

CUMULUS



10 November 2020 – by J Malherbe, R Kuschke

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Summary

More thundershowers initially over the maize-production region

Scattered to widespread thundershowers at times resulted in significant rainfall totals, especially over the western to central maize-production region during the past week. More widespread thundershowers will initially occur going into the rest of the week, with more significant totals expected over especially the central parts of the production region. Once again, as was the case last week, the northeastern parts (northern Mpumalanga and eastern Limpopo) will remain dry for the most part. Drier conditions will set in over most of the country later this week and weekend, with a relocation of thundershowers (mostly isolated to scattered) over the central parts.

The following is a summary of weather conditions during the next few days:

- **General:**

- Most of the country will receive below-normal rainfall.
- The central to eastern parts of the maize-production region will receive normal to above-normal rainfall.
- Temperatures will be near normal to above normal, increasing through the period.
- Significant daily rainfall totals, with some storms also becoming severe, are possible initially over the northeastern parts, focusing on eastern North West, Gauteng, western Mpumalanga, western Limpopo and northern Free State.
- The northeastern parts will initially be relatively cool with abundant cloud cover.
- The remainder of the period will be warmer and drier, with mostly isolated thundershowers relocating over the central interior while it will remain relatively dry in the northeast.
- The central to western interior will experience hot and windy conditions on several days.
- The winter rainfall region will remain mostly dry.
- Maximum temperatures over the western maize production areas will be in the order of 26 – 34°C, increasing during the period. Minimum temperatures will be in the order of 15 – 22°C.
- Maximum temperatures over the eastern maize-production region will range between 20 and 32°C, also with a warming trend. Minimums will be in the order of 11 – 16°C.

- **Detailed:**

- Tuesday (10th): Partly cloudy to cloudy and mild with widespread thundershowers over the northeastern half of the country. More intense thundershowers, with significant totals in some places, will focus on eastern North West, western Limpopo, Gauteng, western Mpumalanga and northern Free State.
- Wednesday (11th): Scattered thundershowers in the northeast (some storms over western Mpumalanga and the surrounding areas may become severe), but sunny and warm over the rest of the country. It will be cloudy, windy and cool over much of KZN and the Lowveld, with light showers.
- Thursday (12th): Sunny to partly cloudy and warm over most areas. Isolated to scattered thundershowers are possible over the central parts, including the western maize-production area. It will become hot over the central to western interior with moderate to strong northwesterly winds.
- Friday (13th): Hot and windy over the central to western interior, becoming very hot over the Karoo with bergwind conditions. Isolated thundershowers will still occur over the central to western interior.
- Saturday to Monday (14th to 16th): Hot and windy over the central to western interior. Isolated thundershowers will still focus over the central interior, becoming scattered over the southeastern parts. It will be partly cloudy, warm and dry in the northeast. The southwestern parts, including the winter rainfall region, should be mild to cool and mostly dry except for some showers in the southwest on Saturday (14th).

Seasonal overview

ENSO and seasonal forecasts

Due to a positive association with La Niña, rainfall over the southern African interior is expected to be above normal through the summer according to seasonal forecast models.

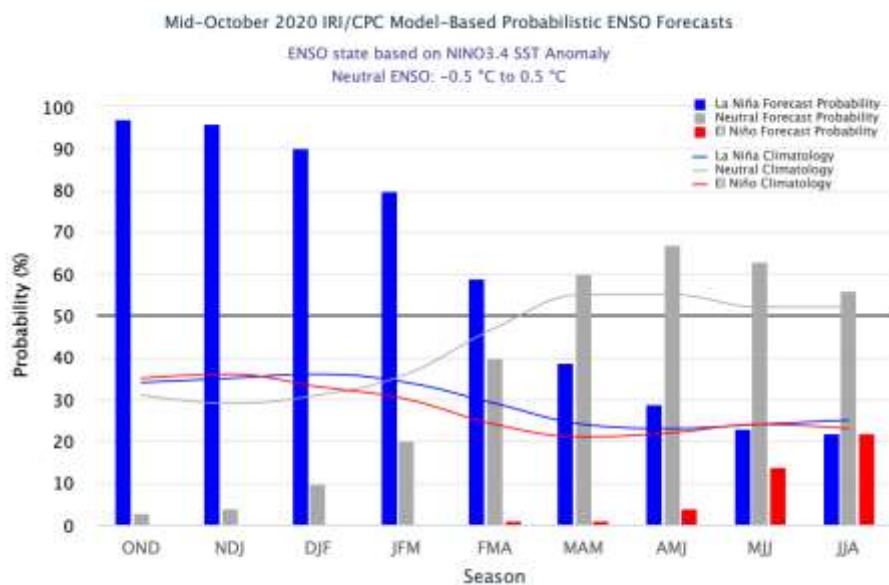
(Updated 10 November) La Niña continues in the tropical Pacific. International climate models suggest it is likely to continue at least through February 2021.

Central and eastern tropical Pacific Ocean sea surface temperatures (SSTs) are at La Niña levels, and remain similar compared to two weeks ago. Models continue to suggest some possibility that central and eastern tropical Pacific SSTs could briefly reach levels similar to 2010–12, with the peak most likely in December 2020 or January 2021.

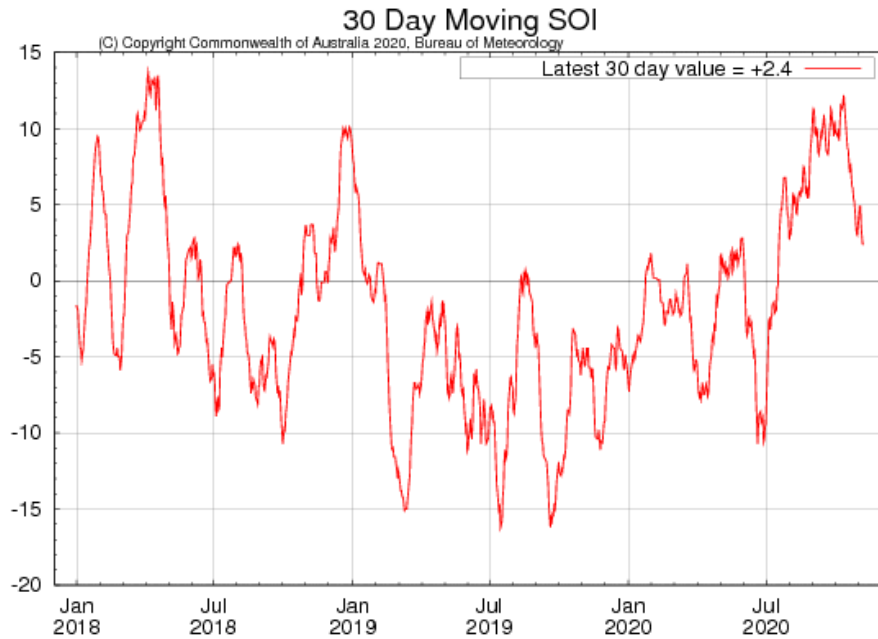
The Southern Oscillation Index (SOI) remains within neutral values, though still positive. With the Madden–Julian Oscillation (MJO) having moved out of the Pacific, the SOI is expected to return to La Niña levels in the coming weeks.

Other oceanic and atmospheric indicators indicate a mature La Niña.....*Australian Bureau of Meteorology* - <http://www.bom.gov.au>

According to the IRI (Updated 19 October) In mid-October, SSTs in the east-central Pacific are roughly 1 degree C below average, and all key atmospheric variables are consistent with La Niña conditions. A large majority of the model forecasts exceeds the threshold of La Niña SST conditions through the Southern Hemisphere Summer, dissipating during spring. The new official CPC/IRI outlook is similar to these model forecasts, calling for an 85% chance of La Niña. A La Niña advisory is in effect. *International Research Institute for Climate and Society*- <http://iri.columbia.edu/>



International Research Institute for Climate and Society- <http://iri.columbia.edu/>



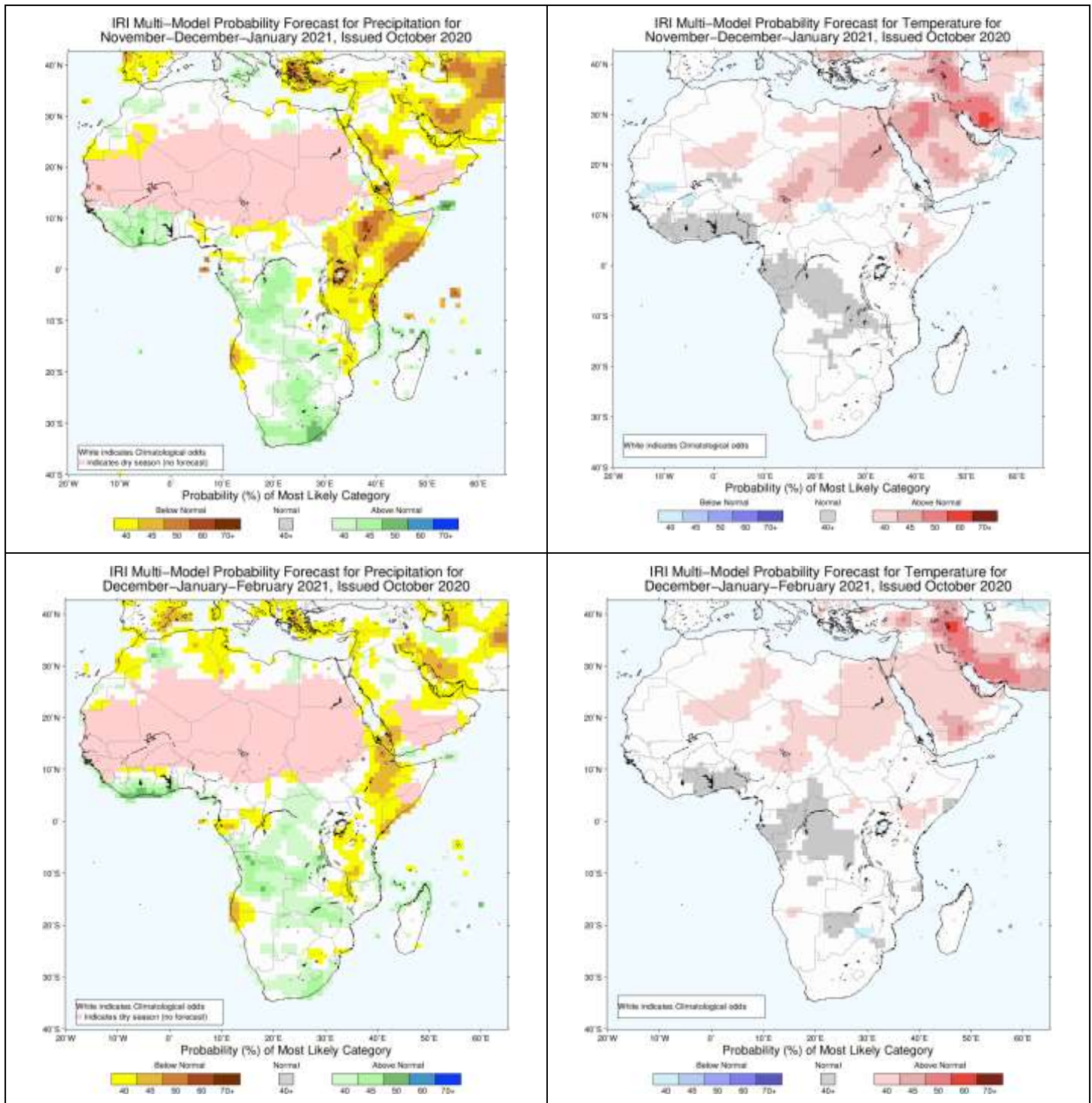
Australian Bureau of Meteorology - <http://www.bom.gov.au>

The Southern Oscillation Index is positive but somewhat lower than the La Niña threshold (2.4 – not larger than +7). It is however expected to return to its generally upward trend, indicating atmospheric circulation patterns consistent with La Niña conditions.

Seasonal forecasts issued by various international institutions

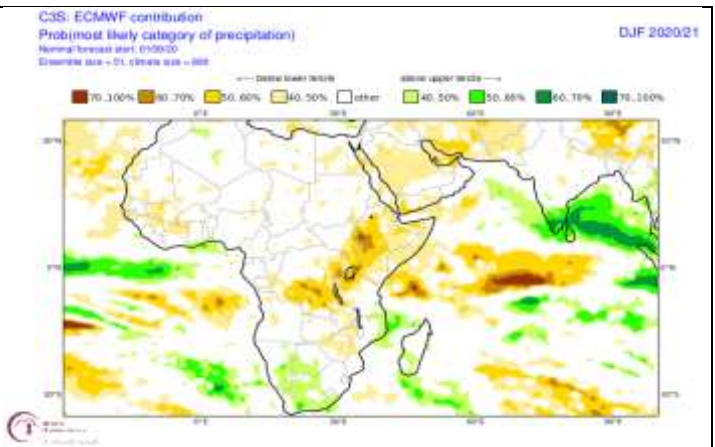
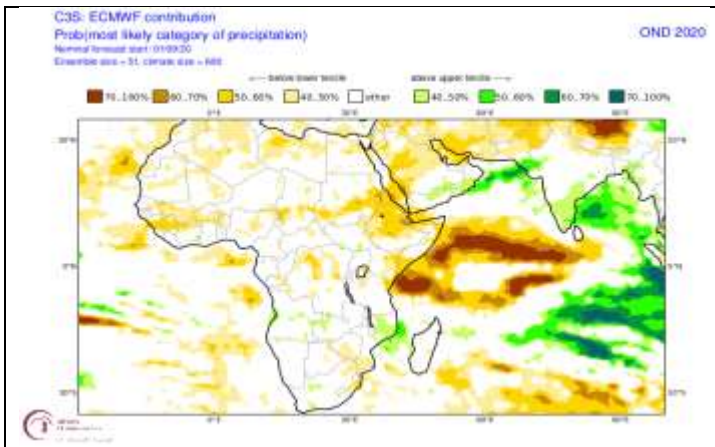
IRI, ECMWF, NCEP, UKMO

The seasonal forecast by the IRI for Africa favours relatively wet conditions for both early and late summer 2020/21 over South Africa. Coupled with the relatively wet conditions expected over the interior, temperatures are expected to remain near normal.

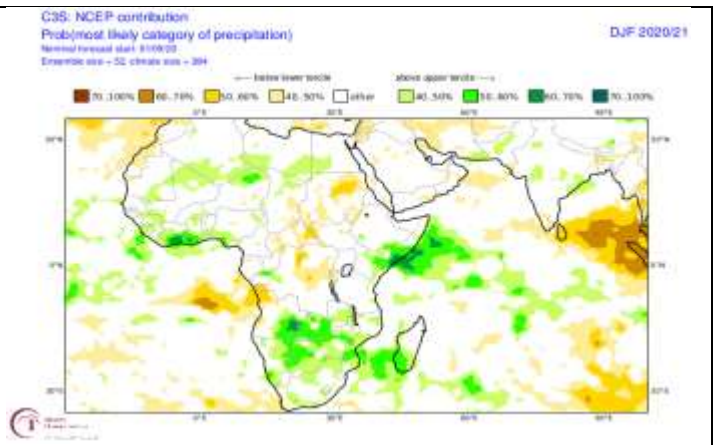
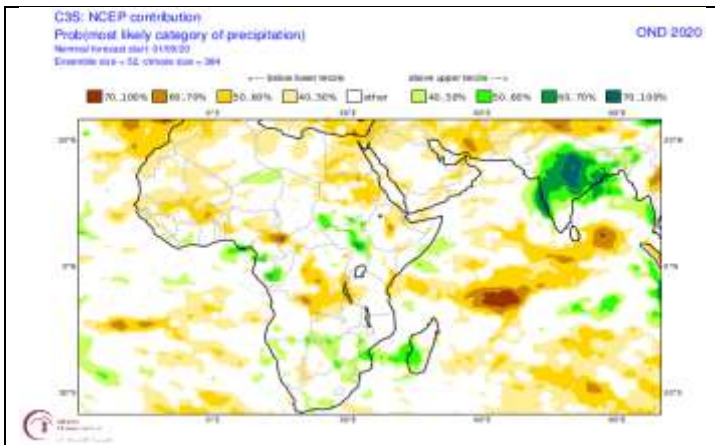


Probabilistic forecasts for rainfall (left) and temperatures (right) for mid-summer (November – January 2020/21; top) and mid-to-late summer (December – February 2020/21; bottom) (Forecast issued in 2020-10 by the IRI - <http://iri.columbia.edu>).

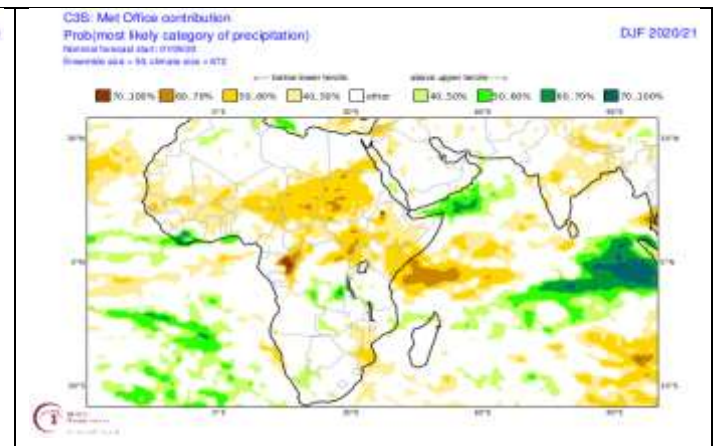
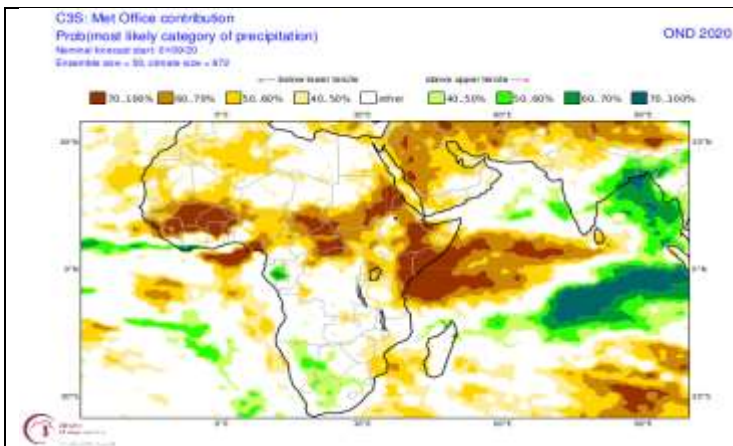
Seasonal forecasts by the ECMWF, NCEP, UKMO, as published by the COPERNICUS Programme (<https://climate.copernicus.eu/seasonal-forecasts>) for both early and mid-summer, reflect similar patterns with regards to rainfall for southern Africa as those by the IRI. The signal for relatively dry conditions over the summer rainfall region of South Africa is somewhat stronger for mid-summer to late summer (DJF) for most of these. This is probably associated with the weak negative Indian Ocean Dipole the developing and expected La-Niña-like conditions.



Probabilistic forecasts by the European Centre for Medium-Range Weather Forecasts for rainfall for early-summer (October – December 2020; left) and mid-to late summer (December – February 2020/21) (Forecasts issued in 2020-09).



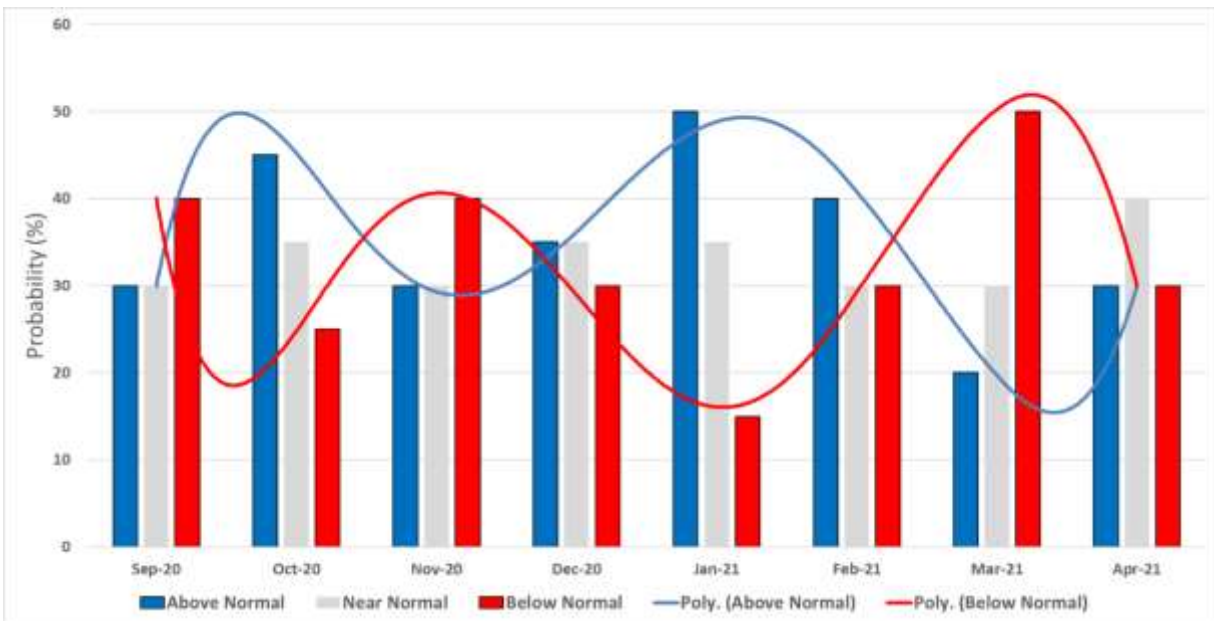
Same as above, but forecasts issued by the National Centres for Environmental Prediction.



Same as above, but forecasts issued by the UK Met Office.

CUMULUS seasonal outlook, based on decadal variability

Based on the typical observed rainfall patterns over the northeastern half of the country (most of the summer rainfall region - from the central Free State north-eastwards), as associated with the cyclic variability of the global climate system, similar summers as 2020/21 more often experience a seasonal rainfall curve that differs from normal conditions as indicated in the bar graph below:

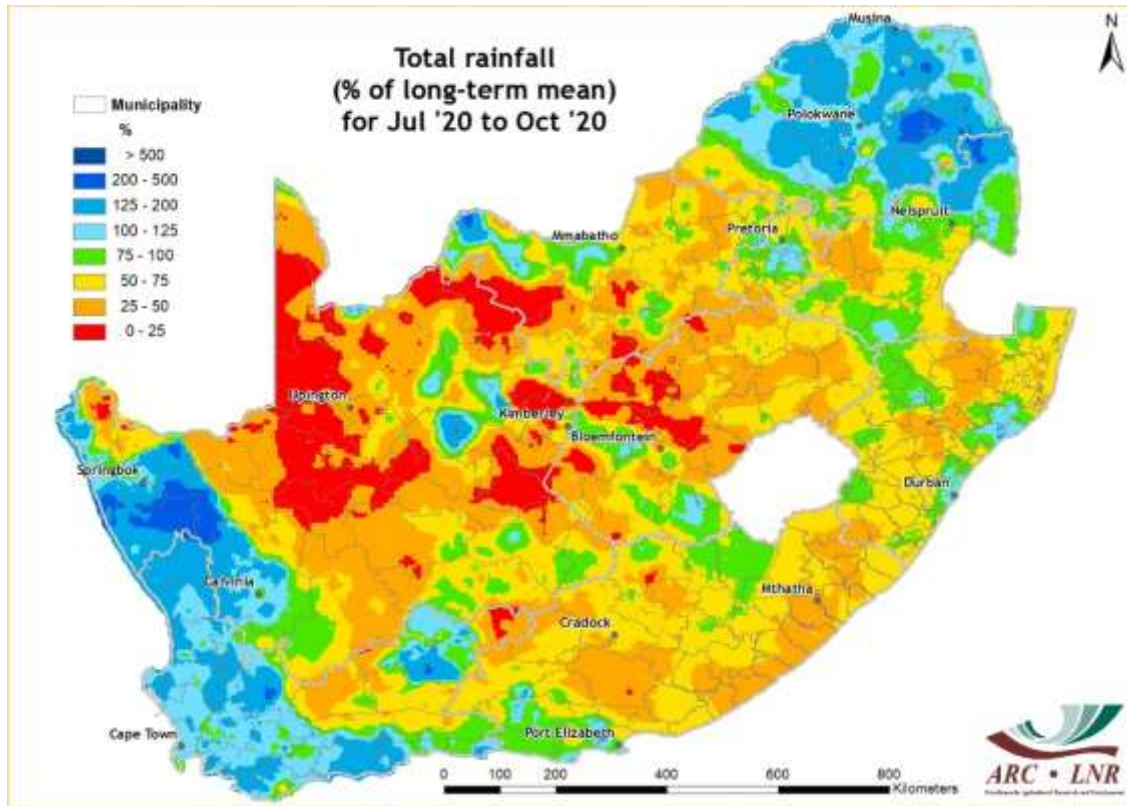


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

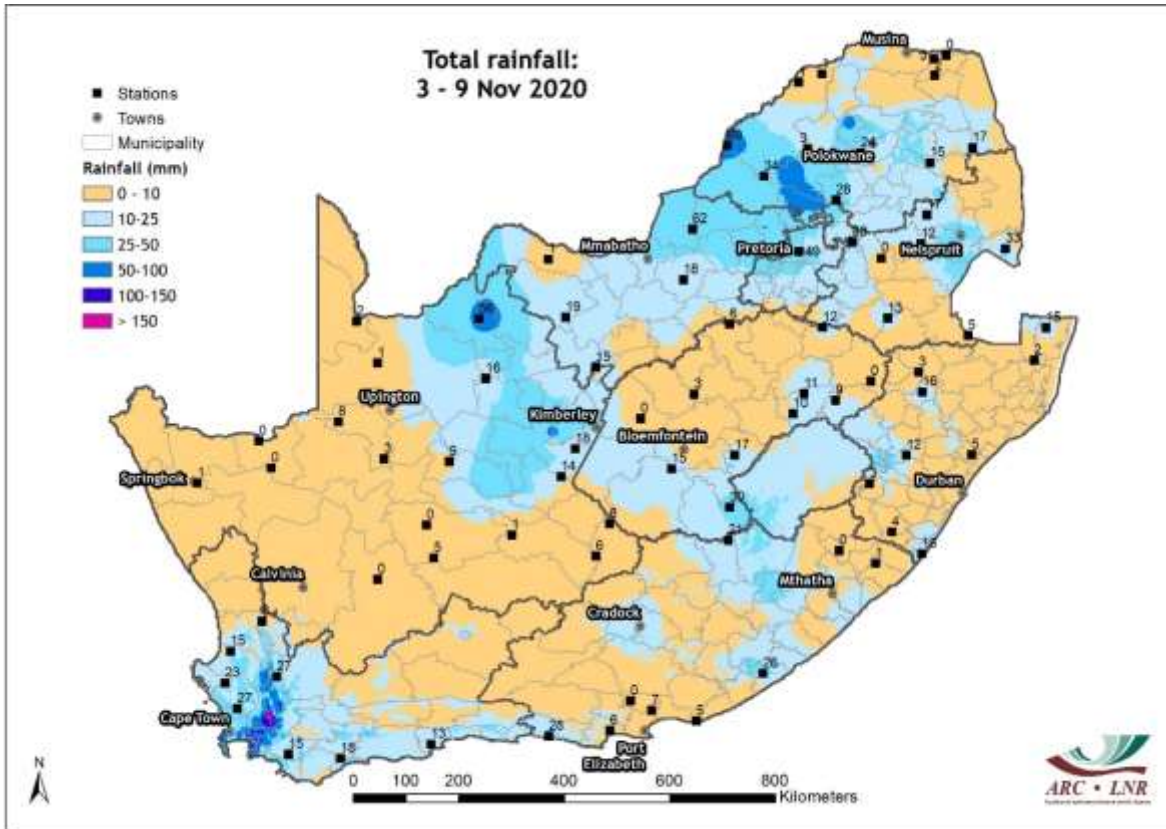
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the summer rainfall region
- Late February – March: Mostly drier than normal

Rainfall (% of long-term mean): July – October 2020



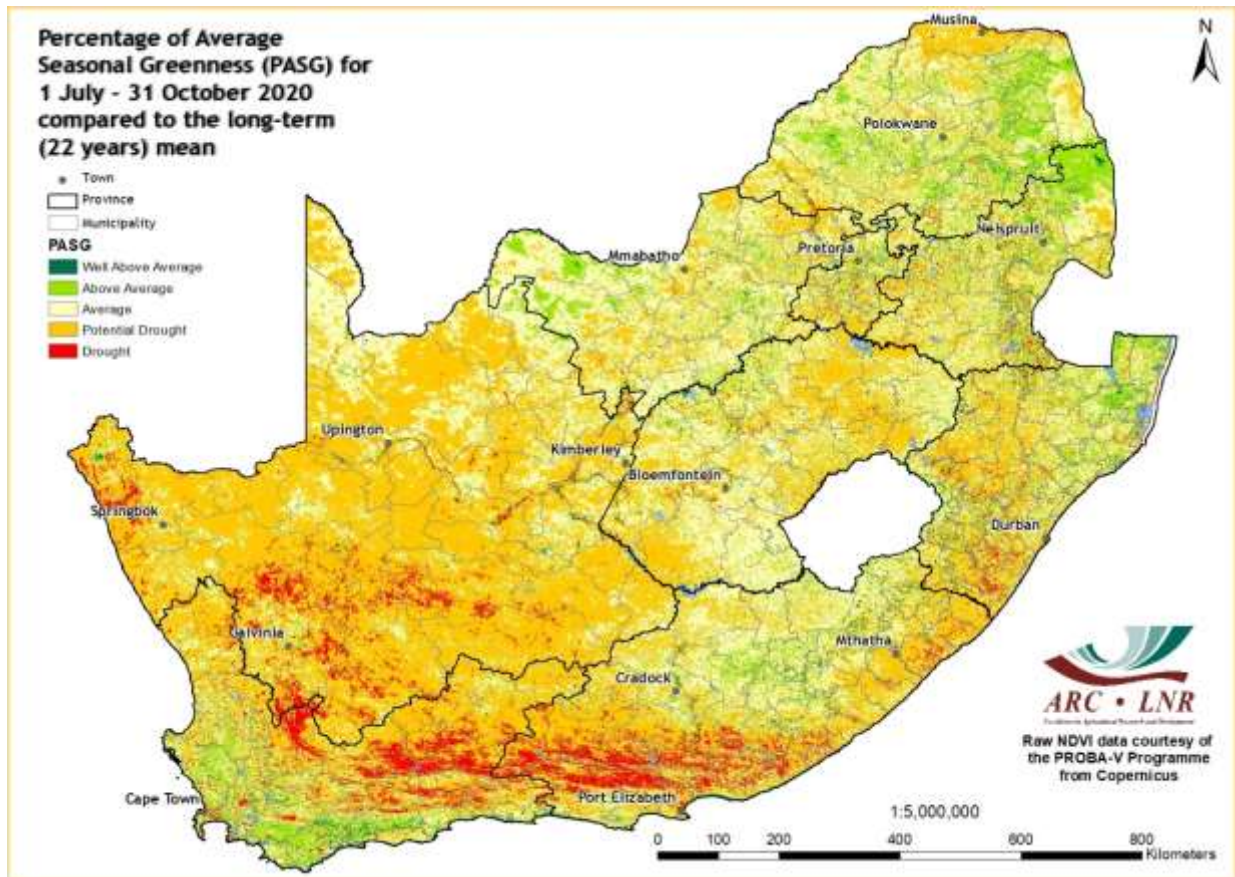
Rainfall during July to October 2020 was above normal over the winter rainfall region and also the northeastern parts of the summer rainfall region. The central parts were mostly dry compared to the long-term average – before the rain during early November.

Rainfall (mm): 3 October – 9 November 2020



The northern parts of the maize-production region received further rainfall during the last few days.

Percentage of Average Seasonal Greenness: 21 July – 31 October 2020



Cumulative vegetation activity for 21 July to 31 October the grain-production areas of the Western Cape experienced above-average cumulative vegetation activity due to above-normal and well distributed rainfall during the winter. Drier conditions resulted in below-average cumulative vegetation activity over the central parts of the Northern Cape, Karoo, the eastern coastal areas of the Eastern Cape and into southern KZN.

Overview of expected conditions over South Africa during the next few days

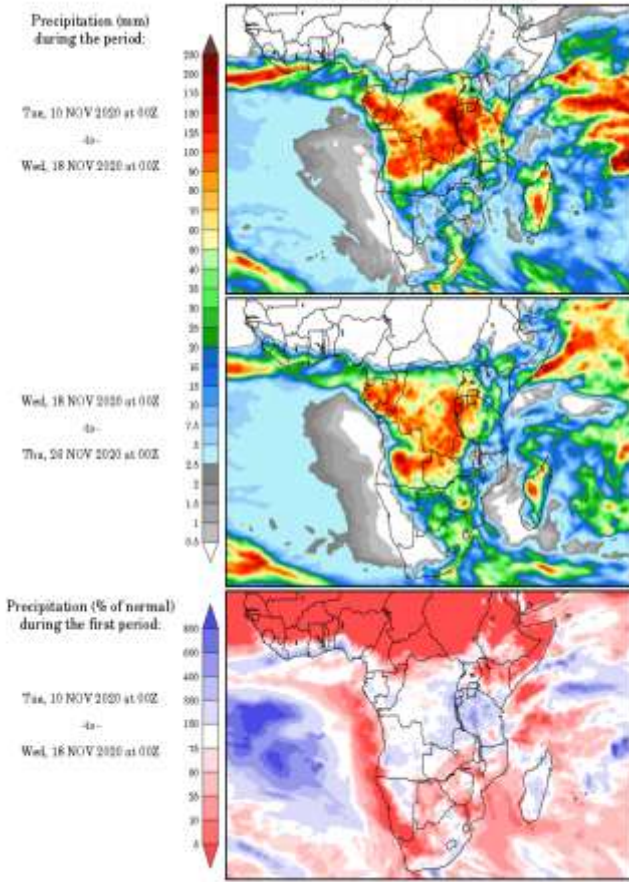
An upper-air trough moving through initially will result in widespread thundershowers over the northeastern parts, including especially the central to eastern maize-production areas, on Tuesday (10th) and Wednesday (11th). A ridging high-pressure system, contributing to the favourable rainfall situation, will result in cooler, wet conditions over KZN and into the Lowveld and eastern escarpment. The rest of the period will be characterized by largely anticyclonic circulation over the country, with some upper-air perturbations over the central parts. The combination of upper-air instability, surface heat and moisture from the north and northeast will result in isolated thundershowers over the central parts. Frontal activity will be largely absent, in contrast to the previous week.

Conditions in main agricultural production regions (10 – 16 November)

Maize production region: Widespread thundershowers are expected initially. Significant falls are possible the central parts of this region on Tuesday (10th). The rest of the period will be partly cloudy and warm, with increasing temperatures. Isolated thundershowers will focus on the western to southern parts of the region during the remainder of the period (from Thursday – 12th). Maximum temperatures over the western maize production areas will be in the order of 26 – 34°C, increasing during the period. Minimum temperatures will be in the order of 15 – 22°C. Maximum temperatures over the eastern maize-production region will range between 20 and 32°C, also with a warming trend. Minimums will be in the order of 11 – 16°C.

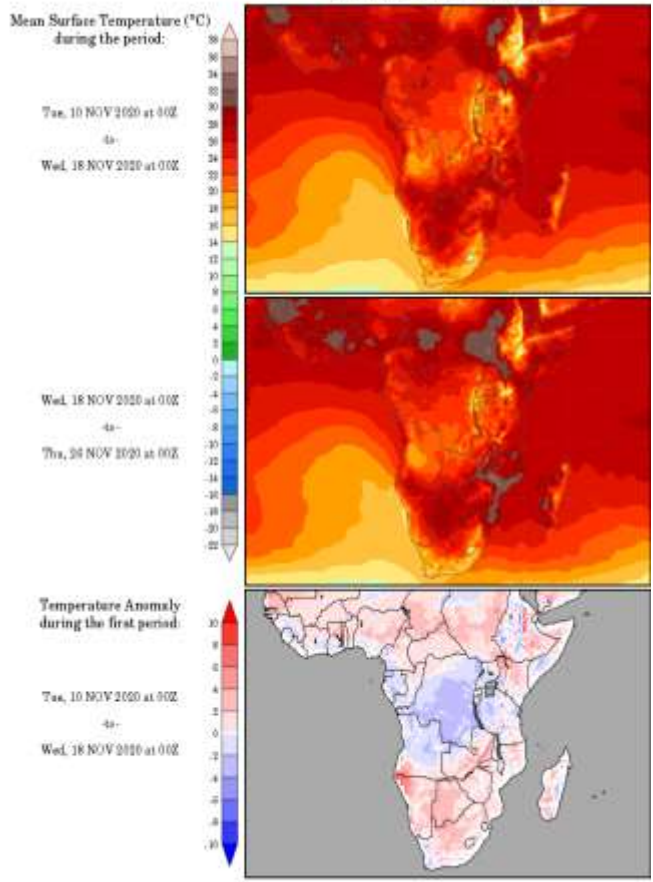
Cape Wine Lands and Ruens: It will be warm to hot and sunny over the region until Friday (13th). A frontal system moving across the region may result in some showers over the southwestern parts on Saturday (14th), after which it will remain cool over the region with southwesterly winds.

Precipitation Forecasts



GeAD503LA

Temperature Forecasts



GeAD503LA

Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) – <http://Wxmaps.org>

Possible extreme conditions - relevant to agriculture

The South African Weather Service issues warnings for any severe weather that may develop, based on much more information (and in near-real time) than the output of one single weather model (GFS atmospheric model - *Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES)* – <http://Wxmaps.org>) considered here in the beginning of a week-long (starting 10 November) period. It is therefore advised to keep track of warnings that may be issued by the SAWS (www.weathersa.co.za) as the week progresses.

According to current model projections (GFS model) of weather conditions during the coming week, the following may be deduced:

- Thundershowers may produce significant rainfall totals and in isolated cases become severe over eastern North West, Gauteng, northern Free State, western Mpumalanga and western Limpopo on Tuesday (10th). Some storms may become severe also on the 11th over western Mpumalanga and the surrounding areas.
- It will be hot and windy over the central to western interior from Thursday (12th) to Sunday (15th). Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.
- It will be very hot with bergwind conditions over the Karoo and into the eastern parts of the Garden Route on Friday (13th). Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.

Sources of information

Seasonal forecasts: Published by the COPERNICUS Programme (<https://climate.copernicus.eu/seasonal-forecasts>)

Rainfall, temperature and wind maps over South Africa for the past week:

Agricultural Research Council - Institute for Soil, Climate and Water (ISCW) – Climate Data Bank. Data recorded by the automatic weather station network of the ARC-ISCW.

Vegetation condition maps: Copernicus Global Land service, distributed by VITO.

Information related to: ENSO, IOD and SOI:

Australian Bureau of Meteorology - <http://www.bom.gov.au>

Climate Prediction Center - <http://www.cpc.ncep.noaa.gov>

International Research Institute for Climate and Society- <http://iri.columbia.edu/>

Information related to the SAM:

The Annular Mode Website - <http://www.atmos.colostate.edu/ao/index.html>

SST map:

NOAA Climate Prediction Center - <http://www.cpc.ncep.noaa.gov>

Daily conditions over South Africa:

CSIR NRE (National Resources and the Environment)

“CSIR NRE produces forecasts on an experimental basis, doesn’t guarantee the accuracy of the daily forecasts and cannot be held accountable for the results of decisions taken based on the forecasts”

Tropical cyclone/hurricane/typhoon information:

Weather Underground - <http://www.wunderground.com>

Cooperative Institute for Meteorological Satellite Studies (CIMMS) - Tropical Cyclone Group -<http://tropic.ssec.wisc.edu/>

Tropical Cyclone Centre La Reunion -http://www.meteo.fr/temps/domtom/La_Reunion/webcmrs9.0/anglais/index.html

Information on drought conditions over the USA:

NOAA National Weather Service - <http://www.weather.gov>

United States Drought Monitor - <http://droughtmonitor.unl.edu>

Precipitation and temperature outlooks for the coming week:

Center for Ocean-Land-Atmosphere Studies (COLA) and Institute of Global Environment and Society (IGES) – <http://Wxmaps.org>

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