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# Seasonal Climate Watch

June to October 2021

Date issued: Jun 03, 2021

## I. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a neutral state and the forecast indicates that it will most likely remain in a neutral state for the whole of the winter and spring seasons. The influence of ENSO on South Africa is however very limited during the winter season and is not expected to have a major impact on southern African weather systems on a seasonal timescale at this time.

The multi-model rainfall forecast indicates mostly above-normal rainfall during the mid- and late-winter seasons (Jun-Jul-Aug, Jul-Aug-Sep). For early spring however, below-normal rainfall is expected over the north-eastern parts of the country, with specific emphasis on the east coast which usually starts receiving significant rainfall during spring. Of specific concern during early spring as well is the below-normal rainfall expected over the Eastern Cape areas. Above-normal minimum and maximum temperatures are expected across the country.

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

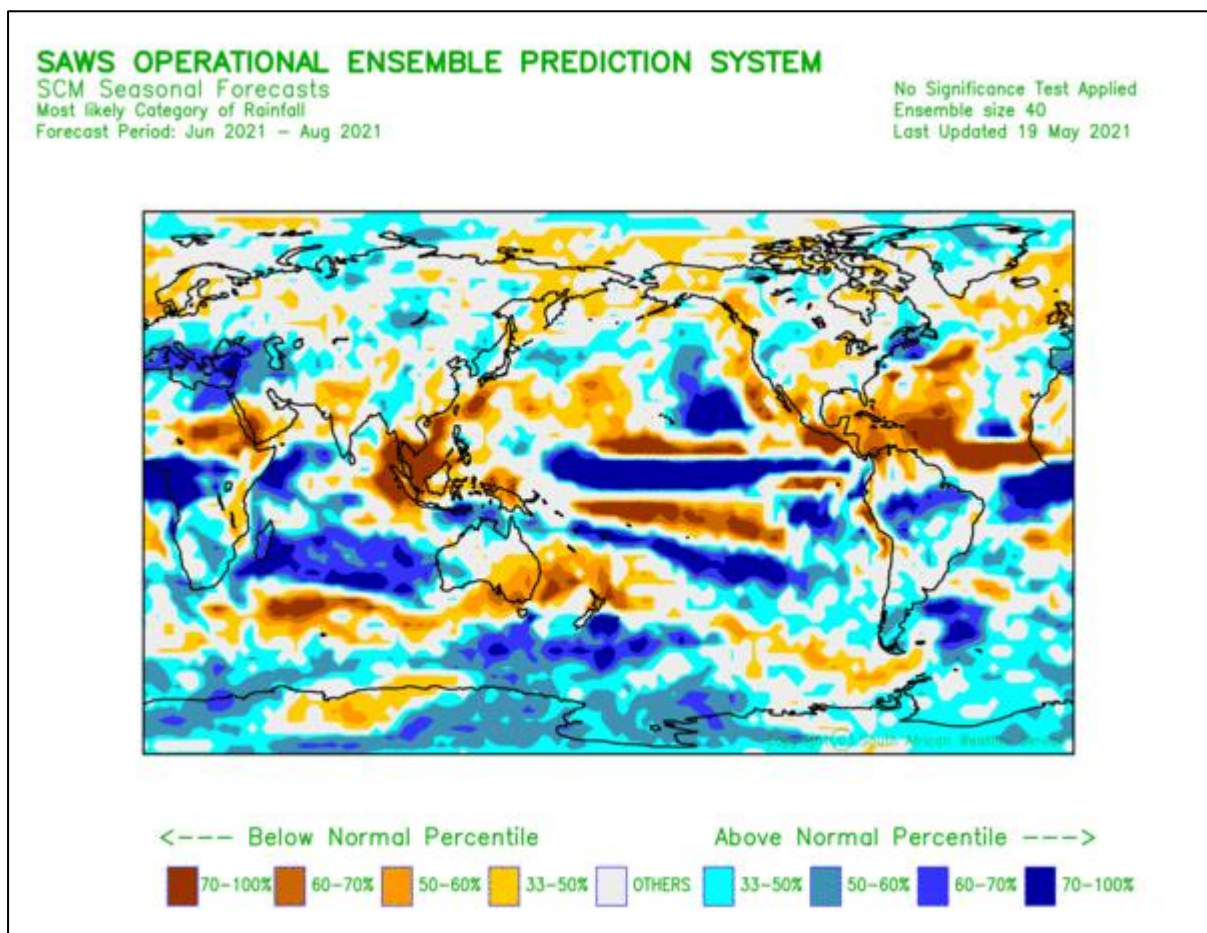
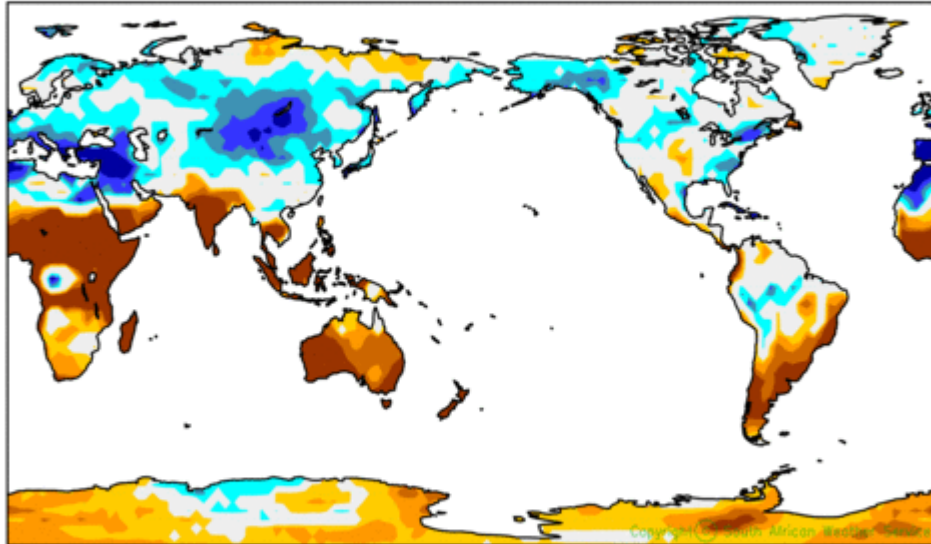


Figure 1: June-July-August global prediction for total rainfall probabilities.

## SAWS OPERATIONAL ENSEMBLE PREDICTION SYSTEM

SCM Seasonal Forecasts  
Most likely Category of 2m Temperature  
Forecast Period: Jun 2021 – Aug 2021

No Significance Test Applied  
Ensemble size 40  
Last Updated 19 May 2021



<--- Below Normal Percentile

Above Normal Percentile --->



Figure 2: June-July-August 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 May 2021 initial conditions, and are presented below for South Africa.

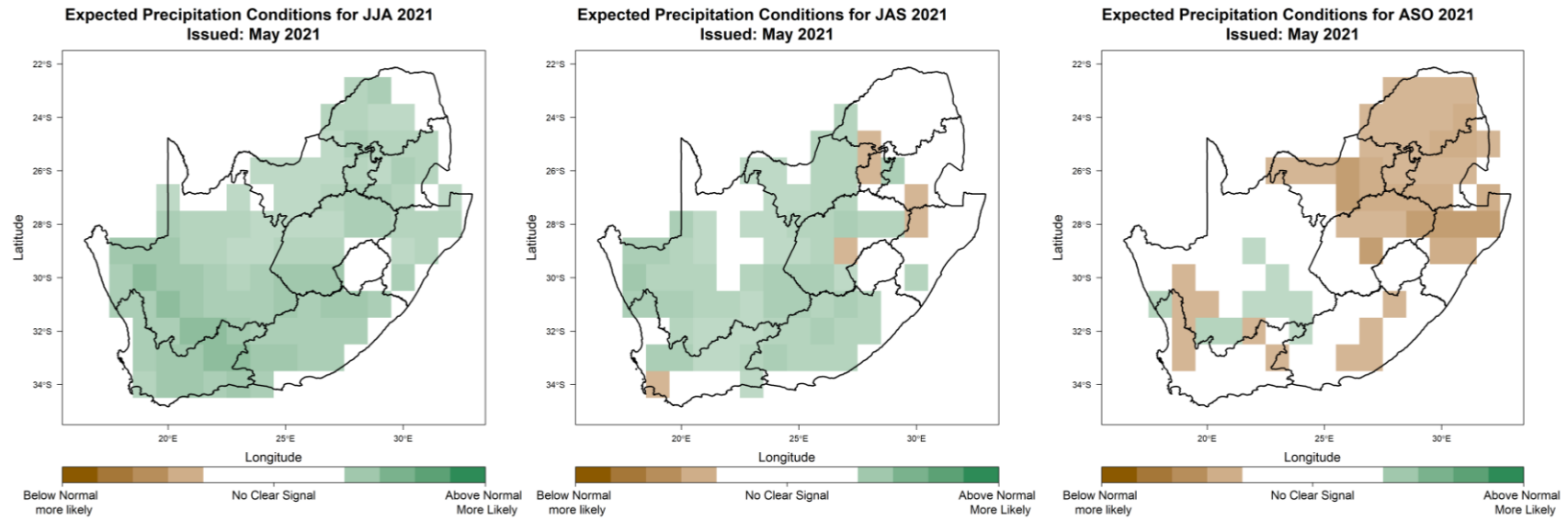


Figure 3: *June-July-August 2021 (JJA; left), July-August-September 2021 (JAS; middle), August-September-October 2021 (ASO; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

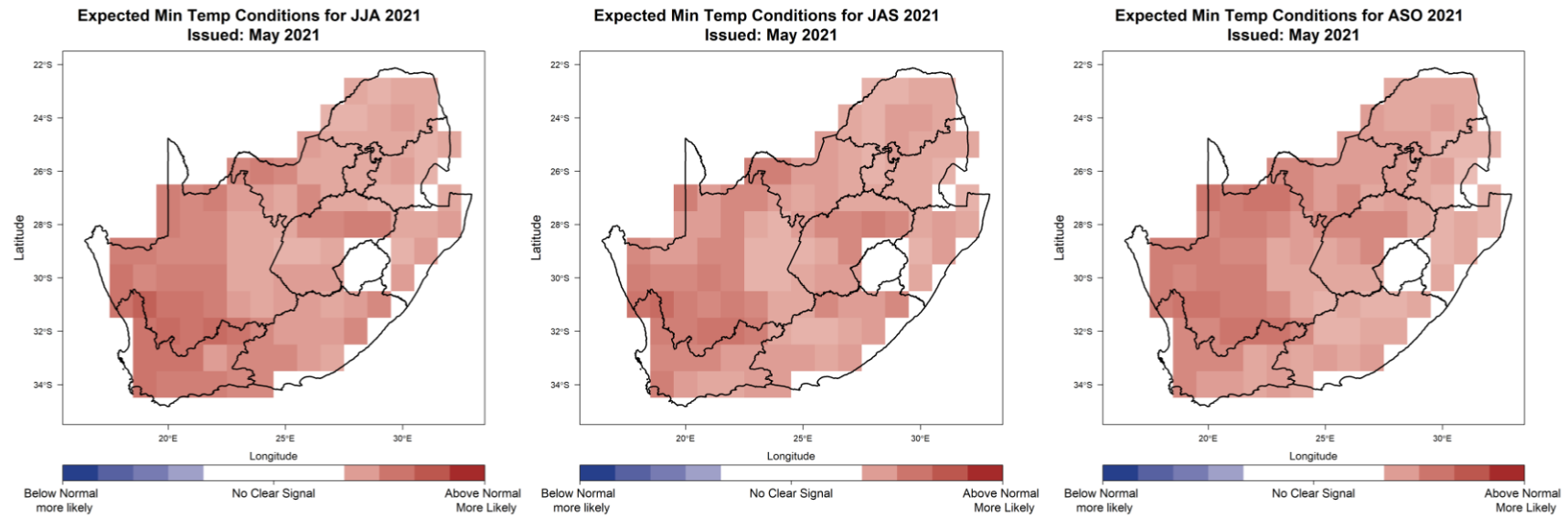


Figure 4: June-July-August 2021 (JJA; left), July-August-September 2021 (JAS; middle), August-September-October 2021 (ASO; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

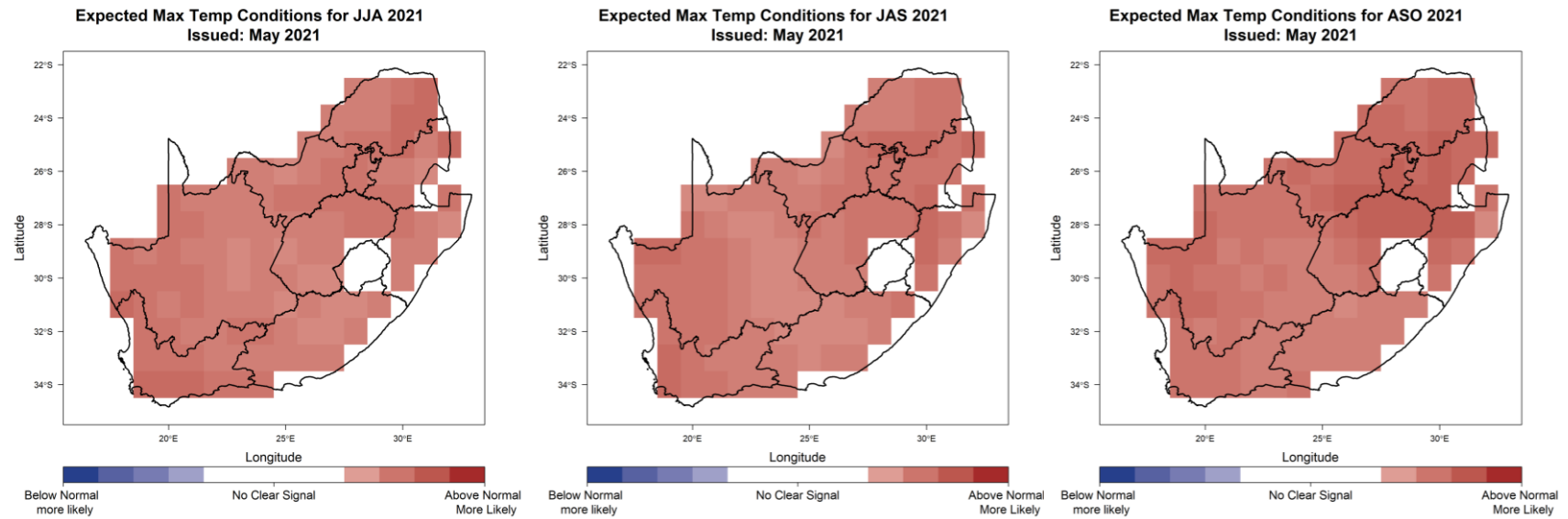


Figure 5: *June-July-August 2021 (JJA; left), July-August-September 2021 (JAS; middle), August-September-October 2021 (ASO; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

### **2.3. Climatological Seasonal Totals and Averages**

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the mid-winter (Jun-Jul-Aug), late-winter (Jul-Aug-Sep) and the early-spring (Aug-Sep-Oct). 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.



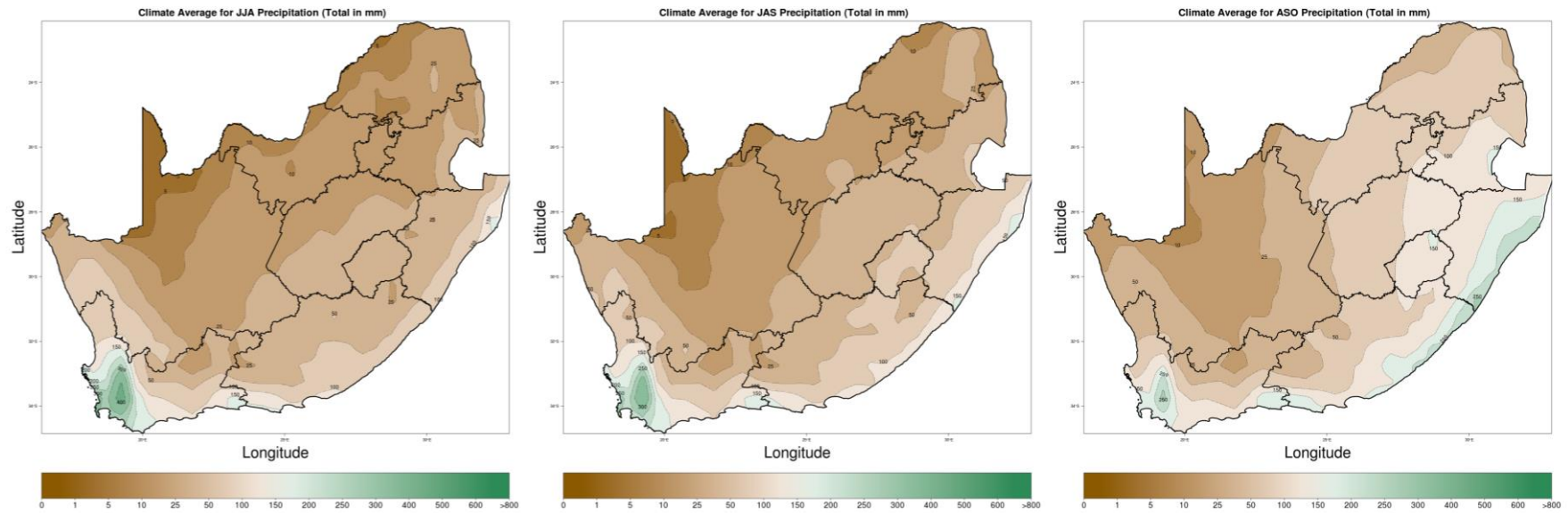


Figure 6: Climatological seasonal totals for precipitation during June-July-August (JJA; left), July-August-September (JAS; middle) and August-September-October (ASO; right).

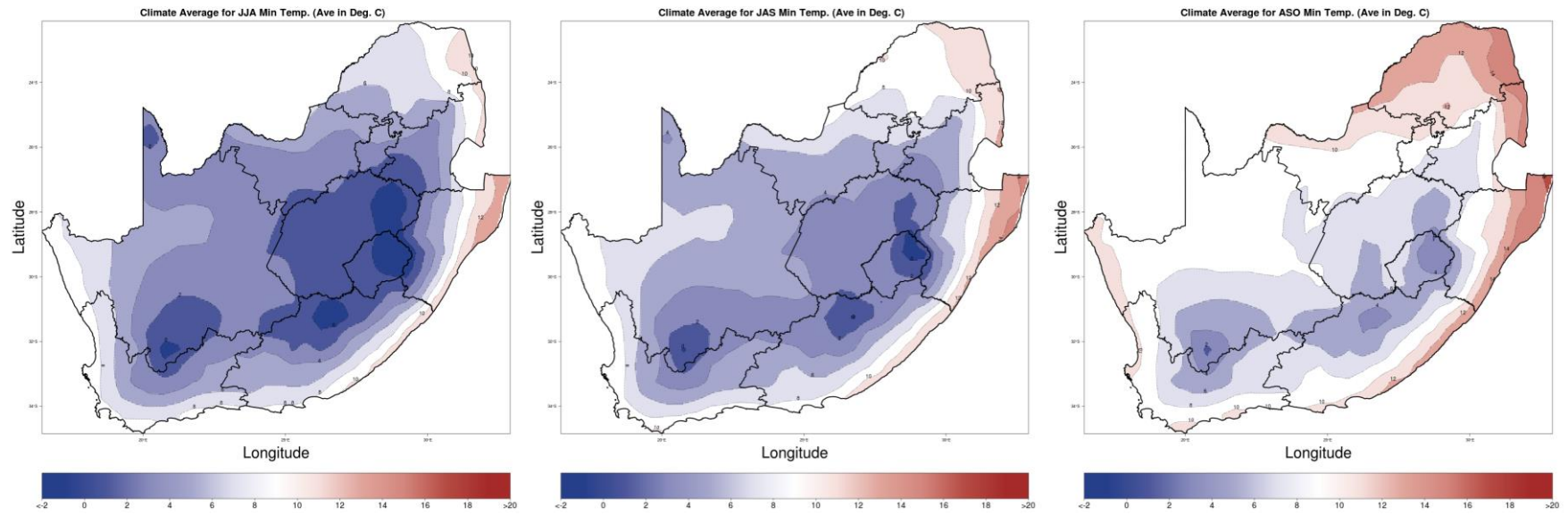


Figure 7: Climatological seasonal averages for minimum temperature during June-July-August (JJA; left), July-August-September (JAS; middle) and August-September-October (ASO; right).

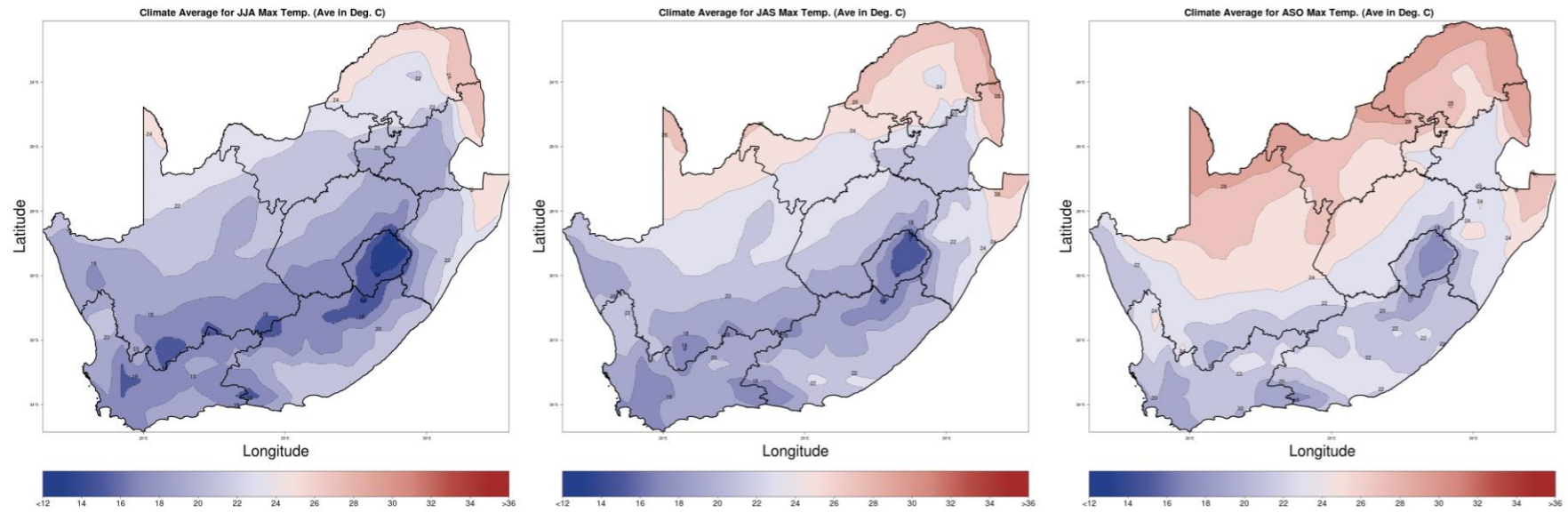


Figure 8: *Climatological seasonal averages for maximum temperature during June-July-August (JJA; left), July-August-September (JAS; middle) and August-September-October (ASO; right).*

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

#### **Water and Energy**

While the above-normal rainfall in most parts of the country during JJA and JAS is anticipated, a minimal impact is expected on the average provincial water levels and hydro power generation, particularly in Gauteng, Free State, the Northern Cape, Mpumalanga, and North West, whose dam levels exceed 80% of the full storage capacity. The impact might remain minimal in the Eastern Cape and Western Cape provinces due to the already burdened water reservoirs as well as the on-going drought in the area. There is also a risk of flash floods over the winter rainfall region that are prone to flooding. Enhanced probability of above-normal minimum and maximum temperatures across the country is likely to decrease energy demand for space heating during JAS and ASO while increased demand is expected during mid-winter. The relevant decision-makers may take note of the above-mentioned potential risks and advise the affected businesses and communities accordingly.

#### **Health**

The predicted above-normal conditions for both minimum and maximum temperatures across the country are likely to increase heat-related health burdens for the affected communities, with more severity anticipated for high altitude regions. Based on the World Health Organization ultraviolet (UV) index (UVI) international standard measurement, UVI will reach exposure reading of 3 where moderate protection from radiation is required. As a result, key decision-makers are recommended to advise the public to use proper sun protection measures and to avoid overexposure. The high probability of above-normal rainfall expected over the winter rainfall region in the mid- and late-winter seasons might lead to flash floods, increasing the probability of the transmission of water-related vector-borne diseases. Accordingly, relevant authorities are encouraged to provide appropriate advice to affected communities.

#### **Agriculture**

A high probability of mostly above-normal rainfall is expected during the mid- and late-winter seasons over most parts of the country. Above-normal rainfall during winter months over the summer rainfall regions is not likely to be significant. However, above-normal rainfall indicated for the winter rainfall region, south and south-western parts of the country, will likely have a positive impact on agriculture. For early spring, below-normal rainfall is expected over the north-eastern parts of the country (east coast), which usually starts receiving significant rainfall during spring. In addition, below-normal rainfall is expected over the Eastern Cape areas during early spring, which is of a great concern considering the on-going drought in the province. Therefore, the relevant decision makers are encouraged to advise farmers in these regions to adopt proper 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)

