

---

# Seasonal Climate Watch

October 2020 to February 2021

Date issued: September 25, 2020

## I. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a weak La Niña state and the forecast indicates that it will most likely remain and strengthen towards a moderate La Niña state during early- and midsummer. With this strong likelihood of a moderate La Niña, there are increased chances of above-normal rainfall in the summer rainfall areas during the coming summer season.

The multi-model rainfall forecast for late spring (Oct-Nov-Dec), however, indicates that the eastern parts of the summer rainfall season may start off with below-normal rainfall, with above-normal expected for the rest of the region. During early- and mid-summer (Nov-Dec-Jan; Dec-Jan-Feb) most of the summer rainfall regions are expected to receive above-normal rainfall, with some parts of KwaZulu-Natal very uncertain and even showing signs of below-normal rainfall.

In general, most of the country is expected to experience above-normal temperatures during late spring, however significant areas over the central parts of the country are expected to have below normal maximum temperatures during early- and mid-summer.

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 (October-November-December) predictions for rainfall (Figure 1) and average temperature (Figure 2).

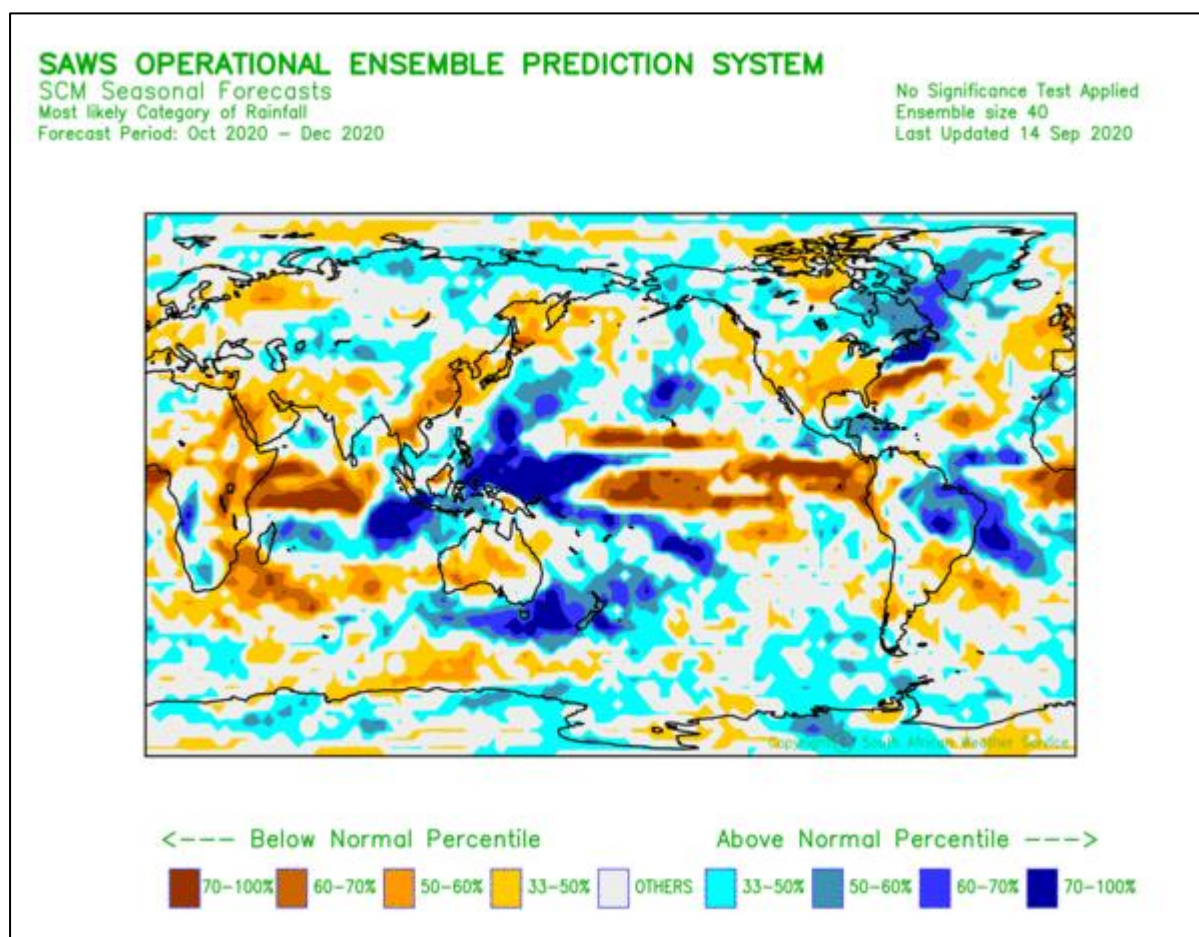
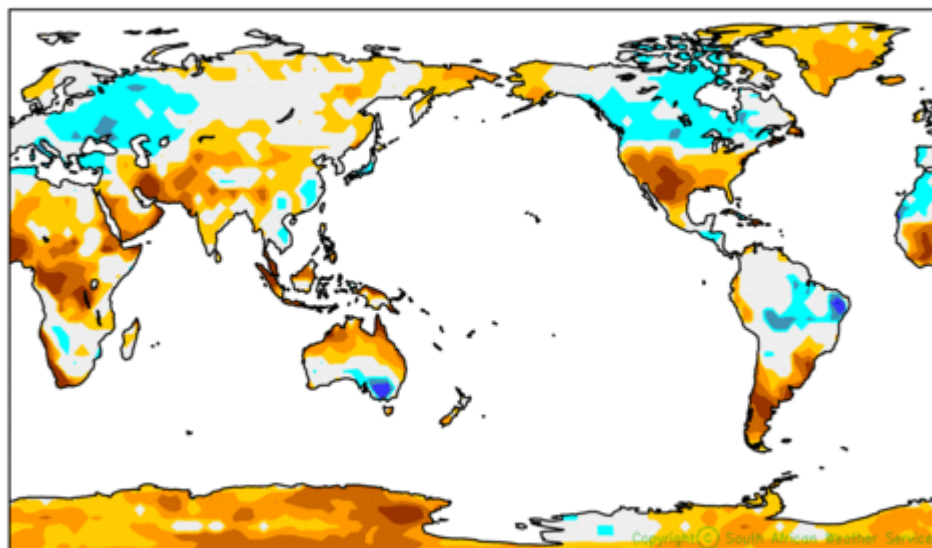


Figure 1: October-November-December global prediction for total rainfall probabilities.

## SAWS OPERATIONAL ENSEMBLE PREDICTION SYSTEM

SCM Seasonal Forecasts  
Most likely Category of 2m Temperature  
Forecast Period: Oct 2020 – Dec 2020

No Significance Test Applied  
Ensemble size 40  
Last Updated 14 Sep 2020



<--- Below Normal Percentile

Above Normal Percentile --->

70-100% 60-70% 50-60% 33-50% OTHERS 33-50% 50-60% 60-70% 70-100%

Figure 2: October-November-December 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 September 2020 initial conditions, and are presented below for South Africa.

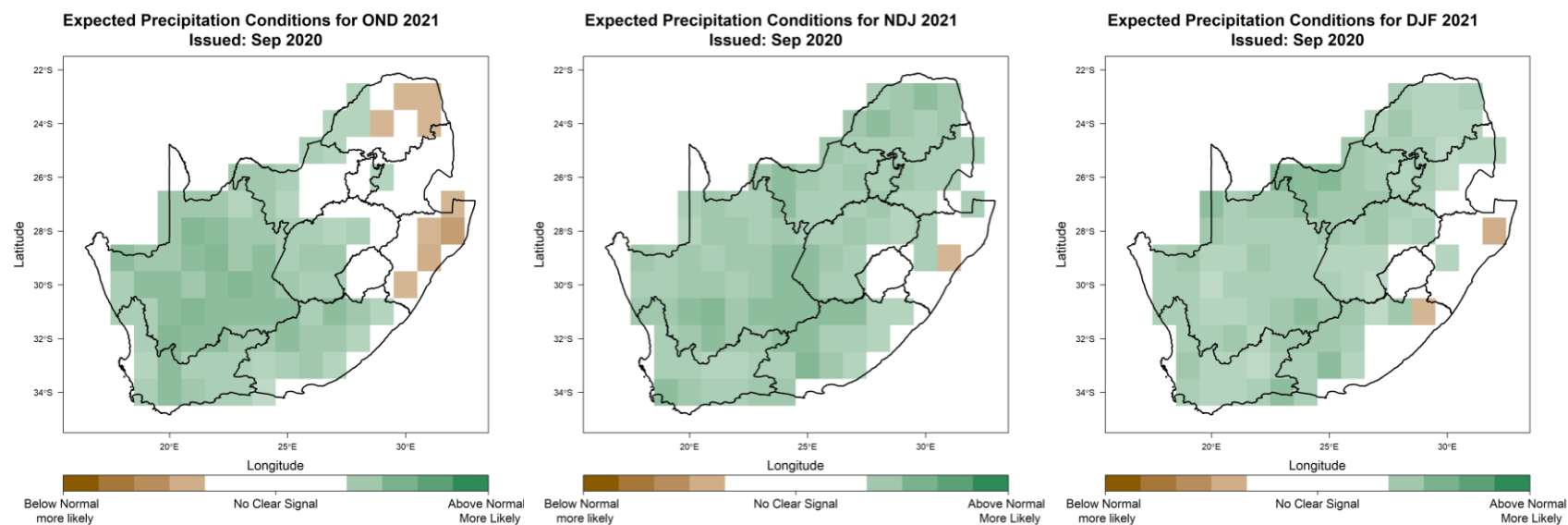


Figure 3: October-November-December 2020 (OND; left), November-December-January 2021 (NDJ; middle), December-January-February 2020 (DJF; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

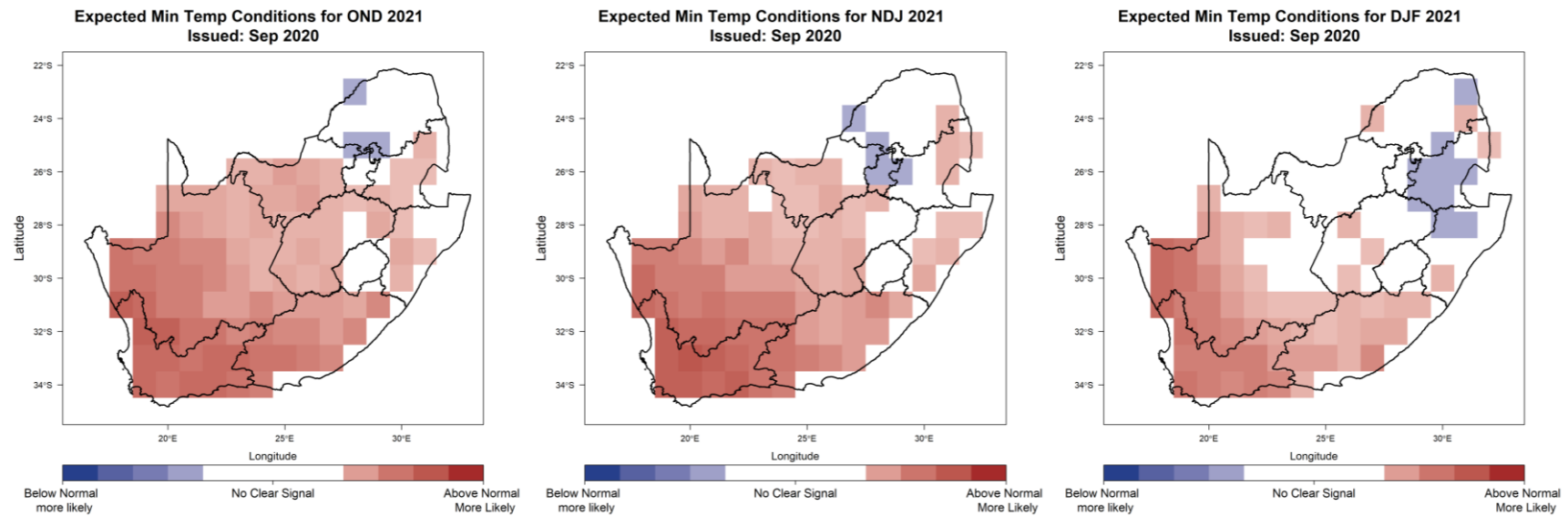


Figure 4: October-November-December 2020 (OND; left), November-December-January 2021 (NDJ; middle), December-January-February 2020 (DJF; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

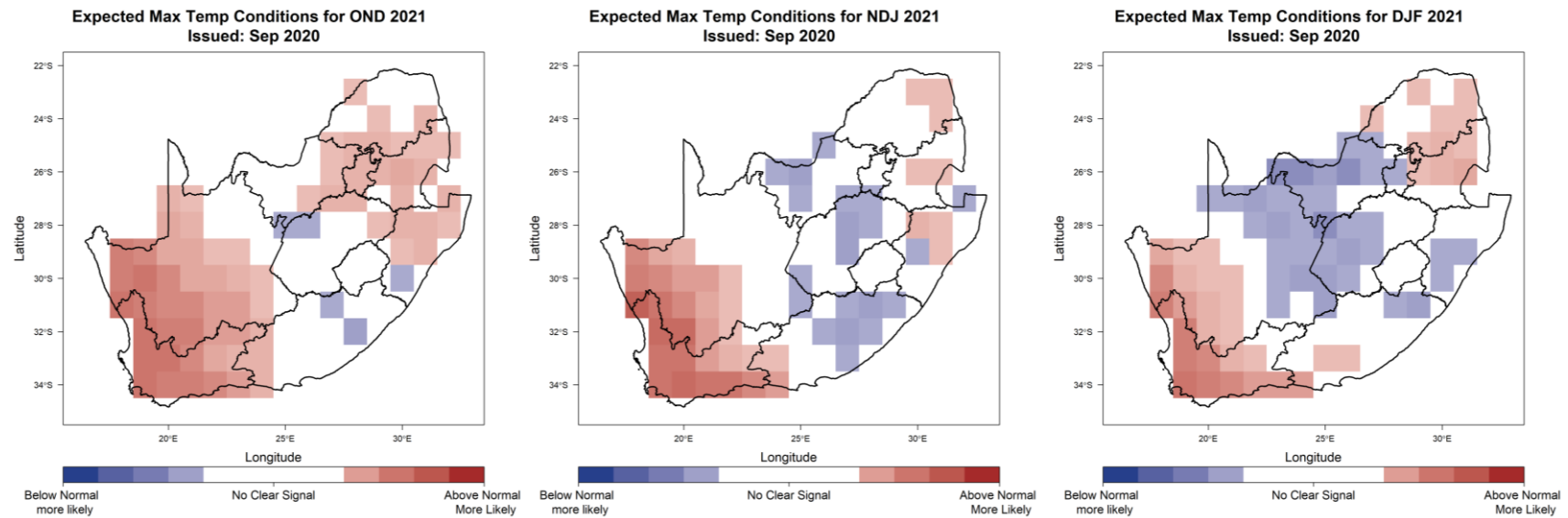


Figure 5: October-November-December 2020 (OND; left), November-December-January 2021 (NDJ; middle), December-January-February 2020 (DJF; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

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

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the late-winter (Sep-Oct-Nov), early-spring (Oct-Nov-Dec) and the spring (Nov-Dec-Jan). 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.

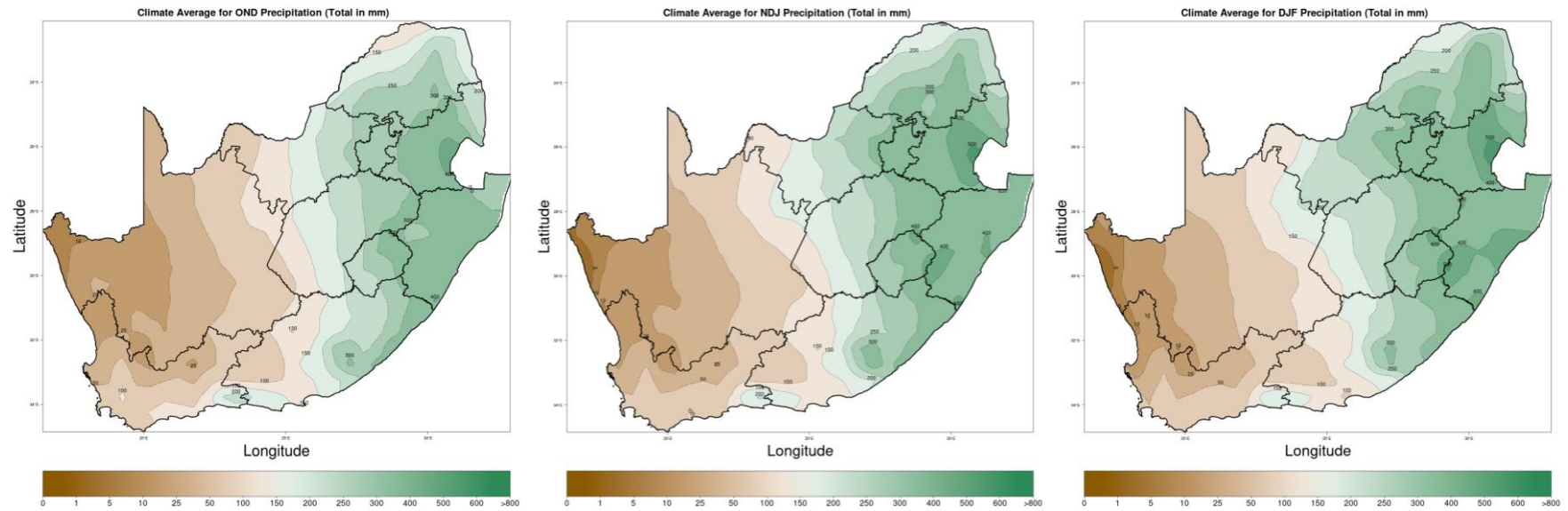


Figure 6: Climatological seasonal totals for precipitation during October-November-December (OND; left), November-December-January (NDJ; middle) and December-January-February (DJF; right).



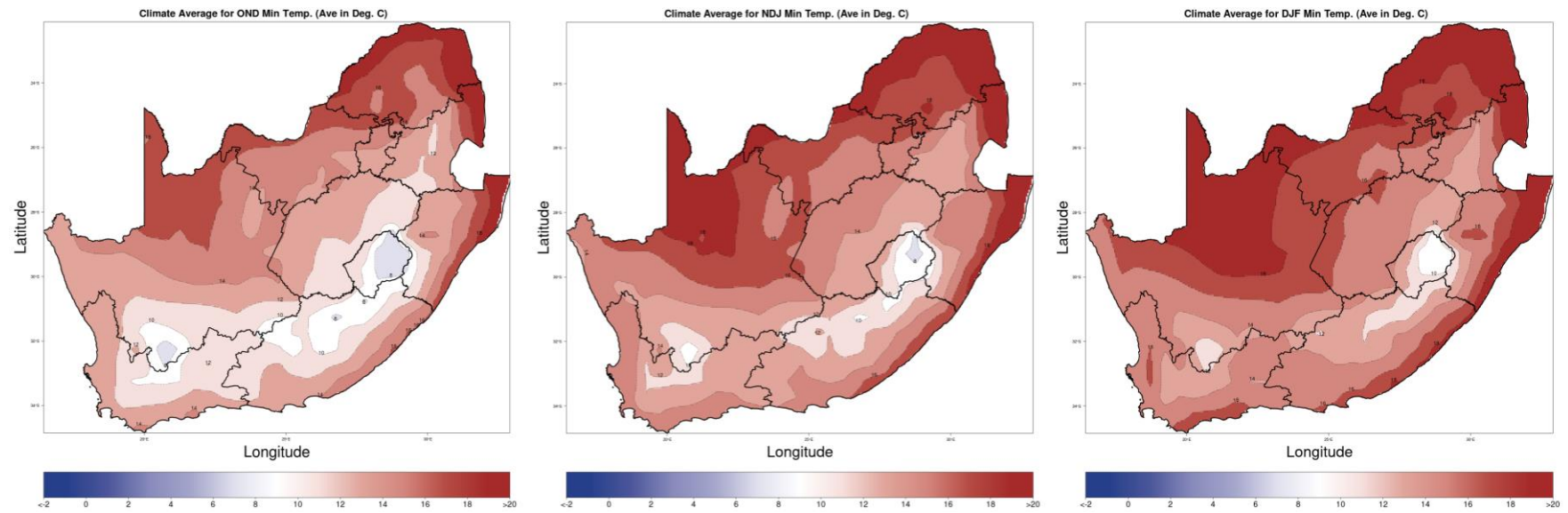


Figure 7: Climatological seasonal averages for minimum temperature October-November-December (OND; left), November-December-January (NDJ; middle) and December-January-February (DJF; right).

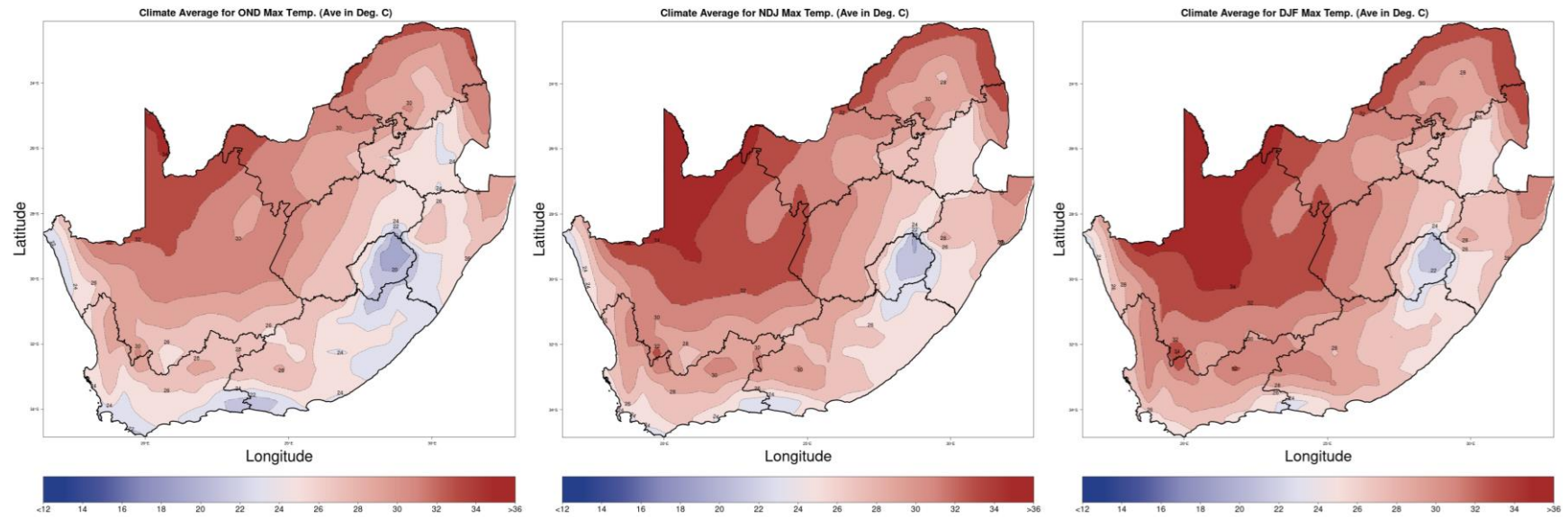


Figure 8: *Climatological seasonal averages for maximum temperature during October-November-December (OND; left), November-December-January (NDJ; middle) and December-January-February (DJF; right).*

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

#### **Water and Energy**

Water reservoirs in most provinces, except KwaZulu-Natal, are likely to recover due to the anticipated above-normal rainfall conditions during the early- and mid-summer seasons. Although the expected above-normal rainfall conditions might bring some relief it may not be enough for provinces like Limpopo and the Eastern Cape, where some dam levels are below 50% storage capacity and various communities (e.g. in Port Elizabeth) are already experiencing water shortages. The above-normal rainfall conditions also pose the risk of flash floods in some urban areas, for example, those in Gauteng, which are prone to flooding hence there is a need for citizens to watch out for short-term forecasts and warnings as the season progresses. In addition, the anticipated above-normal maximum temperature conditions in northern parts of KwaZulu-Natal, parts of Limpopo, Mpumalanga, the Northern Cape, and Western Cape are likely to increase evaporation processes as well as significant demand for energy for cooling.

#### **Health**

The predicted above-normal maximum temperatures in Limpopo, Mpumalanga, North West, Northern Cape and Eastern Cape Provinces during mid-summer and summer season might lead to a rise in bacterial infections, skin and eye allergies. High altitude areas in some parts of Gauteng, Northern and Eastern Cape Provinces will most likely receive high intensities of UV radiation which increase health risks such as eye sensitivity and skin damage. The relevant decision makers are encouraged to advise the public to take appropriate sun protection measures to reduce overexposure to UV radiation by staying in the shade, using sunscreen and wearing protective clothing, particularly during the mid-day period. Additionally, the above-normal rainfall forecast for the Limpopo province might exacerbate malaria incidence. Meanwhile, wetter conditions expected in the Free State, Eastern Cape and the western parts of KwaZulu-Natal (early and mid-summer) might increase waterborne diseases.

#### **Agriculture**

The high probability of above-normal rainfall over the provinces of Limpopo, Mpumalanga, Free State, Gauteng, North West, Northern Cape and Western Cape in early to mid-summer is likely to bring positive impacts for crop and livestock production. Decision makers may advise farmers to prepare the land for planting, practice soil and water conservation, and establish good drainage systems but there may be delays on the onset of the planting season in the eastern parts of Limpopo due to insufficient soil moisture as a result of the predicted below-normal rainfall over those areas. The seasonal forecast for KwaZulu-Natal shows generally drier conditions at the start of the season with gradual wetter conditions expected in the west for early and mid-summer months. The seasonal forecast for the Eastern Cape shows mostly wetter conditions across the province, an indication of drier conditions in mid-summer in the eastern extremes. As a result, the relevant decision makers are encouraged to advise farmers to adopt soil and water conservation practices and water harvesting and storage.

*This forecast is based on existing conditions and the trends can change. Therefore, decision makers, farmers and other stakeholders are advised to keep monitoring the weekly and monthly forecasts issued by the South African Weather Service 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)

