

Seasonal Climate Watch

February to June 2025

Date issued: 30 January 2025

1. Overview

The El Niño-Southern Oscillation (ENSO) has recently crossed the La Niña threshold and is predicted to remain on the boundary of this threshold for the next few months. Current predictions are still uncertain, with multiple global models predicting different direction (either strengthening the La Niña state or moving back to a Neutral state). For South Africa caution is still advised in using the ENSO in any important planning decisions as it seems to be currently very volatile and unpredictable. For South Africa time is running out as well for a potential La Niña to affect us as summer is coming to an end.

Current predictions indicate above-normal rainfall for most of the north-eastern parts of the country during the full forecast period. This is in stark contrast to previous predictions and is most likely due to the sudden decrease in temperatures in equatorial Pacific oceans, prompting a sharp increase in probability in getting above-normal rainfall. Below-normal rainfall is expected over the South-western parts of South Africa, however it is not their rainfall season yet, so no significant impact is expected.

Minimum and maximum temperatures are expected to be mostly above-normal countrywide for the forecast period. However, the southern coastal areas indicate that below-normal maximum temperatures are more likely throughout the summer period.

The SAWS will continue to monitor the weather and climate conditions and provide updates on any future assessments that may provide more clarity on the current expectations for the coming season.

2. South African Weather Service Prediction System

2.1. Ocean-Atmosphere Global Climate Model

The SAWS is currently recognised by the World Meteorological Organization (WMO) as a Global Producing Centre (GPC) for Long-Range Forecasts (LRF). This is owing to its local numerical modelling efforts, which involve the coupling of both the atmosphere and ocean components to form a fully interactive coupled modelling system, named the SAWS Coupled Model (SCM). The SCM is a first of its kind in both South Africa and the region. Below are the first season (FMA) predictions for rainfall (Figure 1) and average temperature (Figure 2).

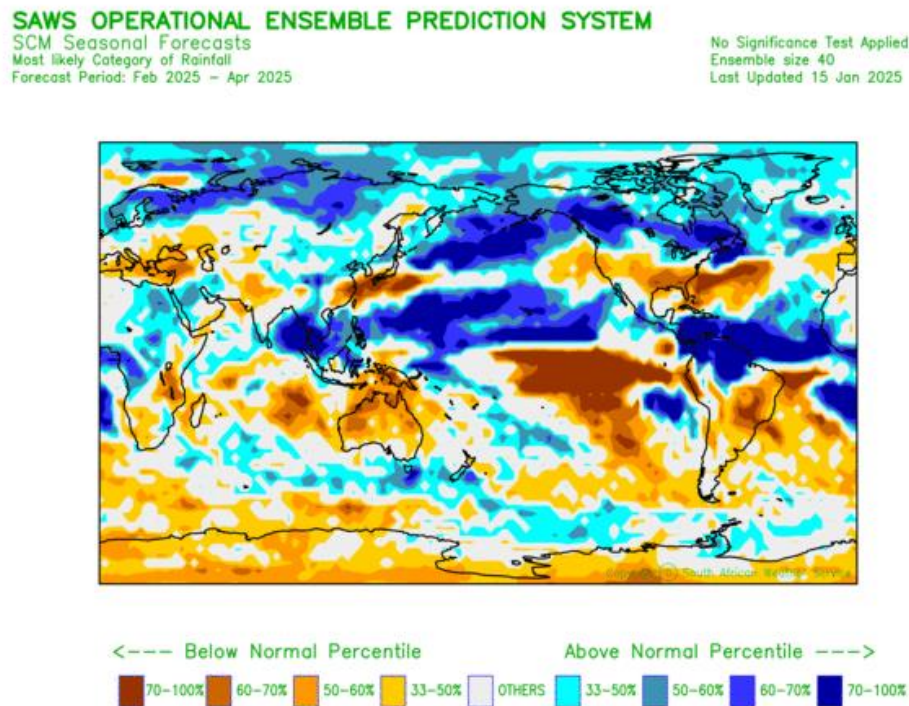


Figure 1: February-March-April, FMA (2025) global prediction for total rainfall probabilities

SAWS OPERATIONAL ENSEMBLE PREDICTION SYSTEM

SCM Seasonal Forecasts
Most likely Category of 2m Temperature
Forecast Period: Feb 2025 – Apr 2025

No Significance Test Applied
Ensemble size 40
Last Updated 15 Jan 2025

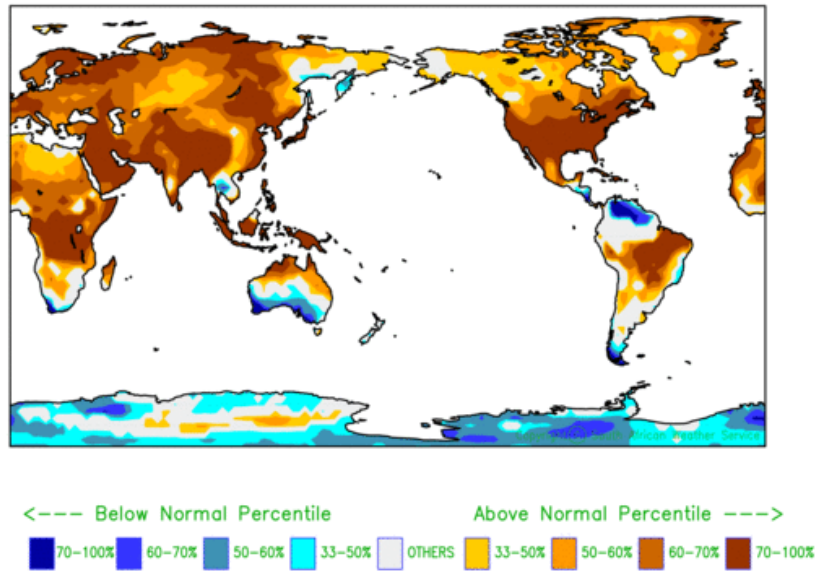


Figure 2: February-March-April, FMA (2025) global prediction for average temperature probabilities

2.2. Seasonal Forecasts for South Africa from the SAWS seasonal prediction system

The above-mentioned global forecasting systems' forecasts are combined with the GFDL-SPEAR and COLA-RSMAS-CCSM4 systems (part of the North American Multi-Model Ensemble System) for South Africa, as issued with the January 2025 initial conditions, and are presented below (District names can be seen in the appendix indicated in Figure A4):

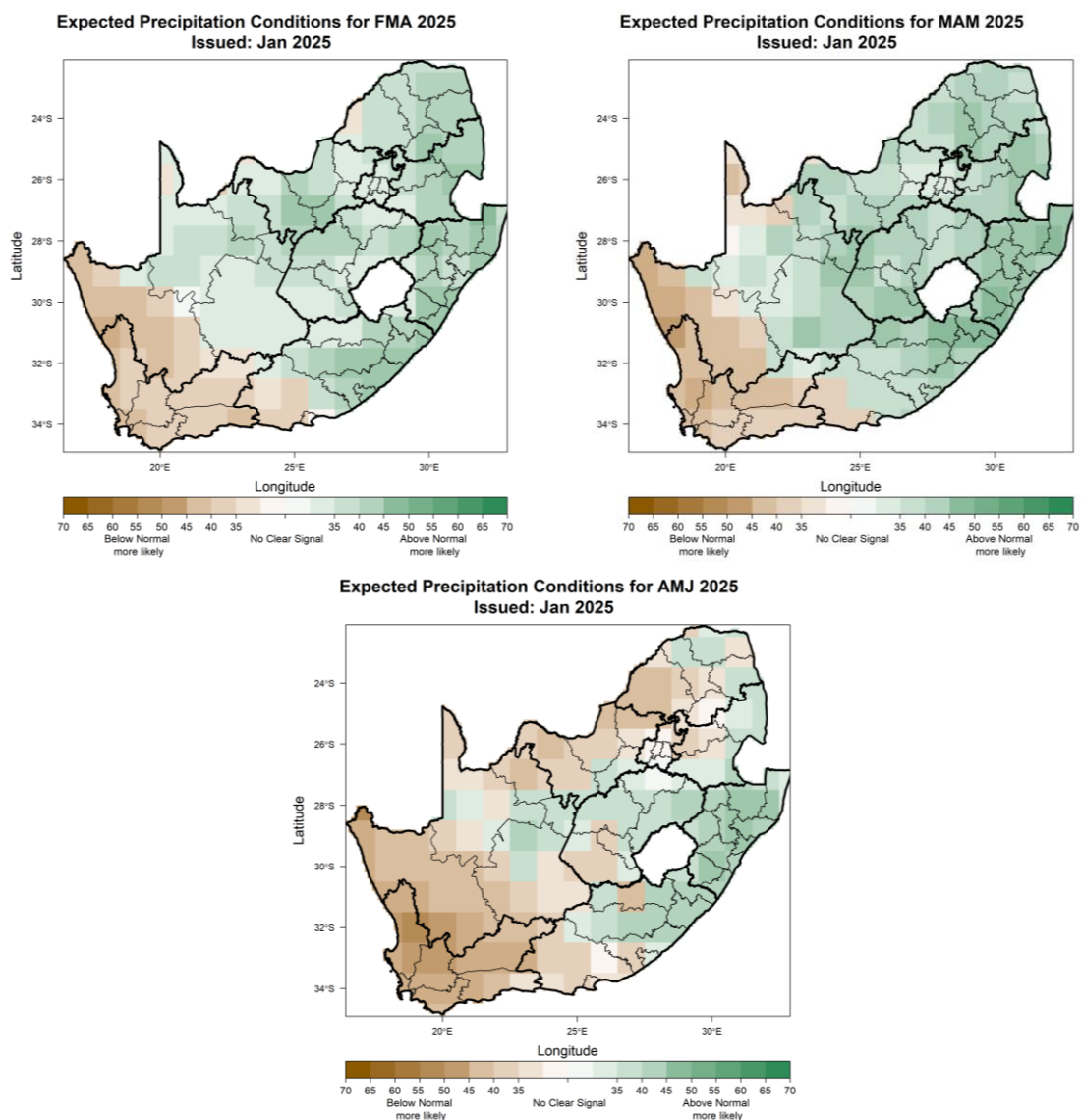


Figure 3: February-March-April 2025 (FMA; left), March-April-May 2025 (MAM; right), April-May-June 2025 (AMJ; bottom) seasonal precipitation prediction. Maps indicate the highest probability of the above-normal and below-normal categories. Please refer to appendix Figure A1 for forecast skill levels.

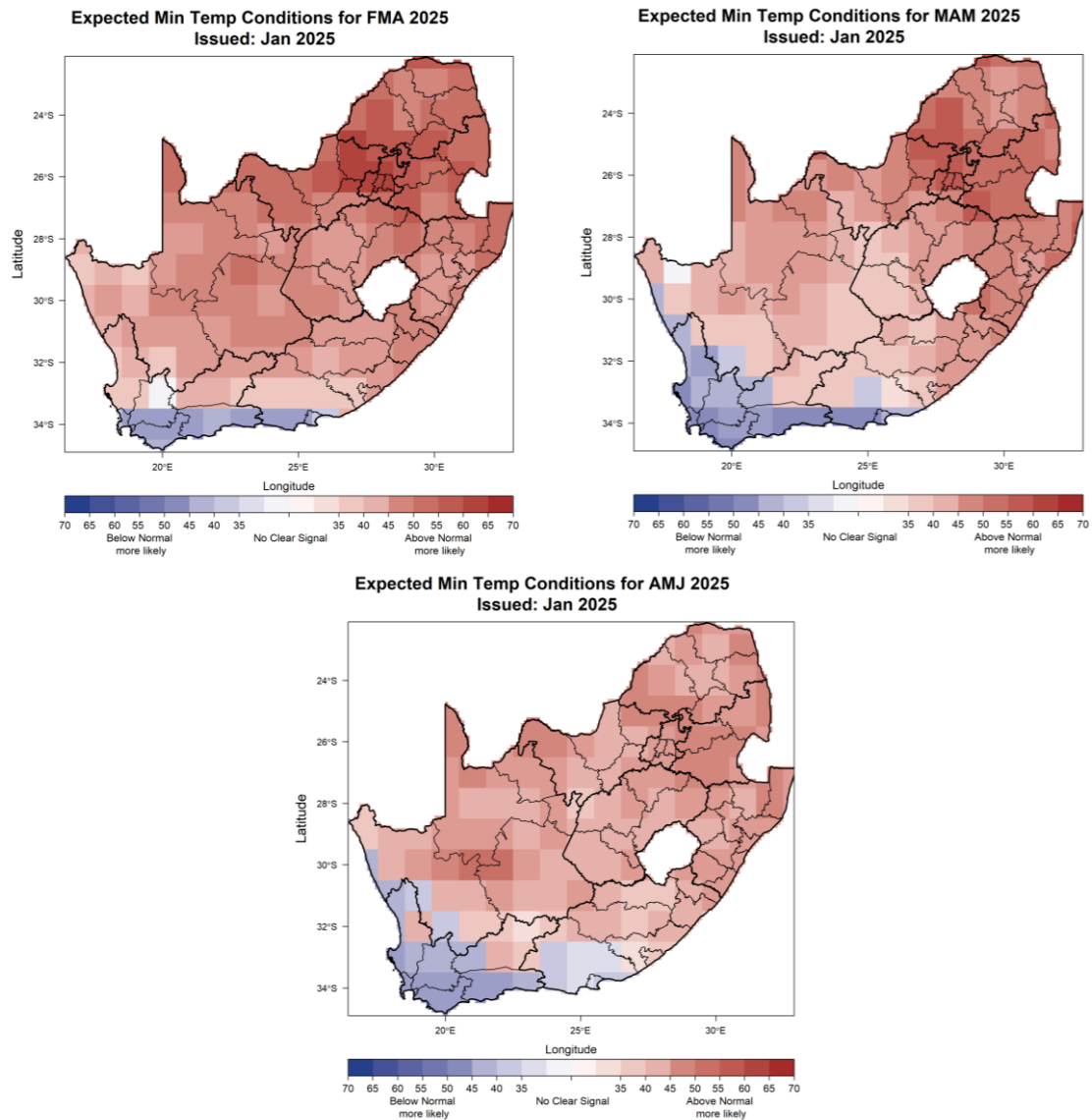


Figure 4: February-March-April 2025 (FMA; left), March-April-May 2025 (MAM; right), April-May-June 2025 (AMJ; bottom) seasonal minimum temperature prediction. Maps indicate the highest probability of the above-normal and below-normal categories. Please refer to appendix Figure A2 for forecast skill levels.

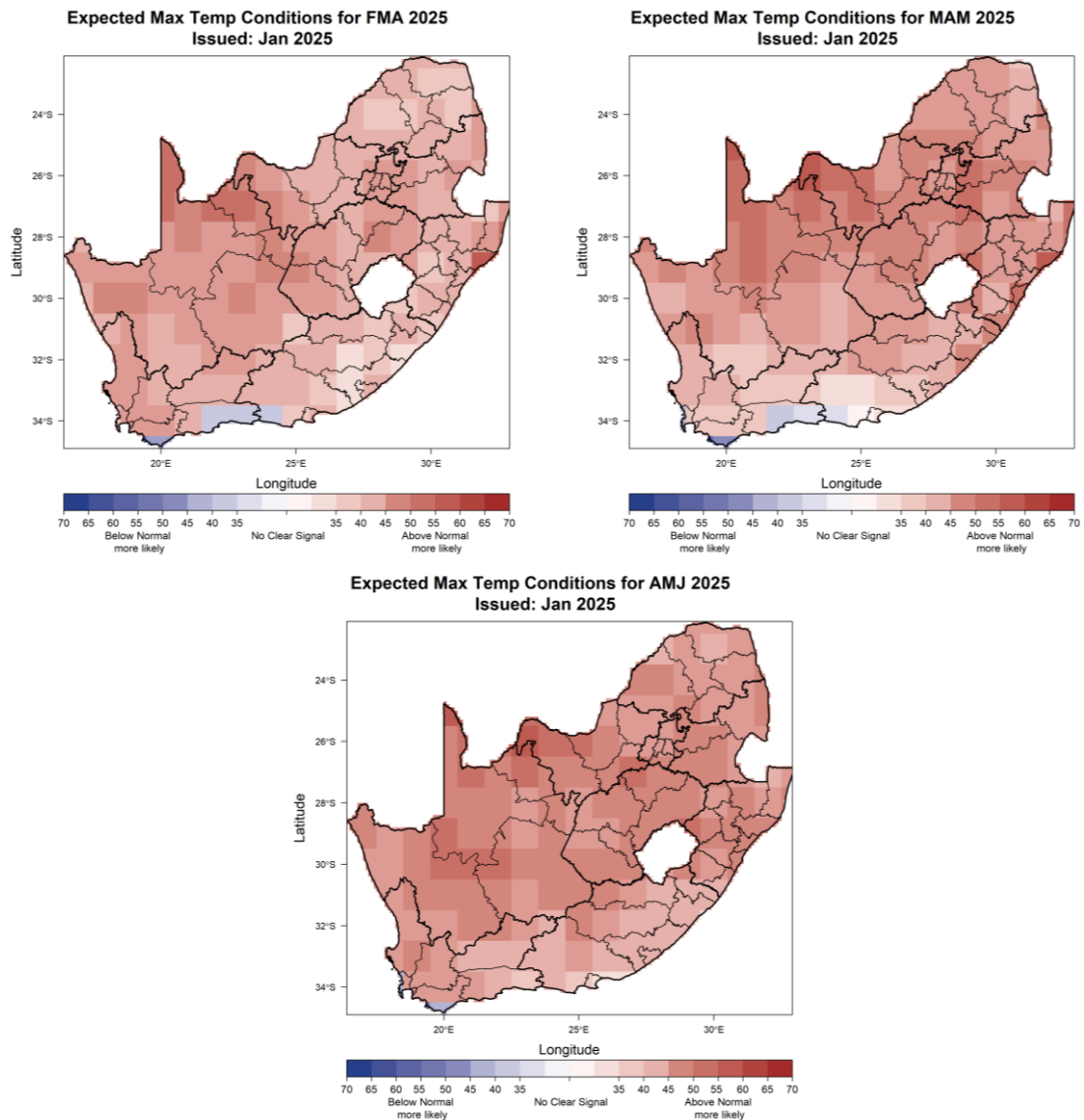


Figure 5: February-March-April 2025 (FMA; left), March-April-May 2025 (MAM; right), April-May-June 2025 (AMJ; bottom) seasonal maximum temperature prediction. Maps indicate the highest probability of the above-normal and below-normal categories. Please refer to appendix Figure A3 for forecast skill levels.

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum temperature) climatology for the February-March-April, March-April-May and April-May-June seasons. The rainfall and temperature climates are representative of the average rainfall and temperature conditions over a long period of time for the relevant 3-month seasons presented here.

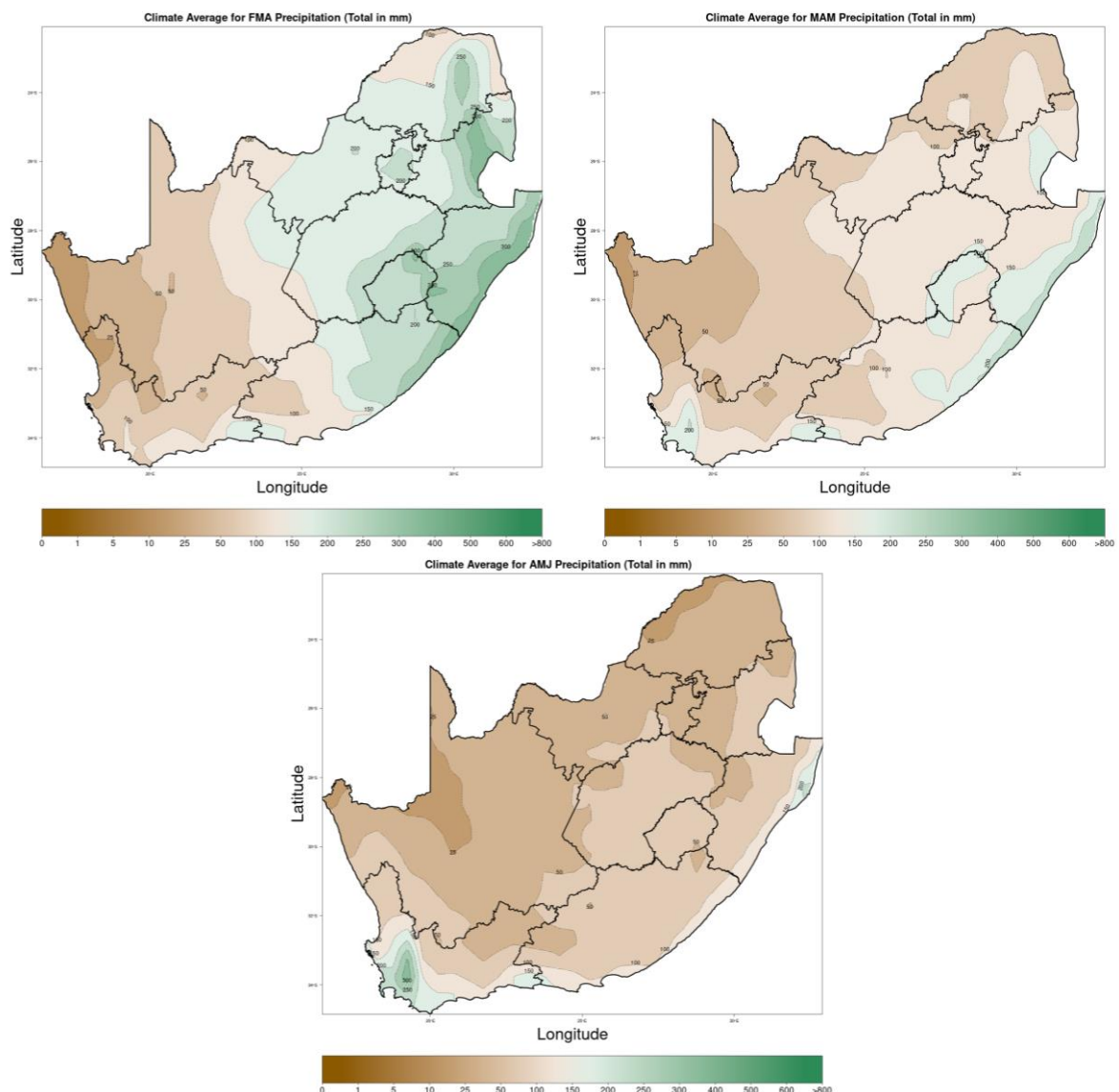


Figure 6: Climatological seasonal totals for precipitation during February-March-April (FMA; left), March-April-May (MAM; right) and April-May-June (AMJ; bottom).

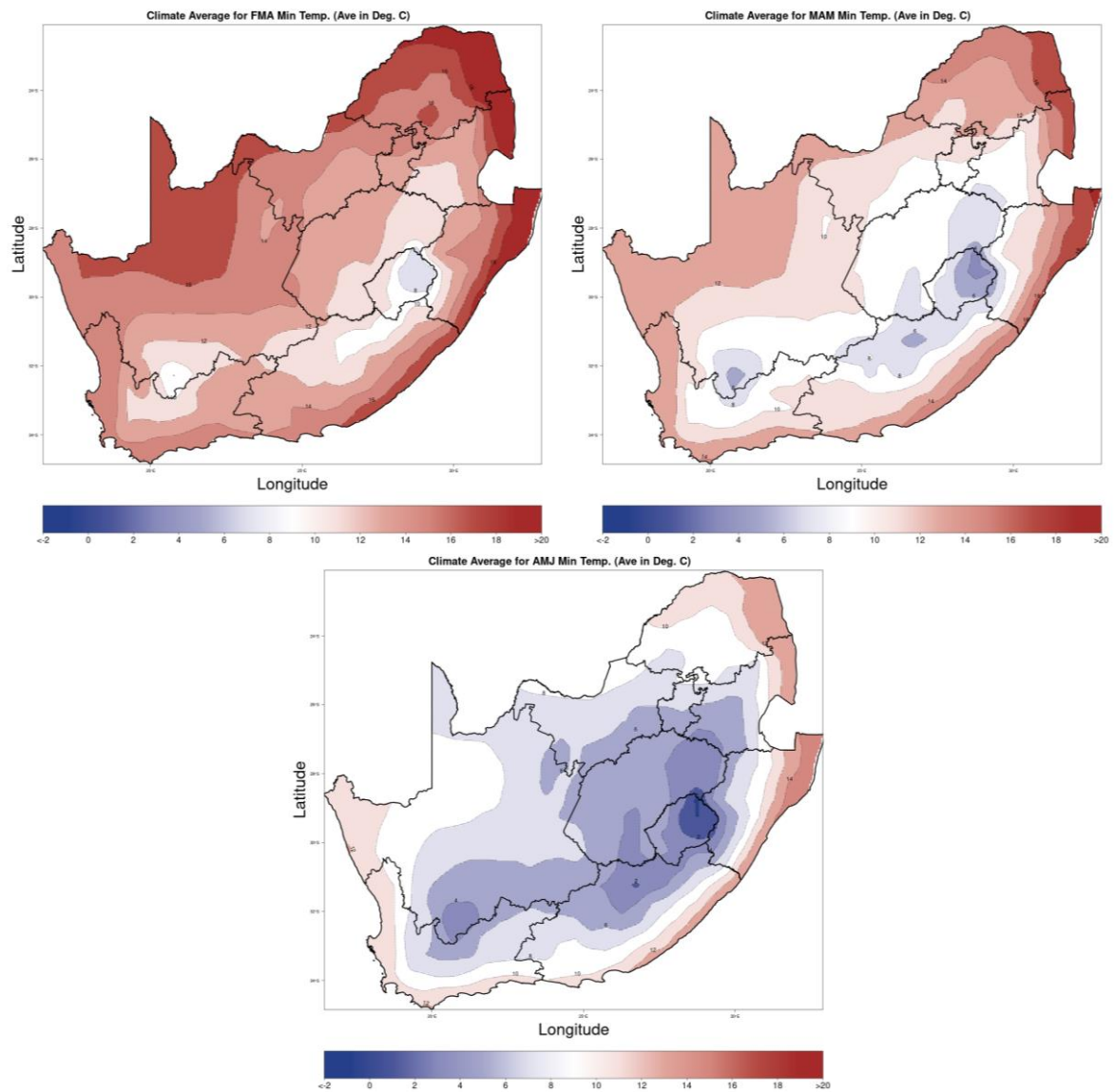


Figure 7: Climatological seasonal averages for minimum temperature during February-March-April (FMA; left), March-April-May (MAM; right) and April-May-June (AMJ; bottom).

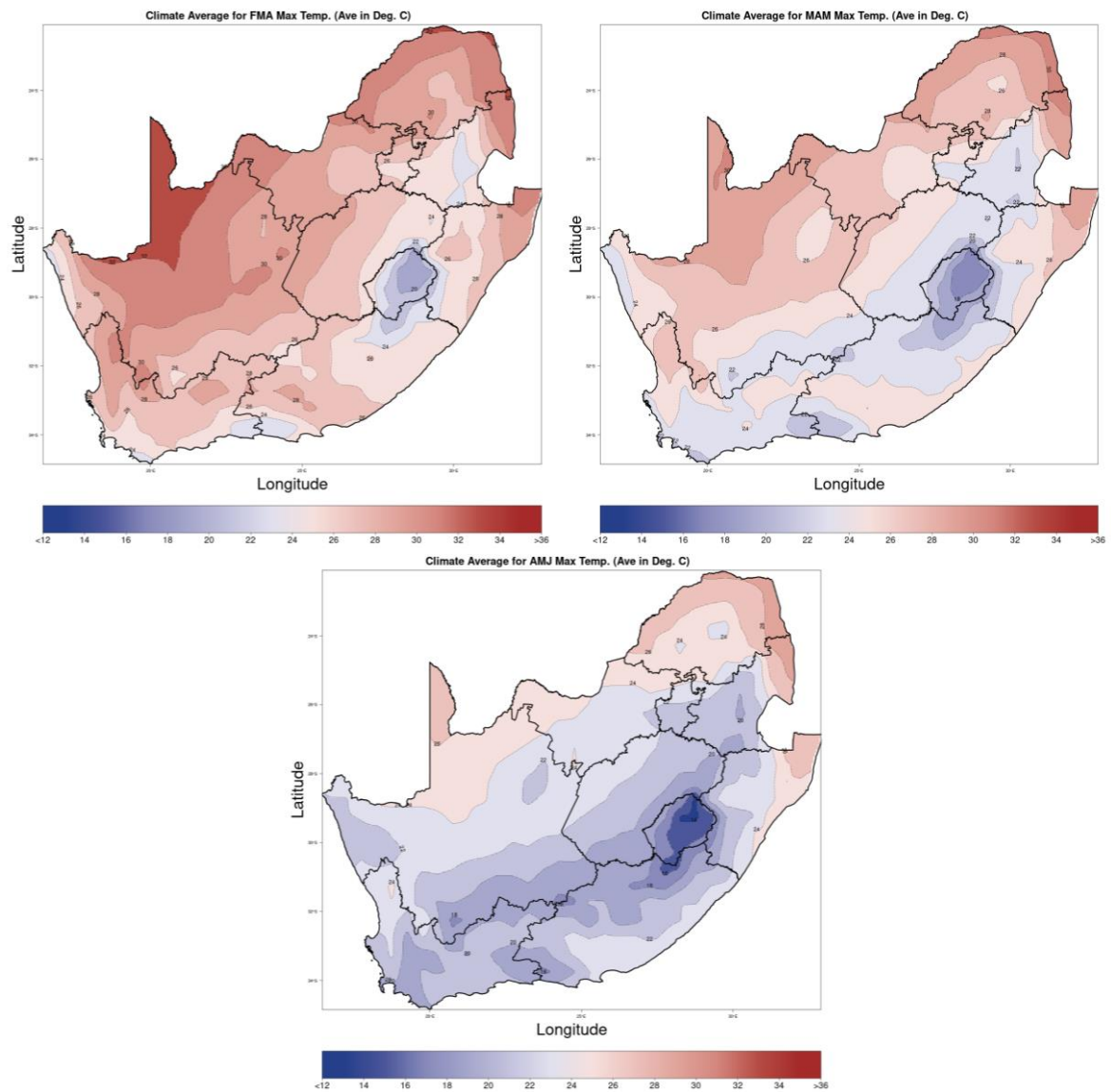


Figure 8: Climatological seasonal averages for maximum temperature during February-March-April (FMA; left), March-April-May (MAM; right) and April-May-June (AMJ; bottom).

3. Summary implications to various economic sector decision makers

Water and Energy

The expected above-normal rainfall conditions in most of the northeastern parts of the country are likely to increase water levels during the forecasted period. These conditions may result in flash floods in flood-prone regions. Additionally, maximum and minimum temperatures are expected to be mostly above normal during the forecast period and this may result in increased demand for cooling countrywide, except for the southern coastal areas where the expected below-normal maximum temperatures are expected. Relevant decision-makers are encouraged to take note of these possible outcomes and communicate with affected businesses and communities accordingly.

Health

The predicted higher temperatures in most parts of the country, except for the southern coastal areas, are expected to greatly increase the risk of heat exposure, potentially leading to heat stress and other heat-related health problems. Furthermore, this rise in temperatures may increase the risk of prolonged UV exposure, which may exceed level 3 on the World Meteorological Organization's UV Index. Such heightened UV exposure could result in a higher incidence of sunburn and other UV-related health issues. Additionally, elevated temperatures may accelerate the growth of food-borne pathogens, raising the risk of foodborne illnesses. The public is advised to maintain good food hygiene, adhere to local health guidelines under these conditions, and take necessary precautions to manage heat exposure. The predicted above-normal rainfall for most of the north-eastern parts of the country is likely to result in flash floods, particularly in flood-prone areas and regions with inadequate drainage systems. These conditions may increase the incidence of waterborne infections, water-related injuries, and drowning accidents, heightened by recreational water activities. It is recommended that the public take precautions and follow the advice and recommendations of local authorities. Local authorities are encouraged to monitor these risks, develop mitigation strategies, and enhance public health surveillance.

Agriculture

Above-normal rainfall is expected over most parts of the summer rainfall region, especially in the north-eastern parts of the country during the late summer and autumn seasons. These above-normal rainfall forecasts are likely to have a positive impact on crop and livestock production in these areas. However, there is an increased risk of water logging that can cause crop damage in areas receiving excessive rainfall. Therefore, the relevant decision-makers are encouraged to advise farmers in these regions to implement soil and water conservation measures, establish effective drainage systems, proper water harvesting and storage techniques, and other appropriate farming practices.

This forecast is updated monthly, and users are advised to monitor the updated forecasts, as there is a possibility for them to change, especially the longer lead-time forecasts. Moreover, farmers are advised to keep monitoring the weekly and monthly forecasts issued by the SAWS. Farmers are also advised to keep on monitoring advisories from the Department of Agriculture and make changes as required.

4. Contributing institutions and useful links

All the forecasts presented here are a result of the probabilistic prediction based on the ensemble members from the coupled climate model from the SAWS and two models from the NMME. Other useful links for seasonal forecasts are:

- <http://www.weathersa.co.za/home/seasonal> (Latest predictions from the SAWS for the whole of SADC)
- <https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/> (ENSO predictions from various centres)
- <https://iri.columbia.edu/our-expertise/climate/forecasts/seasonal-climate-forecasts/> (Copernicus Global forecasts)



Appendix – Verification

The following three figures show the Relative Operating Characteristic (ROC) scores for the relevant multi-model forecasts in the main document. The ROC scores are commonly used in seasonal forecasts to determine the areas where the forecasts perform well, so that the user can make more informed decisions on using the given forecast. As a general guideline, a score over 0,5 is technically better than chance, however, scores around and higher than 0,6 are considered to have significant skill to add confidence to the forecast.

From the figures there will be two ROC scores per season per variable, which indicate the score when a certain rainfall or temperature category is favoured. For example, if an area is favoured to receive above-normal rainfall, then the ROC score to look at would be the one calculated for the above-normal category (right side of the figures below). Also, make sure to look at the correct corresponding seasons indicated in the title of each map.

The aim of these maps is to add (or remove) confidence of a particular forecast over certain areas for specific seasons. Seasonal model skill over South Africa can be highly variable, highlighting the importance of knowing exactly where the forecasting system generally performs well or where it may struggle. It is important to note that the maps do not indicate where the current forecast will be correct or incorrect, but rather highlights confidence levels in the forecasting system.

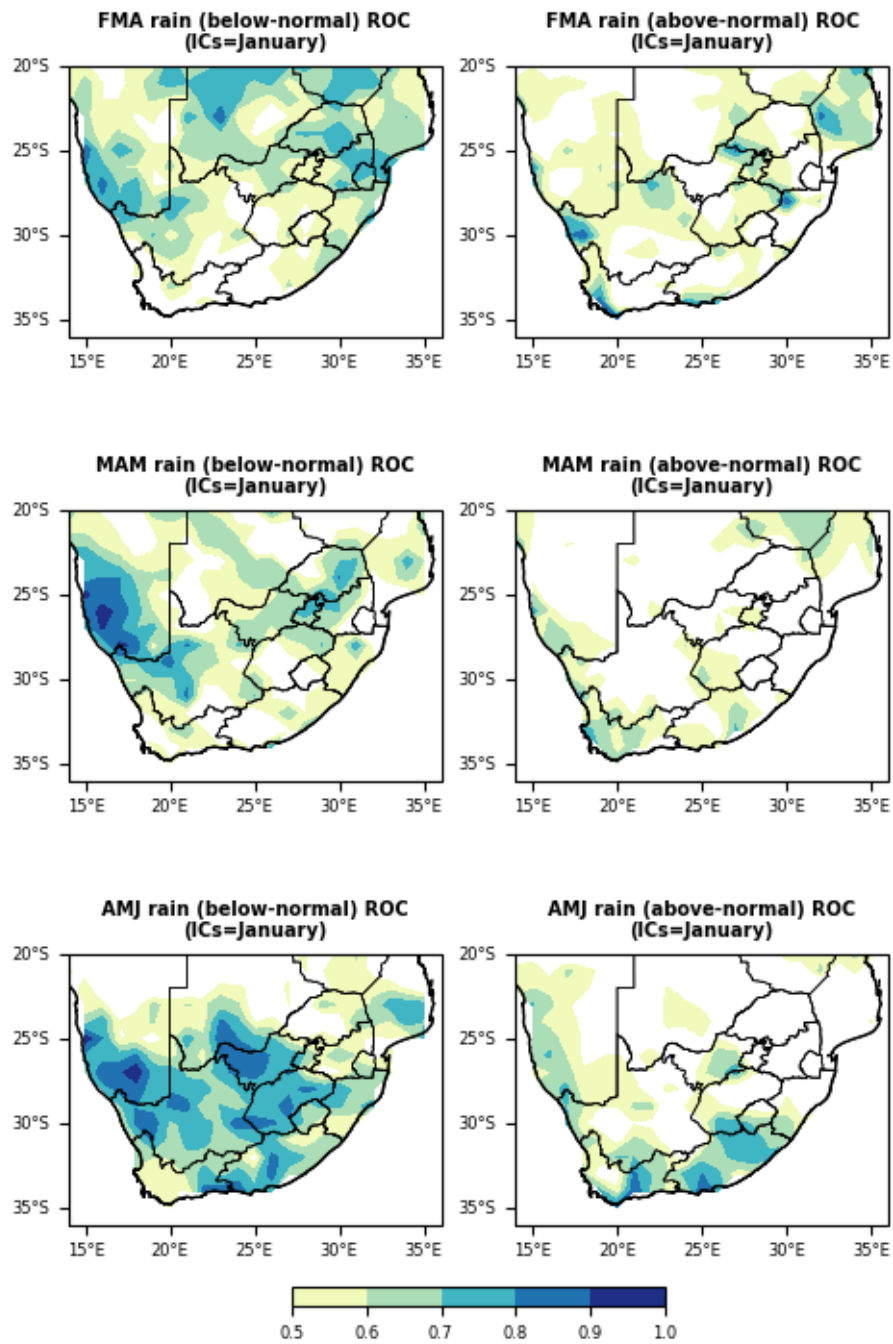


Figure A1: ROC scores for rainfall relevant to the current forecasts in Figure 3.

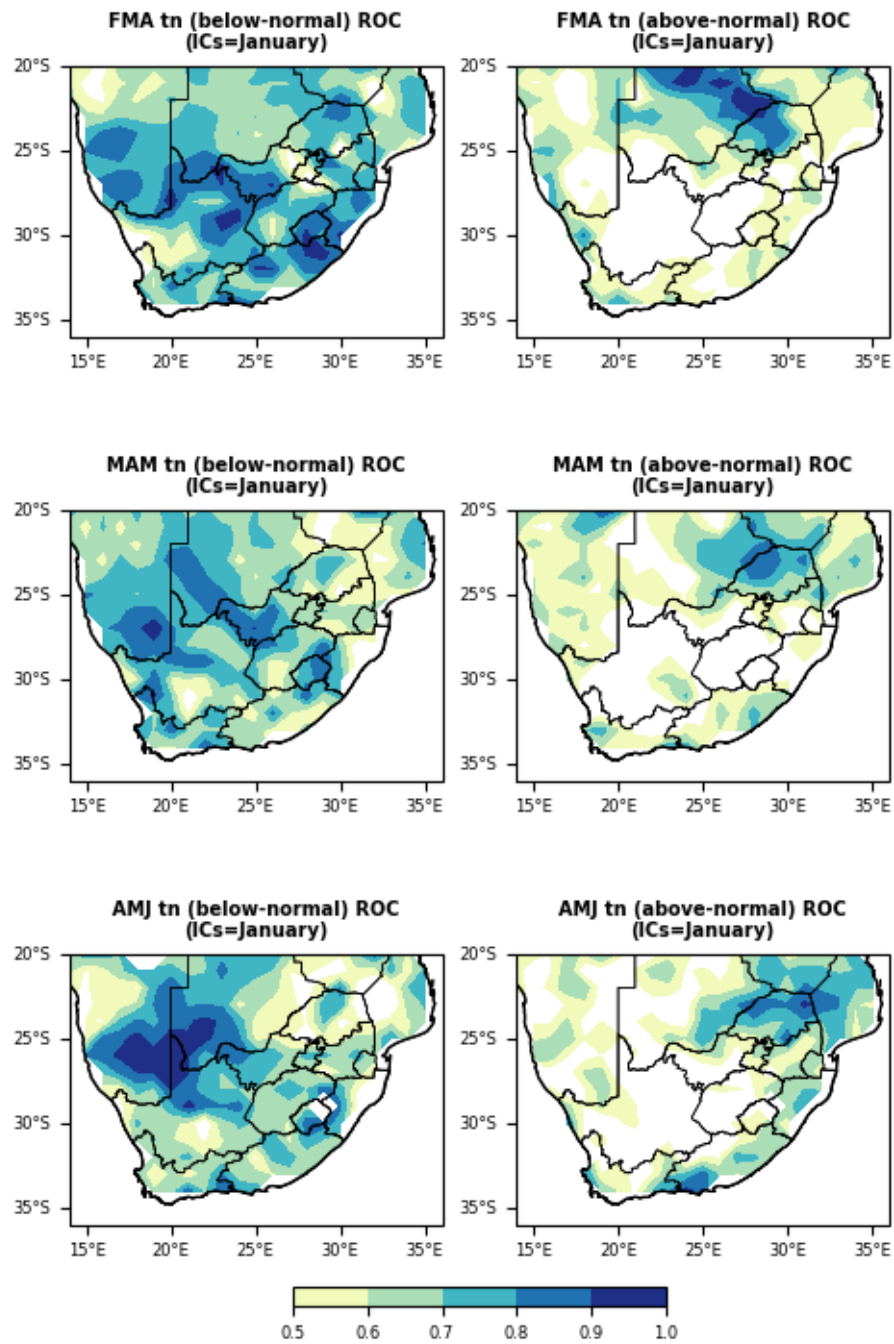


Figure A2: ROC scores for minimum temperatures relevant to the current forecasts in Figure 4.

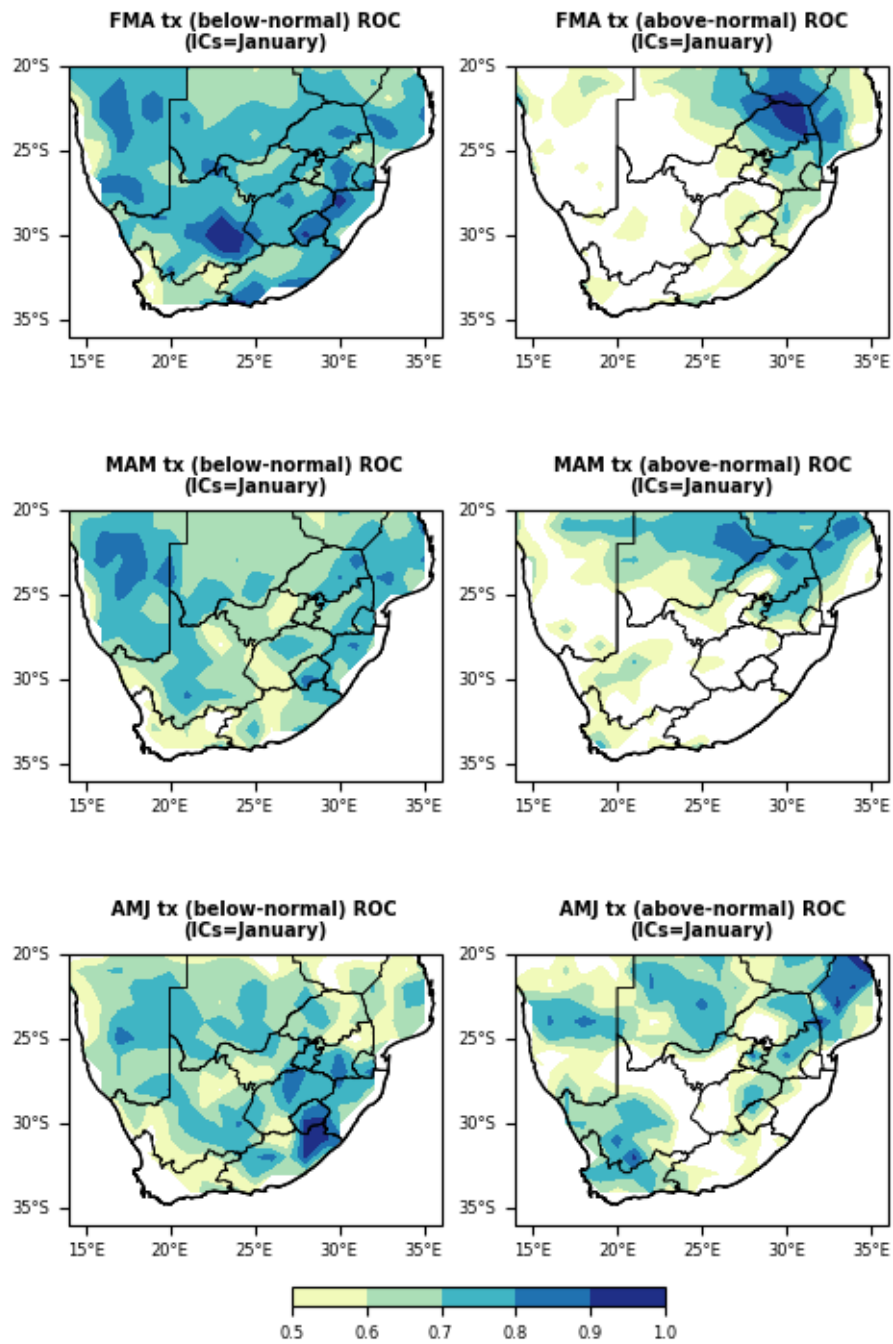


Figure A3: ROC scores for maximum temperatures relevant to the current forecasts in Figure 5.

Appendix – District Information

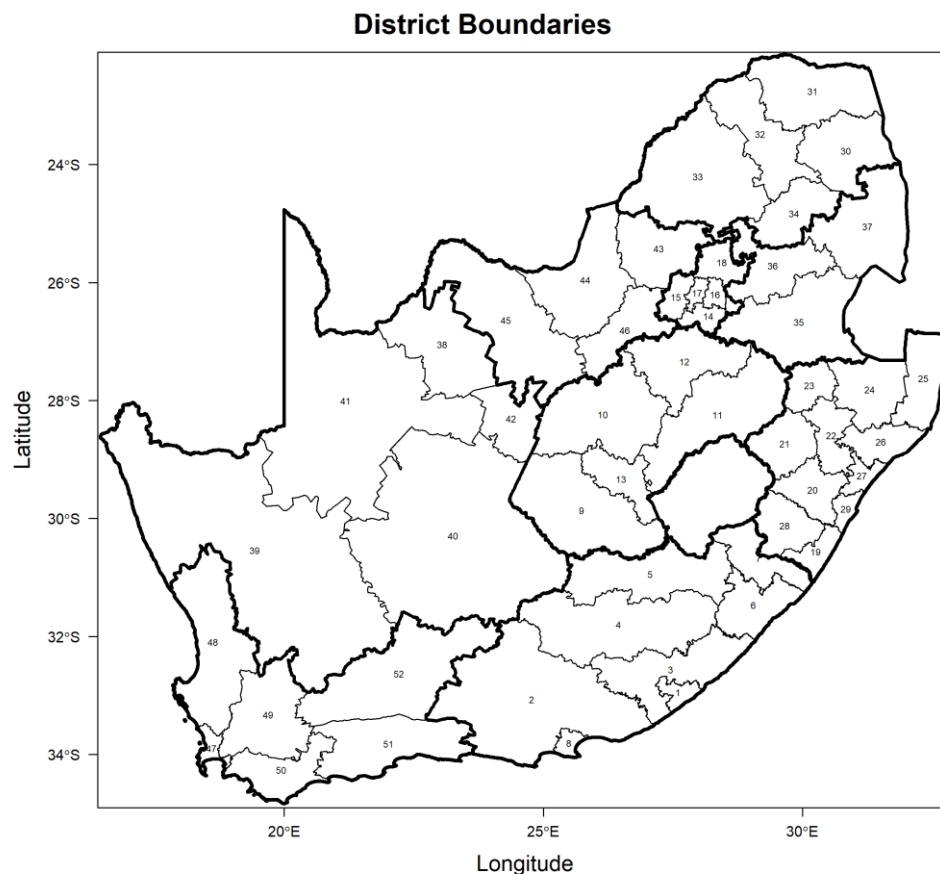


Figure A4: Local District Map with numbers corresponding to the table below with names.

Table with District Names and Numbers

Nr.	District Name	Nr.	District Name	Nr.	District Name	Nr.	District Name
1	Buffalo City	16	Ekurhuleni	31	Vhembe	46	Dr Kenneth Kaunda
2	Sarah Baartman	17	City of Johannesburg	32	Capricorn	47	City of Cape Town
3	Amathole	18	City of Tshwane	33	Waterberg	48	West Coast
4	Chris Hani	19	Ugu	34	Sekhukhune	49	Cape Winelands
5	Joe Gqabi	20	Umgungundlovu	35	Gert Sibande	50	Overberg
6	O.R.Tambo	21	Uthukela	36	Nkangala	51	Garden Route
7	Alfred Nzo	22	Umzinyathi	37	Ehlanzeni	52	Central Karoo
8	Nelson Mandela Bay	23	Amajuba	38	John Taolo Gaetsewe		
9	Xhariep	24	Zululand	39	Namakwa		
10	Lejweleputswa	25	Umkhanyakude	40	Pixley ka Seme		
11	Thabo Mofutsanyane	26	King Cetshwayo	41	Z F Mgcawu		
12	Fezile Dabi	27	iLembe	42	Frances Baard		
13	Mangaung	28	Harry Gwala	43	Bojanala		
14	Sedibeng	29	eThekweni	44	Ngaka Modiri Molema		
15	West Rand	30	Mopani	45	Dr Ruth Segomotsi Mompati		