Seasonal Climate Watch

January to May 2022

Date issued: Dec 31, 2021

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a La Niña state and the forecasts indicate that it will likely remain in a La Niña state throughout the summer. During mid- and late-summer, the presence of ENSO plays an important role in our rainfall. The presence of a La Niña during mid- and late-summer is typically favourable for above-normal rainfall for the summer rainfall areas during that period.

The multi-model rainfall forecast indicates mostly above-normal rainfall for the larger part of the country during the late-summer (JFM), through to the mid-autumn (MAM) season. Mostly above-normal minimum temperatures are expected across the country during late-summer and early-autumn (FMA), except for the south-western parts of the country during mid-autumn when below-normal minimum temperatures are expected. Mostly below-normal maximum temperatures are expected across the country during late-summer and early-autumn, except for the north-eastern parts of the country during mid-autumn when above-normal maximum temperatures are expected.

The South African Weather Service (SAWS) will continue to monitor the weather and climatic conditions 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

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 is the first season (January-February-March) predictions for rainfall (Figure 1) and average temperature (Figure 2).

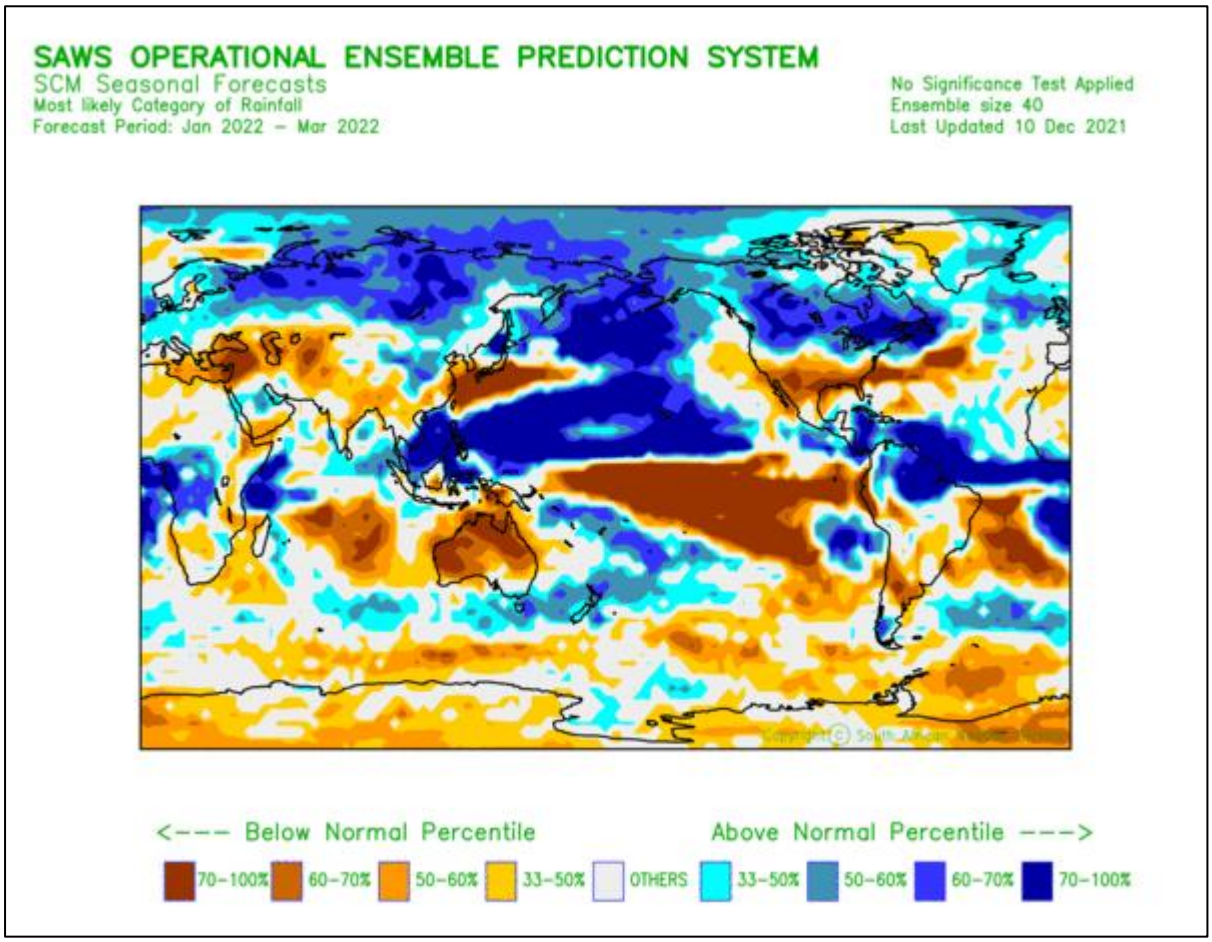

Figure 1: January-February-March global prediction for total rainfall probabilities.

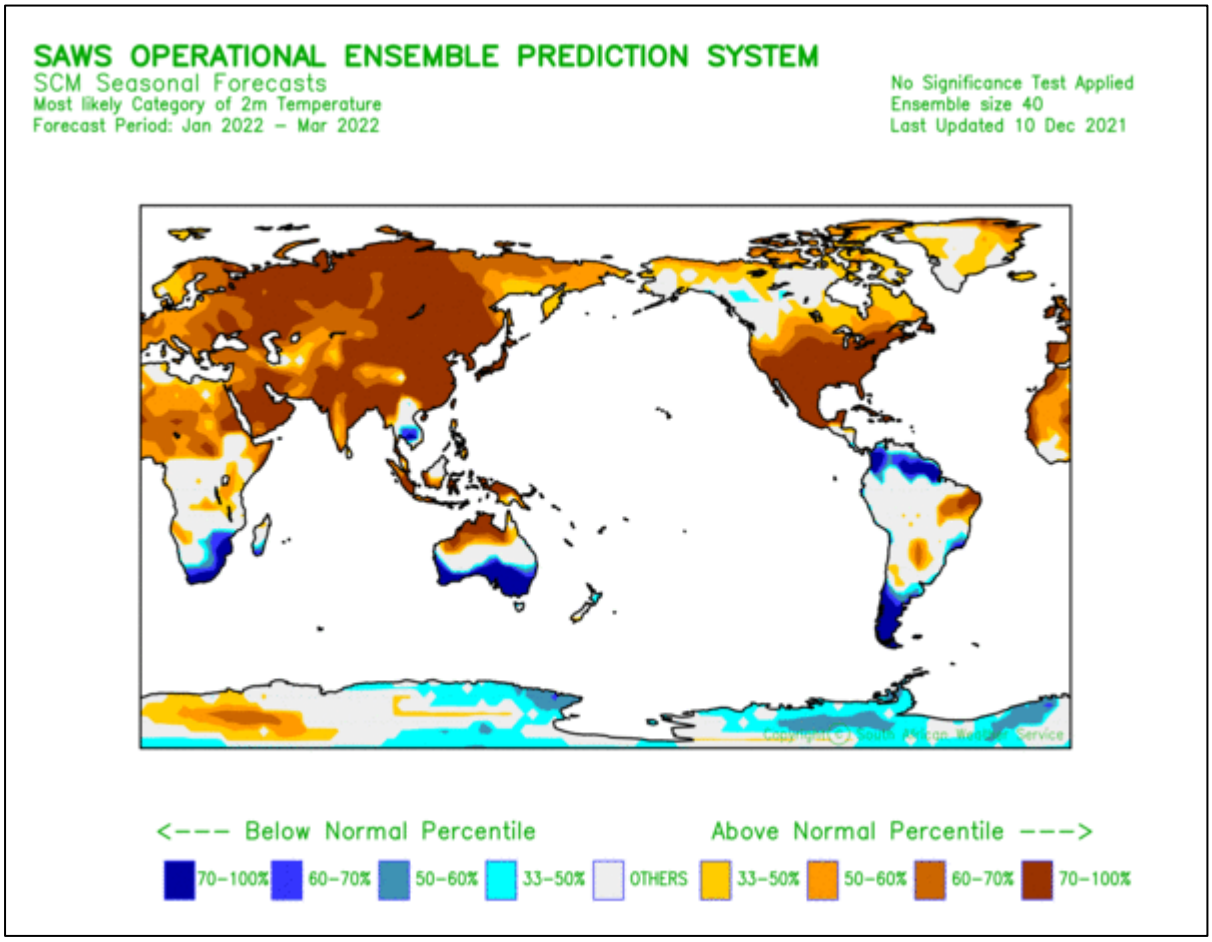

Figure 2: January-February-March global prediction for average temperature probabilities.

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 December 2021 initial conditions, and are presented below for South Africa.

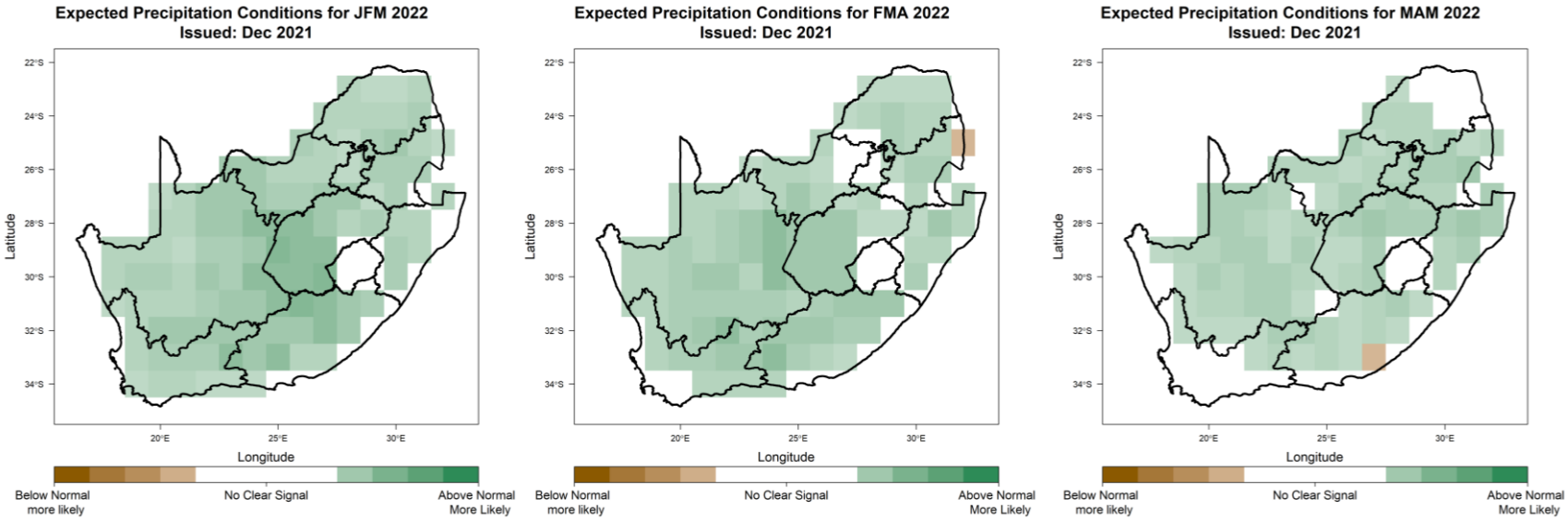

Figure 3: *January-February-March 2022 (JFM; left), February-March-April 2022 (FMA; middle), March-April-May 2022 (MAM; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

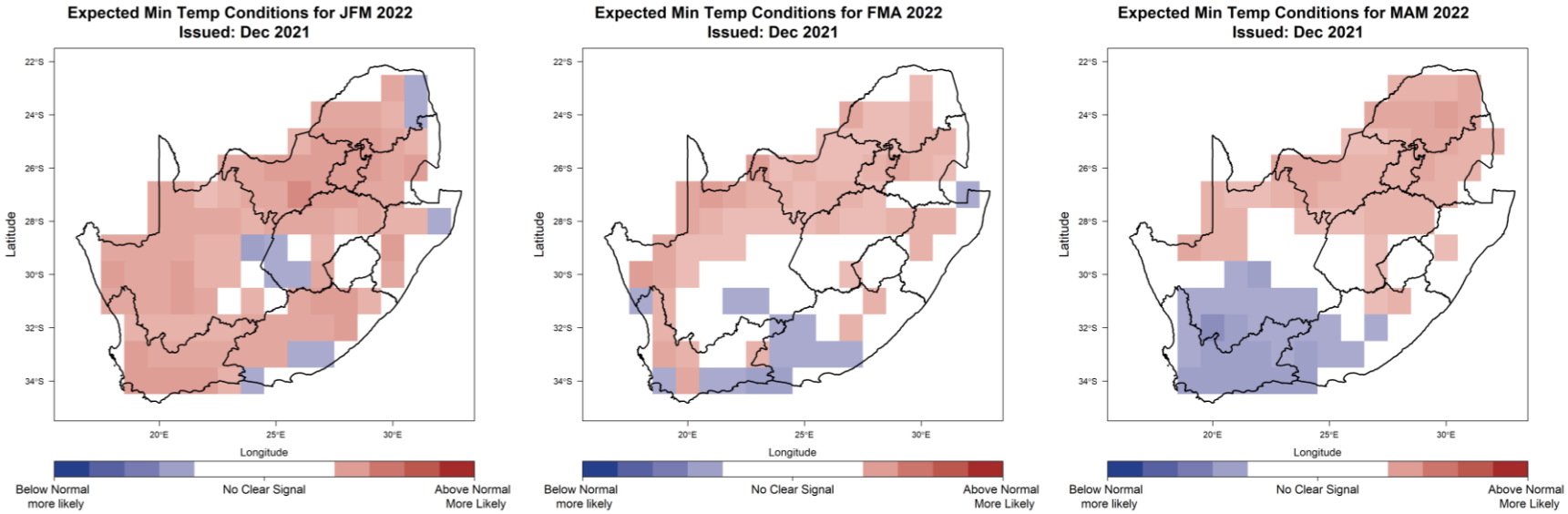

Figure 4: *January-February-March 2022 (JFM; left), February-March-April 2022 (FMA; middle), March-April-May 2022 (MAM; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

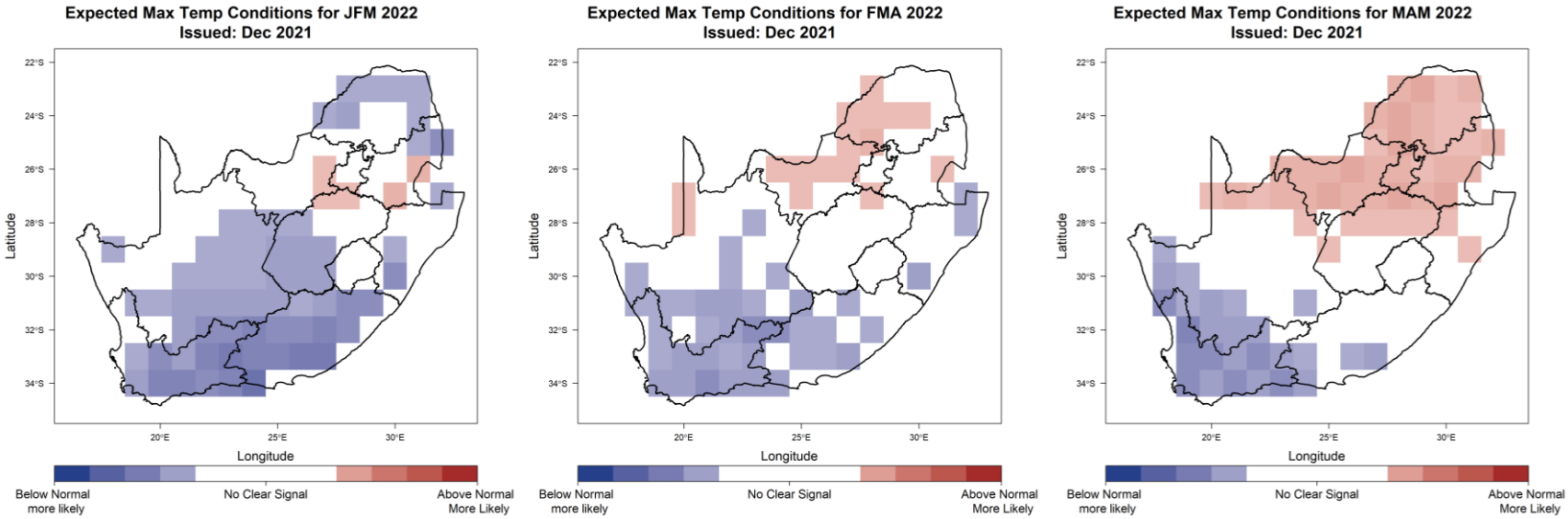

Figure 5: *January-February-March 2022 (JFM; left), February-March-April 2022 (FMA; middle), March-April-May 2022 (MAM; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

2.3. Climatological Seasonal Totals and Averages

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

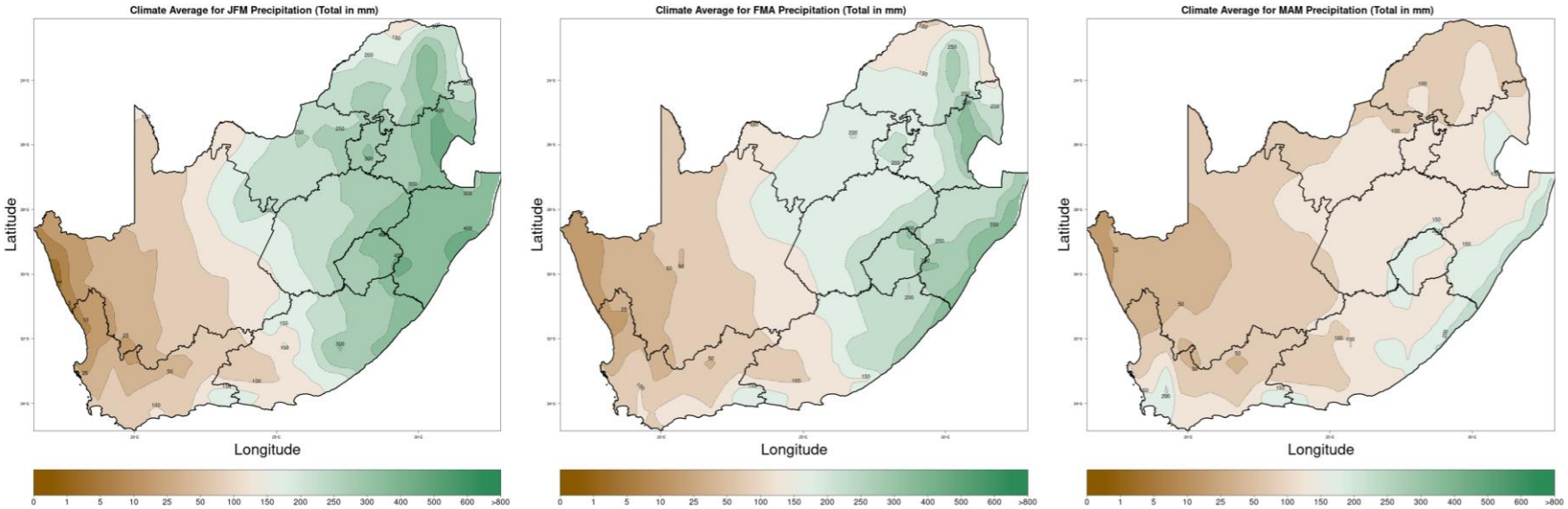

Figure 6: Climatological seasonal totals for precipitation during January-February-March (JFM; left), February-March-April (FMA; middle) and March-April-May (MAM; right).

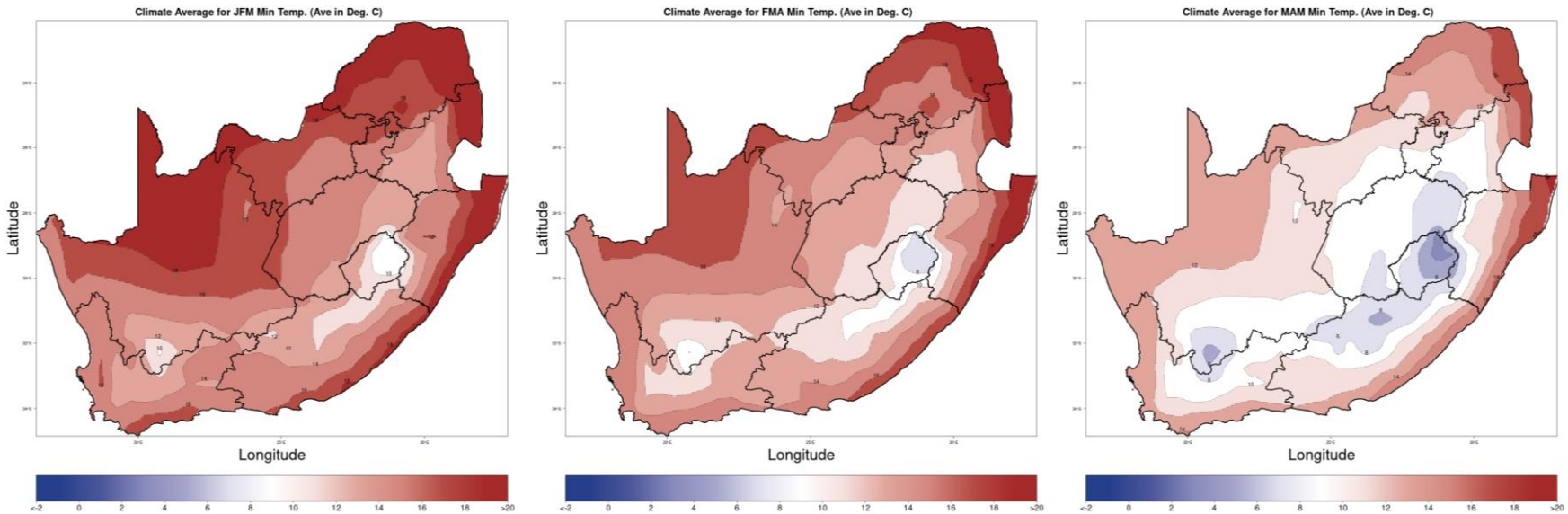

Figure 7: *Climatological seasonal averages for minimum temperature during January-February-March (JFM; left), February-March-April (FMA; middle) and March-April-May (MAM; right).*

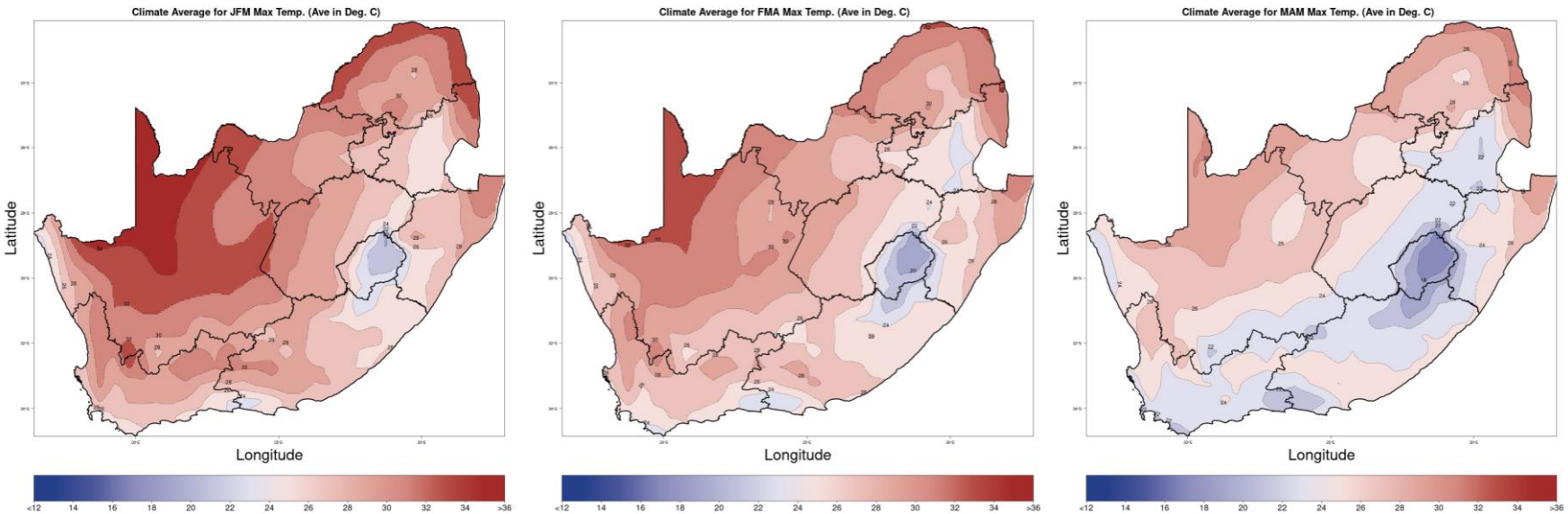

Figure 8: Climatological seasonal averages for maximum temperature during January-February-March (JFM; left), February-March-April (FMA; middle) and March-April-May (MAM; right).

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3. Summary implications to various economic sector decision makers

Water and Energy

The anticipated above-normal rainfall most parts of the country during the late-summer to the mid-autumn seasons is likely to benefit water reservoirs in most parts of the summer rainfall regions. Such conditions may also pose a risk of flash floods. Above-normal minimum temperatures expected across most parts of the country (with exceptions to south-western parts during the mid-autumn season) are likely to reduce demand for cooling. The relevant decision-makers may take note of the above-mentioned potential outcomes and advise the affected businesses and communities accordingly.

Health

The prognosis for above-normal rainfall in most parts of the country throughout the late-summer (JFM) and through to the mid-autumn (MAM) seasons may increase the danger of flash floods, particularly in flood-prone areas. These weather conditions may increase waterborne infections and water-related injuries and accidents, some of which are linked and are heightened by recreational water activities, particularly during the summer holiday season. It is recommended that the public takes precaution and abide by the advice and recommendations of local authorities. The predicted minimum temperatures might result in warmer conditions across the country during late-summer and early-autumn (FMA), with the exception of the south-western parts of the country during mid-Autumn.

Agriculture

Mostly above-normal rainfall is expected for most parts of the country during the late-summer to the mid-autumn seasons, which is likely to bring positive impacts for crop and livestock production. However, 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 soil and water conservation, establish 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 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 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)

South African Weather Service