Seasonal Climate Watch

October 2021 to February 2022

Date issued: Sep 30, 2021

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a neutral state and the forecasts indicate that it will most likely remain in a neutral state for spring, with a likely change to a weak La Niña during early- and mid-summer. As we move towards the mid-summer season, ENSO starts playing an important role in our summer rainfall. As such, the increased likelihood of a weak La Niña during early- and mid-summer is expected to be favourable for above-normal rainfall in that period.

The multi-model rainfall forecast indicates mostly above-normal rainfall for the north-eastern half of the country throughout the early-summer (OND and NDJ) and mid-summer (DJF) seasons, whereas the south-western half, which falls outside the parts which receive summer rainfall, is expected to partly receive below-normal rainfall during early-summer and above-normal rainfall during mid-summer. Above-normal minimum and maximum temperatures are expected across the country throughout the early-summer and mid-summer seasons except for parts of the north-east of South Africa which are expected to have below-normal maximum temperatures during mid-summer.

The South African Weather Service (SAWS) 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

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

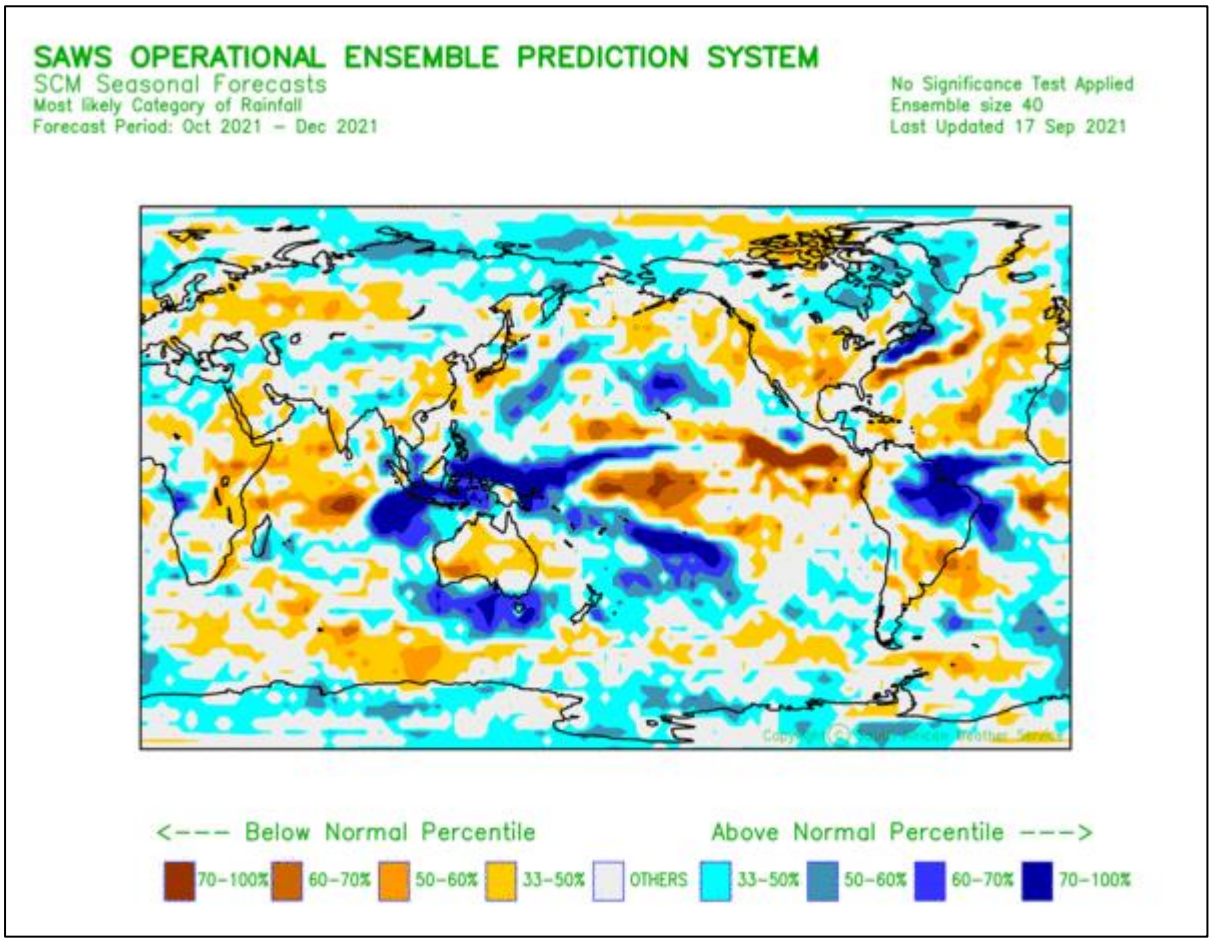

Figure 1: October-November-December global prediction for total rainfall probabilities.

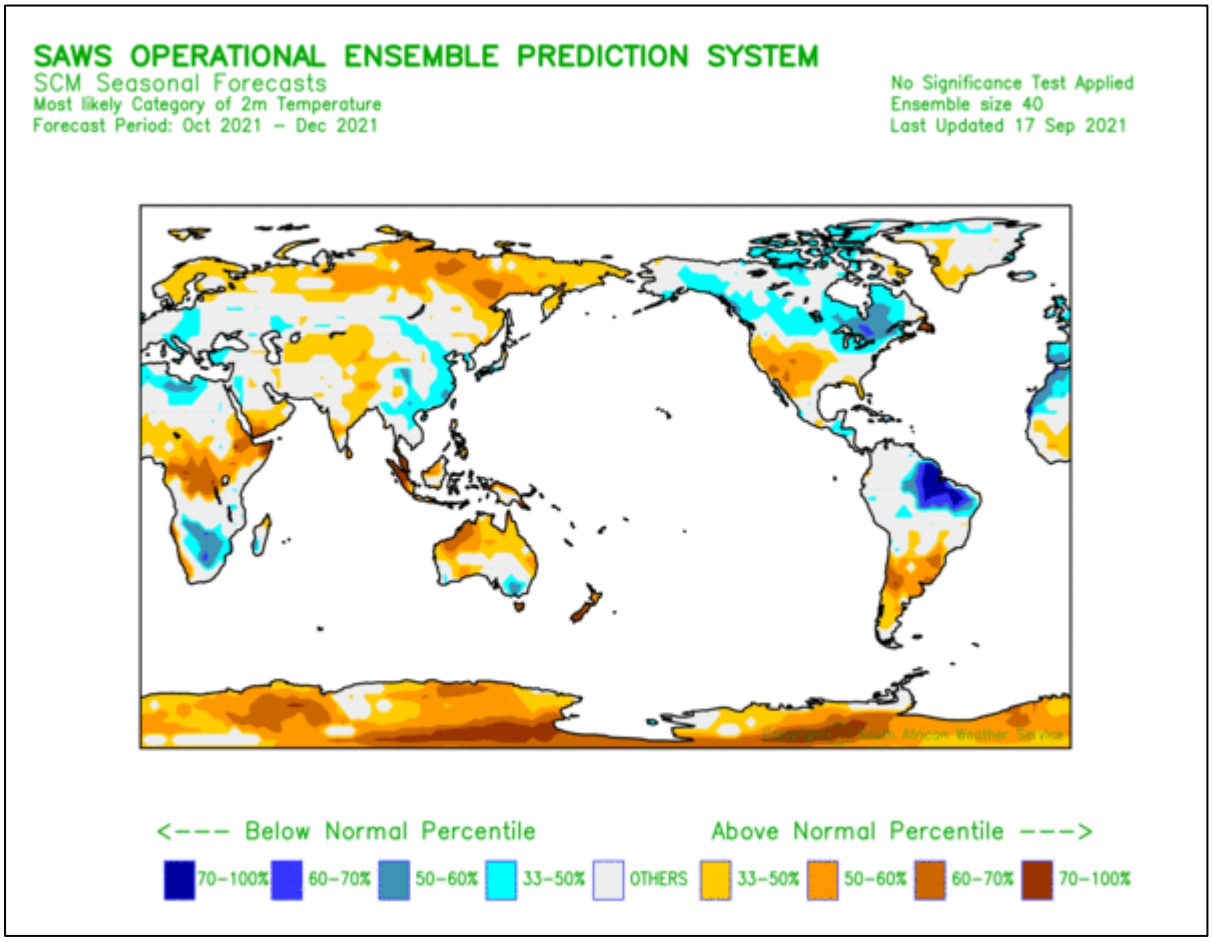

Figure 2: October-November-December global prediction for average temperature probabilities.

2.2. Seasonal Forecasts for South Africa from the SAWS OAGCM

The above-mentioned global forecasting system's forecasts are combined with the GFDL-SPEAR and COLA-RSMAS-CCSM4 systems (part of the North American Multi-Model Ensemble System) for South Africa, as issued with the September 2021 initial conditions, and are presented below for South Africa.

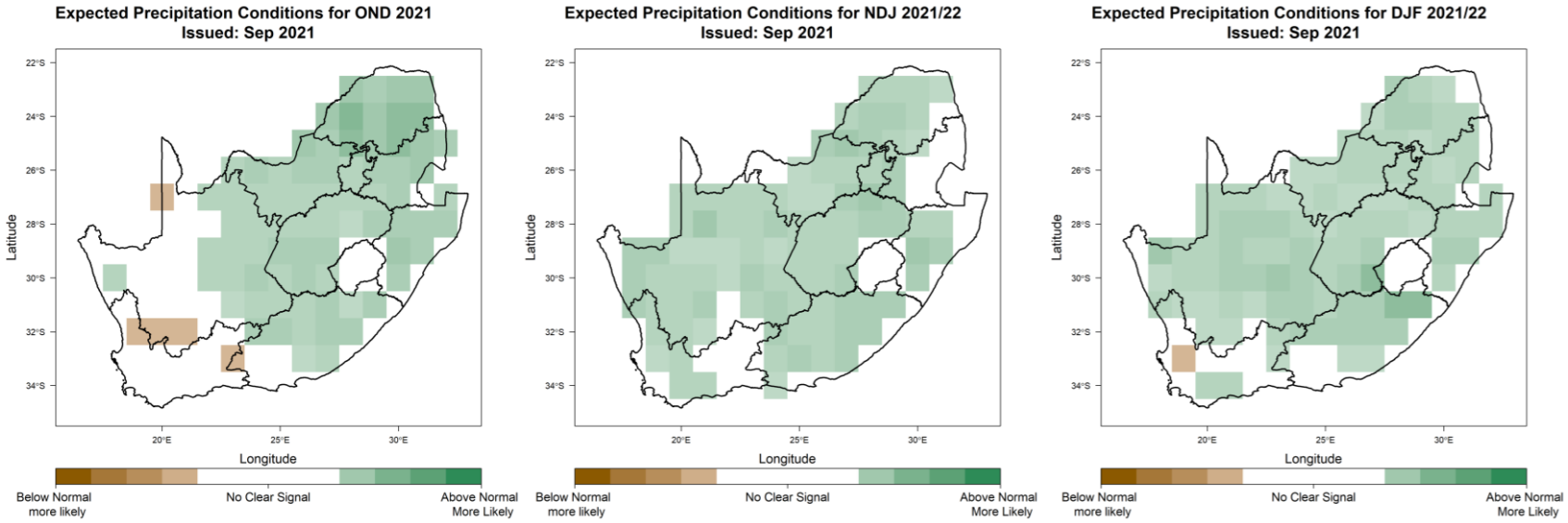

Figure 3: *October-November-December 2021 (OND; left), November-December-January 2021/22 (NDJ; middle), December-January-February 2021/22 (DJF; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

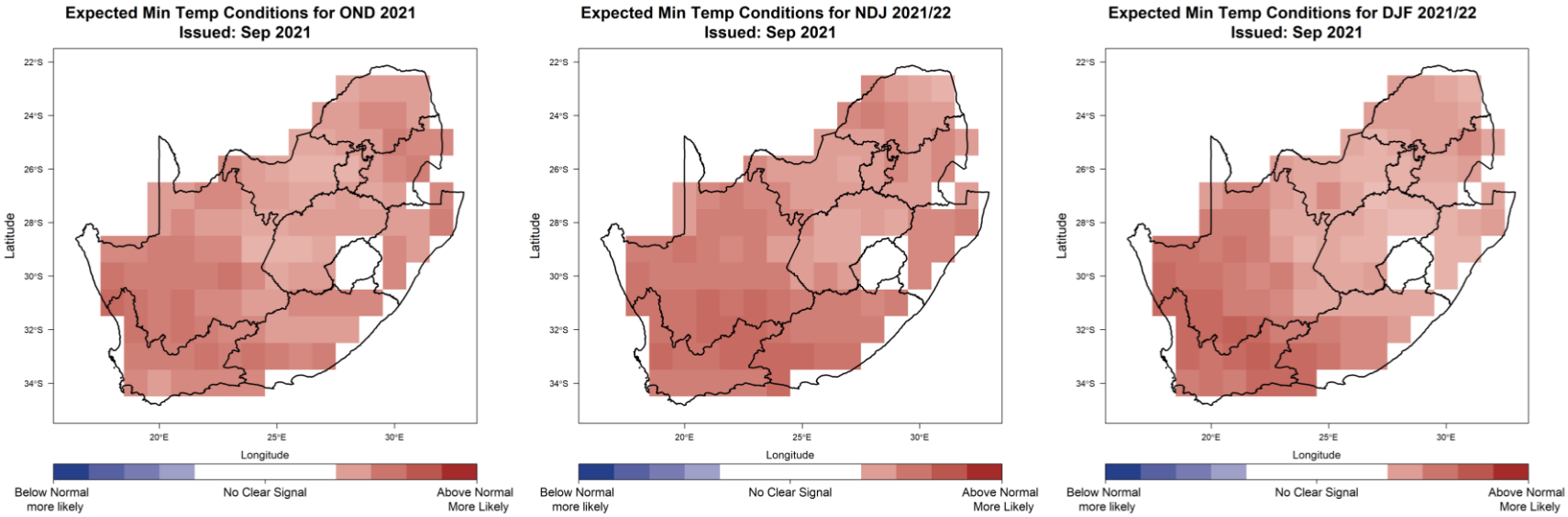

Figure 4: *October-November-December 2021 (OND; left), November-December-January 2021/22 (NDJ; middle), December-January-February 2021/22 (DJF; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

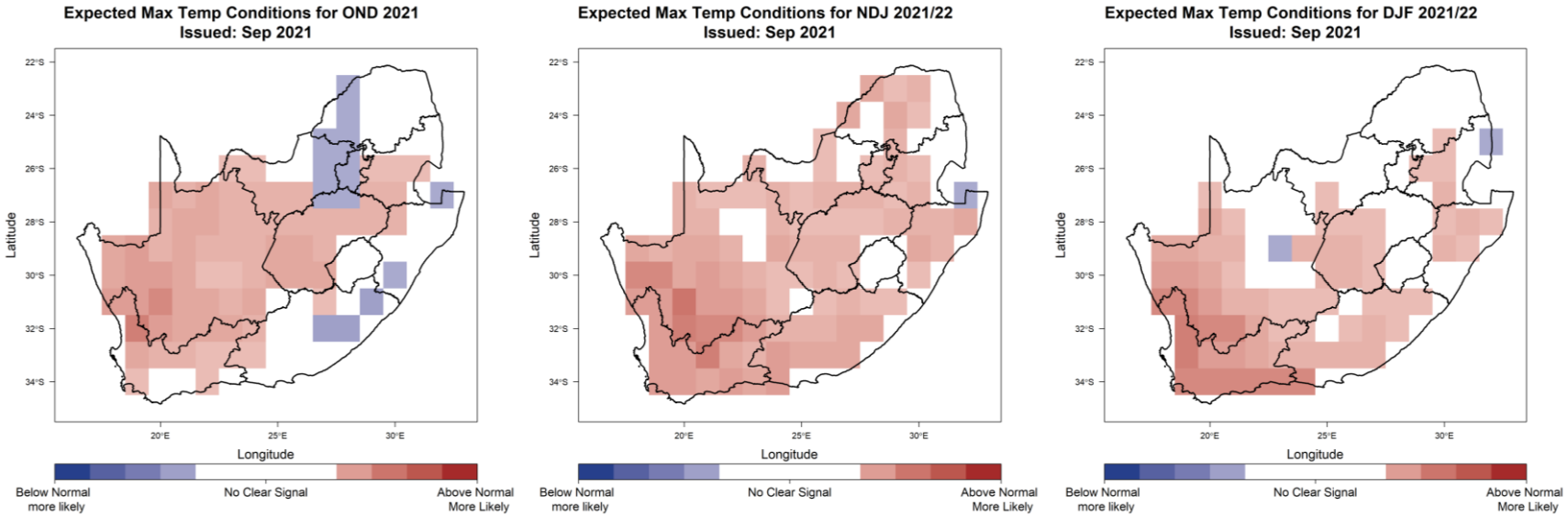

Figure 5: *October-November-December 2021 (OND; left), November-December-January 2021/22 (NDJ; middle), December-January-February 2021/22 (DJF; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the early-summer seasons (Oct-Nov-Dec and Nov-Dec-January) and the mid-summer season (Dec-Jan-Feb). 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.

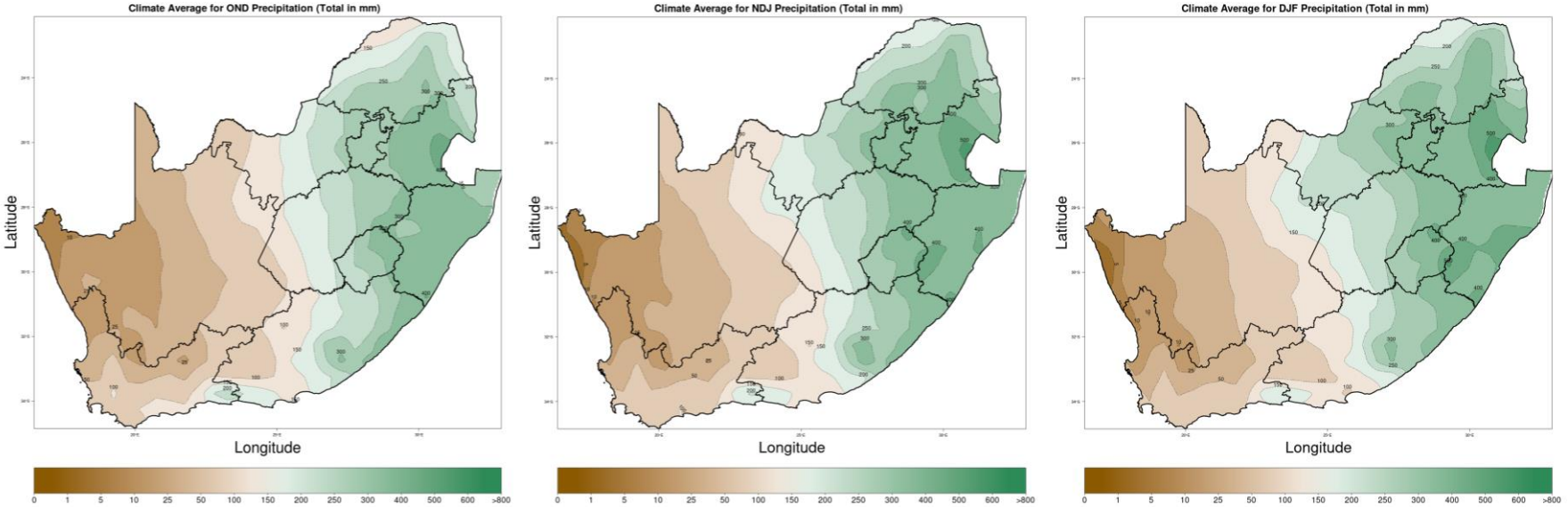

Figure 6: *Climatological seasonal totals for precipitation during October-November-December (OND; left), November-December-January (NDJ; middle) and December-January-February (DJF; right).*

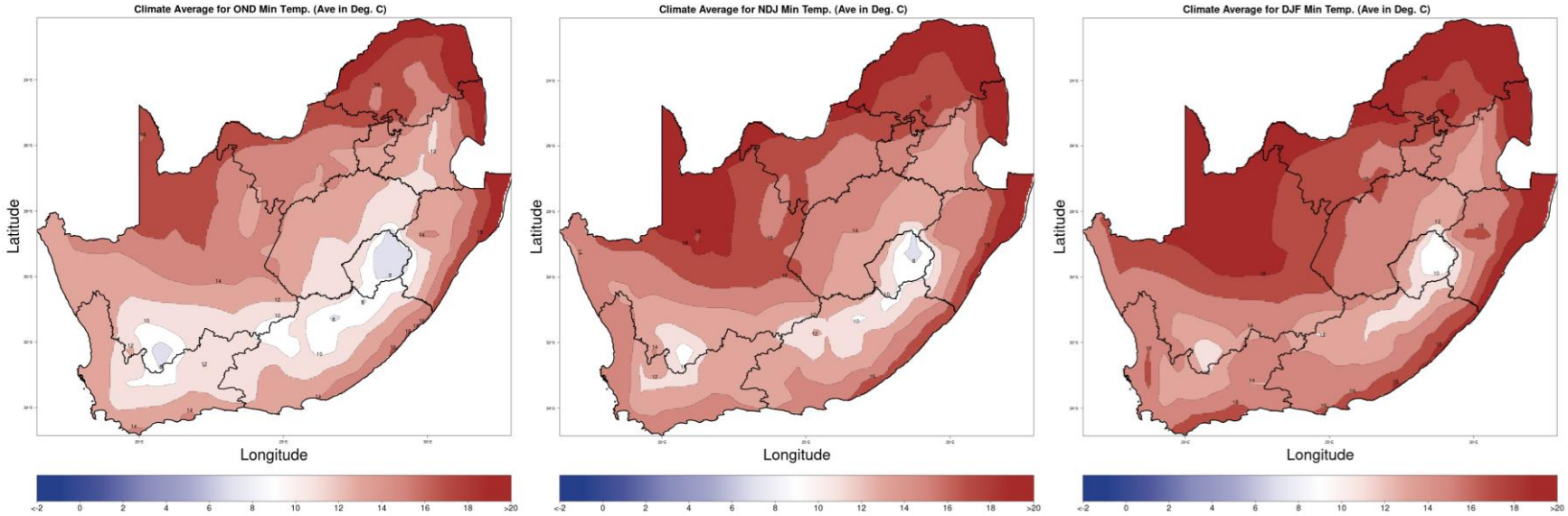

Figure 7: *Climatological seasonal averages for minimum temperature during October-November-December (OND; left), November-December-January (NDJ; middle) and December-January-February (DJF; right).*

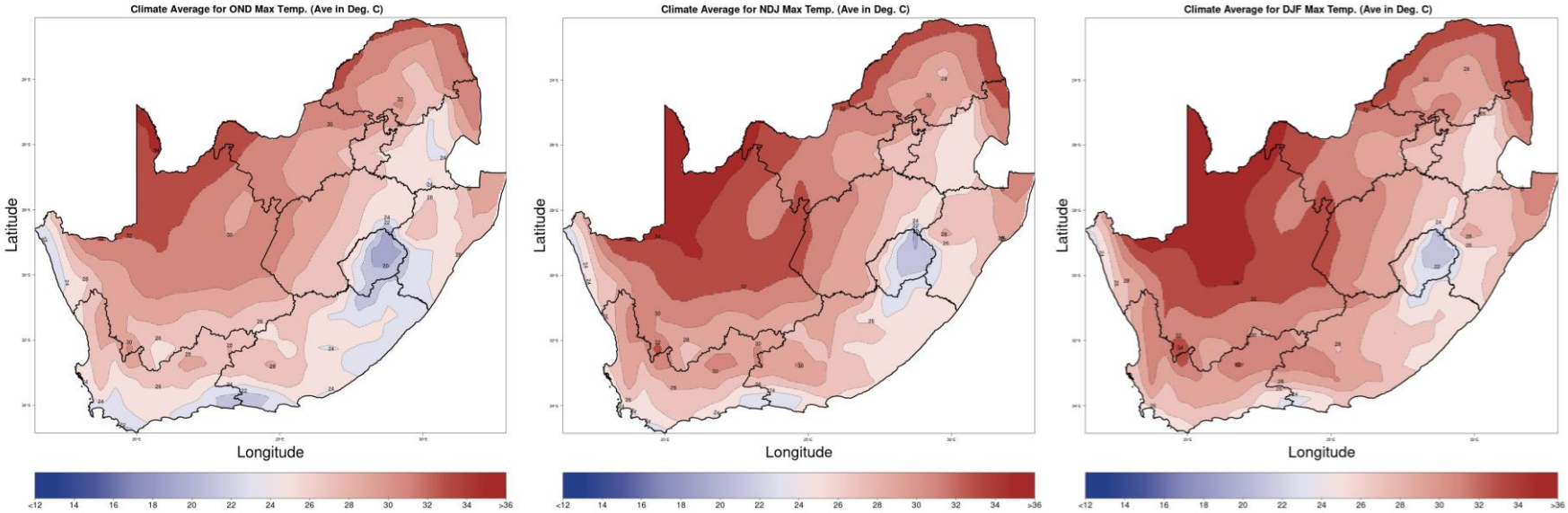

Figure 8: Climatological seasonal averages for maximum temperature during October-November-December (OND; left), November-December-January (NDJ; middle) and December-January-February (DJF; right).

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3. Summary implications to various economic sector decision makers

Water and Energy

The anticipated above-normal rainfall over most of the summer rainfall regions during early- to mid-summer seasons provides a good opportunity for water reservoirs' recharge. This may also pose a risk of flash floods. Moreover, the expected above-normal maximum temperature conditions across the country during the early- and mid-summer seasons are likely to increase 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 predicted above-normal temperatures are likely to induce exposure to ultraviolet (UV) radiation and heat stress conditions, leading to diseases associated with overexposure to UV and high temperatures. Consequently, the relevant decision-makers are urged to advise the public to take appropriate protective measures. The anticipated above-normal rainfall over the north-eastern half of the country during the early- and mid-summer may trigger flash floods and therefore potential waterborne illnesses, especially in areas with poor drainage systems. The relevant authorities are encouraged to provide appropriate advice to affected communities.

Agriculture

Above-normal rainfall is expected over most parts of the summer rainfall regions of the country during the early- to mid-summer seasons, which is likely to bring positive impacts for crop and livestock production. Decision-makers may advise farmers to prepare land for planting, practice soil and water conservation, and establish good drainage systems.

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)