

CUMULUS



27 October 2020 – by J Malherbe, R Kuschke



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Summary

Hot and dry conditions at first with scattered thundershowers by the weekend over the maize-production areas

Most of the next few days will see a continuation of hot and dry conditions focusing on the northeastern parts of the country while some thundershowers are expected relatively far west, over the central to western parts southeastwards and at times moving northeast to include parts of Mpumalanga also. Thundershowers will become scattered and relocate northeastwards to include much of Mpumalanga, Gauteng and North West during the weekend. Again, some thundershowers may become severe with strong wind gusts and the possibility of hail in isolated cases – not above the norm for this time of the year.

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

- **General:**

- Rainfall will be normal to above normal over the central to southern parts, but below normal in the northeast.
- Above-normal rainfall is expected over the winter rainfall region where a cold front will move through later this week.
- Partly cloudy and warm to hot conditions will dominate and on average it will be warmer than normal for this time of the year.
- Isolated to scattered thundershowers will occur over the central parts during the remainder of the week while the northeast should remain warm and dry for the most part.
- Thundershowers will spread northeastwards during the weekend, to include North West, Gauteng and Mpumalanga.
- Maximum temperatures over the western maize production areas will be in the order of 29 – 35°C, with most of the week remaining hot and lower temperatures expected during the weekend. Minimum temperatures will be in the order of 16 – 23°C.
- Maximum temperatures over the eastern maize-production region will range between 20 and 33°C, with the cooler conditions also during the weekend. Minimums will be in the order of 12 – 15°C.

- **Detailed:**

- Tuesday and Wednesday (27th-28th): Warm and dry in the northeast. Maximum temperatures will be relatively high across the country. Isolated thundershowers will occur over the eastern parts of the Northern Cape, Free State and along the Drakensberg northwards to the southern to central parts of Mpumalanga, especially along the eastern escarpment. It will be hot and windy over the central to western interior.
- Thursday (29th): A cold front will bring cold, windy conditions to the winter rainfall region with showers. Cooler, dry weather will spread into the western interior. Scattered thundershowers are possible over the central to eastern parts of the Northern Cape, southwestern Free State, Eastern Cape and southern KZN. Thundershowers in this band – from the northern parts of the Northern Cape southeastwards into the Eastern Cape - may have an enhanced tendency to become severe.
- Friday (30th): The southwestern interior will remain cool. Isolated thundershowers will occur over the central parts and southeastwards, becoming scattered over the northeastern parts of the Eastern Cape and southern KZN. It will be sunny and warm to hot over the northeastern parts.
- Saturday and Sunday (31st, 1st): Isolated to scattered thundershowers over the Free State and eastwards into KZN will move northwards on each day into Mpumalanga, Gauteng and North West. Thundershowers over these areas will have a tendency to become severe, with strong wind gusts and hail in places. The northeastern parts will be somewhat cooler with northeasterly winds. The southern parts (Garden Route / Little Karoo) will be dry and cool but it will be hot over the central to western interior.
- Monday (2nd): It will be partly cloudy and warm over the central to western parts with isolated to scattered thundershowers according to current forecasts, including over the winter rainfall region. The northeastern parts are expected to remain mostly dry according to current forecasts.

Seasonal overview

ENSO and seasonal forecasts

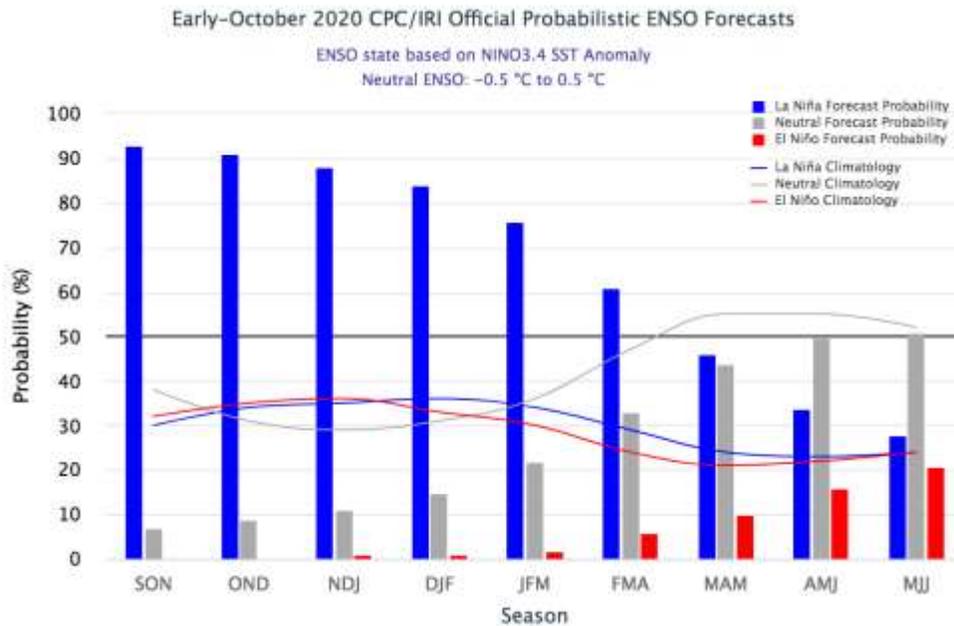
Due to a positive association with La Niña, rainfall over the southern African interior is expected to be above normal through the summer according to seasonal forecast models.

(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.

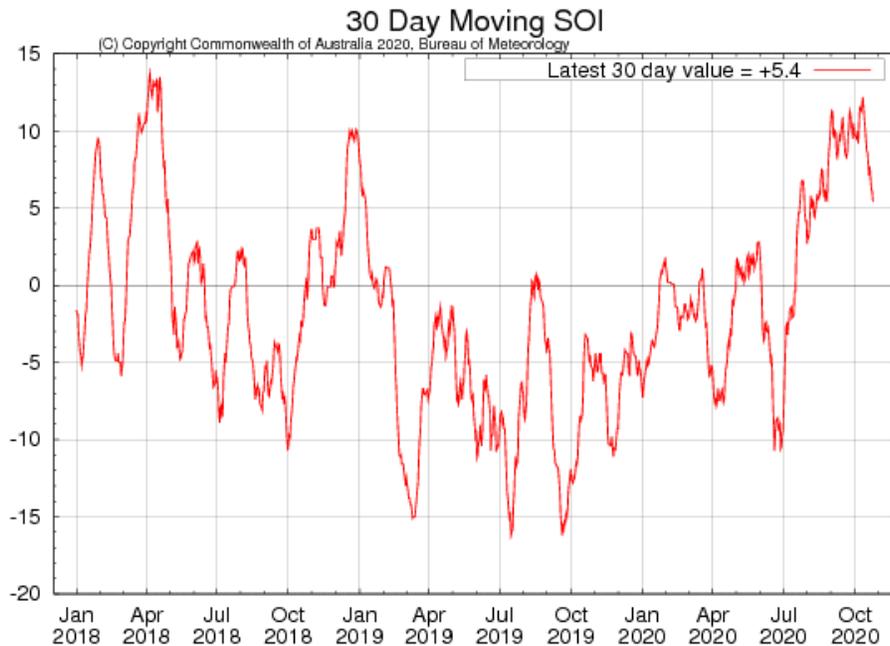
La Niña typically increases the chance of above average rainfall across **southern Africa** during summer.

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/>



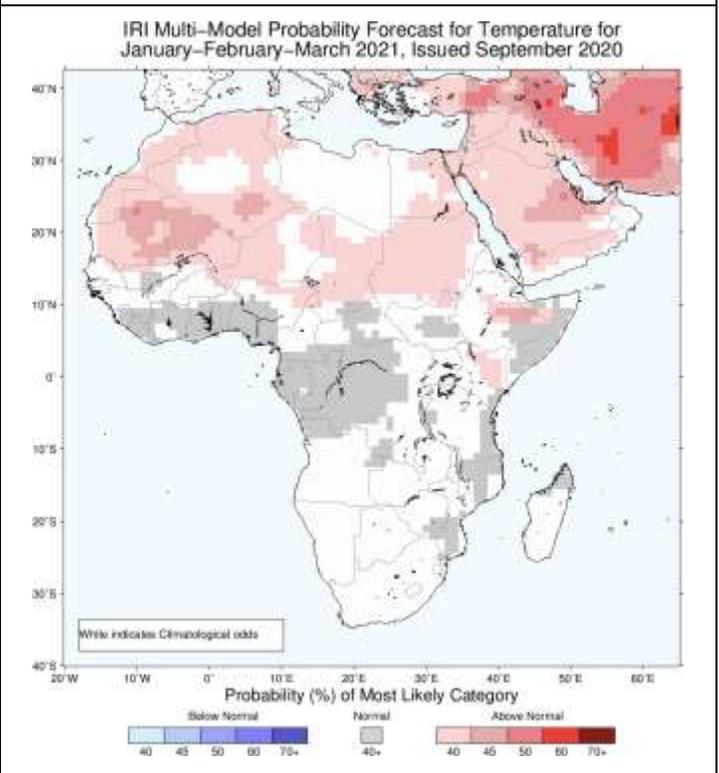
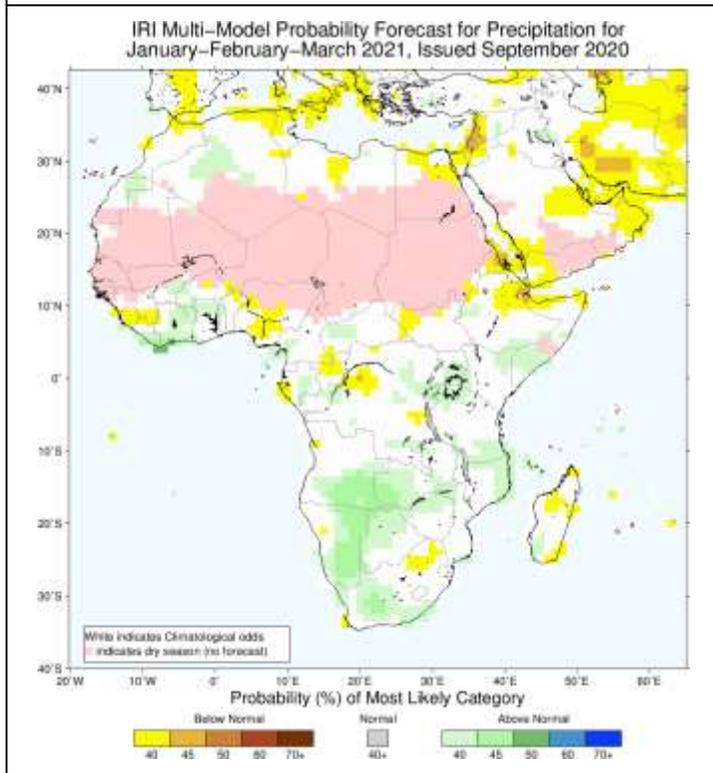
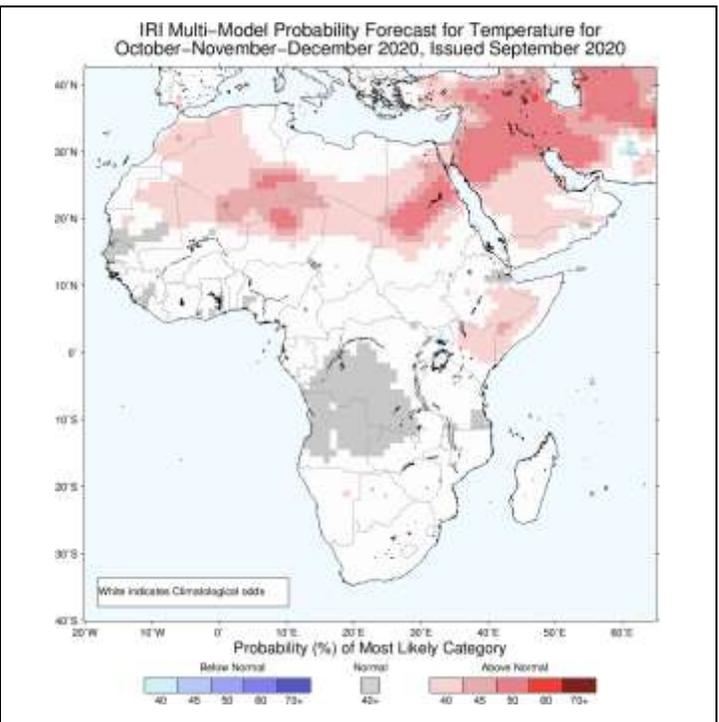
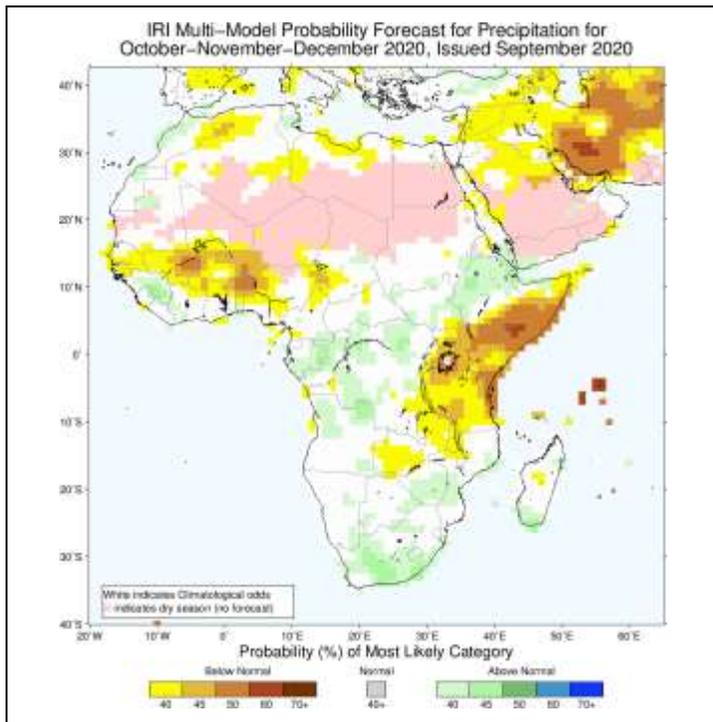
Australian Bureau of Meteorology - <http://www.bom.gov.au>

The Southern Oscillation Index is positive and within the La Niña threshold (larger than +7), indicating atmospheric circulation patterns consistent with La Niña conditions.

Seasonal forecasts issues by various international institutions

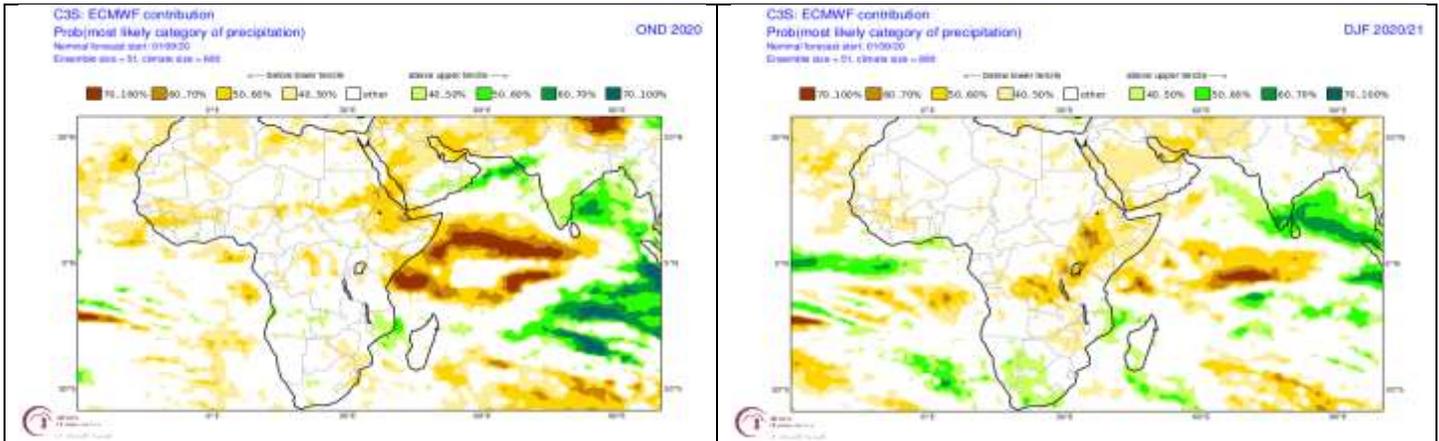
IRI, ECMWF, NCEP, UKMO

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.

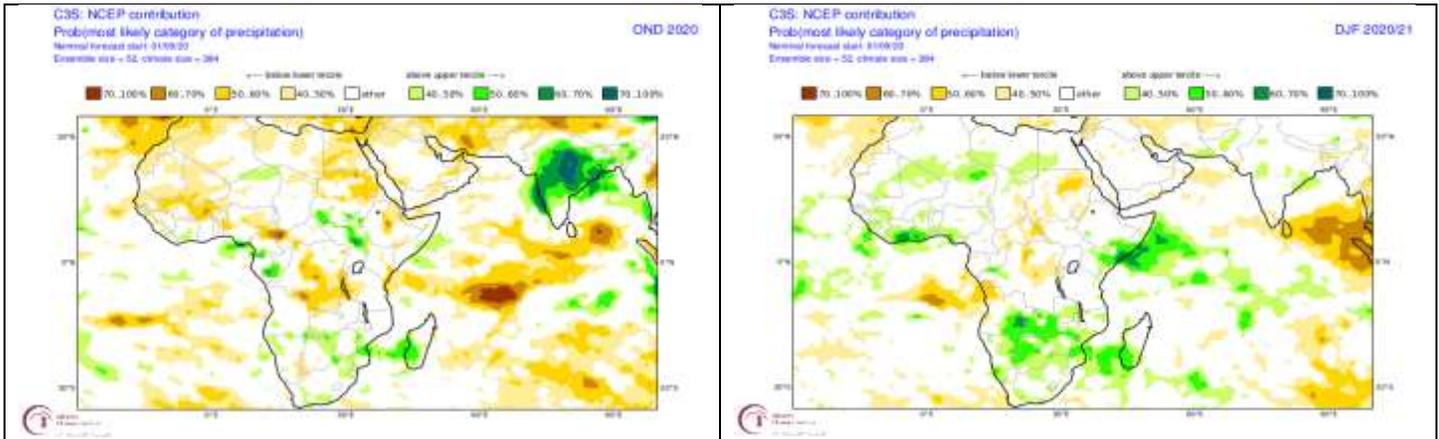


Probabilistic forecasts for rainfall (left) and temperatures (right) for mid-summer (October – December 2020/21; top) and mid-to-late summer (December – February 2020; bottom) (Forecast issued in 2020-09 by the IRI - <http://iri.columbia.edu/>).

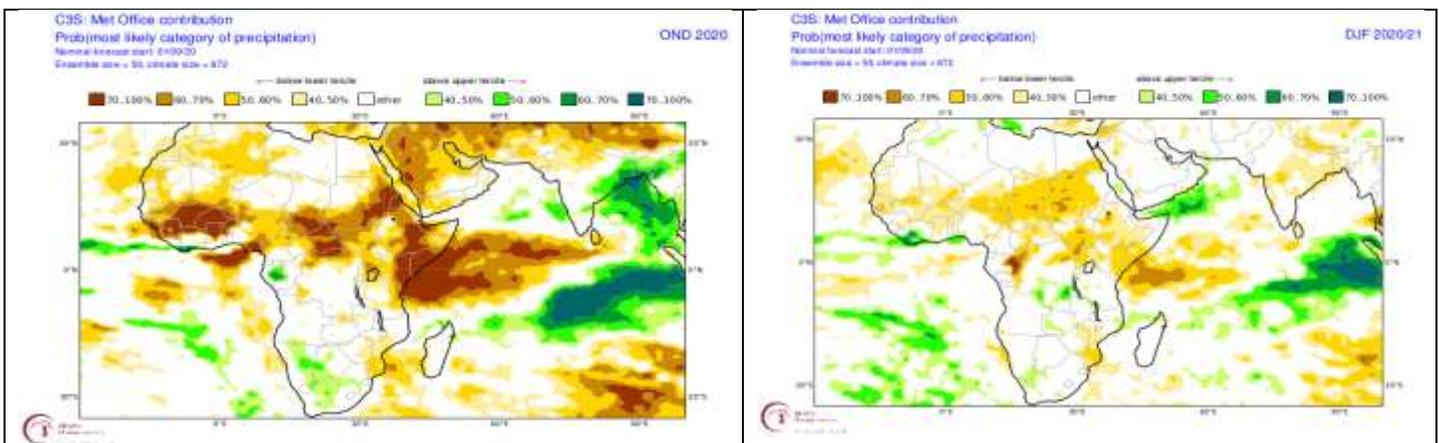
Seasonal forecasts by the ECMWF, NCEP, UKMO, as published by the COPERNICUS Programme (<https://climate.copernicus.eu/seasonal-forecasts>) for both early and mid-summer, reflect similar patterns with regards to rainfall for southern Africa as those by the IRI. The signal for relatively dry conditions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



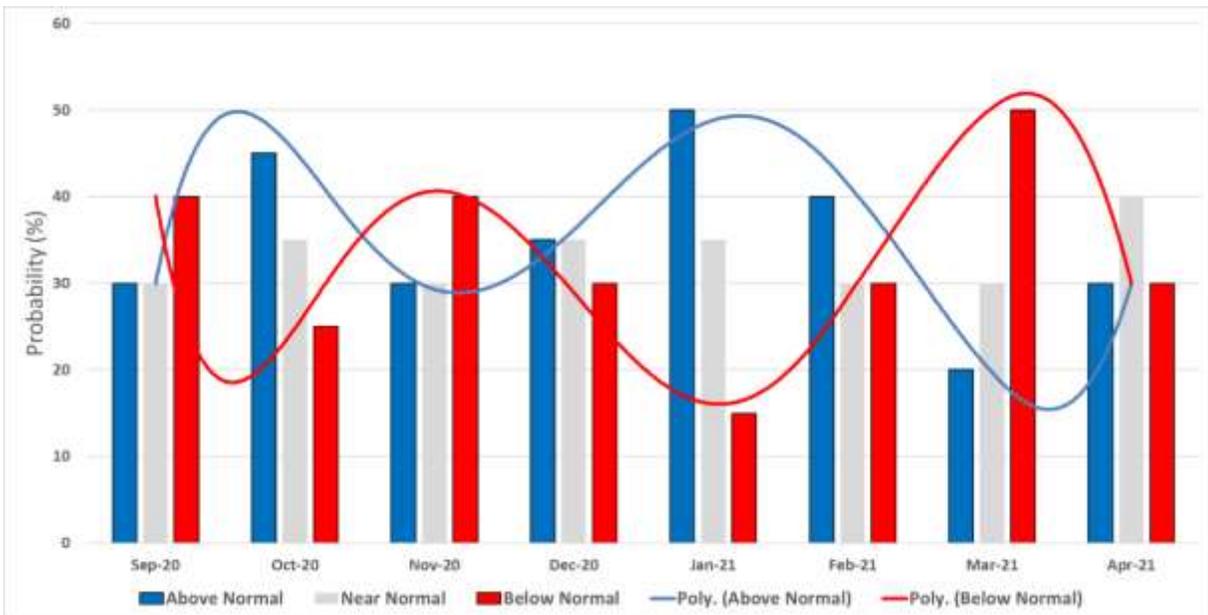
Same as above, but forecasts issued by the National Centres for Environmental Prediction.



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), 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:

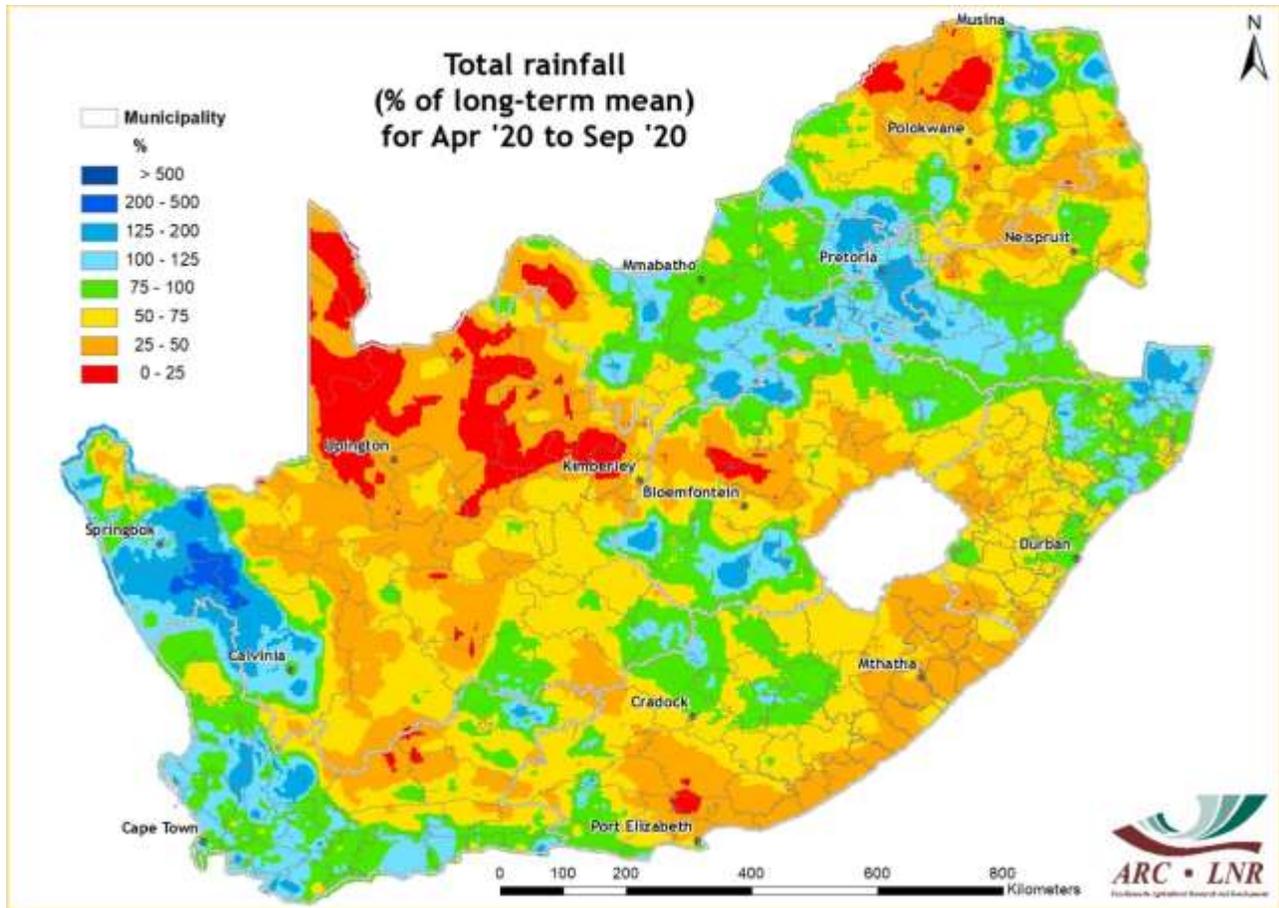


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

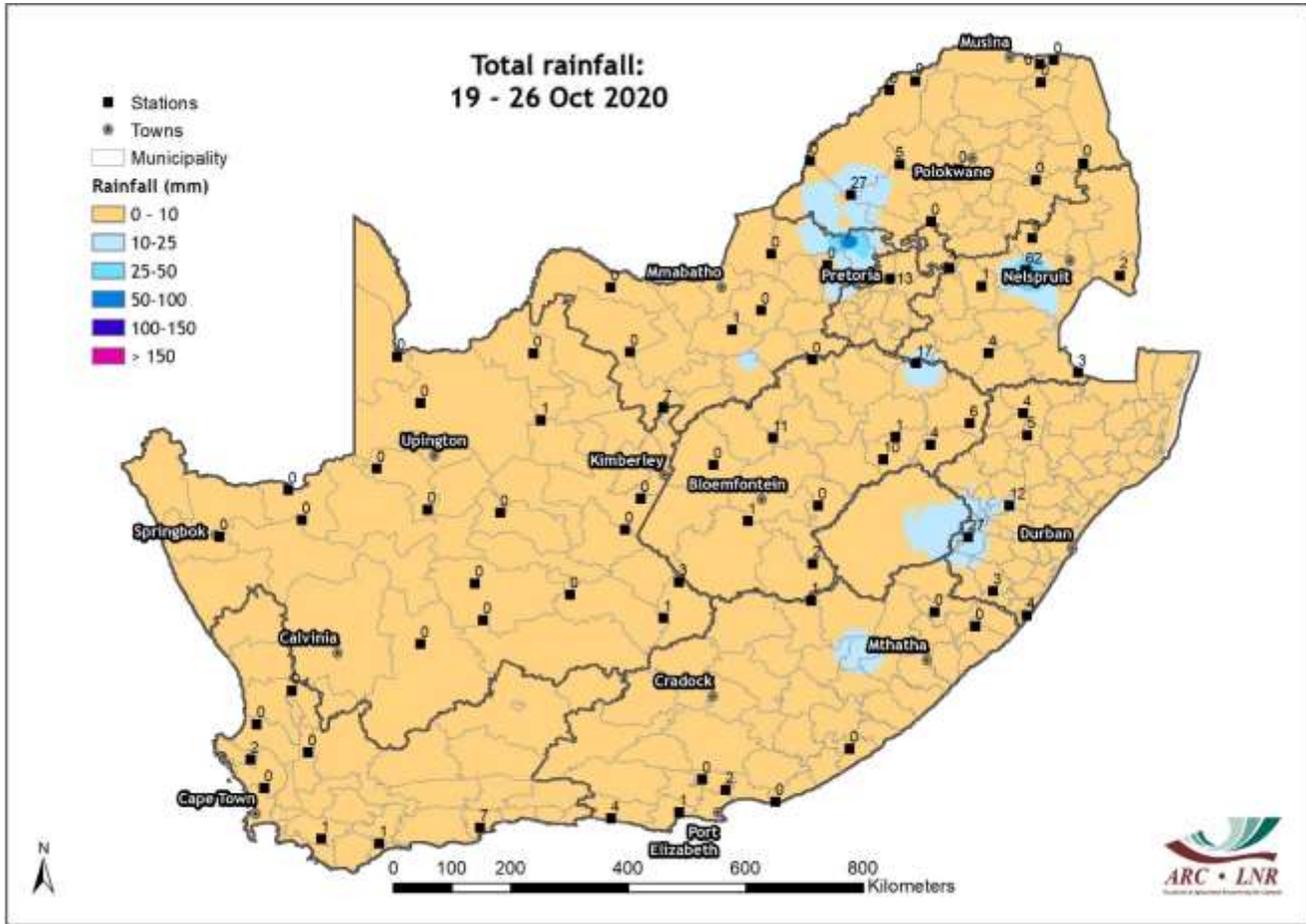
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

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



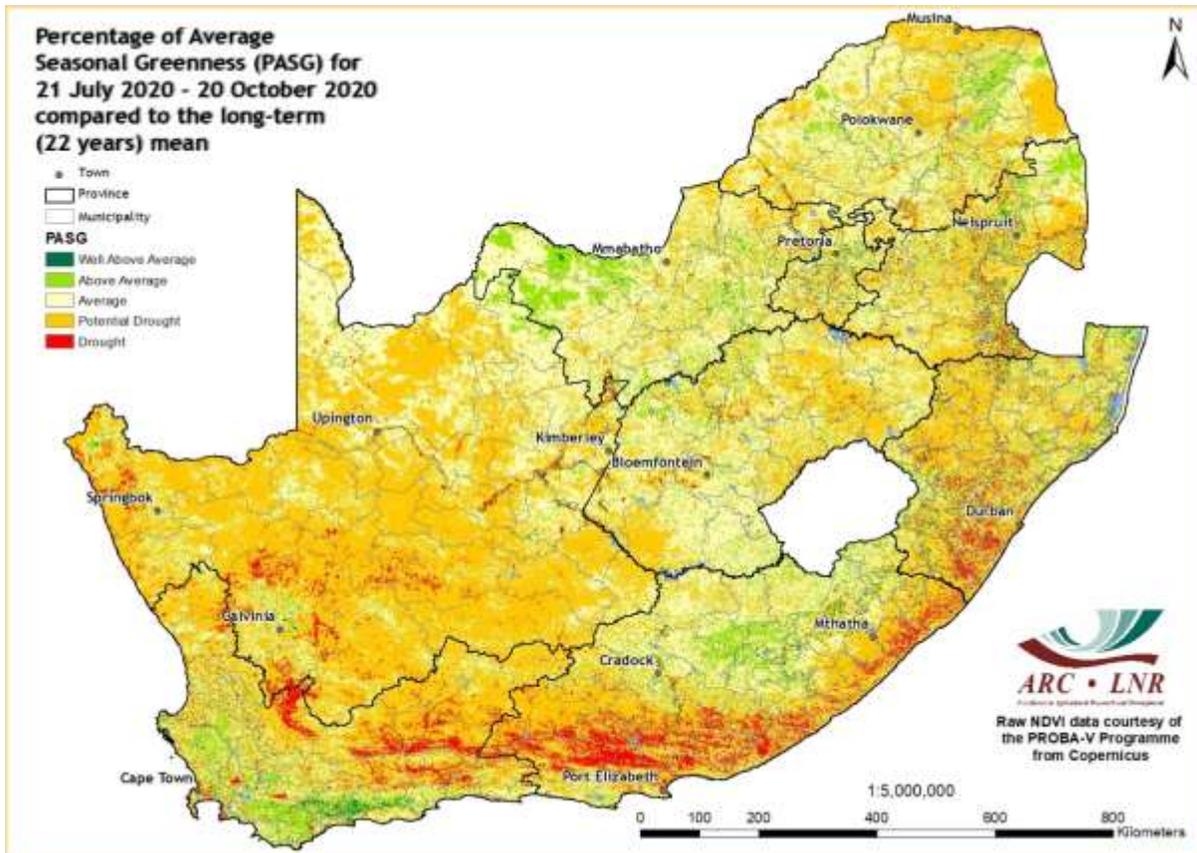
Rainfall during April to September 2020 was above normal over the winter rainfall region and also the Highveld. Most of the rain over the Highveld occurred during April while rainfall over the winter rainfall region was spread over the period late May to September.

Rainfall (mm): 19 – 26 October 2020



It was mostly dry during 19 – 26 October except for some areas in the east where isolated thundershowers occurred.

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

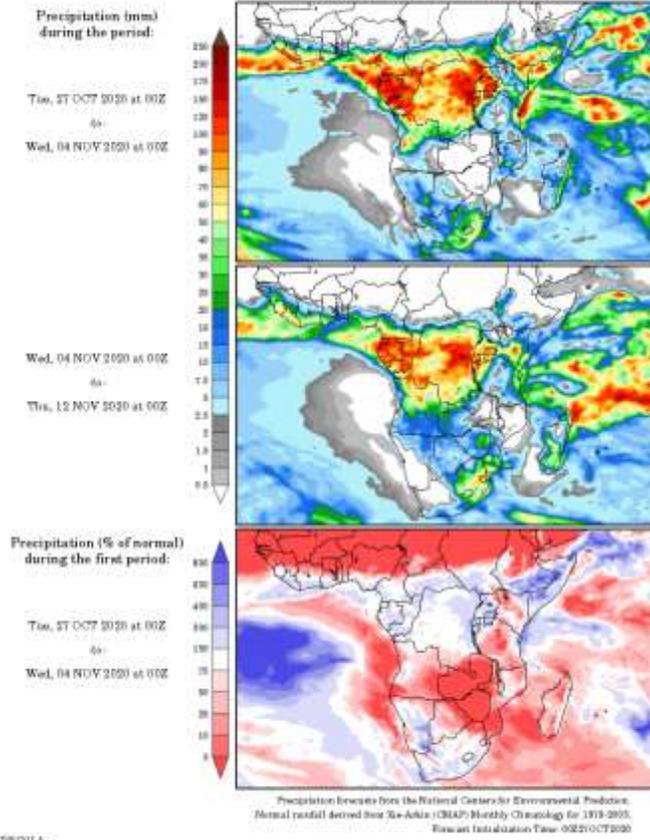
Large-scale atmospheric circulation patterns will remain relatively unfavorable, with upper-air troughs mainly to the west of the country while circulation over the interior remains broadly anticyclonic. A frontal system will however result in some showers over the winter rainfall region by late Wednesday/Thursday while the associated upper-air trough to the west will support a band of thundershowers over the Northern Cape southeastwards. While the interior will be dry for the most part, thundershowers will remain in place from the Free State eastwards until the Weekend. During the weekend, the combination of a ridging high-pressure system together with an upper-air perturbation moving over the eastern interior from the south will support scattered thundershowers over the maize-production areas.

Conditions in main agricultural production regions (27 October – 2 November)

Maize production region: Total rainfall during the period should be near normal to below normal. Partly cloudy and warm weather will dominate through the week, but it will be hot over the western parts. Isolated thundershowers are possible, especially over the Eastern Highveld. On Saturday and Sunday, current forecasts indicate scattered to widespread thundershowers moving south-north over the region. Some of these thundershowers may become severe. Maximum temperatures over the western maize production areas will be in the order of 29 – 35°C, with most of the week remaining hot and lower temperatures expected during the weekend. Minimum temperatures will be in the order of 16 – 23°C. Maximum temperatures over the eastern maize-production region will range between 20 and 33°C, with the cooler conditions also during the weekend. Minimums over the eastern parts will be in the order of 12 – 15°C.

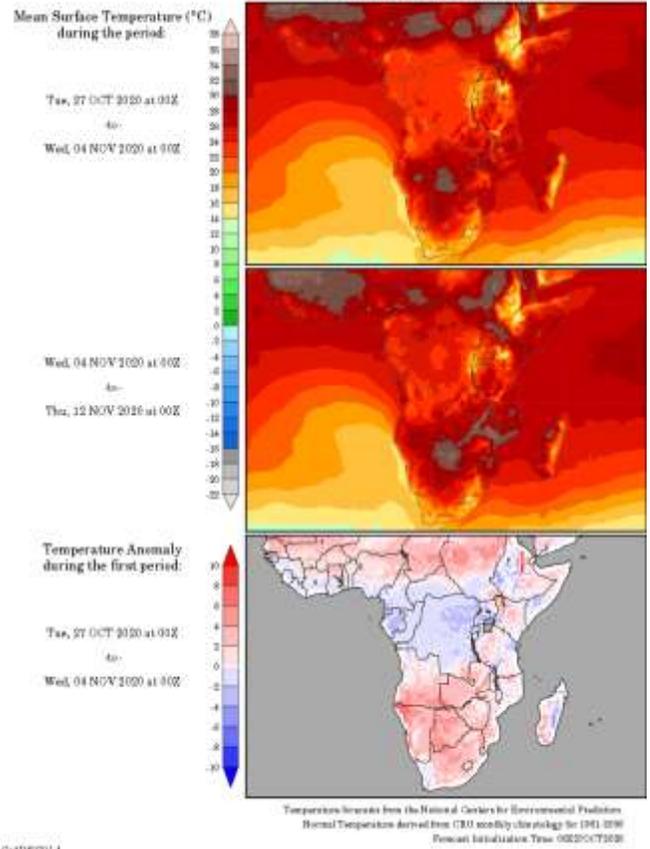
Cape Wine Lands and Ruens: It will be partly cloudy and cool initially, but should become cloudy, cold and windy with showers from Wednesday evening into Thursday. This should be followed by sunny and mild conditions with increasing temperatures heading into the weekend, with strong southeasterlies in the southwest. It may become partly cloudy to cloudy again by Monday, with isolated to scattered showers and thundershowers.

Precipitation Forecasts



GHANESOLA

Temperature Forecasts



GHANESOLA

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 27 October) 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 over the central to southeastern parts on Wednesday to Friday (28th – 30th) may be accompanied by strong wind gusts and in isolated areas also by hail.
- Hot conditions with strong winds during the afternoons on Tuesday and Wednesday (27th / 28th) over the interior of the Northern Cape, central to western North West, Free State and northern parts of the Eastern Cape can be conducive to the development and spread of wild fires where vegetation is dry.
- Thundershowers over the Northern Free State, northwestern KZN, Mpumalanga, Gauteng and North West on Saturday and Sunday (31st, 1st) may become severe with strong wind gusts and hail in places.
- Cold, windy conditions over the southern to southwestern interior (Garden Route, Karoo) on Thursday (29th) to Saturday (30th) may adversely affect small stock.

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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