 draws to a close, the geological profession finds itself at a pivotal moment. Across South Africa and the broader region, geoscientists have had to adapt to new technologies, tighter reporting expectations, and rising public interest in how geological decisions are made. What has stood out most this year is the resilience of our community and the value of sound professional standards when the world around us is moving quickly.

After this year, we have also shifted the language to migrate away from the use of so-called "Soft Skills" in courses offered to our membership and beyond. As most commonly pointed out, these should be described as nothing short of "Essential Skills" instead.

Evolving Expectations and the Role of the Professional Geoscientist

Competent Persons and Professional Natural Scientists are under growing pressure to work faster, communicate more clearly, and take responsibility for increasingly complex datasets. Whether we're producing mineral resource statements, contributing to environmental processes, or helping shape energy-transition strategies, the expectations are high.

The GSSA, through its committees and volunteers, has continued to anchor these efforts. Our involvement in SAMCODES updates, public consultations, and professional guidance has helped keep South African practice credible at a global level and something that remains vital for investment and long-term industry stability.

Skills for a Digital and Decarbonising Sector

2025 reminded us that digital upskilling is no longer a "nice to have". Remote sensing, automation, AI, cloud modelling, and advanced statistics are becoming everyday tools. At the same time, the energy transition is forcing us to work more broadly: mineral systems knowledge now intersects with environmental stewardship, critical minerals strategy, and meaningful community engagement.

Training offered through universities, industry partners, and the GSSA is gradually shifting to reflect this wider skill set.

AI Ethics in Professional Practice

2025 has seen a boom in the use of AI within the industry. As artificial intelligence becomes increasingly embedded in exploration targeting, resource modelling, environmental monitoring, and decision-support systems, geoscientists must navigate a new dimension of professional ethics. The use of AI does not reduce an expert's responsibility for the integrity, transparency, and validity of their work. Instead, it raises additional obligations, such as understanding the limitations of algorithmic tools, to interrogate training data and modelling assumptions, to guard against bias and to clearly communicate uncertainties to stakeholders.

Competent Persons and Professional Natural Scientists should ensure that AI-generated outputs are never treated as truth without human oversight and geological reasoning. As with any emerging technology, ethical practice requires that members balance innovation with accountability, ensuring that AI enhances, rather than erodes, the trust placed in our profession.

Professional Conduct: Upholding Standards in a Transparent World

A recurring theme this year has been the importance of explaining what we don't know. With more data available and greater public scrutiny, our professional reputation relies on clear communication, honesty about limitations, and consistent adherence to ethical standards.

Revisiting the GSSA Code of Ethics, participating in CPD, and supporting early-career geoscientists all strengthen the profession. The revitalised

Mentorship Programme planned for 2026 will further support this.

Looking Ahead to 2026

The year ahead promises continued evolution—in technology, in regulatory frameworks, and in the skills expected of geoscientists. The GSSA's Professional Affairs portfolio will continue to support members through:

- Guidance on professional registration pathways
- Updates on SAMCODES developments and reporting expectations
- Ethics and professional conduct resources
- Workshops, seminars, and CPD opportunities
- Initiatives to support early-career geoscientists and diversity in the profession

2026 will also see renewed collaboration between the GSSA, industry, academia, and international bodies to ensure South African geoscientists remain globally competitive and professionally recognised.

Closing Thoughts

The challenges and opportunities of 2025 have reinforced an important reality that strong professional standards are the foundation of a credible, future-ready geoscience sector. As we close the year, the GSSA acknowledges the dedication of its members and volunteers who work tirelessly to uphold the quality and integrity of our profession.

We look forward to continuing this journey with you in 2026.

Natalie Brand

SAMCODES

SAMCODES Quarterly Snaps

25th Anniversary of the SAMREC Code

March 2025 marked the 25th anniversary of the SAMREC Code. Events were hosted in 2025 to celebrate the genesis and evolution of the Code. The events are highlighted on the SAMCODES, SAIMM and GSSA websites.

LinkedIn

A SAMCODES page is available on LinkedIn to keep up to date with current developments: https://www.linkedin.com/company/samcodessa/.

SAMCODES App

- The App offers a useful platform to access current SAMCODES information.
- The new quiz has been uploaded. Test your proficiency and know-how on the SAMCODES by doing the effective and informative quiz. It will take only a few minutes to complete. Check out the SAMCODES App User Guide for step-by-step instructions: https://lnkd.in/emT8976z.

Training programmes

A compliance course with SAMCODES representatives was presented from 14–18 July through Wits University.

A DMPR Workshop was held on 30 July 2025 and the SSC participated in the event.

An Introduction to SAMCODES and JSE Reporting Workshop was held by the GSSA on 29–30 September as part of the 25th anniversary celebrations, with over 75 attendees participating.

The Internation Valuation Conference was hosted by the SAIMM and SAMVAL Committee in collaboration with IMVAL, AusIMM, CIMVAL and VALMIN from 1 to 3 October 2025, with over 80 delegates participating.

Committee updates

SAMREC	The process of integrating ESG factors into the SAMCODES has been completed. The SSC thanks the team for the good work that has been done.
SAMVAL	The Committee has plans to host a Valuation Conference in South Africa in October 2025.
SAMOG	SAMOG Code updates were sent for public comments, and the launch event will be communicated in due course.
SAMESG	The SAMESG guidelines have been completed and adopted. Gratitude is expressed to the compilation team for the excellent work.
INDUSTRIAL	The Industrial Minerals Guidelines were completed and ratified by the SSC. The SSC expresses its appreciation to the working committee for the good work.

MRPDA

The Mineral and Petroleum Resources Development Act (MPDRA) amendment proposals were released for comment in August. Feedback from stakeholders will be communicated as soon as it is shared.

JSE Listing Rules Amendments

The review of the proposed amendments is ongoing, and feedback will be shared as soon as it's provided.

International Liaison

- JORC Code amendment proposals have been incorporated into the working draft.
- SSC representatives attended the CRIRSCO AGM that was held in Perth from 1–5 September 2025.
- China is very close to joining CRIRSCO as the latest National Reporting Organisation.
- Mozambique aims to develop a CRIRSCO-aligned mineral reporting code in collaboration with SAMREC.

Sifiso Siwela

GSSA
Geological Society of South Africa

university news

University of Johannesburg (including CIMERA and PPM)

Staff and Student News

The staff and students in the UJ Geology Department, CIMERA and PPM have been actively engaged in several research projects, community engagements, conference attendance, and some have been honoured with awards and appointed to various academic and research bodies. Here are some highlights.

Dr **Tebogo Makhubela** was awarded the **National Geographic Wayfinder Award for 2025** at the Explorers Festival in Washington, DC. He was one of 15 global recipients honoured for their work in science, conservation, education, technology and storytelling. Through this award, Dr Makhubela has joined the community of National Geographic Explorers. Following this award, Dr Makhubela was interviewed and profiled by over 15 media reports including Carte Blanche, eNCA, Metro FM, and SABC Unwrap Africa. (For more see https://news.nationalgeographic.org.)

Furthermore, Tebogo was the selected scientist for **FicSci 04**, a three-day workshop where a

Dr Tebogo Makhubela attended the National Geographic Explorers Festival 2025 in Washington DC from 7 to 12 June 2025.

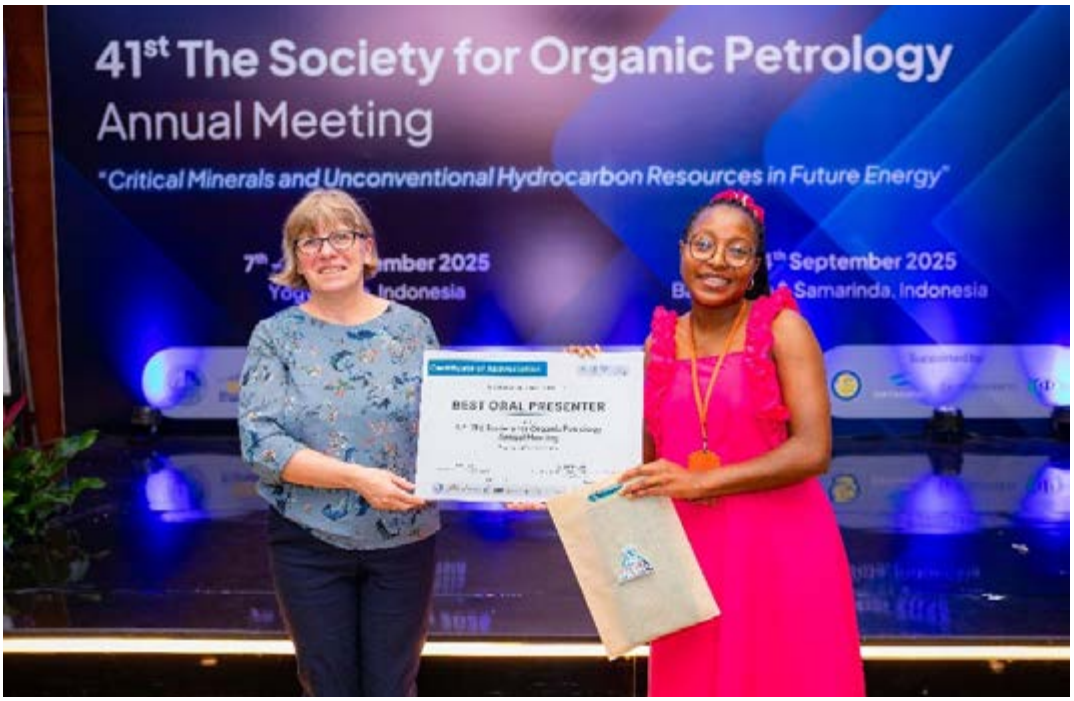
Dr Tebogo Makhubela was awarded the 2025 National Geographic Wayfinder Award.

scientist presents their research to a dozen creatives, including fiction writers, policy experts, poets, graphic designers, journalists and artists. FicSci takes place annually during winter, organised by the SARChI for Science Communication at Stellenbosch University. Tebogo presented three talks on the geology, geochemistry and geochronology of fossil-bearing deposits in the Cradle of Humankind UNESCO World Heritage Site. The creatives who participated in the workshop will translate the science talks into stories, poems, media articles, and visuals that are easily accessible by the public through an anthology to be published in June 2026.

Dr Tebogo Makhubela with the FicSci 04 creatives and organisers.

More recently, Dr Makhubela gave a **TEDxJohannesburg** talk titled "Unearthing Ancient Clues to Understand Our Climate's Future" as part of the CountDown TED Series held on 25 October 2025.

Dr **Marvin Moroeng** and PhD candidate Ms **Fatima Zonke Chitlango** recently attended the **41st Annual Meeting of The Society for Organic Petrology (TSOP)** in Yogyakarta, Indonesia. The event brought together researchers and professionals working in coal and organic petrology from around the world. During the meeting, Dr Moroeng began his term as an elected member of the **TSOP Council** (Councillor, 2025–2027;https://www.tsop.org/council.html), contributing to the society's leadership and strategic direction. Ms Chitlango was recognised with the **Best Oral Presenter** award for her research presentation, highlighting the quality of postgraduate work emerging from South Africa. Their involvement reflects ongoing efforts to engage with the international scientific community and promote research excellence in the field.



Ms Chitlango (right) being awarded Best Oral Presenter by TSOP president, Prof. Magdalena Misz-Kennan (University of Silesia, Poland). (Photo courtesy of TSOP)

In July 2025, **Ntando Ngwenya** attended the **Goldschmidt Conference** (Czech Republic), which brought together geochemists from across the globe. He gave an oral presentation, which was very well received and sparked engaging discussions that generated concrete ideas to advance his research. Throughout the week, Ntando attended mantle geochemistry sessions and explored related topics such as carbonatite research and garnet geochronology, broadening his technical understanding and establishing new research connections.

Ntando also participated in the **Goldschmidt Mentorship Programme** and that was equally rewarding. He was paired with an exceptional and experienced mentor from the University of British Columbia, and received invaluable advice on building an independent research profile. He also reconnected with former UJ colleagues, and held productive discussions with potential international collaborators. The experience was both inspiring and grounding, reinforcing Ntando's optimism for post-PhD research and collaboration within the global geochemistry community.

More recently Ntando also participated in a community engagement effort organised jointly by Mihandzu Tutoring and the University of Johannesburg Community Engagement Office. The group visited the Olivenhoutbosch Secondary School in Centurion, where they spoke to and motivated groups of Grade 8 and 9 learners who will soon be faced with choosing definitive subjects for Grade 10. They also provided advice on which subjects would best suit their future career choices, and guidance on how this can be aligned with meeting admission requirements for the different universities

they wish to enrol in. This was an enriching experience for the group and the students, and provided a prestigious opportunity to give back to the community.

While on the subject of school visits, Prof. **Bertus Smith** gave an invited talk to Grade 9 learners at St Stithians College in Johannesburg on 22 October. His talk focussed on some of the fundamentals and importance of geology, with a special focus on potential careers in the geosciences.

Prof. **Hassina Mouri** represented the **International Union of Geological Sciences (IUGS)** on an international tour, delivering keynote addresses, lectures, and engaging in high-level academic and institutional exchanges in China, Portugal, and South Africa. Her visit in China included meetings, field trips, and lectures promoting geoscience and sustainable development, as well as media engagements and cultural exchanges. In Portugal, she gave a plenary lecture on medical geology and noncommunicable diseases, and in South Africa, she presented on her research and postgraduate training in medical geology, contributing to global discussions on environmental challenges and interdisciplinary research.

The **South African National Antarctic Expedition (SANAE 65)** will once again commence in December 2025. This season's geology team will comprise Dr **Herman van Niekerk** of the Department of Geology at the University of Johannesburg (Team Leader), Prof. **Marlina Elburg** (Head of the Department of Geology at UJ), and two PhD students: **Dewan Isaacs**, currently completing his MSc degree in geology at the University of the Western Cape, and **Nina Woithe**, who is finalising her MSc degree at Stellenbosch University. Both Nina and Dewan will join the University of Johannesburg next year to pursue their doctoral studies. MSc student **Junior Masakona**, who participated in the previous field season, will remain in South Africa this season to complete his degree in geology.

The team will travel to the South African base (SANAE 4) in Dronning Maud Land, Antarctica, aboard the SA Agulhas II before departing for this season's field area on the eastern side of the Jutulstraumen Glacier. Dewan Isaacs and Marlina Elburg will investigate the geology and petrogenesis of the Straumsvola alkaline complex, while Herman van Niekerk and Nina Woithe will study weathering processes and the transport of weathered material from continental Antarctica into the Southern Ocean. Their research aims to better understand how these processes influence the bioavailability of nutrients, which in turn affects primary production and biodiversity within the marine ecosystem. Nina Woithe will be co-supervised by Prof. Marlina Elburg and Prof. David Hedding from UNISA.

The expedition will continue until February 2026, when the team will return to South Africa aboard the SA Agulhas II. As in previous years, the Antarctic field team will travel by snowmobile, hauling their scientific and survival equipment on sledges, and will live in tents throughout the duration of their fieldwork. Further information about this year's expedition will be shared on official social media platforms, where a tracking link will allow followers to monitor the progress of the four field team members in near-realtime as they explore the Antarctic continent.

A beautiful day in the field in Antarctica, cooking dinner outside. Left to right: Dewan Isaacs, Herman van Niekerk, Mike Knoper and Junior Masakona.

The Department of Geology at UJ is part of the **Norwegian GeoInternInternational programme**. The aim of the programme is to offer geoscience students the possibility to develop their skills and competence in working environments abroad. This exchange promotes cross-cultural learning, advanced research skills, and international collaboration in geosciences through student exchange between the universities of Tromsø, Bergen and Oslo, and various geosciences departments around the world, including UJ's Department of Geology. Within this framework, UJ Geology hosted three Norwegian students in July and August this year: **Benjamin Oliver Davis**, **Nils Henrik Simonsen** and **Anders Magnus Søvik**. The three of them worked on several topics related to field sampling and analysis of detrital zircons from the enigmatic Vaalrand quartzite, mapping of the contact zone between the eastern Bushveld Complex and country rocks (together with colleagues from Wits and the BUGEMET programme), and did a range of analytical work (zircon panning, micro-XRF, whole-rock geochemistry) on their collected samples. They also tagged along on our undergraduate field schools. Back in Norway, the interns wrote travel letters on their South African experience, accessible here: https://site.uit.no/realfagspraksis/2025/09/19/.

As part of the exchange, three of our students (**Mbali Kau**, **Kabelo Malapane** and **Khumbudzo Makhosi**) will pursue an internship in late 2025 and early 2026 in Norway. Two will be hosted by the University of Bergen to work on mass balance calculation of glaciers in Western Norway, and one will be trained in thermodynamic modelling and phase equilibria at the University of Tromsø. It will certainly be a lifetime adventure to experience the Arctic winter! Stay tuned for their frozen feedback!

UJ Geology is one of the South African geology departments that receives subventions from the METF (Minerals Education Trust Fund). The Department recently hosted a visit by the Geology Sub-committee of the METF for engaging sessions with the staff and students.

Norwegian exchange students Anders Søvik, Benjamin Davis and Nils Simonsen during their visit to South Africa.

Some Department of Geology staff with the members of the Geology Sub-committee of the Minerals Education Trust Fund during a visit to UJ Department of Geology on 15 August 2025.

On a more 'social' level, staff and postdoctoral fellows completed the Golden Mile Hike in Meadowlands, Soweto. This hike combines stories on life in Soweto with the geology and stories of the Witwatersrand gold mine tailings facilities. This hiking activity was completed as a Transformation activity for the department.

UJ Geology staff and postdoctoral fellows during the Golden Mile Hike in Soweto on 2 August 2025.

UJ Geology HoD Marlina Elburg explaining the intricacies of geology to members of the public at the Walter Sisulu Botanical Gardens.

Several staff in the Department of Geology visited the Geology Rock Garden at the Walter Sisulu Botanical Gardens for an outreach event on the 1 May Worker's Day holiday. During this visit, staff interacted with passers-by to explain geological history, concepts, processes and products based on the rocks in the garden.

On Friday 12 September, UJ Faculty of Science had its annual **Heritage Day/20th Anniversary** celebrations. The theme for the day was "Past, Present, Potential—Two Decades of Transformative Science". Trishya Owen-Smith co-ordinated our Geology Department stand. The display had three continental reconstructions from the past, present and future. We also had to provide suitable eats. So Marlina Elburg baked traditional biscuits in the shape of dinosaurs ('past'); people, airplanes, elephants and others ('present'); and Nikki Wagner baked 'future' cookies containing diatomaceous earth—these were rather interesting. There were also various challenge games—paintball target shooting, painting, javelin throwing, etc., and our team, Jérémie Lehmann, Nikki, and postdoc Ram Kondepudi, took part in these with varying degrees of success.

UJ Faculty of Science Heritage Day celebrations. Left to right: Ram, Trish, Marlina, Bruce (dressed in historical garb), Herman (wearing some Antarctic gear including a nose cover), Jérémie, Nikki and Axel.

One of the competitive activities during the Heritage Day event was decorating a white laboratory coat. Each of the Faculty of Science's eleven departments had to paint or label a theme on the lab coat relating to their specific discipline. We (Geology) decided to do a Jackson Pollock-like artwork and painted our coat accordingly, with additional scalebars, fault lines, and even some grit that was lying around. As a result… Geology won the golden trophy for the most original lab coat!

Geology HoD Marlina Elburg modelling the finely crafted arty lab coat.

Finally, looking back in time, albeit only 20 years, the Department of Geology held an **Alumni Braai & Birthday Bash** to celebrate the long history of the department and all those who have contributed to its success over the years. This coincided with the 20th anniversary of the founding of UJ when, in 2005, it was created out of the merger of RAU and Wits Technikon. Past and present students and staff met on 30 August at the Johannesburg Business School over an excellent spitbraai to reconnect with old acquaintances, forge new ones and share their experiences of their time at UJ Geology and subsequent career paths. In particular, the oldest cohort of graduates (1970s) engaged with the newest on how best to facilitate sharing of knowledge and experience, and take the department forward into the next 20 years.

All the attendees at the UJ Geology alumni function in celebration of UJ's 20th anniversary.

DSTI-NRF CIMERA

There have been some staff changes at DSTI-NRF CIMERA. In May this year we bid farewell to Miss **Khanya Matiwane**, our Events & Marketing Coordinator, who joined our team mid-2023. We wish her all the best as she embarks on an MSc in AI Digital Marketing abroad. We also extend heartfelt thanks to Dr **George Henry**, who stood in as CoE Manager from October 2024 to April 2025. His leadership and support during this period were invaluable. We are grateful that George will remain an active member of CIMERA's Scientific Advisory Committee. We warmly welcome Ms **Busisiwe Maphalala**, our new CoE Manager; she joined the team in May 2025. With her research and project management experience in the minerals and metals sector from her time at the CSIR, she brings invaluable expertise to the team. And we welcome Miss **Itumeleng Modisha**, who joined us in August 2025 as our Events & Marketing Coordinator. Itumeleng brings creativity and strategic insight to our outreach efforts, and we look forward to her contributions in strengthening CIMERA's visibility and impact.

DSTI-NRF CIMERA was a sponsor and exhibitor at Geocongress 2025, hosted by the University of the Free State from 24 to 27 June 2025. CIMERA hosted a workshop on 24 June 2025, attended by collaborators and stakeholders. The workshop aimed to connect both CIMERA-affiliated and non-affiliated stakeholders, gather ideas regarding CIMERA's long-term plans and industry research needs, and explore new research projects and funding opportunities.

DSTI-NRF CIMERA collaborators at Geocongress 2025.

DSTI-NRF CIMERA, in collaboration with the Helmholtz Institute Freiberg for Resource Technology (HIF), hosted a workshop titled "Introduction to Data Analysis with R for Geoscientists," presented by Dr Raimon Tolosana-Delgado from HIF. Participants, including students and industry representatives, gained hands-on experience in this dynamic, interactive workshop. Dr David Khoza is gratefully acknowledged as a sponsor for the event, enabling five postgraduate students to participate. A further workshop/2nd symposium presented by HIF took place in November: "The Importance of Remote Sensing in Exploration: Earth Observation (EO) Tools".

DSTI-NRF CIMERA was proud to host the **2025 International Continental Drilling Program (ICDP) Executive Committee (EC)** and **Assembly of Governors (AOG)** meetings in Johannesburg, held between 4 to 11 May 2025. The ICDP is an independent organisation that supports international drilling projects at globally significant geological sites to advance Earth Science by exploring the subsurface and funding research with high societal relevance. This was the first combined EC and AOG meeting held in Africa. The ICDP South African country membership is funded by the NRF, and South Africa is one of 21 member countries, enabling the South African geoscience community to participate in deep drilling projects both locally and internationally. We thank the CGS for hosting us at Donkerhoek and for the evening dinner in Pretoria, where the international delegates had the opportunity to taste some South African specialities. We also thank the ICDP for funding the field excursions, enabling additional participants to join the ICDP activities.

The recently completed **Bushveld Drilling Project**, funded through the ICDP and additional international and South African funds, reached a final depth of 1,877.2 metres. The recovered core begins in the lower portion of the Critical Zone and extends through the poorly studied Lower Zone.

DSTI-NRF CIMERA was honoured to be nominated as a finalist in the **2025 NSTF-South32 Awards: Communication Award**.

Compiled by ***Bruce Cairncross***

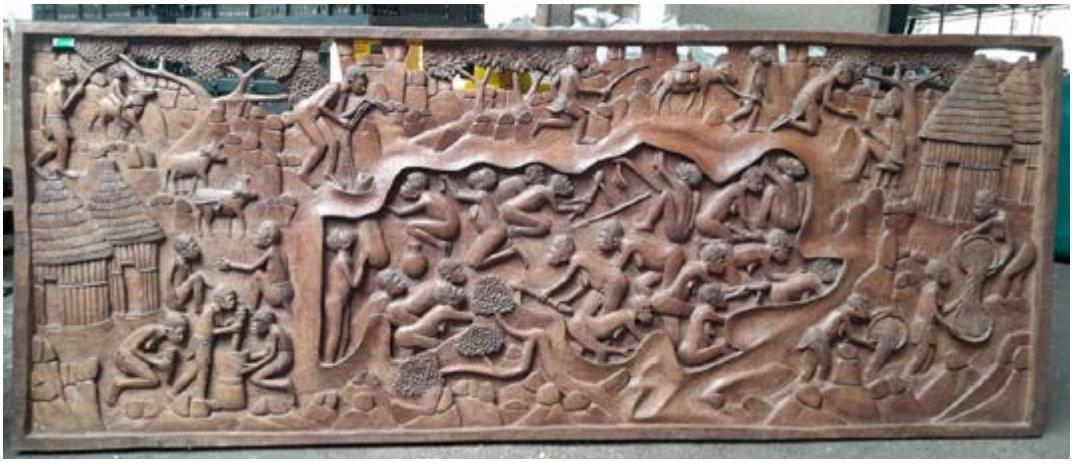
the geological hot pot

"And now for something completely different...". For those who are old (or young) enough to remember Monty Python, this phrase would engender a few chuckles.

I am a confessed bibliophile and always looking out for interesting books to add to my collection. Favourite haunts are charity shops that usually receive books as donations. During a visit to one such shop, my attention was drawn to a wood carving by an assistant. On closer inspection it appeared to depict an artisanal mining scene. The wood carver's name is C.P. Ndaneta. I Googled him and came up with the information that another of his carvings is at the Royal College of Obstetricians and Gynaecologists in London. It is entitled "Marriage and Birth Customs of the Matabele People" and can be seen at this link: https://artuk.org/discover/artists/ndaneta-cleopas-b-active-1976. Other than the fact that he was active in the 1970s, there is little else that I have managed to find out about him. If anyone knows more about the artist and his work, I would be grateful if they would contact me at ghenry@uj.ac.za.

As I thought that the carving deserves a wide audience, I bought it and donated it to the Department of Geology at the University of Johannesburg. It will be on display in the entrance foyer.

George Henry



The carved panel depicting an artisanal mining scene, now on display in the Geology Department at the University of Johannesburg.

A close-up of the underground mining activity from the panel.

The carver's name.

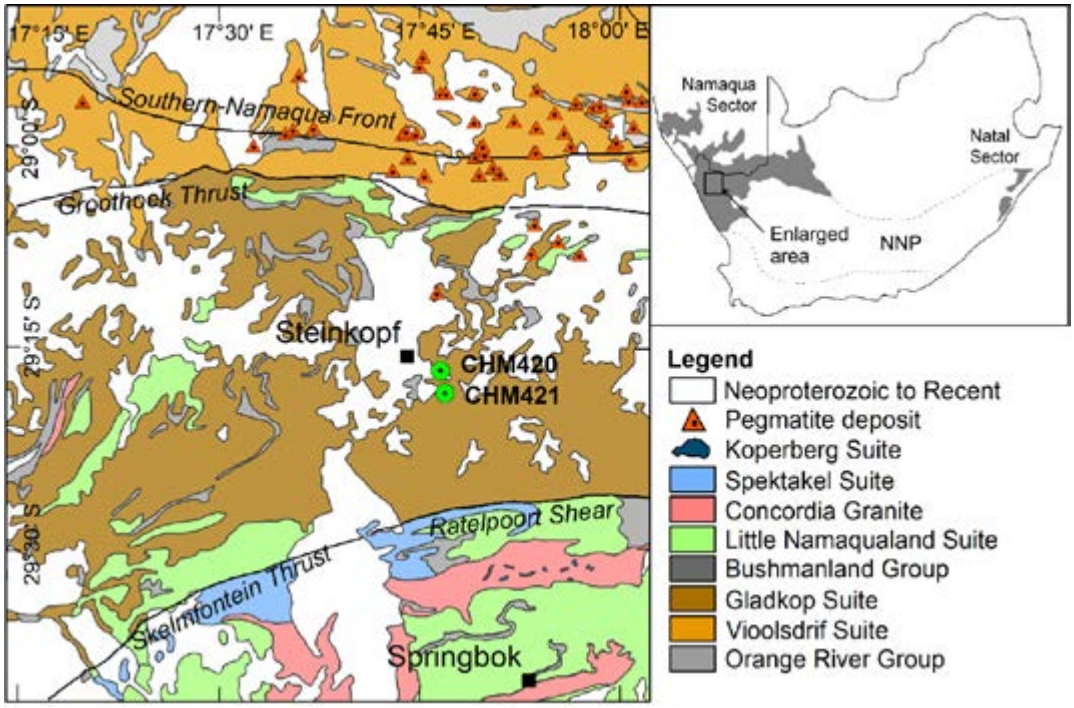
REI Report

Timing of anatexis in the migmatitic Steinkopf gneiss and implications for the formation of new granitic crust in northern Namaqualand, Northern Cape Province

Introduction

REI funding was received during 2023–2025 for the investigation of certain migmatite occurrences in the western part of the Northern Cape Province, where Paleoproterozoic granitic crust is preserved in the Western Sector of the Namaqua-Natal Province (NNP). This article reports results of a study on migmatite in the Steinkopf Gneiss (Gladkop Suite) in an area immediately east of the town of Steinkopf in northern Namaqualand. Zircon and monazite grains were extracted from the migmatite leucosomes in order to determine the timing of anatexis through radiometric U-Pb dating. Details of the study and a full reference list can be found in a paper published in the *South African Journal of Geology*.[1]

Large volumes of granitic crust may form through reworking of older crust, where the lower part of the crust is partially melted to form new granitic melts. These melts may migrate upwards away from their source and mix with other melts, to eventually crystallise at higher crustal levels as newly formed crust. The process of partial melting of the crust is termed anatexis, and migmatites represent the products of such partial melting. Migmatites are often segregated into distinct units, each of which represent a different phase involved in the anatectic process. The restite may represent remnants of the initial source rock, the palaeosome is typically considered left-over parent rock after extraction of neosome, while the neosome itself represents the composition of the newly formed magmas. Leucosomes represent channels through which the initial felsic melts migrated out of the source rocks and typically form cross-cutting quartz–feldspar veins and dykes. Radiometric dating of zircon and monazite from the leucosomes can potentially render ages for both the onset and cessation of the anatectic event.



Geology of the area around Steinkopf, northern Namaqualand, Northern Cape Province. Sample localities of the two leucosome samples used in this study (CHM420 and CHM421) are shown. The extent of the Namaqua-Natal Province (NNP) and location of the study area is shown in the inset.

Single zircon and monazite grains can be radiometrically dated by the U-Pb system through multi-collector laser ablation inductively coupled plasma mass spectrometry (MC-LA-ICP-MS). Zircon has a relatively high closing temperature (>900 °C) and often does not record the crystallisation age of leucosomes since it does not fully reset during the melting event, which may occur at temperatures as low as 650 °C in the presence of water. However, due to its resilience, zircon often retains evidence of earlier events, including the age of the precursor, its source, and the age of metamorphic events that the rock might have gone through. Monazite on the other hand, has a relatively low closing temperature (~725 °C), and often does record the crystallisation age of leucosomes. Therefore, radiometric dating of both these minerals from migmatite leucosomes may potentially provide ages for the initial source rock, the parent rock, onset of anatexis, and the end of the anatectic event as recorded in the final crystallisation ages of the leucosomes.

Background

The Paleoproterozoic Steinkopf Gneiss is one of three constituent units of the Gladkop Suite (1825–1800 Ma), which occurs in the western part of the Namaqua Sector of the NNP. The Gladkop Suite represents some of the oldest crust in the NNP and has been severely deformed and metamorphosed to upper amphibolite facies during the 1200–1000 Ma Namaqua Orogeny, which was related to the assembly of the Mesoproterozoic supercontinent Rodinia. The Steinkopf Gneiss is typically migmatitic and contains leucosomes that differ in shape and orientation, with some being folded to various degrees parallel to the gneissic foliation, while others are straight and cut across both the foliation and other leucosomes, suggesting that they were formed during different anatectic events. During these events, new granitic melts may have been generated that migrated into the surrounding areas to mix with other melts, and so contributed to the formation of new crust. Younger Mesoproterozoic units in the immediate vicinity that might have been formed in this way include the Little Namaqualand and Spektakel suites, the Concordia Granite, and some pegmatites in the Orange River Pegmatite Belt (ORPB). Radiometric dating of these and other units in previous studies has led to the establishment of a well-defined evolutionary history for the western part of the Namaqua Sector, as presented in the accompanying table. However, it was not previously known where the formation of migmatite in the Steinkopf Gneiss fits into this history.

Example of migmatitic Steinkopf Gneiss. The gneiss is grey, fine- to medium-grained, and weathers to a brown colour. Millimetre- to centimetre-scale gneissic banding merges into feint leucosomes that cut across the banding (e.g., at point A). Coarser-grained leucosomes are of centimetre-scale and may be developed parallel to the gneissic banding or cut across it along sharp contacts. Some of the leucosomes are folded (e.g., leucosomes marked B) while others are straight (e.g., leucosome C).

Event	Characteristics	Timing (Ma)
D_4	Regional development of subvertical dextral shear zones and intrusion of pegmatite swarms and leucogranites.	1005-960
D_3	Regional intrusion of the Spektakel Suite; minor intrusions of pegmatites and mafic bodies of the Koperberg Suite; regional-scale dome and basin open folding.	1105-1030
D_2	Regional intrusion of the Little Namaqualand Suite; development of regionally penetrative S_2 foliation and L_2 lineation associated with isoclinal folding and thrusting.	1210-1110
D_1	Formation of Palaeoproterozoic crust including the Richtersveld Magmatic Arc (1910-1865 Ma) and Gladkop Suite (1825-1800 Ma).	2000-1800

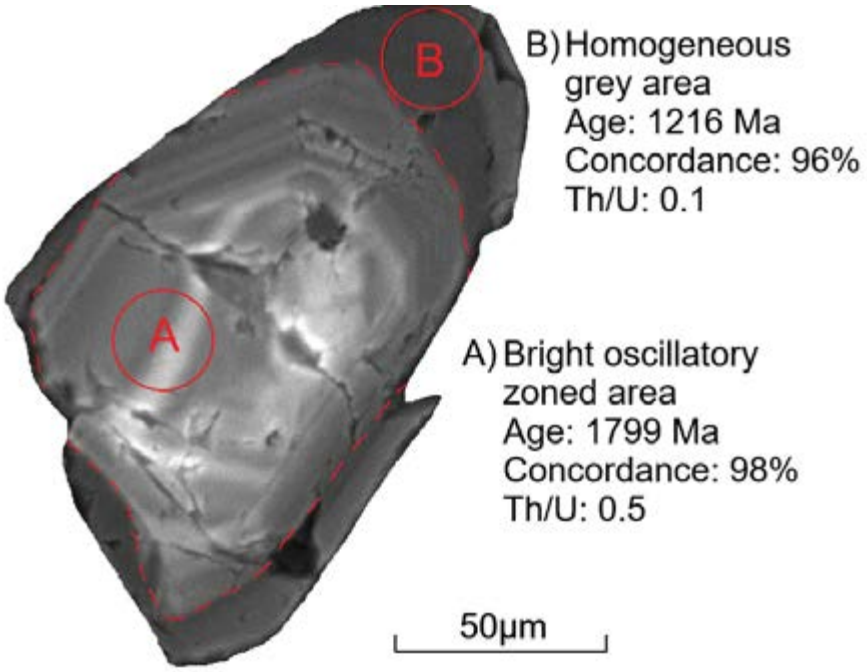
Summary of the evolutionary history in the western Namaqua Sector of the NNP, based on geochronological evidence from previous studies.

Methodology

In order to constrain the timing of anatexis in the Steinkopf Gneiss, U-Pb zircon and monazite ages were obtained for two leucosomes by MC-LA-ICP-MS at the University of Johannesburg (UJ). These analyses were done with the aid of cathodoluminescent (CL) images of the zircon grains, which were obtained with the use of a scanning electron microscope, also at UJ. Zircon CL images show the internal structure of the grains, in which distinctly different zones can often be recognised. Such zones often render different ages, which are related to the history of the grain and may include ages that are inherited from the original source, ages of potential precursors, and ages of metamorphic events. No CL images were obtained for the monazite grains because no structural variations could be discerned in them. They were simply analysed in the centre of the grain.

Results

Zircon data from the two leucosomes are consistently similar and were combined into a single data set. The zircon grains typically show two distinct areas, an example of which is shown in the accompanying figure. The two areas are marked A and B and they render distinctly different ages. Area A is characterised by bright oscillatory zonation, while area B is characterised by a homogeneous grey colour and the absence of zonation. The radiometric age obtained for each area in the grain, the concordance, and the Th/U ratio, are indicated in the same figure. Typically, the brightly zoned areas are associated with concordant dates around 1800 Ma with relatively high Th/U (0.2–0.6) ratios. The homogenously grey areas are typically associated with concordant dates around 1150 Ma and relatively low Th/U (<0.1). The monazite grains rendered concordant dates of 1028 ± 3 Ma for the one leucosome, and 1035 ± 3 Ma for the other.



Example of results obtained from a single zircon crystal from one of the studied leucosomes. Two distinctly different areas can be recognised, which are marked A and B. The circles indicate the spots where the grain was ablated during analysis.

Discussion

Many studies have investigated the origin and meaning of distinctly different areas in single zircon grains. These studies have shown that bright oscillatory zoned areas form during growth of the crystal during crystallisation from a melt. As such, they render crystallisation ages for their host rock. A weighted mean date of 1799 ± 3 Ma for brightly zoned areas in zircons of the current study is therefore considered the crystallisation age of the Steinkopf Gneiss. Zircon studies have further revealed that homogeneous grey areas form as a result of solid-state recrystallisation under the influence of high temperature and pressure during regional metamorphism. During this process, redistribution and expulsion of certain elements such as Th lead to the progressive destruction of the original bright oscillatory zonation, associated with a decrease in Th/U. As such, dates coming from the homogeneously grey areas in the studied zircons are interpreted as the timing of a regional metamorphic event during which anatexis occurred. Such dates have a weighted mean of 1146 ± 8 Ma. This event gave rise to felsic magmas that migrated into the surrounding areas to contribute to the formation of new granitic crust. The weighted mean monazite ages of 1028 ± 3 Ma and 1035 ± 3 Ma indicate the timing of cessation of metamorphism, when the two leucosomes finally crystallised, and effectively the end of the Namaqua Orogeny in the western part of NNP.

Conclusions

The results from this study fit well into the established evolutionary framework for the western part of the Namaqua Sector. The ~1800 Ma crystallisation age for the Steinkopf Gneiss is in agreement with ages obtained in previous studies and represents a time of Paleoproterozoic crust formation. The timing of anatexis in the Steinkopf Gneiss is placed at ~1150 Ma and follows shortly after onset of the Namaqua orogeny, which lasted between 1200 and 1000 Ma. During anatexis, large volumes of newly formed granitic melts might have migrated from their source in the Steinkopf Gneiss to shallower crustal regions and contributed significantly to the formation of new crustal units including the Little Namaqualand and Spektakel suites, the Concordia Granite, and some of the pegmatites in the ORPB. Incremental melting events during which new felsic melts formed and crystallised intermittently, might have occurred throughout the period ~1150–1030 Ma, as evidenced by a number of individual scattered dates from homogeneously grey areas in zircons from the two leucosomes, which are not discussed here. This indicates a prolonged period of prevailing but fluctuating high metamorphic conditions in the area. Anatexis in the Steinkopf Gneiss finally ended around 1030 Ma, as recorded in the crystallisation ages of the two leucosomes, when regional metamorphism faded.

Hendrik Minnaar
University of the Free State

mineral scene

Tsumeb Mine Calcite

Calcite ($CaCO_3$) is a common mineral and in its purest form occurs in white to colourless rhombohedral crystals. When trace amounts of other elements, or inclusions of other minerals are present, then a variety of different coloured calcite is formed. The Tsumeb mine in Namibia is famous for a large number of aesthetic specimens and calcite is one of these. According to the authoritative Tsumeb Mine Notebook website hosted by Harvard University (https://tmn.fas.harvard.edu/objects/TSNB66/) "calcite is almost ubiquitous at Tsumeb, occurring as a component of the host rocks (hypogene) mineralisation and associated alteration (calcitisation), and as a result of (supergene) oxidation processes in the secondary mineral assemblage". Furthermore, Tsumeb is considered to be "one of the top ten or so localities in the world of crystallised calcite".[1]

With this in mind, this 'Mineral Scene' features several calcite specimens from Tsumeb mine to illustrate just a few of the different colours and associated species, of which, according to the Tsumeb Mine Notebook list, there are 94.

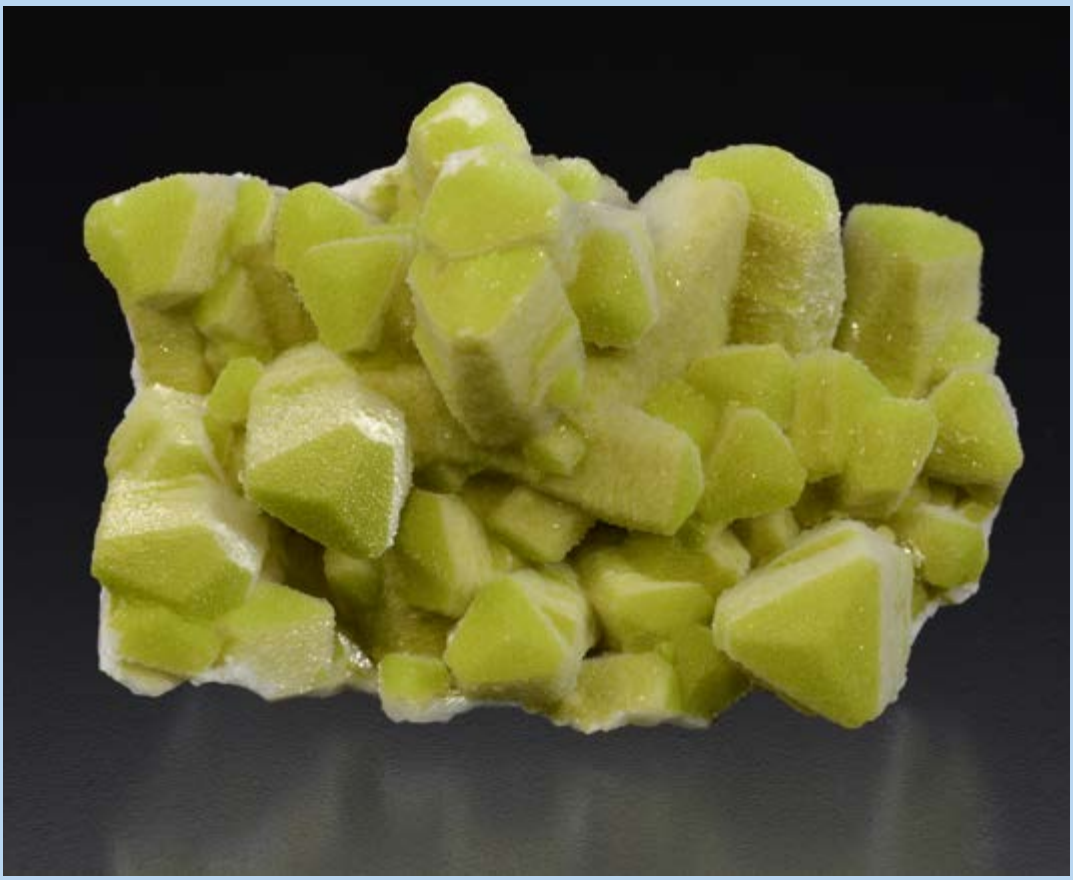
Bruce Cairncross
Department of Geology, University of Johannesburg (brucec@uj.ac.za)

An 8 cm cluster of transparent off-white calcite. The randomly scattered small green globules are mottramite, PbCu(VO4)(OH). (Specimen and photo: Bruce Cairncross)

Another group of clear calcite rhombohedra, with faint tinges of red haematite or cuprite along the edges of some, 9.5 cm. (Specimen and photo: Bruce Cairncross)

Multiply stepped and crudely parallel aligned calcite coloured red by inclusion of micro cuprite crystals, 10.2 cm. (Specimen and photo: Bruce Cairncross)

Orange calcite with possibly cuprite inclusions and a few small sprays of green malachite, 3.8 cm. (Specimen and photo: Bruce Cairncross)



A cluster of pseudohexagonal calcite with the terminations of the crystals coloured green by the presence of mottramite, 6.5 cm. (Specimen: Desmond Sacco; photo: Bruce Cairncross)

Colourless calcite (top), but fluorescent bright red under 365 nm long-wave ultra-violet light (bottom). The specimen is 4 cm. (Specimen and photo: Bruce Cairncross)

GSSA events 2026

Proposed Date	Event	Proposed Venue
10 March	Financial Literacy for Geoscientists	JHB Country Club
17 March	CPD Workshop	Online
18 March	Geotech for Geologists	Online
10 April	3D Geomodelling Workshop	Online
24 June	AI in Geology	Online
16 July	Beyond the Rocks: Esssentials Skills for Geoscientists	JHB Country Club
16 July	GSSA AGM	JHB Country Club
4 August	Field-to-Findings: A Complete Course in Drilling, Sample Handling, and Result Interpretation	Online
TBC August	Mineral Resource Mastery	Online
8 September	Professionalism & Code of Ethics Workshop	Online
10–13 September	Lichtenburg 100	Council for Geosciences
19–20 September	Structural Geology Course & Field Trip	Southbroom KZN Coast
8–9 October	Data Analytics & Machine Learning	Online
19–20 November	African Exploration Showcase	JHB Country Club

In memoriam: Belinda Boyes-Varley

We are deeply saddened to report the recent death of Ms Belinda Boyes-Varley, who served as the graphics and layout provider for the GSSA *Geobulletin* since 2006. I recruited Belinda here in (what was then) Grahamstown (now Makhanda) at the recommendation of colleagues here in town at the National English Literary Museum (NELM, now the Amazwi South African Museum of Literature). At the time, I had relocated the editorial office from Johannesburg, where I'd been producing the *Geobulletin* since 2003 from the University of the Witwatersrand, to Makhanda, when I'd shifted employers to Rhodes pending the closure of the Hugh Allsopp Laboratory at Wits. The *Geobulletin* was then under significant pressure to achieve a balanced budget, with printing and graphics and layout costs being balanced against advertising revenue, and changing to a more economical and more local layout person was practical under the circumstances. Belinda began working with me at the end of 2005 and produced the *Geobulletin* with me from then until I stepped aside in 2011, whereupon I was delighted to see that she continued serving the GSSA *Geobulletin* with Chris Hatton and then with Trishya Owen-Smith, up until Belinda's health prevented her from continuing, in the last few months. Belinda worked from her home office in Makhanda, where she lived (at the time of her service with me) with her (then-teenaged) son, and occasional pets. (They had a domesticated chicken as a pet at one point, until workers renovating the gardens in her housing complex decided to have it for lunch, evidently unaware that it was an actual family pet.) We would have in-person meetings once or twice per issue, in those pre-Zoom days. Belinda produced the *Geobulletin* from the beginning of 2006 until July 2025, comprising nineteen and a half years and by my calculation 78 issues of the magazine, working with three editors. She passed away in hospital in Pretoria after a short illness, with her family (her son and two brothers) in attendance.

Steve Prevec

When I took over the editorship of the *Geobulletin* from Chris Hatton in 2020, Belinda was my pillar of continuity. She tolerated my early experimentation with layout and editorial policy, and my infamous nitpickiness—when copyediting proofs reached the 4th draft, with requests to insert yet another missed comma or hyperlink—without complaint or even a hint of eye-rolling. She was always ready to pick things up, as the inevitable late submissions yielded unpredictable schedules, and accommodating of many strange requests (landscape image for a profile cover?). She always made a plan. We've recreated the templates as best we can, but we'll certainly miss the Belinda touch.

Trishya Owen-Smith

REGISTRATION WITH

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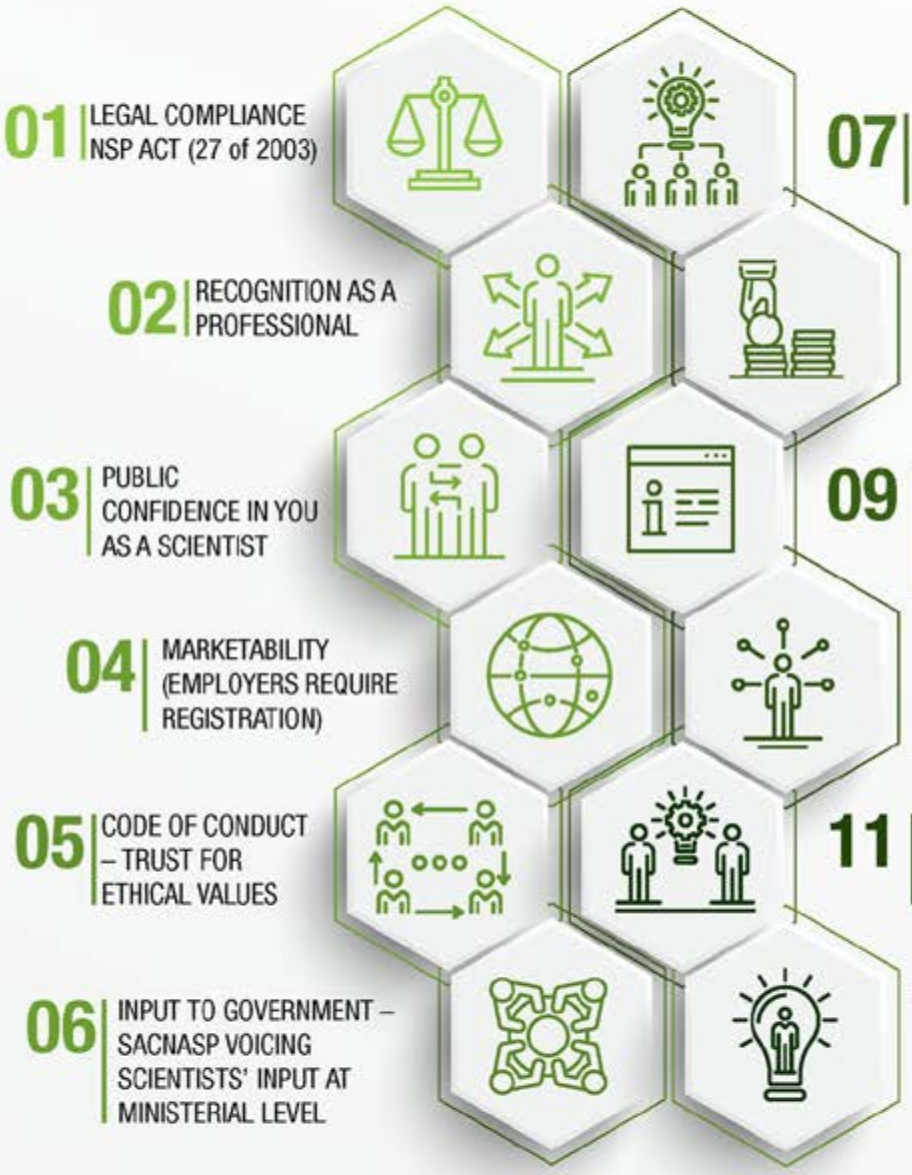
South African Council for Natural Scientific Professions



01 LEGAL COMPLIANCE NSP ACT (27 of 2003)

02 RECOGNITION AS A PROFESSIONAL

03 PUBLIC CONFIDENCE IN YOU AS A SCIENTIST

04 MARKETABILITY (EMPLOYERS REQUIRE REGISTRATION)

05 CODE OF CONDUCT – TRUST FOR ETHICAL VALUES

06 INPUT TO GOVERNMENT – SACNASP VOICING SCIENTISTS' INPUT AT MINISTERIAL LEVEL

07 NETWORKING – WEBINARS, WEBSITE NETWORKING PORTAL

08 POTENTIAL FAVOURABLE RATES FOR PROFESSIONAL INDEMNITY INSURANCE

09 CAREER ADVERTISEMENTS – EMPLOYERS ADVERTISE VACANCIES ON SACNASP WEBSITE AND SOCIAL MEDIA

10 VOLUNTARY ASSOCIATION EVENTS – NETWORK WITH FIELD OF PRACTICE PEERS AND GAIN VOCATIONAL CAREER ADVICE

11 FACILITATES LIFELONG LEARNING THAT IS CRUCIAL TO A PROFESSIONAL'S CAREER PATH – CANDIDATE MENTOR PROGRAMME

12 CONTINUING PROFESSIONAL DEVELOPMENT – ONLINE LEARNING

CMP and CPD

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7 12 18 23 **Lifelong learning opportunities** 65

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OTHER BUSINESS

2026 Rates

rates card 2026

incl VAT

1. ADVERTISING RATES (Incl. VAT & Agency Commission)

Geobulletin is published by the Geological Society of South Africa (GSSA) and appears quarterly during March, June, September and December each year in digital format.

	Per issue	Annual (4 issues)
Size		
Full Pg	R3 000.00	R9 000.00
Half Pg	R2 400.00	R7 200.00
Quarter Pg	R1 200.00	R3 600.00
Banner (horizontal)	R600.00	R1 800.00

Special Positions	Per issue	Annual (4 issues)
FP Inside front/back cover	R5 000.00	R15 000.00

Business Cards: Size: 45 x 90 mm wide	Per issue	Annual (4 issues)
	R500.00	R1 500.00

Advertorial rate per page: R2 500.00

2. MECHANICAL DETAILS

Trim Size:	297 mm x 210 mm
Full Bleed	297 mm x 210 mm + 5 mm all round Full
Type Area:	Page: 275 mm x 190 mm
Half Page:	135 mm x 190 mm wide (Horizontal ad)
Quarter Page:	135 mm x 95 mm (Vertical ad)
Banner:	210 mm x 75 mm (Horizontal) + 5 mm all round
Screen:	300 DPI or more
Material:	E-mail high resolution PDF in CMYK

Material to be supplied as a digital PDF file. Accompanying images should be high resolution in CMYK format (NO RGB or Pantone colours). Any full page material to be trimmed to 297 x 210 mm must include a bleed of 5 mm all round. Any modifications to supplied material will be charged to the advertiser at R300.00 per hour. Ads may contain a link to advertiser's website.

3. DEADLINES FOR COPY AND ADVERTISING MATERIAL

March issue:	1 February 2026
June issue:	1 May 2026
September issue:	1 August 2026
December issue:	1 November 2026

4. CANCELLATIONS

At least 4 weeks prior to deadline

5. CIRCULATION

Geobulletin is issued in digital format to all members of the GSSA and its local and overseas exchange partners.
The electronic version is available as an open access download on the GSSA website.

6. ADVERTISING BOOKINGS AND SUBMISSION

Contact person: Kate James-Kleynhans
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The design and layout of the adverts is the responsibility of the advertiser. If you wish to utilise the services of the GB graphics and layout supplier, please contact Annerine directly, well in advance of the advert submission deadline to make arrangements.

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