

CUMULUS



13 October 2020 – by J Malherbe, R Kuschke



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Summary

Drier conditions ahead

Much of the northeastern half of the country experienced normal to above-normal rainfall for the period late September into early October. The eastern parts of the maize-production region also benefitted from the rain with much of Mpumalanga receiving about 50 mm of rain in total.

The next few days are expected to be dry, with only isolated thundershowers expected over parts of the Eastern Highveld. Coupled with the dominating dry, anticyclonic circulation, temperatures are expected to be higher than normal for this time of the year with clear skies. Winds over the interior should remain light and variable in the northeast, but are expected to become moderate to strong northwesterly over the central parts later this week and into the weekend, especially during the afternoons.

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

- **General:**

- Rainfall will be below normal. Most of the interior will receive little to no rain during the next few days.
- Sunny to partly cloudy and warm conditions will dominate. It will become hot to very hot over large parts by the weekend and into early next week.
- Isolated thundershowers are possible over parts of the Highveld and further north during the weekend.
- Dust storms are possible over the central to western parts of the Free State and surrounding areas in the event of isolated thundershowers later this week and into the weekend.
- Temperatures will on average be above normal for this time of the year.

- **Precipitation:**

- Tuesday to Thursday (13th – 15th): Dry over the interior. Only light showers along the Garden Route on Tuesday (13th).
- Friday (16th): Isolated thundershowers with gusty winds over the central to western Free State and surrounding areas.
- Saturday (17th): Isolated thundershowers with gusty winds over the northern Free State, North West, Gauteng and Mpumalanga.
- Sunday and Monday (18th and 19th): Isolated thundershowers over the northeastern half of the country, dry over the central to western parts – according to current forecasts. Showers are possible along the Garden Route on Monday (19th).

- **Temperatures:**

- Tuesday to Wednesday (13th – 14th): Mild in the east and warm over the central to western parts.
- Thursday (15th): Warm to hot over the central parts, becoming partly cloudy and windy in the afternoon. Mild to warm conditions in the east and north.
- Friday to Monday (16th – 19th): Warm to hot over most of the interior, especially the central parts and Limpopo River Basin. Hot conditions will spread east of the escarpment, with high maximum temperatures also expected over KZN and the Lowveld. It will become cooler over the winter rainfall region, Garden Route and Karoo with southwesterly winds according to current forecasts.
- Maximum temperatures over the western maize production areas will be in the order of 27 – 26°C, with highest temperatures towards the end of the period. Minimum temperatures will be in the order of 14 – 22°C.
- Maximum temperatures over the eastern maize-production region will range between 22 and 33°C, with lowest values early, warming during the period. Minimums will be in the order of 10 – 16°C – also with a warming trend during the period.

Seasonal overview

ENSO and seasonal forecasts

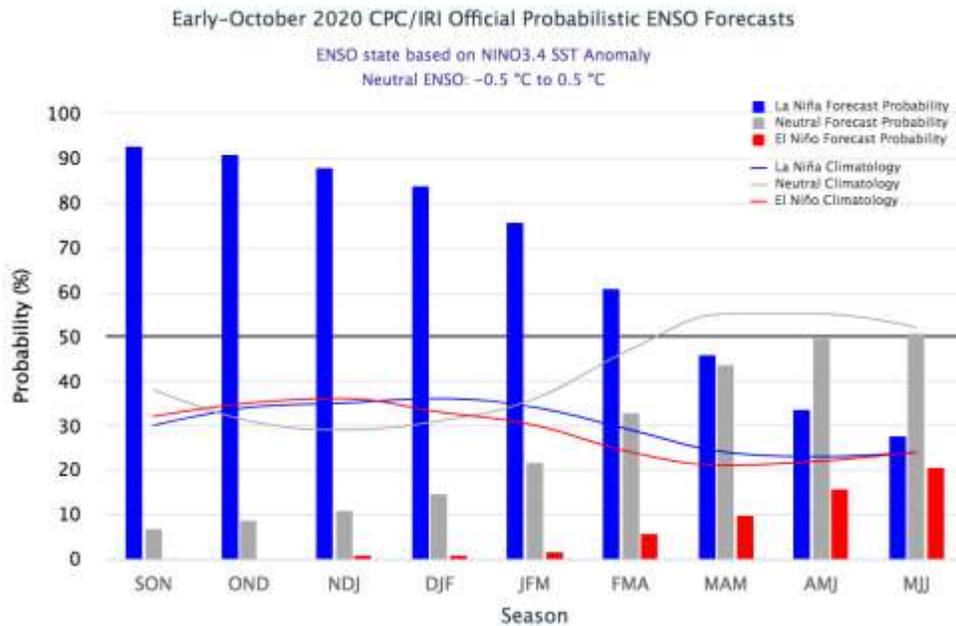
Due to a positive association with La Niña, rainfall over the southern African interior is expected to be above normal through the summer according to seasonal forecast models.

(Updated 13 October) A La Niña is underway in the tropical Pacific. All surveyed international climate models indicate this La Niña will persist through the southern hemisphere summer 2020–21.

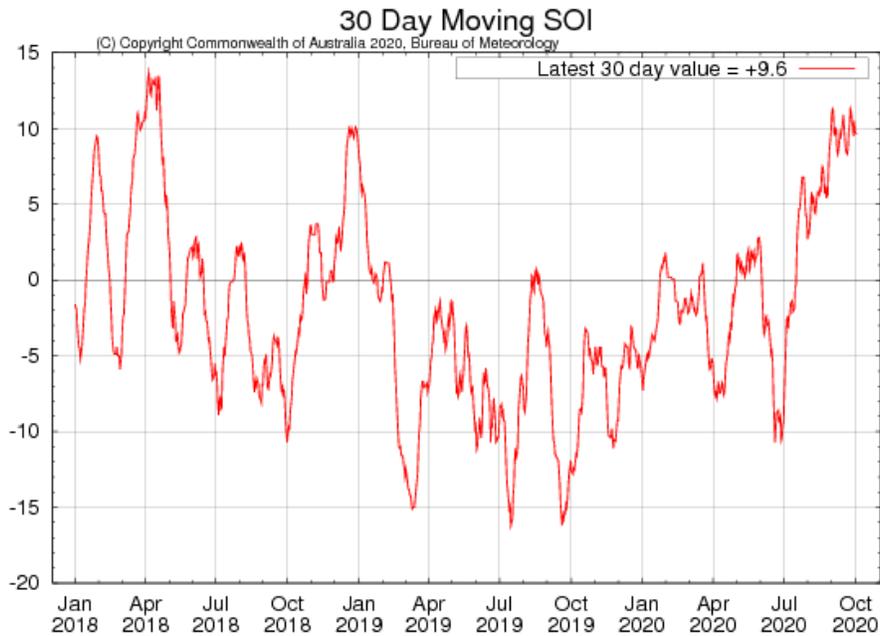
Most models suggest the La Niña will strengthen, peaking in December. Around half the models anticipate a strong event, meaning there is a possibility it could reach similar strength to the La Niña of 2010–12. However, models forecast this event will be shorter, possibly ending in the first quarter of 2021.

Central and eastern tropical Pacific Ocean sea surface temperatures remain around La Niña thresholds (0.8 °C below average) and atmospheric indicators, including the Southern Oscillation Index (SOI), trade winds and cloud, are also at La Niña levels.....*Australian Bureau of Meteorology* - <http://www.bom.gov.au>

According to the IRI (Updated 8 October) In early 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. The majority of the model forecasts exceeds the threshold of La Niña SST conditions through the winter, dissipating during spring. The new official CPC/IRI outlook is similar to these model forecasts, calling for a 85% chance of La Niña for *Southern Hemisphere Summer*. 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/>



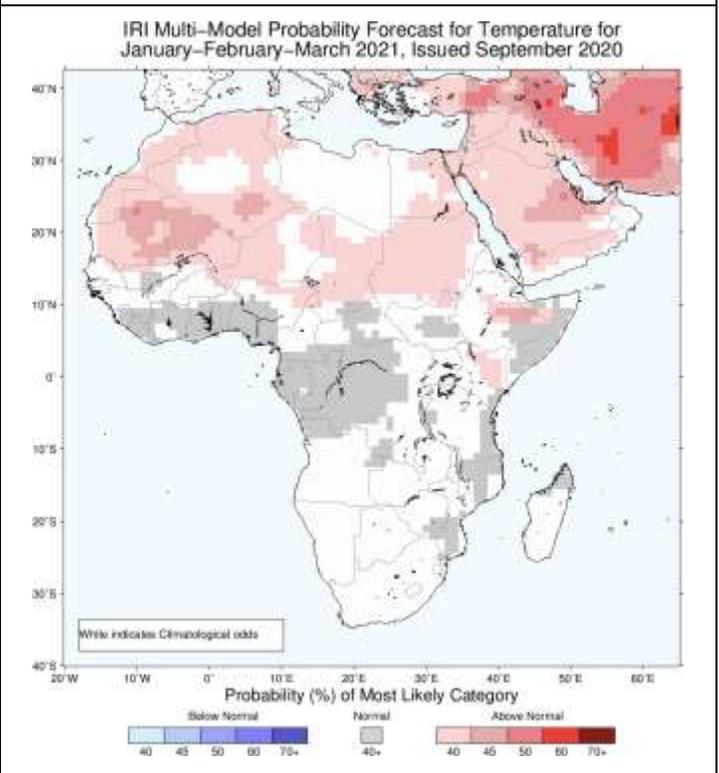
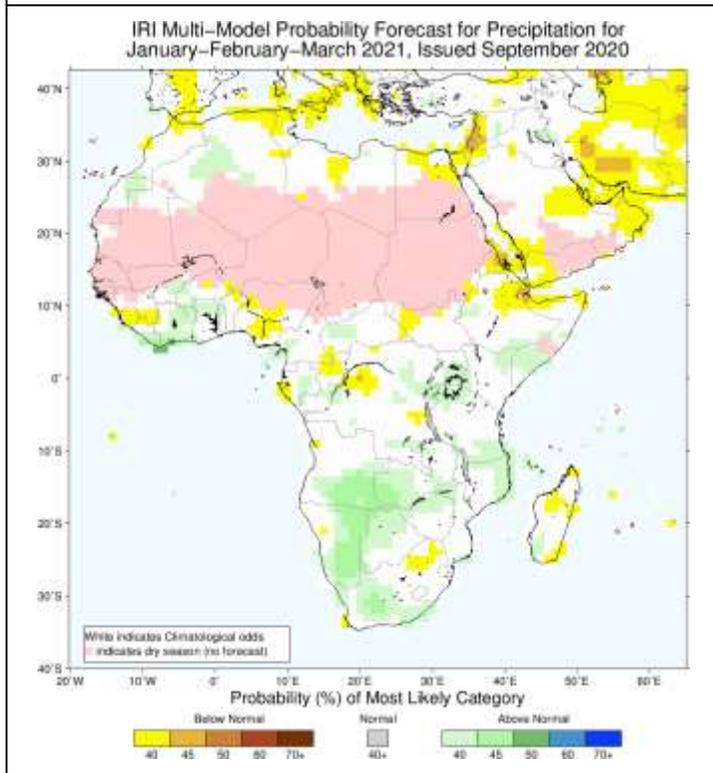
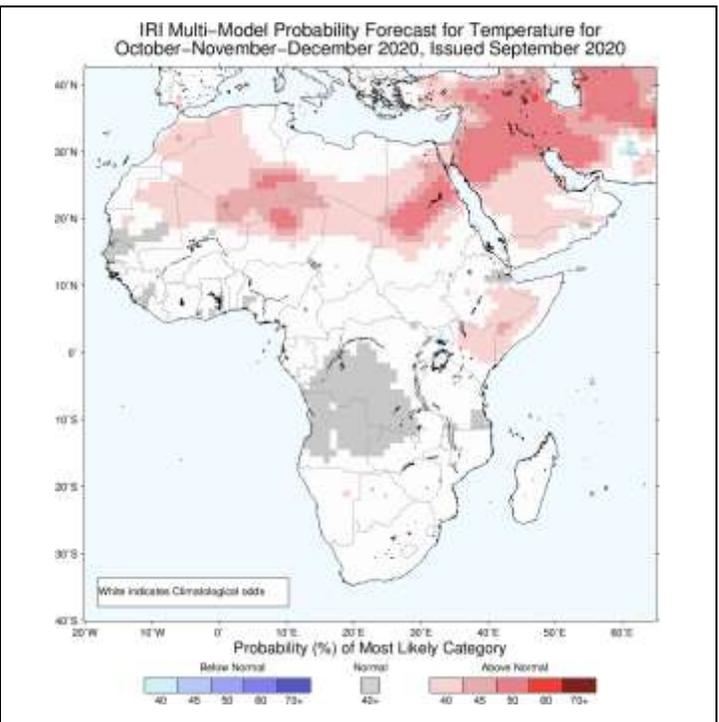
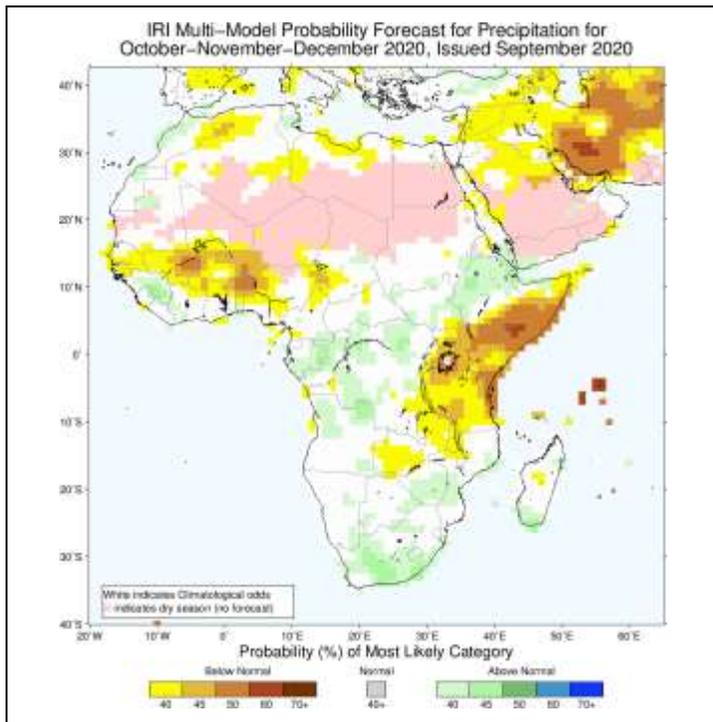
Australian Bureau of Meteorology - <http://www.bom.gov.au>

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

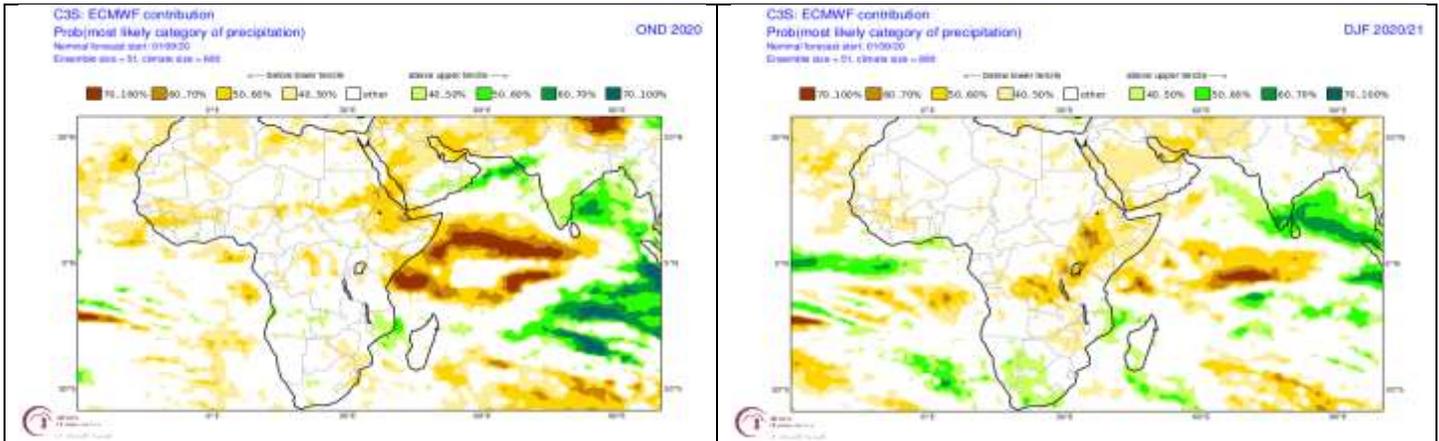
IRI, ECMWF, NCEP, UKMO

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.

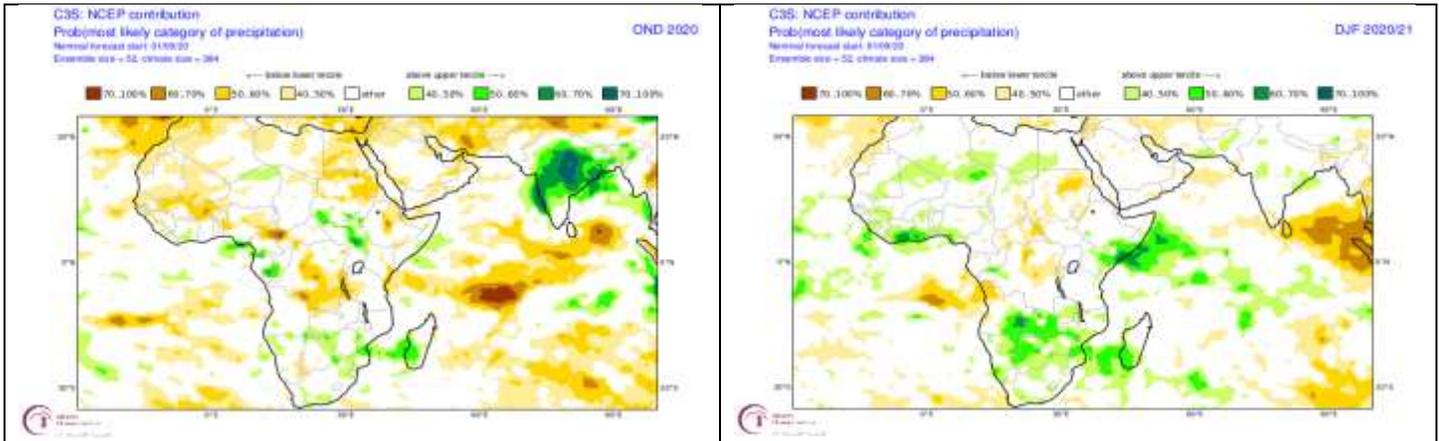


Probabilistic forecasts for rainfall (left) and temperatures (right) for mid-summer (October – December 2020/21; top) and mid-to-late summer (December – February 2020; bottom) (Forecast issued in 2020-09 by the IRI - <http://iri.columbia.edu/>).

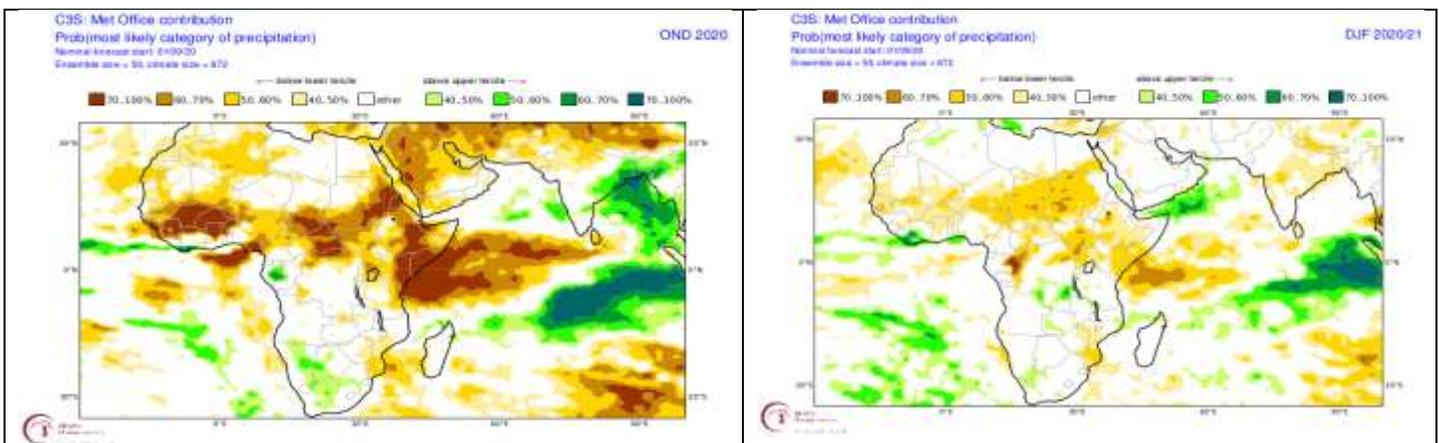
Seasonal forecasts by the ECMWF, NCEP, UKMO, as published by the COPERNICUS Programme (<https://climate.copernicus.eu/seasonal-forecasts>) for both early and mid-summer, reflect similar patterns with regards to rainfall for southern Africa as those by the IRI. The signal for relatively dry conditions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



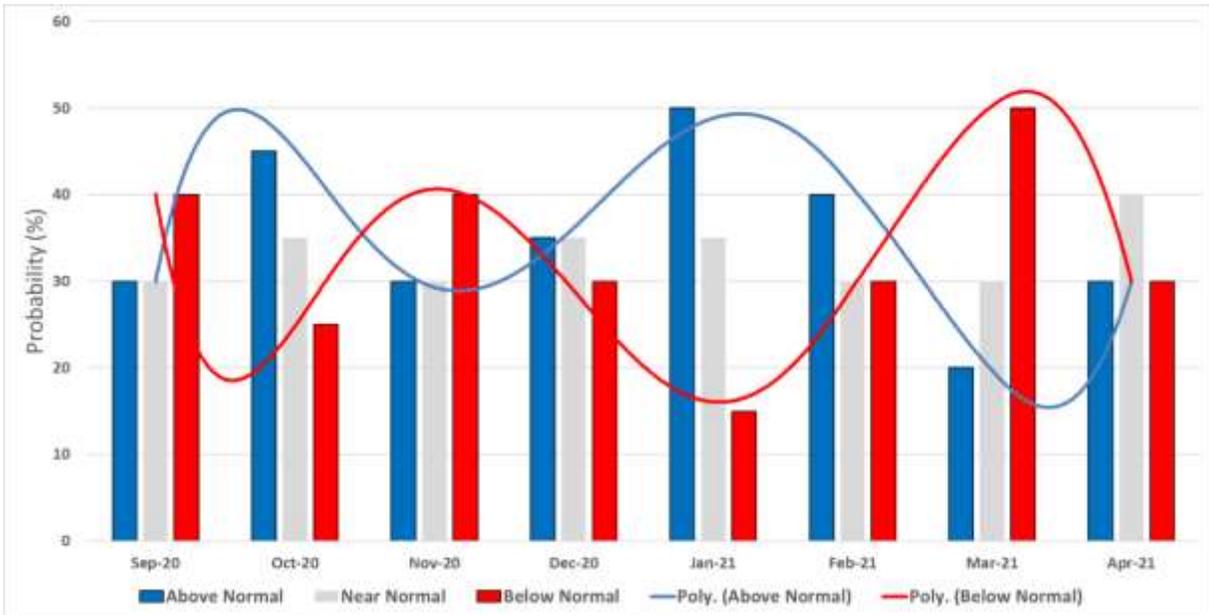
Same as above, but forecasts issued by the National Centres for Environmental Prediction.



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:

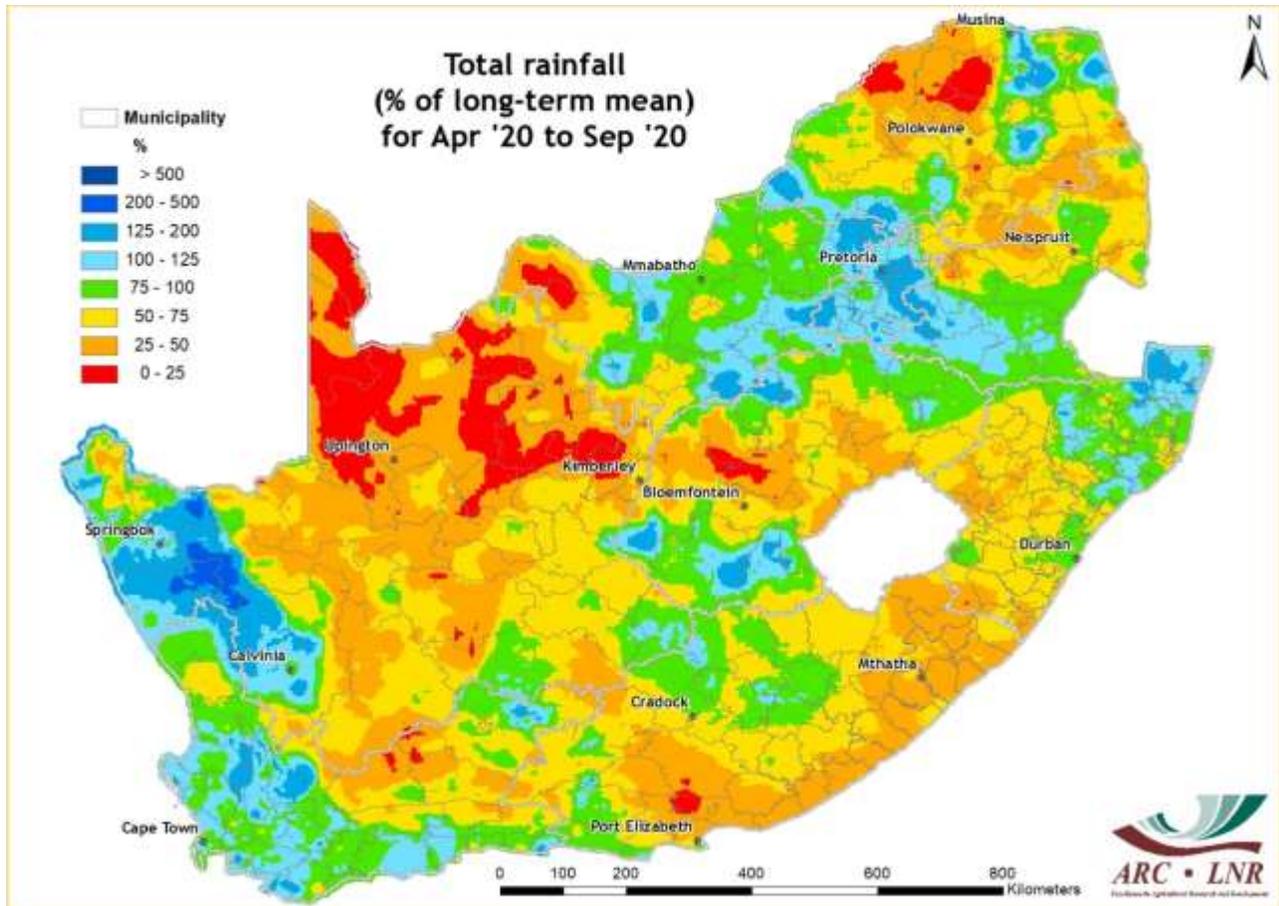


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

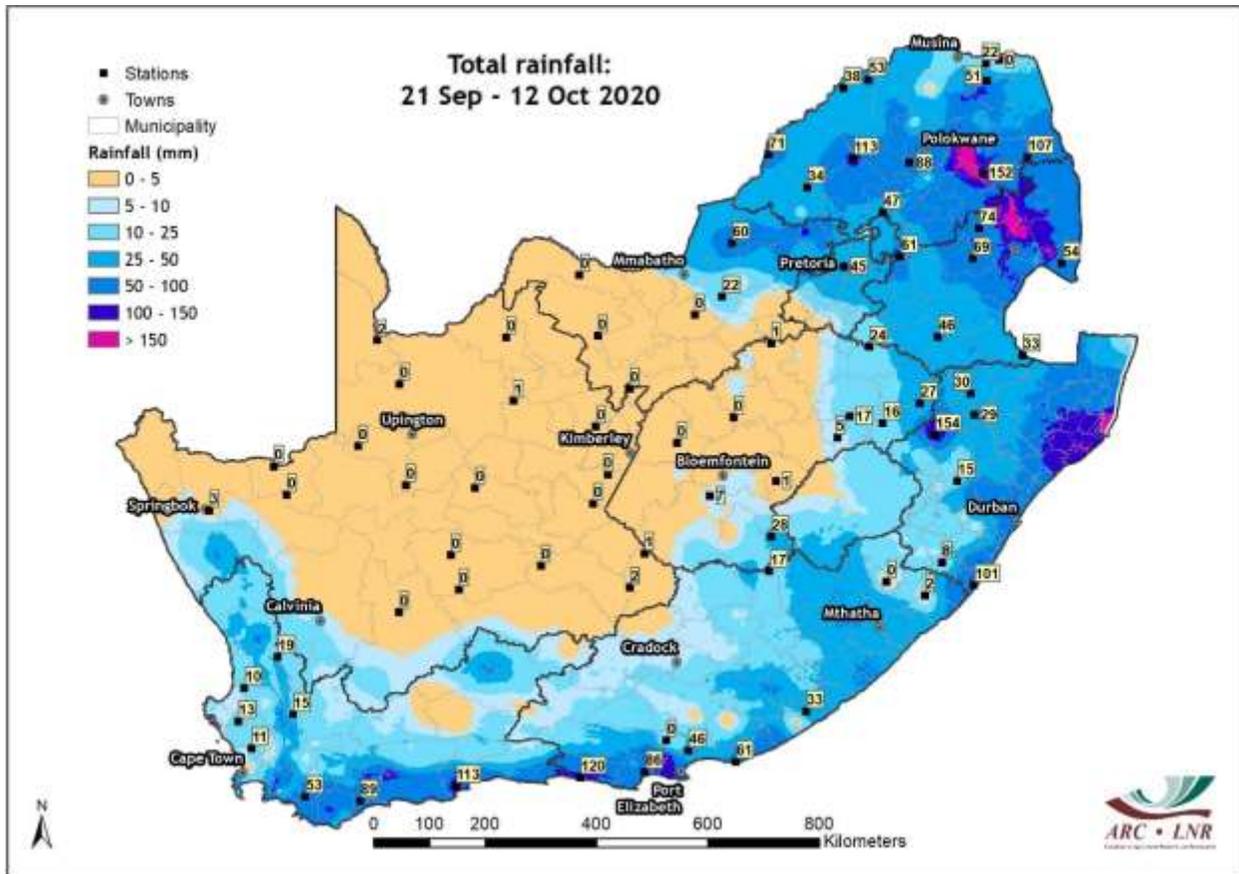
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

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



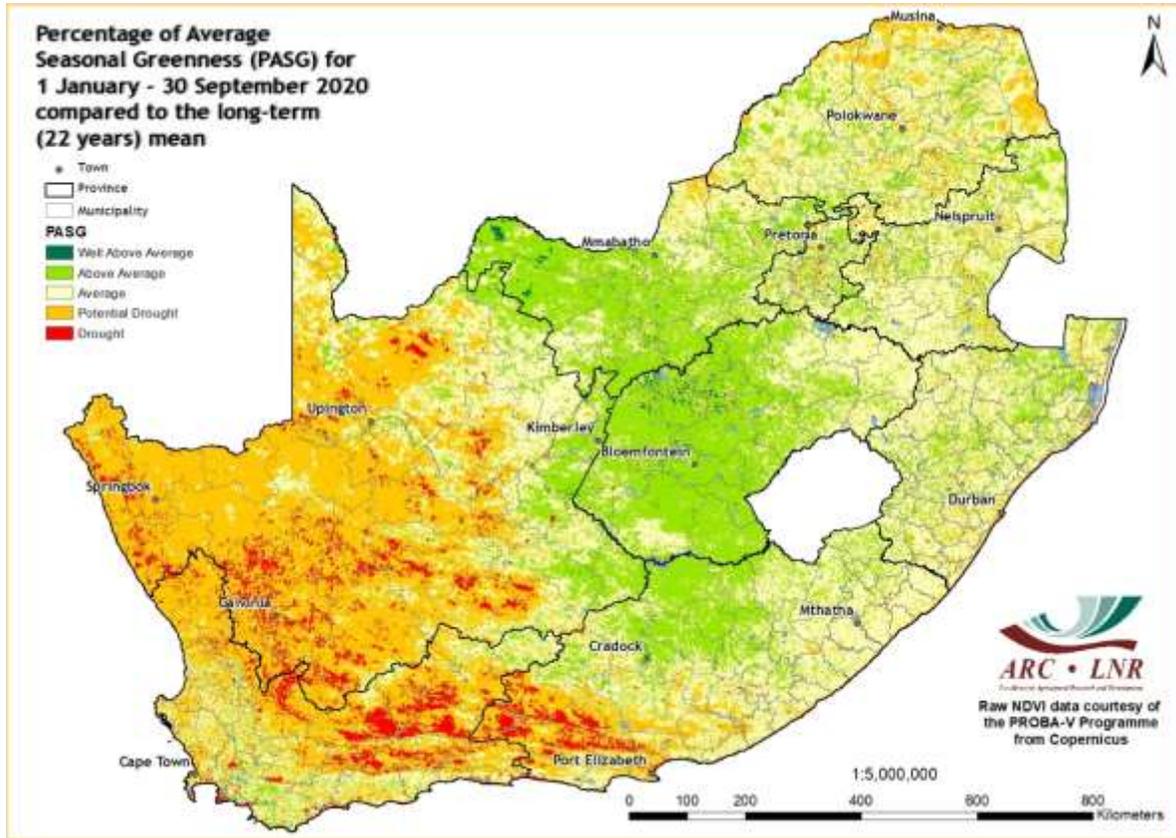
Rainfall during April to September 2020 was above normal over the winter rainfall region and also the Highveld. Most of the rain over the Highveld occurred during April while rainfall over the winter rainfall region was spread over the period late May to September.

Rainfall (mm): 21 September – 12 October 2020



Early-summer thundershowers resulted in rain over the northeastern, eastern and southern parts of the country. The eastern maize-production region received between 10 and 60 mm of rain while much of the western parts of the production region remained relatively dry.

Percentage of Average Seasonal Greenness: 1 January – 30 September 2020



Cumulative vegetation activity for 1 January – 30 September still shows the positive effect of above-normal rain during the 2019/20 summer over the central areas as well as the grain-production areas of the Western Cape with above-average cumulative vegetation activity over these areas.

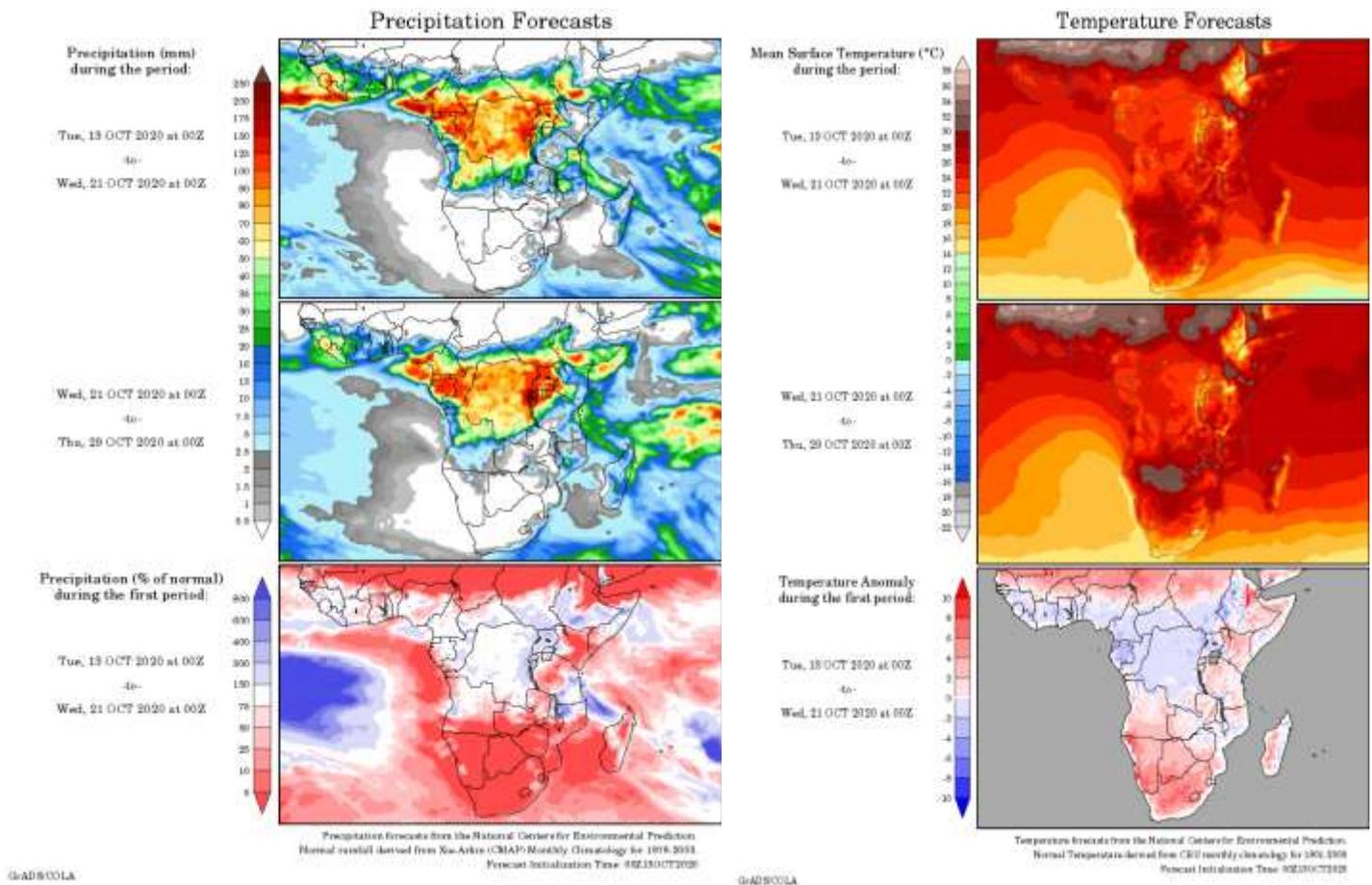
Overview of expected conditions over South Africa during the next few days

A high-pressure system, centered over Botswana, will dominate the interior. This will result in sunny and dry conditions for the most part. Some moisture flowing around the western edges of the system will move into the central parts and will be responsible for a few thundershowers over the central parts by Thursday and Friday, spreading into the northeastern parts by the weekend where moisture from the Indian Ocean will also play a supporting role. Strong northwesterly winds will occur over the central parts of the country, resulting from a steep pressure gradient between the high-pressure system to the north and northeast and low-pressure systems moving past south of the country.

Conditions in main agricultural production regions (13 -19 October)

Maize production region: Sunny to partly cloudy and mild to warm, becoming partly cloudy and warm to hot with isolated thundershowers, especially over the central and eastern parts of the region, during the weekend and early next week. Maximum temperatures over the western maize production areas will be in the order of 27 – 36°C, consistently warming during the period. Minimum temperatures will be in the order of 14 – 22°C. Maximum temperatures over the eastern maize-production region will range between 22 and 33°C, with lowest values early, warming during the period. Minimums will be in the order of 10 – 16°C – also with a warming trend during the period.

Cape Wine Lands and Ruens: Partly cloudy and mild to cool, with light showers in the south on Tuesday (13th) and Monday (19th). The wind will be moderate to strong southeasterly over the southwestern parts on Tuesday (13th) and Thursday (15th), otherwise light to moderate with a westerly component.



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 13 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 northern Free State and surrounding areas from Friday to Sunday (16th to 18th) may be accompanied by strong wind gusts.
- Hot conditions with strong winds during the afternoons over the interior of the Northern Cape, Free State and northern parts of the Eastern Cape can be conducive to the start and spread of wild fires where vegetation is dry from Thursday (15th) onwards.
- It will be hot to very hot over the central interior (Northern Cape, Karoo, Free State, North West), Limpopo River Valley, Lowveld and interior of KZN from Friday (16th) to Monday (19th).
- Cool and windy conditions over the Karoo, Garden Route and southern high-lying areas by late Monday (19th) may adversely affect small stock in the region. This forecast is still very uncertain given the long lead time.

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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