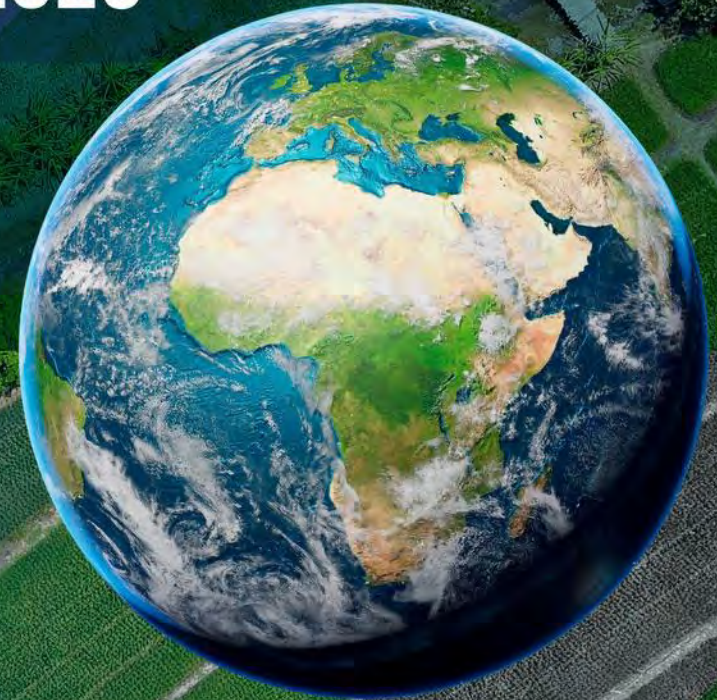


COMMUNITIES OF PRACTICE (COP)
INTEGRATED WORKSHOP AND TRAINING **2026**

Climate Action



INTEGRATED WORKSHOP

An initiative of the DSTI that is hosted and managed by the CSIR

Draft Strategy



CoP CO-CHAIRS

Ms Tshisikhawe Mphaphuli



Tshisikhawe (Tshisi) Mphaphuli is a geospatial professional with over 20 years of experience in the geospatial industry and in Remote Sensing. She is currently a Chief Advisor: Geoscience at National Transmission Company South Africa (NTCSA) Ltd and holds qualifications in Engineering Surveying, Project Management, and an MSc in Geographic Information Systems and Science.

Tshisi is a registered Geomatics Professional (GPrGISc 1512) with the South African Geomatics Council and a certified GIS Professional. Her expertise includes the application of both Optical and SAR satellite data for environmental monitoring, infrastructure management, and disaster risk reduction.

She serves on the Group on Earth Observations (GEO) Working Group on Disasters and Risk, is Chairperson of the SABs Mirror Committee for ISO/TC 211 Geographic Information/Geomatics, representing South Africa in the development of international geospatial standards, and was recently appointed as the ISO/TC 211 Liaison to the European Space Agency (ESA).

Dr Thabani Mazibuko



Dr. Thabani Mazibuko is a passionate space enthusiast and author of *Mangwe the Space Boy* and *Life Beyond The Karman Line OUTER SPACE* — Both books are sparking curiosity and ambition in future scientists and explorers. He is a Chairperson of the South African Space Technology for Sustainable Development Foundation focusing in STEM education, space innovation, and youth empowerment across South Africa. Dr. Mazibuko serve in the KZN4IR Commission. In 2024, he championed DisasterWatch, a localized satellite early warning and response system application that demonstrates the role of earth observation in addressing disasters in the KZN province. He also serve on the KZN Climate Change and Sustainable Development Council.

Dr Brilliant Mareme Petja



Brilliant Petja currently works as Research Manager for Climate Change at the Water Research Commission of South Africa. He obtained a Doctor of Philosophy in GIS and Remote Sensing from University of Limpopo and attended postgraduate training in Climate Change Mitigation and Adaptation at the Swedish Meteorological and Hydrological Institute. His area of expertise includes applications of GIS and Remote Sensing in global change (including climate change), natural resource management, aquatic resources, rural development, agriculture, public health and epidemiology.

He previously worked as a Remote Sensing Researcher at Agricultural Research Council – Institute for Soil, Climate and Water, Pretoria. He also worked for Limpopo Department of Agriculture as a Specialist Researcher: Site Specific Agriculture/ Precision Farming and Scientific Manager.

CONTEXT OR OVERALL GOAL

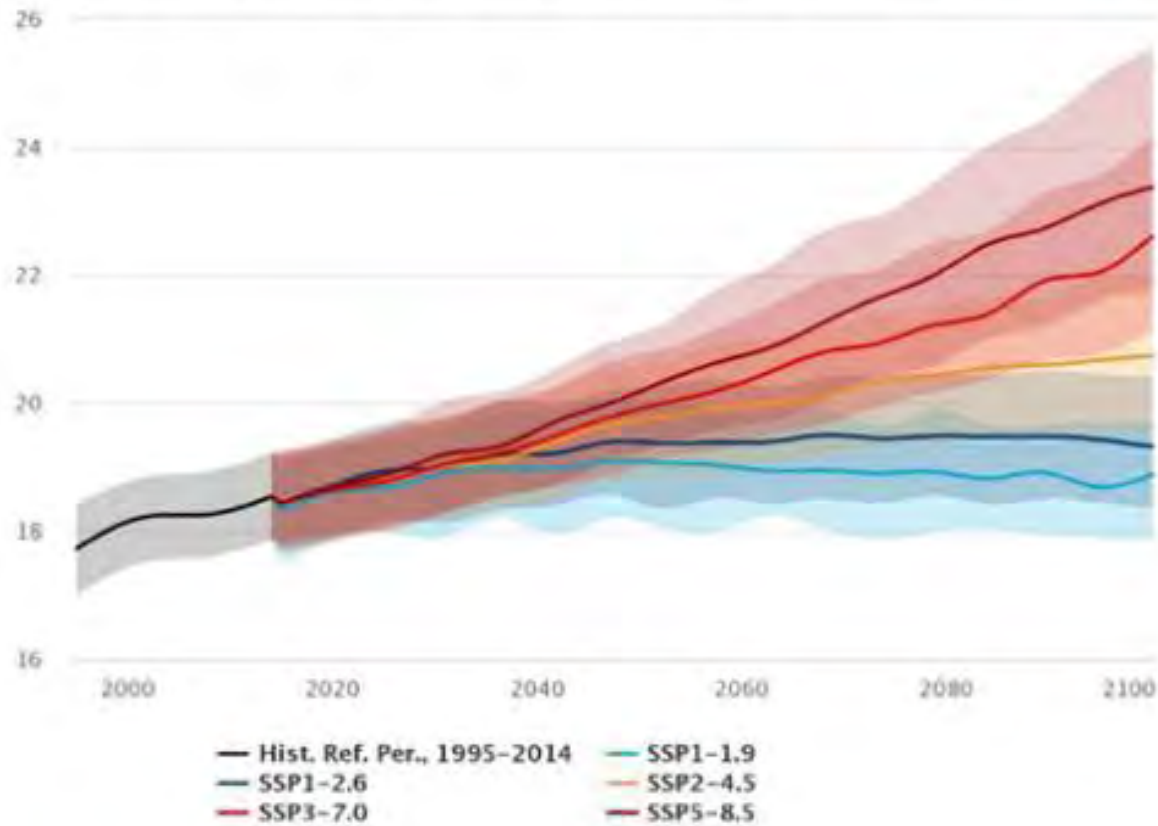
Climate change is one of the biggest challenges facing the world and particularly South Africa. EO can play a significant role in efforts to address climate change e.g. The CoP can provide EO data in support of effective policy responses for monitoring (e.g. of greenhouse gases, climate change impacts etc.), mitigation and adaptation actions.

Goal

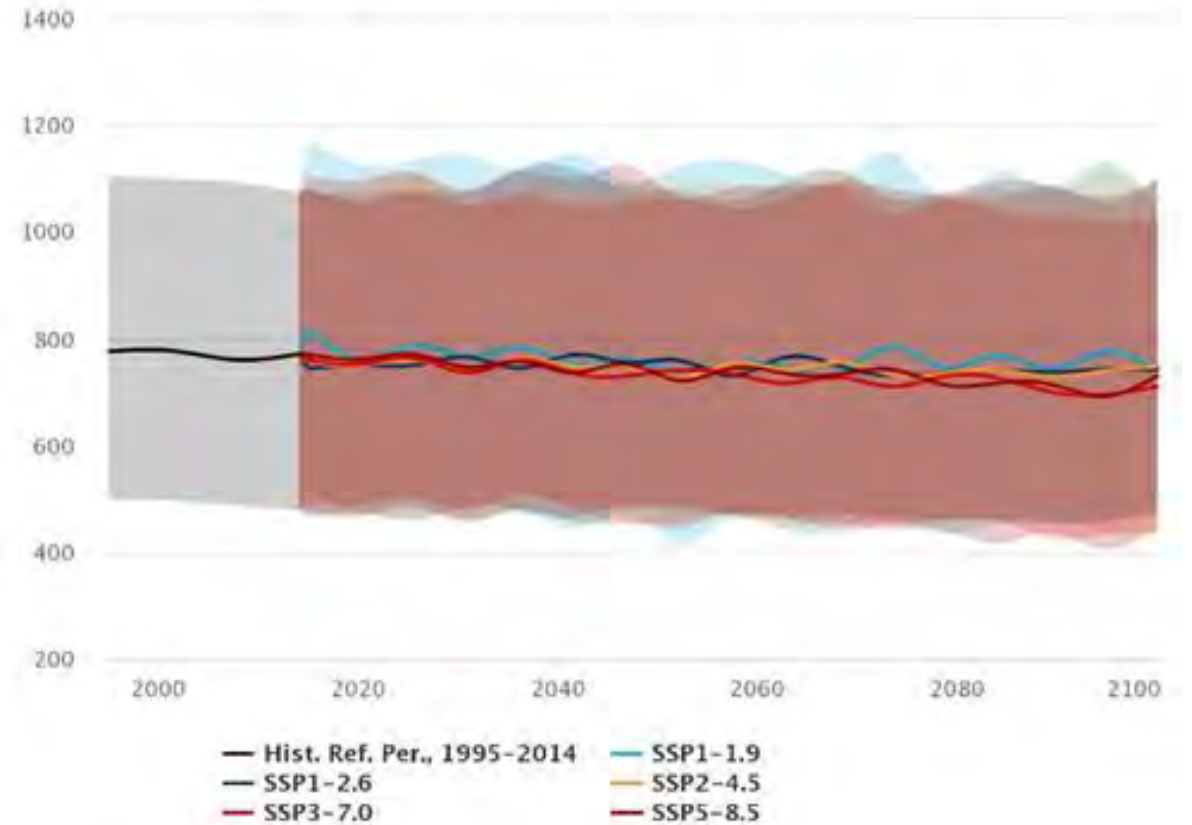
This CoP seeks to strengthen scientific knowledge on climate, observation of the climate system and early warning systems, to supports decision-making.

PROJECTED CLIMATE CHANGES IN SOUTH AFRICA

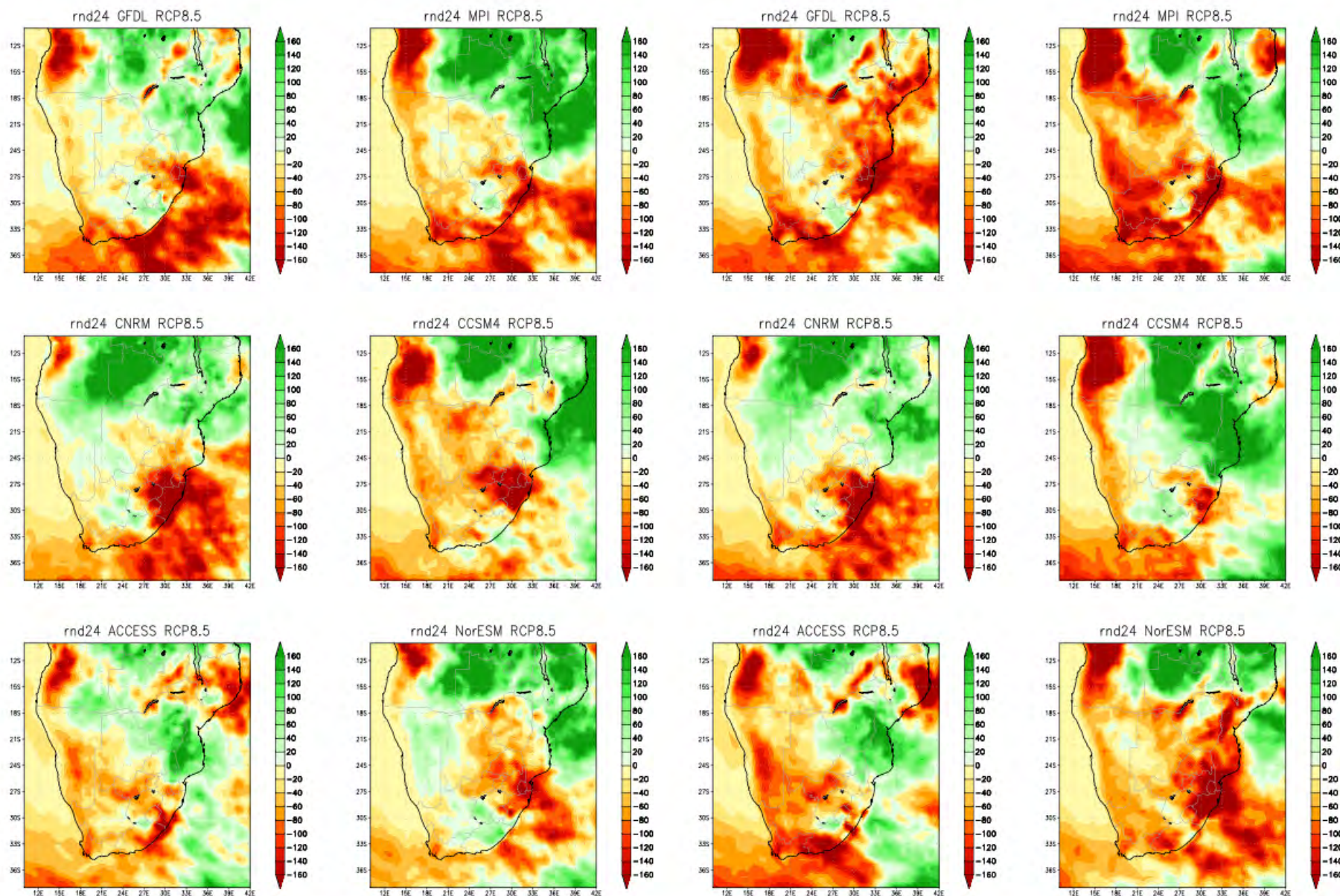
Projected Mean-Temperature
South Africa; (Ref. Period: 1995–2014), Multi-Model Ensemble



Projected Precipitation
South Africa; (Ref. Period: 1995–2014), Multi-Model Ensemble



PROJECTED FUTURE RAINFALL

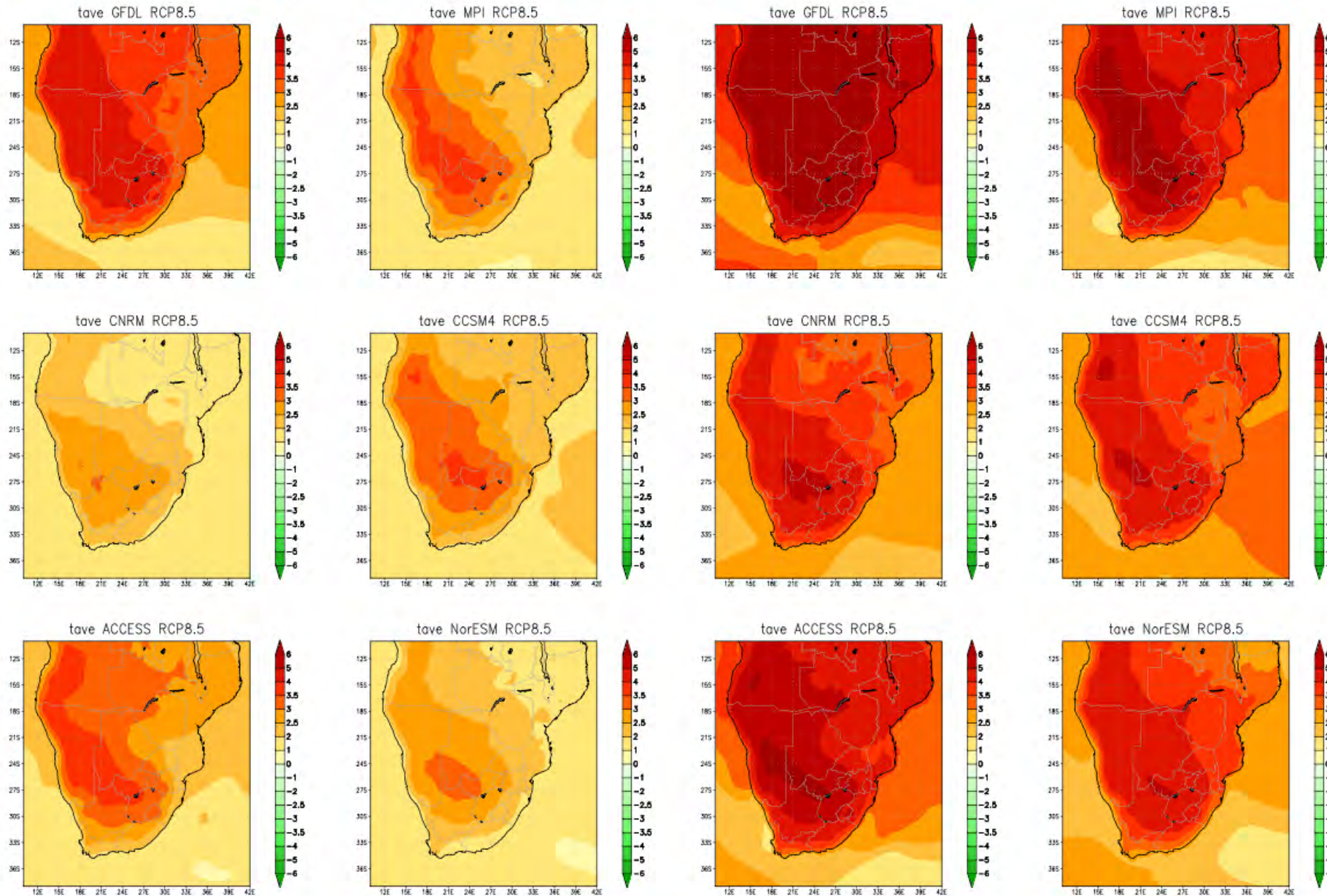


CCAM-CABLE projected changes in annual rainfall (mm) under RCP 8.5 for the period 2046-2065 relative to 1961-1990.

CCAM-CABLE projected changes in annual rainfall (mm) under RCP 8.5 for the period 2070-2099 relative to 1961-1990. Engelbrecht et al., 2020, WRC Report

- Substantial rainfall decreases over the eastern escarpment of South Africa, including Lesotho by the end of the century.
- Unprecedented dry years may occur as early as the period 2016-2035, and by the mid-future period of 2046-2065 multi-year droughts may be frequently occurring over eastern South Africa.
- This will seriously compromise South Africa's water security, including that of Gauteng, and may significantly hamper future industrial development in the country.
- Rainfall increases are projected over much of Mozambique, a signal of change that is likely the result of more landfalling tropical cyclones.
- Some of the downscalings are indicative of this pattern of change extending southwards into north-eastern South Africa.

PROJECTED FUTURE TEMPERATURE

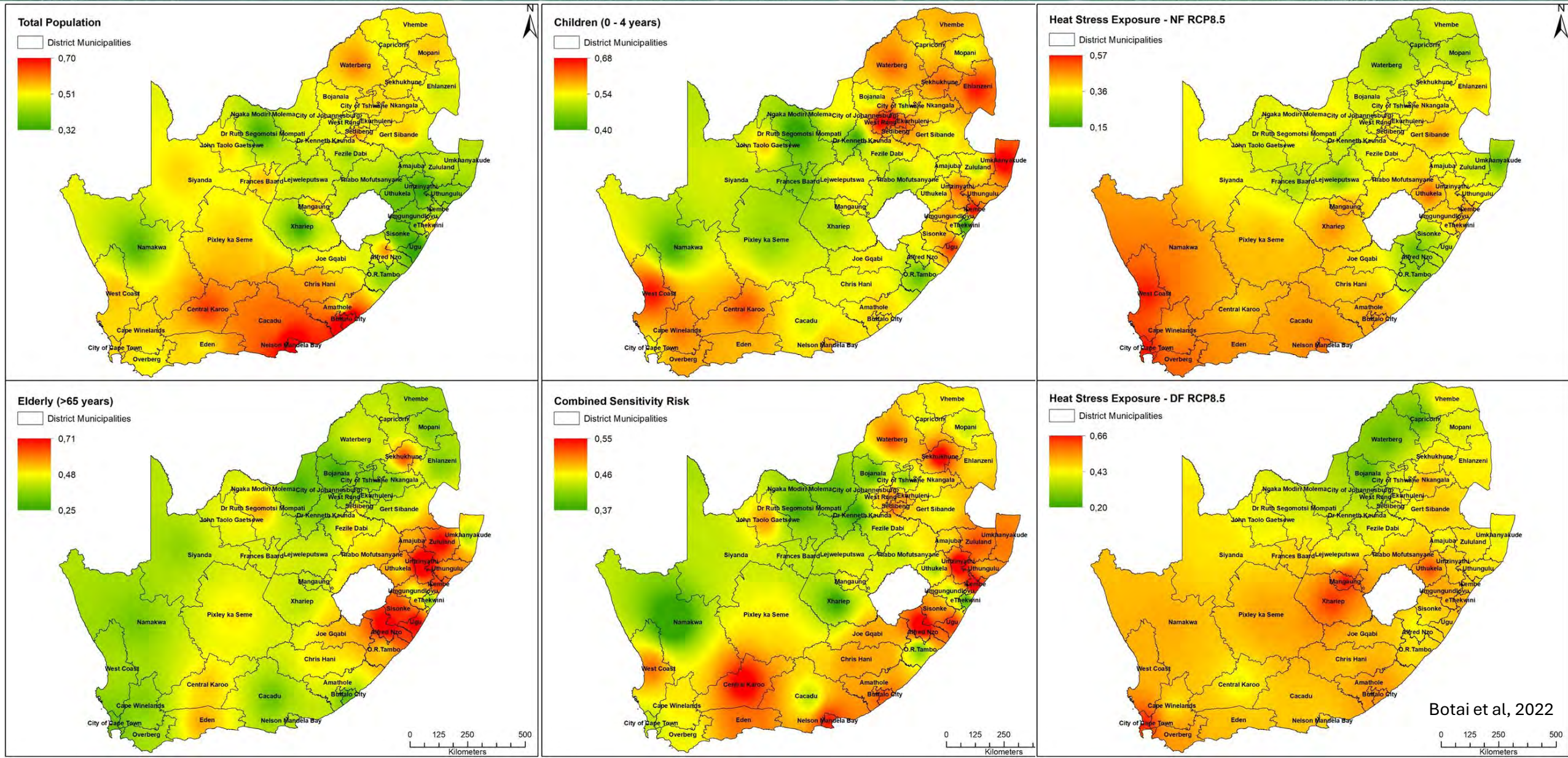


CCAM-CABLE projected changes in annual mean temperature (°C) under RCP 8.5 for the period 2046-2065 relative to 1961-1990

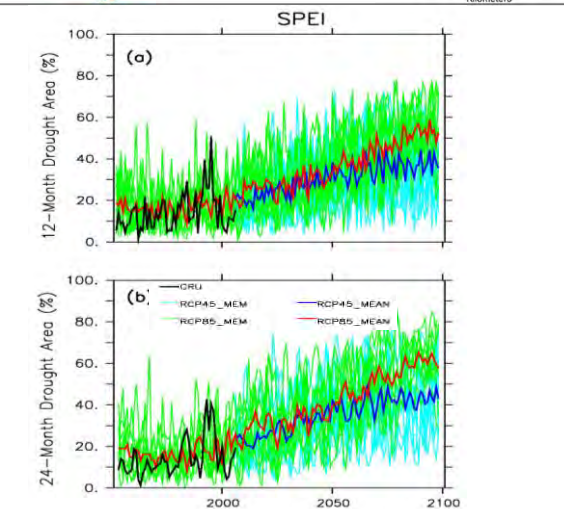
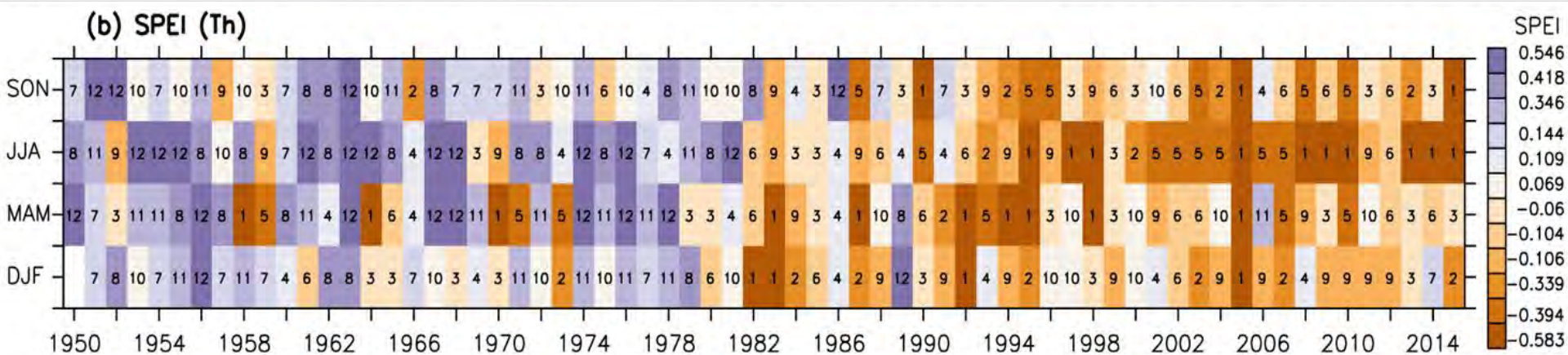
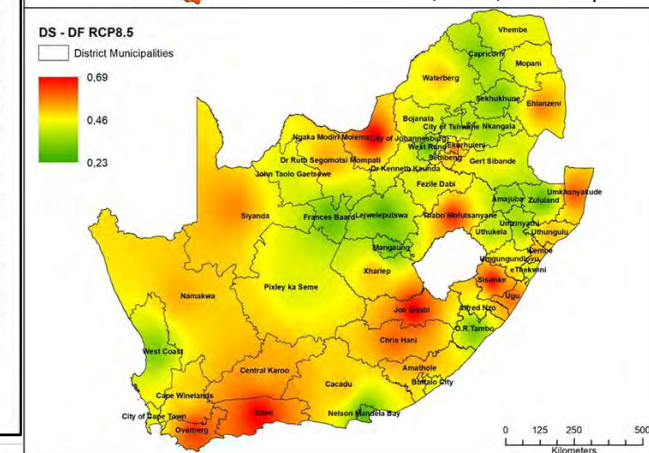
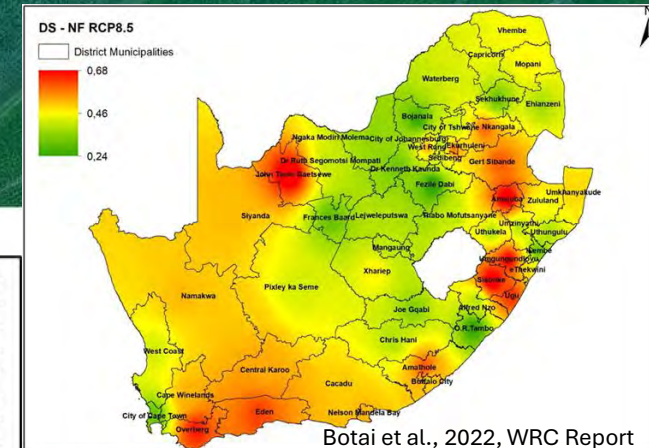
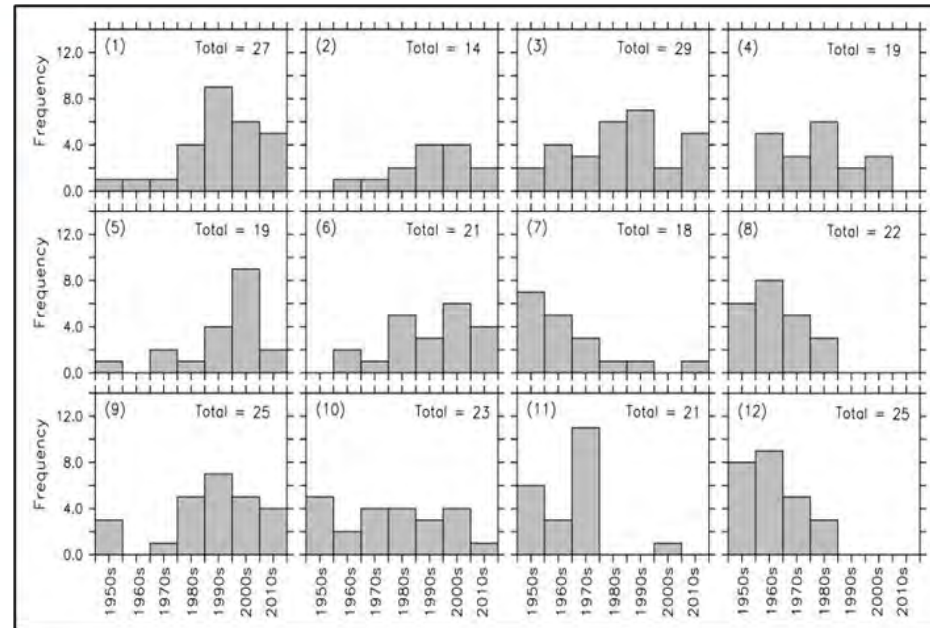
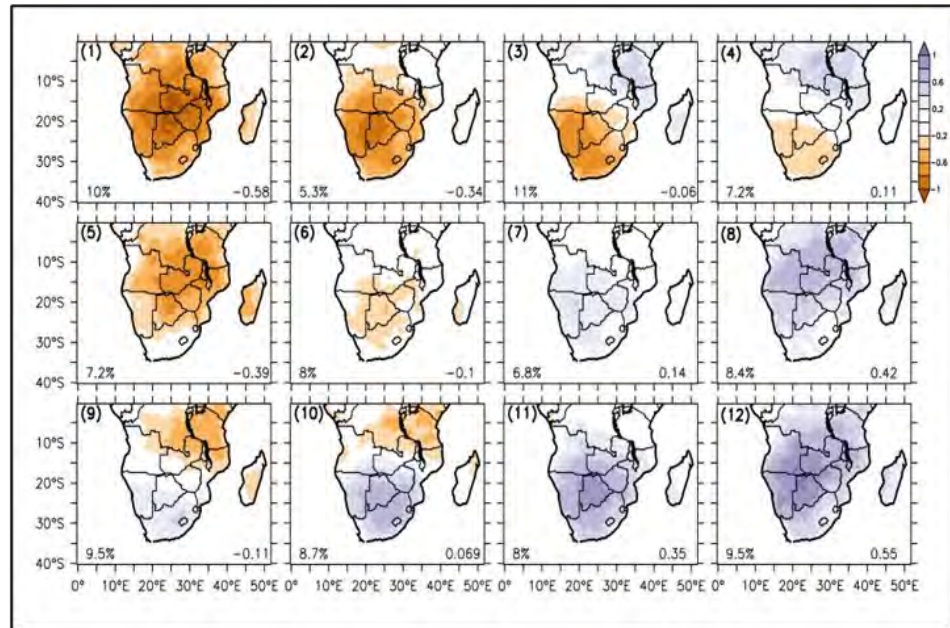
CCAM-CABLE projected changes in annual mean temperature (°C) under RCP 8.5 for the period 2070-2099 relative to 1961-1990.

- Drastic increases in temperature are projected for South Africa (Heat Waves).
- Rising temperatures are projected to have a range of negative impacts on southern Africa, including reductions in crop yield and livestock production.
- These will directly impact on water security through inducing enhanced evaporation and land-use change.

PROJECTED HEAT STRESS



DROUGHT (PAST AND PROJECTED FUTURE)



Abiodun et al., 2017, WRC Report

OBJECTIVES

1. Identify capacity and capability for Climate Action including potential areas for collaboration.
2. Identify gaps in the current user requirements for new EO systems in the domain.
3. Provide guidelines for the use of EO for:
 - Assessment and monitoring of climate using Earth Observation.
 - Assessment of different policy responses and actions.
 - Tracking of the implementation of mitigation and adaptation actions and responses.
 - Disaster Risk Reduction
4. Contribute to the development and generation of value-added EO information for environmental monitoring (biodiversity, food security, drought, floods etc.), in collaboration with the Agriculture CoP.
5. Share EO data and tools on climate action applications.
6. To bridge dialogue between EO data/information generators, users of EO data and policy makers.
7. Create awareness and promote the CoP.
8. Contribute to initiatives such as AfriGEO, GEO climate community activities and initiatives, and the Intergovernmental Panel on Climate Change (IPCC).

PRIORITY APPLICATION AREAS OR INTERVENTION DOMAINS

PRIORITY APPLICATION AREAS

- Atmosphere
- Land Surface and Ecosystems
- Water Security and Hydrological Systems
- Climate Risk, Adaptation and Resilience
- Disaster Risk Reduction and Early Warning
- Greenhouse Gas Monitoring and Carbon Accounting
- Partnerships and Decision Support

EXPECTED OUTCOMES

- Inventory of the existing initiatives and users of EO data for climate related actions, studies and programmes.
- Greater collaboration amongst the Climate change information generators, users and policy makers.
- Guidelines for the use of EO for climate action developed.
- All users and developers participating in the CoP.

COLLABORATION WITH OTHER COPS

This CoP could potentially collaborate with:

- Agriculture and Food security e.g., to assess and monitor the impacts of climate change or extreme weather events on agriculture.
- Circular economy and Natural Resources Management.
- Data governance.
- EO Infrastructure – data dissemination

Alignment to national institutions, programmes or initiatives

South Africa's National climate response – The white paper which presents South African Government's response for an effective climate change response and the long-term, just transition to a climate resilient and lower-carbon economy and society, through mitigation and adaption actions.

WORKPLAN AND ITS ALIGNMENT

Below is a **3-year workplan (2026–2028)** aligned with the **National Climate Change Adaptation Strategy (NCCAS)** of the **Republic of South Africa**, the **Climate Change Act (2024)**, the **National Adaptation Plan (NAP)**, and the **GEO/AfriGEO Earth Observation (EO) Framework**.

The workplan emphasizes strengthening climate resilience through Earth Observation (EO), evidence-based decision-making, climate services, stakeholder collaboration, and knowledge sharing

This workplan supports the NCCAS priorities by:

- Strengthening climate information systems and evidence-based decision-making using Earth Observation.
- Building institutional and human capacity for climate adaptation.
- Improving disaster risk reduction through EO-based monitoring and early warning.
- Supporting adaptation planning in agriculture, biodiversity, water, food security, and human settlements.
- Enhancing collaboration among government, academia, industry, civil society, and international partners.
- Promoting open climate data, knowledge sharing, and science-policy integration.
- Supporting South Africa's obligations under the Paris Agreement, the National Adaptation Plan, AfriGEO, GEO, and related global climate initiatives.

WORKPLAN

Goal

This CoP seeks to strengthen scientific knowledge on climate, observation of the climate system and early warning systems, to supports decision-making.

Objective	Strategy	Required resources	Timeline		
			Year 1	Year 2	Year 3
1. Identify capacity and capability for climate action, including potential areas for collaboration.	Conduct institutional and stakeholder mapping; establish collaboration mechanisms; identify centres of excellence and expertise.	CoP Secretariat, stakeholder database, survey tools, workshop funding, facilitation team.	Conduct national capacity and needs assessment; map institutions and EO capabilities; establish Climate CoP membership; identify collaboration opportunities with government, academia, private sector and NGOs.	Develop collaboration agreements (MoUs); implement joint capacity-building programmes; establish thematic working groups.	Evaluate collaboration outcomes; institutionalize partnerships; develop long-term national Climate EO collaboration framework.
2. Identify gaps in current user requirements for new Earth Observation (EO) systems in the climate domain.	Undertake user needs assessments; engage EO data providers and end-users; develop user requirement specifications.	EO specialists, survey tools, consultation workshops, stakeholder engagement budget.	Conduct user requirement analysis across sectors; identify EO system and service gaps; prioritise user needs.	Validate findings with stakeholders; engage EO providers to address priority gaps; support pilot EO applications.	Review progress in addressing user needs; recommend enhancements to future EO systems and services.

WORKPLAN CONT'D

Objective	Strategy	Required resources	Timeline		
			Year 1	Year 2	Year 3
3. Provide guidelines for the use of EO for climate assessment, policy support, mitigation and adaptation tracking, and Disaster Risk Reduction (DRR).	Develop standardized EO guidelines aligned with NCCAS, NAP, Climate Change Act and GEO best practices.	Technical writing team, climate scientists, EO specialists, policy experts, consultation workshops.	Establish expert task team; review existing international and national guidelines; draft EO guideline framework.	Validate guidelines through pilot projects; publish national EO guideline document; conduct training workshops for users.	Mainstream guidelines into government departments and municipalities; periodic review and update of guidelines.
4. Contribute to the development and generation of value-added EO information for environmental monitoring (biodiversity, food security, drought, floods, etc.) in collaboration with the Agriculture CoP.	Promote collaborative research; integrate EO products across sectors; strengthen interdisciplinary partnerships.	EO datasets, modelling tools, researchers, Agriculture CoP collaboration, computing infrastructure.	Identify priority environmental monitoring products; establish collaboration with Agriculture CoP; develop prototype EO products.	Validate and refine value-added EO products; implement demonstration projects; share results with stakeholders.	Operationalise EO products; integrate into national environmental monitoring programmes; evaluate impact and scalability.
5. Share EO data and tools on climate action applications.	Develop data-sharing protocols; establish open-access platforms; promote FAIR data principles (Findable, Accessible, Interoperable and Reusable).	Data repository, cloud platform, IT support, data management specialists, licences where applicable.	Develop EO data inventory; establish data-sharing platform; define data governance arrangements.	Expand available datasets and analytical tools; conduct user training on EO platforms and applications.	Maintain and improve data platform; monitor usage; integrate additional national and regional datasets.

WORKPLAN CONT'D

Objective	Strategy	Required resources	Timeline		
			Year 1	Year 2	Year 3
6. Bridge dialogue between EO data/information generators, users of EO data and policymakers.	Strengthen science-policy interface; establish regular stakeholder engagement forums; promote co-production of knowledge.	Stakeholder engagement budget, facilitators, communication materials, policy experts.	Convene multi-stakeholder dialogue forums; establish communication channels between producers and users; identify policy priorities.	Organise annual EO-policy forums; produce policy briefs based on EO evidence; strengthen collaboration across sectors.	Institutionalise the annual Climate EO Summit; establish policy impact. Evaluate policy and stakeholder engagement outcomes.
7. Create awareness and promote the Climate Change CoP.	Develop communication and outreach strategy; use digital media and public engagement; participate in national events.	Communications officer, website, branding materials, social media platforms, marketing budget.	Develop communication strategy and branding; launch CoP webpage and social media platforms; host inaugural awareness events.	Expand outreach through webinars, newsletters, conferences and stakeholder events; showcase success stories.	Evaluate awareness campaigns; strengthen national visibility; develop sustainability and membership growth strategy.
8. Contribute to initiatives such as AfriGEO, GEO Climate Community activities, and the Intergovernmental Panel on Climate Change (IPCC).	Strengthen regional and international partnerships; participate in global EO initiatives; contribute technical expertise and knowledge products.	International collaboration funding, travel support, technical experts, partnership agreements.	Establish engagement with AfriGEO, GEO Climate Community and relevant IPCC activities; identify contribution opportunities.	Participate in regional and international meetings; contribute case studies, technical reports and collaborative projects.	Lead or co-lead regional initiatives where appropriate; contribute to international assessments; strengthen South Africa's role within GEO and AfriGEO networks.

SYNERGIES WITH GEO AND OTHER INTERNATIONAL INITIATIVES

This is well aligned with GEO's climate action goal. The use of EO to support effective assessment and monitoring of climate and related socio-economic variables; assessment and evaluation of different policy responses and actions; and tracking of the implementation of those actions and responses.

The CoP could collaborate with the following global bodies:

- AfriGEO Climate Action CoP
- Department of Forestry, Fisheries and the Environment
- UN framework Convention on climate change (UNFCCC)
- The intergovernmental panel on climate change (IPCC)
- The World Meteorological Organisation (WMO),
- The United Nations Environmental Programme (UN Environment)
- The Committee on Earth Observation Satellites (CEOS)

The CoP goals are also aligned with SDG13: Climate action: To strengthen the ability of SA and the broader region to deal with the impacts of climate change through appropriate new technologies.

THANK YOU

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