Seasonal Climate Watch
December 2019 to April 2020

Date issued: November 29, 2019

1.   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 coming seasons. The sea-surface temperatures have risen sharply though in the last month and chances for a weak El Niño state during the summer period has increased drastically. Usually when this is the case, seasonal forecasts for the summer rainfall areas of South Africa tend to be more uncertain as compared to seasons with a clear ENSO signal. Historically, neutral ENSO conditions have been associated with above-normal, near-normal and below-normal rainfall outcomes.

The rainfall forecast for mid-summer (Dec-Jan-Feb), late-summer (Jan-Feb-Mar) and early-autumn (Feb-Mar-Apr) from the SAWS/NOAA-GFDL Multi-Model system indicates enhanced probabilities of below-normal rainfall over the north-eastern and southern parts of the country. With regards to temperatures, mostly higher than normal temperatures are expected this summer over most of South Africa with the exception of the far south-western parts that indicate lower than normal minimum temperature throughout summer and early autumn.

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 (December-January-February) predictions for rainfall (Figure 1) and average temperature (Figure 2).
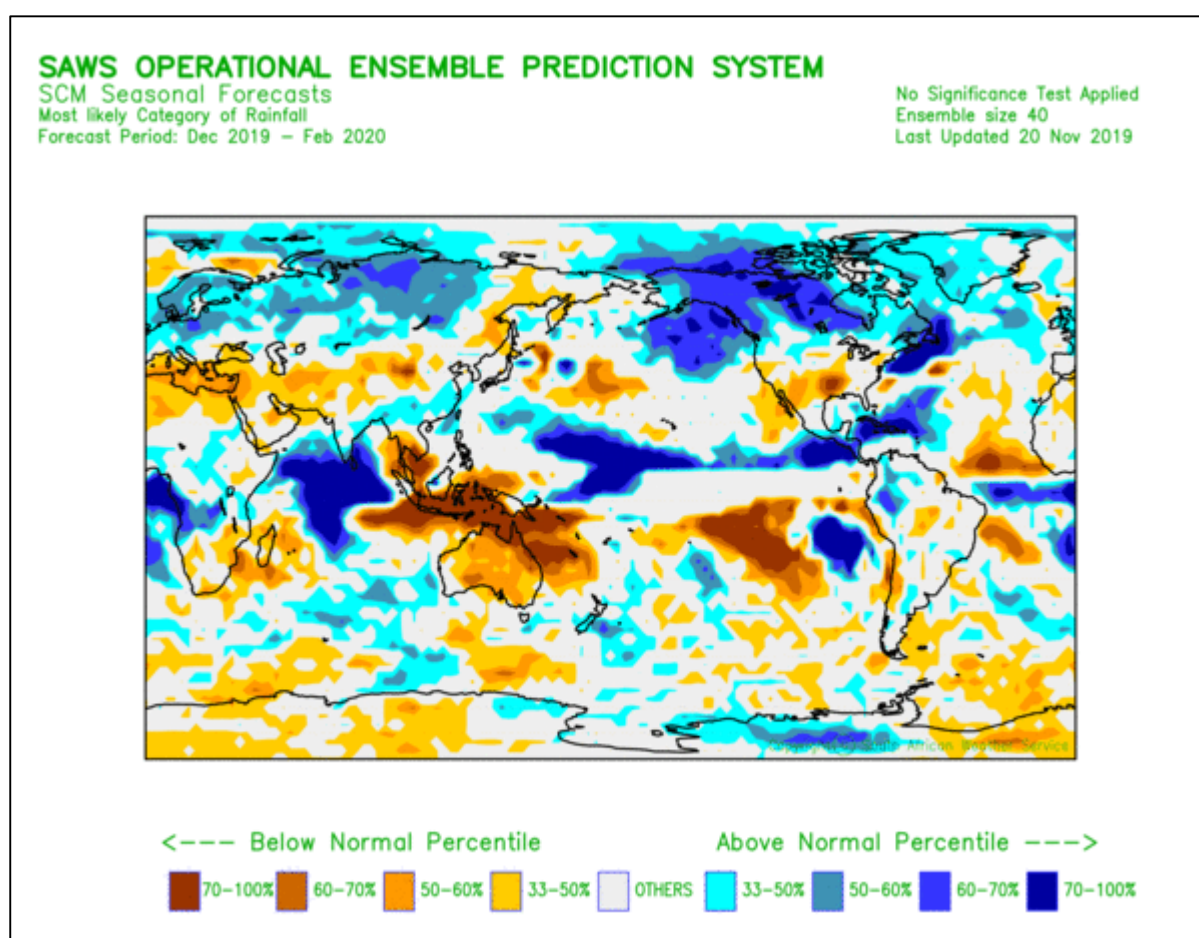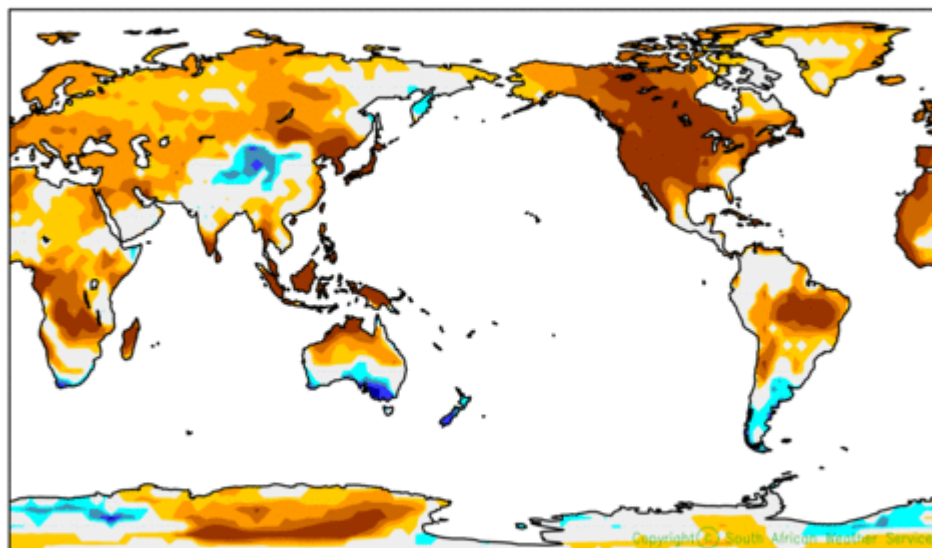

Figure 1: December-January-February global prediction for total rainfall probabilities.

Figure 2: December-January-February 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 system (part of the North American Multi-Model Ensemble System) for South Africa, as issued with the November 2019 initial conditions, are presented below for South Africa.
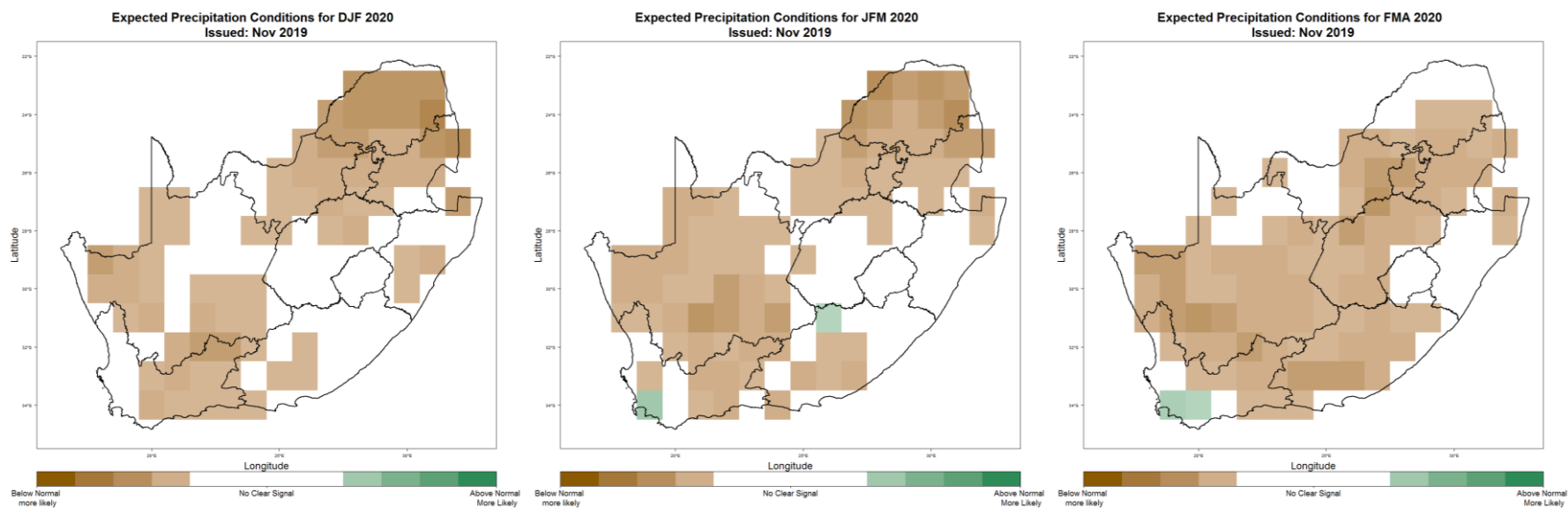
Figure 3:   *December-January-February 2020 (DJF; left), January-February-March 2020 (JFM; middle), February-March-April 2020 (FMA; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-normal, Near-Normal and Below-Normal.*
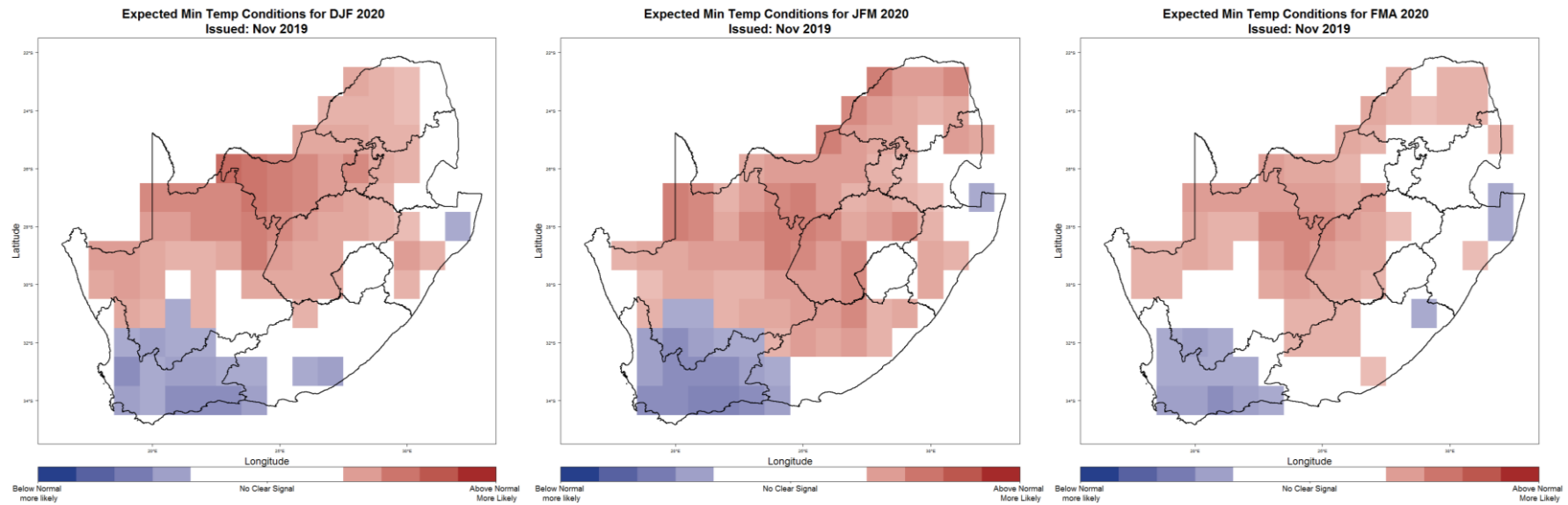
Figure 4:   *December-January-February 2020 (DJF; left), January-February-March 2020 (JFM; middle), February-March-April 2020 (FMA; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-normal, Near-Normal and Below-Normal.*
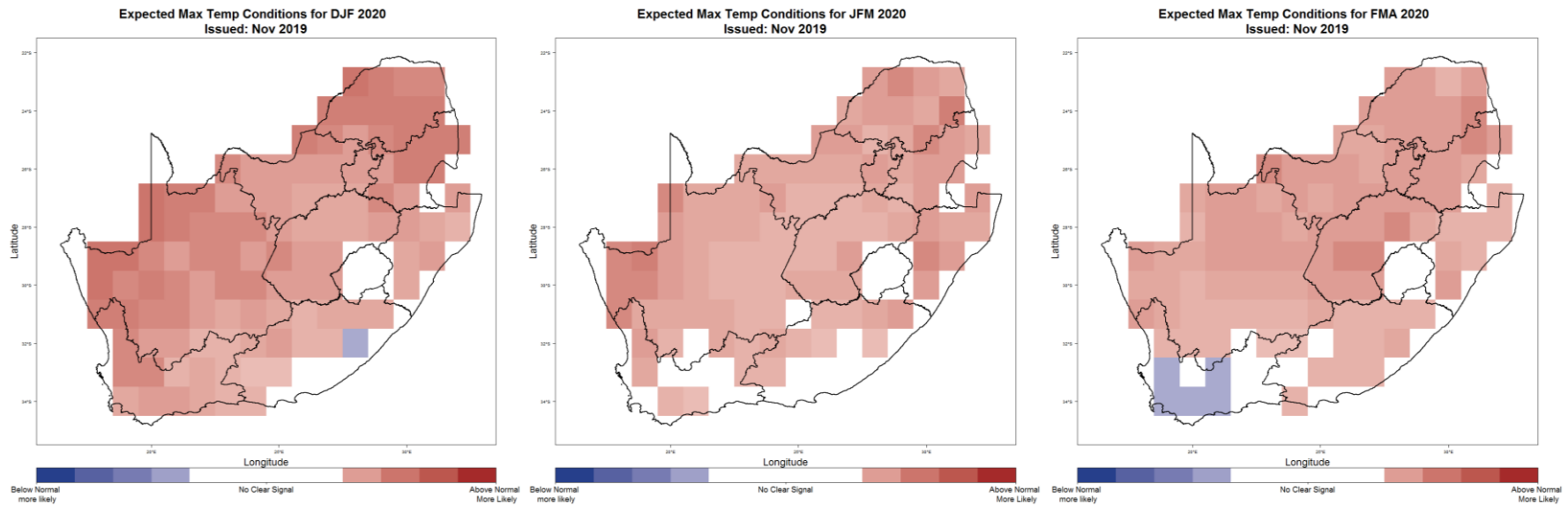
Figure 5:   *December-January-February 2020 (DJF; left), January-February-March 2020 (JFM; middle), February-March-april 2020 (FMA; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-normal, Near-Normal and Below-Normal.*

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the early-summer (Dec-Jan-Feb), mid-summer (Jan-Feb-Mar) and the late-summer (Feb-Mar-Apr). 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.
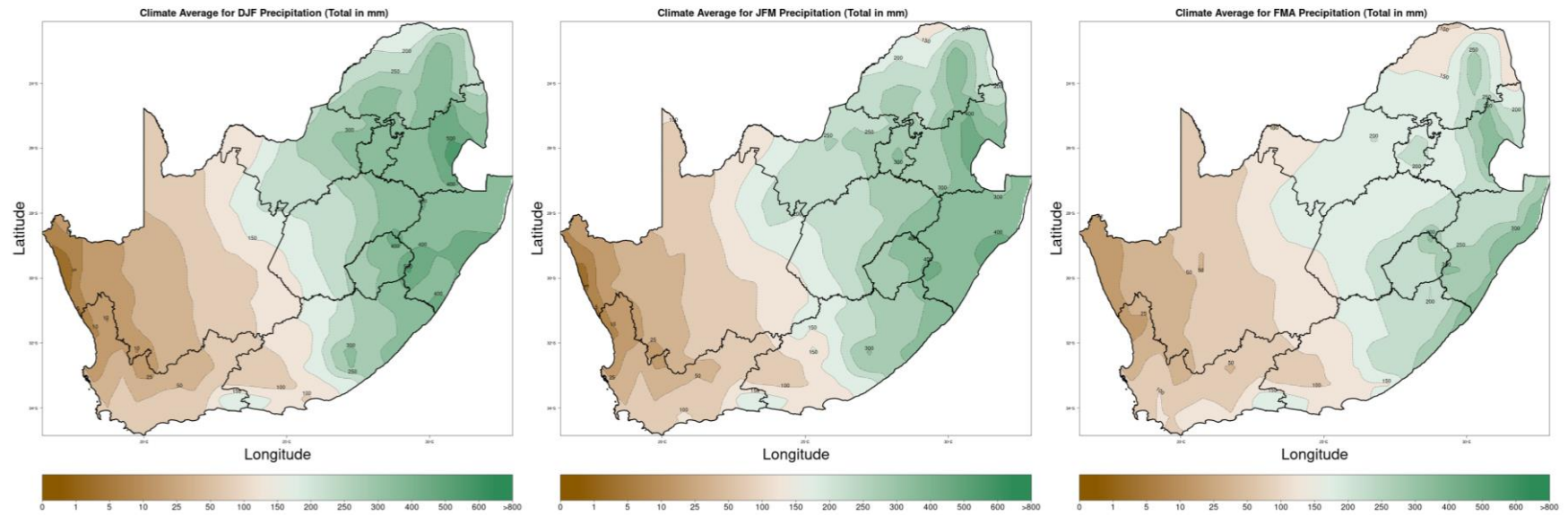
Figure 6:   Climatological seasonal totals for precipitation during Dec-Jan-Feb (DJF; left), Jan-Feb-Mar (JFM; middle) and Feb-Mar-Apr (FMA; right).
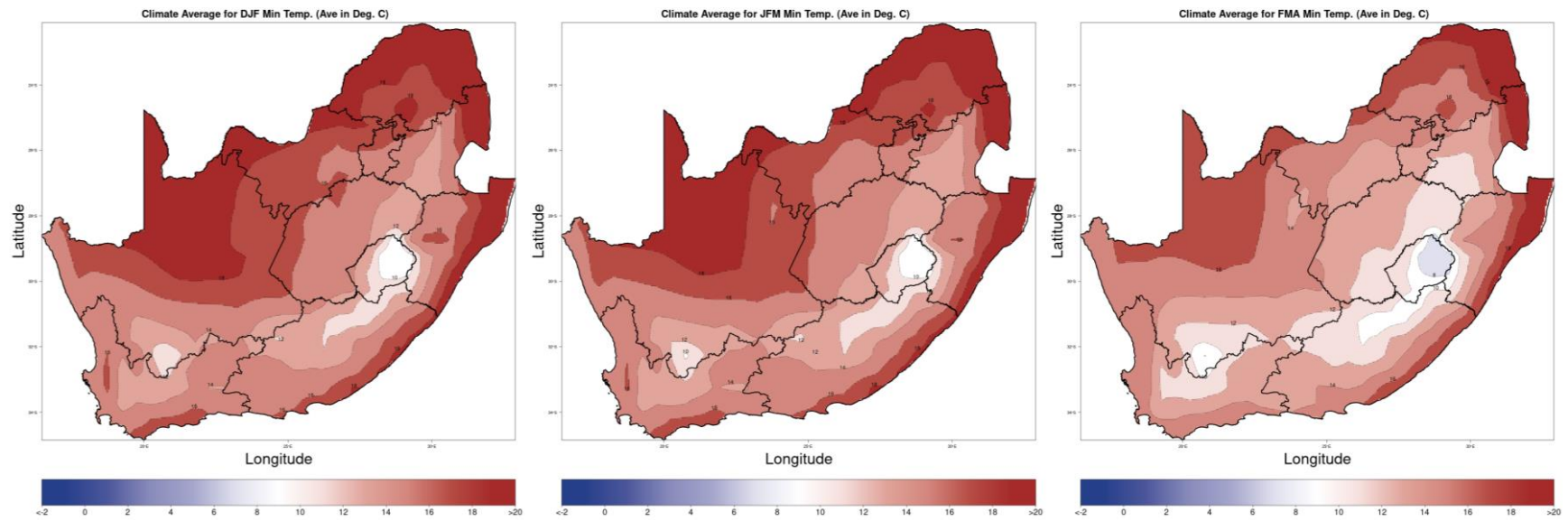
Figure 7:   Climatological seasonal averages for minimum temperature during Dec-Jan-Feb (DJF; left), Jan-Feb-Mar (JFM; middle) and Feb-Mar-Apr (FMA; right).
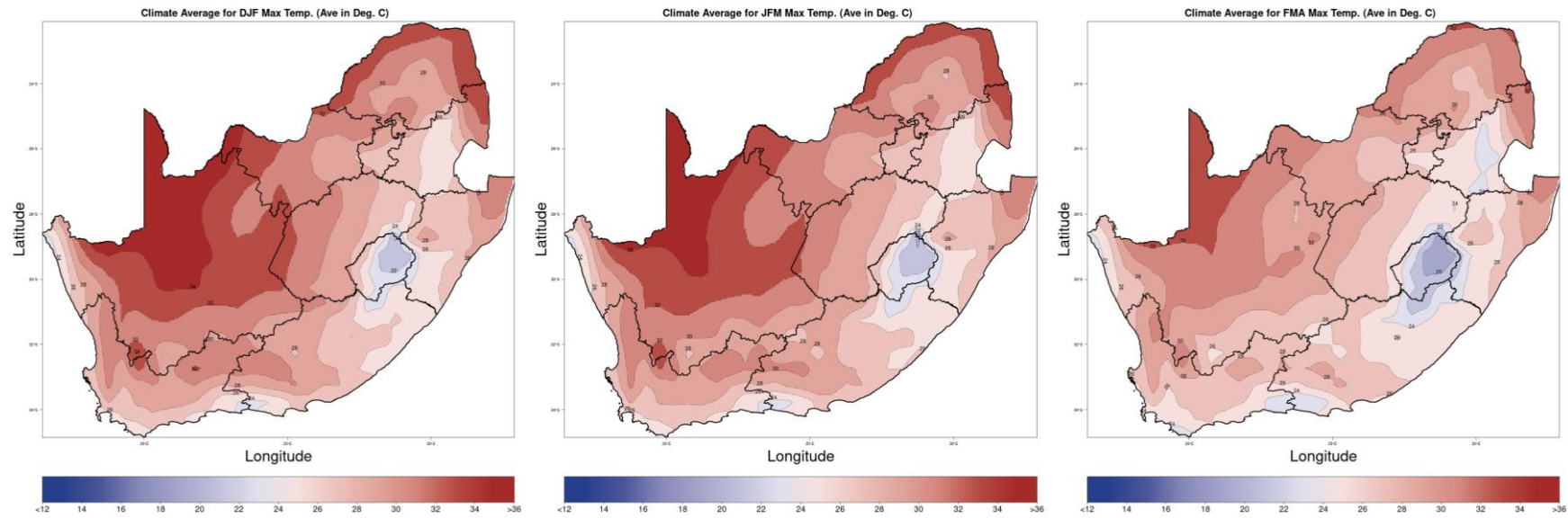
Figure 8: *Climatological seasonal averages for maximum temperature during Dec-Jan-Feb (DJF; left), Jan-Feb-Mar (JFM; middle) and Feb-Mar-Apr (FMA; right).*

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3.   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)