Seasonal Climate Watch

May to September 2023

Date issued: May 08, 2023

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a Neutral state, and forecasts indicate that it will likely remain in a neutral state during winter, with predictions indicating a higher probability to switch to an El Niño state during late-spring (Jul-Aug-Sep). However, ENSO's impact is limited for the coming seasons until the next summer season which may be impacted by an El Nino state if early predictions are correct. Caution is advised however as changes in the ENSO prediction may change during winter and only monitoring is advised at this stage.

The multi-model rainfall forecast indicates above-normal rainfall for most of the country during early winter. Of importance for the next two seasons, mid-winter (Jun-Jul-Aug) and late-winter (Jul-Aug-Sep), there is below-normal rainfall expected for the south-west and above-normal rainfall for the southern coastal areas. As most of the rainfall during winter is expected in the far south-west, the below-normal rainfall conditions in those areas are expected to have a significant impact.

Minimum and maximum temperatures are expected to be mostly above-normal countrywide for the forecast period.

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 (May-June-July) predictions for rainfall (Figure 1) and average temperature (Figure 2).

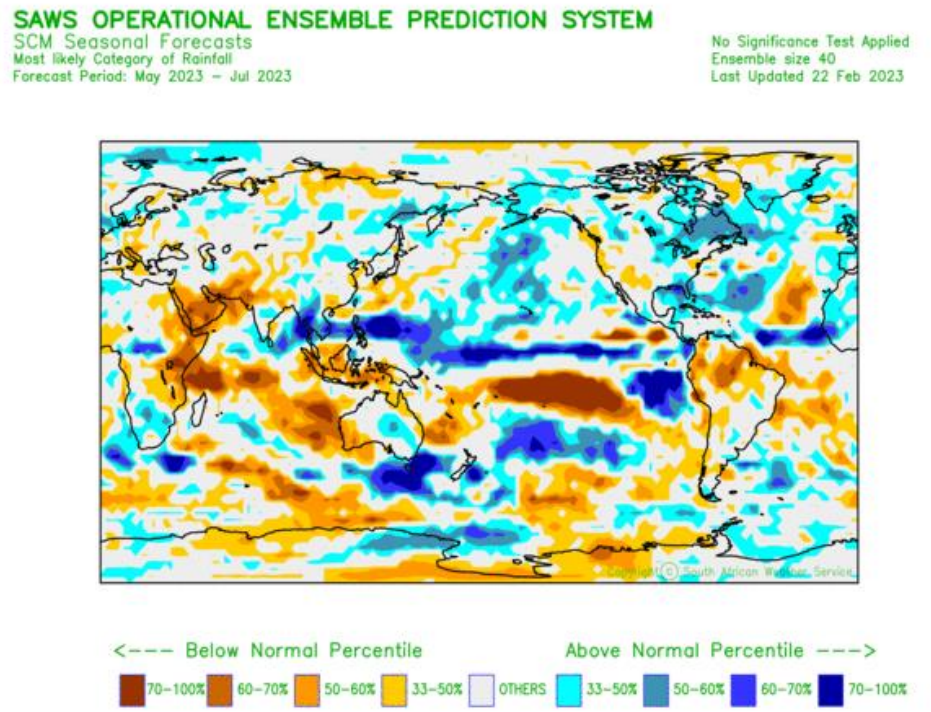

Figure 1: May-June-July, MJJ (2023) global prediction for total rainfall probabilities

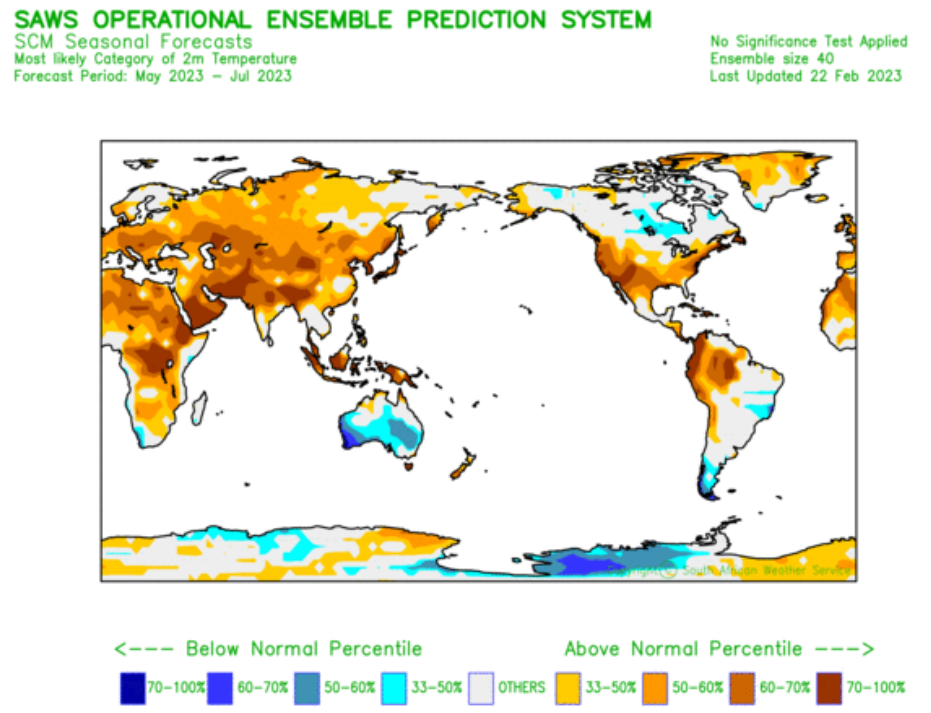

Figure 2: May-June-July, MJJ (2023) global prediction for average temperature probabilities

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 April 2023 initial conditions, and are presented below:

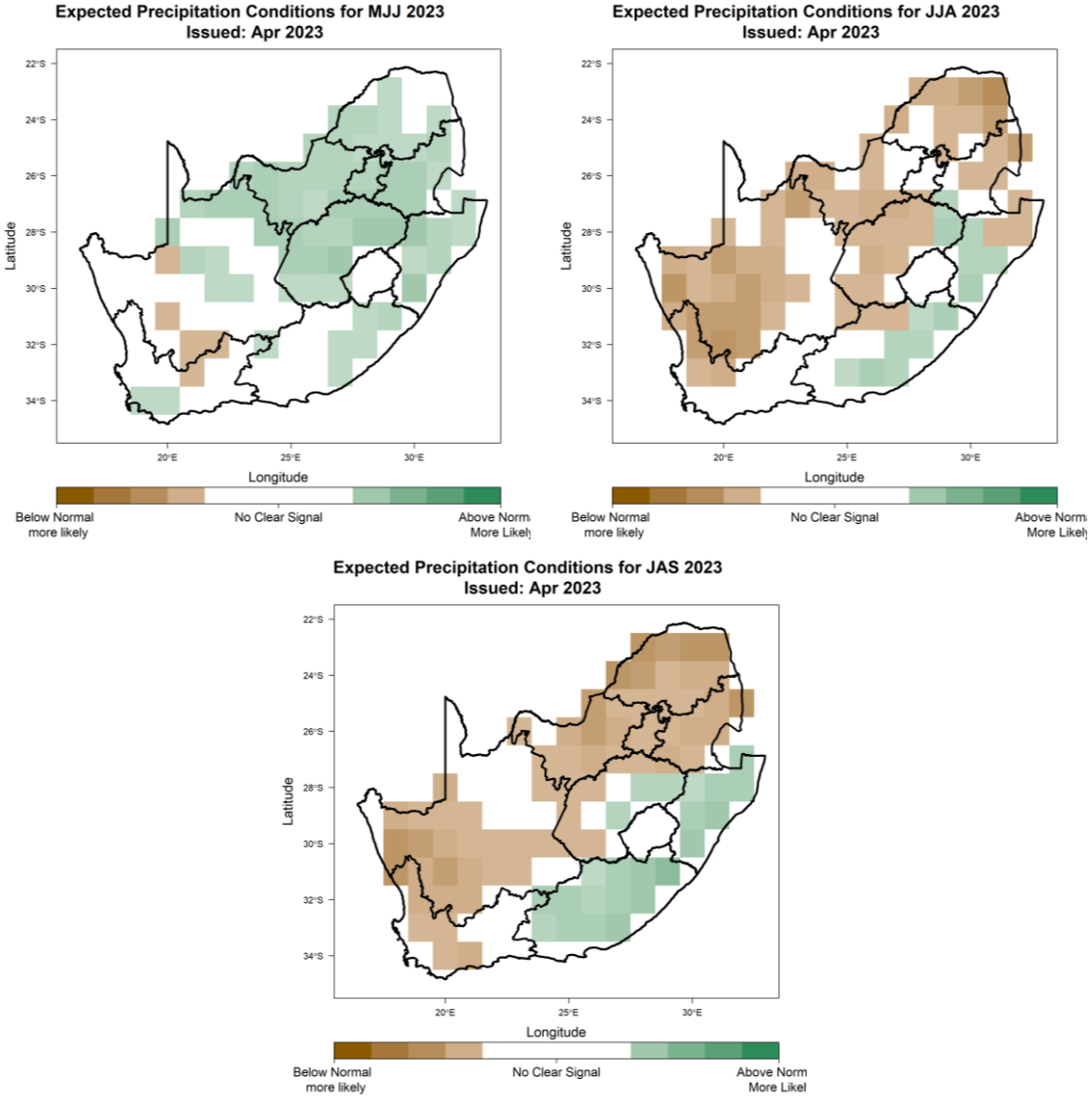

Figure 3: May-June-July 2023 (MJJ; left), June-July-August 2023 (JJA; right), July-August-September 2023 (JAS; bottom) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories, namely above-normal, near-normal and below-normal.

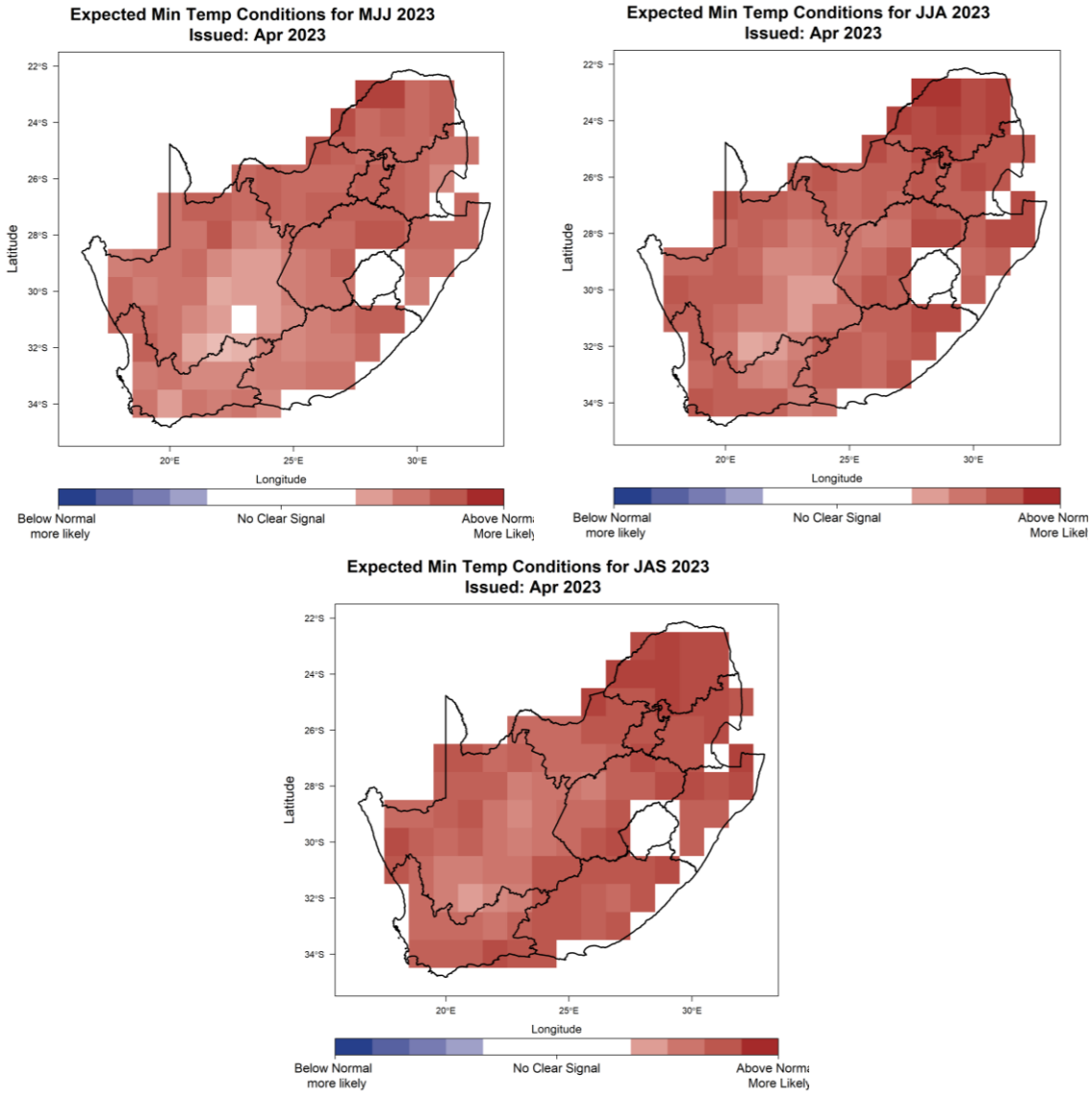

Figure 4: May-June-July 2023 (MJJ; left), June-July-August 2023 (JJA; right), July-August-September 2023 (JAS; bottom) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories, namely above-normal, near-normal and below-normal.

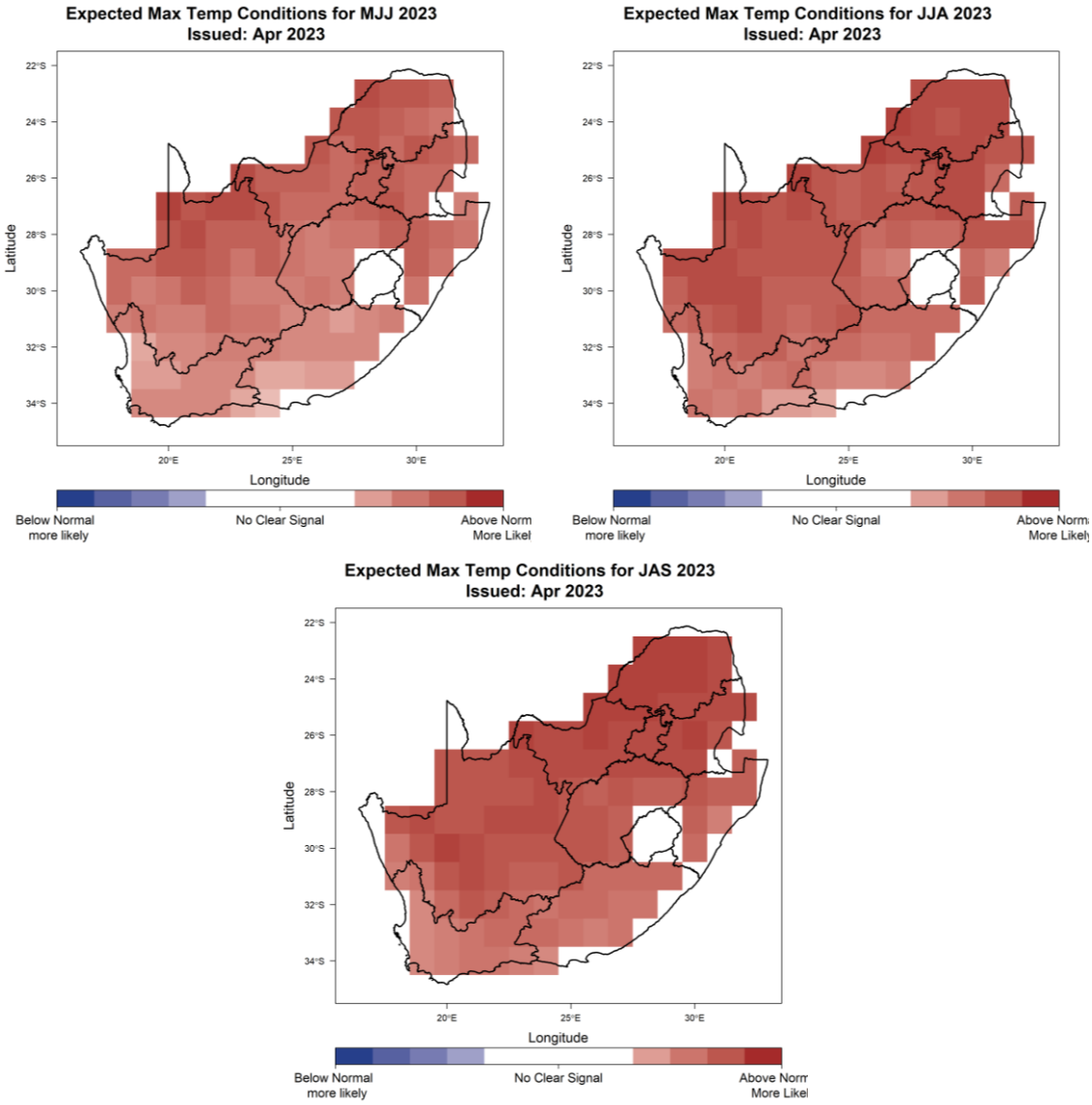

Figure 5: May-June-July 2023 (MJJ; left), June-July-August 2023 (JJA; right), July-August-September 2023 (JAS; bottom) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories, namely above-normal, near-normal and below-normal.

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum temperature) climatology for April-May-June, May-June-July and June-July-August 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.

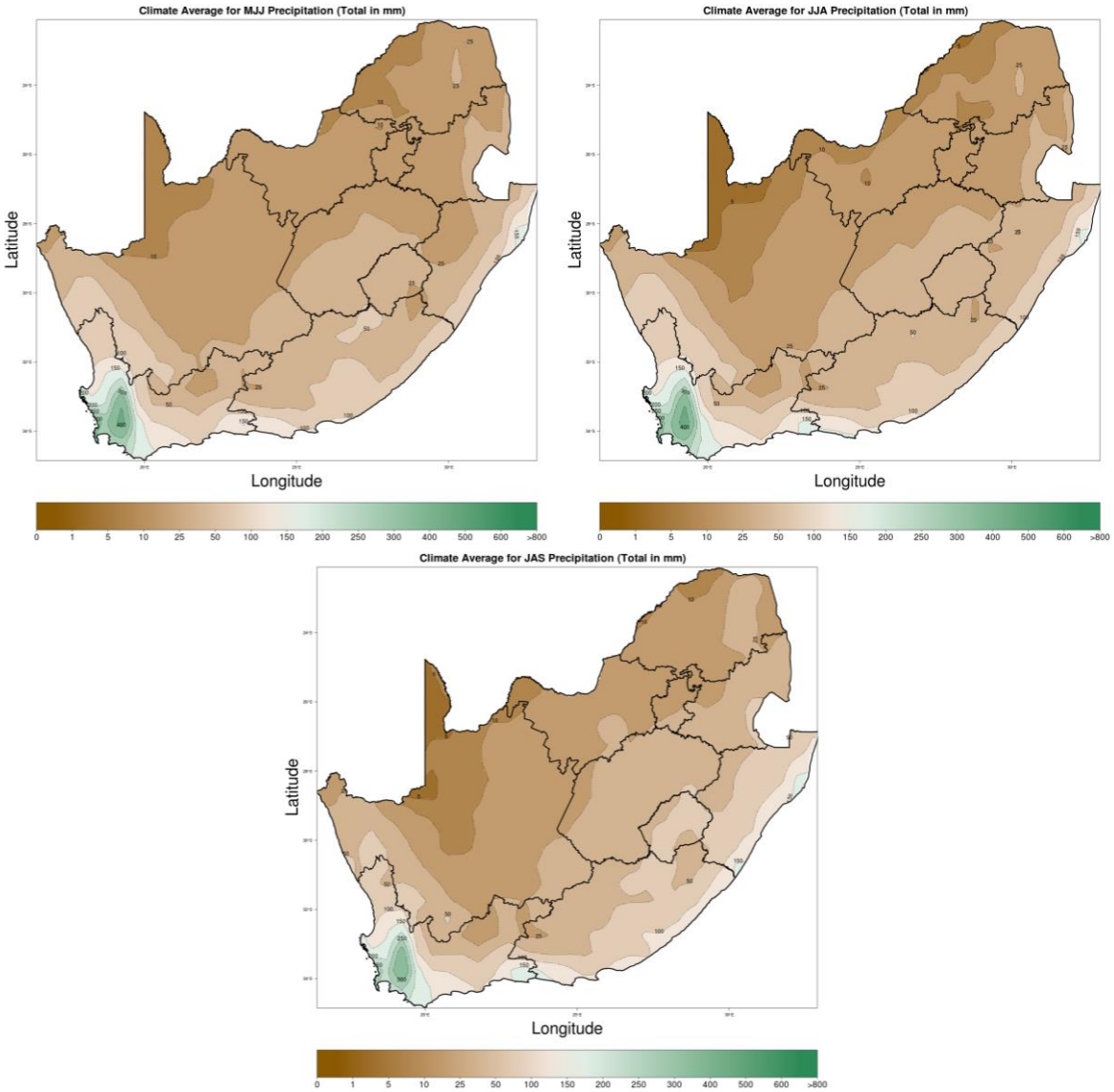

Figure 6: Climatological seasonal totals for precipitation during May-June-July (MJJ; left), June-July-August (JJA; right) and July-August-September (JAS; bottom).

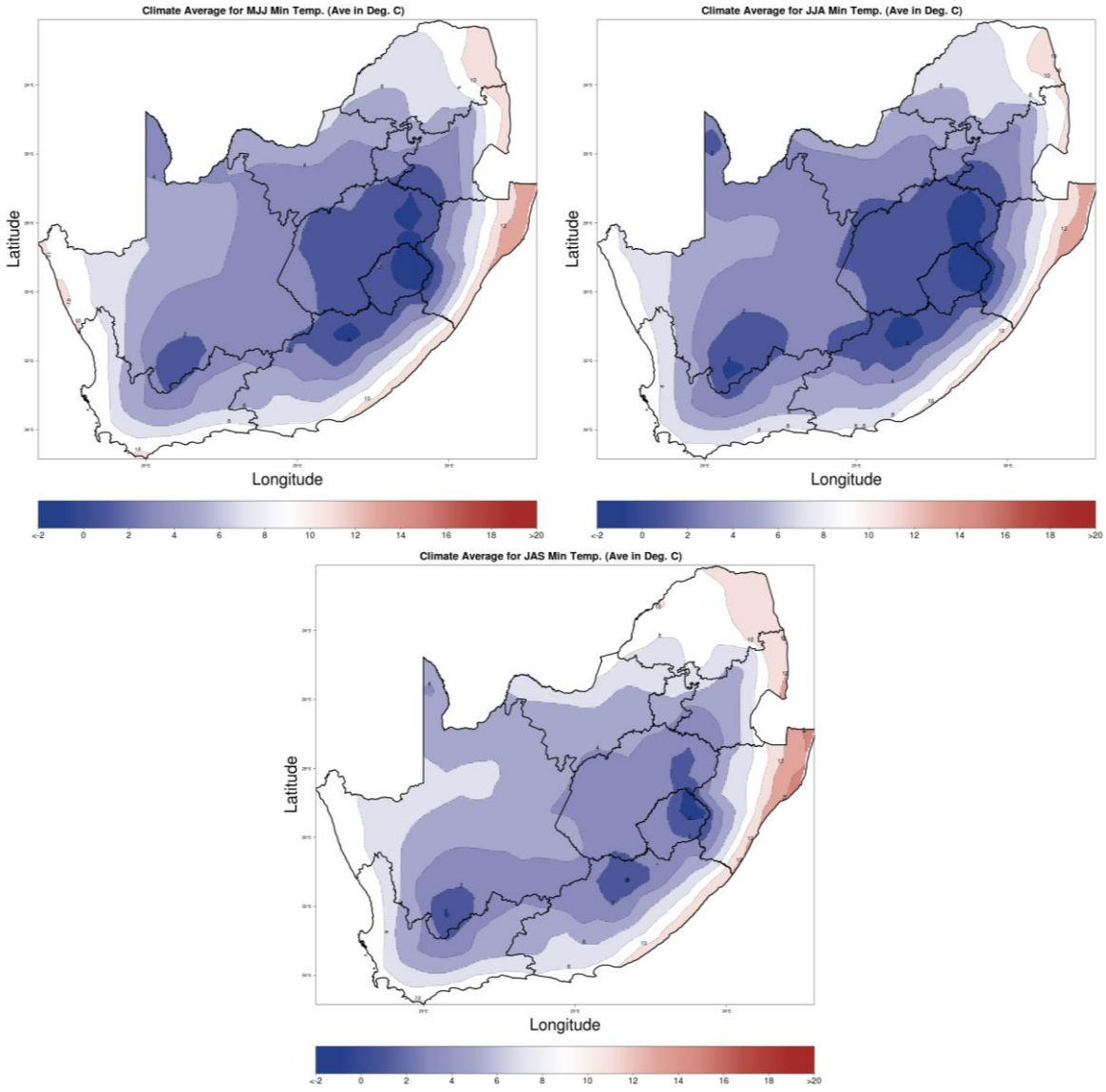

Figure 7: Climatological seasonal averages for minimum temperature during May-June-July (MJJ; left), June-July-August (JJA; right) and July-August-September (JAS; bottom).

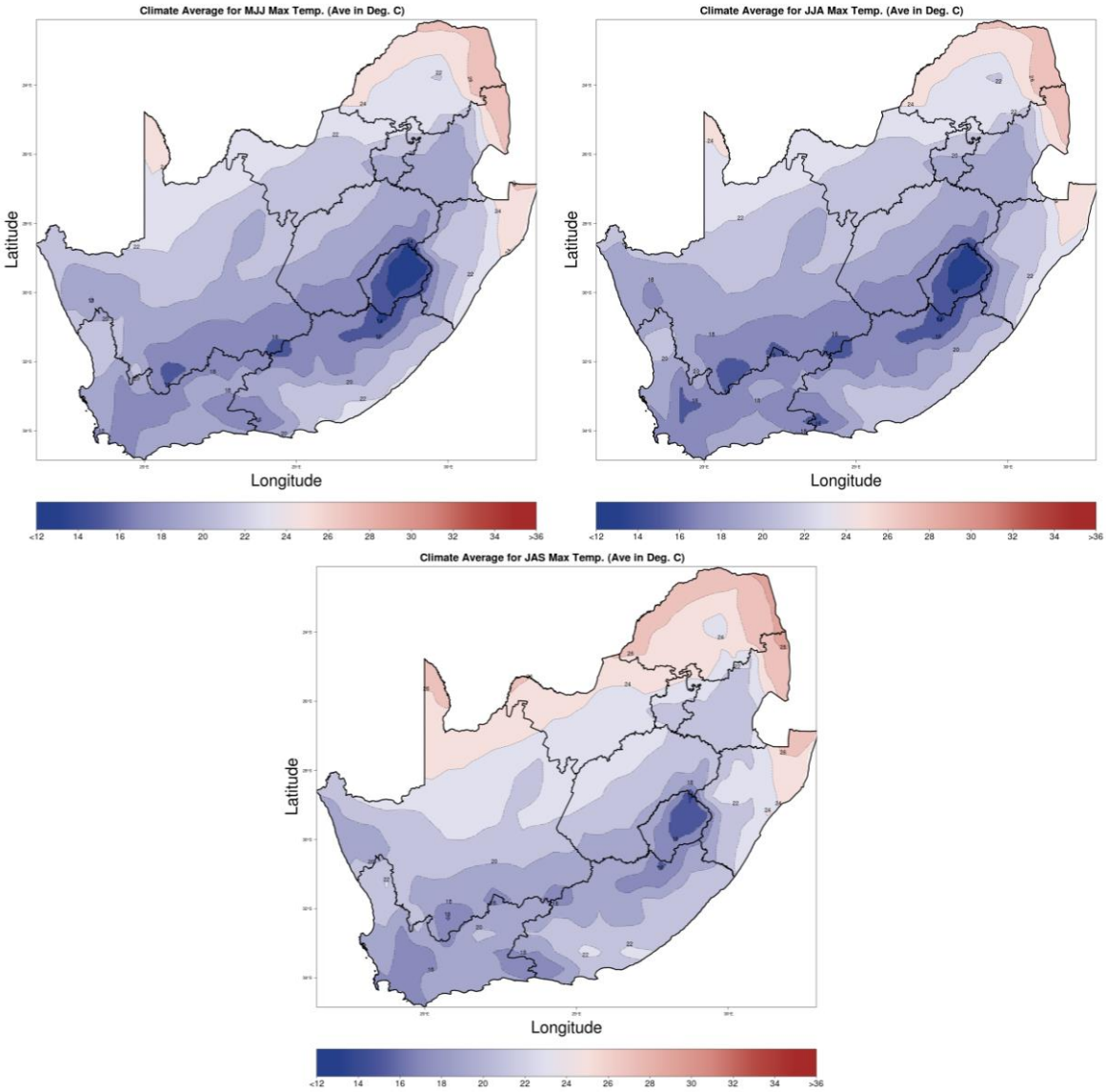

Figure 8: Climatological seasonal averages for maximum temperature during May-June-July (MJJ; left), June-July-August (JJA; right) and July-August-September (JAS; bottom).

3. Summary implications to various economic sector decision makers

Water and Energy

The expected above-normal rainfall for the southern coastal areas across the seasons provide a good opportunity for improvement of dam levels and other water reservoirs. This also pose risk of flash flood in flood-prone areas. Furthermore, the expected below-normal rainfall conditions coupled with above-normal minimum and maximum temperatures may lead to water scarcity due to exacerbated evapotranspiration and on-going drought, among other factors, in the south-west parts of the country. Minimum and maximum temperatures are expected to be mostly above-normal countrywide for the forecast period and demand for space heating will likely increase during the forecast period. Relevant decision-makers are encouraged to take note of these possible outcomes and communicate to affected businesses and communities.

Health

The projected minimum and maximum temperatures during the forecast period may result in warmer conditions with varying implications depending on the sensitivity and general health of impacted individuals. The danger of UV-related health impacts is significant throughout this reporting period. The public is encouraged to take appropriate sun protection measures such as seeking shade, wearing clothing that covers the body, and applying sunscreen, particularly at midday. The public is encouraged to take precautions and follow the guidelines and recommendations of local authorities. The predicted below-normal rainfall during mid-winter (Jun-Jul-Aug) and late-winter (Jul-Aug-Sep) for the southwestern part of the country may result in dry conditions that have direct and indirect impacts on human health. The public is advised to take precautions and adhere to the recommendations and guidance of local authorities.

Agriculture

Above-normal rainfall is expected for most parts of the country during early winter and throughout the forecast period for the southern coastal areas. However, the south-western part, which normally receives significant rainfall during mid and late-winter seasons, is expected to receive mostly below-normal rainfall during this period. Below-normal rainfall conditions in these areas are expected to have a significant impact on crop and livestock production. Therefore, the relevant decision- makers are encouraged to advise farmers in these regions to practice soil and water conservation, proper water harvesting and storage, 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)