# Seasonal Climate Watch

February to June 2021

Date issued: January 31, 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 but remain in a weak La Niña state towards the autumn 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 for early autumn (Feb-Mar-Apr) indicates mostly above normal rainfall for most of the country with the exception of parts of Limpopo and the Eastern Cape to expect below-normal rainfall. Above-normal rainfall is also widely expected in mid-(Mar-Apr-May) and late-autumn (Apr-May-Jun) with the only exception again for parts of the Eastern Cape in mid-autumn.

Mostly above normal minimum temperatures are expected in the north-eastern half of the country for the entire forecasts period with the south-western parts expected to be below-normal. Maximum temperatures show a similar pattern however the below-normal maximum temperatures are expected further north into the interior of South Africa.

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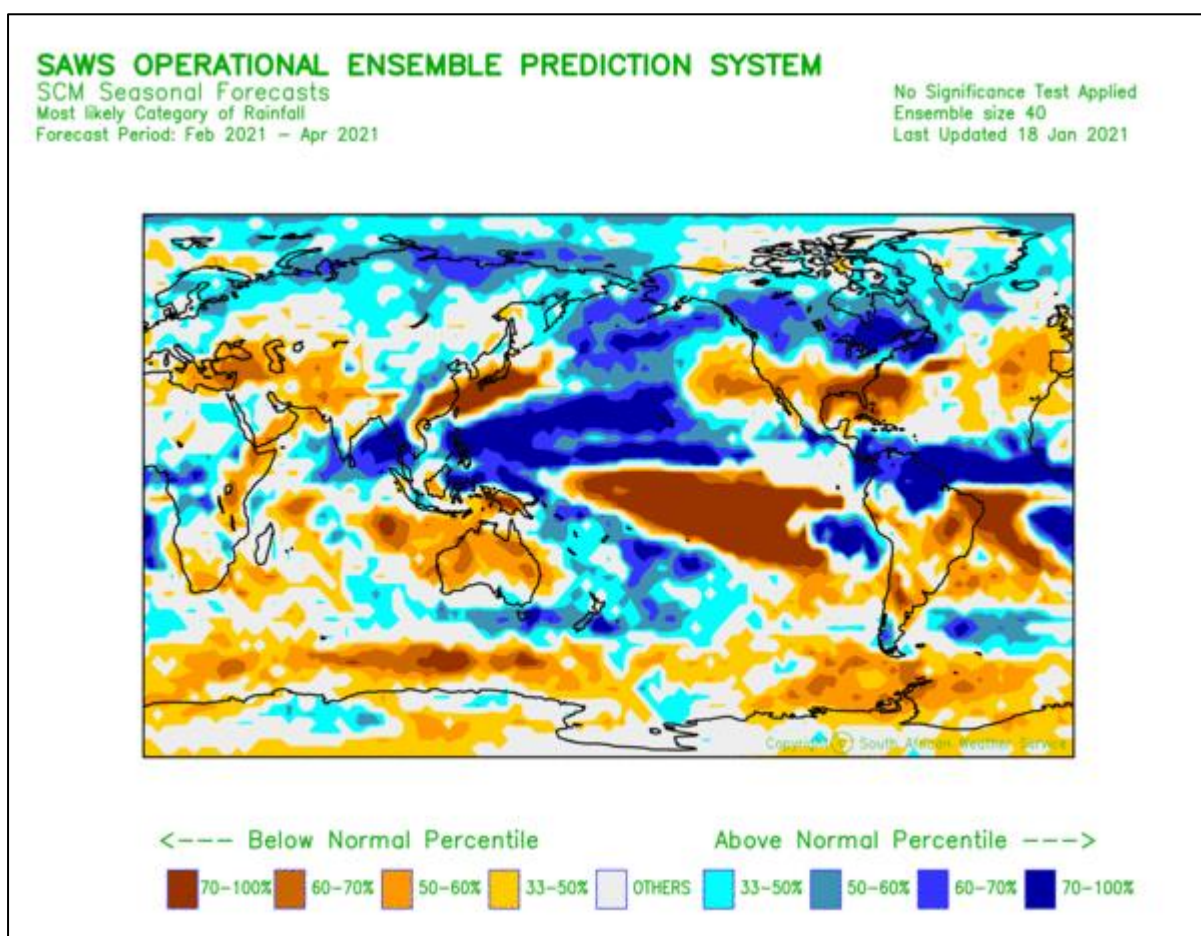


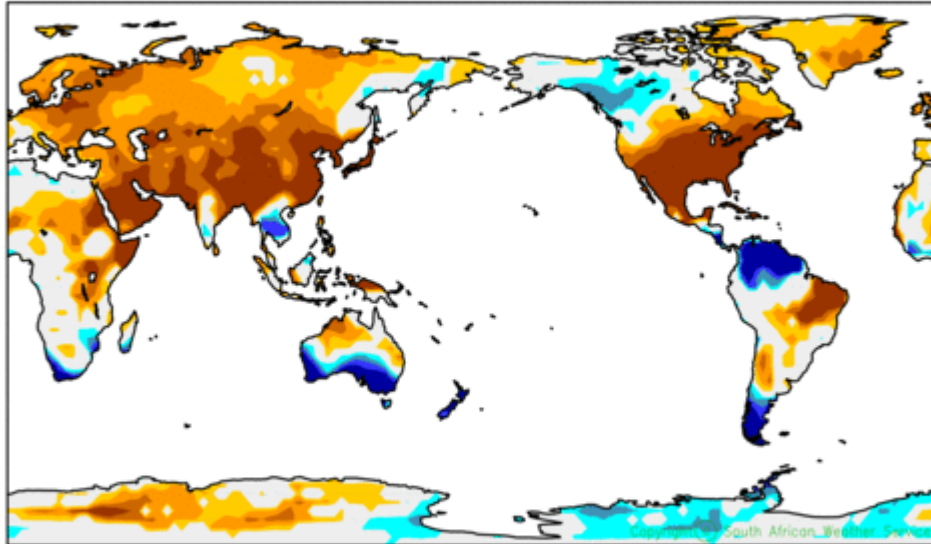*Figure 1: February-March-April global prediction for total rainfall probabilities.*

*Figure 2: February-March-April 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 NOAA-GFDL and NOAA-GFDL A06 systems (part of the North American Multi-Model Ensemble System) for South Africa, as issued with the January 2021 initial conditions, and are presented below for South Africa.
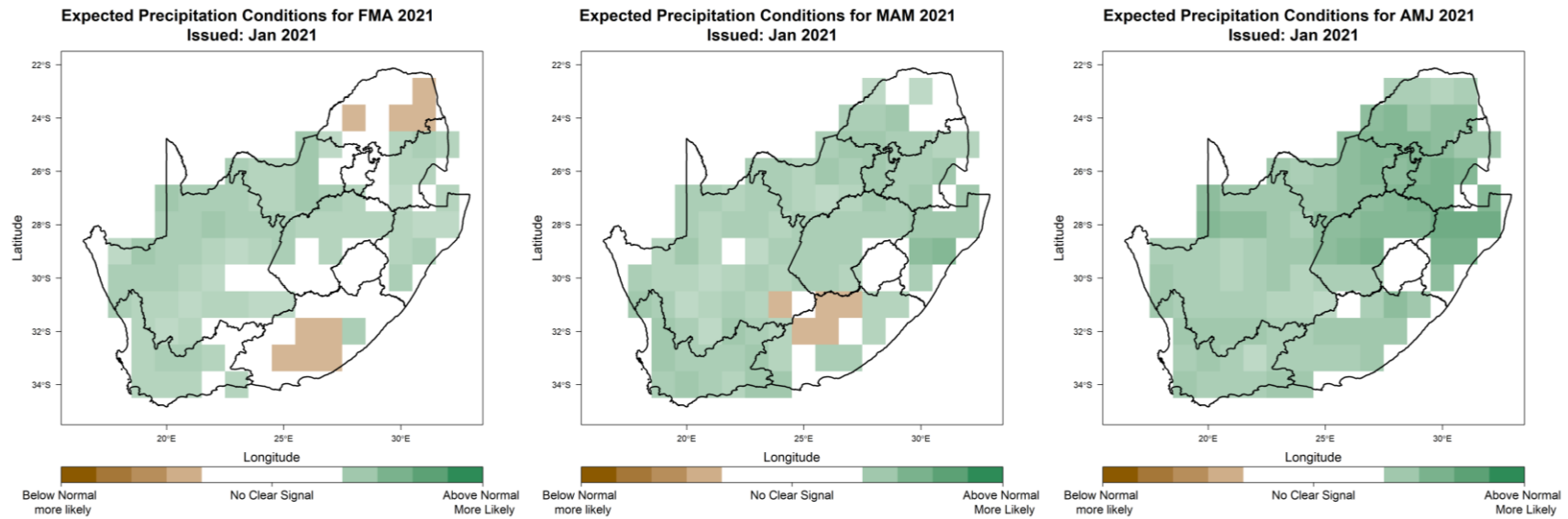
*Figure 3:     February-March-April 2021 (FMA; left), March-April-May 2021 (MAM; middle), April-May-June 2021 (AMJ; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*
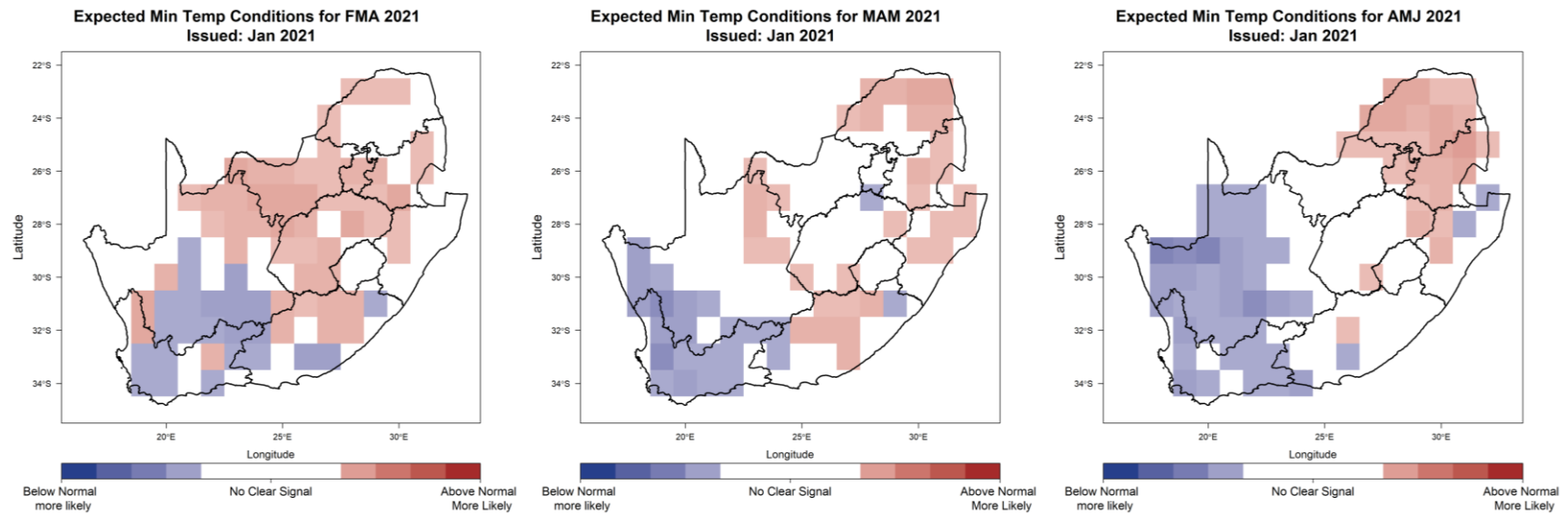
*Figure 4:* *February-March-April 2021 (FMA; left), March-April-May 2021 (MAM; middle), April-May-June 2021 (AMJ; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

*Figure 5:*      *February-March-April 2021 (FMA; left), March-April-May 2021 (MAM; middle), April-May-June 2021 (AMJ; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*
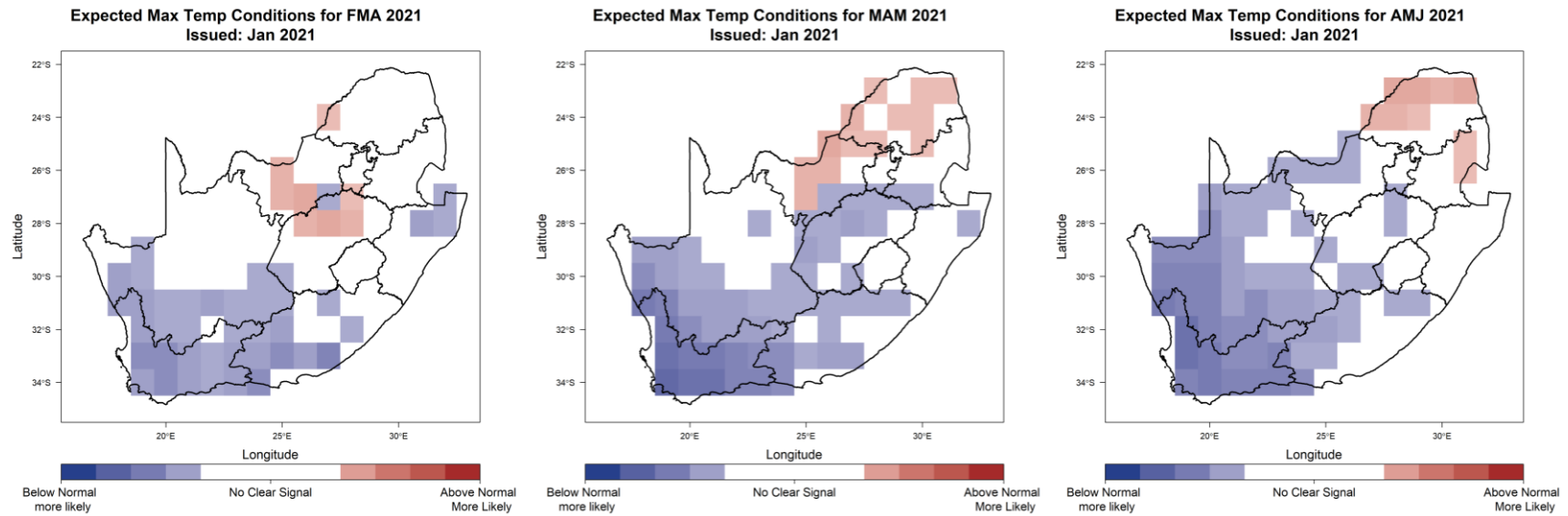
## 2.3.    Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the early-autumn (Feb-Mar-Apr), mid-autumn (Mar-Apr-May) and the late-autumn (Apr-May-June). The rainfall and temperature climate is representative of the average rainfall and temperature conditions over a long period of time for the relevant 3-month seasons presented here.
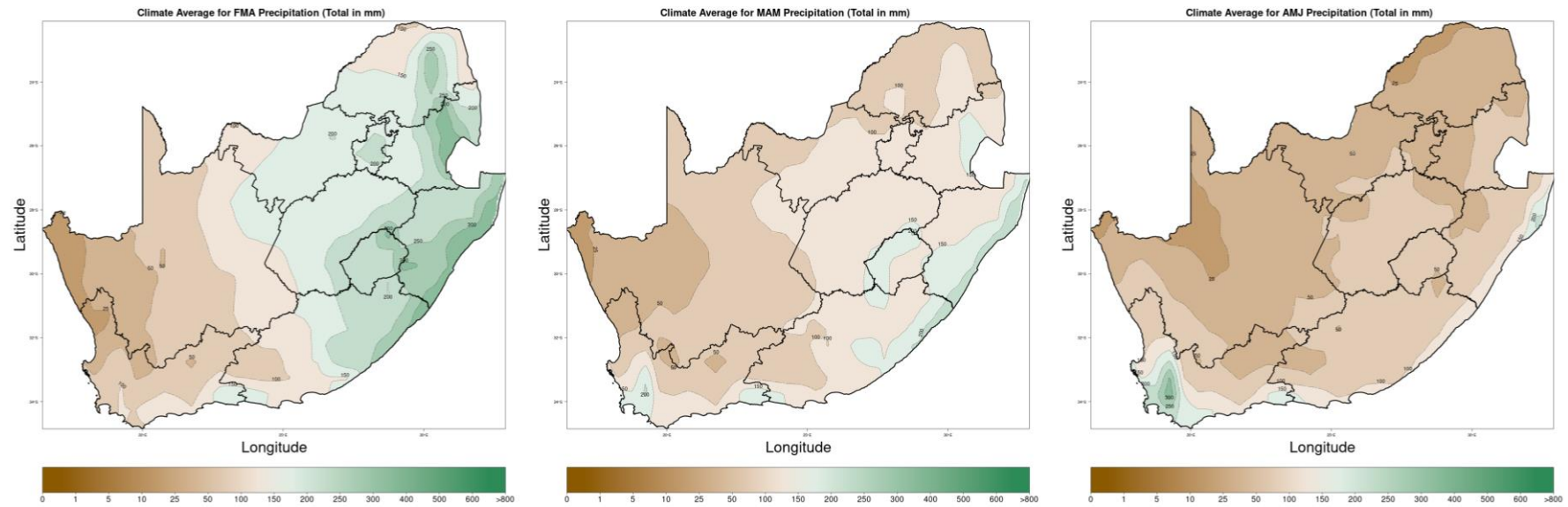
*Figure 6:        Climatological seasonal totals for precipitation during February-March-April (FMA; left), March-April-May (MAM; middle) and April-May-June (AMJ; right).*

*Figure 7:* *Climatological seasonal averages for minimum temperature during February-March-April (FMA; left), March-April-May (MAM; middle) and April-May-June (AMJ; right).*
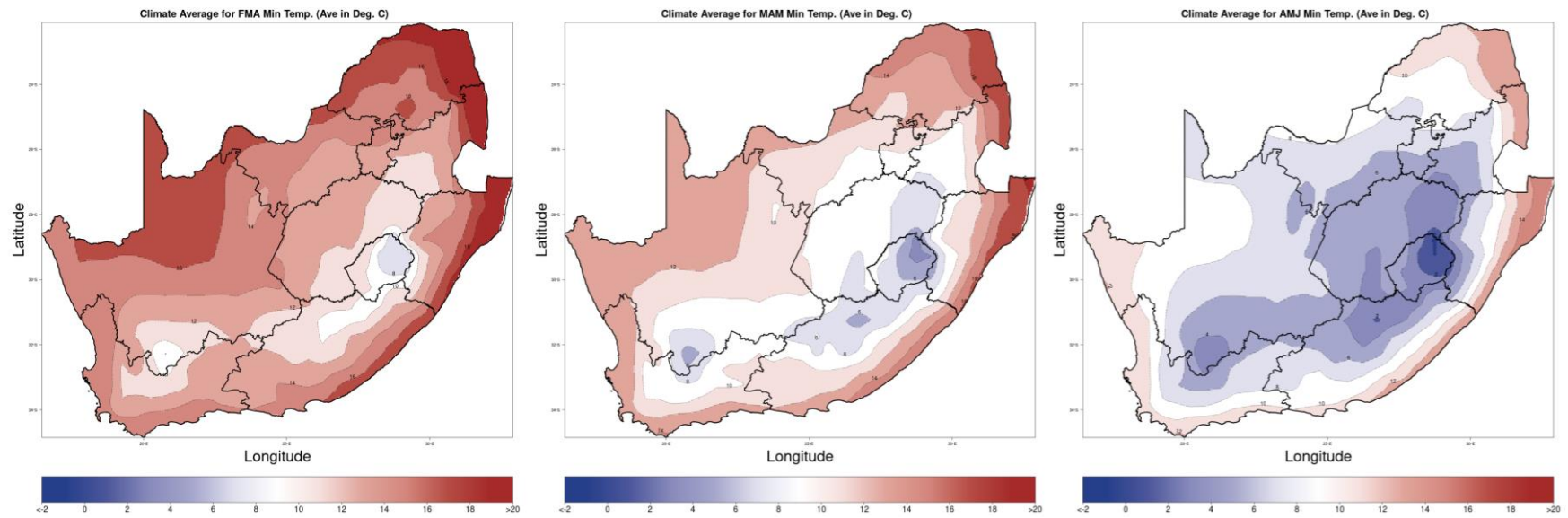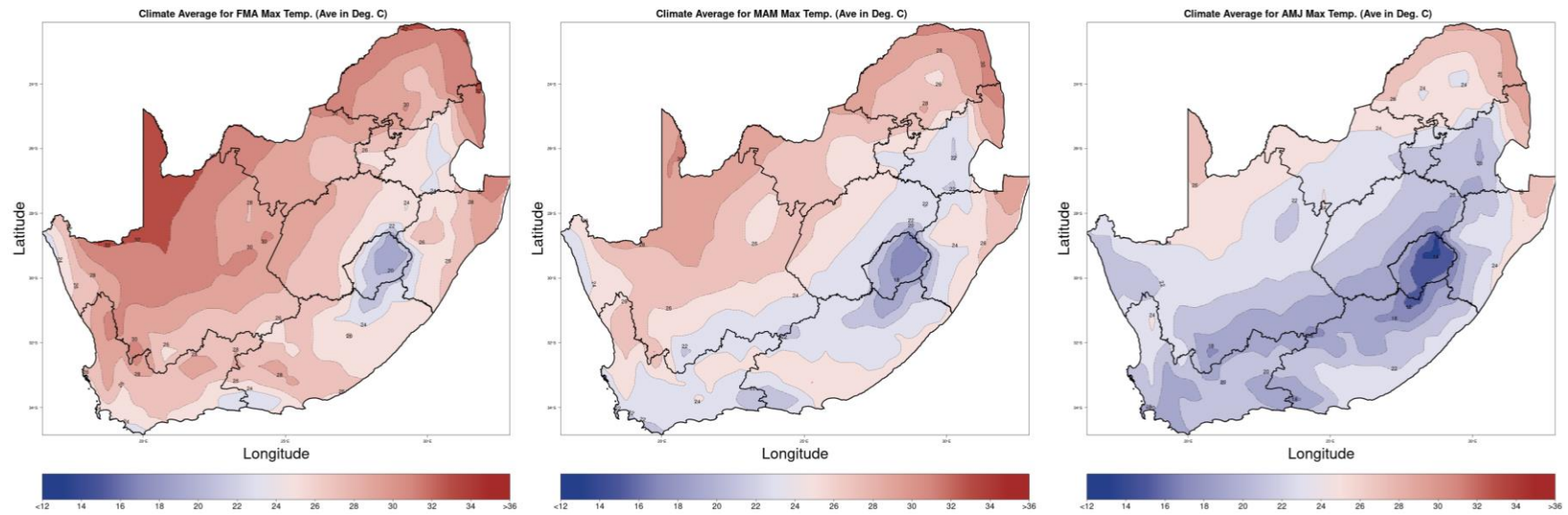
*Figure 8:      Climatological seasonal averages for maximum temperature during February-March-April (FMA; left), March-April-May (MAM; middle) and April-May-June (AMJ; right).*

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## 3.      Summary implications to various economic sector decision makers

**Water and Energy**

The estimated above-normal rainfall countrywide is likely to increase recharge of water-supply reservoirs and provide temporal drought relief to drought affected communities, particularly in the North West and Mpumalanga provinces. Water reservoirs in parts of Limpopo and the Eastern Cape provinces are likely to be burdened because of predicted below-normal rainfall during the early- and mid-autumn (only the Eastern Cape). Furthermore, the expected above-normal rainfall across the autumn season poses a risk of flash floods, especially in flood prone areas of Gauteng, Mpumalanga, and KwaZulu-Natal. Additionally, the projected below-normal temperatures across the provinces, with exceptions to Limpopo, in the late-autumn, is likely to increase demand for energy for space heating. Therefore, the relevant decision-makers may take note of the above potential risks and advise the affected businesses and communities accordingly.

**Health**

Throughout the autumn forecasting period, the minimum and maximum temperatures predicted mainly in the north-eastern half of the country, are expected to be above normal. These conditions are likely to cause sustained and extreme exposure to high solar ultraviolet radiation (UV) and heat conditions that may lead to diseases associated with UV overexposure and heat stress. Consequently, the relevant decision-makers may advise the public to take appropriate protection measures. The below normal minimum and maximum temperatures predicted for the south-western regions may lessen the heat and UV related health burden in the affected regions. The above-normal rainfall predicted for early-, mid- and late-autumn in most parts of the country may lead to flash flooding which are often accompanied by water-related vector-borne diseases especially in areas with inadequate sanitation. Therefore, relevant decision-makers may advise the public about these risks.

**Agriculture**

The high probability of above-normal rainfall over most parts of the country for early to late autumn is likely to bring positive impacts for crop and livestock production. But there is also an increased risk for water logging that can cause crop damage. Decision makers may advise farmers to practice appropriate farming practices. However, the rainfall forecasts indicate below-normal rainfall for parts of Limpopo (early autumn) and parts of the Eastern Cape (early to mid-autumn). Therefore, the relevant decision makers are encouraged to advise farmers in these regions to adopt soil and water conservation practices and 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)