SMART Agri BAROMETER

Edition 2 - 2025/2026

NEWSLETTER

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EDITOR'S NOTE

SMARTAGRI BAROMETER 2 - 2025/2026

Welcome to the second edition of the SmartAgri Barometer of 2025/2026.

This is the last edition of the Barometer under Dr Ilse Trautmann's leadership. We pay tribute to her hard work and wish her well in her future endeavours! Several awards for exceptional service recently came her way – congratulations!

In this edition we include feedback on several MCAP (Mediterranean Climate Action Partnership) actions, showing that the partnership is strengthening: an account of the Living Labs excursion with MCAP delegates on 7 May; information on three Mini-Sprint Projects currently underway; and two webinars on climate smart tools between the Western Cape, Catalonia and Emilia-Romagna.

All the above were supported actively by the School for Climate Studies, Stellenbosch University, a key research and strategic partner. We include an article that provides details on current focus areas and planned joint actions.

The SmartAgri Plan is implemented across the various Programmes of the Western Cape Department of Agriculture. The Disaster Risk Reduction unit is delivering sterling frontline service, including the roll-out of the disaster damage assessment app, and ongoing river protection works that provide resilience to extreme rainfall.

Conservation Agriculture and Regenerative Agriculture (what is the difference?) came under the spotlight at WCARF, and the Climate-Smart Agriculture session at the 14th Annual Departmental Extension and Advisory Services Symposium highlighted strategies for building resilience in agricultural systems.

Other Western Cape Departments are joining hands! Climate change experts were interviewed as part of an exciting collaboration between the Western Cape Museum Services and the Stellenbosch Academy of Design and Photography. Ten student groups are producing infographics, video clips and a visual concept that will become part of a digital exhibition to raise awareness about climate change in a hopeful way for younger audiences.

Enjoy the read, and please feel free to send your feedback and ideas, and to disseminate to other interested parties.

For those who have not read about the SmartAgri plan, or seen our previous editions of the SmartAgri Barometer, please visit www.greenagri.org.za and click on SmartAgri.

Prof Stephanie Midgley
Editor

NEWS SNIPPETS & MEDIA LINKS

CLIMATE CHANGE CHAMPION BIDS

FAREWELL

TRIBUTE TO DR ILSE TRAUTMANN

On 30 September 2025, Dr Ilse Trautmann will retire from the Western Cape Department of Agriculture (WC-DoA). Our agriculture climate change champion will leave an indelible legacy and will be sorely missed!

Ilse, we are deeply grateful to you, for your vision, commitment, energy and persistence in leading the way. And along the way, there were many wonderful shared moments, lots of laughs, new friends from around the world, and a highly deserved sprinkling of awards.

Starting in the early 2010s, Ilse recognised that the agricultural sector in the Western Cape was highly vulnerable to climate change, and that a science-based and farmer-led response strategy was needed.

The SmartAgri Plan was born in 2016 and the rest is history! One only needs to page through all the back issues of the SmartAgri Barometer to see how this journey has unfolded.

For Ilse, SmartAgri reaches far beyond the farm gate, and into people's homes and hearts. Through two series (104 programmes) of the Kwik Styg radio series from April 2018 until April 2020, Ilse and presenter Lizma van Zyl created awareness on climate change and the larger food system amongst listeners from all walks of life.

The skills development and encouragement of young people entering the sector excited her, and she was a critical enabler of three successive annual Climate Change and Agriculture Youth Summits hosted across the province in 2022, 2023 and 2024 (Image 1).

Image 1: The WC-DOA team that delivered three wonderful Agriculture and Climate Change Youth Summits.

We will always remember how much pleasure it gave her to source and confer dozens of wonderful gifts and prizes to the excited youth delegates! A passion project of Ilse's was the launch of the Mediterranean Climate Action Partnership (MCAP).

A crucial step in this development was leading a technical visit by the Western Cape team to California in 2023 to deepen the partnership between the two sub-national governments and signal support for the MCAP (Image 2).

Image 2: F.l.t.r. Stephanie Midgley, Secretary Karen Ross (California Department of Food and Agriculture), Ilse Trautmann and Karen Shippey after meeting in California in June 2023.

Subsequently, she signed the MCAP Partnership Agreement on behalf of the Western Cape Government at COP28 in 2023, and led the team that hosted the very successful 2nd MCAP Annual Convening in Cape Town and Stellenbosch in May 2025 (Images 3, 4).

Image 3: Ilse Trautmann (middle) at the MCAP Annual Convening in Stellenbosch, May 2025, with Secretary Wade Crowfoot (California Natural Resources Agency), Director Sonsoles Letang (Climate Change and Environmental Quality, Government of Catalonia), Karen Shippey (WC-DEA&DP), HOD Gerhard Gerber (WC-DEA&DP).

Image 4: Welcoming reception at Premier Winde's official residence Leeuwenhof in Cape Town at the start of the MCAP Annual Convening in May 2025.

Image 6: Proud recipient of the Premier's Service Excellence Award for Best Implemented Project (SmartAgri) in 2018.

Another feather in Ilse's cap was the Memorandum of Agreement signed in 2023 between the WC-DoA, the Western Cape Department of Environmental Affairs & Development Planning (WC-DEA&DP), and the School for Climate Studies at Stellenbosch University (Image 5). This partnership is growing and leading to joint projects.

Image 5: Signing of the Memorandum of Agreement between the WC-DOA, WC-DEA&DP and the School for Climate Studies, Stellenbosch University, November 2023.

One of the most important partnerships that Ilse nurtured is the joint leadership of the Western Cape climate change response by WC-DoA and WC-DEA&DP, going back to the start of SmartAgri in 2014, and exemplified by several recent initiatives such as the Provincial Internal Climate Change Workshop (Elsenburg, December 2023), the Provincial Climate Change Indaba (Cape Town, March 2024) and the MCAP Convening (Stellenbosch, May 2025).

The quarterly meetings between the WC-DoA and WC-DEA&DP colleagues in the SmartAgri Steering Committee, under Ilse's steady chairing, are always something to look forward to!

Her hard work has not gone unnoticed, and the SmartAgri plan received the Premier's Service Excellence Gold Award for Best Implemented Project in 2018 (Image 6) and the Eco-Logic Gold Award for Climate Change in 2019 (Image 7).

Image 7: Eco-Logic Gold Award for Climate Change in 2019, for the SmartAgri Plan.

Die Kwik Styg received the Eco-Logic Gold Award for Climate Change in 2020, and this year the MCAP project is a finalist in the 2025 Eco-Logic Awards in the same category.

At parallel awards functions on 12 September 2025, Ilse received the Gold Award for Best Public Service Leader (Exemplary) at the Western Cape Government Service Excellence Awards, as well as the 1662 Industry Award from Hortgro (Image 8), named after the first apples harvested at the Cape in 1662.

"She has been instrumental in advancing agricultural research, climate change strategies, and fostering international partnerships, leaving a lasting impact on both the industry and the province."

The leadership and vision of Dr Trautmann will continue to shape the future of agriculture in the Western Cape. We thank her for her unwavering service and perseverance, and the difference she made to so many people!

Image 8: Dr Ilse Trautmann received the 1662 Hortgro Industry Award which "gives recognition to any individual or individuals who have made an exceptional impact on the industry in any sphere", on 12 September 2025.

BILATERALS AT MCAP 2025 CONVENING LEADS TO FIRST WEBINAR SERIES

DR ILSE TRAUTMANN

As mentioned in the previous edition of the SmartAgri Barometer, a very productive second MCAP (Mediterranean Climate Action Partnership) annual convening was held during May 2025 in Stellenbosch and was co-hosted by the Western Cape Departments of Agriculture (WC-DoA) and Environmental Affairs and Development Planning.

During the event, several bilateral meetings were held with our international partners. Following the bilaterals, the idea of doing two webinars to start sharing our climate smart tools emerged and these were held on the 15th and 29th of September respectively. Experts from the Western Cape, Emilia-Romagna (Italy) and Catalonia (Spain) shared the platform.

Climate-smart tools encompass a suite of data-driven, evidence-based technologies and methodologies that operationalize the principles of Climate-Smart Agriculture (CSA) to enhance resilience, productivity, and sustainability within agro-ecosystems.

These tools integrate climate modelling, geographic information systems (GIS), remote sensing, and decision-support platforms to inform adaptive management and risk reduction strategies under variable and uncertain climate conditions.

Furthermore, climate-smart tools provide policymakers and practitioners with robust analytical frameworks for scenario planning, vulnerability assessments, and the design of interventions that align with national adaptation and mitigation commitments, thereby ensuring that agricultural and economic development pathways remain both resilient and sustainable.

The webinar of the 15th of September covered the following topics:

- Cape Farm Mapper (CFM) - Dr Mike Wallace, WC-DoA
- Prediction of summer bioclimatic discomfort in Emilia-Romagna - F Grazzini
- Viewer of PIMA Adapta Costa - Carme Puig, Cartographic and Geological Institute of Catalonia

The webinar of the 29th of September covered the following topics:

- Hydrological modelling as a tool for climate change impact and risk assessment - Prof Guy Midgley, Director, School for Climate Studies, Stellenbosch University (Western Cape)
- The iCOLT climate service: seasonal predictions of irrigation for Emilia-Romagna - Giulia Villani, Climate Change Impact Observatory
- The interactive climate vulnerability map of Catalonia of LIFE EcoAdapt50 - Marina Clarà, Catalan Office for Climate Change

Both webinars were recorded and if readers would like to attend or obtain the recording, please click here or contact Dr Stephanie Midgley at stephanie.midgley@westerncape.gov.za for more.

INNOVATIVE DISASTER DAMAGE ASSESSMENT APP

GARY JONES

The Western Cape has experienced a rise in natural disasters in recent years, which have had a significant impact on farmers, agricultural workers, and rural communities. A prompt response to these emergencies is essential to rehabilitate, to protect livelihoods, and to ensure food security in the entire province.

The Western Cape Department of Agriculture's (WC-DoA) Disaster Risk Reduction unit created an innovative Disaster Damage Assessment App utilising Microsoft 365 tools to improve its response, which was subsequently enhanced in collaboration with GIS.

The app's first deployment occurred during the major floods of 2023 and 2024, when numerous affected areas were rendered inaccessible.

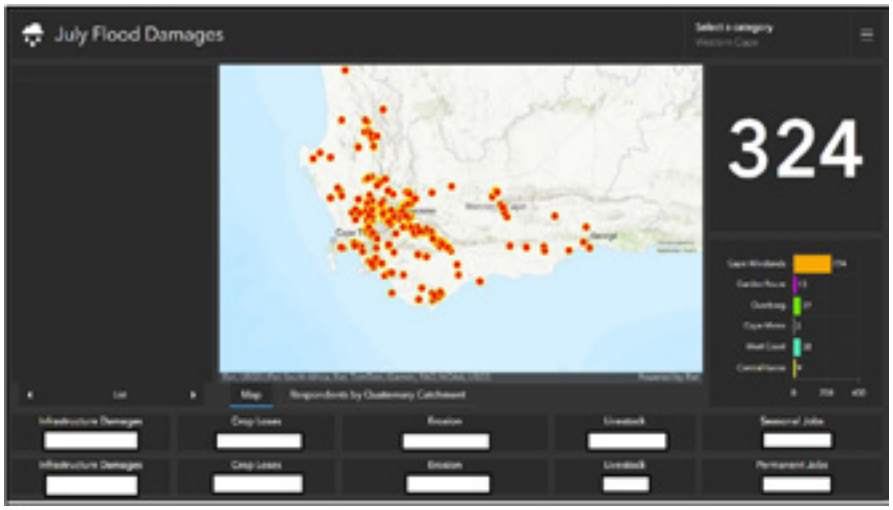
Farmers could quickly and securely report damages from their mobile phones or any device by simply scanning a QR code or clicking a link. This digital tool replaced the need for extensive paperwork and diminished the requirement for officials to travel to disaster areas. This also facilitated the collection of real-time geo-referenced data, which aided damage assessment, the direction of support, and the preparation of accurate reports to the Provincial Disaster Management Centre (PDMC).

As a result, the WC-DoA was able to secure R300 million in disaster funding to support the various farmers. The success of this application is attributed to departmental cross-functional collaboration, combined with a strong focus on innovation, responsiveness, and effective change management.

This tool, initially conceived for crisis response, has transformed into a replicable model for government, demonstrating how technology and collaborative efforts can reshape service delivery and contribute to a more resilient Western Cape.

For further information please contact Mr Gary Jones at Gary.Jones@westerncape.gov.za or Ms Jody Wentzel at Jody.Wentzsel@westerncape.gov.za.

Footnote from Dr Stephanie Midgley: The SmartAgri team is proud to share the news that the WC-DoA Disaster Risk Reduction unit was awarded the prestigious Gold Award for Best Frontline Service Delivery Team at the Western Cape Government Service Excellence Awards on 12 September. Congratulations!



Dashboard showcasing real-time submission by respondents and the QR code for submission

FARMING REVOLUTION OR JUST MORE OF THE SAME – CONSERVATION AND REGENERATIVE AGRICULTURE

PROF JOHANN STRAUSS

Panel members with Dr Ilse Trautmann after the meeting of the Western Cape Agricultural Research Forum (WCARF) meeting at Elsenburg on 18 September 2025. The panel discussion theme was: "What is regenerative agriculture? Sharing some myths and truths." F.l.t.r. Chris Burgess (Panel Chairperson, Editor in Chief, Landbouweekblad), Matthew Addison (retired Hortgro/Stellenbosch University entomologist), Dr John Tolmay (Nitrophoska), Wilhelm Joubert (Viticulturist, Hartenberg Wine Estate), Dr Chris de Brouwer (retired WC-DoA Scientific Manager Animal Sciences), Prof Johann Strauss (CA champion and Senior Researcher, WC-DoA), Dr Ilse Trautmann (Chairperson of WCARF, WC-DoA).

More than 50 years ago, farmers faced a crisis. Across the world, soil was literally blowing away. In the U.S. Midwest, massive dust storms darkened skies, stripped fertile land, and left farming communities devastated. Something had to change.

The answer was surprisingly simple: stop ploughing.

By leaving crop residues, such as maize stalks and wheat stubble, on the fields, farmers discovered they could protect their soils from wind and rain. This "no-till" method kept the ground intact, conserved moisture, and created healthier soils. What started as a desperate measure against erosion quietly grew into one of the most critical farming revolutions of our time.

Today, this approach has matured into what's known as Conservation Agriculture (CA) — and it's transforming farming worldwide.

A Quiet, Global Spread

Since 2008, farmers have been adopting CA at a rapid pace, with approximately 10 million hectares of farmland being converted every year. That's roughly the size of Iceland being converted to more sustainable farming annually.

From semi-arid landscapes in Africa to humid regions in South America, CA is proving itself across climates, soils, and farm sizes.

And it's not just about erosion anymore. These systems, built on three core principles — no-till, permanent soil cover, and crop diversity — are demonstrating that sustainable farming can also be profitable. Farmers report better yields, healthier soils, and reduced costs on fuel, machinery, and chemicals.

In short, CA isn't a niche experiment. It's a global shift, and it's gaining ground fast.

Beyond the Buzzwords

Over the years, many farming movements have claimed to offer the "future of agriculture." The Green Revolution increased yields but came at the expense of intensive tillage and chemical dependence.

Organic farming reduced synthetic inputs but still relied on ploughing. More recently, Regenerative Agriculture (RA) has captured headlines, often marketed as the next big thing.

But here's the twist: at its heart, regenerative farming is built on the same principles as CA. The added practices — like integrating livestock or maintaining year-round root growth — are valuable tools but not universally necessary.

When RA is done without tillage, it is essentially the same as CA. In other words, the "new idea" is really the continuation of the same quiet revolution that began decades ago.

Farming with Nature, Not Against It

So, what makes CA so powerful? It's not just about growing crops; it's about rethinking the farm as an ecosystem.

CA systems:

- Use inputs like fertilisers, fuel, and water more efficiently.
- Rebuild soil organic matter, which improves fertility and water storage.
- Support biodiversity above and below ground.
- Reduce vulnerability to droughts, floods, and pests.
- Capture carbon and help combat climate change.

In other words, CA farms don't just produce food — they produce resilience.

The Road Ahead

The beauty of CA is its flexibility. It works for smallholders planting maize by hand in Africa as much as it does for large-scale wheat producers in Canada. It thrives under irrigation or rainfed production.

And perhaps most importantly, it helps answer some of the biggest questions facing humanity: How do we feed a growing population without destroying the planet? How do we adapt to climate change while reducing our impact on it?

CA doesn't claim to be the only answer — but it's one of the most promising tools we have and the challenge lies in improving the system without creating new buzzwords.

The farming revolution that began quietly, with farmers deciding to put down the plough, may well turn out to be one of the boldest and most important transformations in modern agriculture.

Please check Landbouweekblad for the recording of the meeting.

CAWC JACK HUMAN CONSERVATION AGRICULTURE WEEK

PROF JOHANN STRAUSS

The 12th edition of the Jack Human Conservation Agriculture week on 6-7 August 2025 was another roaring success. From soil biology to answering the question "Have we succeeded?" was discussed, and Tygerhoek Research Farm hosted the trial visits.

The speakers during this year's week included a Brazilian expert from the Netherlands, two Australian experts from opposite sides of their continent, as well as two South African experts. Over 200 people attended the lecture day and about 140 the practical day.

Prof Joana Falcao Salles (The Netherlands) spoke about the importance of microbiology's contribution to production, and she also highlighted that adding organisms to the soil is not always the best approach and is highly context-specific.

Dr Rob Norton (Australia), a retired plant nutrition specialist, focused on nitrogen management in cropping systems. He stressed the importance of having a nutrient budget that takes into account losses from harvesting and gains from legumes and mineralisation to understand the amount of fertiliser needed to achieve the yield goal.

Dr Martin Harries (Australia) shared the successes and challenges experienced by Western Australian no-till farmers. Similar issues, such as herbicide resistance, are shared by our two countries and the respective cropping systems. He emphasised that their producers have recognised the need to make a serious intervention to address an existing problem.

Prof Gert Ceronio from the University of the Free State answered the question about whether South African agriculture has been thriving by referring to maize production. He clearly showed the incremental steps in the improvement of maize production by highlighting what contributed to these yield jumps.

Our final speaker, Louise Bestbier, a PhD student from Stellenbosch University, is busy evaluating ryegrass herbicide resistance. She shared some initial results that are, to say the least, worrying. She is a gifted speaker and had the audience smiling, despite the very serious topic.

We look forward to next year and promise to again have excellent speakers addressing relevant topics. We want to thank our partners at Landbouweekblad and the Western Cape Department of Agriculture, as well as everyone behind the scenes, for making the CAWC week a success. For more information please contact Johann.Strauss@westerncape.gov.za.

SMARTAGRI DISCUSSION ON LUCENTLANDS MEDIA PODCAST

On 10 July, Prof Stephanie Midgley was interviewed by Louise Brodie and Dewald Kirsten of Lucentlands Media, for their podcast series.

Under the theme "Farming in a Hotter, Drier Future – What the Science Is Telling Us", the conversation was wide-ranging. We covered the scientific evidence of warming and shifting rainfall patterns in the Western Cape, risk and impacts of these changes to farming, pressure on water resources, and what actions farmers can take to build resilience.

Stephanie also highlighted the climate change strategy for agriculture in the Western Cape (the SmartAgri plan) and a new partnership with 14 other Mediterranean-climate regions across the world to tackle critical climate risks.

Listen to the full episode:

YouTube: https://lnkd.in/g-wVWmnm
Spotify: https://lnkd.in/gvswJqcd

CLIMATE CHANGE PROJECTS PRESENTED AT HORTGRO RESEARCH SHOWCASE

Hortgro Science presented it biennial Research Showcase on 3-4 June 2025 at the Lord Charles in Somerset West. Several completed climate-related research projects were presented. The videos can be accessed here:

Hortgro Research Showcase | Pome Day 2025 - YouTube
Hortgro Research Showcase | Stone Day 2025 - YouTube

WINE INDUSTRY RESEARCH PROJECTS RESPOND TO CLIMATE CHALLENGES

South Africa Wine (Research, Development and Innovation) has released the 2025 edition of its annual Research Booklet. It contains summaries of the projects that concluded in 2024, projects that are in progress, and new projects. Climate challenges are a central theme in the viticultural research portfolio. The booklet can be downloaded here: https://user-hpa96tt.cld.bz/South-Africa-Wine-Research-Projects-2025

SMARTAGRI IMPLEMENTATION

‘LIVING LABS’ SITE VISITS WITH MCAP DELEGATES

MEDITERRANEAN CLIMATE ACTION PARTNERSHIP (MCAP) ANNUAL CONVENING

PROF STEPHANIE MIDGLEY

The Water Hub, Franschhoek: a Living Lab for research and innovation in nature-based water treatment, with demonstrations of shack construction methods for heat management. Photo credit: Arie van Ravenswaay.

In the March edition of AgriProbe, Dr Ilse Trautmann reported on the 2nd Annual Convening of the Mediterranean Climate Action Partnership (MCAP) hosted by the Western Cape Government in Stellenbosch, from 6 to 9 May 2025. In this follow-up article, we share the experiences of the full-day technical excursion, the ‘Living Labs’ site visits, on 7 May.

The MCAP priority climate risks that provide a clear focus for the initiative are drought, extreme heat and wildfire. Residents of the Western Cape will instantly identify with these risks – we have our fair share of such extremes. Across all the Mediterranean-climate partner regions, these extremes are leading to disasters more frequently and with greater damages than previously, driven to some degree by climate change.

On this tour, delegates had the opportunity to engage first hand with the climate-related risks and responses in the mountain catchments and agricultural landscapes east of Stellenbosch (Image 1). The four sites were chosen to demonstrate and explore regional climate adaptation projects, approaches and solutions and their potential to confer resilience at a regional scale.

The first stop was the Berg River Dam near Franschhoek, which is an integral part of the Western Cape Water Supply System (WCWSS). At the pump house (Image 2), officials of the National Department of Water and Sanitation described the interconnected water management system using a scale model. The design and operation of the dam brings together both innovative engineering solutions and ecological considerations. The WCWSS played a large role in helping the City of Cape Town to avert ‘Day Zero’ in early 2018. Nearby at the dam wall (Image 3), Rudolph Röscher (Western Cape Department of Agriculture) introduced the area-wide planning approach that has been adopted to address the ecological health of the Berg River catchment. Practical tools and partnerships, such as the River Maintenance and Management Plan and the Strategic Water Source Area Collective for the upper mountain catchment, are built on collective visioning, planning and action.

Eurica Scholtz (CEO, Berg River Water Users’ Association) spoke about the perspectives and challenges faced by local water users, especially the many irrigation farmers along the Berg River. Since the limited water resource is shared between the city, farmers, local municipalities and industry, collaborative water governance and responsible usage are essential.

Not far from the dam, the next stop was The Water Hub at the site of the old Franschhoek Wastewater Treatment Works. This is a research and innovation facility dedicated to low-cost, nature-based treatment of polluted rivers. Prof Kevin Winter from the University of Cape Town, along with UCT researchers, demonstrated bio-filtration techniques that can successfully clean polluted water and restore rivers impacted by high urban growth rates (Image 4).

He also took delegates inside two shacks, where one was constructed using low-cost modifications to achieve a 7□C cooling effect compared to the adjacent shack built in the conventional manner.The buses then took the group through the Franschhoek Pass to the third site, the Amandel River catchment. Here, staff from CapeNature and The Nature

Conservancy explained the importance of fire in fynbos ecosystems (Image 5). Dense stands of invasive pine trees in the mountains reduce the water that flows into rivers and dams and pose a high risk to biodiversity loss and catastrophic wildfires. The prescribed Amandel River burn project aims to address these challenges in an integrated and collaborative manner.

The route to the fourth site was through Vyeboom and Grabouw, a primary apple and pear production region of South Africa. After some welcome refreshments at the Kromco Packhouse, Paul Clüver Jr, his father, Dr Paul Clüver Sr, and his sister, Karin Clüver, shared their family's sustainability journey, "Farming in harmony with nature" (Image 6). Over the years, Paul Clüver Family Wines has developed data-led decision-making and practical and financially sensible adaptive innovations. The private sector is taking an active role in addressing the climate crisis.

All the projects and innovations showcased on this tour are grounded in a science-driven understanding of the province's climate change risks, and an integrated collaborative approach to adaptation exemplified in both the Western Cape Climate Change Strategy: Vision 2050 and its Implementation Plan, and the SmartAgri Plan (Climate Change Response Framework and Implementation Plan for the Agricultural Sector of the Western Cape). The safety and development of communities, and economic growth in the Western Cape, depend on an effective yet affordable response.

For more information, contact Prof Stephanie Midgley, stephanie.midgley@westerncape.gov.za

Image 1: MCAP Living Lab route map showing the four sites visited during the tour.

Image 4: The Water Hub, Franschhoek: a Living Lab for research and innovation in nature-based water treatment, with demonstrations of shack construction methods for heat management. Photo credit: Arie van Ravenswaay.

Image 2: Berg River Dam pump house with the scale model under discussion. Photo credit: Arie van Ravenswaay.

Image 5: Delegates engage in discussions on integrated wildfire management at the Amandel River burn site. Photo credit: Arie van Ravenswaay.

Image 3: Rudolph Röscher and Eurica Scholz present the collaborative, landscape-based approach to water management in the Berg River catchment. Photo credit: Arie van Ravenswaay.

Image 6: Paul Clüver Jr addresses MCAP delegates at the conclusion of the Living Labs tour. Photo credit: Arie van Ravenswaay.

MINI-SPRINT PROJECT ACCELERATION: MCAP REGIONS IN ACTION

Information provided by the MCAP Secretariat: Mini-Sprints Project Acceleration - Mediterranean Climate Action Partnership

Mini-Sprint Project Acceleration

MCAP Regions in Action

After a three-month "Mini Sprint" to spur project acceleration and collaboration, nine cross-regional teams submitted project proposals to be considered for funding and added capacity support from the MCAP Secretariat, thanks to the generosity of the Hilton Foundation.

Ultimately, three projects were selected to design and implement solutions to MCAP's Priority Actions—Extreme Heat, Wildfire, and Drought—with the ambitious goal of generating meaningful progress by and beyond COP30.

During the Annual Convening held in May of 2025 in the Western Cape, the three selected teams presented their projects and received expert feedback to refine their work plans and outcomes.

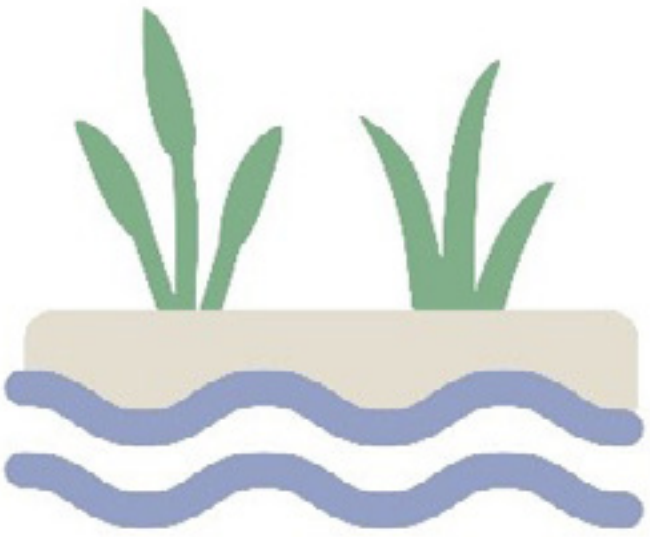
Through this session, the MCAP Secretariat also identified opportunities for building a learning agenda across the partner regions.

The session activated excitement and furthered opportunities for new cross-regional collaborations, partnerships, and additional funding streams for the projects. In the coming months, the MCAP Secretariat, in collaboration with regions that are not involved in the projects, will offer two themed webinars in alignment with MCAP's Priority Actions.

Learn more about the three projects below. Feel free to download the projects' one-pagers and share them with potential technical partners and/or funders. For questions about the projects, please contact secretariat@medclimate.org.

The Selected Projects:

1. IMPROVING MEDITERRANEAN COASTAL WETLAND RESILIENCE THROUGH BIODIVERSITY PROTECTION AND SUSTAINABLE WATER MANAGEMENT PRACTICES



TEAM LEAD:
Catalonia

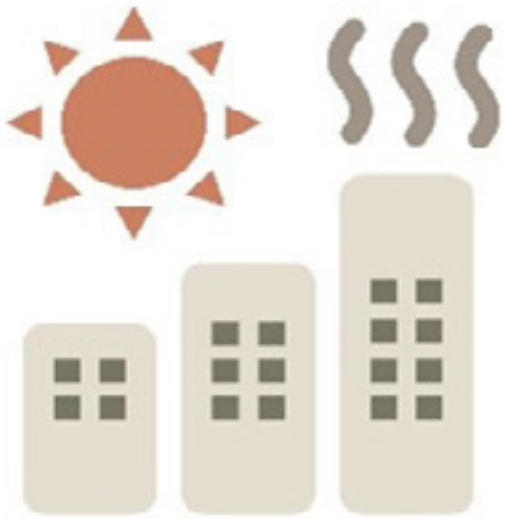
PARTNER REGIONS: Western Cape, Central Greece
IMPLEMENTATION LEAD: Amics dels Aiguamolls i del Patrimoni Natural de l'Empordà (AAPNE)
IMPLEMENTATION PARTNERS: Western Cape Freshwater Research Center

This project will enhance the resilience of freshwater reservoirs by installing physical and nature-based barriers to reduce saline intrusion. In Catalonia, a sluice gate will be installed on the Fluvià River to physically limit saltwater intrusion from maritime storms and reduced freshwater flows, protecting local ecosystems and agricultural lands.

Simultaneously, the Western Cape will construct a floating wetland to act as a natural filter in the Hartenbos estuary, absorbing excess water and managing salinization and erosion while improving overall ecosystem health. Both regions will monitor the performance of their interventions by tracing water loss and assessing infrastructure and riparian health.

Central Greece will act as a key knowledge partner, supporting implementation teams with best practices and research to prepare for a similar intervention in the future. Ultimately, the three regions will jointly develop a set of policy recommendations for long-term adaptive management of freshwater reservoirs under the increased threat of salinization. Read more here.

2. INCREASING AWARENESS AND PREPAREDNESS TO EXTREME HEAT IN MEDITERRANEAN REGIONS THROUGH A HEAT ISLAND MONITORING & PREDICTION TOOL



TEAM LEAD: Santiago de Chile

PARTNER REGIONS: Western Cape, California
IMPLEMENTATION LEAD: Universidad Andrés Bello
IMPLEMENTATION PARTNERS: University of the Western Cape (UWC), Universidad de Chile, Red por la equidad energética (REDPE)

This project will create a Heat Island Monitoring & Prediction Tool, a GIS-based web tool to map heat islands within the urban and rural areas of Santiago de Chile and the Western Cape regions. Building on a successful model from California, this tool will help regional and local governments, scientists, and planners understand heat exposure and inform adaptive strategies.

Working with local university partners in Santiago and Western Cape, the project will deploy sensors to collect standardized temperature data across both regions. By integrating temperature data with census and health data, the tool will identify areas most at risk. This will enable stakeholders to make better-informed decisions on resource allocation and the development of adaptation strategies to keep communities safe, strengthening technical capacity and fostering data-driven decision-making to close the climate resilience gap.

3. INFORMING MEDITERRANEAN MANAGED FIRE PRACTICES THROUGH A GEOSPATIAL RISK & BIODIVERSITY ASSESSMENT PLATFORM

TEAM LEAD: Western Cape

PARTNER REGIONS: California, Catalonia, New South Wales, Santiago de Chile
IMPLEMENTATION LEAD: Council for Scientific and Industrial Research (CSIR)
IMPLEMENTATION PARTNERS: CapeNature, Center for Ecological Research and Forestry Applications (CREAF)

This project will create a comprehensive, map-based tool that integrates biodiversity and historical wildfire data from Catalonia and the Western Cape. Building on Catalonia's existing methodology, the tool will identify high-priority areas for proactive, managed fire practices to reduce fuel loads from invasive species, helping to restore biodiversity and preserve water.

A broader team of wildfire and biodiversity experts from California, New South Wales, and Santiago, Chile will collaborate to enhance this methodology and develop a system for predictive risk modeling and mitigation planning. The project will leverage remote-sensed imagery and other sources to establish indicators for evaluating the efficiency of these fire prevention actions.

This comprehensive system will be designed to provide critical biodiversity and risk information for governance and a continuous service for a wide range of public and private users, enabling them to integrate managed fire practices in their mitigation actions.

For further information, contact Ms Karen Shippey at Karen.Shippey@westerncape.gov.za.

FOCUS ON CLIMATE-SMART AGRICULTURE AT THE 14TH ANNUAL DEPARTMENTAL EXTENSION AND ADVISORY SERVICES SYMPOSIUM

BY ADRIAAN CONRADIE

Key Message: The symposium highlighted the critical role of soil and water stewardship, organic farming opportunities, land rehabilitation, and methane reduction in advancing Climate-Smart Agriculture (CSA). The Western Cape Department of Agriculture's Extension and Advisory Services are actively embedding CSA principles through conservation agriculture, organic support, efficient irrigation, and responsible land-use planning. Together, these measures aim to build resilience, reduce emissions, and support sustainable, climate-smart production systems.

The 14th Annual Departmental Extension and Advisory Services Symposium was held on 16–18 July 2025 at Saldanha Bay, West Coast District. Under the Climate-Smart Agriculture (CSA) sub-theme, four key presentations highlighted strategies for building resilience in agricultural systems in the Western Cape.

A. Caring for Soil and Water – The Foundation of Climate Resilient and Sustainable Production (Prof. Stephanie Midgley, Research and Technology Development Services)

Prof. Midgley emphasized soil as a central element in climate change mitigation and adaptation (Fig. 1).

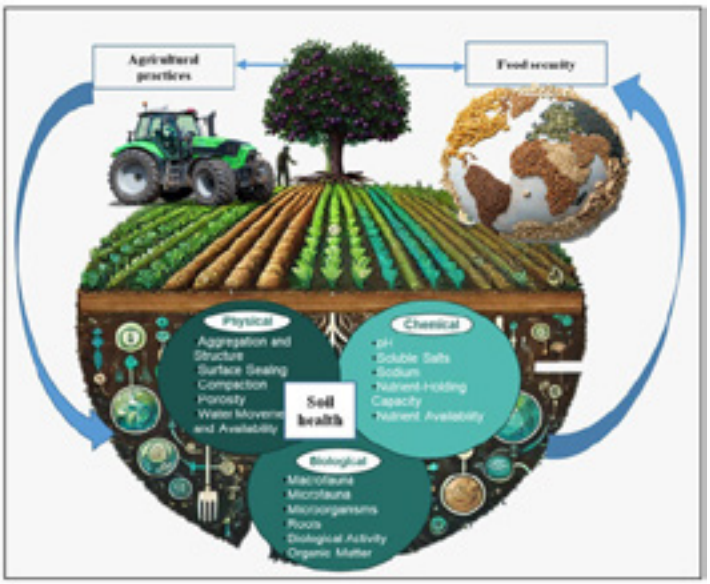


Figure 1: Visual representation of the interrelationships between soil health, agricultural practices and food security. Source: Topa et al. (2025).

Key points:

1. Planetary Boundaries: Six of nine critical Earth system thresholds have already been exceeded (Fig. 2), threatening irreversible environmental change.

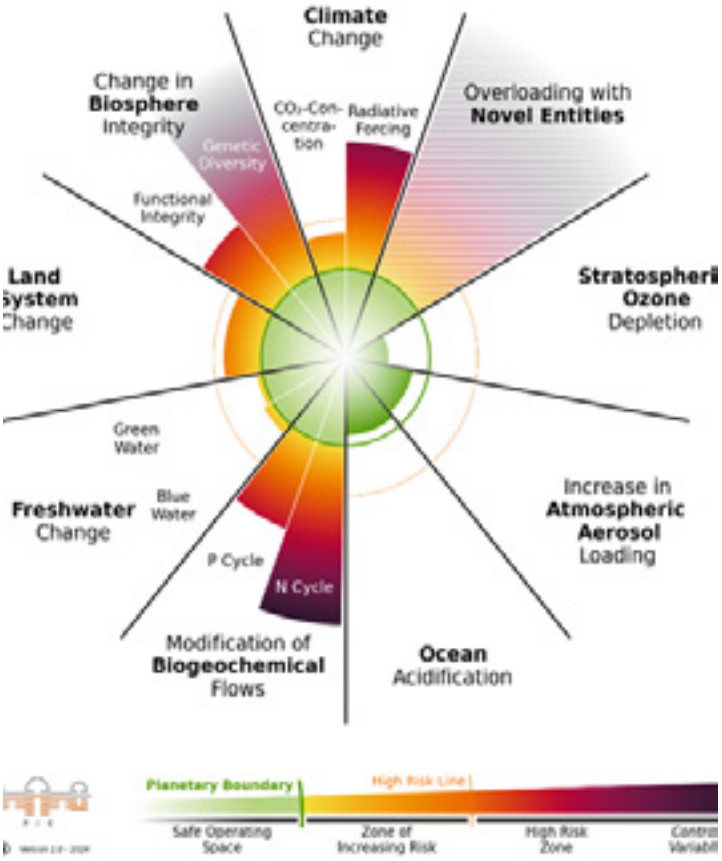


Figure 2: The Planetary Boundaries Framework. Source: https://www.pik-potsdam.de/en/topics/planetary-boundaries-tipping-elements-global-commons

2. Soil as a climate regulator: Soil stores the largest terrestrial carbon pool. In South Africa, over 90% of terrestrial carbon is in soils, highlighting the need for soil carbon restoration and careful management.
3. Impacts of climate change on soil:
   - Chemical: Nutrient leaching, acidification, salinization, loss of organic carbon.
   - Physical: Reduced water retention, erosion, landslides, runoff.
   - Biological: Loss of soil biodiversity, disrupted pest/disease dynamics, altered crop yields and food safety risks

4. Sustainable practices for CSA: Land and soil assessments, erosion control, organic matter management, water conservation, nutrient efficiency, and disaster risk reduction.

B. Feedback on an Organic Pilot Project in Potato Production (Ms. Carien Snyman, Agricultural Producer Support and Development: Little Karoo)

Driven by consumer demand for healthier, environmentally friendly produce and high chemical costs, the Department piloted organic potato trials with Potatoes SA at Goedverwacht near Piketberg and Haarlem in the Langkloof (Little Karoo) (Fig. 3).
Preliminary Results:

- Organic yields: 22–25 t/ha vs. 40 t/ha for conventional (Goedverwacht).
- Conventional crops showed more growth cracks; organic potatoes were smaller but of good quality.
- Production costs were similar, but commercial organic products were expensive and applied at only 40% of crop requirements.
- Previous years' conventional yields (50–63 t/ha) were significantly higher.

Lessons Learned:

- Use disease-resistant cultivars and earlier planting to avoid frost.
- Manage costs carefully; prioritize access to premium organic markets.
- Develop efficient, affordable organic methods (including home-made products).
- Build advisory capacity for organic/regenerative farming.

Figure 3: Organic Pilot Project in Potato Production in the Little Karoo.

C. Land Rehabilitation as a Strategy to Mitigate Climate Change Impacts (Ms. Sinesipho Matwa, Agricultural Producer Support and Development: Central Karoo)

The Katrivier Farm case study explored land rehabilitation to restore degraded ecosystems, enhance resilience, and mitigate climate impacts (Fig. 4).

Strategies included re-vegetation, erosion control, and improving soil organic matter to strengthen ecosystem services such as carbon sequestration and water regulation. Rehabilitation was positioned as critical to sustainable land use in arid regions like the Central Karoo.

Figure 4: Land rehabilitation project in the Central Karoo to improve climate resilience, showing Ms. Sinesipho Matwa and two assistants implementing rehabilitation measures.

D. Methane Mitigation Strategies for Ruminants (Mr. Thabo Sefike, Research and Technology Development Services: Animal Sciences)

Mr. Sefike focused on reducing methane emissions from livestock, a major contributor to agricultural greenhouse gases. Strategies included:

- Improved feed quality and additives to reduce enteric fermentation.
- Selective breeding for low-methane-emitting animals.
- Better manure management and integration with renewable energy (biogas) (Fig. 5).
- Exploring synergies with grazing management and soil carbon storage.

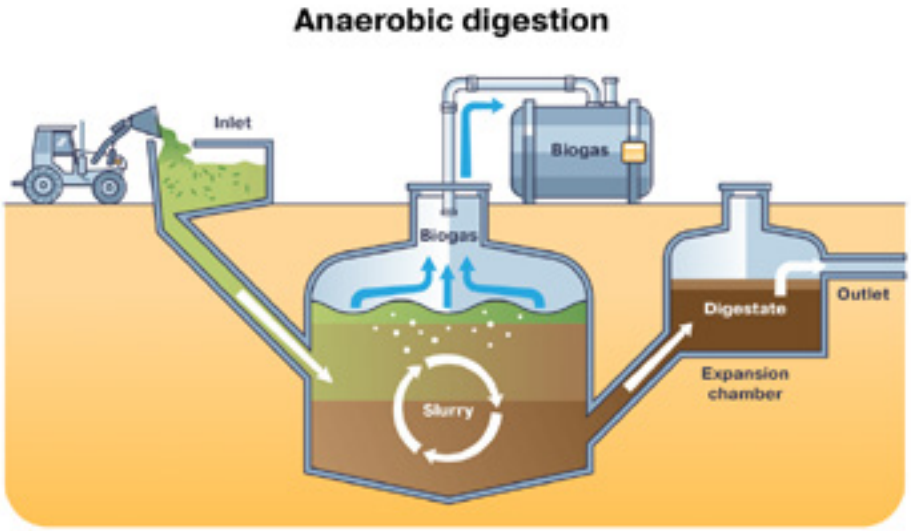


Figure 5: Schematic representation of biogas generation from animal manure.

Western Cape Extension and Advisory Services – Tackling CSA in Practice

The Western Cape Department of Agriculture has embedded CSA principles into service delivery through a range of programs:

1. **Conservation Agriculture (CA):** Running for over 30 years in the grain sector, based on minimum tillage, stubble management, rotation, and crop diversity. Farmers are continuously trained in CA benefits.
2. **Organic support for food security gardens:** Through the ILLIMA program, ~20 schools, 70 subsistence, and 2600 household gardens receive organic inputs annually. Training focuses on raised beds, mulching, composting, and organic practices.
3. **Potato demonstration trials:** In partnership with Potatoes SA, now in its third year, with most farmers using organic methods. The goal is to refine organic/ regenerative "recipes" to boost potato yields sustainably.
4. **CASP Projects:** Support to commercial farmers experimenting with cover crops, compost teas, and organic wine production, including grants for no-till implements.
5. **Irrigation efficiency:** Promoting drip systems, orchard netting, and windrows to save water and reduce fertilizer leaching.
6. **Environmental Impact Assessments (EIAs):** Guiding farmers to expand responsibly without clearing virgin soil unnecessarily, promoting balance with natural ecosystems.
7. **Grazing management and feed quality:** Advising farmers with better grazing systems and plants as well as feed ration compilation.
8. **Land rehabilitation:** Farmers are advised in terms of vegetation, erosion control, and improving soil organic matter to strengthen ecosystem services

For further information please contact Mr Adriaan Conradie at adriaan.conradie@westerncape.gov.za.

RIVER PROTECTION "WORKS"

BY JODY WENTZEL

Image 1 Bakkie in flood damage

LESSONS FROM THE 2008 DE DOORNS FLOODS

In 2008, the town of De Doorns in the Western Cape faced one of the most devastating natural disasters in its history. Torrential rains led to severe flooding of the Hex River, washing away critical road networks, damaging bridges, and cutting off communities from essential services (Image 1 above).

The event not only disrupted daily life but also highlighted the fragility of infrastructure in the face of increasingly unpredictable climate conditions.

For days, families were isolated, agricultural activities ground to a halt, and the local economy suffered heavy losses. The event underscored the urgent need for a sustainable, long-term approach to flood risk management.

River stabilisation structures is an intervention that would safeguard livelihoods, protect infrastructure, and ensure that communities remained connected during future climate-related events.

A TURNING POINT: RIVER PROTECTION WORKS (2013)

In response to the catastrophic floods, government, farmers and local stakeholders came together to develop a more resilient river management system.

By 2013, the River Protection Works (RPW) was implemented along a vulnerable section of the Hex River and its tributaries.

RPW focused on:

- Stabilising embankments through groyne structures.
- Improving channel alignment to reduce the destructive force of floodwaters.
- Protecting critical infrastructure such as roads, bridges, and agricultural land.
- Integrating natural solutions by planting indigenous vegetation between structures to strengthen embankments.

This investment was not only about rebuilding after the 2008 flood but about building back better to mitigate future flood incidents. It recognised that climate related risks were likely to intensify and that resilience had to be at the centre of all planning.

PROOF OF RESILIENCE: THE 2023 AND 2024 FLOODS

A decade later, the true value of the River Protection Works was tested. In 2022, 2023 and again in 2024, the Western Cape experienced major flood events, with record rainfall and significant increases in river flows. These floods caused widespread concern across the province, but in De Doorns, the story was somewhat different.

Where once entire communities were cut off, the reinforced embankments and stabilized river channels now held, to a certain extent. Minimal damages were recorded, and critical road infrastructure remained mostly intact (Image 2) at historically damaged points.

Image 2: Only a small portion of the road was damaged in the recent floods.

While certain infrastructure (a main water supply pipeline) experienced damages further upstream by excess rainfall, the physical barriers where the RPW was implemented proved resilient in areas where the community was once left isolated.

Farmers were able to resume operations quickly, and the broader economic impact was significantly reduced. In real terms, the River Protection Works safeguarded lives, livelihoods, and millions in infrastructure investments.

Building Back Better: A Model for Risk Reduction

The success of the River Protection Works in De Doorns demonstrates the effectiveness of a proactive, risk-reduction approach to disaster management.

Rather than waiting for crises to repeat, the government's decision to invest in preventative infrastructure has provided measurable long-term benefits.

This initiative embodies the principle of building back better, as championed in both national and international disaster risk management frameworks. Key lessons include:

1. **Prevention is cost-effective:** The cost of constructing protective works in 2013 was a fraction of what would have been lost had the 2023 and 2024 floods caused the same level of damage as in 2008.
2. **Integration of engineering and natural systems:** Combining structural reinforcements with natural vegetation helped stabilise embankments and reduce erosion along the road carriageway, creating a more sustainable solution.
3. **Community resilience:** By ensuring that communities remain connected during floods, the works supported not only infrastructure resilience but also social and economic resilience.
4. **Replicable best practice:** The De Doorns case serves as an example for other flood-prone areas in South Africa, where similar interventions can prevent widespread destruction.

GOVERNMENT COMMITMENT TO RESILIENCE AND ADAPTATION

The groynes (Image 3) were implemented by the Western Cape Department of Agriculture, in partnership with provincial roads, BGCMA (Breede-Olifants Catchment Management Agency) and the Hex River Water Users' Association. The experience provides a strong case for continued investment in river protection, catchment management, and climate adaptation initiatives.

Image 3: Groynes visible inside the red lines, and the historical break in the road next to the bridge indicated inside the yellow lines.

In a changing climate, where extreme weather events are becoming more frequent and severe, the government is committed to:

- Scaling up proven interventions like river protection works in other high-risk catchments.
- Strengthening collaboration between engineers, environmental specialists, and local communities.
- Embedding resilience into infrastructure planning and rural development strategies.
- Promoting innovative approaches that blend traditional engineering with nature-based solutions.

Looking Ahead

The River Protection Works implemented in 2013 transformed vulnerability into resilience, ensuring that when the floods of 2022, 2023 and 2024 arrived, the story was one of preparedness rather than all round devastation.

This success stands as a model of how to build safer, stronger communities in the face of climate uncertainty. It is proof that with foresight, collaboration, and investment, South Africa can not only recover from disasters but also grow stronger through them.

By prioritising resilience today, we are protecting lives and livelihoods for tomorrow.

For further information contact Ms Jody Wentzel at Jody.Wentzel@westerncape.gov.za.

NEWS FROM OUR PROVINCE

LET'S SWIPE RIGHT FOR THE EARTH CLIMATE CHANGE CAMPAIGN

Dr Helene Vollgraaff, Western Cape Department of Cultural Affairs and Sport

The Stellenbosch Museum, which is affiliated with the Western Cape Museum Services, in partnership with the Stellenbosch Academy of Design and Photography (hereafter the Academy), has entered into a collaboration that gives students valuable real-world work experience.

Building on this agreement, the Museum, Museum Services and the Academy - together with support from the Western Cape Climate Change Workgroup - are launching a joint campaign to raise awareness about climate change and improve climate literacy.

The campaign focuses less on policy and scientific data, and more on inspiring individuals to make practical behavioural changes in their everyday lives. Several Western Cape government departments contributed to the project. The Climate Change Directorate within the Department of Environmental Affairs and Development Planning (DEA&DP) played a central role by helping to identify government officials, academics, and NGOs for students of the Academy to interview.

Among those interviewed was Dr Stephanie Midgley from the Department of Agriculture. Additional participating departments included Local Government (Directorate: Disaster Risk Reduction), and Infrastructure and Mobility. Janine Winder from the Department of Local Government also supported the project by gathering video and photographic material of disaster events.

Museums provide an ideal platform for this programme because they bring together diverse stakeholders to engage with complex issues in an evocative and thought-provoking way. This project did exactly that - bringing young videographers, graphic designers, and illustrators into conversation with civil servants, activists, and educators to co-create a programme that tackles a challenge affecting us all.

This communication route was chosen because climate change action requires a fresh approach:

- Climate change is complex and often overwhelming.
- It demands collaboration that crosses both national and personal interests.
- The message is difficult to translate into action at an individual level.
- Constant negative messaging risks causing people to disengage.
- Powerful, divergent voices can create confusion and resistance.
- The effects of individual actions are not immediately visible, leading to procrastination as tomorrow is another day.
- The focus should not be on sharing information alone, but on encouraging sustainable behavioural change.
- Research on museums and climate change action shows that people are more likely to commit to a positive goal than to respond to doom-and-gloom messaging.

The students were divided into ten groups, each tasked with interviewing different participants and producing an infographic along with three video clips of varying lengths: 10-20 seconds, 30-40 seconds, and 90-180 seconds. Each group also developed a visual concept to present climate change action in a way that resonates with younger audiences. Many chose to frame their work within a hopeful tone.

Western Cape Museum Services will use these outputs - together with the raw footage - to create a digital exhibition. Because the groups included students from diverse design backgrounds, the videos blended interview footage with illustrations and animations. In the second semester, marketing students at the Academy will build on this work by creating a dedicated climate change action marketing campaign.

One group developed the concept "Swipe right for the Earth: The Earth deserves a relationship, not a situationship." This idea captured the spirit of the entire project. Across the videos and infographics, the emphasis was on emotion and human connection - encouraging people to see the Earth as a living being and to rebuild a sense of relationship with it and with one another.

The campaign will be launched at the Stellenbosch Museum and, from there, rolled out to all Western Cape–affiliated museums in 2026. It will also be featured on Museum Services' upcoming Digital Exhibition Platform, 160 000 Years of Stories (www.museumstories.co.za), which is currently under development.

For further information contact Dr Helene Vollgraaff at helene.vollgraaff@westerncape.gov.za.

Figure 1: Group 6 infographic. Group 6 interviewed Mr James Irlam from the UCT Health Faculty.

Figure 2: Group 10 infographic. Group 10 interviewed Dr Stephanie Midgley, specialist scientist, Western Cape Department of Agriculture.

Figure 3: Group 9 infographic. Group 9 interviewed Ms Janine Winder, Directorate of Risk Reduction in the Department of Local Government, and Thokane Norushe, Department of Infrastructure and Mobility.

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NATIONAL & INTERNATIONAL NEWS

Under the theme: Solidarity, Equality, Sustainability, South Africa's G20 Presidency has set the following four overarching priorities:

- Strengthening disaster resilience and response.
- Taking action to ensure debt sustainability for low-income countries.
- Mobilising finance for a just energy transition.
- Harnessing critical minerals for inclusive growth and sustainable development.

As this Newsletter is being compiled, the G20 Agriculture Working Group Ministerial Meeting (18 September) and the Food Security Task Force Ministerial Meeting (19 September) are underway in Somerset West, Western Cape. The Minister of Agriculture, Mr John Steenhuisen, opened the G20 Agriculture Working Group Ministerial Meeting with the powerful message of "One Culture, One Future: Agriculture Unites the World": https://lnkd.in/p/d4_Gkpey

For further information on these meetings click here: https://g20.org/g20-media/minister-john-steenhuisen-and-deputy-minister-nokuzola-capa-to-host-g20-agriculture-working-group-and-food-security-task-force-ministerial-meetings/

Preceding these meetings in September was the 14th Meeting of Agricultural Chief Scientists of G20 states (G20-MACS), held on 26-28 May 2025 in Polokwane, Limpopo Province. This was hosted by the Agricultural Research Council (ARC) and the Department of Agriculture under South Africa's G20 Presidency. The outcome was a Communique issued on 28 May 2025 that informs the current deliberations of the Agriculture Ministers. In the Preamble, it is stated that:

"A first for Africa, this G20-MACS followed intensive national and African continental dialogues, resulting in six thematic focus areas. These themes identified actionable science, technology, and innovation actions to advance the UN 2030 Agenda for Sustainable Development Goals (SDGs), the African Union's Agenda 2063, and the African Common Position on Food Systems. The G20-MACS outcomes align with South Africa's G20 Presidency Agriculture Working Group priorities.

We advocate for policies and approaches that promote inclusive market participation, empower women and youth, foster innovation and technology transfer on voluntary and mutually agreed terms while respecting intellectual property rights, and strengthen climate, environmental, economic and sanitary resilience across agriculture and food systems."

The six priority themes are:

1. Transformation of agriculture and food systems
2. Stewardship of biodiversity, genetic and natural resources
3. Soil health and sustainable management
4. Reinforcing climate-smart agriculture for sustainability and resilience in food and agricultural production systems
5. Building resilient agriculture-based bioeconomies
6. Digital agriculture and the adoption of Fourth Industrial Revolution (4IR) technologies

Under the theme **"Reinforcing climate-smart agriculture for sustainability and resilience in food and agricultural production systems",** the following text summarizes the agreed understanding and way forward:

"We recognise that climate change is one of the biggest problems facing humanity, against a projected global population of 9.8 billion in 2050. This presents major challenges for achieving global food security and nutrition, efforts to reduce poverty and hunger, and achieving greater social equity."

"We reaffirm the importance of context-specific research and innovation for climate adaptation and mitigation, taking into consideration local, national, and regional circumstances. We advocate for equitable access to finance from all sources, as well as to technologies, and other resources – including for smallholder farmers, women, youth, Indigenous Peoples, and local communities – to increase the adaptive capacity of the agricultural sector for climate resilience. We are committed to supporting the work of the UNFCCC Sharm El-Sheikh Joint Work on the Implementation of Climate Action on Agriculture and Food Security."

"We call upon G20 countries to share information and strengthen collaboration and partnerships to support climate resilience practices, such as advisory services and early warning systems. We emphasise the strengthening of international cooperation in the integration of science, technology, innovation, and Indigenous Knowledges. We highlight the impact of climate change on the global water cycle, and the need to implement integrated water management to ensure water-resilient agriculture and food systems."

"We invite G20 Agriculture Ministers to strengthen policy coordination and recommend synergies for physical and virtual research, knowledge and innovation platforms, and hubs for countries to share science- and evidence-based policy experiences applicable to sustainable climate-resilient practices. We emphasise the importance of promoting training and capacity building to enhance skills for holistic and systemic approaches to climate resilience through exchange programs and sharing research information."

The full communique can be downloaded here: https://www.macs-g20.org/fileadmin/macs/Annual_Meetings/2025_South_Africa/Communique_14th_MACS_Meeting_26-28_May_in_RSA-final.pdf


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FOLLOW YOUR DREAM AND MAKE IT HAPPEN
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STRENGTHENING CLIMATE RESILIENCE: A PARTNERSHIP BETWEEN THE WESTERN CAPE GOVERNMENT AND STELLENBOSCH UNIVERSITY

SKYLA THORNTON

The Western Cape Government (WCG), through its Department of Agriculture (DoA) and Department of Environmental Affairs and Development Planning (DEA&DP), has forged a crucial partnership with Stellenbosch University's School for Climate Studies (SCS).

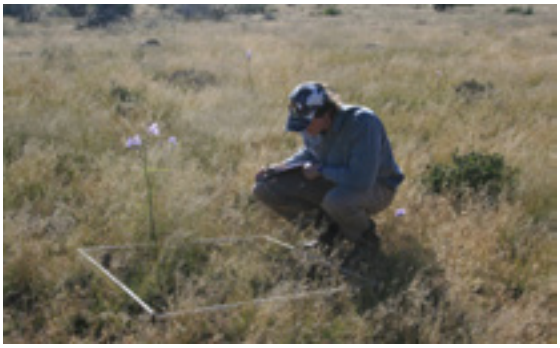
The School for Climate Studies resides in the Natural Sciences Department at Stellenbosch University (Photo: Skyla Thornton)]

This partnership, established to enhance the resilience of the agricultural sector to climate change, build the climate change knowledge base in the Western Cape, and jointly pursue local and international opportunities, is a testament to the power of collaborative action against the common, global threat of the climate crisis. This collaboration aims to create a dedicated framework for joint efforts in climate change adaptation and mitigation.

The core purpose of this strategic alliance is to exchange scientific and institutional expertise, fostering a robust climate change knowledge base in the Western Cape. This collective endeavour is vital for developing and applying effective strategies for climate change adaptation and mitigating its impacts. The partnership's joint areas of cooperation are diverse, encompassing collaborative research, projects, joint research outputs, engagement of postgraduate students, and the organization of courses, workshops, and conferences.
A key objective is to continually pursue opportunities, both local and international, to strengthen the climate change knowledge base within the region.

THE 2024 LAND-BASED MITIGATION WORKSHOP

A significant highlight of the collaboration was the Workshop on Land-Based Mitigation in the Western Cape, held on October 23, 2024. This event, a joint effort between the DoA, the SCS, and Blue North Sustainability, delved into the complexities of carbon markets and their relevance to agriculture, amongst other topics. The primary takeaway from the workshop was a critical assessment of opportunities for local land users to benefit from carbon markets, and the emphasis on rather focussing on the adaptation co-benefits of practices that enable farmers to survive and maintain profitability.



SCS honours student assesses soil carbon sequestration on a farm in the Central Karoo, near Middelburg (Photo: Skyla Thornton)]

THE MCAP CONVENING 2025

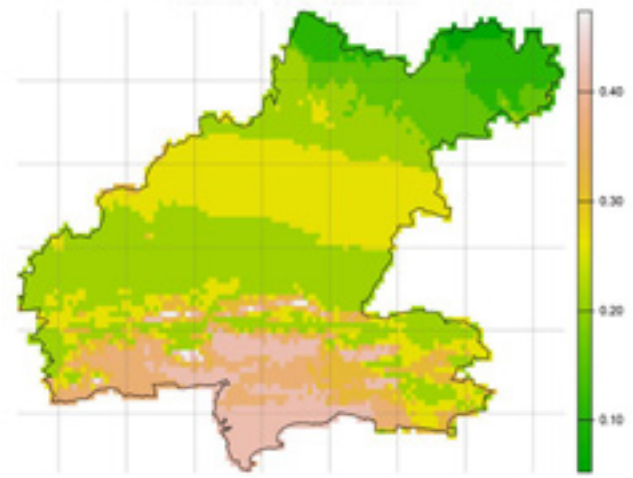
The partnership also played a pivotal role in the 2025 Mediterranean Climate Action Partnership (MCAP) Annual Convening, which took place from 6-9 May in Stellenbosch. The Convening brought together representatives from 11 of the 16 founding Mediterranean-climate subnational governments to accelerate regional responses to key climate risks: drought, wildfire, and extreme heat.

A significant component of the Convening was a "Living Labs" excursion on 7 May, which provided delegates with first-hand engagement with climate-related risks and adaptation solutions in the mountain catchments and agricultural landscapes east of Stellenbosch.

This tour demonstrated various fit-for-purpose regional adaptation projects, approaches, and solutions designed to build resilience. Prof Guy Midgley, Director of the SCS, and Dr Andrew Watson, senior researcher at SCS, accompanied the delegates and provided relevant science-based information as expert "tour guides".

The Western Cape also contributed to three MCAP mini-sprint projects: designing a wildfire risk information service, developing a regional heat island monitoring and prediction tool, and enhancing coastal wetlands resilience. Looking ahead, the idea of an MCAP Universities network was proposed, aiming to leverage academic collaborations to provide ongoing research, assessments, and secure funding for policymaking, thereby ensuring continuity and sustained impact.

To this end, the SCS centred the MCAP need for policy guidance in its 2025 Biodiversity & Ecology (BDE) Honours course, tasking students to develop an assessment of climate risk to biodiversity in the Western Cape, and providing a detailed report, a set of presentations, and infographics as outputs.



Work currently in progress in the School for Climate Studies at Stellenbosch University for MCAP, in which the Biodiversity & Ecology Honours class of 2025 are conducting a biodiversity and climate change risk assessment. The Figure shows the observed thermal persistence over the past 20,000 years in the eastern parts of the Western Cape Province - Garden Route (excl. Hessequa) and Central Karoo District Municipalities - mapping what fraction of time each pixel mapped remained within a 1/2 of the standard deviation of the long term mean temperature. The metric shows the high thermal stability of the Southern Cape Fynbos landscapes, in particular. Work in progress, do not cite.

Hydrological modelling efforts are also underway in the SCS, leveraging cutting edge stable isotope technology to enhance model accuracy under the expert hand of Dr Andrew Watson, with his international network that includes the University of Tokyo and the International Atomic Energy Association in Austria.

This work will be showcased during the second MCAP webinar on 29 September 2025 organised by the DoA (see page 9).

BROADER CLIMATE ACTION AND RESEARCH

The partnership extends to numerous other critical areas of climate action and research. Key research priorities include:

- Water management, particularly groundwater, technology, water use, availability, and allocation.
- Addressing pests, diseases, weeds, and biosecurity in the context of climate change.
- Developing climate monitoring networks, platforms, and ensuring access to data.
- Capacity building through training and skills development.
- Genetics for climate-adapted breeding and evaluating new technologies.

Additionally, the SmartAgri Plan is being updated to include new priorities such as resilience and disaster risk reduction. These activities have resonance with a new SCS/Faculty of Arts and Social Science M.Phil. and Post Graduate Diploma program launching in January 2026 under the leadership of Dr Robyn Pharoah of the Research Alliance for Disaster and Risk reduction (RADAR): https://www.sun.ac.za/english/pgstudies/Pages/Arts/Research-Alliance.aspx

Going forward, the collaboration will actively seek to identify suitable candidates for postgraduate studies and internships, aligning their selection with departmental criteria and giving preference to equity parameters, scarce skills candidates, and students from the Western Cape.

Significant efforts are underway in data management, with discussions focusing on creating a joint data pool between SU and Western Cape government departments. This initiative aims to provide students with valuable real-time data for "deep diving" and adding value, especially utilizing Artificial Intelligence (AI) for data mining.

The partnership also plans to develop policy briefs to inform government leaders and policy development. These documents, drafted by SCS in collaboration with the departments, emphasize evidence-based decision-making, the role of data in informing policy, and the strategic positioning of the university as a key partner in addressing climate change challenges.

The partnership between the Western Cape Government and Stellenbosch University School for Climate Studies acts as a vanguard of climate resilience, continuously identifying, researching, and implementing solutions across the agricultural landscape. By blending academic expertise with governmental policy and practical application, the collaboration is laying robust groundwork for a climate-resilient Western Cape.

For further information please contact Prof Guy Midgley at gfmidgley@sun.ac.za. or https://climate.sun.ac.za/

SHOWCASING RESEARCH AND YOUNG SCIENTISTS

The ongoing research partnership between the Western Cape Department of Agriculture (WC-DoA) and Stellenbosch University (SU) Faculty of AgriSciences continues to produce excellent research outputs by scientists in training. We are pleased to share three articles published recently in high-calibre international scientific journals by current PhD students.

CULTIVATING CLIMATE-SMART CROP SYSTEMS: A SYSTEMATIC MAP OF AGRONOMIC INTERVENTIONS IN A MEDITERRANEAN-TYPE CLIMATE

Kent Buchanan[1,2], Stephanie J.E. Midgley[3,4], Johann Strauss[2,3] and Pieter Swanepoel[2]

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[2] *Department of Agronomy, Stellenbosch University, Stellenbosch, South Africa*
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[4] *Department of Horticultural Science, Stellenbosch University, Stellenbosch, South Africa*

ABSTRACT

Agriculture systems require evidence-based management approaches to minimize impacts from climate change and to minimize greenhouse gas emissions.

This is critical in global regions with a Mediterranean-type climate where the impacts are expected to intensify greater than the global average, thus threatening crop yields.

A significant knowledge gap exists regarding the agronomic interventions that are suitable for climate-smart agriculture considering their net effects on climate adaptation and mitigation. This study seeks to fill this gap in the context of a Mediterranean-type climate.

A systematic map study was conducted on peer-reviewed research focusing on climate change relevant agronomic interventions in crop production systems. The aim was to assess the extent of the research pertaining to climate mitigation and/or climate adaptation and the readiness to inform evidence-based climate-smart agriculture policy.

A total of 722 articles were identified from database searches, 648 articles were screened for relevance, and 158 articles were selected for further analysis. Information was extracted on geographic location of the research, timing of the research, type of climate change outcome researched, interventions studied, and crops studied.

The study found that the knowledge base was significantly inadequate of what can be implemented to adapt and/or mitigation climate change and the net climate effects of interventions. 27 interventions were studied across 55 unique crops since 1996, mostly in Spain and Italy.

More studies were relevant to climate adaptation (62%) than mitigation (22.5%). 15.2% of studies considered both adaptation and mitigation together and only 1 of 158 considered impacts on yield, adaptation, net mitigation.

This study concluded that a larger evidence base is needed to inform policy on which crop management interventions are suitable to maximize positive impacts of both climate mitigation and adaptation together, with positive or acceptable yield outcomes.

It is also recommended that further research into interventions should include yield and product quality, as well as economic and social benefits and trade-offs.

Citation: Buchanan K, Midgley SJE, Strauss J and Swanepoel P (2025) Cultivating climate-smart crop systems: a systematic map of agronomic interventions in a Mediterranean-type climate. Front. Agron. 7:1632146. https://doi.org/10.3389/fagro.2025.1632146

EVALUATING CLIMATE-DRIVEN YIELD RESPONSES IN CANOLA: INSIGHTS FROM 12 YEARS OF DATA FROM SOUTH AFRICA

A.A. Le Roux[a], S.J.E. Midgley[b,c], J.A. Straussa,[b], P.J.A. Lombard[b], P.A. Swanepoel[a]

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ABSTRACT

Context: Canola (Brassica napus L.) is a key rotational crop in Mediterranean-type dryland farming systems, yet its yield is highly sensitive to rainfall variability and temperature extremes.

Objective: This study aimed to evaluate the influence of rainfall and temperature factors on canola yield across phenological stages and provide guidance for cultivar selection and adaptive management.

Methods: Twelve years (2011 – 2023) of field trial data from the Swartland region of South Africa were analysed, including 13 – 18 canola cultivars per season classified by cultivar type (conventional, Clearfield, and Triazine Tolerant) and growing season length (short, medium-short, medium, and long). Yield data were analysed using a three-way analysis of variance (ANOVA), Pearson correlations, and both linear and quadratic regression models to identify critical climate-yield relationships.

Results: The ANOVA detected main and interaction effects among cultivar type, season length, and year ($P < 0.05$ for all main effects). Triazine Tolerant cultivars consistently yielded less than conventional and Clearfield cultivars. Short and medium-short cultivars performed better under drier conditions, while medium-length cultivars excelled in seasons with early planting and favourable late-season moisture.

Correlation analyses indicated that yield was strongly and positively associated with rainfall amount and frequency during vegetative and flowering stages, as well as with moderately warm temperatures during the seedling stage. Conversely, high average temperatures and heat stress events during flowering and pod filling were negatively correlated with yield.

Multiple regression models confirmed the significance of these relationships, and quadratic regressions highlighted stage specific nonlinear thresholds for rainfall and temperature effects. Yield gains plateaued beyond 300 mm seasonal rainfall, while optimal flowering stage rainfall was between 90 – 110 mm.

Average temperatures above 13 □C during flowering and 15 □C during pod filling consistently reduced yield. Heat stress during flowering, even as few as one day exceeding 28 □C, was especially detrimental. Cumulative growing degree days to flowering and end of flowering were positively related to yield, but growing degree days to maturity showed weaker associations.

Conclusion: Canola yield is shaped by stage specific climatic sensitivities, particularly to rainfall distribution and reproductive stage heat stress.

Implications: Climate-smart cultivar selection and planting strategies that align growth stages with optimal rainfall and temperature windows will be essential to sustain canola productivity under intensifying climate variability.

Citation: Le Roux, A.A., Midgley, S.J.E., Strauss, J.A., Lombard, P.J.A., Swanepoel, P.A. (2025) Evaluating climate-driven yield responses in Canola: Insights from 12 years of data from South Africa. Field Crops Research 334 (2025) 110128. https://doi.org/10.1016/j.fcr.2025.110128

EFFECTS OF CROP ROTATION DIVERSIFICATION AND LIVESTOCK INTEGRATION ON ABOVE-GROUND ARTHROPOD DYNAMICS UNDER CONSERVATION AGRICULTURE

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ABSTRACT

Diversification through integrating diverse crop species and livestock is key to enhancing above-ground arthropod diversity and promoting the sustainability of cropping systems within conservation agriculture (CA) in South Africa. This study compared two crop rotation treatments, A (Wheat-Wheat-Wheat-Wheat) and G (Canola-Medics-Wheat-Medics), as part of a long-term CA trial conducted in a wheat-producing region of South Africa.

For crop rotation system G, each phase of the rotation sequence was represented in separate plots annually. Surface-dwelling arthropods were sampled using pitfall traps, while plant-dwelling ar¬thropods were captured through sweep-net sampling. These methods comprehensively assessed above-ground arthropod diver¬sity 90 days after crop emergence.

The results showed that crop rotation diversification positively influenced arthropod diversity, though the effects varied depending on the arthropod group and sampling position. Ground-dwelling arthropods exhibited less pronounced differences between crop rotation systems, whereas plant-dwelling arthropods displayed more crop-specific varia¬tions.

Analysis of individual arthropod orders revealed that the effects of crop rotation diversification varied across different ar¬thropod groups. Our findings emphasize the importance of examining multiple arthropod groups to understand diversification's impacts fully within CA farming systems.

Citation: Louw, A., Strauss, J., Addison, P. (2025) Effects of Crop Rotation Diversification and Livestock Integration on Above-Ground Arthropod Dynamics Under Conservation Agriculture. Ecology and Evolution, 2025; 15:e71788. https://doi.org/10.1002/ece3.71788

UPCOMING CONFERENCES

1

ADAPTATION FUTURES 2025 (AF2025)

13-16 October 2025
Te Pae Christchurch Convention Centre
Ōtautahi Christchurch
NEW ZEALAND

Hybrid (in-person and virtual)
Adaptation Futures Conference 2025

- AF2025 is a unique opportunity to share new ideas, network with 1500 people from around the world and online and inspire action to accelerate climate adaptation!
- AF2025 will recognise the vital role of Indigenous and local knowledges and insights from Oceania.
- AF2025 aims to support Global South, Indigenous and youth leadership at this global event.
- AF2025 will offer innovative, inclusive and interactive discussion formats, face to face and online. Alongside welcoming traditional papers/panels and posters to ignite action and share new insights we encourage 'co-creation' sessions including workshops/talanoa-wānanga opportunities for rich discussion, feedback and new knowledge creation.
- AF2025 will intentionally stimulate inclusive, disruptive and challenging conversations to accelerate adaptation.

SBPDIG-SA

2

SOILBORNE PLANT DISEASES SYMPOSIUM

21-23 October 2025
ARC-Plant Health and Protection in Stellenbosch (Vredenburg campus)
Contact: Dr SC Lamprecht lamprechts@arc.agric.za

The Soilborne Plant Diseases Interest Group of South Africa holds an annual multidisciplinary symposium on soilborne diseases. These symposia began in 1990 and proved very successful thus far. The topic of the 2025 symposium is "Water and soilborne plant diseases". At this year's symposium, we will focus on the effect of water on soilborne plant diseases, detection of pathogens in water, optimum irrigation scheduling, management of pathogens in irrigation water and the effect of water weeds on water quality.

3

PATHWAYS TO NET ZERO - CARBON FARMING, NEW TECHNOLOGIES AND THE STATUS OF CARBON CREDITS THUS FAR.

5-6 November 2025
Protea Hotel Technopark, Stellenbosch
Contact: Mr Duncan Ndebele - duncan@empiretraining.co.za

4

SOUTH AFRICAN SOCIETY FOR ATMOSPHERIC SCIENCES 39TH ANNUAL CONFERENCE

13-14 November 2025
UCT Graduate School of Business Conference Centre, Cape Town
Theme: Climate Science for Climate Action
Contact: sasasuct2025@gmail.com or sarika@csag.uct.ac.za

With the climate crisis we need science that not only explains the Earth's system but can also inform decisions at all levels. This year we focus on advancing and celebrating climate science that can drive real-world action.

5

5

30TH UNITED NATIONS CLIMATE CHANGE CONFERENCE 2025 (UNFCCC COP30)

10-21 November 2025
Belém, Brasil
https://cop30.br/en

6

CLIMATE, MIGRATION AND HEALTH NEXUS: SUMMER SCHOOL 2026

3-6 February 2026
School for Climate Studies, Stellenbosch University
Contact: Dr Christian Lueme, the Summer School Facilitator at christianl@sun.ac.za

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