Seasonal Climate Watch

March to July 2021

Date issued: February 26, 2021

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a La Niña state and the forecast indicates that it will most likely weaken and possibly return to a neutral state by the winter season. The influence on South Africa from ENSO however is expected to dissipate as we move towards the autumn and winter months.

The multi-model rainfall forecast indicates mostly above-normal rainfall with drier than normal patches scattered in parts of the north-east and south-west in late autumn (Apr-May-Jun) and early winter (May-Jun-Jul).

Mostly below normal minimum and maximum temperatures are expected over the country with the exception of the interior, especially during the late autumn. By contrast, early winter will see a modest signal for above normal minimums and maximums over the interior, but cooler than normal elsewhere.

The South African Weather Service will continue to monitor and provide updates on any future assessments that may provide more clarity on the current expectations for the coming seasons.

2. South African Weather Service Prediction System

2.1. Ocean-Atmosphere Global Climate Model

The South African Weather Service (SAWS) is currently recognised by the World Meteorological Organization (WMO) as the 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 is the first season (March-April-May) predictions for rainfall (Figure 1) and average temperature (Figure 2).

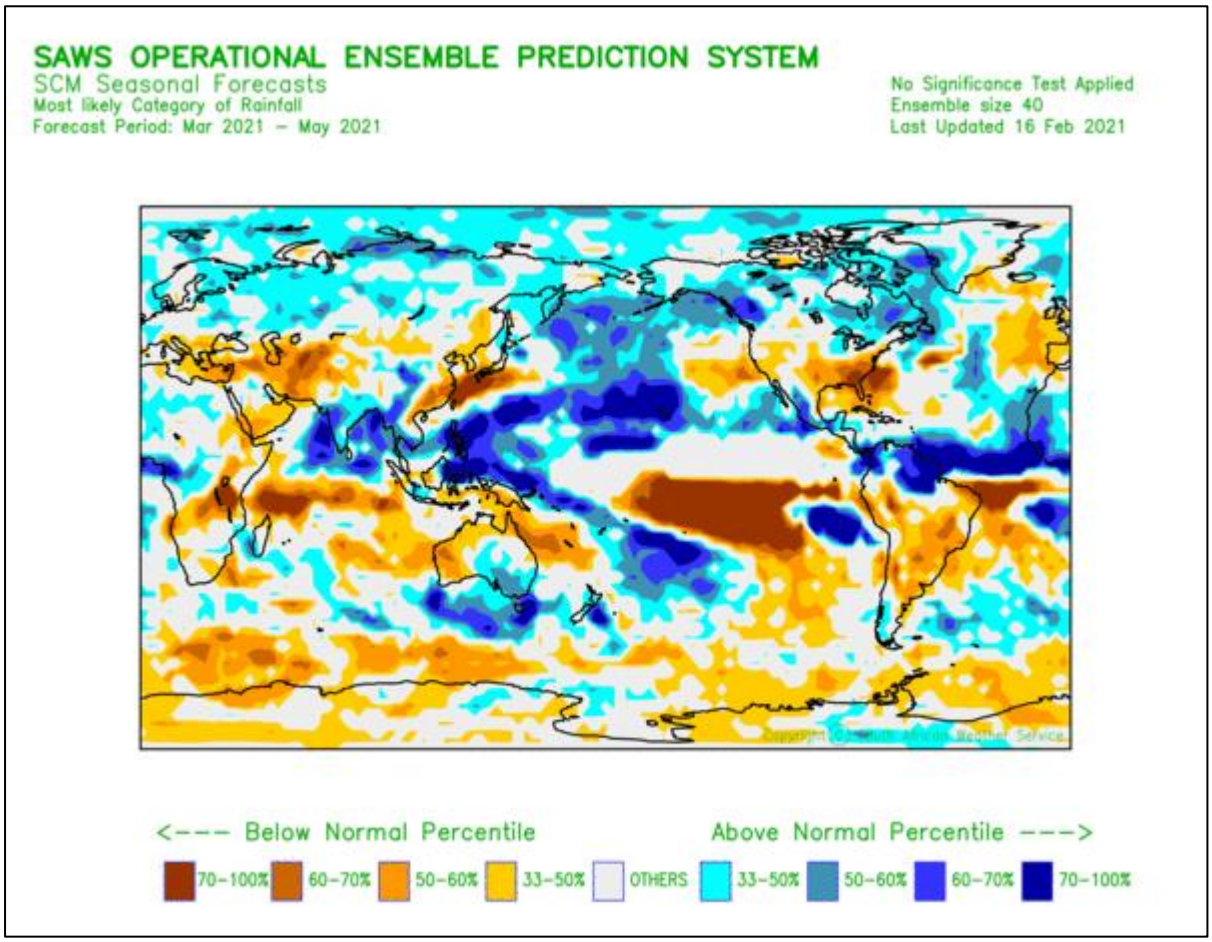

Figure 1: March-April-May global prediction for total rainfall probabilities.

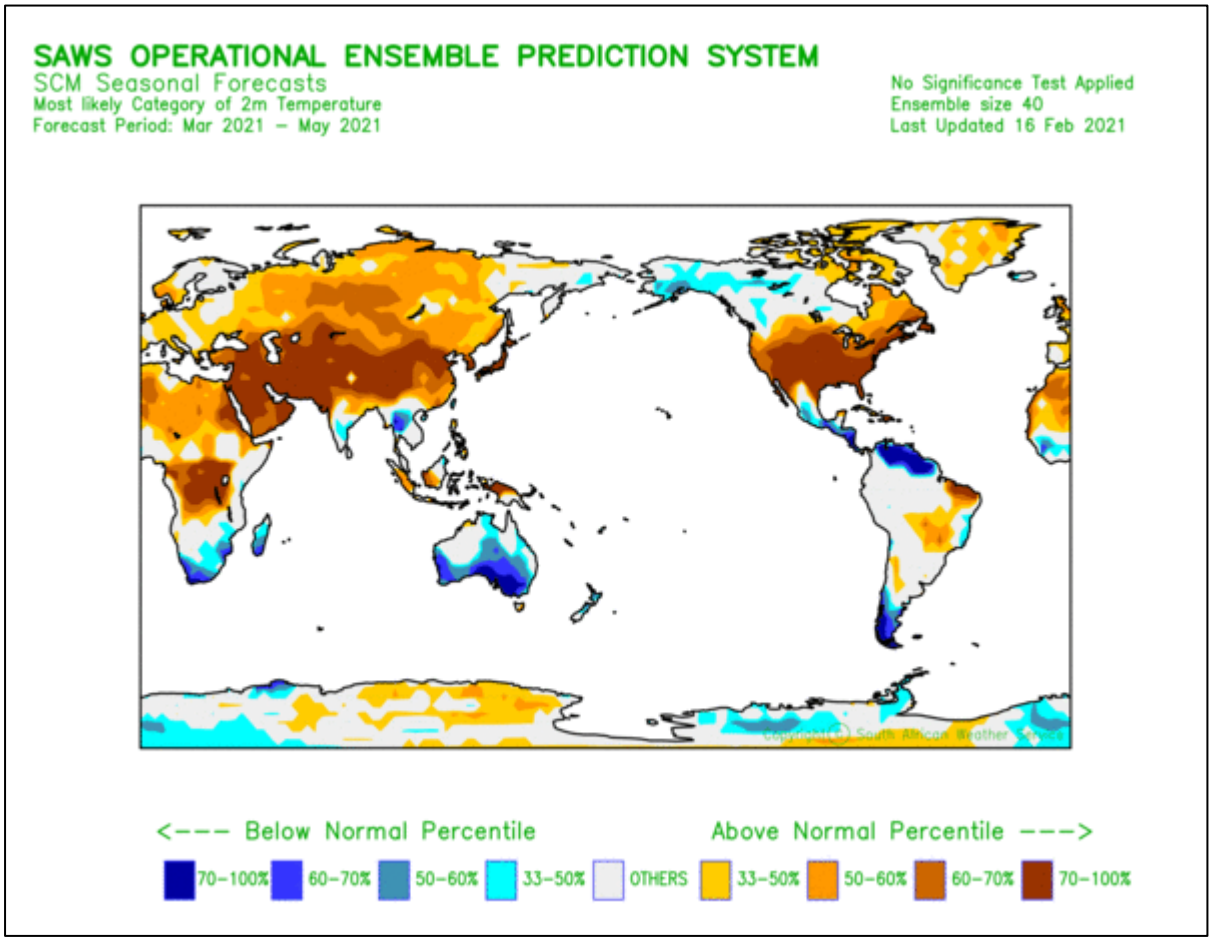

Figure 2: March-April-May global prediction for average temperature probabilities.

2.2. Seasonal Forecasts for South Africa from the SAWS OAGCM

The above-mentioned global forecasting system's 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 February 2021 initial conditions, and are presented below for South Africa.

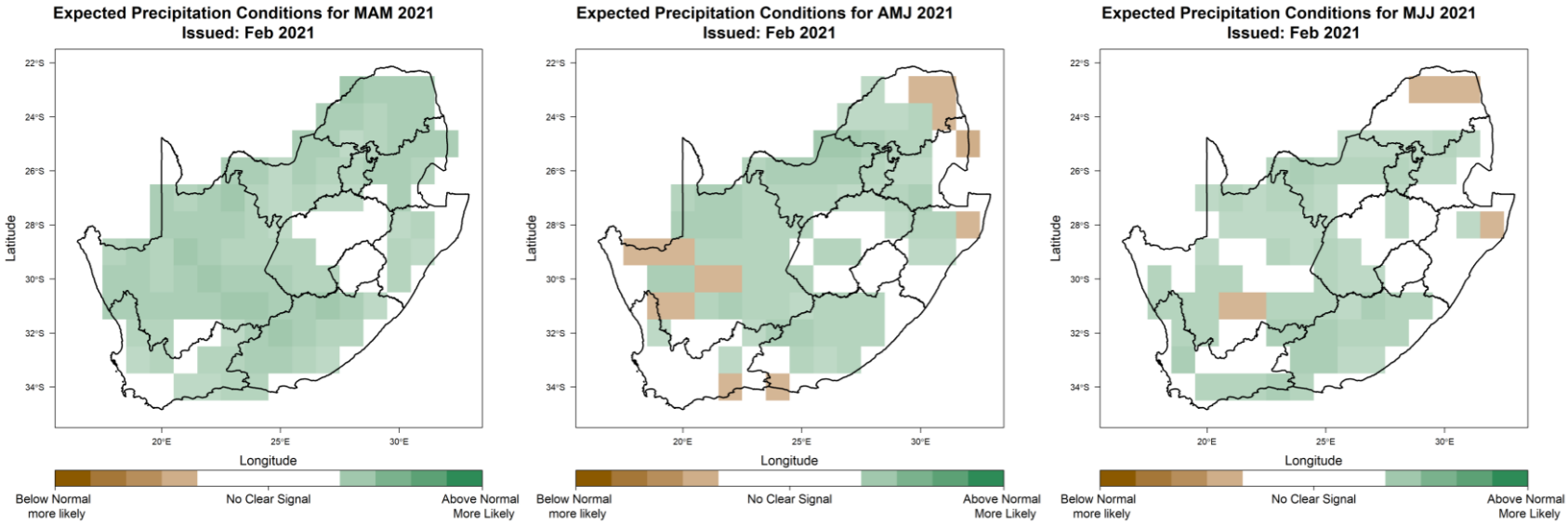

Figure 3: *March-April-May 2021 (MAM; left), April-May-June 2021 (AMJ; middle), May-June-July 2021 (MJJ; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

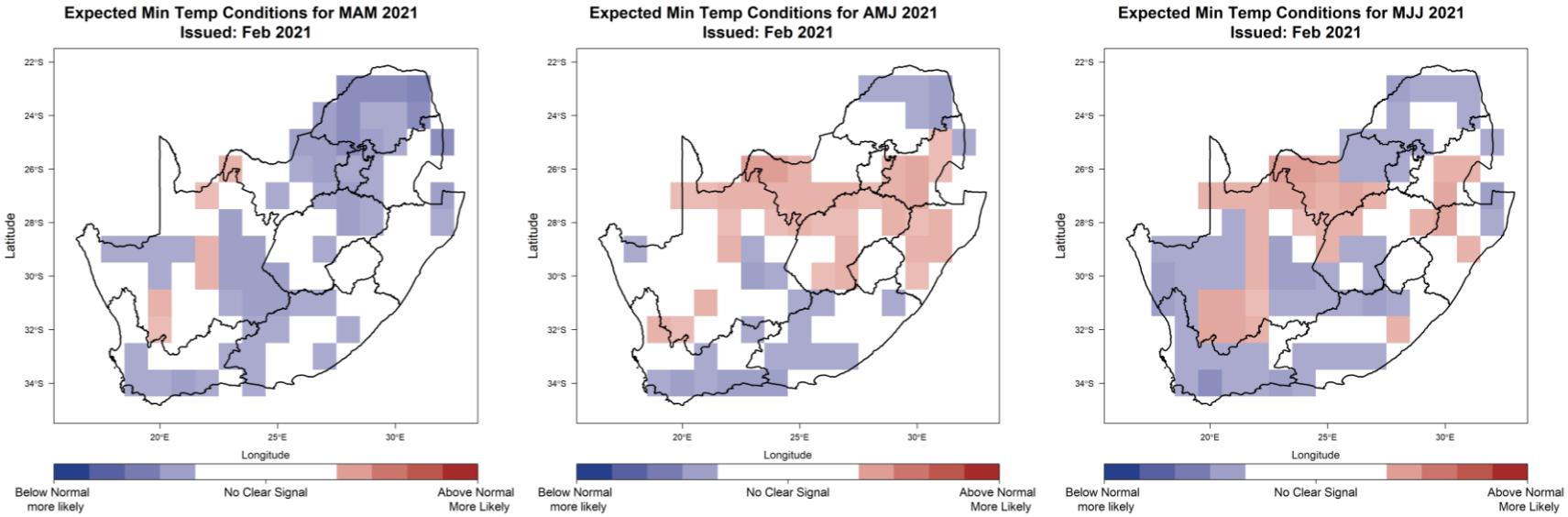

Figure 4: *March-April-May 2021 (MAM; left), April-May-June 2021 (AMJ; middle), May-June-July 2021 (MJJ; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

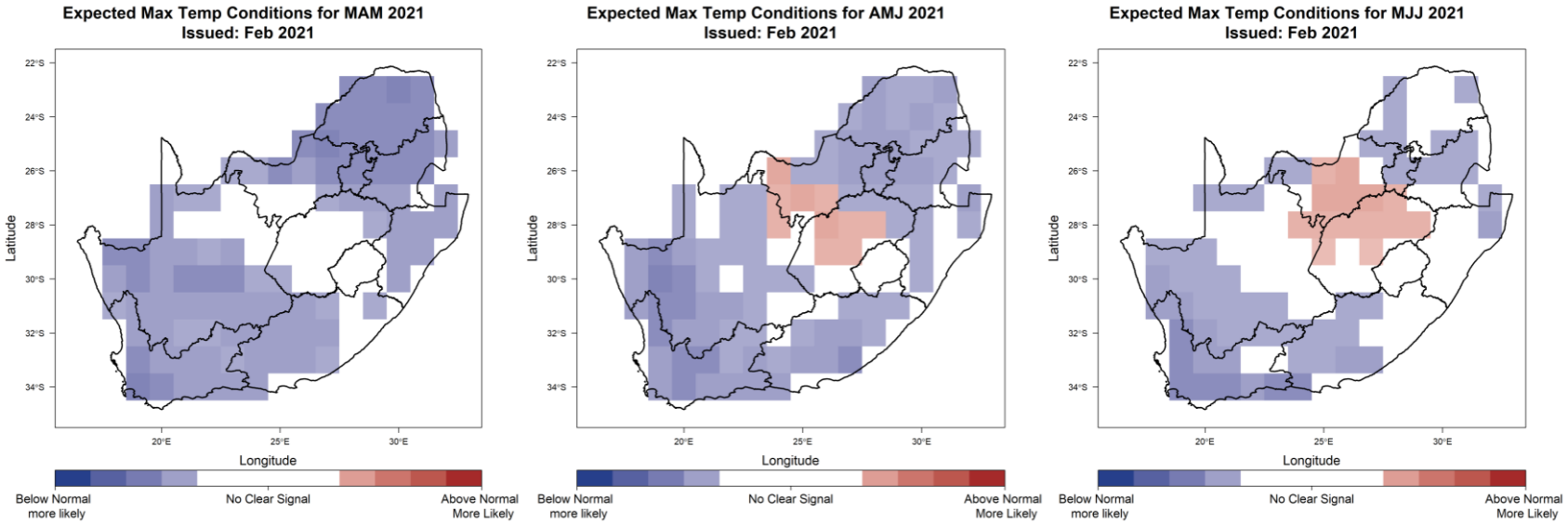

Figure 5: *March-April-May 2021 (MAM; left), April-May-June 2021 (AMJ; middle), May-June-July 2021 (MJJ; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the mid-autumn (Mar-Apr-May), late-autumn (Apr-May-Jun) and the early-winter (May-Jun-Jul). The rainfall and temperature climate are representative of the average rainfall and temperature conditions over a long period of time for the relevant 3-month seasons presented here.

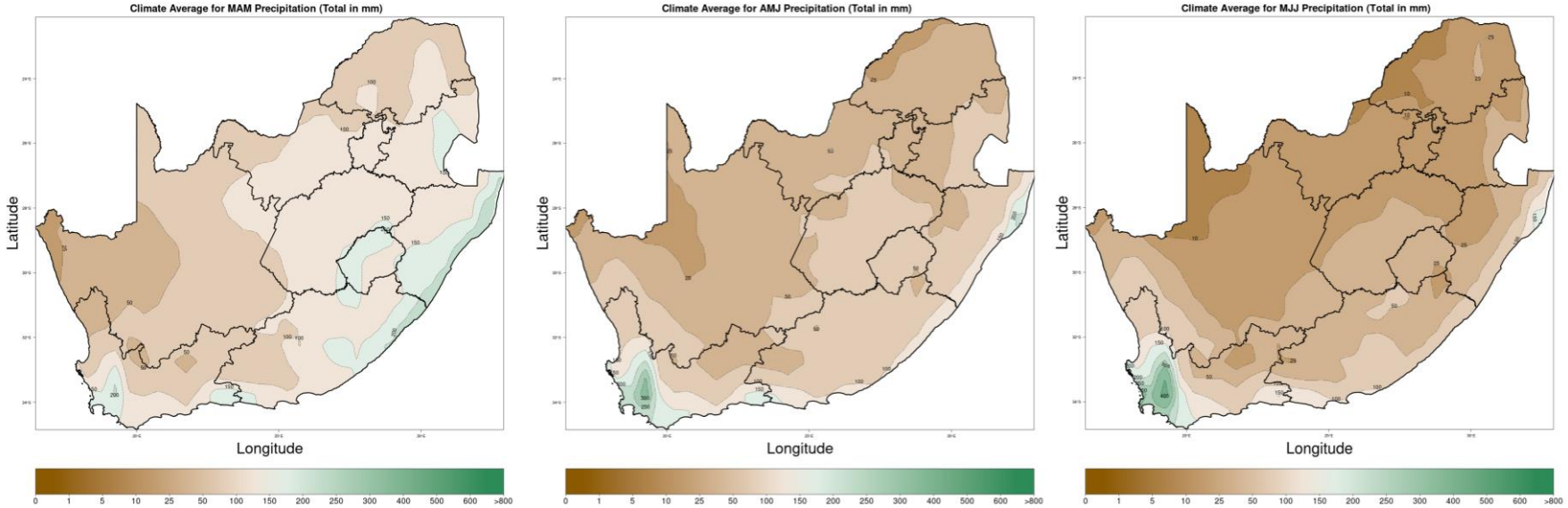

Figure 6: Climatological seasonal totals for precipitation during March-April-May (MAM; left), April-May-June (AMJ; middle) and May-June-July (MJJ; right).

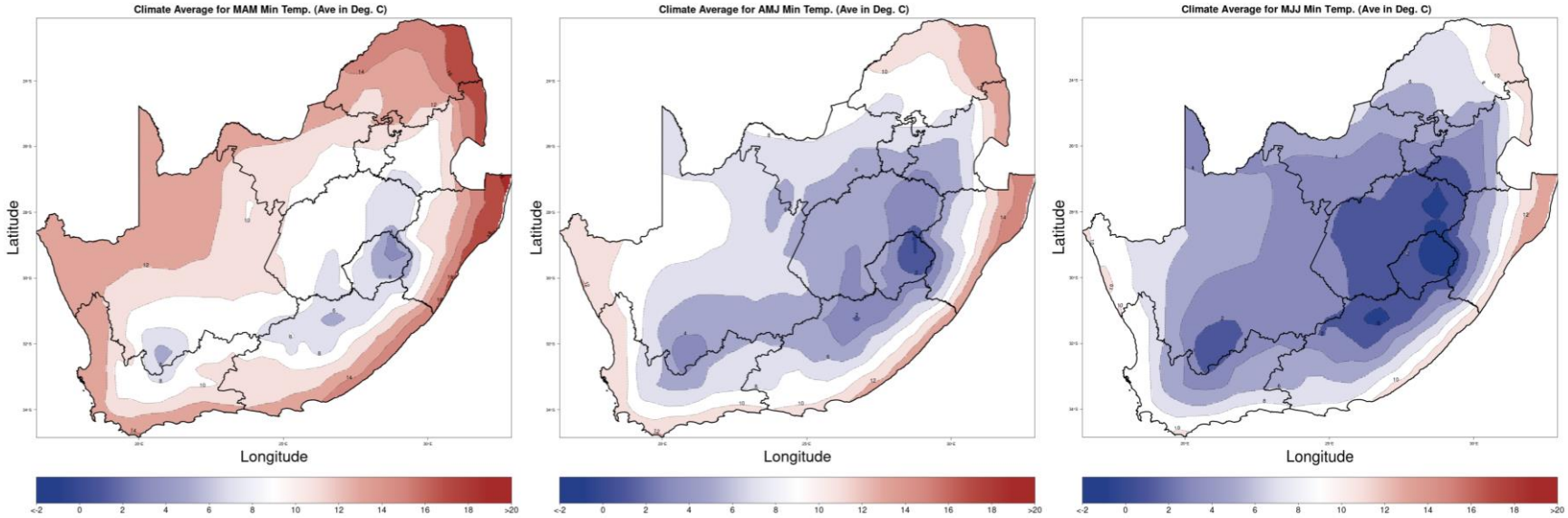

Figure 7: Climatological seasonal averages for minimum temperature during March-April-May (MAM; left), April-May-June (AMJ; middle) and May-June-July (MJJ; right).

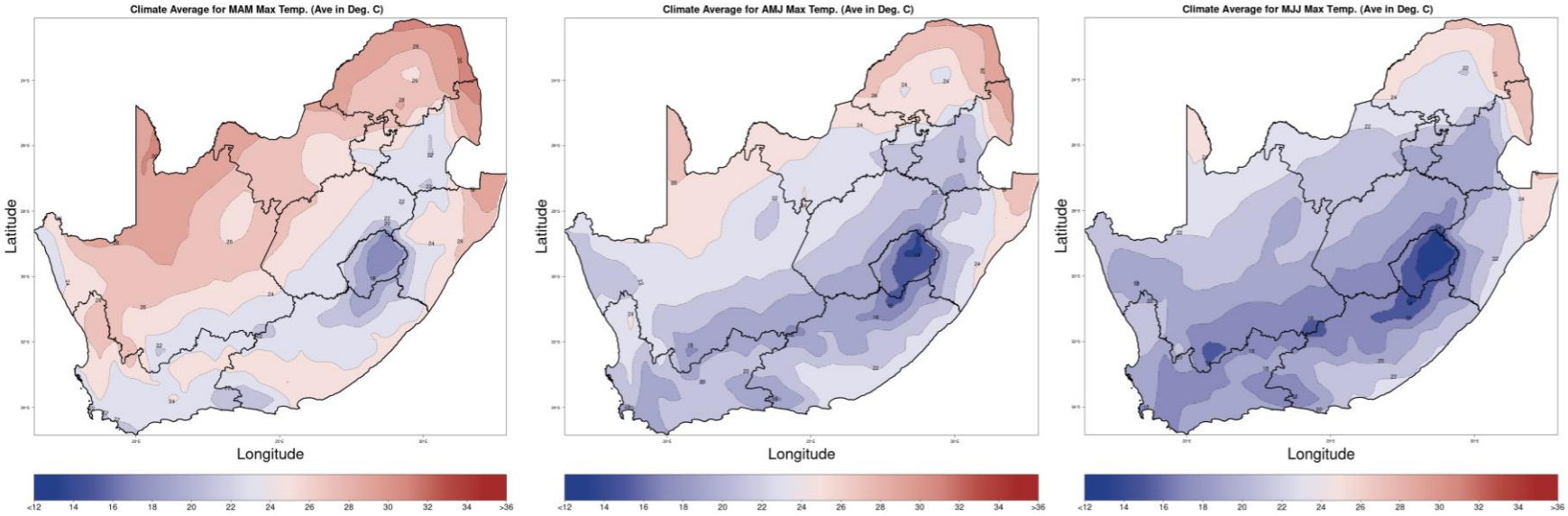

Figure 8: Climatological seasonal averages for maximum temperature during March-April-May (MAM; left), April-May-June (AMJ; middle) and May-June-July (MJJ; right).

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3. Summary implications to various economic sector decision makers

Water and Energy

The expected above-normal rainfall provides a good opportunity for water reservoirs recharge in most parts of the country. Provinces like Gauteng, Limpopo, Mpumalanga, North West and Northern Cape, whose provincial dam levels are above 80% and prone to flooding, are at risk of experiencing flash floods, particularly during The March-April-May period. Also, water reservoirs in the Eastern Cape, Western Cape, and KwaZulu-Natal provinces may be burdened because of the predicted below-normal rainfall in parts of these provinces in late autumn and early winter. The estimated below-normal temperatures across the country, except the interior, especially in late autumn, is likely to increase demand for energy for space heating. Consequently, the relevant decision-makers may take note of the above-mentioned potential risks and advise the affected businesses and communities accordingly.

Health

The expected below-normal minimum and maximum temperatures across the country, except for Gauteng and North West during late autumn and early winter, might reduce ultraviolet radiation (UV) and heat-related health burdens for the affected communities. The anticipated above-normal temperatures in the North west and Gauteng provinces might lead to sustained and severe exposure to high UV and warmer than normal conditions, with greater severity expected in high altitude regions, particularly in the Gauteng Province. Accordingly, the relevant decision-makers are urged to advise the public, particularly during midday, to take adequate sun protection measures to prevent over-exposure by remaining in the shade, utilising sunscreen and wearing sun-protective clothing. Wetter conditions might increase the spread of infectious diseases, drowning incidence and personal injuries. Relevant authorities, particularly in disaster risk management, are advised to be at high alert and advice the public, especially those reciting in flood-prone areas, to take extra caution.

Agriculture

A high probability of above-normal rainfall is expected over most parts of the country for mid-autumn to early-winter. There is an increased risk for water logging that can cause crop damage in areas receiving excessive rainfall. Decision makers may advise farmers to practice appropriate farming practices. Specifically, above-normal rainfall over the Eastern Cape and Western Cape provinces for early winter will likely bring positive impacts for crop and livestock production. Therefore, the relevant decision makers are encouraged to advise farmers in these regions to adopt proper drainage systems, water harvesting and storage where possible.

This forecast is updated monthly, and users are advised to monitor the updated forecasts as there is a possibility for especially the longer lead time forecasts to change. Additionally, farmers are advised to keep monitoring the weekly and monthly forecasts issued by the South African Weather Service. 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. 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)