

CUMULUS

3 November 2020 – by J Malherbe, R Kuschke

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Summary

More rain expected during the remainder of the week

Widespread thundershowers occurred during the weekend over much of the summer rainfall region, including the western to central parts of the maize-production region. This represents a timely start to rainfall over the central interior, a feature (early – to – normal start) that was absent during the last few years over the western maize-production region. The northeastern parts of the country (Limpopo and northern Mpumalanga) were mostly excluded from the rainfall however. The next few days will see a continuation of scattered to widespread thundershowers over most of the summer rainfall region, moving out by Friday and giving way to drier conditions during the weekend. Once again, rainfall will feature more strongly over the central parts than the northeast according to current forecasts.

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

- **General:**

- Rainfall will be near normal over most of the country and above normal over the winter rainfall region.
- Temperatures will be near normal over the interior during the remainder of the week, but it will start warming up in the north again by the weekend with drier conditions indicated then.
- Scattered thundershowers will remain in place over the interior until Thursday
- Drier conditions will develop over the interior, with cool, dry air expected to invade the southern to western parts by the weekend while it will become hot in the northeast.
- Thundershowers may become severe, especially by Wednesday and Thursday over the central to eastern and northeastern interior.
- Maximum temperatures over the western maize production areas will be in the order of 28 – 35°C, with higher temperatures during the weekend. Minimum temperatures will be in the order of 15 – 22°C.
- Maximum temperatures over the eastern maize-production region will range between 24 and 33°C, with the cooler conditions in place until Friday, followed by warmer conditions during the weekend. Minimums will be in the order of 13 – 19°C.

- **Detailed:**

- Tuesday (3rd): Partly cloudy and mild with scattered thundershowers over the western, central and northern interior. Little to no rain is expected over the far eastern parts, into KZN.
- Wednesday (4th): Thundershowers will spread over the entire central to eastern interior, but including also the interior of the Western Cape. Thundershowers over the interior of the Northern Cape and western parts of North West and the Free State may have an enhanced tendency to become severe, with strong winds and hail. It will be mild and windy over the winter rainfall region and Karoo with showers and thundershowers. Cooler, dry weather will spread into the western interior.
- Thursday (5th): Scattered thundershowers are expected over the eastern and northeastern parts (some thundershowers may become severe), with showers still possible also along the Garden Route and Karoo in the south. It will become cool and dry over the western and central interior with westerly winds.
- Friday and Saturday (6th and 7th): Mild to warm, dry and windy (westerly winds) conditions will dominate the western to central parts. Isolated thundershowers will still be possible in the far northeast on Saturday. It will be very hot over the Limpopo River Valley and Lowveld. A cold front will bring further cooling and showers to the winter rainfall region of the Western Cape, spreading further east into the Karoo.
- Sunday (8th): More showers are expected over the winter rainfall region with another frontal system moving over the region, bringing colder air also into the southwestern interior where it will be windy. Isolated thundershowers will develop over the central parts according to current forecast. Cold air will spread over the Karoo with showers setting in from the west over the Karoo and Garden Route.
- Monday (9th): Cooler, dry air will be present over much of the central and western interior where it will be windy. Isolated thundershowers will relocate to the eastern and northeastern parts. Cool to cold and

windy conditions with scattered showers and thundershowers are expected over the Karoo and Eastern Cape, spreading into KZN during the day while it will be overcast with showers along the Eastern Cape and KZN coast. Thundershowers over northern KZN and Mpumalanga will become scattered in the afternoon, and severe in some cases. The wind may become strong southeasterly in the southwest.

Seasonal overview

ENSO and seasonal forecasts

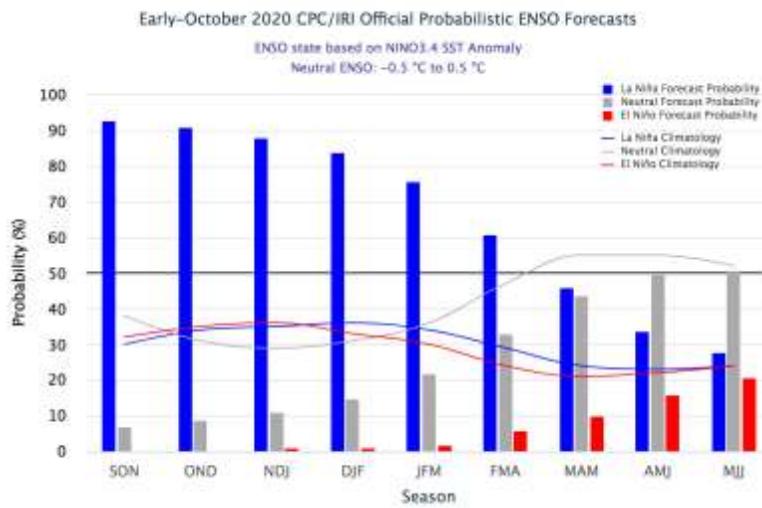
Due to a positive association with La Niña, rainfall over the southern African interior is expected to be above normal through the summer according to seasonal forecast models.

(Updated 27 October) Central and eastern tropical Pacific Ocean sea surface temperatures remain at La Niña levels, as do most atmospheric indicators, including trade winds and cloudiness. The Southern Oscillation Index (SOI) has moved back into neutral values, most likely due to the influence of a passing MJO event. The SOI is expected to return to La Niña levels in the coming weeks.

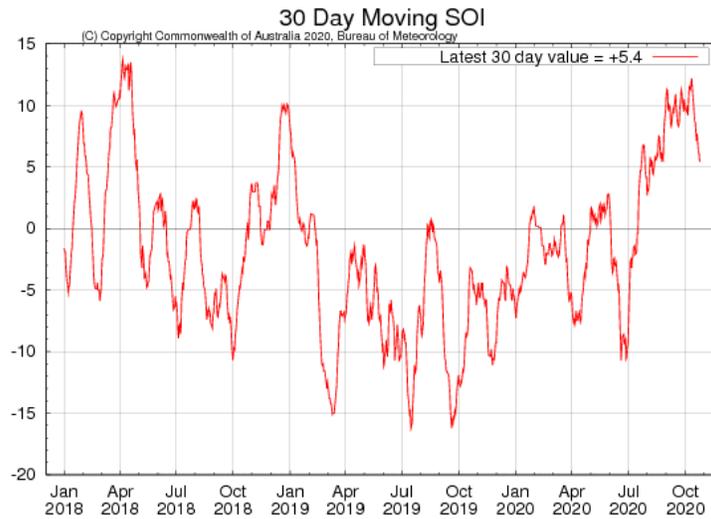
La Niña typically increases the chance of above average rainfall across **southern Africa** during summer.

Most models suggest La Niña will peak in December, with around half the models anticipating a strong event. While there is some possibility that the peak strength could reach levels similar to 2010–12 there are some differences. La Niña became established much earlier in 2010.....*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 a 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/>



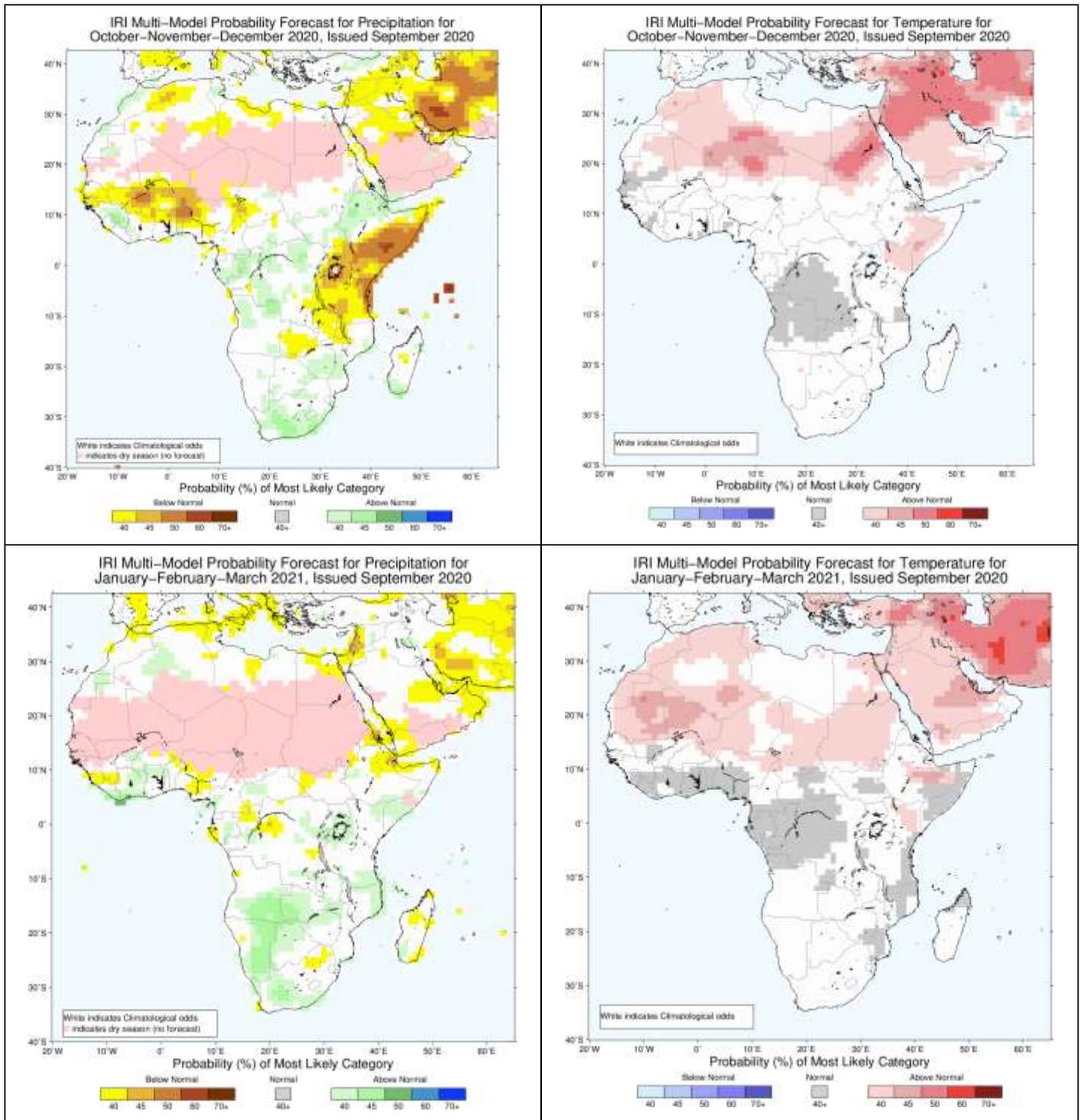
Australian Bureau of Meteorology - <http://www.bom.gov.au>

The Southern Oscillation Index is positive but somewhat lower than the La Niña threshold (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

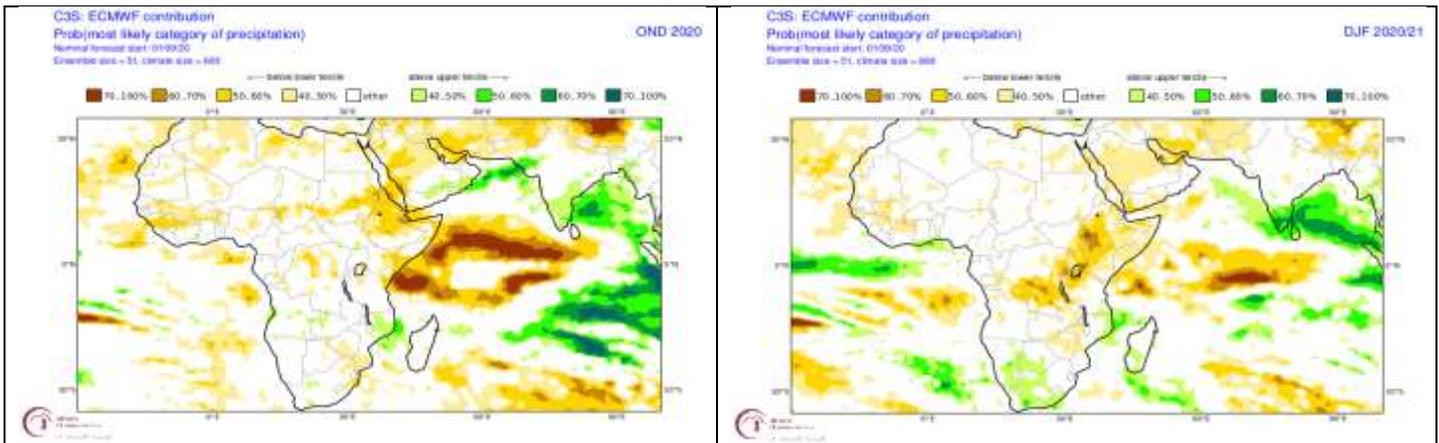
IRI, ECMWF, NCEP, UKMO

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.

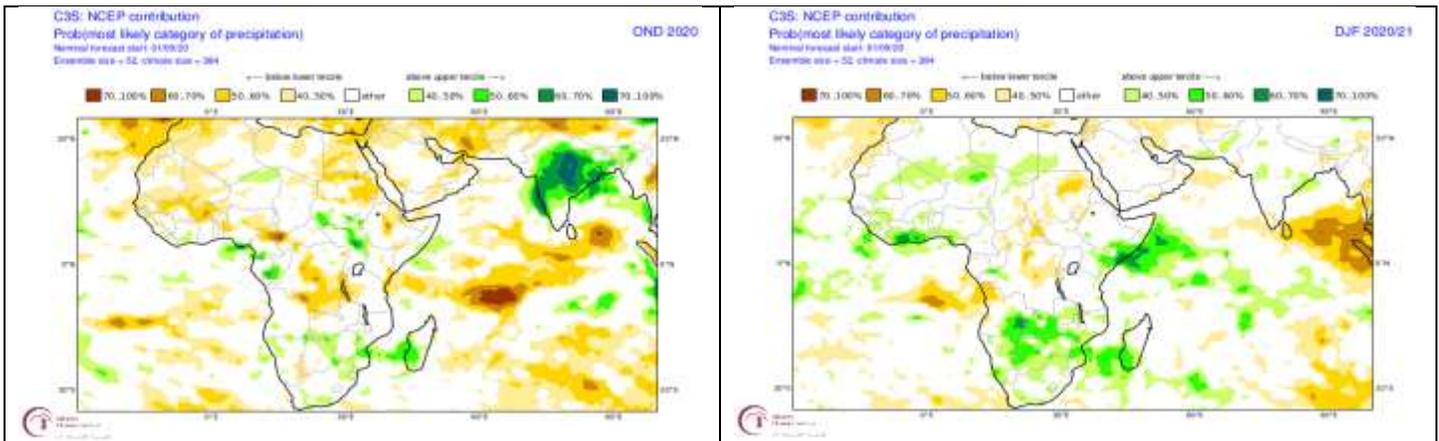


Probabilistic forecasts for rainfall (left) and temperatures (right) for mid-summer (October – December 2020/21; top) and mid-to-late summer (December – February 2020; bottom) (Forecast issued in 2020-09 by the IRI - <http://iri.columbia.edu/>).

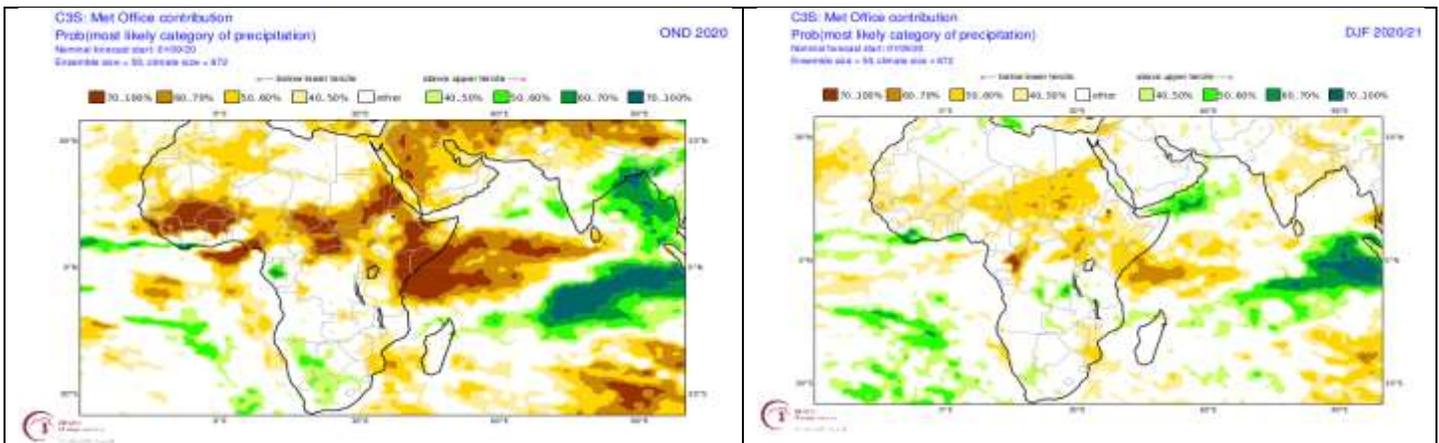
Seasonal forecasts by the ECMWF, NCEP, UKMO, as published by the COPERNICUS Programme (<https://climate.copernicus.eu/seasonal-forecasts>) for both early and mid-summer, reflect similar patterns with regards to rainfall for southern Africa as those by the IRI. The signal for relatively dry conditions 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; right) (Forecasts issued in 2020-09).



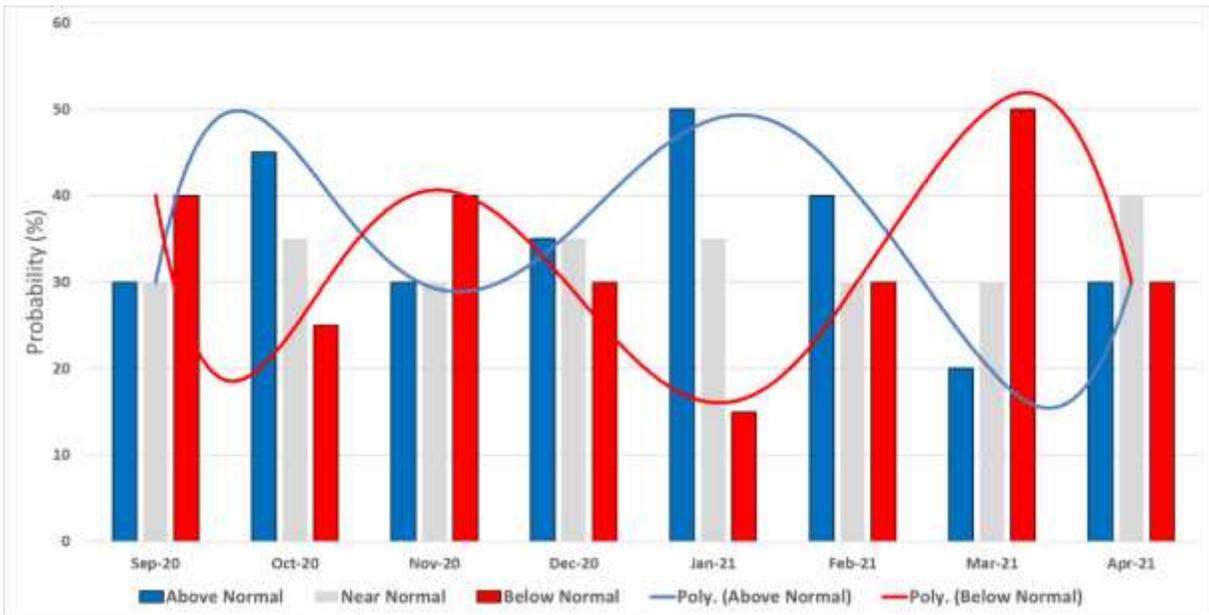
Same as above, but forecasts issued by the National Centres for Environmental Prediction.



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:

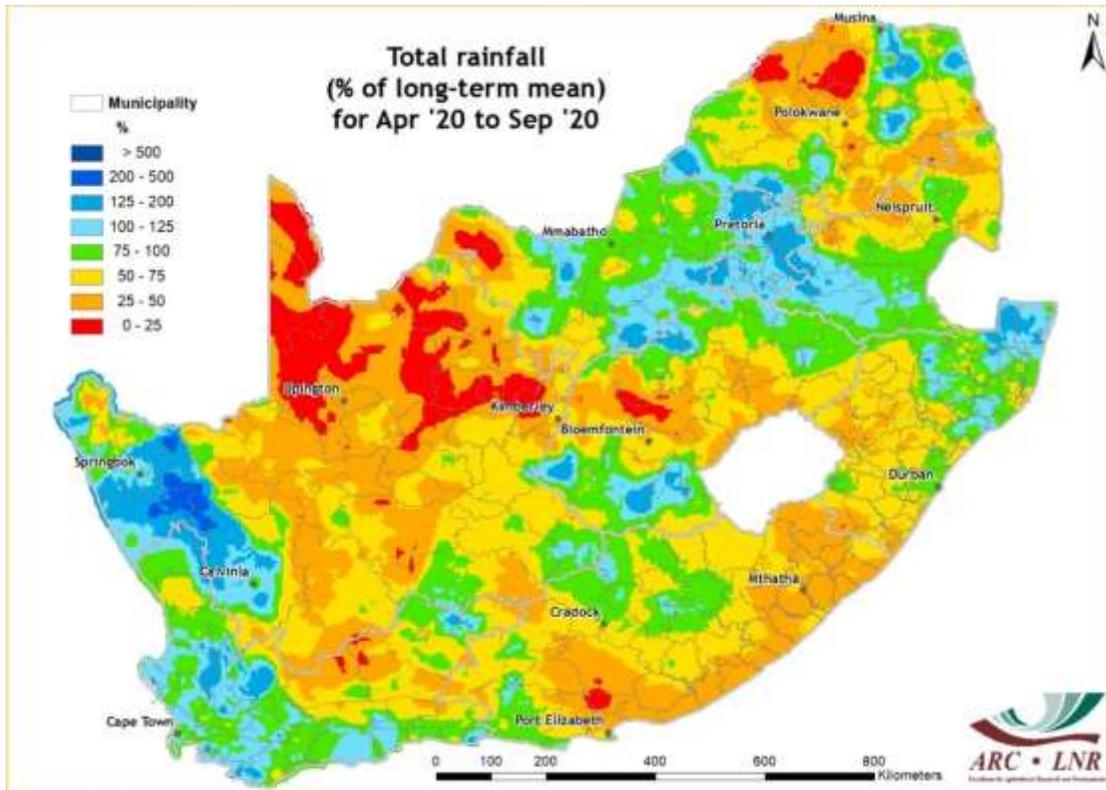


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

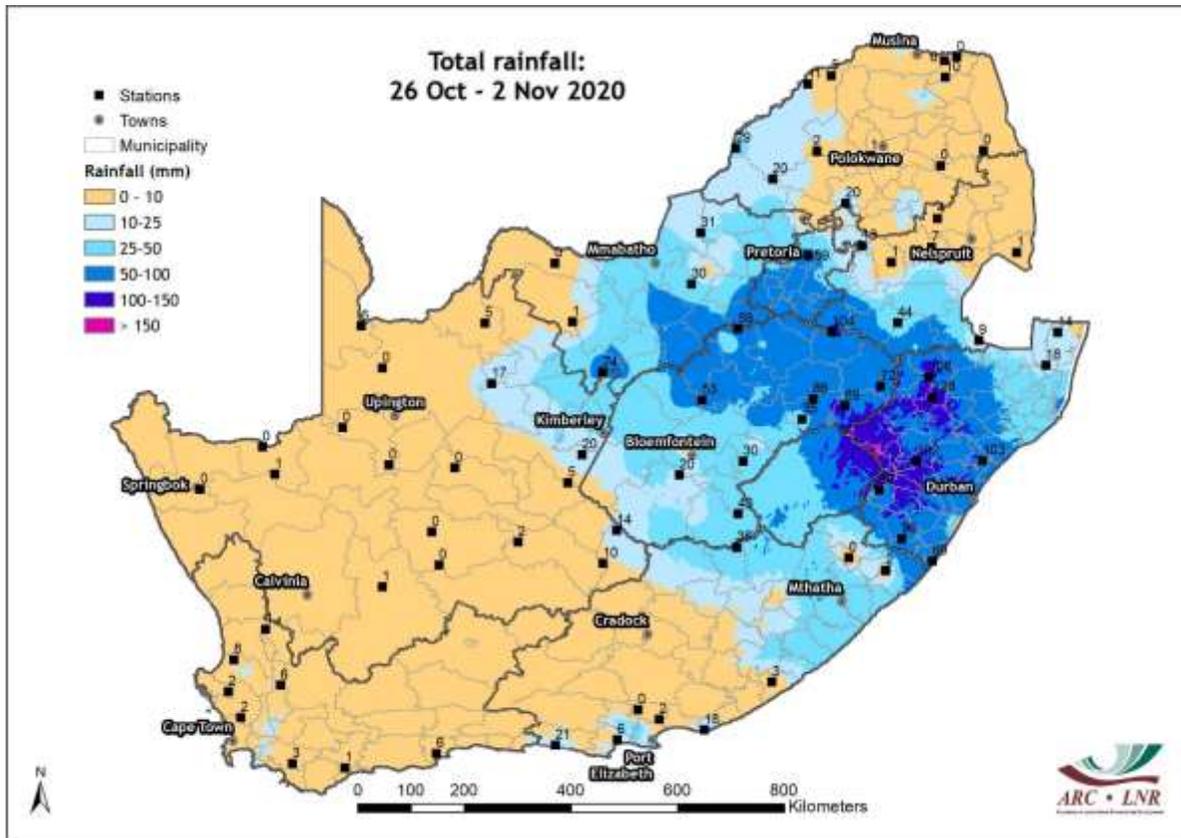
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

Rainfall (% of long-term mean): April – September 2020



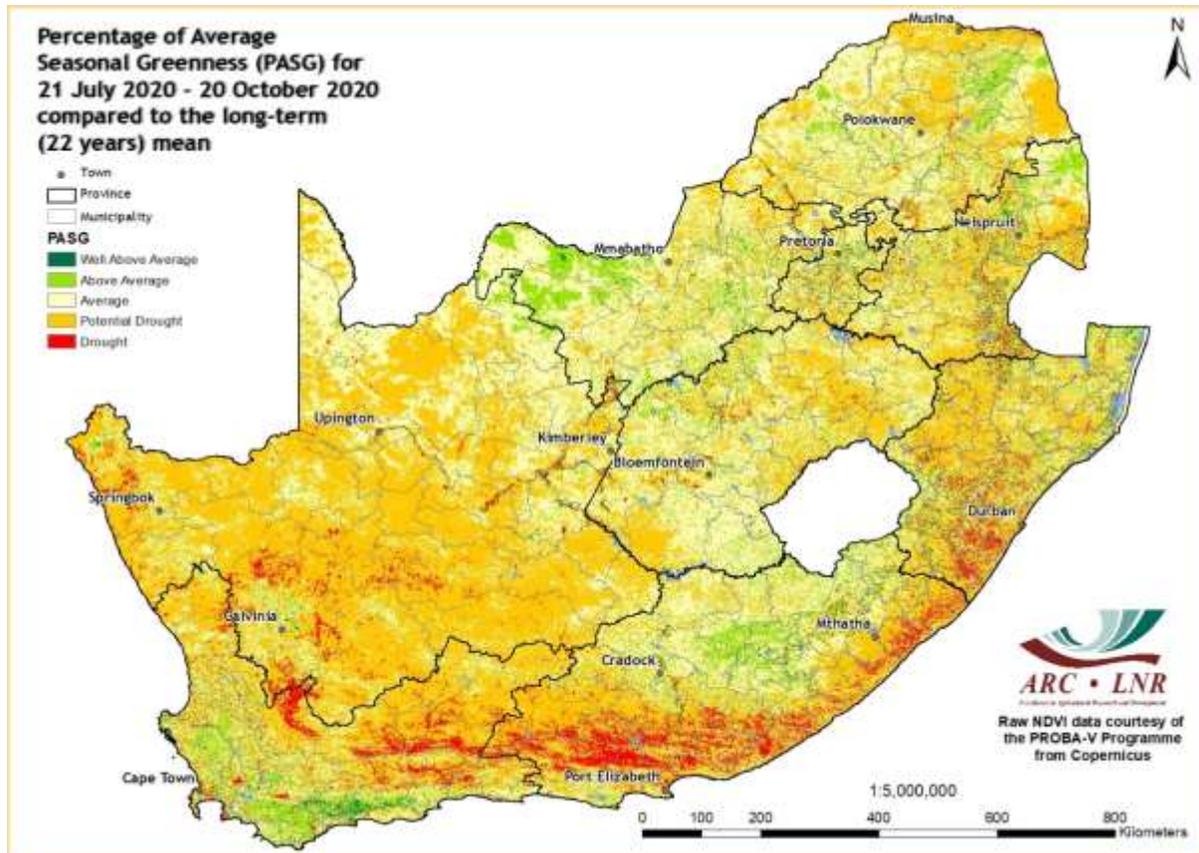
Rainfall during April to September 2020 was above normal over the winter rainfall region and also the Highveld. Most of the rain over the Highveld occurred during April while rainfall over the winter rainfall region was spread over the period late May to September.

Rainfall (mm): 26 October – 2 November 2020



Large parts of the white-maize production region as well as the southern half of the yellow-maize production region received in excess of 50 mm of rain during the period 26 October to 2 November. Most of northern Mpumalanga and Limpopo remained dry.

Percentage of Average Seasonal Greenness: 21 July – 20 October 2020



Cumulative vegetation activity for 21 July to 20 October still shows the positive effect of above-normal rain during the 2019/20 summer over the central areas to some extent. The grain-production areas of the Western Cape also experience 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

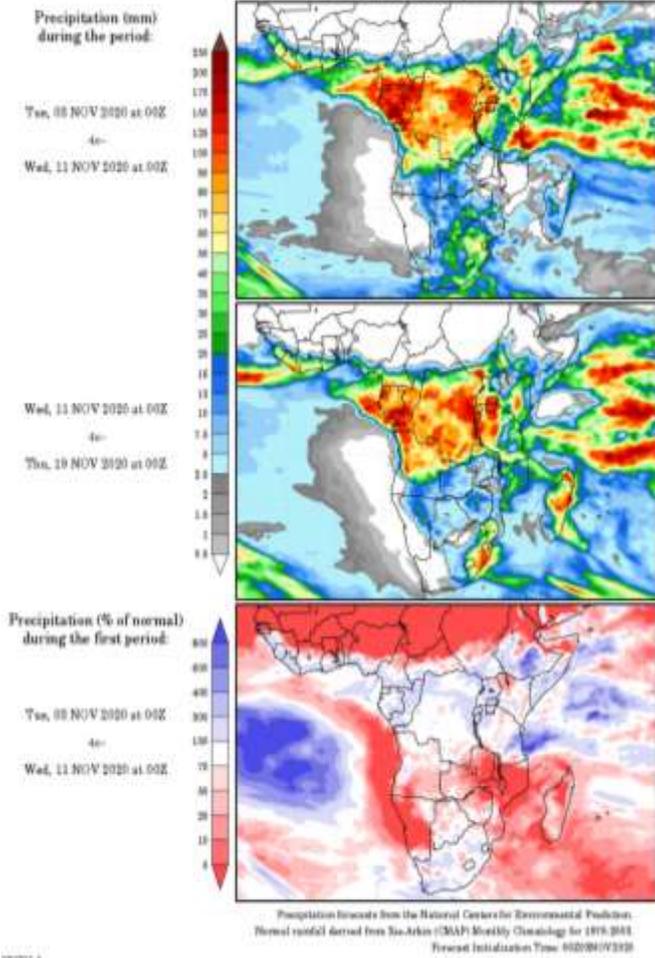
An upper-air cut-off low will move into the western interior, and eastwards into the central parts while weakening by Thursday (5th) before moving out. Widespread thundershowers will be associated with the system over the interior. From Friday (6th), frontal activity will bring showers to the winter rainfall region and dry, cool to mild conditions over the western to central parts. The southwestern to southern parts will be cold and windy with the movement of frontal systems over the areas, together with an influx of cold air from the south by Sunday / Monday (8th / 9th) when a high-pressure system will ridge around the country, also enhancing chances for rain in the east.

Conditions in main agricultural production regions (3 – 9 November)

Maize production region: Total rainfall during the period should be near normal. Scattered thundershowers are possible until Thursday (5th) when some storms may become severe. It will become hot during the weekend and mostly dry. Thundershowers should occur again from Sunday (8th), becoming scattered over the eastern parts of this region by Monday (9th) when some storms may become severe according to current forecasts. Maximum temperatures over the western maize production areas will be in the order of 28 – 35°C, with higher temperatures during the weekend. Minimum temperatures will be in the order of 15 – 22°C. Maximum temperatures over the eastern maize-production region will range between 24 and 33°C, with the cooler conditions in place until Friday, followed by warmer conditions during the weekend. It will become cooler again in the east by Monday. Minimums will be in the order of 13 – 19°C.

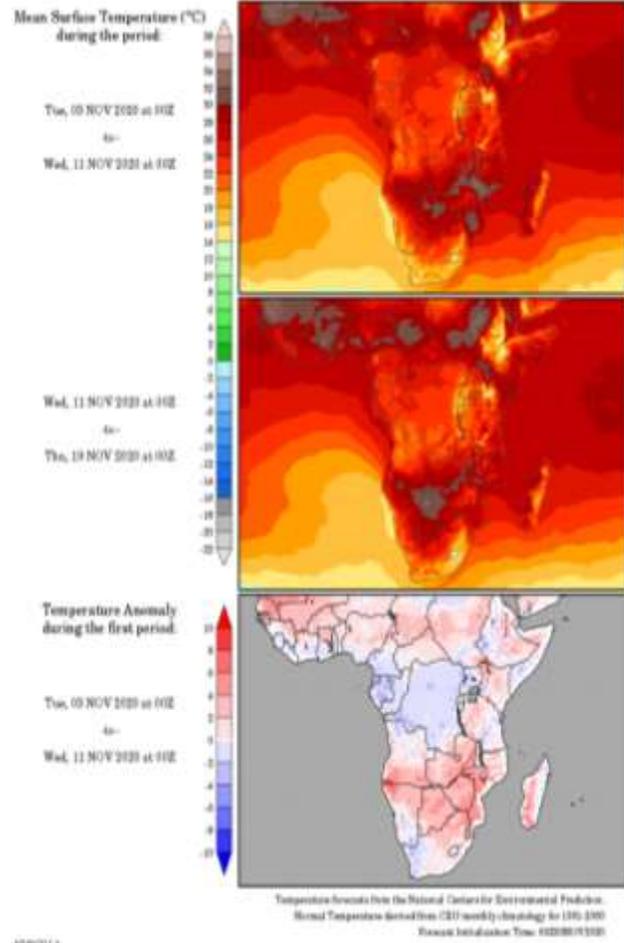
Cape Wine Lands and Ruens: The region will be relatively cold and wet on average for this time of the year. It will be partly cloudy and mild to warm initially with strong southeasterlies in the southwest. It will become cloudy, with isolated to scattered thundershowers, especially over the interior, by Wednesday to Thursday (4th / 5th). It will be partly cloudy to cloudy, windy and cold from Friday (6th) to Sunday (8th) with showers. Conditions will clear by Monday (9th) with strong southeasterlies in the southwest.

Precipitation Forecasts



08/01/2024

Temperature Forecasts



08/01/2024

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 3 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 have a tendency to become severe over the following areas:
 - Interior of the Northern Cape, western Free State and western North West on Wednesday (4th)
 - Eastern Free State, northern KZN, Mpumalanga, Gauteng, eastern North West and western to central Limpopo on Thursday (5th).
 - Northeastern parts of the Eastern Cape, western KZN and southern to central Mpumalanga on Monday (9th).
- Cold, wet and windy conditions over the winter rainfall region and Karoo from Friday (6th) to Monday (9th) may adversely affect small stock.
- It will be very hot and humid over the Lowveld and Limpopo River Valley from Friday (6th) to Monday (9th).

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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