

## PROGRAMME

# 6th National Global Change Conference University of Mpumalanga



01 – 04 December 2025



UMP Mbombela Campus

### Theme

Transformational Science for Social and Economic Empowerment in a Changing World.

*In partnership with: The National Global Change Science Committee (GCSC)*



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities

**CONFERENCE CO-CHAIRS: Ms Ditebogo Lebea (Chairperson) and Prof Sylvester Mpandeli (Deputy Chairperson), GCSC**

DAY 1: MONDAY, 01 DECEMBER 2025	
07:30 – 08:30	REGISTRATION
09:00 – 11:00	<b>SESSION 1 – OFFICIAL OPENING</b>
Opening Plenary	<p><b>Theme: Welcome, opening remarks and scene-setting</b></p> <p><b>Venue: GREAT HALL AUDITORIUM</b></p> <p><b>General announcements and introduction of the session and chair – Ms Ditebogo Lebea, GCSC Chairperson</b></p> <p><b>Chair: Dr Naledi Nthite, Director: Research, UMP</b></p> <ul style="list-style-type: none"> <li>• Official Opening: Conference aim and expectations – Session Chair (5min)</li> <li>• Welcoming remarks – Prof Aldo Stroebe, Deputy Vice-Chancellor Research, Innovation and Internationalisation (10min)</li> <li>• Welcoming remarks – Ms Lindi Masina, MEC for Education, Mpumalanga Provincial Government and Conference Co-Host (10min)</li> <li>• Opening remarks – Dr Zolani Dyosi, Executive Director: NRF (10min)</li> <li>• Complimentary remarks – Hon. Ms Bernice Swarts, Deputy Minister, DFFE (10min)</li> <li>• Keynote address (recorded) – Hon. Dr Nomalungelo Gina, Deputy Minister, DSTI (15min)</li> <li>• Global change research video – The Journey Thus Far (15min)</li> <li>• Scientific lecture – Prof Mulala Simatele, Wits University (30min)</li> </ul> <p>Reflections on scientific talk, and welcoming and opening remarks – Q &amp; A session (10min)</p>
11:00 – 11:45	TEA BREAK, POSTER SESSION & INTERVIEWS
11:45 – 13:00	<b>SESSION 2 – PANEL DISCUSSION</b>

*In partnership with: The National Global Change Science Committee (GCSC)*

<b>Panel Discussion</b>	<p><b>Theme: Pivoting STI for socio-economic development (entrepreneurship, transformation and empowerment)</b></p> <p><b>Venue: GREAT HALL AUDITORIUM</b></p> <p><b>Chair: Prof Aldo Stroebe, DVC – Research, Innovation and Internationalisation, UMP</b></p> <ul style="list-style-type: none"> <li>➤ Lead talk: Prof Patrick Voua Otomo, Director: Centre for Global Change, UFS (20min) <ul style="list-style-type: none"> <li>• Government perspective – DSTI Representative (5min)</li> <li>• National research management perspective – Dr Zolani Dyosi, Executive Director: NRF (5min)</li> <li>• Local government perspective – Mr Rabelani Tshikalanke, SALGA (5min)</li> <li>• Business development perspective – Mr Rest Kanju, Indalo Inclusive (5min)</li> <li>• Perspective of research community – Prof Ndiko Ludidi, UMP and ASSAf representative (5min)</li> <li>• Youth perspective – Representative of youth (5min)</li> </ul> </li> </ul> <p>Reflections on scientific lecture and perspectives of key role players – Q &amp; A session (15min)</p>
13:00 – 14:00	<b>LUNCH AND POSTER SESSION</b>
14:00 – 15:30	<b>SESSION 3</b>

*In partnership with: The National Global Change Science Committee (GCSC)*

In partnership with: The National Global Change Science Committee (GCSC)



**science, technology  
& innovation**

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



**National  
Research  
Foundation**



**UNIVERSITY OF  
MPUMALANGA**

Creating Opportunities

### Session 3A: Local Economies and Entrepreneurship

Venue: 11 (ROOM 205)

**Moderator: Mr Rest Kanju**

- Enhancing the Governance of Street Trading for Inclusive Economic Growth in the Face of Global Change: A South African Perspective.  
– **Siyasanga Sidumo**
- Leveraging Transformative Science for Socio-Economic Empowerment in South Africa.  
– **Silindokuhle Siphika**
- Comparison of social capital factors influencing entrepreneurship success of African immigrants and locals in the informal sector in Phuthaditjhaba.  
– **Siphosethu Mthethwa**
- Investigating the management skills amongst women in agricultural cooperatives in Mankweng Service Centre, Limpopo Province.  
– **Boshomane L, Nkoana P.M, Dube S.V & Zwane E.M**

### Session 3B: SIDE EVENT A - Just Energy Transition for Sustainable Futures: Innovations from South African Universities

Venue: 10 (ROOM 204)

**Convener: Prof Kaitano Dube, VUT**

Showcasing cutting edge research, community-based projects and policy engagements led by a consortium of universities in South Africa that are shaping South Africa's Just Energy Transition (JET) terrain. The side event will highlight local innovations driving climate resilient, socially inclusive and economically viable solutions for a carbon neutral future that is relevant to historically disadvantaged areas.

Exhibition will include, green building materials, smart metering; solar innovations and micro-grid prototypes.

### Session 3C: Weather and Climate Systems

Venue: 4 (ROOM 104)

**Moderator: Prof Neville Sweijd**

- Understanding the Propagation of Meteorological to Agricultural Drought and their Characteristics Using Multi-Source Data in the Maize Triangle of South Africa  
– **Mahlatse Kganyago (revise)**
- Process-based Evaluation of the Influence of the Kalahari Thermal Low and its Induced Dynamics on Regional Precipitation in some CMIP6 GCMs over Southern Africa.  
– **Bellinda Monyela**
- Identifying suitable Machine Learning Algorithms for Drought Prediction in the Karoo Region of South Africa.  
– **F. Ndalammbia**
- Investigating the impact of extreme floods on erosion in inland wetlands using remote sensing.  
– **Mpho J Maketa**
- Extreme weather events influence floral traits and yield in sunflower.  
– **Phrasia Mapfumo**

### Session 3D: Biodiversity and Ecosystems

Venue: 3 (ROOM 103)

**Moderator: Dr Salmina Mokgehele**

- Modeling Non-RAMSAR Wetland Transformation Overtime Using Landsat Data and Machine Learning Algorithms, South Africa.  
– **Nolizwi Diko; Kgabo Humphrey Thamaga**
- Diversity and habitat preferences of snails in Qwaqwa and their associated helminth infections  
– **Makaula, A.; Mofokeng, L.S.; van As, J.; Nyembe**
- Exploring biodiversity and ecological resilience of surface-active arthropod assemblages in avocado orchards and savannah vegetation, Mpumalanga.
- - **Happiness Madonsela, Tarombera Mwabvu, Inam Yekwayo**
- Complex habitats support higher species richness, occurrence, and unique assemblage composition in Babanango Game Reserve, Northern KwaZulu-Natal.  
– **Snothile Madikizela**
- Spatial Distribution of the dominant Woody Invasive Alien Species in the Namahadi



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities

				<p>Catchment Area: Phuthaditjhaba Free State.</p> <p>- <b>Siyanda Shabalala</b></p> <ul style="list-style-type: none"> <li>• Soil Organic Matter Fractionation Methods for Spekboom Soils: Insights into Carbon Accumulation.</li> </ul> <p>- <b>H Motsi</b></p>
15:30 – 16:00	TEA AND POSTER SESSION			
16:00 – 17:30	SESSION 4			

*In partnership with: The National Global Change Science Committee (GCSC)*

#### Session 4A: Local Economies and Entrepreneurship

Venue: 11 (ROOM 205)

**Moderator: Mr Rest Kanju**

- Enhancing Inclusive Benefit-Sharing in Wildlife Economies: Leveraging Policy and Analytical Frameworks for Socio-Economic Empowerment.  
- **V. Martins, ZT Hlongwane**
- Insights into Green innovative HRM-focused social enterprise in the East Cape, South Africa.  
- **KB Klishi**

#### Session 4B: Food Systems and Security

Venue: 10 (ROOM 204)

**Moderator: Dr Ali Ali**

- The impact of district-level climatic shifts on maize production and the implications for South African farmers.  
- **Robert Mangani, Jocelyn Mazarura, Solly Matlou, Arnim Marquart, Emma Archer, Nicky Creux**
- *Pseudarthrobacter spp.* from *Hordeum marinum* Enhances Wheat Salt Tolerance by Modulating Antioxidant Enzymatic Activity and Reducing Oxidative Damage.  
- **Liyabona Mula, Ruvimbo Mhari, Sibusiso Mbewe, Andiswa Beauty Boya, Adelé Mariska Barker, Ndiko Ludidi, Faheem Shahzad Baloch, Ali Elnaeim Elbasheir Ali**
- The effects of planting geometry and irrigation regimes on pigeon pea (*Cajanus cajan*) performance in a semi-arid environment.  
- **S. Manzini, W.A. Tesfuhuney, Z.A. Bello**
- The significance of varying Guanoblast application rates on the nutrient release pattern and pH changes of three contrasting Eastern Cape soils.  
- **H Motsi**

#### Session 4C: Weather and Climate Systems

Venue: 4 (ROOM 104)

**Moderator: Prof Neville Sweijd**

- Negative storm surge event along the southwest to southeast coast of South Africa during the April 2024 cut-off low event.  
- **Rapolaki R**
- Atmospheric and oceanic drivers of Tropical Cyclone Freddy's re-intensification in the Mozambique Channel.  
- **Zaine Perry, Ramontsheng Rapolaki, Sarah Roffe, Moagabo Ragoasha**
- A systematic review on advanced deep learning, GIS, and remote sensing approaches for post-flood disaster damage assessment.  
- **Leshabana M. Mabina, Fredrick M. Mashao, Fhumulani I. Mathivha and Hector Chikoore**
- Validation of SA Rainfall and Temperature Outputs Derived from the ARC's Short- to Medium Range Forecast System.  
- **Mosusumedi Rose Malema, Sarah Roffe, Fhumulani I. Mathivha, and Hector Chikoore**
- Assessment of trends and spatial patterns of agricultural drought incidence in Mpumalanga Province, South Africa.

#### Session 4D: Biodiversity and Ecosystems

Venue: 3 (ROOM 103)

**Moderator: Prof Wisemen Chingombe**

- Exploring the utility of temporal information in improving invasive alien tree mapping using Sentinel-2 imagery in the Global South  
- **TE Skosana, KJ Esler, and AJ Rebelo**
- Bird communities show limited responses to an extreme drought across Kruger National Park, South Africa.  
- **Rion E. Lerma, Lucas P. Medeiros, Dave I. Thompson, David A. Ehlers Smitha, Colleen T. Downs**
- Role of Climate in the Distribution of a Woody Encroacher in Montane Grasslands of...  
- **Gbenga F. Akomolafe**
- Generational Indigenous Knowledge of Bush Encroachment Management in Rural Areas of Muzenhe village: Limpopo Province.  
- **Thabang Maphanga, Benett Siyabonga Madonsela, Tshidi Mokgatsane Baloyi, Terry Takalani Phungela, Mosa Koloko, Karabo Concelia**



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities

		<ul style="list-style-type: none"><li>Quantifying Tiller Contribution to Yield as a Compensatory and Water Stress Adaptation Mechanism in Sorghum - <b>Jabulani Ntuli</b></li></ul>	- <b>Baloyi Humbulani and Wisemen Chingombe</b>	<b>Malakane, Xolisiwe Sinalo Grangxabe</b> <ul style="list-style-type: none"><li>Changing Climate and Savanna Resilience: The role of below-ground bud banks. - <b>T.L. Ramalevha, D.I. Thompson, F. Siebert.</b></li></ul>
17:30 – 18:30	<b>SIDE EVENTS</b> (side event programmes can be viewed or down-loaded from <a href="http://www.ump.ac.za/globalchange2025">www.ump.ac.za/globalchange2025</a> )			
Parallel Side Events	<b>Side Event B: Everyday Governance and a Just Urban Transition</b> <b>Venue: 11 (ROOM 205)</b> <b>Convener: Prof Christina Culwick Fatti, UWC, <a href="mailto:cculwickfatti@uwc.ac.za">cculwickfatti@uwc.ac.za</a></b> Many South African cities are confronted with urgent but complex challenge of a just transition – one that creates pathways towards environmentally sustainable just energy futures. The session explores governance dimensions of such just transitions, focusing on how power, infrastructure and everyday coping strategies intersect in low-income urban areas.		<b>Side Event C: From Capacity Development to Capabilities: Youth Shaping Catchment Futures in a Changing World</b> <b>Venue: 10 (ROOM 204)</b> <b>Convener: Ms Dan’sile Cindi (Mavimbela), SANBI, <a href="mailto:d.cindi@sanbi.org.za">d.cindi@sanbi.org.za</a></b> In SA’s catchments, young professionals are leading the way in tackling climate extremes, biodiversity loss and water insecurity. Youth are not just developing skills, they are creating lasting capabilities that yield sustainable social, ecological and economic benefits. There is value in sharing and cross-learning among youth working in different catchments; it strengthens the application of knowledge and tools that advance catchment management.	
	19:00 – 21:00	<b>WELCOMING DINNER (GREAT HALL – Lower Veranda)</b>		
<b>DAY 2: TUESDAY, 2 DECEMBER 2025</b>				
08:00 – 08:30	<b>REGISTRATION</b>			
08:30 – 09:30	<b>SESSION 5</b>			

*In partnership with: The National Global Change Science Committee (GCSC)*



Plenary Session	<p><b>Theme: Building resilient communities in the face of increasing natural disasters</b></p> <p><b>Venue: GREAT HALL AUDITORIUM</b></p> <p><b>Chair: Prof Sylvester Mpandeli, WRC and GCSC Deputy Chairperson</b></p> <ul style="list-style-type: none"> <li>• Plenary talk 1: Prof Patrick Voua Otomo, Director: Centre for Global Change, UFS (20min)</li> <li>• Plenary talk 2: Dr Brian Mantlana, CSIR (10min)</li> <li>• Plenary talk 3: Dr Kholeka Mtshali, UFS (10min)</li> <li>• Plenary talk 4: Dr Simphiwe Ngcobo, UKZN (10 min)</li> </ul> <p>Reflections and panel discussion – Q &amp; A session (5min)</p>			
09:30 – 11:00	<b>SESSION 6</b>			
Parallel Sessions	<p><b>Session 6A: Resilient Communities and Social Systems</b></p> <p><b>Venue: 11 (ROOM 205)</b></p> <p><b>Moderator: Dr Simpiwe Ngcobo</b></p> <ul style="list-style-type: none"> <li>• Investing in transformative social learning to enhance resilience for communities in a changing world. – <b>Mzukisi Kuse</b></li> <li>• Assessing and Quantifying Soil Erosion Dynamics in Sekhukhune District (1994–2024), Using Remote Sensing Data. – <b>McCarthy Phafudi Sekome, , Hector Chikoore, Frederick Mokibelo Mashao</b></li> <li>• Exploring the Role of Women in Addressing Water Scarcity in Qwaqwa: Challenges, Resilience and Community-Based Solutions. – <b>Nonhle Ngubane</b></li> <li>• Investigating the role of education in promoting social justice and</li> </ul>	<p><b>Session 6B: Urban Development and Planning</b></p> <p><b>Venue: 10 (ROOM 204)</b></p> <p><b>Moderator: Dr Kholeka Mtshali</b></p> <ul style="list-style-type: none"> <li>• Bridging the Gap Between WASH Policies and Practices in South Africa's Peri-Urban Area. – <b>Shadreck Muchaku</b></li> <li>• Spatio-Temporal mapping of a City Expansion using Landsat, the case of uMhlathuze Municipality, South Africa. – <b>Mabaso S, Pululu PS and Mncube Z</b></li> <li>• Examining disaster management for flood risk reduction in Ladysmith. – <b>Presenter (not provided)</b></li> </ul>	<p><b>Session 6C: Weather and Climate Systems</b></p> <p><b>Venue: 4 (ROOM 104)</b></p> <p><b>Moderator: Prof Elvis Nkoane</b></p> <ul style="list-style-type: none"> <li>• Urban Heat Islands in Semi-Arid Cities: Monitoring and Modelling Thermal Variability in Bloemfontein, South Africa. – <b>Kaylne Tshikovhi</b></li> <li>• The coupled effects of climate change and exploitation on a South African line-fishery species. – <b>Nabani P. Xolani; Bailey Lauren; Muller Cuen; Childs Amber; Potts Warren</b></li> <li>• Isotope Geochemistry of Cenozoic Sequences of Southern Africa for Climate Modeling. – <b>Sameera Musa</b></li> </ul>	<p><b>Session 6D: Food Systems and Security</b></p> <p><b>Venue: 3 (ROOM 103)</b></p> <p><b>Moderator: Prof Paulina Bopape-Mabapa</b></p> <ul style="list-style-type: none"> <li>• Effect of growth stages of maize and soybean on ants, beetles and spiders – <b>Chuma Zenande Guqa, Inam Yekwayo, Tarombera Mwabvu</b></li> <li>• Assessment of the Water-Energy-Food Nexus on smallholder farmers' productivity: A perspective of Sustainable Agri-Park model in Gauteng Province, South Africa. – <b>Kwena Mpati</b></li> <li>• Soil microbial population and activity response to sunnhemp cover crop, combined nano zinc and copper and nitrogen fertiliser</li> </ul>





	<p>equity in the former homeland of Qwaqwa.</p> <p>- <b>Sebabaco Itholeng, Ntebohiseng Sekhele</b></p>		<ul style="list-style-type: none"> <li>Profiling Climate Change Communication and Education in South Africa: Insights from the UNESCO GEM 2023 PEER Collaboration.</li> <li>- <b>Ben Souza</b></li> <li>Validation of Gridded Rainfall Estimation Products Against Ground-Based Monitoring Systems in South African Catchments: A Comparative Analysis of Cathedral Peak (KZN) and Jonkershoek (WC).</li> <li>- <b>Sbonelo Mtetwa, Kershani Chetty and Michele Toucher</b></li> </ul>	<p>application after canola cultivation.</p> <p>- <b>Mokgophi M.M, Ayisi K.K, Kgopa P.M, Kena M.A</b></p> <ul style="list-style-type: none"> <li>Physio-Morphological and Nutrient Composition Response of Amaranth (Amaranthus Cruentus L) to Fertilizer and Mulching.</li> </ul> <p>- <b>Lindokuhle Education Mathebula, Salmina Ngoakoana Mokgehele and Bongiwe Mcata</b></p>
11:00 – 11:30	TEA/COMFORT BREAK			
11:30 – 13:00	SESSION 7			

*In partnership with: The National Global Change Science Committee (GCSC)*

### Session 7A: Resilient Communities and Social Systems

Venue: 11 (ROOM 205)

**Moderator: Dr Adele Barker**

- Comparative effectiveness of community-based feedlots vs commercial systems for climate adaptation in Southern Africa: A systematic review.  
– **Mhlangabezi Slayi, Leocadia Zhou, Siphe Zantsi & Lwandiso Mdiya**
- Green spaces and parks accessibility and inclusivity across socioeconomic statuses in Mthatha, Eastern Cape, South Africa.  
– **A. Zweni, S. Ndhleve, and H.M. Kabiti**
- The Impact of Rural to Urban Migration on the Provision of Housing in Buffalo City Metropolitan Municipality: A case of East London.  
– **Zicwengile Loni**
- Impact of Transfrontier Conservation Areas on the Migration of park-adjacent Communities in the Lubombo Conservation area.  
– **Lunika Buhle A**
- Transdisciplinary Research Collaboration with a Local Community: Reflections on Methodology.  
– **Matsobane Malebatja**

### Session 7B: Water Management and Security

Venue: 10 (ROOM 204)

**Moderator: Prof Sylvester Mpandeli**

- Harnessing the potential of indigenous bacteria for bioremediation of xenobiotics and calcitrant industrial contaminants in surface water bodies near the industries.  
– **K M Moloantoa**
- Ecklonia radiata in gullies is a coastal engineer that influences water nutrients and physicochemical parameters across two regions.  
– **Zizipho Mateyisi, Tembinkosi Steven Dlaza & Motebang Vincent Nakin**
- Integrating Citizen Science in Water Quality Monitoring of the Eastern Cape Province.  
– **Mndawe K, Williams-Bruinders L, Dhliwayo N, Linol B**
- Adsorptive removal of heavy metals, pharmaceuticals and personal care products using activated carbon/ZIF-8 nanocomposite.  
– **Nontuthuzelo Khoase, Azile Nqombolo**
- Metal contamination in freshwater ecosystems: Linking feeding strategies to metal accumulation patterns and variations across

### Session 7C: Human Health and Diseases

Venue: 4 (ROOM 104)

**Moderator: Prof Emma Archer**

- Integrating indigenous knowledge of *Hermannia geniculata* for anti-inflammatory drug discovery and socio-economic impact in a changing world.  
– **Sylvia Modibedi, Pheello Mojau, Sellwane Lehasa**
- Coping strategies for hypertensive patients to adapt to the impact of climate change at selected districts in Limpopo Province of South Africa.  
– **Mmusi SM, Bopape MA. Mothiba T.M**
- Psychological Impacts of Climate Change on Farmers in the Eastern Cape, South Africa.  
– **Nyusani S, Nkanyuza SN, Kabiti HM**
- Spatiotemporal analysis of bovine tuberculosis in cattle in South Africa.  
– **Maguta, E.; Jaja, I.F.; Michel, A.**
- The effects of different doses of paracetamol on the development and morphometry of insects.  
– **Nathanias Munsami**

### Session 7D: Food Systems and Security

Venue: 3 (ROOM 103)

**Moderator: Prof Paulina Bopape-Mabapa**

- Divergent Adaptation Strategies in two contrasting *Medicago truncatula* lines under Combined Drought and Heat Stress: Insights from Physiological and Gene Expression.  
– **Nour Ressaissi, Wiem Mnafgui, Irene Romero, Cheima Mejri, Ndiko Ludidi, Maria Teresa, Sanchez-Ballesta, and Mounawer Badri**
- Fusarium Wilt Severity, Growth and Yield Response of Tomato to Zinc-Copper Nano-Micronutrient and Canola Bio-Fumigant in Semi-Arid Agro-Ecosystems.  
– **Molobela Mpho, Kena Mapotso, Ayisi Kingsley, Phasa Nkateko, and Ntuli Vafana**
- Morphological and molecular identification of seedborne fungal pathogens associated with soybean.  
– **NV Hlongwane, LA Rothmann, M Jackson and A Minnaar-Ontong**
- Advancing Sustainable Crop Protection and Soil Health



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities

		functional feeding groups and intermetal relationships. - <b>Refentje MV Mokwena, Mapurunyane C Selala, Jeffrey Lebepe</b>		Through Precision Agriculture Technologies. - <b>Emogine Mamabolo, Makgabo Johanna Mashala, Ephias Mugari, Tlou Elizabeth Mogale, Norman Mathebula, Kabisheng Mabitsela, and Kwabena Kingsley Ayisi</b> • Gut Microbiome of Eldana saccharina: Unlocking Microbial Interactions for Improved Pest Management Strategies in Sugarcane. - <b>Buthelezi KNG, Rutherford RS and Munyai C</b>
13:00 – 14:00	LUNCH			
14:00 – 15:30	SESSION 8			

*In partnership with: The National Global Change Science Committee (GCSC)*

### Session 8A: Coastal Management and Marine Systems

Venue: 11 (ROOM 205)

**Moderator: Dr Motebang Nakin**

- Effects of habitat on population characteristics of chitons in marine reserves and non-reserves along the Eastern Cape coast of South Africa.  
– **A Zwezwe, MDV Nakin, M Zvavahera**
- Variations in fish behaviour in response to differences in rocky shore habitats along the South African Wild Coast.  
– **Nasiphi Mdusulwana**
- Assessment of heavy metal concentrations and distribution in tissues of sea urchin species: *Parechinus angulosus* and *Tripneustes gratilla* along the Wild Coast of South Africa.  
– **Madikizela Avela**
- Spatio-temporal Variation of Heavy Metal Concentration in Different Sizes and Tissues of a Giant Chiton *Dinoplax gigas* (Gmelin, 1791), Along the Eastern Cape Coast of South Africa.  
– **Boitumelo Kortjass**
- Sedimentology and palynology of marine sediments in Algoa Bay, Eastern Cape  
– **Nothando Duma**

### Session 8B: Water Management and Security

Venue: 10 (ROOM 204)

**Moderator: Prof Emma Archer**

- Evaluating nitrate pollution and potentiality of native bacterial consortia in WWTPs across KwaZulu-Natal for in-situ complete denitrification.  
– **Nomsuka BY, Moloantoa KM**
- Assessing the feasibility of Managed Aquifer Recharge in the Nelson Mandela Bay Municipality for Sustainable Groundwater Resource Management.  
– **Vandala Bamanye, Mahed Gaathier**
- The Evaluation of Satellite-Based Hydrometeorological Estimates for Streamflow Modelling in a Mountainous Catchment Using Machine Learning Techniques.  
– **Feroza Morris-Kolawole**
- Citizen Science for improved Water Quality Monitoring in South Africa, Kenya, and Ghana.  
– **Dhliwayo NA**

### Session 8C: Miscellaneous - Geopolitics and Carbon Markets etc

Venue: 4 (ROOM 104)

**Moderator: Ms Ditebogo Lebea**

- The political economy of illegal mineral extraction and sustainable development: Implications on human ecology in Zimbabwe and South Africa in the capitalocene-anthropocene.  
– **Zvikomborero Kapuya**
- Carbon Markets and Mitigation Practices by Small-scale famers in Agriculture: "A Case of Sub-Saharan Africa".  
– **V. Tsheleza, S. Ndhleve**

### Session 8D: Food Systems and Security

Venue: 3 (ROOM 103)

**Moderator: Prof Kingsley Ayisi**

- A pilot trial of Bt sugarcane and the sterile insect technique for reducing *Eldana saccharina*-induced damage in sugarcane.  
– **V.L. Lauchande, L.N. Malinga, T.C. Munyai**
- Field evaluation of sorghum genotypes for response against fungal diseases across varying agroecological zones in South Africa.  
– **Masisi, T.V., Moloi, N., Sabela, K.S., Rothmann, L.A., Shamuyarira, K.W., Botha, E., Shimelis, H. and Labuschagne**
- Evaluation of organic fertilizers on soil quality and wine grape performance.  
– **Sipho Mncedi, Johan van Zyl and Ailsa G Hardie**
- Analysis of Small-Holder Cattle Farmers' willingness to Pay for the Feed Supplements in Lepelle-Nkumpi Local Municipality, Capricorn District, Limpopo Province.  
– **Sekonya DR, Gidi LS and Ledwaba LJ**
- Nutritional Water Productivity of Selected Potato Cultivars under Varying Mulch Application and Locations.



				- Nosipho Precious Minenhle Phungula, Sandile Thamsanqa Hadebe, Lucky Sithole and Nomali Ziphorah Ngobese
15:30 – 16:00	TEA/COMFORT BREAK			
16:00 – 17:30	SESSION 9			

*In partnership with: The National Global Change Science Committee (GCSC)*

### Session 9A: Circularity and Resource Efficiency (Waste Management)

Venue: 11 (ROOM 205)

**Moderator: Ms Alinah Mthembu**

- Kinetics of Trichoderma Viride Cellulase Catalyzed Saccharification of Wastepaper.  
– **OOP Ojobaro, AH Kgopa, KMP Mokatse and JPH van Wyk**
- Arthropod assemblages in municipal solid waste landfills: decomposers or hidden hazards?  
– **Nozipho Kheswa, Arun Gokul, Judicaël Obame-Nkoghe and Nontembeko Dube**
- AI-Driven Adaptive System for Floodwater and Wastewater Reuse in Climate-Stressed Semi-Urban South Africa  
– **Lethukubonga Matshaba-Mkasi**
- Assessing the effectiveness of Household Solid Waste Management Practices and their Impacts on the Local Environment and Communities: A case of Phuthaditjhaba and Makwane in the Free State Province,  
– **Pulane Pudumo, M. Hansen and G. Mukwada**
- Sustainable eco-friendly recovery processes of ionomer membrane from end-of-life fuel cells.

### Session 9B: SIDE EVENT D – Expanded Freshwater and Terrestrial Environment Observing Network (EFTEON)

Venue: 10 (ROOM 204)

**Convener: Dr Gregor Feig, SAEON**

Both EFTEON and SAEON play pivotal roles in South Africa's long-term environmental observation framework. Through our integrated networks, we support high-quality, long-term data collection that informs research, policy, and public understanding of global environmental change. Our participation in the conference exhibition will showcase our advanced monitoring technologies, foster collaborative opportunities, and highlight the significance of sustained observation infrastructures in addressing climate and ecological challenges.

### Session 9C: Technology Applications

Venue: 4 (ROOM 104)

**Moderator: Ms Kogilam Govender**

- Identifying Pulsar Associations of Supernova Remnant (SNR) Candidates from SARAO MeerKAT Galactic Plane Survey Data.  
– **Ntombizodwa Zwane**
- Harnessing AI for Equitable Student Success: Empowering the Next Generation in the Education Faculty at UWC.  
– **Maira Bladergroen, De Wet Schutte, Monique Manuel**
- Introducing the Irrigation Resource Intelligence System (IRIS-AI) powered by Earth Observation and Artificial Intelligence for Optimising Water Use and Governance.  
– **Mahlatse Kganyago**

### Session 9D: Food Systems and Security

Venue: 3 (ROOM 103)

**Moderator: Prof Kingsley Ayisi**

- Investigating the role of biliverdin, a heme oxygenase gene product in enhancing salinity stress tolerance of Sorghum bicolor.  
– **Vivian Chigozie Ikebodu, Mulisa Nkuna, Nzumbululo Ndou, Rachel Fanelwa Ajayi, and Takalani Mulaudzi**
- Elucidating the biochemical response and nutrient dynamic of grapevine under different cover crops and their management practices.  
– **Nemaluma GL, Howell CL, Mulidzi AR, Mulaudzi**
- An overview of the impact of invasive plants on smallholder farmers in the Sub-Saharan Region.  
– **Tshidi Mokgatsane Baloyi, Thabang Maphanga, Benett Siyabonga Madonsela**
- Proteomic Analysis Reveals Contrasting Stress-Response Mechanisms in Soybean Genotypes under Combined Drought and Salinity.  
– **A.B. Boya, N. Ludidi, A.E.E. Ali**
- A systematic review on the importance of insect pollinators



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities



	- Karabo BS Langa			for avocado (Persea americana) productivity in Africa: implications for socio-economic empowerment in a changing climate. - Luyanda Hlamaphi, Silvia Ceașu, Richard Pearson, Rob Slotow and Caswell Munyai
17:30-18:30	SIDE EVENTS (side event programmes can be viewed or downloaded from <a href="http://www.ump.ac.za/globalchange2025">www.ump.ac.za/globalchange2025</a> )			
Parallel Side Events	SIDE EVENT E: Blue entrepreneurship for inclusive socio-economic development and empowerment Venue: 11 (ROOM 205) Convener: Safiyya Sedick, SAEON <a href="mailto:s.sedick@saeon.nrf.ac.za">s.sedick@saeon.nrf.ac.za</a> In a changing world, entrepreneurship offers an equally important pathway for applying science to real-world challenges. Entrepreneurship, particularly within the blue economy, provides opportunities to translate research and innovation into practical solutions that create jobs, empower communities and safeguard ecosystems.		SIDE EVENT F: Exploring Partnership Practices from Source to Tap Venue: 10 (ROOM 204) Convener: SANBI SANBI, in partnership with WRC, DWS and DARLDR are leading the Living Catchments Programme. The programme employs a long-term programmatic approach aimed at fostering more resilient, better-connected and better-resourced communities capable of co-governing water and ecological resources through research-informed, participatory approaches. The intention is to bring people, ecosystems, and landscape partnerships at the centre of catchment-scale restoration.	
	19:00 - 22:00 BRAAI & NETWORKING (GREAT HALL – Lower Veranda)			
DAY 3: WEDNESDAY, 3 DECEMBER 2025				
08:00 – 08:30	REGISTRATION			
08:30 – 09:30	SESSION 10			

*In partnership with: The National Global Change Science Committee (GCSC)*

Plenary Session	<p><b>Theme: Technology and infrastructures as enablers for research</b></p> <p><b>Venue: GREAT HALL AUDITORIUM</b></p> <p><b>Moderator: Dr Gilbert Siko</b></p> <ul style="list-style-type: none"> <li>• Presentation 1 – Dr Gregor Feig, SAEON (20 min)</li> <li>• Presentation 2 – Prof Kemiki Adebawale, Federal University of Technology, Nigeria (15 min)</li> <li>• Presentation 3 – Prof Ramagwai J Sebola, SANBI (15min)</li> </ul> <p>Reflections and discussion – Q &amp; A session (5min)</p>
09:30 – 10:45	<b>Session 11</b>

*In partnership with: The National Global Change Science Committee (GCSC)*

### Session 11A: Pollution

Venue: 11 (ROOM 205)

**Moderator: Mr Thabo Radebe**

- Advancements in Remote Sensing Technologies for Enhanced Detection and Monitoring of Offshore Oil Spills.  
– **Thobelani Jiyane**
- Tackling Diaper Pollution: Enhancing Soil Moisture, Biomass Accumulation, and Growth Patterns of Napier Fodder through Entrenched Diapers and Biochar in South African Degraded Landscapes.  
– **Ayanda Shandu, Jon McCosh, Thabo Makhubedu, Pardon Muchaonyerwa, Isabella Gosetto and Jason Weeks**
- Identification and Characterization of Trichoderma Harzianum for Bioremediation of Hydrocarbon Polluted Sites.  
– **Michael Asemoloye**

### Session 11B: Sustainable Energy Transitions and Futures

Venue: 10 (ROOM 204)

**Moderator: Dr Zolani Dyosi**

- Sustainable eco-friendly recovery processes of ionomer membrane from end-of-life fuel cells.  
– **Karabo BS Langa**
- Electrocatalytic Efficiency of some Platinum-Based Ternary Transition Metal Catalysts Supported on Nitrogen-Doped Multiwalled Carbon Nanotubes for Direct Methanol Fuel Cells.  
– **Nolufefe Magama, Mike O. Ojemaye**
- The Impact of a CuS Passivation Layer on the Photovoltaic Performance of MnS Quantum Dot-Sensitized Solar Cell.  
– **Sindisiwe Jakalase**

### Session 11C: Unspecified

### Session 11D: Food Systems and Security

Venue: 3 (ROOM 103)

**Moderator: Prof Kinsley Ayisi**

- Managing fire risk under global change: Exploring the relationship between plantation forestry ownership and fire in Mpumalanga, South Africa.  
– **Tiisetso Mphela**
- *Pseudarthrobacter spp.* from *Hordeum marinum* Enhances Wheat Salt Tolerance by Modulating Antioxidant Enzymatic Activity and Reducing Oxidative Damage.  
– **Liyabona Mula, Ruvimbo Mhari, Sibusiso Mbewe, Andiswa Beauty Boya, Adelé Mariska Barker, Ndiko Ludidi, Faheem Shahzad Baloch, Ali Elnaeim Elbasheir**
- Response of grain yield performance of soybean genotypes under different sites in the Eastern Cape, South Africa.  
– **Sihle Sitshaka, Charles Shelton Mutengwa, Nyasha Chiuta, Peter Swanepoel**
- Comparative analysis of water use dynamics, growth and yield of tomato cultivars grown under shade net conditions in Mokopane, Limpopo Province.



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities

				- Benjamin Mathibe
10:45 – 11:15	TEA AND POSTER SESSION			
11:15 – 12:30	<b>SIDE EVENTS</b> (side event programmes can be viewed or down-loaded from <a href="http://www.ump.ac.za/globalchange2025">www.ump.ac.za/globalchange2025</a> )			
Side Event	<b>SIDE EVENT F: Centre for Global Change (CGC) – Mini-Workshop</b> <b>Venue: GREAT HALL AUDITORIUM</b> <b>Moderator: Dr Zolani Dyosi</b> <ul style="list-style-type: none"> <li>Overview of the initiative <ul style="list-style-type: none"> <li>Purpose and evolution – Leluma Matooane, DSTI</li> <li>Management and operations – Jonathan Diediriks, NRF</li> </ul> </li> <li>Presentation of scope, niche areas and achievements to date (various universities) <ul style="list-style-type: none"> <li>CGC Directors</li> </ul> </li> </ul> Reflections – Q & A session			
12:30 -13:30	LUNCH AND POSTER SESSION			
14:00 -17:00	<b>FIELD TRIP</b> <ul style="list-style-type: none"> <li>Presentation of operations and guided tour of the Lowveld National Botanical Garden (in 3 groups of 80-100)</li> </ul>			
19:00–22:00	<b>GALA DINNER &amp; AWARDS</b>			

*In partnership with: The National Global Change Science Committee (GCSC)*

Closing Plenary	<p><b>Venue: MULTI-PRUPOSE HALL</b></p> <p><b>Co-chairs: Ms Ditebogo Lebea (GCSC Chair) and Prof Sylvester Mpandeli (GCSC Deputy-Chair)</b></p> <p>PART 1 (Awards)</p> <ul style="list-style-type: none"> <li>• Short Highlights and Outcomes – Prof Neville Sweijd GCSC (15min)</li> <li>• Awards and Acknowledgements (20min)</li> <li>• <i>Starter meal</i></li> </ul> <p>PART 2 (Gala dinner)</p> <ul style="list-style-type: none"> <li>• Closing Remarks – Dr Nomalungelo Gina, Deputy Minister, DSTI</li> <li>• Live Music</li> <li>• <i>Main course meal</i></li> <li>• Vote of Thanks – Prof Ludidi, UMP</li> <li>• <i>Desserts</i></li> <li>• <i>Live Music</i></li> </ul>
<b>DAY 4: THURSDAY, 4 DECEMBER 2025</b>	
08:30 – 12:00	<b>SIDE EVENTS</b> (side event programmes can be viewed or down-loaded from <a href="http://www.ump.ac.za/globalchange2025">www.ump.ac.za/globalchange2025</a> )
Side Event	<p><b>SIDE EVENT G: African Earth Observation Network (AEON) – Moderated Session</b></p> <p><b>Venue: 11 (ROOM 205)</b></p> <p><b>Convener: Dr Bastien Linol, NMU and AEON; <a href="mailto:Bastien.Linol@mandela.ac.za">Bastien.Linol@mandela.ac.za</a></b></p> <p>Earth-Ocean Link from the Indian Ocean to the Karoo ecosystem: System Studies linking Life to the Power of Tectonics and Climate Change. A moderated session comprising presentation of a set of projects which have been undertaken or currently being undertaken.</p>
12:00 – 13:00	<b>LUNCH</b>
13:00 –	<b>CONFERENCE ADJOURNMENT &amp; DEPARTURE</b>
<b>PRE- AND POST-CONFERENCE SPECIAL EVENTS</b>	

## **EVENT: Habitable Planet Workshop (ACCESS)**

**Date: 29 November – 7 December 2025**

**Time: 08:00 – 18:00 daily**

**Venue: BUILDING 6 MAIN AUDITORIUM**

- Attendance by invitation ONLY  
For more information: Dr Carl Palmer, [cpalmer@access.ac.za](mailto:cpalmer@access.ac.za); [carlp@csir.co.za](mailto:carlp@csir.co.za)

*In partnership with: The National Global Change Science Committee (GCSC)*



# INVITED PLENARY SPEAKERS AND PANELISTS



**Prof Mulala Danny Simatele** is a British-Namibian-Zambian born academic who is currently based at the University of the Witwatersrand in South Africa. He is a geographer and environmentalist by training with extensive research and policy experience in environmental management and sustainability science including community development, climate change adaptation, environmental management systems, water resources and disaster management. He has served as a member of the advisory and steering committee for different International organisations and governments and has taken a number of short and long term assignments for bilateral and multilateral agencies including; the World Bank, the Ford Foundation, the UK's Foreign, Commonwealth & Development Office (FCDO), the International Development Research Centre (IDRC), the Canadian International Development Agency (CIDA), the Australian Centre for International Agriculture Research (ACIAR), the Scottish Think Tank on Climate change and sustainability, the Food and Agriculture Organisation of the United Nations (FAO) and more recently the Intergovernmental Panel on Climate Change (IPCC).

He has worked as a senior academic for several universities including the Universities of Gothenburg and Lund in Sweden; the Universities of Sussex, Brighton, Manchester and St-Andrews in the UK, Moscow State University in Russia, the University of Zambia, Technical University of Mombasa in Kenya, and the University of Vermont in Burlington, in the USA. He has published a total of 220 journal articles and 3 textbooks on different aspects covering human-environment interactions. He has also supervised to completion a total of 380 MSc and 85 PhD students. He is currently serving as a technical advisor to the IPBES Secretariat and the European Commission on climate change adaptation.



**Prof Gina Ziervogel** is a professor in the Department of Environmental and Geographical Science and Director of the African Climate and Development Initiative (ACDI), at the University of Cape Town. Gina is a geographer by training, with 25 years of experience in the field of adaptation and vulnerability to global environmental change, where she has worked closely with a range of actors across scales from the neighbourhood and NGO level to cities, provinces and national levels to better understand opportunities to adapt to climate risk governance, development and inequality challenges. Methodologically she is interested in engaged scholarship and transdisciplinary projects that bring together civil society, government, and academics to address climate-related problems collaboratively. Gina is currently co-PI with Petra Holden on the CLARE project, Tuwe Pamoja.

The project, working in Accra, Cape Town, Lusaka, and Nairobi, aims to better understand the lived experiences of people in informal settlements, and to better plan nature-based solutions that holistically account for diverse needs and climate risks at neighbourhood levels to support climate resilient development pathways.

*In partnership with: The National Global Change Science Committee (GCSC)*



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities



**Prof Laura Pereira is a Professor** in Sustainability Transformations and Futures at the Global Change Institute at Wits University and a researcher at the Stockholm Resilience Centre, Stockholm University. She is an interdisciplinary sustainability scientist, having been trained in ecology, law, zoology and human geography. She completed her DPhil in Geography at Oxford University in 2012, before working internationally at various institutions including the Harvard Kennedy School of Government, the University of Cape Town, Stellenbosch University, City University of London and Utrecht University.

Laura is an Earth Commissioner and sits on the IPBES Task Force on scenarios and models. She was a review editor for the IPBES Values assessment and is a lead author for the IPBES Transformative change assessment. She was a contributing author to the Africa chapter of the IPCC's 6th Assessment report and has been both a coordinating lead author and a lead author for various UNEP GEO Assessments. She is interested in the interface between indigenous and local knowledges and innovation, the role of futures techniques and visioning in enabling transformative change and developing innovative methods for knowledge co-production in global South contexts.



**Prof Patrick Voa Otomo** is an Associate Professor in the Department of Zoology and Entomology at the University of the Free State (UFS), South Africa, where he also serves as Director of the Centre for Global Change (CGO). An ecotoxicologist with research experience in Africa and Europe, he founded and leads the Ecotoxicology Research Laboratory at UFS—now a breeding ground for innovative research in water quality assessment, aquatic pollution remediation, and bioassay development. Prof. Otomo's research bridges environmental toxicology, molecular ecology, and biomonitoring, with a focus on the effects of pollutants on soil and aquatic invertebrates.

An NRF-rated scientist, he has contributed to national policy advisories on water security and serves on scientific committees, including the Academy of Science of South Africa's SAGE subcommittee on Water Security and Water Quality. A passionate mentor and academic leader, he has supervised over 35 postgraduate students and promotes interdisciplinary collaboration and internationalisation—particularly with francophone African institutions. His work continues to shape research, policy, and community engagement in environmental sustainability across the region."

*In partnership with: The National Global Change Science Committee (GCSC)*



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities



**Dr Brian Mantlana** joined the Council for Scientific and Industrial Research (CSIR) in 2017, where he led a team working on biodiversity and ecosystem services. From November 2019 to date, he has been leading work on climate change at the CSIR. Prior to working at the CSIR, he was the chief director at the Department of Environmental Affairs for six years, and spent six years as a research scientist at the South African National Biodiversity Institute (SANBI) in Kirstenbosch, Cape Town. Mantlana holds a PhD from Wageningen University in the Netherlands, which he completed while based at the Max Planck Research Institute for Biogeochemistry in Jena, Germany.



**Prof Ramagwai J Sebola** is currently the Chief Director responsible for foundational biodiversity sciences at the South African National Biodiversity Institute (SANBI), managing scientific collections (> 2.4 million plant specimens at three sites, namely Compton Herbarium in Kirstenbosch, KwaZulu Natal Herbarium in Durban, National Herbarium in Pretoria), as well as the Wildlife DNA Biobank at the Nation Zoological Gardens in Pretoria. This portfolio also include overseeing the implementation of strategic projects funded by the Department of Science Technology and Innovation (DSTI) under the South African Research Infrastructure (SARIR) programme, namely the Natural Science Collections Facility (NSCF), the Biodiversity Biobanks of South Africa (BBSA) project, the Living Collections Cluster, and the Foundational Biodiversity Information Programme (FBIP) that is jointly managed with the National Research Foundation (NRF) to mobilize foundational biodiversity information and data from research community through allocation and administration of research grants (large and small grants). Prof Sebola holds a PhD in botanical sciences from the University of the Witwatersrand and has since 2017 been formally affiliated with the School of Animal, Plant and Environmental Sciences at the same university as an Adjunct Professor contributing to research outputs (publications in peer reviewed scientific journals), training and co-supervision of postgraduate students in plant systematics/taxonomy, biodiversity and conservation.

His main research interests are in the systematics and diversification of the core Myrtalean plant families, in particular the family Oliniaceae with emphasis on conservation, breeding systems, ecology, phytogeography, and evolutionary trends/patterns. Research interests have expanded to cover systematics and taxonomic studies in the families Aizoaceae (focusing on the enigmatic genus *Delosperma*, commonly known as vygies), Dipsacaceae (genera *Scabiosa* and *Cephalaria*), Fabaceae (genera *Sesbania*, *Aspalathus*, *Dalbergia*, and *Trifolium*) and the Amaryllidaceae (genus *Brunsvigia*).

*In partnership with: The National Global Change Science Committee (GCSC)*



**Prof Olurotimi Adebowale Kemiki** joined the Federal University of Technology, Minna, Nigeria, in 2002 as an Assistant Lecturer in the Department of Estate Management and rose to the rank of Professor of Estate Management and Valuation in 2019. He has served in a variety of capacities, including Examination Officer, Level Adviser, Postgraduate Coordinator, Deputy Dean, Head of Department, Chairman of the University Board of Survey and currently the Dean of the School of Environmental Technology. He is a Board of Trustess/Governing Council member of some universities in Nigeria. As an astute professional, he is currently a fellow and National Secretary of Nigerian Institution of Estate Surveyors & Valuers. He is a member of Nigeria Environmental Society. He is one of the coordinators of the Institute for Land and Community Resilience.

He is a Board member of West Africa Science Service Center on Climate Change and Adapted Land Use, FUT Minna. He is an alumnus of the Experiential Classroom School of Business, Oklahoma State University, USA, and the Dubai Real Estate Institute. He is a member of the International Society on Urban Health (USA) and the Association for the Advancement of Cost Engineering (USA). His research interests include Sustainability, Real Estate Spatial Analysis, Land Governance, and Property Investment. He has led numerous projects both domestically and internationally. He has secured research grants and provides consultancy services for the World Bank, RAAMP, and other government agencies.



**Dr Simphiwe Ngcobo** is a Hydrology Senior Lecturer, Researcher and Academic Coordinator in the Centre for Water Resources Research at the University of KwaZulu-Natal. His research specialties include uncertainty in hydrological prediction with emphasis on quantifying and reducing predictive uncertainty for sustainable water resources management; hydrological modelling with an emphasis on design hydrology, remote sensing, climate change, dam operations and dam design; water resources policy development, water resource management under global environmental change and education in undergraduate and postgraduate hydrological sciences. He has led projects funded by the Water Research Commission and the NRF and has published extensively in the fields of sustainable water resources management. Prior to joining UKZN, Dr Ngcobo worked as a Hydrologist for Eskom Holdings Research and Development responsible for quantifying the impacts of Eskom's Generation and Transmission Divisions on water resources in and around power plants. He also worked for Jones and Wagener Engineering and Environmental Consultants and was responsible for designing water resource management systems for various mining companies in Gauteng and Mpumalanga.

*In partnership with: The National Global Change Science Committee (GCSC)*



science, technology  
& innovation

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



National  
Research  
Foundation



UNIVERSITY OF  
MPUMALANGA

Creating Opportunities





**Dr Kholeka Mtshali** is a Lecturer in Human and Urban Geography at the University of the Free State, South Africa. Her research and teaching interests focus on climate change adaptation, urban resilience, and environmental sustainability, with an emphasis on how cities and communities can respond to environmental and social challenges. She holds a PhD in Environmental Geography, which examined the role of Urban Ecological Infrastructure (UEI) in enhancing climate change adaptation and resilience within the City of Johannesburg Metropolitan Municipality. Her Master's research explored the effects of urban planning and gated communities on social cohesion, providing her with extensive knowledge of how spatial planning influences community dynamics and inclusion in South African cities. In 2024, Dr Mtshali was selected for the first cohort of the Research Excellence Accelerator Programme (REAP) at the University of the Free State, which supports and accelerates the careers of emerging scholars.

She also supervises postgraduate research projects in urban geography and environmental sustainability, contributing to the growth of new scholarship in these fields. As an emerging academic, Dr Mtshali is passionate about advancing locally relevant approaches that link scientific understanding with practical urban policy and community engagement. Her plenary session, "Building Resilient Communities in the Face of Increasing Natural Disasters," will highlight how integrated planning, social cohesion, and sustainable infrastructure can enhance resilience in a rapidly changing world.



**Dr Gregor Feig** is a biogeochemist and atmospheric environmental scientist with over fifteen years of post-PhD experience working at the interface of terrestrial ecosystem processes, atmospheric composition, and long-term environmental observation. His research is driven by a commitment to improving the scientific evidence base needed for climate change mitigation, adaptation, and environmental policy in southern Africa. He leads the Expanded Freshwater and Terrestrial Environmental Observation Network (EFTEON) within the South African Environmental Observation Network (SAEON), where he is responsible for conceptualising, deploying, and managing one of South Africa's flagship research infrastructures under the DSTI SARIR programme. In this role, he oversees multidisciplinary teams, coordinate substantial annual budgets, and develop quality systems and data platforms that support long-term ecological and atmospheric research across six intensively instrumented landscapes.

He previously managed national-scale air quality networks at the South African Weather Service, contributed to the development of the National Atmospheric Emissions Inventory System (NAEIS), and led high-precision greenhouse gas and carbon flux measurement programmes at the Council for Scientific and Industrial Research. A central theme of my work has been integrating observations across disciplines—linking soil, vegetation, hydrology, and atmospheric processes to understand how ecosystems respond to climate variability, land-use change, and disturbance.

*In partnership with: The National Global Change Science Committee (GCSC)*



**science, technology  
& innovation**

Department:  
Science, Technology and Innovation  
REPUBLIC OF SOUTH AFRICA



**National  
Research  
Foundation**



**UNIVERSITY OF  
MPUMALANGA**

Creating Opportunities



**Mr Rest Kanju** is the Founder and Executive Director of Indalo Inclusive South Africa NPC. His passion is in the training and development of inclusive and responsible businesses. In addition, he has a particular interest in the Tourism and Biodiversity economy. In his professional career of over 25 years and having started as an environmental activist during his High School days, he has been part of numerous initiatives; starting with the first organisation which he founded, BUSH Resources; which was responsible for setting up of various Youth Eco-Clubs in the Bushbuckridge area.

He advanced his career in the conservation and development space, gaining experience across the Southern African region through numerous senior management positions that he held within various organizations including, ResourceAfrica, the W.K. Kellogg Foundation, the International Union for the Conservation of Nature (IUCN), International Labor Organisation (ILO). Rest has academic qualifications and training in the field of Industrial Sociology, Environmental and Geographical Sciences (University of Cape Town) and Entrepreneurship and New Venture Creation (Wits University). In addition, he holds numerous certificates in Environmental Law (Wits), Community Based Natural Resources Management (Rhodes), Conservation Based Development (Southern African Wildlife College), Mutual Gains Approaches for Negotiations (IPMS). He is also an ILO Certified Master Trainer for the Sustaining Competitive and Responsible Enterprises (SCORE).



**Mr Rabelani Tshikalange** is a Senior Manager/Specialist: Environmental Management, Climate Change and Sustainability at SALGA. He brings extensive experience in climate policy, resilience planning, and sustainability initiatives across local, provincial, and national government levels. Previously, he served as Programme Manager and Head of Climate Change and Resilience at the City of Johannesburg for six years, where he led urban climate adaptation and mitigation strategies. Before that, he was Director for Green Economy Programmes & Projects with the Western Cape Government, driving sustainable development and low-carbon initiatives. At the national level, Mr. Tshikalange worked for the Department of Forestry, Fisheries and the Environment (DFFE) as Director for Climate Change Mitigation Sector Plan Implementation, overseeing sectoral mitigation strategies aligned with national climate goals. Earlier in his career, he contributed to energy efficiency and environmental programs at the Department of Minerals and Energy within the Energy Efficiency and Environment Directorate.

*In partnership with: The National Global Change Science Committee (GCSC)*