Science Matters

SCIENCE FACULTY NEWSLETTER

FACULTY OF SCIENCE

DECEMBER 2024

Message from the Dean

Dear Colleagues

Welcome to the latest edition of Science Matters, sharing news from around the Faculty of Science. We are experimenting with a new format, as well as merging our previous newsletters into a single edition for all internal and external readers.

There are numerous accomplishments from staff members and students contained within these pages. I specifically want to congratulate the staff who were recognized with international awards, those who received NRF ratings and those who were promoted and celebrated in our Ad Hominem Promotions and Development Dialogues processes. Well done to everyone!

The Dean's office has focused on a few different areas this year. Research support systems was the underlying theme of both Dean's Dialogue events and many follow-up discussions. Student success is critical and Science teamed up with CHED to pilot the development of academic advising systems. In our Curriculum Change discussions, we developed new rules to promote interdisciplinarity and reduce the requirements of the degree for current and future generations of BSc students.

In the Transformation space, we ran a very successful research assistant programme to provide opportunities to students who may otherwise not be exposed to research. Artificial Intelligence (AI) has captivated the imagination of the university and Science is at the centre of research, new programmes and the development of a university-wide AI initiative

From an operational perspective, we are developing new academic and administrative staff models, and have reviewed the staff in all parts of the faculty offices, so our systems are flexible, responsive and efficient to support the needs of the faculty, and drive positive changes in the university at large.

Thank you to everyone for engaging with and contributing to the work of the faculty!

Regards,
Hussein Suleman

Achievements

THE NRF RATING SYSTEM IS A KEY DRIVER IN THE NRF'S AIM TO BUILD A GLOBALLY COMPETITIVE SCIENCE SYSTEM IN SOUTH AFRICA.

NRF ratings are allocated based on a researcher's recent research outputs and impact as perceived by international peer reviewers.

The Faculty of Science managed to achieve 27 Rated Researchers during 2024 cycle.

These awards falls within the following categories:
A – Leading international researchers
B – Internationally acclaimed researchers
C – Established researchers
P – Prestigious Awards
Y – Promising young researchers

A1 Prof Kelly Chibale
A1 Prof Ed Rybicki
B1 Prof Shadreck Chirikure
B1 Prof Daniel Joseph Pisano
B1 Assoc Prof Lynne Shannon
B2 Assoc Prof Katye Altieri
B2 Assoc Prof Emese Bordy
B2 Emer Prof Mino Caira
B2 Assoc Prof Maria Keet
B3 Dr Alvaro de la Cruz-Dombriz
B3 Emer Prof Kathy Driver
B3 Assoc Prof Tony Verboom
C1 Emer Assoc Prof Edmund February
C1 Dr Geoffrey Howarth
C1 Dr Jenny Huggett
C1 Dr Christopher Lennard
C1 Prof Zarina Patel
C1 Dr Jasper Slingsby
C1 Dr Johanna Von Holdt
C2 Dr Carryn De Moor
C2 Dr Teresa Gridley
C2 Dr Thomas Leadbeater
C2 Dr Julie Luyt
C2 Dr Colleen O'Ryan
P Dr Itumeleng Monageng
Y1 Dr Diego Quiros
Y2 Dr Petra Holden

AD HOMINEM PROMOTIONS

CONGRATULATIONS TO THE FOLLOWING STAFF ON THEIR AD HOMINEM PROMOTIONS – EFFECTIVE JANUARY 2024

NAME	DEPARTMENT	PROMOTED TO
Professor Frank Eckardt	Environ & Geographic Science	Professor
Professor Charalampos Skokos	Mathematics & Applied Maths	Professor
A/Professor Clive Lloyd Oliver	Chemistry	Associate Professor
A/Professor Jane Elizabeth Battersby	Environ & Geographic Science	Associate Professor
A/Professor Katye Elisabeth Altieri	Oceanography	Associate Professor
Dr Itumeleng Matuba Monageng	Astronomy	Senior Lecturer
Dr Charlene Janion-Scheepers	Biological Sciences	Senior Lecturer
Dr Jan Moolman Buys	Computer Science	Senior Lecturer
Dr Suraya Scheba	Environ & Geographic Science	Senior Lecturer
Dr Patrick William Adams	Mathematics & Applied Maths	Senior Lecturer
Dr Sizwe Dube	Molecular & Cell Biology	Senior Lecturer
Dr Monique Joy Williams	Molecular & Cell Biology	Senior Lecturer
Dr Mathew Ngaruiya Njoroge	H3D	Chief Investigator
Dr Christopher Harry Trisos	ACDI	Chief Research Officer
Dr Cornelia Klak	Biological Sciences	Principal Scientific Officer
Miss Shakiera Sattar	Molecular and Cell Biology	Principal Scientific Officer

PROFESSOR TOMMIE MEYER ELECTED FELLOW OF THE AFRICAN ACADEMY OF SCIENCES

Prof Tommie Meyer

PROFESSOR TOMMIE MEYER HAS BEEN ELECTED AS A FELLOW OF THE AFRICAN ACADEMY OF SCIENCES (AAS) IN RECOGNITION OF HIS EXCELLENCE IN THE FIELD OF ARTIFICIAL INTELLIGENCE (AI).

The AAS is a pan-African organisation dedicated to pursuing excellence by funding and recognising transformative research across the continent. Fellowship recognition is awarded to scholars who have achieved the highest level of excellence in their fields and have made significant contributions to the advancement of science and innovation in Africa.

The academy focuses its efforts on six key areas: climate change; health and well-being; food security and nutritional well-being; water and sanitation; sustainable energy; and science, technology, engineering, and mathematics.

At UCT, Meyer is the CAIR-UCT Research Chair in AI, a professor of Computer Science and a co-director of the AI Research Unit (AIRU). He is also the co-director of the national Centre for AI Research (CAIR) and one of only three South African Computer Scientists to have obtained an A-rating from the National Research Foundation (NRF).

"With the recent extraordinary advances in Artificial Intelligence (AI), it is important for Africa's voice to be represented on the world stage when it comes to global decisions on this issue. I hope to be able to contribute to this important discussion on behalf of the AAS," he said.

Africa has embraced the transformative capabilities of AI as technology, policy and opportunities advance on the continent. Meyer's innovations in AI policy and education in Africa have significantly contributed to the development of AI both on the continent and internationally. His commitment to fostering AI in Africa and beyond highlights his notable accomplishments and dedication to the field.

As an AAS Fellow, he will have the opportunity to support the mandate of the academy to strengthen capacity and develop strategies that promote science in Africa and are relevant to the needs of the continent.

MACHINE-LEARNING RESEARCH EARNS DR JAN BUYS AN NRF P-RATING

DR JAN BUYS HAS BEEN AWARDED A PRESTIGIOUS P-RATING BY THE NATIONAL RESEARCH FOUNDATION (NRF). THIS RECOGNITION IS A TESTAMENT TO HIS OUTSTANDING CONTRIBUTIONS TO THE FIELD OF COMPUTER SCIENCE AND THE GLOBAL RECOGNITION OF HIS RESEARCH.

Dr Jan Buys has received the prestigious P-rating from the NRF for his significant contributions to the field of Natural Language Processing (NLP) and Machine Learning (ML). This rating is a testament to his work, which has not only been well-received in academia, but also lays the foundation for the technology behind systems like ChatGPT.

Buys' research is particularly focused on areas such as text generation, linguistic structure prediction, and low-resource language processing. These areas are crucial to the development of Large Language Models (LLMs) like ChatGPT, which are capable of generating fluent text in response to user prompts. His work

Dr Jan Buys

has explored the potential of these models and their applications, noting that while the rapid advancements in recent years have surprised experts and opened up many new opportunities, there are still many challenges and open research questions to address.

Buys' journey in academia reflects a dedication to pushing the boundaries of knowledge in NLP. His academic path began with undergraduate and master's degrees in computer science at Stellenbosch University. He then went on to pursue a doctoral degree at the University of Oxford, where he studied under Professor Phil Blunsom, an early pioneer in language model research. This experience provided a solid foundation for his future contributions to the field.

Buys furthered his research as a postdoctoral researcher at the University of Washington, where he collaborated with Professor Yejin Choi in a leading NLP research group. This experience allowed him to explore in greater depth approaches to text generation from language models. The research conducted during this time pushed the boundaries of what was possible, particularly in the period just before interest in LLMs surged with the release of models like ChatGPT.

Following his time in the United States, Buys joined UCT at the end of 2019. Since then, he has shifted his research focus to a new challenge: developing models for languages that are not yet benefiting from the advancements made in NLP.

One of the key issues he highlights is that while LLMs work well for English and other high-resource languages due to the abundance of available text data, they perform less effectively for low-resource languages, which include most African and South African languages. This has led Buys to focus on advancing NLP for South African languages, advocating for the active participation of researchers based in Africa to ensure these languages benefit from the progress being made in the field. He has expressed encouragement at the growth of local and grassroots-driven research in this area, noting the increase in papers from Africa-based researchers being published at top international NLP conferences.

Buys believes that the NRF P-rating serves as motivation to continue pushing the boundaries of research and to mentor the next generation of researchers who will shape the future of NLP. His goal is to expand the positive impact of AI systems that are capable of understanding and generating human language.

PHYSICAL SCIENCES PIONEER

DR MONAGENG IS MAKING WAVES IN ASTROPHYSICS WITH HIS GROUNDBREAKING RESEARCH ON INTERACTING BINARY STARS. USING DATA FROM POWERFUL TELESCOPES, MONAGENG DELVES INTO THE PHYSICAL PROCESSES OF THESE STELLAR SYSTEMS, SHEDDING LIGHT ON THE MYSTERIES OF THE UNIVERSE.

His passion for astrophysics started at UCT where he completed his undergraduate studies in 2010. He continued his journey with an MSc in the National Astrophysics and Space Science Programme (NASSP).

After earning his PhD in 2018, he joined the Southern African Large Telescope (SALT) operations team, where he performed a service observing for an international research community. He later held a post-doctoral position at the NRF-SAAO where he continues his research on interacting stellar systems.

"I am honoured to receive the NRF P-rating. Not only is it a great recognition of my hard work and dedication, but also the invaluable support from my colleagues and collaborators. This has motivated me to continue being committed to my academic work," said Monageng of his latest achievement.

Since 2017, he has co-authored 38 publications, earning him several prestigious accolades, including recognition as one of the top 20 young scientists at the 69th Lindau Nobel Laureate Meetings as well as the College of Fellows Young Researcher Award. Beyond his research he is dedicated to nurturing the next generation of scientists by supervising several postgraduate students.

No stranger to participating in media initiatives to share his passion for astronomy, Monageng engages with fervour about public education and outreach and organising educational events.

Dr Itumeleng Monageng (centre) leads research on binary stars at UCT and SAAO.

THE KATIA AND MAURICE KRAFFT AWARD HAS BEEN BROUGHT HOME

THE 2024 KATIA AND MAURICE KRAFFT AWARD IS AWARDED TO SINELETHU HASHIBI FOR PIONEERING WORK DEVELOPING ACCESSIBLE GEOSCIENCE EDUCATIONAL RESOURCES THAT FILL A VITAL NEED, TRANSLATING COMPLEX CONCEPTS INTO MORE UNDERSTANDABLE LANGUAGE FOR UNDER-SERVED AUDIENCES.

Sinelethu Hashibi is awarded the 2023 Katia and Maurice Krafft Award for her truly exceptional work increasing diversity and accessibility in geoscience education. Hashibi has become a passionate advocate for enriching Science, Technology, Engineering and Math (STEM) learning, especially amongst disadvantaged youth who face systemic obstacles. Her groundbreaking PhD research focuses on creating innovative curriculum and teaching materials that make highly complex geoscience concepts and terminology more understandable and engaging for non-English speaking students in under-resourced schools across South Africa.

Hashibi's academic excellence and remarkable empathy shine through in her tireless efforts to reach diverse audiences far beyond the classroom. She has spearheaded multiple creative initiatives providing relatable STEM role models and inspiration to the next generation of women and people of colour, giving vital exposure to the promise of geoscience careers.

Her science communication programs targeted at youth from disadvantaged backgrounds are enriching lives and bringing excitement to learning. Supporting letters highlight Hashibi's enormous resilience in the face of challenges, outstanding work ethic, and truly remarkable early career impact. Her pioneering efforts to decolonise and diversify geoscience education are laying absolutely vital groundwork, although the full fruits of her initiatives may not be seen for years to come.

By celebrating her stellar achievements with this award, the EGU recognises Sinelethu Hashibi's current monumental contributions and strongly encourages her in continuing her efforts engaging under-served communities around the world. She exemplifies the highest levels of excellence and dedication in engaging new audiences in the geosciences. It is tremendously promising and inspiring to see such a overwhelmingly strong nomination arising from the Global South, where her work is so urgently needed, and while she is still an early career scientist, Hashibi has already made absolutely remarkable strides in her outreach and boundary-pushing research.

PROF SKOKOS EARNS PLACE IN UCT'S COLLEGE OF FELLOWS

PROFESSOR HARIS SKOKOS IS A NEWLY INDUCTED FELLOW OF THE COLLEGE OF FELLOWS AT THE UNIVERSITY OF CAPE TOWN.

This prestigious honour is bestowed upon academics who demonstrate exceptional and original academic work, signifying the highest level of achievement at the university. Professor Skokos is a world-leading figure in the mathematical field of nonlinear dynamics, having made significant contributions to the understanding and analysis of chaotic systems.

Prof Skokos has published 84 papers in international peer-reviewed journals, 46 papers in conference proceedings, two book chapters, and a research monograph. This is a high publication output, well above an expected average in Applied Mathematics. He served as a

Prof Haris Skokos

guest editor for several special issues of international journals and a volume of the 'Lecture Notes in Physics' series. His work was presented at 83 conferences, which includes 33 invited talks. Prof Skokos was the principal organizer of one local and three international conferences.

The highlight of his career is the invention of novel chaos-detection techniques based on the so-called Smaller Alignment Index and its generalized version (SALI and GALI, respectively). Together with the Lyapunov exponents (invented in the XIX century), SALI and GALI indices introduced by Prof Skokos comprise the main numerical tools for the study of systems with complex behaviour.

Prof Skokos comprehensive review of Lyapunov exponents has received a broad international recognition and became a basic reference point in the field. His book on modern developments in Hamiltonian systems (published by Springer Verlag) can be found in any nonlinear dynamist's library. His studies of the chaotic dynamics in disordered nonlinear lattices, together with the development of efficient numerical integration schemes (the so-called symplectic integrators) have also proved to be highly influential.

The impact of the work Prof Skokos is doing is reflected by 4 779 citations in Google Scholar, 2 824 in the Web of Science, and 2 939 in Scopus. His H-index is 35 on Google, 26 in WoS, and 26 on Scopus. Invited talks at numerous international conferences along with the invitations to serve as a member of the editorial board of 10 international peer-reviewed journals attest to his world-leading role in nonlinear dynamics.

The scientific achievements of Prof Skokos were recognized by the UCT Science Faculty through conferring on him a Merit Award in 2022–2023. His international standing is reflected by his NRF B1 rating achieved in 2015 and confirmed in 2021.

SOMETHING OLD, SOMETHING NEW, SOMETHING BORROWED, SOMETHING BLUE

PROFESSOR GREGORY SMITH DELIVERED HIS INAUGURAL LECTURE TITLED "THE MARRIAGE OF ORGANOMETALLIC CHEMISTRY: SOMETHING OLD, SOMETHING NEW, SOMETHING BORROWED, SOMETHING BLUE", IN THE PRESENCE OF HIS FAMILY, PEERS, FORMER AND CURRENT STUDENTS, AND COLLEAGUES.

Prof Gregory Smith

UCT's vice-chancellor, Professor Mosa Moshabela, opened the evening by reflecting on the significance of inaugural lectures: "Inaugural lectures mark the ascent to full professorship, the highest academic rank. It provides universities with an opportunity to celebrate the achievements of the academics. They also, importantly, provide an opportunity for the inaugural lecturer to share his or her insights into their scholarly work in a manner that is accessible to us, the broader audience."

Smith's lecture unfolded through the lens of a wedding metaphor, with the title referencing the classic wedding rhyme: "Something old, something new, something borrowed, something blue and a sixpence in your shoe."

He used this structure to explore the evolution and future of organometallic chemistry, touching on key milestones in the field and how it continues to borrow from nature, with a particular emphasis on sustainability.

Something old: The foundations of organometallic chemistry

Smith got his lecture underway by addressing the "old" components of organometallic chemistry, highlighting

foundational reactions that have defined the field for decades. He paid special attention to hydroformylation, a process discovered in the 1930s, that remains crucial to industrial chemistry today.

"Hydroformylation is a cornerstone of organometallic chemistry," Smith said. "It showcases how fundamental research can still be relevant decades later, particularly in industrial applications."

Something new: Pioneering biopolymer-supported catalysts

In discussing the "new" aspects of his work, Smith shifted to one of his key research areas: biopolymer-supported rhodium catalysts. These catalysts offer a more sustainable approach to chemical reactions by being biodegradable and non-toxic, fitting squarely into the realm of green chemistry.

"The new frontier in catalysis is sustainability," he continued. *"We must find ways to make our processes not only efficient but also environmentally responsible. The future of chemistry lies in developing methods that reduce waste and minimise harm to the environment."*

Something borrowed: Mimicking nature with dendrimers

Smith introduced the concept of dendrimers, highly branched macromolecules that take inspiration from biological systems. *"Dendrimers are like nature's own design,"* he noted. *"These molecules have a highly organised structure, and their applications range from drug delivery to materials science."*

His research has borrowed principles from nature to create dendrimers that can perform highly specific functions in various chemical processes. "The beauty of dendrimers," Smith said, *"is that they can be tailored for a wide range of uses, making them one of the most versatile tools in modern chemistry."*

Something blue: The future of bio-organometallic chemistry

The "blue" component of Smith's lecture focused on bio-organometallic chemistry, particularly his groundbreaking work on ruthenium-arene complexes for cancer treatment. These complexes have shown remarkable efficacy in targeting drug-resistant ovarian cancer cells, offering new hope for patients facing limited treatment options.

"Our ruthenium-based compounds are exciting because they offer an innovative way to target cancers that have become resistant to conventional therapies," Smith explained. *"The future of chemotherapy could lie in these metal-based drugs."*

The director of the Centre for Supramolecular Chemistry Research, Professor Susan Bourne, delivered the vote of thanks and praised Smith's ability to blend deep scientific inquiry with real-world relevance.

LECTURE EXPLORES EVER-EXPANDING UNDERSTANDING OF THE UNIVERSE

PROFESSOR AMANDA WELTMAN DELIVERED HER INAUGURAL LECTURE. THE EVENT TOOK PLACE IN THE MATHS BLOCK'S M304 LECTURE THEATRE, AN APT LOCATION GIVEN THAT THIS WAS WHERE PROFESSOR WELTMAN USED TO LECTURE FIRST-YEAR STUDENTS.

Professor Weltman, a leading figure in theoretical physics at UCT's Department of Mathematics and Applied Mathematics, currently heads UCT's High Energy Physics, Cosmology & Astrophysics Theory Group (HEPCAT). Her contributions to the field have earned her global recognition, with over 10 000 citations and numerous accolades to her name. In 2020, she was promoted to full professor.

UCT Vice-Chancellor Professor Mosa Moshabela opened the evening with words of appreciation for Weltman and her academic journey. *"Inaugural lectures capture in one moment the long, arduous journey that [the scholar] has travelled to get to where they are. For the new generation and next generation of scholars, they also get to see what it takes to get to this point,"* Professor Moshabela said. He added that these occasions allow the university community to celebrate both the scholar's work and its far-reaching impact. In her lecture, titled *"From the Laboratory to the Sky: New Windows on the Universe"*, Weltman paid tribute to her early influences, particularly her two "very mathematical parents". Their guidance and passion for numbers had a profound effect on her career. She explained how her work is built on three pillars: mathematics, physical intuition, and creativity. These elements, she noted, form the foundation of how she approaches the big questions in her field; questions that seek to explain the very nature of the universe itself.

She invited the audience to embark on a journey that spans from the tiniest, vibrating strings of matter to the vast expanse of the universe, highlighting the importance of building and testing theories across various scales. Her lecture provided an overview of the current understanding of the universe, while she also commented on the unresolved crises cosmologists face today.

Prof Amanda Weltman

"You will learn about chameleon gravity, a novel theory of gravity I developed as a PhD student," she said, referring to her ground-breaking work, *"and the many efforts over the years to discover its effects in laboratory and astrophysical observations."* She added: *"We only really understand less than 5% of the total energy of the universe. Ninety-five percent of it is dark ... We call it dark matter and dark energy simply because it doesn't interact with light."*

Weltman's career has been marked by her ability to think creatively, ask the right questions, and find innovative ways to answer them. Her work in theoretical physics, particularly her research on chameleon gravity, has made her a leading figure in her field. Chameleon gravity is a theory she authored during her PhD at Columbia University, where she studied under the physicist Professor Brian Greene.

After completing her PhD in 2007, she spent time as a postdoctoral research associate at the University of Cambridge's Centre for Theoretical Cosmology, where her research continued to flourish. In 2007, she returned to South Africa to join UCT as a lecturer, and soon after, she founded the HEPCAT group, which has since become a hub for ground-breaking research, fostering the next generation of cosmologists and theoretical physicists.

Over the years, Weltman has received numerous awards, including the Meiring Naude Medal from the Royal Society of South Africa and the Elsevier Young Scientist Award. In 2021, she was awarded the prestigious South African Research Chair in Physical Cosmology, further solidifying her position as a leader in her field.

Throughout her career, Weltman has maintained a balance between her rigorous research and her commitment to teaching and mentorship. She has inspired many young scientists to further their careers, and she continues to serve as a role model for women in science.

In his vote of thanks, Professor Jeff Murugan, UCT's acting deputy vice-chancellor for Research and Internationalisation, praised her not only for her academic contributions but for her exceptional ability to balance the many facets of her life. *"She is also a role model in how she balances the different aspects of her life; never letting one responsibility overshadow another but instead showing us all how to weave together family, mentorship and scientific pursuit in a way that enriches them all,"* he said.

"Only a select few of us will ever have the privilege of being able to ask the right questions at precisely the right time. Amanda is one such rare scientist."

AFRIKA FOR ANTARCTICA

Prof Marcello Vichi

Inaugural lectures are a central part of university academic life. These auspicious occasions commemorate the speakers' appointment to a full professorship.

"We celebrate these moments because they really represent the pinnacle of an academic journey, but we are also hoping that our young up-and-coming academics can see what it takes, as well and learn from that."

"We're very fortunate that Professor Vichi is not only an academic in our Department of Oceanography, but also the director of MARiS or Marine and Antarctic Research for Innovation and Sustainability."

"His exceptional career spans both modelling and observation in the polar sciences, and he has led multiple expeditions into the Antarctic seas. His work has helped us to understand the nterconnectedness of the polar regions and Africa, and the role that Africa plays in polar science research." said UCT Vice-Chancellor Professor Mosa Moshabela in his opening address.

Adding to this, the deputy dean for Transformation, Professor Sarah Fawcett, highlighted Vichi's almost unmatched contribution to Antarctic oceanography, securing a seat for the South African research community at a table dominated by the Global North.

"Marcello has brought boundless energy and passion to the Department of Oceanography in his reimagining of MARiS, in his reform of our curriculum and, as we heard about tonight, his development of a national sea ice programme, which has led to novel research findings. We've all benefited immensely from our child's efforts," she said.

Vichi's lecture, titled ***"Fifty degrees of separation: Why Antarctica and the polar regions matter for Afrika"***, looked at the significance of Antarctica and the polar regions, emphasising their role in global climate change as well as their relevance to and impact on Africa.

"Polar regions are the cooling system of our earth for a variety of reasons. One very important feature is that they have a very long seasonal cycle. As you move towards the poles, seasonality becomes extreme – you have full days or full nights for half of the year," Vichi explained.

"The way water behaves in these regions is also very different. The way it becomes ice is very different; this happens in the sea, where you have salt, and on land, where you have continental ice sheets – the largest reservoir of water in the world."

But why should Africa care? Although polar waters, snowfall and ice are not necessarily part of our daily lives on the continent, these phenomena have a massive impact on climate change – which disproportionately affects Africa.

"Sea ice has got the important feedback called the sea ice–albedo. So, if the sea ice goes away, then your temperatures rise much more quickly. And this is what we're currently seeing," he added.

Unlike the Arctic Ocean, which is surrounded by at least semi-inhabited land and has therefore been studied extensively, the Southern Ocean and Antarctica present far more unknowns. This has made Antarctic exploration and research far more urgent.

"No one can talk about familiarity with the Antarctic and certainly not with the Antarctic continent. On the Antarctic continent, we only have scientific places. You can only go there if you have a scientific programme," *Vichi said.*

With the significance that this research can have for both the future of Africa and the world, along with the rising geopolitical tensions across the globe, Vichi noted that South Africa has not just an opportunity but a responsibility to lead the scientific enquiries taking place on Antarctica.

"What's happening now, since 2014, is thermodynamics is taking over. The warming of the atmosphere is now making the system go beyond its natural variability and we are unfortunately going towards a major problem," *he said.*

"For example, on an expedition in 2022, when we expected ice, we didn't find it. We actually found spring for five days in the middle of winter. This is, of course, part of natural variability, but if it happens more often, it's a problem."

"We are the stalwarts of the whole thing. We have such a huge responsibility, which actually forms part of the Antarctic Treaty. The treaty was signed in 1959 – the year after the end of the International Geophysical Year – and we were going through complications geopolitically, with the Cold War," he said.

"Now, we're going towards an International Polar Year in eight years' time and we're going through pretty much the same conditions. We're asking ourselves whether we'll be able to work together with the countries who signed the treaty [Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and Russia] in this place that we designated to be the continent for science.

"So, it's a huge opportunity for everyone, particularly for Africans and South Africans, to engage and do this research that can really change the course of history."

As part of these efforts, Vichi noted, UCT has been making major contributions to Antarctic research. In addition to producing a variety of instrumentation, the institution is slated to have the first sea ice laboratory on the continent to become the ***"pulsating cold heart of Africa"***.

Departmental News

ASTRONOMERS ROARED "IT'S TIME FOR AFRICA!"

HOSTED EVERY THREE YEARS, THE INTERNATIONAL ASTRONOMICAL UNION (IAU) GENERAL ASSEMBLY CONFERENCE WAS HOSTED ON THE AFRICAN CONTINENT FOR THE FIRST TIME IN ITS OVER 100-YEAR HISTORY.

Cape Town played host to the first International Astronomical Union (IAU) Genearl Assembly conference in Africa, something University of Cape Town's (UCT) Department of Astronomy praised as a *"very significant meeting for African astronomers"*.

The conference is organised by the International Astronomical Union (IAU) the largest professional body of astronomers in the world. The IAU General Assembly (GA) conference is held every three years to advance research, foster collaboration, and address contemporary challenges in astronomy. In its over 100-year history, it was the first time it landed on the African continent.

Held between 6 and 15 August, the conference brought together more than 2000 international astronomers spread across 150 countries. Nearly 50% of the scientific contributions were made by early-career researchers and students. Around 78 UCT academics, postdoctoral researchers and students attended and/or presented talks or posters on their research during the conference.

Notably, this IAU GA in South Africa has been the culmination of a long process started in 2015 when Prof Patrick Woudt, professor of in the UCT Department of Astronomy and interim Director of the Inter-University Institute for Data Intensive Astronomy (IDIA), led the original work to host the GA in South Africa and presented the South African bid during the 2015 IAU GA in Honolulu (Hawaii). The winning announcement was given in 2018 and since then the National Organising Committee (NOC) co-chaired by Kevin Govender (IAU OAD),

Attendees at the IAU

Vanessa McBride (UCT at the time) and Dr Charles Takalana (co-Chair, IAU OAD) had worked to make the conference a reality in 2024.

A./Prof. Sarah Blyth, Head of the Department of Astronomy at UCT, confirmed that several astronomers associated with the UCT Department of Astronomy were also members of the scientific organising committees of four out of the six symposium meetings which took place while others were involved in organising focus meetings. Blyth also waxed lyrical about the hands-on approach from students who not only contributed to the science that has been presented at the conference, but who also helped out in running the conference and parallel events with schools on a daily basis for the full conference duration.

“Our postgraduate students were particularly well represented in terms of giving talks and presenting posters. This was excellent as it gave them a platform to present their work to a large international audience and to showcase the excellent work they are doing on very topical research in various fields of astronomy,” said Dr Lucia Marchetti, senior lecturer in the Department of Astronomy and chair of the “Galaxy and Cosmology” symposium that took place during the conference.

She then adds: “Conferences like this are unique opportunities for everybody. The students get to engage the international astronomical community with their science and get to find opportunities for their future. New collaborations can be established, and ideas are shared. It’s almost impossible to encapsulate in a few words all the amazing science and opportunities that are coming out from a conference of this size, but what I think has been critical to see is that South Africa and the African continent, with the Southern African Large Telescope (SALT), the MeerKAT Radio Telescope and the upcoming Square Kilometre Array (SKA), to name a few key projects, is now an established protagonist of the current and future astronomy research panorama worldwide.”

Putting this conference into numbers is just mind-blowing! 2 648 participants attended the conference; 911 grants were awarded with significant African participation achieved. There were 211 science sessions (including plenaries) and 16 poster sessions (all hybrid) plus many social and side events including 16 online-first. There were 20 sponsors and 43 exhibitors, including the National Astrophysics and Space Science Project (NASSP, led by UCT) and IDIA with its IDIA visualisation Lab station. The extensive outreach and education activities during the general assembly reached around 28 000 school learners, 85 educators and around 3 800 general public.

MARIS AT SCAR CONFERENCE 2024

South Africa was well represented at the XIth SCAR Open Science Conference held in Pucón-Punta Arenas, Chile in August 2024. Posters and presentations from the delegates showcased South Africa’s research and contribution to safeguarding our blue planet for a sustainable future. Representatives from the MARiS sea ice research group attended and presented their research at the conference.

The XIth SCAR Open Science Conference brought together researchers from across the globe and from a vast array of disciplines to foster interdisciplinary networking and collaboration on Antarctic issues. The Scientific Committee on Antarctic Research (SCAR) is a non-governmental organisation that instigates, advances and coordinates research about Antarctica and the Southern Ocean on international platforms. Pucón and Punta Arenas was the world capitals of Antarctica during the conference and the biennial meetings, capturing the interest of global media.

The conference comprised of a diverse programme featuring plenary lectures, mini-symposia, parallel sessions, panel discussions, posters, and various social and excursion opportunities in Pucón and its surroundings.

“The SCAR Open Science Conference (SCAR OSC) stands as the foremost global platform for Antarctic science. It unites hundreds of researchers and other stakeholders who showcase cutting-edge advancements, shaping the trajectory of polar knowledge. The conference focuses not only on advancing our understanding of Antarctica but also on discussing its interface with critical issues like the climate crisis and its global impacts.”

An interdisciplinary, multi-departmental and multi-faculty research collaborative with MARiS through investigating sea ice from large to small scale processes and properties of sea ice, Ms Robyn Verrinder (UCT Electrical Engineering) and Dr Tokoloho Rampai (UCT Chemical Engineering) had the privilege of representing the UCT MARIS SEA ICE team at the SCAR Open Science Conference 2024 in Pucón, Chile, where they shared insights from MARIS's innovative work on Antarctic sea ice dynamics, focusing on the challenging and dynamic marginal ice zones (MIZ).

Dr. Rampai presented two posters and an oral. These were based on sea ice-algae interactions, sea ice dynamics and optimised methodologies for sea ice structure analysis. Ms Verrinder presented a poster on in situ wave-in ice measurements within the Antarctic Marginal Ice Zone during the SCALE winter 2022 expedition. Their team's poster highlighted the use of the UCT SHARC buoys, which provide critical in situ measurements of waves-in-ice dynamics during extreme polar conditions. These data are crucial for advancing our understanding of how sea ice responds to environmental forces, contributing to more accurate global climate models.

The conference provided incredible opportunities for both of them to showcase their research and foster further collaborations for the advancement of science within Antarctic research.

FITZ SEABIRD STUDY FINDS LITTLE CHANGE IN THE AMOUNTS OF PLASTIC AT SEA SINCE 1980S

A new study by researchers at the University of Cape Town's FitzPatrick Institute of African Ornithology shows that the amount of plastic in petrels breeding at Inaccessible Island in the central South Atlantic Ocean has remained constant since the 1980s. The findings of their study were published in the Science of The Total Environment journal.

Petrels can be used as indicators of plastic pollution at sea. For instance, in the Northern Hemisphere, Fulmars breeding close to densely-populated areas contain more plastic than those breeding in remote Arctic regions. Given the steady increase in the global production of plastics since the 1950s, the researchers expected the amount of plastic in petrels to increase over time.

Over the last few decades there has been growing concern about the amount of waste plastic in the environment. Physical degradation of plastic items has led to tiny plastic particles becoming ubiquitous around the world, with especially high concentrations in the sea.

"Seabirds frequently consume these plastic fragments directly or in their food. Among seabirds, the highest ingested plastic loads typically are found in petrels, which can store plastics in their stomachs for weeks or months. Indeed, petrels were among the first organisms found to contain plastics in 1960, and since then, almost all petrel species examined have been found to contain plastic," said PhD student Vonica Perold, who led the study.

The study examined plastic loads in Brown Skua pellets containing the remains of four petrel species. Skuas are predatory seabirds that mainly feed on other seabirds while breeding at Inaccessible Island, and regurgitate the indigestible remains of their prey – including the plastic they contain. Perold took advantage of samples collected since 1987 by Emeritus Professor Peter Ryan, who started conducting research on the island while a student at the FitzPatrick Institute of African Ornithology.

Brown Skuas breeding on Inaccessible Island, Tristan da Cunha, mainly feed on seabirds that breed on the island. Photo: Peter Ryan

Professor Ryan said: ***"Global plastic production increased more than four-fold over the study period, so the failure to detect an increase in the amount of plastic in petrels sampled in the same way at the same site for over 30 years is surprising. Our findings suggest that efforts to limit waste plastic entering the environment have been at least partly successful, reducing the proportion of plastic leaking into the sea over this period."***

He continued: ***"When the study started, dumping of plastics at sea was still legal, and lax controls on plastic converters resulted in huge numbers of industrial pellets reaching the sea. Since then numerous initiatives have been implemented to reduce plastic leakage and clean up plastics in the environment. For the seabirds in the South Atlantic, these measures appear to have more or less balanced the increase in the amount of plastic now being produced."***

"Clearly there is room for even stricter controls to reduce waste plastic leakage, and in particular to reduce the amount of plastic used in single-use applications. Continued monitoring of plastic in seabirds will help to determine the efficacy of further efforts, including the UN Plastic Treaty currently being negotiated."

UCT-MARIS SPEARHEADS COLLABORATIVE EFFORT TO INVESTIGATE OXYGEN DYNAMICS ALONG THE WEST AFRICAN MARGIN

The Marine and Antarctic Research Centre for Innovation and Sustainability (MARiS) at the University of Cape Town (UCT) is excited in making significant strides in global oceanographic research with the appointment of Associate Professor Sarah Fawcett from the Department of Oceanography as the lead researcher for one of the prestigious Ocean Biogeochemistry Virtual Institute (OBVI) projects.

This groundbreaking initiative, facilitated through Schmidt Sciences, marks a pivotal moment for UCT-MARiS, positioning the institution at the forefront of international efforts to address critical gaps in ocean data and modeling. The project, titled "Oxygen and Biogeochemical Dynamics along the West African Margin (WAM): Processes and Consequences," highlights South Africa's commitment to advancing scientific understanding of ocean carbon cycling and ecosystem resilience in the Atlantic Ocean.

The OBVI initiative aims to enhance the scope of research in ocean biogeochemistry while expanding global capacity to comprehend and manage ocean resources. With UCT-MARiS leading one of the five selected projects, South Africa will play a central role in shaping future strategies for sustainable ocean management.

Associate Professor Sarah Fawcett

Associate Professor Sarah Fawcett expressed her enthusiasm, stating, ***"This opportunity not only highlights the scope of expertise within UCT-MARiS but also highlights South Africa's growing influence in global marine research. Our project will delve into the intricate dynamics of oxygen and biogeochemical processes along the West African Margin, shedding light on vital ecosystem functions and their implications for climate resilience."***

The project will investigate three core research questions:

- What are the controls on hypoxia and suboxia along the African margin?
- How do these processes affect African margin ecosystems?
- What are the basin- and global-scale consequences of West African margin processes

UCT-MARiS Directorship emphasised the broader implications of the project, stating, ***"Our involvement in the OBVI initiative signifies a strategic commitment to advancing scientific knowledge and fostering sustainable practices in ocean conservation. By unravelling the complexities of biogeochemical processes in the Atlantic Ocean, we aim to inform evidence-based policies and promote stewardship of our marine resources for generations to come."***

The main areas of interest within this project includes the West African Margin (eastern Atlantic Ocean) and the equatorial Atlantic upwelling, with specific cruises planned aboard the RV Falkor in 2026 and 2027. Additionally, the project will involve the development and simulation of high-resolution global and regional ocean biogeochemical models to facilitate comprehensive analysis. Moreover, the project offers numerous opportunities for collaboration, including scientific synergies with the Ocean Biogeochemistry Virtual Institute (OBVI) InMOS project and outreach initiatives aimed at capacity building and networking.

As UCT-MARiS embarks on this ambitious venture, the university reaffirms its dedication to excellence in research and its pivotal role in addressing pressing global challenges. With Associate Professor Sarah Fawcett at the helm, the institution is prepared to make significant contributions to our understanding of ocean dynamics and pave the way for a more resilient and sustainable future.

The significance of this endeavour cannot be overstated, with the project securing over 3 million in funding for UCT and contributing 6.5 million to South Africa's research infrastructure. This substantial investment reflects the international recognition of UCT-MARiS as a leading institution in marine science and underscores the potential for transformative discoveries in ocean biogeochemistry.

1.7 BILLION PEOPLE IN URBAN AND PERI-URBAN AREAS FACE FOOD INSECURITY

NEW HLPE-FSN REPORT HIGHLIGHTS THE URGENT NEED TO STRENGTHEN URBAN AND PERI-URBAN FOOD SYSTEMS FOR GLOBAL FOOD SECURITY AND NUTRITION.

Jane Battersby, HLPE-FSN drafting team leader, during the launch of the report in Rome, Italy.

As urbanization continues to reshape our world, the focus on urban and peri-urban food systems becomes increasingly crucial. The latest report from the High Level Panel of Experts on Food Security and Nutrition (HLPE-FSN) of the UN Committee on World Food Security (CFS), titled "Strengthening urban and peri-urban food systems to achieve food security and nutrition, in the context of urbanization and rural transformation", and launched today sheds light on this critical issue.

This groundbreaking report challenges prevailing narratives: contrary to common belief that picture the rural areas as more vulnerable to food insecurity and malnutrition, it shows that over 3/4 of the world's food insecure population are in urban and peri-urban regions; in other words, of the 2.2 billion moderately and severely food-insecure people in the world, 1.7 billion live in urban and peri-urban areas.

HLPE-FSN Jane Battersby, lead author of the report, explained during the launch. ***"This report underscores the urgent need for specific policies to address the complexities of urban food systems and provides a roadmap for policymakers to ensure no one is left behind in our urbanizing world"***, she concluded.

THE BIOGEOCHEMISTRY RESEARCH INFRASTRUCTURE PLATFORM (BIOGRIP)

BIOGRIP is a South African research network that drives discovery into the biological, geological, chemical and physical processes that shape environments over time and space. BIOGRIP is largely funded by the Department of Science and Innovation but receives substantial in-kind contributions from the host universities and research is conducted using funds from a wide variety of sources. BIOGRIP works to facilitate collaboration within and between the platform's four nodes based at South African universities as well as collaborators beyond the university landscape.

BIOGRIP consists of four nodes which enable access to cutting-edge technology. These nodes are based at the University of Cape Town, North-West University, University of the Free State and Stellenbosch University. Work also takes place with partners beyond these four nodes, including state, private and international collaborators.

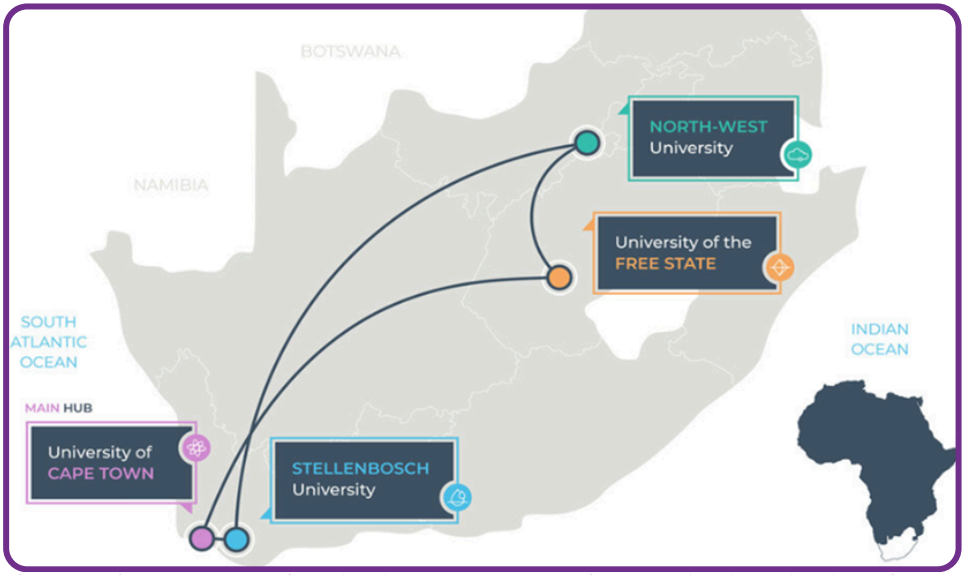
The Isotope Node is based at the University of Cape Town and facilitates analyses of gases, liquids and solids for stable and radiogenic isotopes, using solutions or laser ablation. Affiliated centres of BIOGRIP within the University of Cape Town include the Marine Biogeochemistry Lab at the Department of Oceanography, the Stable Light Isotope Lab housed in the Archaeology Department and both the Multicollector ICP-MS Lab and High-Resolution Laser Ablation ICP-MS Facility (HR-LA-ICP-MS) located in the Department of Geological Sciences.

The BIOGRIP Hub located at the University of Cape Town acts as a catalyst to get public and private sector partners to utilise the advanced instruments and the skills of the technical staff and researchers to assist with project design and execution. The BIOGRIP Hub moved into their new offices in February 2024 at Level 6 of the P.D. Hahn Building. In the BIOGRIP Hub you will find the director (Dr Roger Diamond), project manager (Dr Aldwin Ndhlovu) and the financial manager (Gloria Cupido).

BIOGRIP's official launch took place on the 31st of October 2024. Hosted by the BIOGRIP Mineral Node at the University of the Free State to showcase four laboratories that will advance research and innovation in agriculture, mining sustainability and water biotreatment.

These labs include the (1) DNA Laboratory for DNA and RNA extraction and preparation, (2) Environmental Laboratory for the preparation analysis and experimentation with biogeochemical materials (e.g., soil, sediment, plant, and microbial material), (3) Field Laboratory for field sample preparation and (4) Proof of Concept Laboratory for conducting experiments in a lab exposed to daily and seasonal temperature fluctuations.

The BIOGRIP Hub offices located at the University of Cape Town, Room 6.53, P.D. Hahn Building.



The four nodes of BIOGRIP at the University of Cape Town, North-West University, University of the Free State and Stellenbosch University.

One of the two MC-ICP-MS (multicollector inductively coupled plasma mass spectrometers) instruments housed in Geological Sciences at UCT, for measuring isotopes of several elements, including Li, Sr, Pb and U.

Khutjo Diphofe measuring radon gas dissolved in groundwater or surface water, in the field. Given the half-life of Rn is 3.8 days, samples ideally need to be analysed the same day, before significant amounts of Rn have decayed away.

ISOTOPE NODE AT UCT LAUNCHES UNDER DR TARA EDWARDS

AS CHIEF SCIENTIFIC OFFICER IN THE NEW LA-ICPMS LAB, DR TARA EDWARDS WILL HEAD UP CAPACITY WITH THE RESOLUTION LASER ABLATION SYSTEM AND NU INSTRUMENTS ATTOM – THE FIRST MACHINE OF ITS KIND ON THE CONTINENT.

The Biogeochemistry Research Infrastructure Platform (BIOGRIP) has announced the appointment of Dr Tara Edwards as Chief Scientific Officer heading up the new lab housed at its Isotope Node of the new LA-ICPMS lab, housed at the University of Cape Town (UCT).

Launching the lab in January 2024, her vision is to develop an ecosystem of skills and capacity among local researchers who will manage and utilise its cutting-edge facilities for their own work and the work of others.

"I am honoured to take this position, and excited for the opportunity not only to develop and strengthen research capacity on the continent, but also to shift Africa to the forefront of isotope and geochemical analysis," says Edwards.

Nicknamed the Lesolethu Lab, the facility's name is a nod to the cutting edge analytical research capacity it makes available on the continent for the first time. In isiXhosa, 'leso' means 'eye', and 'lethu' means 'for all of us'.

"We think Lesolethu is a fitting name for a national facility designed to 'see' into rocks and other important samples," says Edwards.

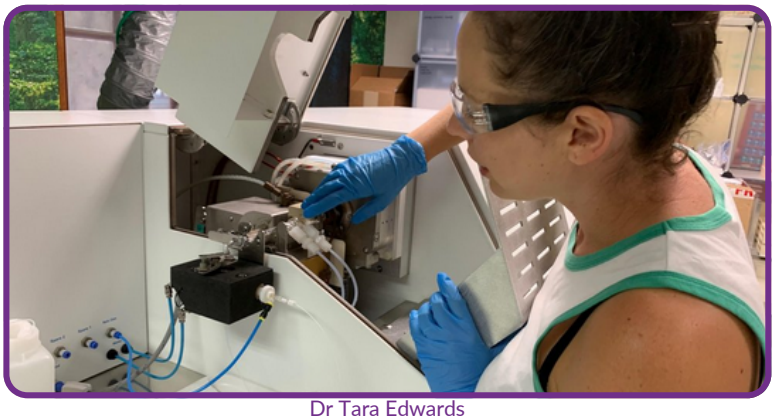
Some of those samples will be connected to her own work. Indeed, Edwards takes the position after completing a PhD at La Trobe University in Melbourne, Australia. Her research focuses on geochronology and palaeoclimate reconstruction, with a special interest in the reconstruction and dating of speleothems from South Africa's Cradle of Humankind.

"Our focus right now is to provide researchers and post-graduate students with hands-on training to support the advanced skills necessary to operate instruments, conduct experiments, and to develop new analytical methods that until now were not available on the continent," says Edwards.

Specifically, Uranium-lead dating will be central to the work coming out of the lab. Methodology which enables dating of materials like cave deposits, speleothems, stalagmites and flowstones. This research has important implications for human evolution, archaeology, and palaeontology.

The techniques made possible with the facilities available at the LA-ICPMS lab are also much less destructive, enabling laser precision that preserves the integrity of delicate samples.

"The kind of analysis Edwards will lead at this lab has until now only been possible by sending samples abroad," says Dr Robyn Pickering, a geologist with UCT.



Dr Tara Edwards

INTERNATIONAL ASTRONOMICAL UNION GENERAL ASSEMBLY

20 YEARS AGO SOUTH AFRICA HAD 40 QUALIFIED ASTRONOMERS – ALL WHITE. HOW IT'S OPENED SPACE SCIENCE AND DEVELOPED SKILLS SINCE THEN.

In 2000, South Africa embarked on a journey to transform its astronomical landscape. With the approval to construct the Southern African Large Telescope (SALT), the country aimed to attract and nurture young talent in the scientific and engineering fields. However, a significant challenge existed: there were only about 40 qualified astronomers in South Africa, all of whom were white due to the legacy of apartheid.

To address this, the National Astrophysics and Space Science Programme was established. This programme pooled resources from eight universities and two national facilities to create a pipeline for developing astronomers. The programme offered honours and master's degrees, emphasizing collaboration and targeting young scientists, particularly those from previously disadvantaged communities.
The programme has been successful in attracting students and developing their skills.

One participant, Miriam Nyamai, highlighted the programme's impact, stating, "Collaboration with international researchers through the programme enabled me to do world-class research, attend international conferences, and give talks on my work."

By mid-2023, the programme had produced hundreds of graduates, with many going on to successful careers in academia, industry, education, and government. Graduates have been involved in significant astronomical discoveries, including producing the first images of black holes, finding distant galaxies, and investigating unusual black holes.

The 20th anniversary of the National Astrophysics and Space Science Programme was commemorated with a two-day symposium hosted at the University of Cape Town (UCT) in January 2024.

While the programme has significantly impacted the field of astronomy in South Africa, challenges remain in filling vacant astronomer positions due to factors like funding and career path clarity. Despite these challenges, the programme continues to evolve, incorporating new technologies like machine learning and artificial intelligence. The programme's success hinges on inter-university collaboration and support from senior administrators.

Southern African Large Telescope. SAAO

HIGHLIGHTS FROM THE XIX ICSZ & XVI ICA CONFERENCE

THE XIX INTERNATIONAL COLLOQUIUM ON SOIL ZOOLOGY (ICSZ) AND THE XVI INTERNATIONAL COLLOQUIUM ON APTERYGOTA (ICA) TOOK PLACE FROM AUGUST 26 TO 30, 2024, IN CAPE TOWN, SOUTH AFRICA.

The colloquium was opened by Prof Suki Goodman and this particular event was notable as it was the first time these colloquia were hosted on the African continent, underscoring the increasing global focus on soil biodiversity research.

The conference was organized by the Soil Ecology and Entomology Research Group (SEER), based in the Department of Biological Sciences at the University of Cape Town, led by Dr Charlene Janion-Scheepers and Dr Juliette Chassain. The aim was to foster discussions on critical themes such as Soil Biodiversity, Ecology and Sustainable Agricultural Practices.

Hosting this conference is a landmark achievement for South Africa and the African continent. These meetings have a rich history, dating back to their inception in 1955 and 1970 across various countries, including France, Italy, and Brazil. The conference served as a platform for sharing historical insights, forging new connections, and initiating future projects. Collaborative efforts are essential to enhance our understanding of soil biodiversity in Africa amidst climate change challenges.

Soil biodiversity is vital for human health and well-being but remains vastly understudied in Southern Africa. Healthy soil prevents erosion and flooding, ensuring food security under climate change conditions.

Conference Overview

- Five keynote speakers
- 59 oral presentations and 50 posters showcasing research in Soil Zoology and Apterygota studies
- Attendance of 84 onsite and 22 online participants

Awards were presented for outstanding contributions:

- Best Student Presentation: Dean Erasmus
- Best Student Poster: Alberto Piris Martín
- Best Overall Posters: Wouter van der Vegt and Yating Zhang

Workshops and Discussions included:

- SoilBON Foodweb: Led by Anton Potapov, Soil biodiversity data integration and recycling for the next generation of global soil ecological research.
- OniscidBase: Presented by Konstantin Gongalsky and Pallieter De Smedt introducing a worldwide database on terrestrial isopods.
- Soil Biodiversity Data Integration: Discussed strategies for harmonizing data across various taxa to enhance soil health.
- An Early Career (ECR) Workshop was facilitated by Shanali Govender to reflect on ECR future career and give advice to new generations of researchers.

Keynote Speakers included, Zoë Lindo (Canada), Hannah Karuri (Kenya), Louis Deharveng (France), Daoyuan Yu (China) and Nokuthula Mbanyana-Nhleko (South Africa). Their presentations emphasized the urgent need for collaboration to tackle challenges facing soil biodiversity.

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Attendees at the conference

UCT GEOGRAPHERS LEADING THE WAY!

THE INFLUENCE AND IMPACT OF UCT GEOGRAPHERS ON THE DISCIPLINE WAS PARTICULARLY WELL DEMONSTRATED DURING 2024 AT THE INTERNATIONAL, NATIONAL AND LOCAL LEVELS. WITH EMERITUS PROFESSORS, STAFF AND POSTGRADUATES LEADING THE WAY AT GEOGRAPHY CONFERENCES.

In September this year, a group of approximately 70 South Africans participated in the International Geography Congress, hosted by Dublin City University in Ireland (in spite of the chaos around sudden visa requirements!). Amongst the South Africans present was Emeritus Professor Mike Meadows, former HOD of EGS. Mike presided over the Congress and the General Assembly as outgoing president of the International Geographer's Union, an affiliate organisation of the International Science Council. Associate Professor Zarina Patel (EGS), participated at the General Assembly meeting of the IGU as the Chair of the South African Committee of the IGU.

'This was a massive learning opportunity, to be part of making decisions that shape the discipline globally. Seeing Mike in action on a global stage made us proud to be South African Geographers.' (Zarina Patel). Zarina also presented a paper 'Advancing Just and Sustainable urban transitions: Strengthening the role(s) of African Universities'.

Zarina Patel

Two weeks after the IGU, UCT geographers Professor Maano Ramutsindela and A/Prof Zarina Patel participated in the Society of South African Geographers biennial conference, hosted by the North West University in Potchefstroom. Maano led a panel focussed on Ecological Futures: Political Ecology in/for South(ern) Africa. One of the panelists, Dr Emmanuel Mogende from the University of Botswana, was a former PhD graduate supervised by Maano at EGS.

Two important governance meetings of the Society were held during the conference, including the Council Meeting and the Biennial General Meeting. At these meetings, Zarina Patel was inducted as President of the Society of South African Geographers. She will lead the Society for the next two years. In her presidential address, Zarina emphasized the significance of collaboration, transformation and making visible underrepresented voices and scholarship.

Immediately following the SSAG Conference was the Society of South African Geographers (SSAG) 2024 Student Conference, also hosted by NWU. EGS was well represented by postgraduate students Kezia Fortuin, Sally Fraser and Shannon Weaver, and Climate System Analyst Group (CSAG) Senior Research Assistant, Matlhatse Mohale.

Kezia, now registered for a PhD with Dr Suraya Scheba (EGS) and a UCT ATAP scholar, presented on her Masters research, 'Occupations as housing models: The role of labour in sustaining an occupation over time' during the session titled: Urban Challenges: Health, Safety, and Community Dynamics. The session was lively with diverse approaches to the theme, ranging from public health, student safety, studentification, gentrification, and rural transformation. Her research focused on Immediately following the SSAG Conference was the Society of South African Geographers (SSAG) 2024 Student Conference, also hosted by NWU. EGS was well represented by postgraduate students Kezia Fortuin, Sally Fraser and Shannon Weaver, and Climate System Analyst Group (CSAG) Senior Research Assistant, Matlhatse Mohale.

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sustaining an occupation over time' during the session titled: Urban Challenges: Health, Safety, and Community Dynamics. The session was lively with diverse approaches to the theme, ranging from public health, student safety, studentification, gentrification, and rural transformation. Her research focused on how low-income urban residents in Cape Town make and sustain life in a building occupation amidst housing precarity, dispossession and the threat of eviction, drawing on the concept of "labour" to explicate these dynamics.

Kezia reflects, ***"I felt the Q&A session post-presentation to be such a thrill, and I am still ruminating over the questions I received; which were related to my feminist ethnographic approach to the research methodology, and related to the dual-role of physical and emotional labour in sustaining occupations over time."***

Sally presented on her masters research titled 'Expected Roles and Responsibilities of Waste Pickers and Homeowners in the Waste Picker Integration Process: A Case Study', supervised by Zarina Patel and Dr Catherina Schenck (UWC). ***"Sharing my findings with fellow researchers in the environmental and geographical field was incredibly rewarding, marking a significant milestone in my postgraduate journey. It was truly inspiring to see my research come to life through discussions and questions from the audience."***

Kezia Fortuin

Shannon Weaver presented her thesis titled: 'Investigating the barriers to public healthcare access for food insecure patients in a Cape Town neighbourhood'. Shannon is completing her Masters (Mphil) under the supervision of Dr Jane Battersby. ***"It was an incredible experience to be able to meet postgraduate students from across the country and listen to the range or research coming out of different institutions. It was my first time presenting at a conference and it was amazing being able to share the work I have been doing over the past two years. It gave me time to reflect on my research and understand it even further."*** (Shannon Weaver).

EGS students valued the opportunity to delve into a wide range of postgraduate research in environmental and geographical fields, including agriculture, water resources, food security, housing, green spaces, and conservation to name a few.

"The conference provided a valuable platform to learn from the diverse range of research being conducted by students from across South Africa. From honors to PhD level, there were insightful presentations on various environmental and geographical topics." (Sally Fraser). Beyond academic discourse, the conference offered a chance to connect with like-minded individuals from different universities and regions. Our students engaged in lively discussions about research methods, shared experiences, and explored potential collaborations. ***'Opportunities for networking with fellow South African geography students across the country were ample, and comfortable to navigate given our shared passions for geography. I remain in contact with many of the presenters, and am grateful for having explored the town of Potchefstroom through an informal dinner we self-organised as students on our final evening.'*** (Kezia Fortuin).

In addition to these disciplinary contributions, EGS staff and students are constantly on the move, working with communities and policy makers – always seeking to work across epistemic differences, across space and generations – to shape our discipline, and to make a difference.

BIOSCAPE: SUCCESS STORIES FROM NASA'S FIRST BIODIVERSITY-FOCUSED AIRBORNE CAMPAIGN

BioSCape, or the Biodiversity Survey of the Cape, is NASA's first biodiversity-focused airborne campaign led by scientists from both South African and the United States of America. The BioSCape domain in South Africa covers two global biodiversity hotspots, with the richest temperate flora and the third-highest marine endemism in the world. BioSCape is testing the limits and potential of remote sensing for biodiversity applications worldwide and will take us one step closer to measuring biodiversity variables globally from space.

BioSCape's Unprecedented Dataset Focuses on Accessibility for Biodiversity Science.
Concurrent measurements from three imaging spectrometers and two lidar instruments were captured across the region in October and November 2023. Such a spectrally extensive dataset is unprecedented in airborne science and has immense potential to increase the impact of current and upcoming satellite missions. During the campaign, NASA's GV aircraft flew 16 science flights while the GIII flew 22 science flights, together covering ~45,000 km2 and meeting the data priorities of all 19 projects in BioSCape. You can view the current versions of the airborne data at bioscape.io/data. Data access and analyses will be supported for both South African and U.S. data users via the "BioSCape Cloud" computing environment.

The airborne data are accompanied by a large amount of biodiversity field data, including: over 600 vegetation survey plots across environmental gradients, and field spectroscopy measurements from all dominant species; phytoplankton, bio-optics, and water quality data from marine and freshwater systems; eDNA surveys from rivers' source to sea; sound recordings and point counts of birds and frogs across the region; terrestrial lidar scans across a fire return time gradient; quantification of essential biodiversity variables in estuaries along the coastline; detailed biodiversity and ecosystem function measurements in plots with varying levels of invasion by alien plants; and species surveys and field spectroscopy measurements on kelp forests along the coastline.

BioSCape's Support for Decision-Making Needs in the Region and Globally.
Since its conceptualization, BioSCape emphasized ensuring impact of the work, creating and maintaining deep and meaningful collaboration between researchers in the U.S. and South Africa and always emphasizing the importance of co-developing research. Early inclusion of South Africans led to a diverse Science Team of ~150 members, of which approximately half are affiliated with South African institutions and half with U.S. institutions.

Members of the BioSCape Science, Aircraft, and Instrument teams in front of the JSC GV and the LaRC GIII in Cape Town, South Africa. Photo: O.Whitehead.

The U.S. participation on the team ensured global applicability, access to best-in-class technology, and bridged gaps in capacity. The strong South African presence on the team ensured that the research agenda for BioSCape was locally relevant and that local ecological expertise was incorporated. Many South African collaborators are embedded within local, provincial and national public conservation and environmental management agencies. To take advantage of this, before starting data collection, we brought the science team and local stakeholders together for a five-day in-person workshop to ensure that the research was relevant for local decision-making needs for biodiversity conservation and natural resource management.

BioSCape's Support for Outreach and Capacity Building.

BioSCape supported several community outreach events, including a public lecture attended by 150 local stakeholders, a school education program run by GLOBE that reached nearly 170 students from 10 schools, the development of a NASA Space Apps challenge attempted by 71 teams around the world as well as two local NASA SpaceApps events for high school students and the Graduate Student Conference for the South African Environmental Observation Network where 144 students had the opportunity to engage with BioSCape scientists. We also ran a workshop on the Nagoya Protocol (co-hosted by a U.S. and South African representative), which guided documentation of shared benefits of the research (i.e. ways in which both South African and US counterparts benefit from the research). Such a document is important for managing expectations and keeping teams focused on how South African and U.S. members benefit from working together. BioSCape also has a Code of Conduct that includes clear authorship guidelines, ran a pre-deployment Ethical Participation training course, and had zero reports of harassment or safety issues during the campaign.

To ensure equitable access to and understanding of the data that were collected, BioSCape worked with NASA's Applied Remote Sensing Training (ARSET) program to host a training webinar series that focussed on the BioSCape sensors and how they could be applied to biodiversity monitoring and will be hosting an in-person 2-day capacity development workshop in Cape Town focussing on field spectroscopy.

BioSCape also worked with NASA's ORNL DAAC to present a training webinar on the NASA DAACs, what they do, how to use them to archive your data, and data best practices. Additionally, BioSCape is supporting the ORNL DAAC to host an in-person 2-day workshop in South Africa that will focus on teaching users how to access and do basic analyses on the BioSCape data sets, as well as similar training workshops at AGU and ESA conferences in the U.S.

"By using the BioSCape data we will be able to upscale what local scientists have been doing on the ground to what's happening at the global level. I'm hoping that in doing so we will be able to get the bigger picture and will be able to make decisions that go beyond conservation managers conserving species in one reserve." Muthama Muasya, Faculty of Science, University of Cape Town.

YOUNG CHEMISTS' SYMPOSIUM – WESTERN CAPE RSC/SACI 2024

UCT proudly hosted the Western Cape RSC/SACI 2024 Young Chemists' Symposium. This annual gathering aims to provide postgraduate students in the chemical sciences with a platform to meet their peers, present their research, and engage in fruitful discussions with colleagues from other institutions.

Despite the cold and stormy weather, over 120 postgraduates from Stellenbosch University (SU), the University of Cape Town (UCT), the University of the Western Cape (UWC), and the Cape Peninsula University of Technology (CPUT) attended this event. The symposium was successfully organized by a dedicated group of postgraduate students from these institutions: Leah Amod and Nicole Teixeira (UCT), Ilanie Wessels and Michael-Phillip Smith (SU), Eldon Pierre Damon and Tatum Matthews (UWC), and Sapokazi Timakwe (CPUT).

The event commenced with a registration and breakfast session, followed by a warm welcome address by Leah Amod and Nicole Teixeira.

UCT Chemistry Delegation

This was succeeded by an address from Prof. David Gammon representing the Royal Society of Chemistry (RSC) and Prof. Denzil Beukes from the South African Chemical Institute (SACI).

The morning session featured Masters' oral presentations and flash talks. After a tea break, a panel discussion on "Cultivating the Path to Academia for Early Career Researchers" was held. This discussion featured young academics including Dr Marwaan Rylands from UCT, Dr Candice Franke from UWC, Dr Masixole Makhaba from CPUT, and Dr Prinessa Chellan from SU. The session was inspiring and provided valuable insights and motivation for future academics in the audience.

The midday session included PhD oral presentations, followed by a lunch break. The afternoon resumed with more PhD oral presentations and flash talks, showcasing advanced research work by doctoral candidates. This led into the poster session and judging, where attendees had the opportunity to discuss research posters and network with peers and exhibitors. The judges were: Assoc. Prof. Clinton Veale (UCT), Prof. Selwyn Mapolie (SU), Prof. Lindiwe Khotseng (UWC), and Dr Kanyisa Maqashu (CPUT).

The symposium concluded with a closing ceremony, marking the end of a successful and well-attended event. The organizing committee did a superb job, taking on the challenge of coordinating every aspect of the event. From issuing the calls for abstracts and scheduling the posters and presentations to organizing the catering and ensuring the venues were perfectly set up, their meticulous planning and execution ensured a seamless and engaging experience for all attendees.

Leah and Nicole received great feedback from delegates. What stood out was multiple student presenters thanking them for the opportunity to present, as this was their first chance to share their research with a wider audience, and it meant a lot to them to gain this experience.

The organising committee extend their heartfelt gratitude to their generous sponsors: SACI, the RSC, A/Prof. Anwar Jardine (UCT Chemistry Department), Merck, Microsep, Analytical Solutions, Lasec, the H3D foundation, and Separation Scientific. Special thanks go to event photographer Laa-iqa Rylands, the panellists (Dr Marwaan Rylands, Dr Prinessa Chellan, Dr Candice Franke and Dr Masixole Makhana), Deirdre Brooks from the UCT Chem CAO, Prof. Denzil Beukes (SACI), Laila Smith (SACI), Prof. Edith Beukes (SACI), and Assoc. Prof. David Gammon (RSC).

THE PLANT CONSERVATION UNIT BIDS FAREWELL TO PROF LINDSEY GILLSON

Professor Lindsey Gillson's contributions to UCT are celebrated as she embarks on a new journey. After 18 years at the university, Professor Gillson, a full Professor, will lead the Leverhulme Centre for Anthropocene Biodiversity at York University in the UK. Her time at UCT has been marked by significant contributions across various levels, including research, teaching, and mentorship.

Professor Gillson is renowned for her research as a palaeoecologist, which focuses on understanding the long-term dynamics of African ecosystems by examining the past, present, and future. Her work spans diverse projects such as exploring the dynamics of Southern African savanna and grassland ecosystems, understanding the impact of change on Madagascar's environments, and investigating palaeoecology's role in fire management and restoration in Namibia and the fynbos biome.

Professor Gillson is recognised for her ability to translate her research findings into practical applications, evident in her book: Biodiversity Conservation and Environmental Change: using palaeoecology to manage dynamic landscapes in the Anthropocene. Her dedication to teaching, mentorship, and shaping courses in conservation, ecosystem management, global change, and applied palaeoecology is also acknowledged. Professor Gillson's contributions have earned her several awards, including the National Research Foundation's President's Award and the Vice-Chancellor Future Leader's Award. The Plant Conservation Unit team, led by Professor Timm Hoffman, expressed gratitude for Professor Gillson's leadership, research, and mentorship.

INSPIRING YOUNG MINDS: THE 2024 ESKOM CAPE TOWN EXPO FOR YOUNG SCIENTISTS

THE 2024 ESKOM CAPE TOWN EXPO FOR YOUNG SCIENTISTS SHOWCASED REMARKABLE TALENT AT THE UCT SPORTS CENTRE ON 14TH AND 15TH OF AUGUST.

Dr Dalielah Jappie led the department's participation with engaging experiments. She was joined by Claire Lawrence Naidoo and Laa-iqa Rylands, who enjoyed interacting with the students and sparking their interest in science.

The projects presented by the students were impressive and featured a diverse array of innovative ideas. The Chemistry Department sponsored four prizes for projects featuring some sort of green chemistry aspect. The Royal Society of Chemistry (RSC) were also prize sponsors. Retired staff members Assoc. Prof. David Gammon and Assoc. Prof. Alan Hutton were present, representing the RSC and judging the projects. Dr Cesarina Edmonds-Smith and Dr Sophie Reese-Jones from the Chemistry Department also served as judges, evaluating the impressive array of student projects with keen eyes and encouraging feedback.

The expo highlighted the excitement and creativity of young scientists. The UCT Chemistry Department's involvement showcased their commitment to nurturing future scientific talent. The event was a reminder of the vibrant community supporting the next generation of innovators.

WOMEN'S MONTH SIP 'N PAINT

IN CELEBRATION OF WOMEN'S MONTH AND IN HONOUR OF THE AMAZING WOMEN IN CHEMISTRY, THE TRANSFORMATION & MARKETING COMMITTEE HOSTED A SIP 'N PAINT EVENT ON MONDAY, 2ND SEPTEMBER 2024. THIS WAS OPEN TO ALL STAFF AND POSTGRADUATES WITHIN THE DEPARTMENT OF CHEMISTRY AND WAS WELL RECEIVED WITH CLOSE TO 40 ATTENDEES.

The purpose of this event was to encourage members of the department to take a moment out of the lab and/or office, to come together to embrace their creative side in a relaxed environment. This was quite a memorable mid-morning occasion and in contrast to the usual Monday blues, we experienced an array of colour, smiles, fun, high energy, delicious food and a strong sense of community spirit.

The Sip 'n Paint session began with a warm and friendly welcome from the organising committee, Mrs Laa-iqa Rylands, Dr Roxanne Mohunlal and Dr Samantha Douman, who also shared the purpose of this special celebration. The boardroom was transformed into a beautiful and inspiring art studio combining elements of chemistry and art with an added touch of Spring. Many took the opportunity to swap their labware for paint brushes and create stunning works of art which are now displayed within the department. Attendees enjoyed having the opportunity to get creative and paint, whilst enjoying light snacks and drinks. Often, due to the demands of teaching and research, we tend to spend most of our time with a small subset of people within the department and find ourselves saying a fleeting hello to others, in passing.

This Sip 'n Paint event was an excellent space that encouraged networking and collegiality allowing people to connect with different members of the department and forge new connections with ease. Ms Joanne Polzin very kindly guided the session by sharing painting tips such as how to use primary colours to create your own unique colour palette along with wonderful painting techniques. All attendees were given a token of appreciation comprising a key ring which had a positive affirmation and a sweet treat so that they could have a reminder of this lovely celebration.

Students in the News

FACULTY OF SCIENCE CROWNS TOPS STUDENTS

On Monday 16 September 2024, the Faculty of Science held its first faculty Student Awards Ceremony. This event celebrated the top students in the class for each course offered by the faculty for the 2023 academic year.

In a heartfelt welcome, the Dean emphasized the significance of this event, stating, ***"Today we will be announcing over 100 truly outstanding achievements."*** Amongst the brightest stars were Andrea Plumbley from Statistical Science and Oliver Borg from Computer Science, both receiving an astounding 5 awards each. Their dedication and hard work represent the spirit of excellence that the faculty aims for.

The highlight of the event was the prestigious Joseph Arenow Prize, awarded alongside the PhD medal to Tanya Scott for her thesis titled "***A Contribution to Understanding the Primary Moult of Birds."*** Birds are the only animals which replace their main means of locomotion, the flight feathers of their wings, on an annual basis. This thesis provides a review of quantitative studies of the process of replacement of the most important flight feathers, the primaries.

The review demonstrates that the available studies of primary moult are distributed unevenly, both geographically and taxonomically. Geographically there is a scarcity of studies in the tropics, and at both far northern and southern latitudes. The continent with the most studies is Africa. Taxonomically, a disproportionate number of studies deal with shorebirds and with weavers. To help fill the gaps, this thesis contributes 18 additional studies, increasing the total number to 260.

Following the success of this inaugural event, the Faculty of Science Student Awards will become an annual celebration of academic excellence.

Hussein Suleman & Tanya Scott

UCT POSTGRADUATE SCIENCE STUDENTS DONATE CRITICAL LAB EQUIPMENT TO CAPE TOWN SCHOOL.

The UCT Postgraduate Science Students' Council (PGSSC) has donated much-needed science equipment to Cape Academy, a school for science and technology in Cape Town. The donation was made possible by a generous contribution of R15,000 worth of laboratory equipment from LASEC, a leading laboratory equipment supplier.

The PGSCC partnered with the Spirit Education Foundation (SEF), a non-profit organisation that offers scholarships and support to economically disadvantaged high school learners, to identify a

From left to right: Nzele, Mr van Breda (Science and Mathematics teacher), two school representatives, Henrick Keyter (PGSSC public relations) and Mymoena Davids (PGSSC Chairperson).

school in need. SEF recommended Cape Academy and facilitated the connection between the school and the PGSCC.

PGSCC representatives visited Cape Academy to deliver the equipment and were given a tour of the school's three laboratories by the science and mathematics teacher, Mr van Breda. The visit highlighted the challenges that the school faces in providing practical science lessons to its students. The school has basic facilities but struggles to maintain them and afford running costs, especially for the chemistry laboratory.

The equipment donated by LASEC, which included beakers, measuring cylinders, weighing boats, gloves and pipettes, will help the school to provide students with adequate chemistry demonstrations. Mr van Breda and other school representatives warmly received the donation, which will go a long way in assisting the school with its science curriculum.

However, the visit also revealed that Cape Academy requires further assistance. The chemistry classes need more chemicals to conduct experiments and a safe way to dispose of them. The science laboratories and classrooms are also in need of repair.

The PGSCC is committed to doing more outreach work at Cape Academy to ensure that learners have access to practical science education. They believe that equipping learners with scientific knowledge and practical skills will help them in their careers and open doors to new opportunities.

POSTGRADUATE STUDENTS WERE AWARDED THE DSI-ESTHER MAHLANGU MASTER'S AND PHD FELLOWSHIPS, RESPECTIVELY.

The Minister of Science, Technology and Innovation, Prof. Blade Nzimande lauded the South African Women in Science Awards (SAWiSA) as an important initiative that recognises and celebrates the women researchers and scientists pushing the boundaries of knowledge and innovation for the benefit of everyone.

The Department of Science and Innovation (DSI) hosted the 2024 SAWiSA on 15 August 2024 in Mbombela. Now in its 18th year, this prestigious annual event honours the exceptional contributions of women to science, technology, engineering, mathematics and innovation (STEMI) in South Africa.

Among the evening's festivities was the awarding of the DSI-Esther Mahlangu Fellowships to women scientists and researchers who are pursuing their master's or doctoral studies and

already hold scholarships from the National Research Foundation or other DSI agencies. The fellowships are worth R75 000 for master's students and R95 000 for doctoral students.

The funding can be used to top up tuition fees or enhance students' academic programmes by covering the costs of conference attendance or specialised research materials and equipment required to complete their degree. The recipient may also use the funding to spend three to six months at an international research institution for the purpose of expanding her research experience.

The recipients of the DSI-Esther Mahlangu Master's Fellowships are as follows:
Kathleen Charlton - MSc, specialising in astronomy with a focus on galaxy evolution, active galactic nuclei (AGN) and neutral hydrogen gas (HI). In her current research, she is investigating the relationship between HI and AGN by searching for HI absorption within these galaxies. She is undertaking this research using observations from the MeerKAT telescope in the MIGHTEE survey, using new techniques to blindly search for the absorption.

Kathleen Charlton

Kelebogile Gasealahwe - is currently enrolled for a PhD with a focus on Stellar astrophysics - X-ray binaries. In her current research, she is investigating low mass neutron star X-ray binaries with a focus on the radio wavelength, using the MeerKAT telescope. She is studying the physical mechanisms responsible for the relativistic outflows (jets) of these objects during X-ray outbursts. She hopes her research will help expand the knowledge of neutron star X-ray binaries and the processes involved when the jets of these systems are produced during outburst events.

Kelebogile Gasealahwe

The SAWiSA serve as a powerful reminder of the critical role that women play in advancing science and innovation in South Africa.

SHOWCASING RESILIENCE: ART THAT DEFINES EGS

EGS TRANSFORMATION WORKING GROUP ART HOSTED ITS SECOND ANNUAL ART COMPETITION WITH WINNERS SELECTED BOTH BY A JURY AND POPULAR VOTE.

Students exhibition pieces

The art competition is designed to provide a way for the EGS building to become more representative of who we are as a department and of the thematic areas we work on. The winning entries of the year are displayed in the buildings foyer for the whole year, and then replaced with the next year's winners, a bit like the Fourth Plinth in Trafalgar Square. The other entries from each year, and previous winners, are displayed around the building, with each year adding to the representation on our walls.

This year's competition theme was "Resilient" and the three winners were Erica Whittal's "Legacies reframed" reflecting on the Upper Campus as palimpsest and the stories that resurface in place over time, David Arries's work reflecting on resilience in the context of systemic oppression faced by marginalized people of colour within university and broader societal spaces, and Menka Vansant's work "Resilience on the Wild Coast" drawing inspiration from the Xolobeni community's resilience in their fight against mining and to protect their land and livelihoods.

FROM 30% TO PHD: DR OLWETHU WAKA'S MATHEMATICAL JOURNEY EQUALS SUCCESS

DR OLWETHU WAKA'S REMARKABLE JOURNEY FROM A 30% MATH FAILURE TO EARNING A PHD IN MATHEMATICS SHOWCASES THE POWER OF RESILIENCE, DEDICATION, AND UNWAVERING DETERMINATION DESPITE NUMEROUS CHALLENGES AND SETBACKS.

"I have never stopped trying despite my many disappointments," says Waka, 33, who recently graduated with a PhD in pure mathematics from the University of Cape Town (UCT).

Waka's academic journey was filled with obstacles from the start. In 2008, while in Grade 10, he failed math after getting only a 30% mark. However, with the help of a passionate Grade 11 math teacher at Pakamani High in Butterworth, Eastern Cape, Waka developed a deep love for the subject and achieved an impressive 89% in his final-year Grade 12 exams.

After matriculating, Waka was unsure what to study. He enrolled in a diploma program in chemical engineering at Walter Sisulu University but failed his first-year modules and abandoned the program. He took a gap year in 2012 before applying to Rhodes University with the support of an education non-profit.

At Rhodes, Waka thrived. He completed a BSc degree, majoring in math, and then pursued an honours degree. From there, he went on to UCT, where he earned his MSc in mathematics with distinction. Waka then registered for a PhD, which he completed at the beginning of September 2024.

Now a post-doctoral fellow at the University of the Western Cape, Waka says his achievement proves *"one is not a failure until they stop trying."* He credits his late father, who helped him with homework and was a founding member of his rural primary school, as the most influential person in his life. Waka's illiterate mother also deserves recognition for supporting him through the difficult times.

Reflecting on his educational journey, Waka acknowledges the poor conditions and lack of resources at the schools he attended. He notes that his primary and high schools often lacked basic necessities like textbooks and scientific equipment. Yet Waka was able to excel, particularly in math, which did not require specialized lab materials.

Dr Olwethu Waka

A NEW PROGRAM OF TRANSFORMATIVE STUDENT ASSISTANTSHIPS IN THE SCIENCE FACULTY

Student research assistantships help students build their academic skills, knowledge, and networks, and have been shown to encourage enrolment in postgraduate degree programs.

However, a brief survey of the student assistants appointed in the Science Faculty as of mid 2024 revealed that the ad hoc nature of these appointments precludes the participation of many promising students. The Faculty Transformation Committee thus developed the Transformative Student Assistantship Program, to create opportunities for students to learn the practicalities of academic work on-the-job, specifically targeting students in UCT's designated equity groups (i.e., South African citizens who are black and/or women and/or have disabilities). Through an open call, student (2nd year undergraduate to Honours) and staff member pairs were invited to propose a small research project, one to six months in duration, with the student's time funded by the Faculty's transformation budget.

Twenty student assistantships were awarded, with the cohort including 16 black students and 12 women spread across nine departments/ units. The projects ranged from evaluating the types of climate science used as evidence in legal cases, to managing a season of the Cosmic Savannah podcast, an existing initiative aimed at engaging the public in Afro-centric astronomy research, to producing high-resolution geological maps to assess the late-stage evolution of the Karoo Basin. One student assistant whose research focused on nitrogen deposition to soils commented that the internship ***"offered a professional experience. I learned to adapt to a 9-to-5 work routine, manage tasks independently, and develop as a junior scientist"***.

A second student, working to produce digital elevation models of a Namibian fault system, fed back that ***"this position gave me an avenue to socialize and learn from [more experienced postgraduates], which really made science feel like more of an open, welcoming pathway"***.

In addition, the fact that the assistantships come with financial compensation ***"helps relieve that pressure of proving [to your family] that you're doing something worthwhile towards your future"***. The Faculty Transformation Committee plans to run the program again in 2025, with a call opening in late March.

In October, all student assistants and their supervisors were invited to a celebratory reception attended by the Dean and members of the Faculty Transformation Committee that provided an opportunity for networking and feedback

The project team responsible for the development and implementation of the Transformative Student Assistantship Program is Sarah Fawcett, Deputy Dean: Transformation and Transformation Committee Chair; Stephan Jamieson, Department of Computer Science and Transformation Committee Member; Vuyiswa Lupuwana, Department of Archaeology and Transformation Committee Member and Anna Taylor, Africa Climate and Development Initiative and Transformation Committee Member.

Staff News

WELCOME TO THE NEW STAFF

THE FACULTY OF SCIENCE WELCOMED THE FOLLOWING NEW STAFF MEMBERS DURING JANUARY – SEPTEMBER 2024

ACDI:
- Dr Petra Brigitte Holden - Senior Research Officer
- Dr Marieke Norton - Lecturer
- Ms Mira Blumberg - Programme Administrative Assistant
- Ms Tebogo Bridgette Manyekwane - Programme Administrative Assistant

ASTRONOMY:
- Mr Bret Marshall Yotti - Technical Officer

BIOLOGICAL SCIENCES:
- Professor Pierre William Froneman - Professor
- Dr Kelly Ortega Cisneros - Research Officer
- Professor Charl Anton Pauw - Professor
- Mr Shaheen Daniels - Senior Laboratory Assistant
- Miss Nqubeko Nontsikelelo Hlekwayo - Administrative Assistant
- Miss Leila Nefdt - Communications Officer
- Miss Isabella Gongota - Technical Officer
- Dr Susan Margaret Miller - Principal Scientific Officer

CHEMISTRY:
- Dr Marwaan Rylands - Lecturer

COMPUTER SCIENCE:
- Mrs Schamony Apollis - Administrative Assistant

ENVIRONMENTAL & GEOGRAPHICAL SCIENCE:
- Dr Daniel Murungi Kironde Kibirige - Lecturer
- Dr Phikolomzi Matikinca - Lecturer
- Dr Johanna Regina Catherina Von Holdt - Lecturer
- Ms Christina Mazivila - Senior Research Assistant

FACULTY OF SCIENCE - MARKETING:
- Mr Hishamodien Hoosain - Manager: Comm. Development & Marketing

FACULTY OF SCIENCE - FINANCE:
- Mr Bennet Zwelibanzi Nkala - Finance Officer

GEOLOGICAL SCIENCES:
- Dr Tara Rosemary Edwards - Chief Scientific Officer
- Mr Juane Neville Leukes - Chief Technical Officer

H3D:
- Dr Devasha Redhi - Junior Research Fellow
- Dr Lauren Beth Coulson - Chief Investigator
- Ms Chante Foentjies - Operations Manager
- Dr Jason Peter James Hlozek - Investigator
- Mrs Nandipha Mehlala - Senior Research Scientist

IDIA:
- Dr Jordan David Collier - Senior Research Officer
- Mr Jeremi-Ernst Jean-Paul Avenant - Senior Technical Specialist
- Mr Michael Andrew Currin - Senior Technical Specialist
- Mr Dane Kennedy - Senior Technical Specialist
- Mr Walter Silima - Astronomy Support Specialist

MATHEMATICS & APPLIED MATHEMATICS:
- Mr Walter Silima - Astronomy Support Specialist

MOLECULAR AND CELL BIOLOGY:
- Dr Alexis Joanna Bick - Junior Research Fellow
- Dr Johnson Mosoko Moliki - Junior Research Fellow

PHYSICS:
- Mr Roger Recardo Hansen - Technical Officer

OCEANOGRAPHY:
- Professor Babatunde Joseph Abiodun - SARCHI in Ocean & Atmospheric Modelling

STATISCIAL SCIENCES:
- Miss Ane Cloete - Lecturer
- Adj Assoc Prof Ian Noel Durbach - Adjunct Associate Professor
- Mr Retselisitsoe Monyake - Junior Research Fellow

STAFF FAREWELLS & RETIRING STAFF

WE SAY GOODBYE TO STAFF RETIRING FROM THE FACULTY OF SCIENCE

ASTRONOMY:
- Professor Thomas Harold Jarrett
- Mrs Carol Charmaine Marsh

BIOLOGICAL SCIENCES
- Emer Professor Lindsey Gillson
- Assoc Professor Astrid Claudia Jarre

MOLECULAR AND CELL BIOLOGY:
- Ms Anne-Marie Filmer

THE FACULTY SAID GOODBYE TO THE FOLLOWING STAFF:

BIOLOGICAL SCIENCES:
- Professor George Anthony Verboom

COMPUTER SCIENCE:
- Mrs Phelisa Lucas
- Ms Jenine Christians

FACULTY OF SCIENCE - ACADEMIC ADMINISTRATION:
- Ms Christina Mazivilla
- Ms Tara Pretorius

GEOLOGICAL SCIENCES:
- Dr Rosalie Tostevin

H3D:
- Dr Richard Klaus Gessner
- Miss Kim Louise Jackson
- Mr Ronald Johannes Olckers
- Dr Ayanda Ignatia Zulu
- Dr Preshendren Govender

IDIA:
- Dr Jordan David Collier

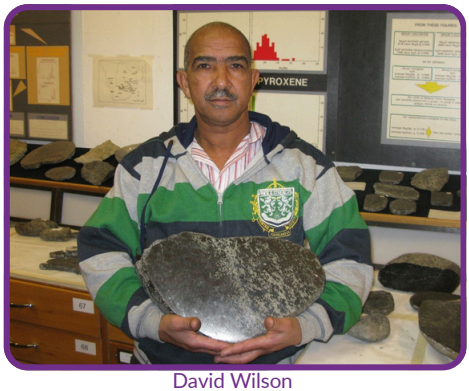
MOLECULAR AND CELL BIOLOGY:
- Dr Johnson Mosoko Moliki

PHYSICS:
- Mr Michael Rudi Van Heerden

STATISCIAL SCIENCES:
- Ms Janine Tobin

IN MEMORIAM

DAVID WILSON (1952-2024)



David Wilson

David Wilson began his career at UCT in June 1970 as a cleaner in Jameson Hall. Two years later, he transitioned to the Department of Mineralogy & Geology, initially as a workshop assistant and then as a driver. His curiosity for rocks soon led him to become involved in laboratory work.

David's interest in rocks quickly grew, and he began assisting in the department's thin section laboratory. This facility specializes in creating ultra-thin slices of rock mounted on glass slides, allowing researchers to examine the mineralogy and textures of igneous, sedimentary, and metamorphic rocks under a microscope. David's exceptional aptitude for this intricate and technically demanding work was quickly recognized, and he rose to the position of Head Thin Section Technician, a role he held with distinction for more than four decades.

Over his illustrious career, David produced an estimated 100,000 thin sections for academic researchers within UCT's Departments of Mineralogy & Geology and Geochemistry, as well as for academics nationwide as well as for industry. A particularly notable achievement was his work on thin sections of lunar samples collected during NASA's Apollo missions in the late 1960s and early 1970s. These samples were studied by UCT's Prof. Louis Ahrens and his students who later became professors themselves, James Willis and John Gurney to name a few. These lunar sections, like all Apollo mission materials, were returned to NASA and are now preserved in the Astromaterials Research and Exploration Science collections at the Johnson Space Center in Houston, Texas.

David was celebrated throughout UCT and the broader South African geology community as a master craftsman. His ability to produce high-quality thin sections with remarkable speed set him apart. He also generously shared his expertise, mentoring the current thin section technician in the Department of Geological Sciences, Ms. Rene van der Merwe. After 47 years of dedicated service, David retired in 2017, a departmental service record unlikely to be surpassed.

David's brother Ivan joined the department in 1981 and continues to work there today, marking a familial legacy within the institution. Beyond his professional achievements, David was deeply engaged in his community in Grassy Park, actively supporting the Protea Village land claim in Cape Town and contributing to his church. He was a devoted family man, surviving the loss of his beloved wife, Georgina, and leaving behind two sons, one daughter, and three grandchildren.

David's warmth, humor, and dedication to his craft left an indelible mark on those who had the privilege of knowing him. He will be fondly remembered and deeply missed by colleagues, friends, and family alike.

DR GAËLLE RAMON (1976–2024)

Dr Gaëlle Ramon

Gaëlle Ramon received her Ph.D. from the University of Claude Bernard Lyon I in 2005. Her significant contributions to Crystal Engineering began at the University of Cape Town under Prof. Nassimbeni, where her dissertation explored inclusion compounds and the relationship between macro properties and molecular-level observations.

After her doctorate, Gaëlle conducted post-doctoral research at UCT and taught as a Lecturer at the Cape Peninsula University of Technology. In 2009, she joined UCT's Research Office as a Research Development Coordinator while maintaining ties with the Centre for Supramolecular Chemistry Research, where she co-supervised Ph.D. students with Prof. Susan Bourne and collaborated on research publications.

In 2016, Gaëlle became Manager: Researcher Development at UCT, leading the Emerging Researcher Programme (ERP) and the Researcher Development Academy (RDA). These initiatives provided training for emerging researchers across South Africa and Africa.
Known for her inspiring personality and unwavering positivity, Gaëlle was dedicated to developing younger staff members and fostering academic growth. Her untimely passing leaves a significant void at UCT, where colleagues, students, and collaborators deeply miss her contributions and collaborative spirit.

FACULTY OF SCIENCE

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