
Seasonal Climate Watch

September 2021 to January 2022

Date issued: Sep 03, 2021

I. 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 spring and 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 spring to early summer seasons (SON, OND and NDJ), whereas the south-western half, which falls outside the parts which receive summer rainfall, is mostly expected to receive below-normal rainfall during spring and above-normal rainfall during early-summer. Above-normal minimum and maximum temperatures are expected across the country throughout spring and early-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 (September-October-November) predictions for rainfall (Figure 1) and average temperature (Figure 2).

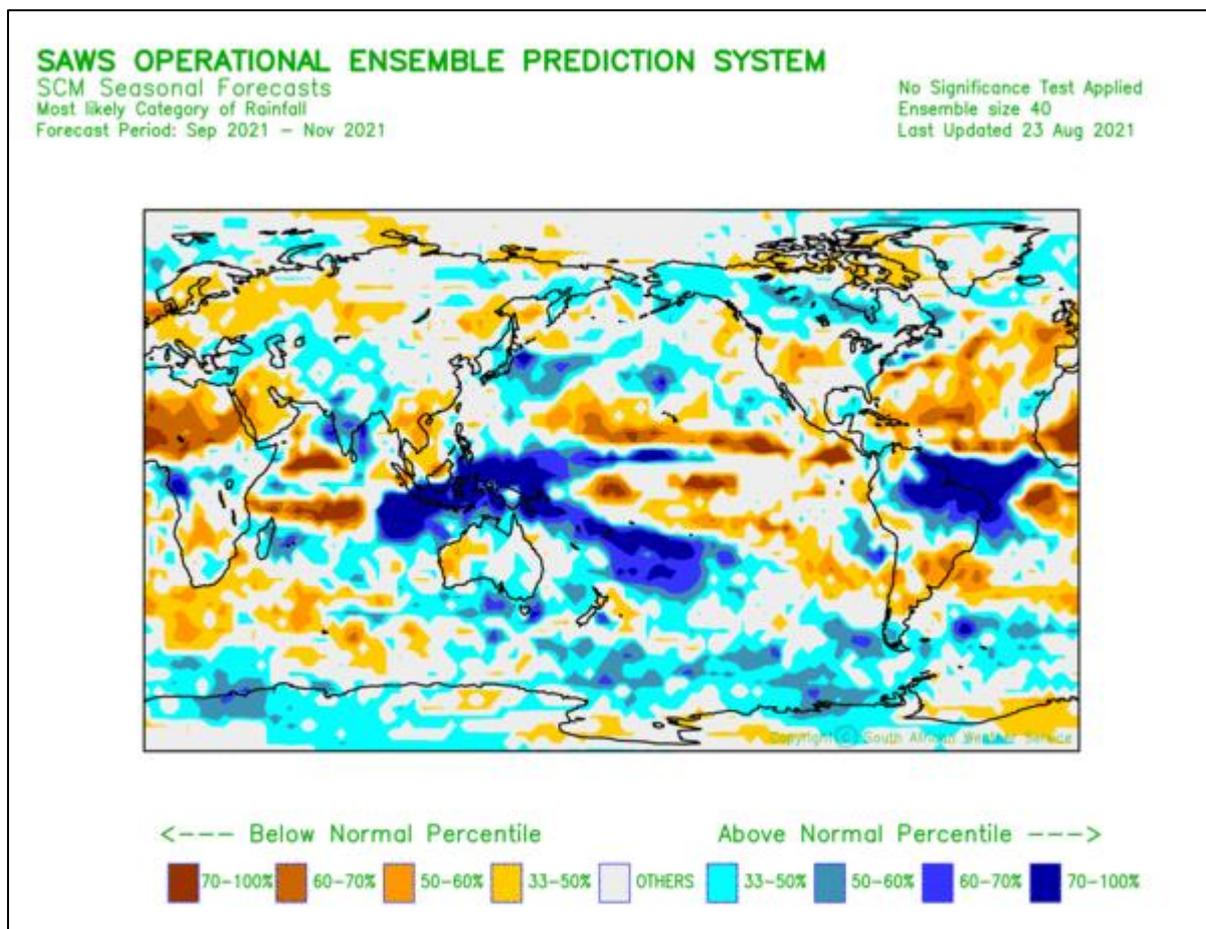
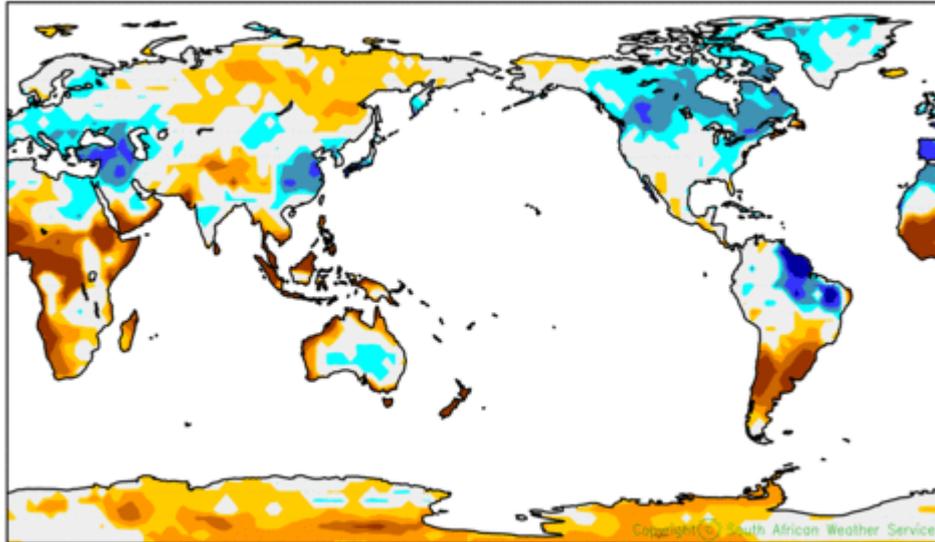


Figure 1: September-October-November global prediction for total rainfall probabilities.

SAWS OPERATIONAL ENSEMBLE PREDICTION SYSTEM

SCM Seasonal Forecasts
Most likely Category of 2m Temperature
Forecast Period: Sep 2021 – Nov 2021

No Significance Test Applied
Ensemble size 40
Last Updated 23 Aug 2021



<--- Below Normal Percentile

Above Normal Percentile --->



Figure 2: September-October-November 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 August 2021 initial conditions, and are presented below for South Africa.

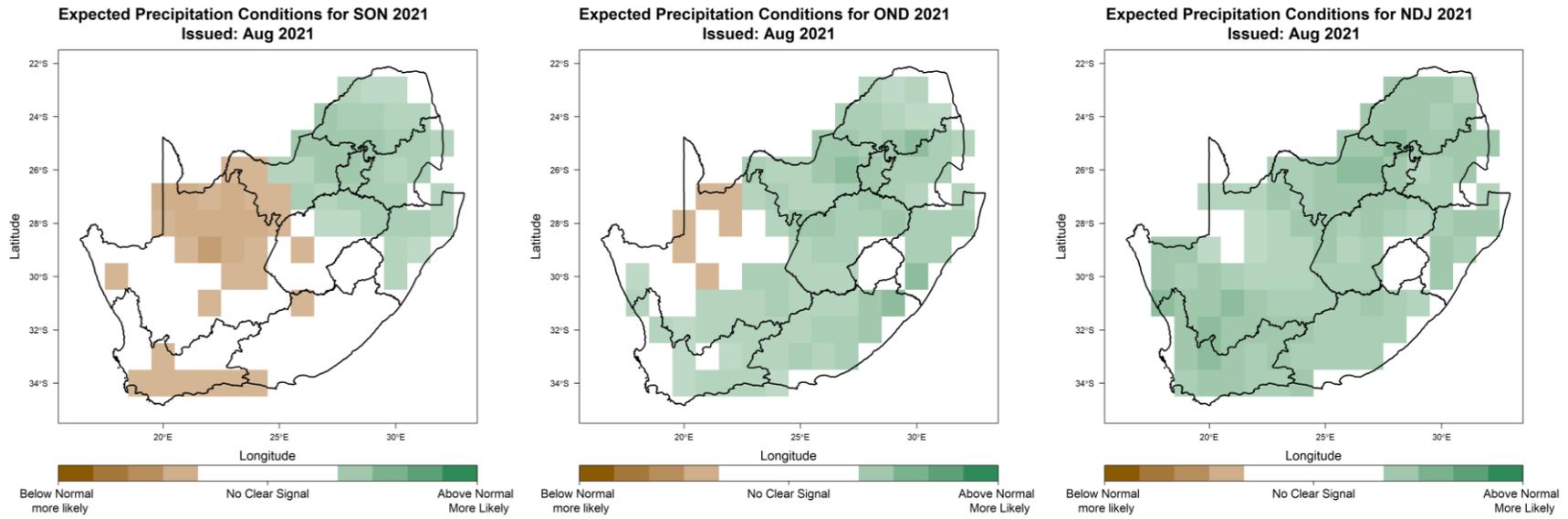


Figure 3: September-October-November 2021 (SON; left), October-November-December 2021 (OND; middle), November-December-January 2021 (NDJ; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

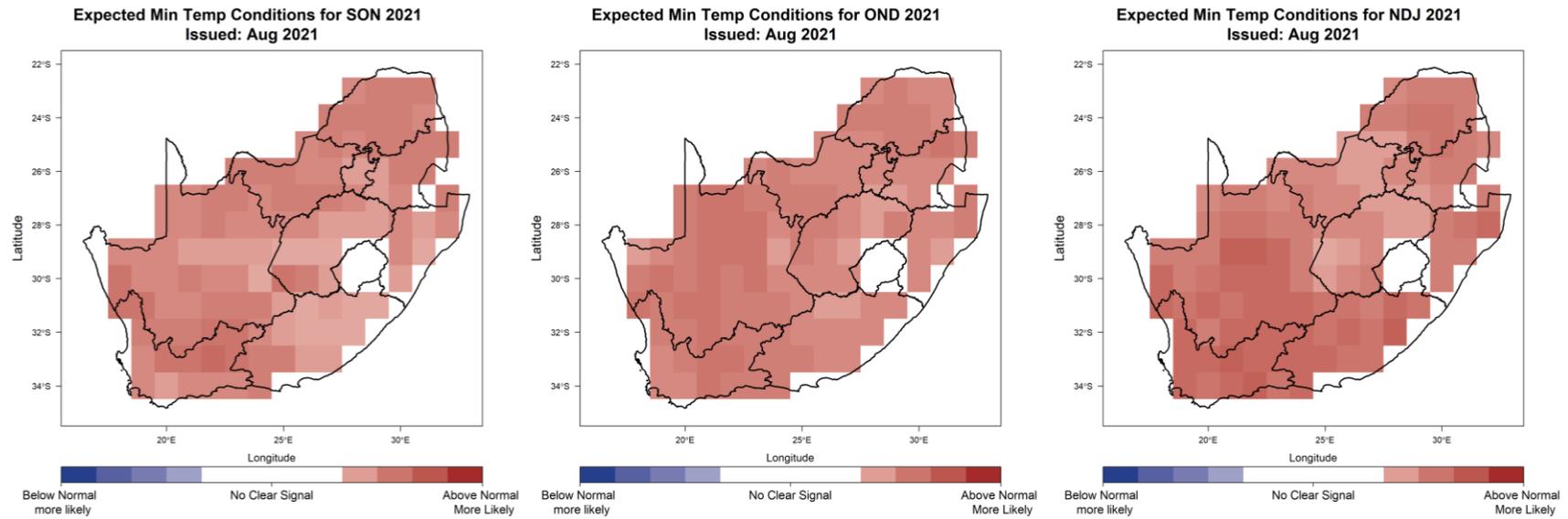


Figure 4: September-October-November 2021 (SON; left), October-November-December 2021 (OND; middle), November-December-January 2021 (NDJ; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

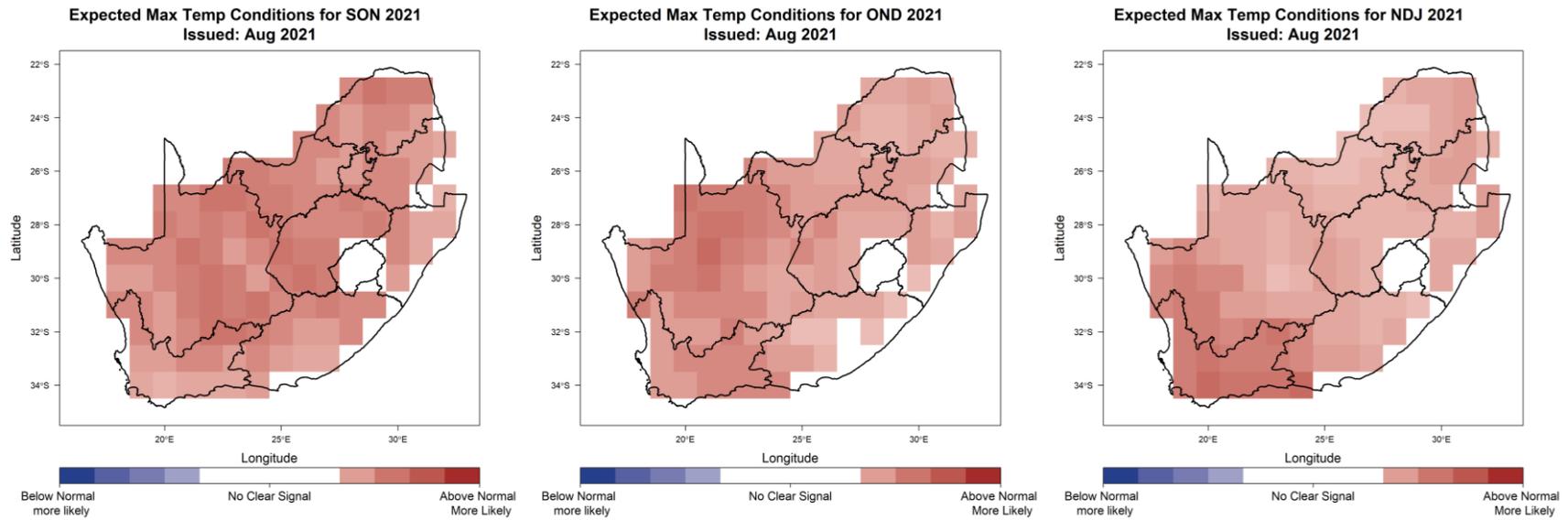


Figure 5: September-October-November 2021 (SON; left), October-November-December 2021 (OND; middle), November-December-January 2021 (NDJ; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the spring (Sep-Oct-Nov), and early-summer seasons (Oct-Nov-Dec and Nov-Dec-January). 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.

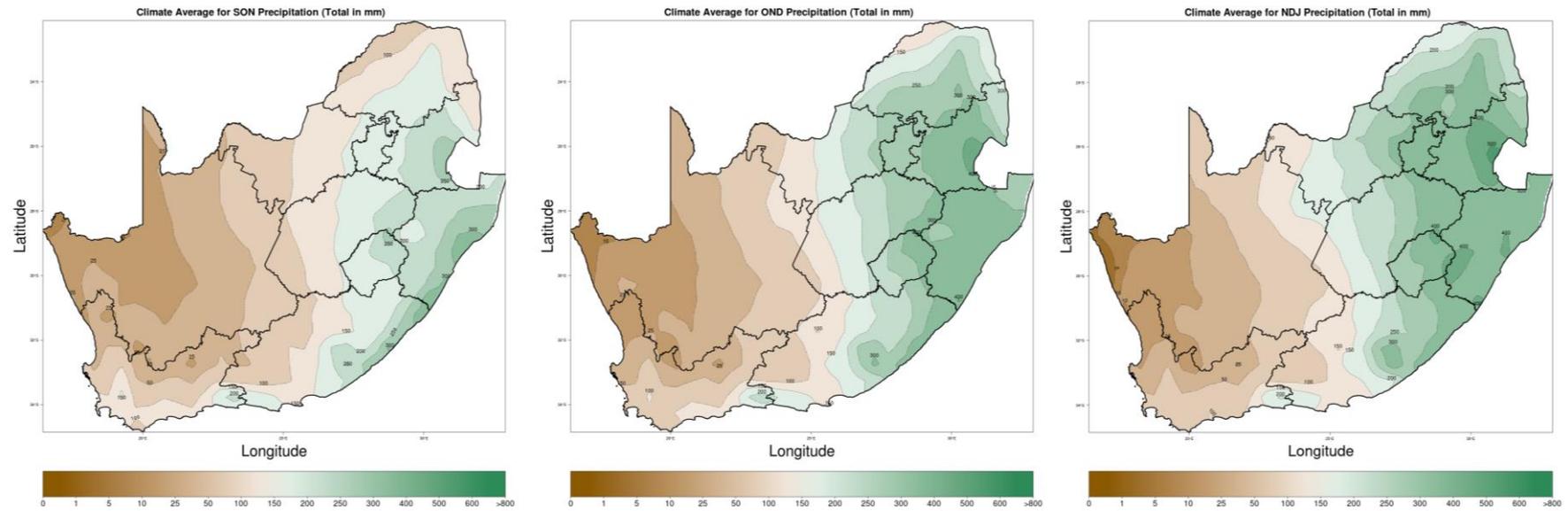


Figure 6: *Climatological seasonal totals for precipitation during September-October-November (SON; left), October-November-December (OND; middle) and November-December-January (NDJ; right).*

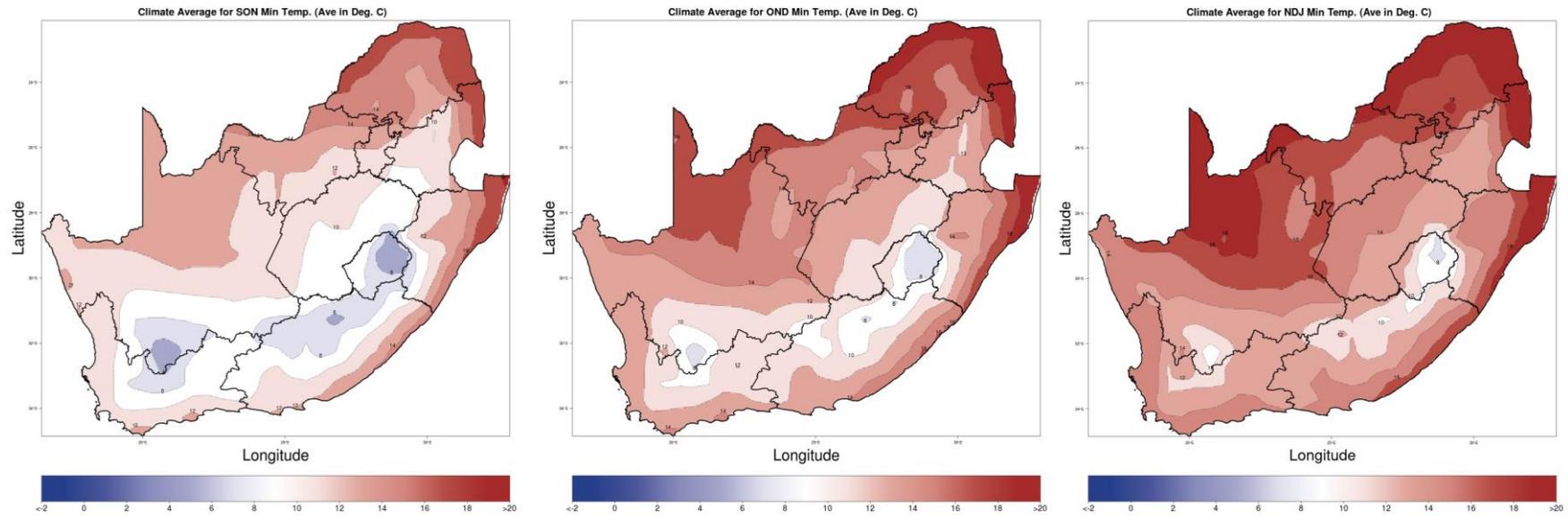


Figure 7: Climatological seasonal averages for minimum temperature during September-October-November (SON; left), October-November-December (OND; middle) and November-December-January (NDJ; right).

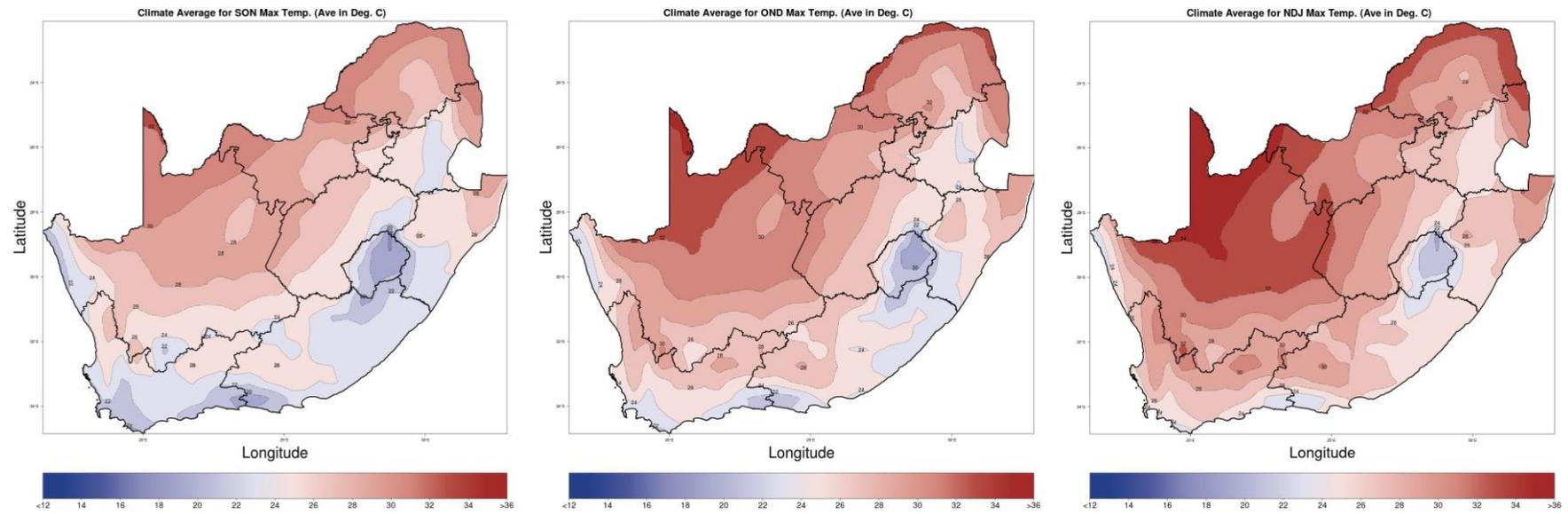


Figure 8: *Climatological seasonal averages for maximum temperature during September-October-November (SON; left), October-November-December (OND; middle) and November-December-January (NDJ; right).*

3. Summary implications to various economic sector decision makers

Water and Energy

Above-normal rainfall conditions are likely to enhance recharge of water reservoirs, mainly in summer rainfall regions across the forecasted seasons. Moreover, the expected above-normal minimum and maximum temperatures countrywide throughout spring and early-summer 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 expected above-normal rainfall for the north-eastern half of the country throughout the SON, OND and NDJ seasons might result in flash flooding in certain regions thus posing health and safety risks, including water and vector-borne diseases, infections, and injury. Relevant authorities are recommended to advise the public to take precautionary measures, particularly vulnerable communities residing in low lying regions with poor or insufficient drainage. The above-normal minimum and maximum temperatures predicted throughout spring and early-summer may lead to an increase in heat-related health effects. Skin and eye allergies are likely to increase during this season due to increased pollen discharge. UVI exposure levels are also anticipated to be high. Decision-makers should advise the public to minimize their exposure to the sun.

Agriculture

Normal to above-normal rainfall is expected over most parts of the summer rainfall regions during the spring to early 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)

