Seasonal Climate Watch

November 2022 to March 2023

Date issued: Nov 01, 2022

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a La Niña state, and forecasts indicate that it will likely remain in this state during the remainder of 2022 and early 2023. The presence of a La Niña event usually has its strongest impact on rainfall during the mid-summer months. With the continued strengthening of the La Niña event, there is a high chance that it will have its usual effect on South Africa, which is generally for above-normal rainfall and below-normal temperatures over the summer rainfall areas.

The multi-model rainfall forecast indicates above-normal rainfall for most parts of the country for all predicted seasons. Minimum temperatures are still expected to be above-normal countrywide, however, maximum temperatures are expected to be below-normal over large parts of the country during early- (Nov-Dec-Jan), mid- (Dec-Jan-Feb) and late-summer (Jan-Feb-Mar).

The South African Weather Service (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

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 coupling of both the atmosphere and ocean components to form a fully interactive coupled modelling system, named the SAWS Coupled Model (SCM), the first of its kind in both South Africa and the region. Below are the first season (November-December-January) predictions for rainfall (Figure 1) and average temperature (Figure 2).

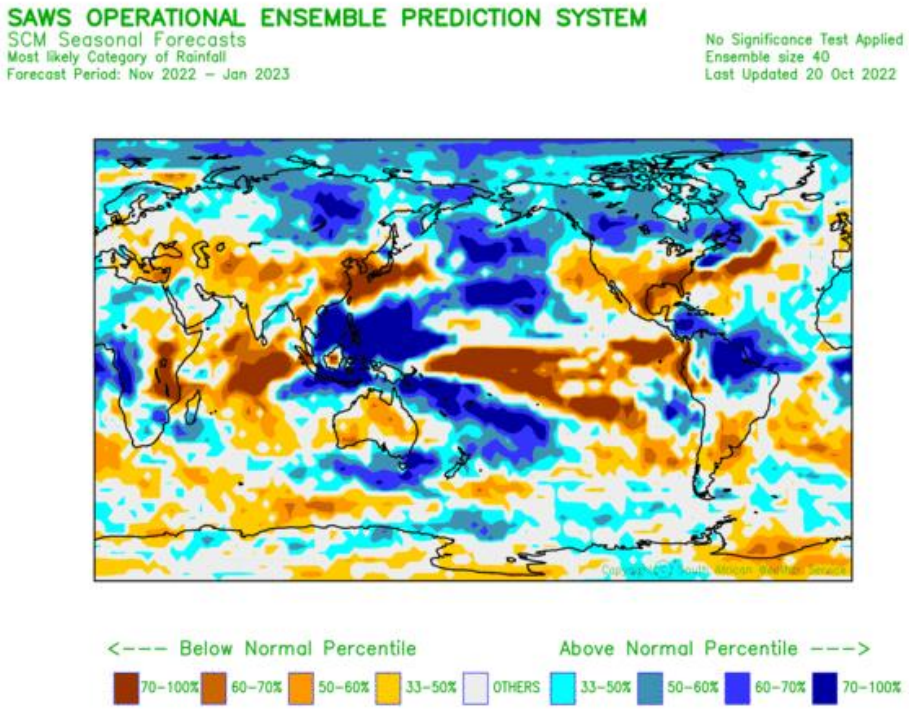

Figure 1: November-December-January, NDJ (2022) global prediction for total rainfall probabilities

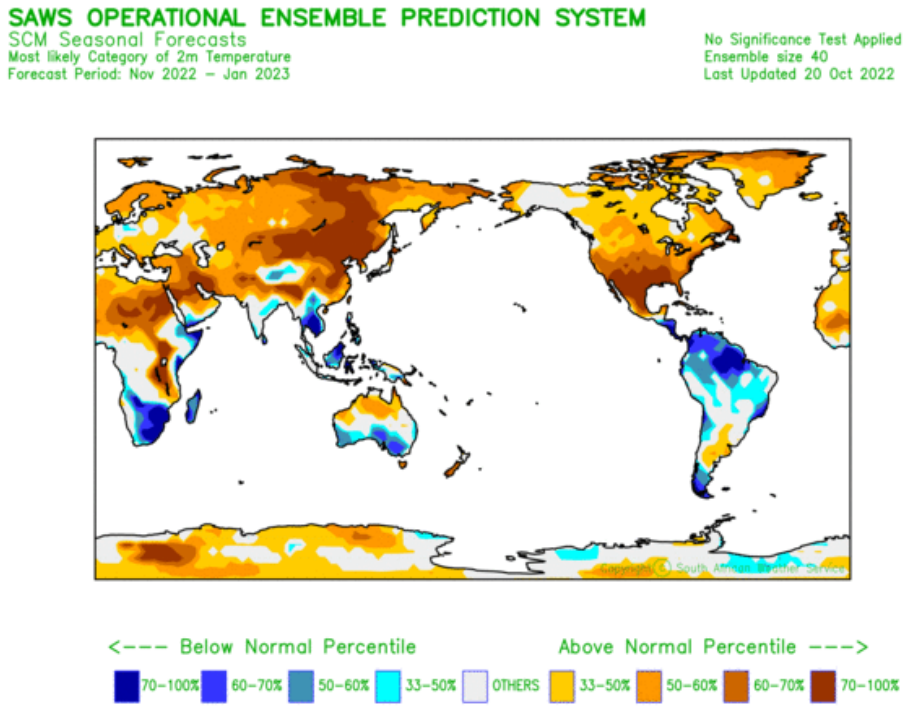

Figure 2: November-December-January, NDJ (2022) global prediction for average temperature probabilities

2.2. Seasonal Forecasts for South Africa from the SAWS OAGCM

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 October 2022 initial conditions, and are presented below for South Africa.

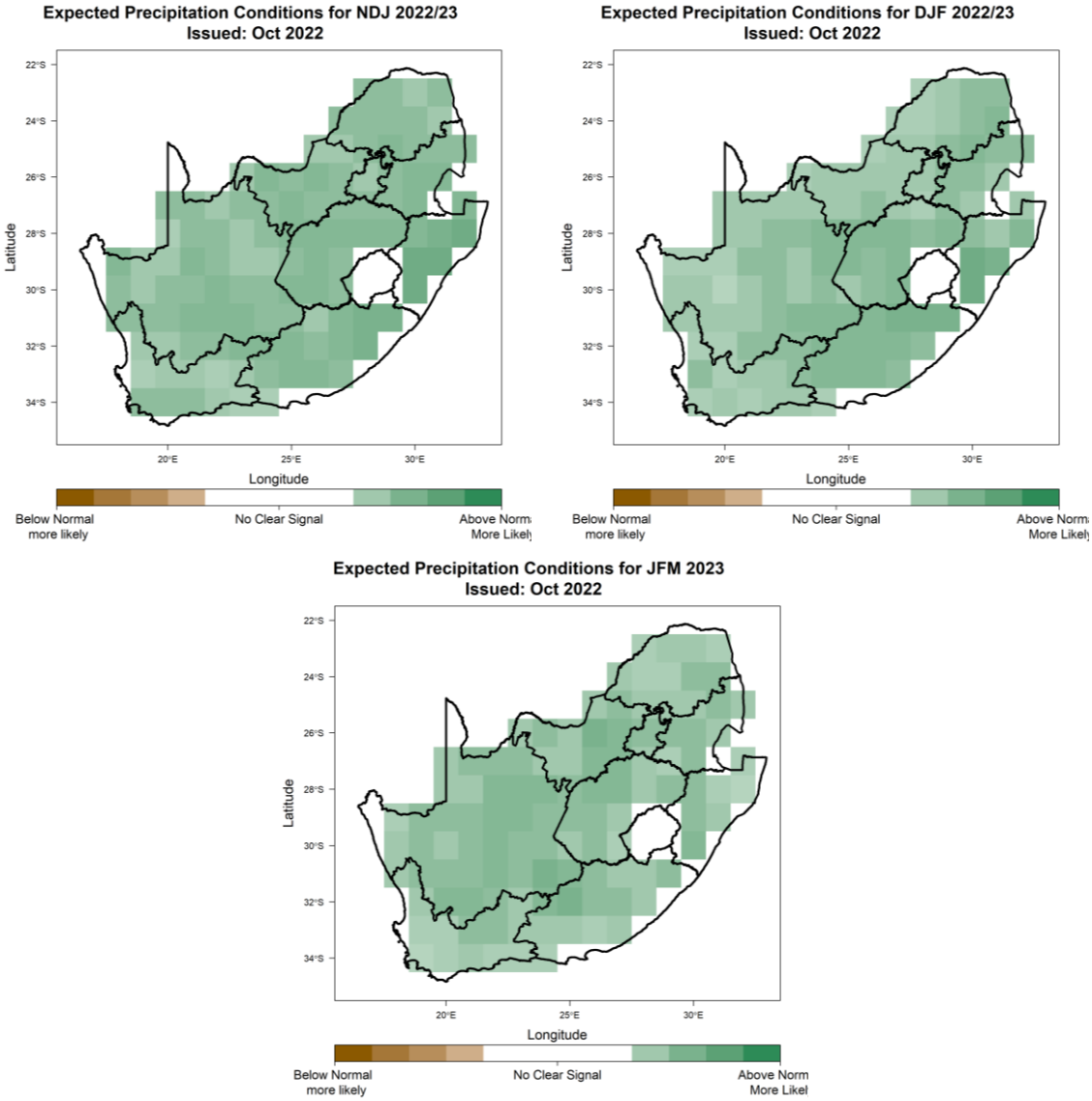

Figure 3: November-December-January 2022/23 (NDJ; left), December-January-February 2022/23 (DJF; right), January-February-March 2023 (JFM; bottom) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely above-normal, near-normal and below-normal

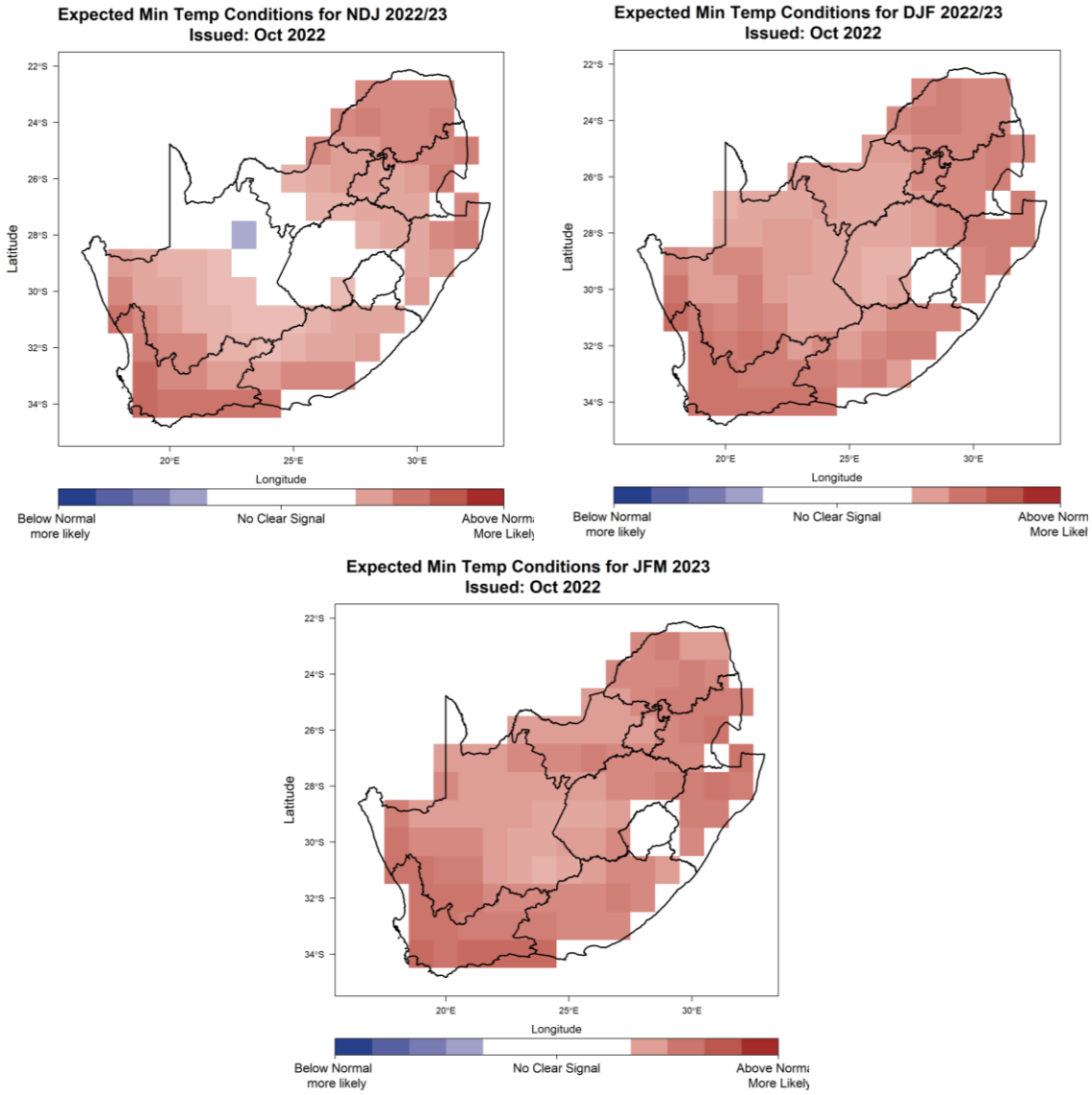

Figure 4: November-December-January 2022/23 (NDJ; left), December-January-February 2022/23 (DJF; right), January-February-March 2023 (JFM; bottom) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely above-normal, near-normal and below-normal

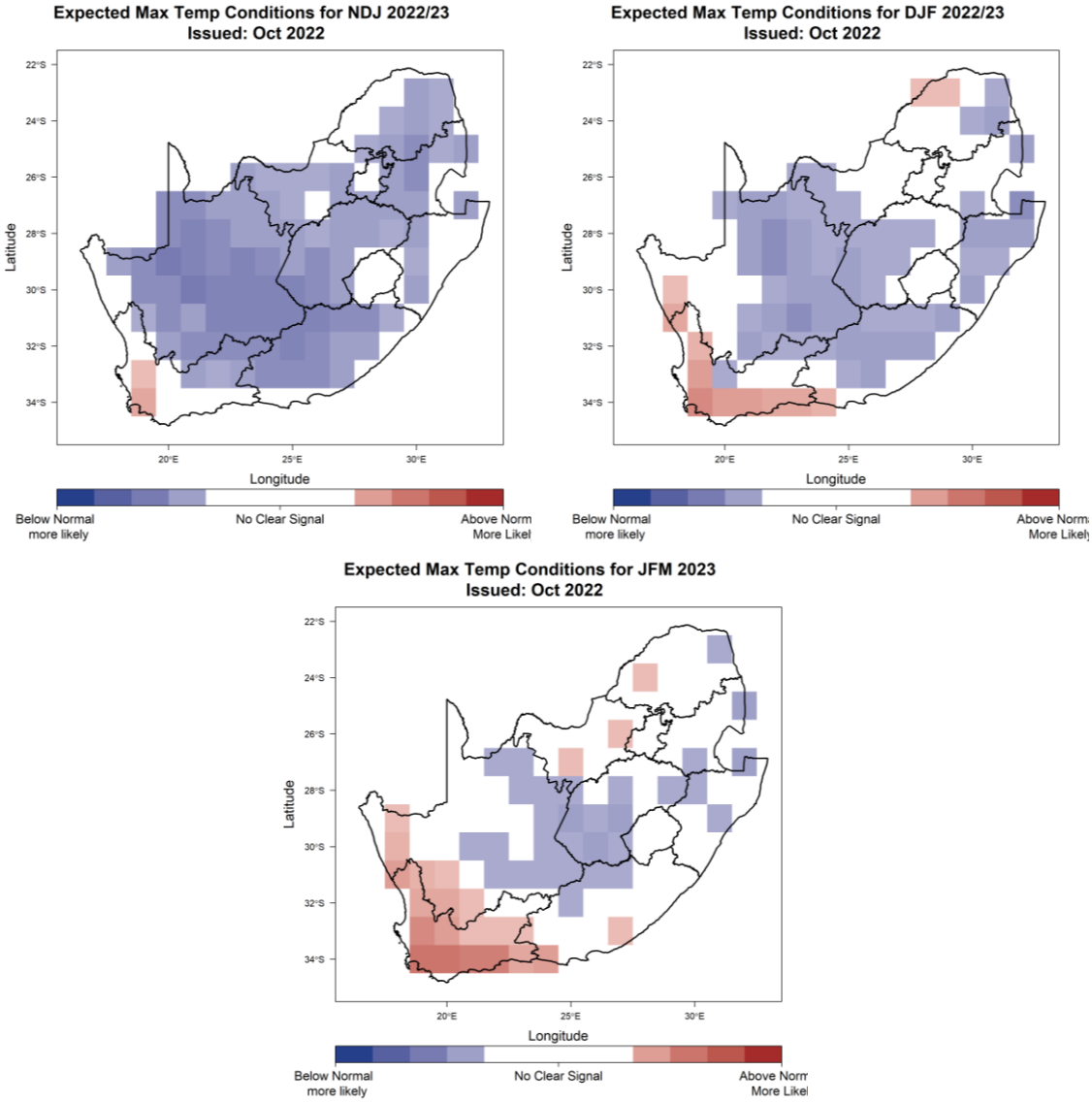

Figure 5: November-December-January 2022/23 (NDJ; left), December-January-February 2022/23 (DJF; right), January-February-March 2023 (JFM; bottom) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely above-normal, near-normal and below-normal

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum temperature) climatology for the early- (Nov-Dec-Jan), mid- (Dec-Jan-Feb) and late-summer (Jan-Feb-Mar). 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.

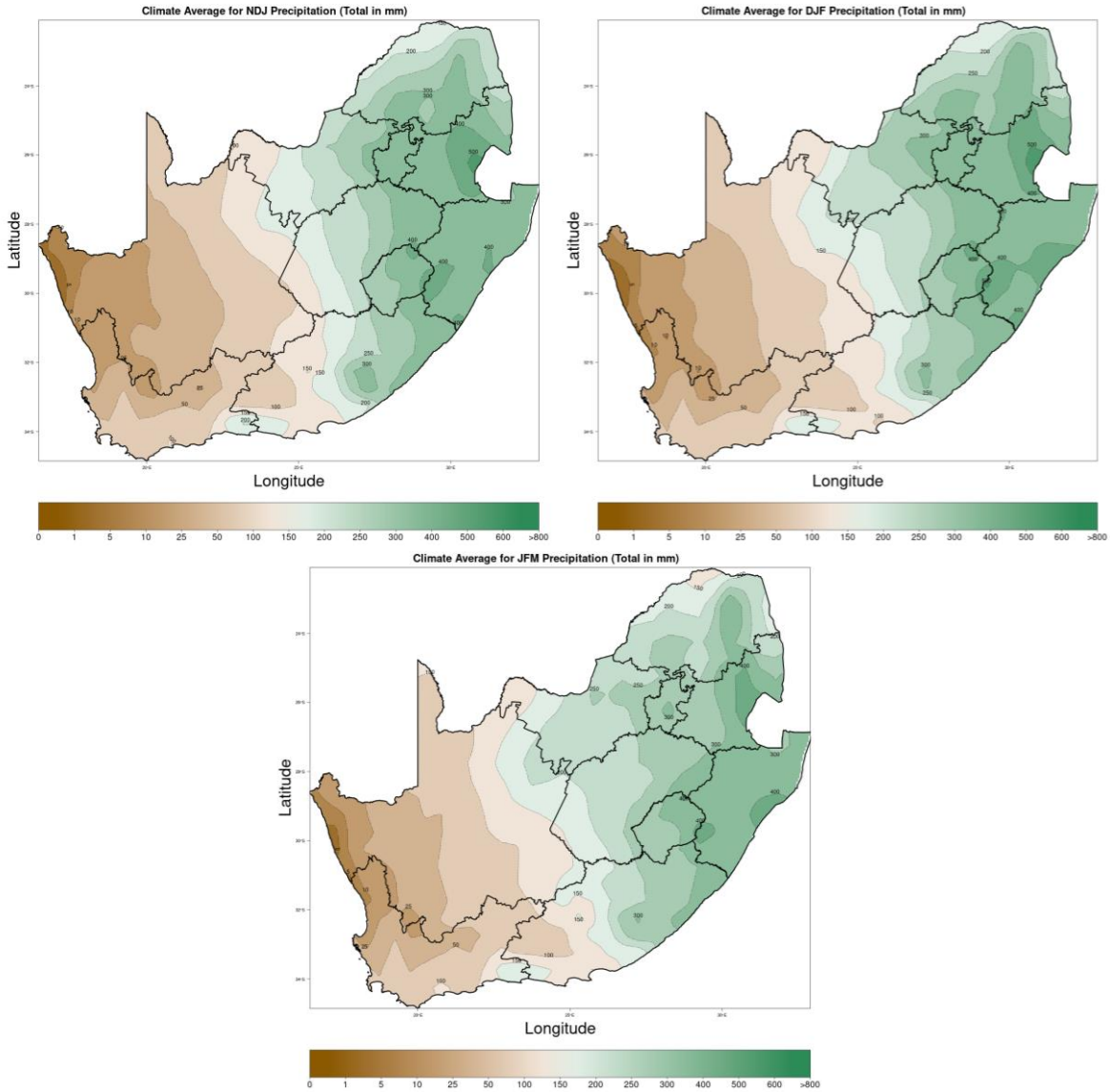

Figure 6: Climatological seasonal totals for precipitation during November-December-January (NDJ; left), December-January-February (DJF; right) and January-February-March (JFM; bottom)

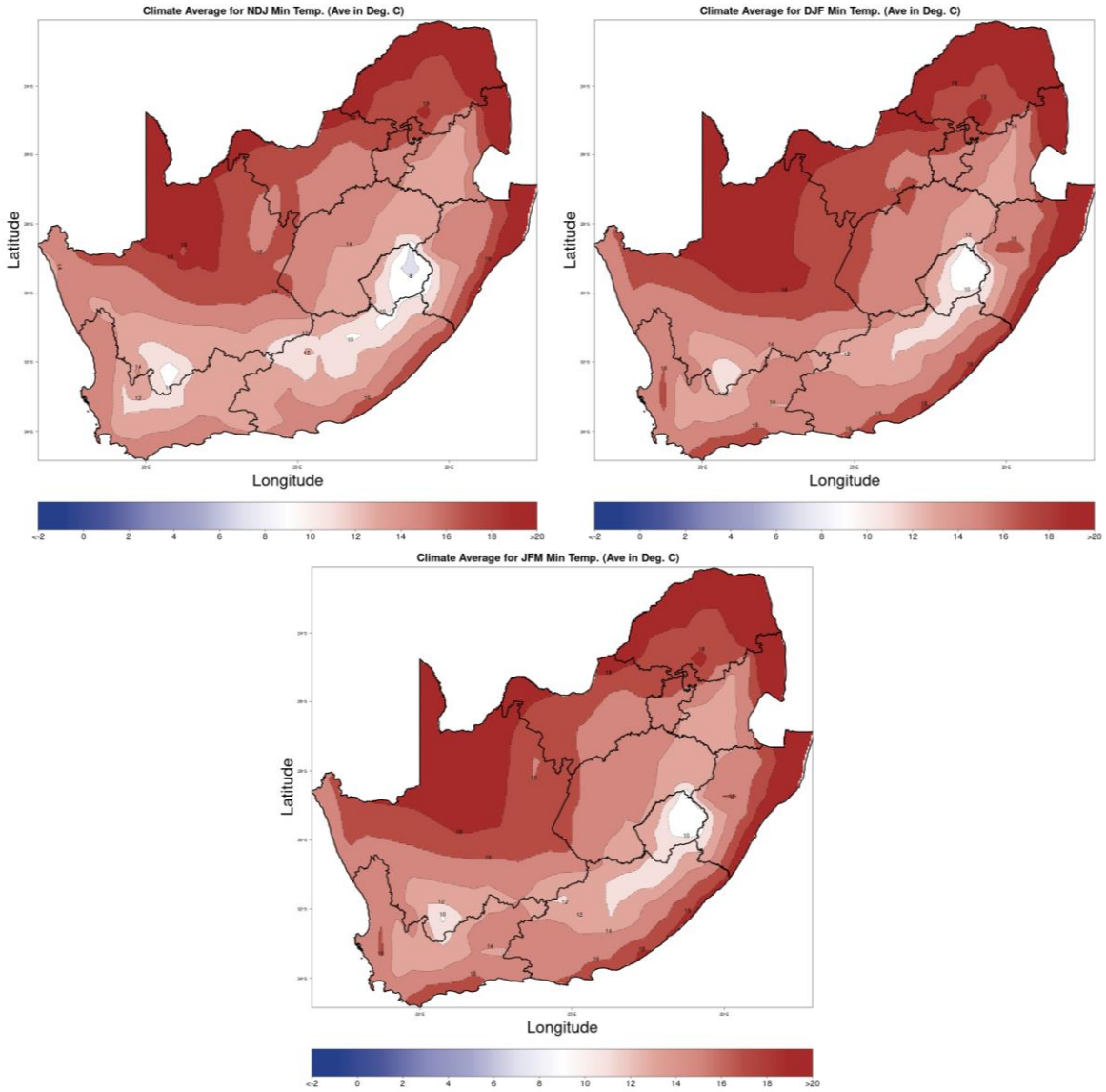

Figure 7: Climatological seasonal averages for minimum temperature during November-December-January (NDJ; left), December-January-February (DJF; right) and January-February-March (JFM; bottom)

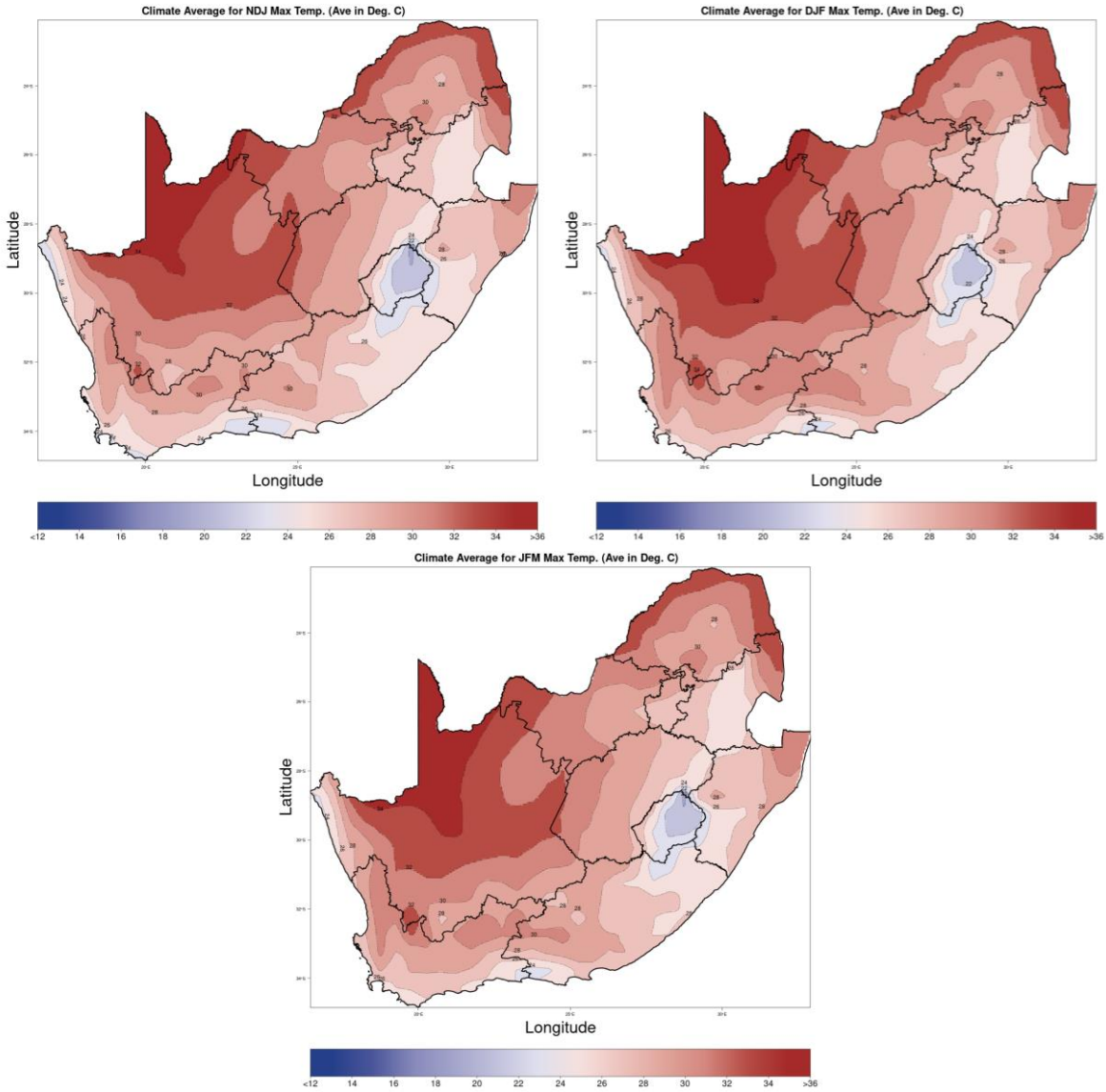

Figure 8: Climatological seasonal averages for maximum temperature during November-December-January (NDJ; left), December-January-February (DJF; right) and January-February-March (JFM; bottom)

3. Summary implications to various economic sector decision makers

Water and Energy

The expected above-normal rainfall for most parts of the country across the predicted seasons is likely to increase dam water levels, particularly in summer rainfall regions such as in Mpumalanga and the Free State, where a slight decline in water levels was reported lately. These conditions are expected to benefit areas such as KwaZulu-Natal and Gauteng, where water levels have remained stable. Above-normal rainfall conditions might also heighten chances of flash flooding in regions prone to floods.

Above-normal minimum temperatures expected across the country, and below-normal maximum temperatures over most parts of the country, are likely not impact the cooling/heating demand except for parts of the Western and Northern Cape, where the above-normal temperatures are expected during mid- and late-summer and will likely increase the demand for cooling. Relevant decision-makers should take note of the above-mentioned potential outcomes and advise the affected businesses and communities accordingly.

Health

The above-normal rainfall forecast for most parts of the country for all predicted seasons may increase the danger of flash floods in some regions, particularly in flood-prone areas and regions with poor drainage systems. These wet conditions may increase waterborne infections and water-related injuries and accidents. It is recommended that members of the public take precautions and abide by the advice and recommendations from local authorities.

The expected minimum summer temperatures may result in warmer conditions, particularly at night, for most of the country. The ultraviolet radiation (UV) levels during this reporting period are expected to be very high, thus the risk of UV-related health adverse effects is imminent, necessitating the public to take appropriate sun protection measures such as seeking shade, wearing clothing that covers the body, and applying sunscreen, especially at midday. The public is urged to take precautions and adhere to local authorities' recommendations and guidelines.

Agriculture

Above-normal rainfall is expected over most parts of the country during the early- mid- to late summer seasons, which is likely to bring positive impacts for crop and livestock production. Therefore, the relevant decision-makers are encouraged to advise farmers to prepare land for planting, to practice measures such as soil and water conservation, proper water harvesting and storage, establishing good drainage systems, 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 South African Weather Service (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 South African Weather Service and two models from the NMME. Other useful links for seasonal forecasts are:

- http://www.weathersa.co.za/home/seasonal (Latest predictions from 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)