

# CUMULUS



9 March 2021 – by J Malherbe, R Kuschke

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## Summary

### *Drier conditions continue*

The warm and dry conditions since late February are expected to continue over most of the interior during the next few days. Frontal systems will result in widespread rain over especially the southern parts of the winter rainfall region and along the Garden Route while sunny to partly cloudy and warm conditions will prevail over the central to northern and eastern parts. It will become hot and windy over the western to central and southern parts at times during the week as well as over the Lowveld and Limpopo River Valley. Isolated to scattered thundershowers are expected by Thursday and Friday over the northeastern parts, but these will relocate to the western, central and southern interior during the weekend.

There are some early indications that atmospheric circulation patterns will improve towards next week, with a return to somewhat wetter conditions than according to current forecasts. The current week is expected to be drier than normal for the most part, with tropical moisture located far towards the north of our borders as upper-air circulation is largely unresponsive to rainfall.

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

- **General:**

- It will remain somewhat warmer than normal for this time of the year over most of the country.
- The northeastern parts, especially the Lowveld and Limpopo River Valley, will be very hot until Thursday.
- The western to central and southern parts will be warm to hot and windy during the remainder of the week, but it will become hotter over these areas and very hot over the Karoo going into the weekend.
- It will however be cooler than normal over the winter rainfall region, along the Garden Route and adjacent interior where it will be cool and windy during the first few days of the period.
- Most of the country will receive below-normal rainfall for this time of the year, but the southern areas (southern winter rainfall region, Garden Route and southern parts of the Karoo) are expected to receive above-normal rainfall.
- A frontal system will result in widespread rain and showers over the winter rainfall region and along the Garden Route until Thursday (11<sup>th</sup>). Another frontal system may result in further showers over these areas during the weekend.
- While it will be mostly dry over the interior, isolated to scattered thundershowers are expected by the end of the week over the Highveld, with scattered falls possible over parts of Mpumalanga and Gauteng by Friday (12<sup>th</sup>).
- Temperatures will be slightly above normal for this time of the year over the summer-grain production area – and generally conducive to production:
  - Maximum temperatures over the western maize-production areas will be in the order of 28 – 33°C, with cooler conditions expected by the weekend. Minimum temperatures will be in the order of 13 – 18°C.
  - Maximum temperatures over the eastern maize-production region will range between 24 and 31°C, with lowest values expected by Friday (12<sup>th</sup>) when relatively widespread thundershowers are expected. Minimums will be in the order of 9 – 14°C.

- **Detailed:**

- Tuesday - Wednesday (9<sup>th</sup>, 10<sup>th</sup>): It will be sunny, windy and mild to warm over the southwestern, southern, western and central parts. It will be cool over the winter rainfall region and Garden Route with rain and showers, especially over the southern areas. The northeast will be partly cloudy and warm to hot with very isolated thundershowers. It will be very hot over the Limpopo River Valley and Lowveld.
- Thursday (11<sup>th</sup>): The interior will be mild to warm and dry. The southern parts (Karoo, Eastern Cape, Garden Route) will remain cool with a southerly wind and residual showers. It will remain hot over the Lowveld and Limpopo River Valley. Isolated thundershowers are possible over the Eastern Highveld with scattered falls around Swaziland. The cloudy, cool and rainy conditions along the Garden Route will relocate to the southern KZN coastal belt and adjacent interior, moving further up the coast during the day.
- Friday (12<sup>th</sup>): Scattered thundershowers will develop over Mpumalanga, Gauteng, eastern North West, northeastern and eastern Free State, interior of KZN and the southern half of Limpopo. Some storms may become severe over western Mpumalanga and Gauteng. It will become hot over the central so western and southern parts, especially the interiors of the Cape provinces, but very hot over the Karoo. It will remain mild over the Garden Route and winter rainfall region.
- Saturday (13<sup>th</sup>): The area of expected thundershowers will shift slightly west, but remain in the vicinity of Gauteng and surrounding areas. Light showers are possible along the eastern escarpment. It will become cloudy and windy over the southwestern winter rainfall region with light showers towards the evening. The western to southern interior will remain warm and dry ahead of the front, with very hot and windy conditions especially over the eastern Karoo and further east.
- Sunday (14<sup>th</sup>): Thundershower activity will shift to the central as well as the southeastern parts. The rest of the country will be warm and dry for the most part except along the northeastern escarpment where light showers are possible. It will remain cool over the winter rainfall region and Garden Route with a very slight chance of light showers.
- Monday (15<sup>th</sup>): Thundershowers over the central to southeastern parts will become scattered to widespread. Light rain is still possible along the Garden Route where it will remain cool. The northeastern parts of the country will remain mostly dry and mild to warm according to current forecasts.

## Seasonal overview

### ENSO and seasonal forecasts

Due to the positive association with La Niña, rainfall over the southern African interior is expected to remain above normal through the rest of the summer according to the latest seasonal forecasts.

**According to the Australian Bureau of Meteorology** (Updated 2 March): The 2020–21 La Niña has passed its peak and is now weakening. Climate model outlooks indicate the El Niño–Southern Oscillation (ENSO) will return to neutral (neither La Niña nor El Niño) during autumn. .... *(Seasonal forecasts for South Africa continue to lean towards wetter than normal conditions during March to May)*

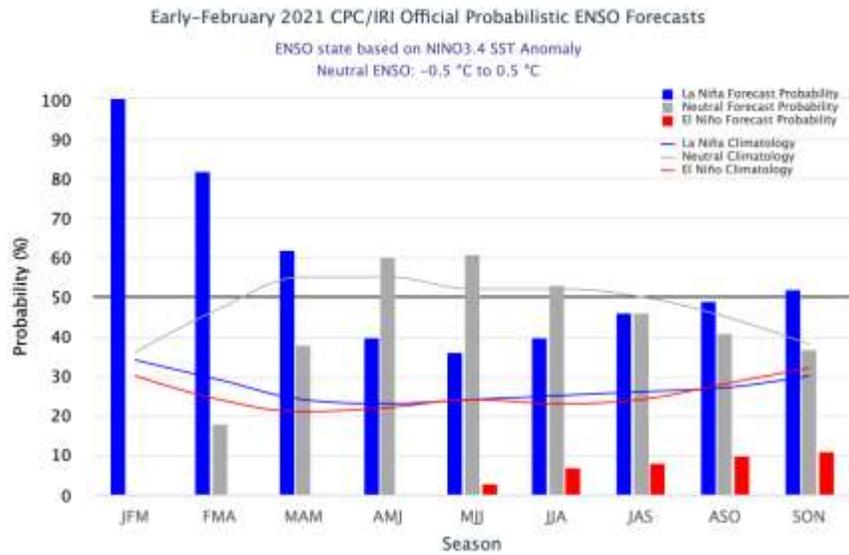
Tropical Pacific Ocean sea surface temperatures are currently close to La Niña threshold. However, atmospheric indicators such as the Southern Oscillation Index (SOI), cloudiness near the Date Line, and trade winds clearly remain at La Niña levels. Waters beneath the surface remain cooler than average, but the strength of cool anomalies has begun to ease.

After persisting at positive values for the first half of February, the Southern Annular Mode (SAM) returned to neutral levels. Forecasts indicate neutral SAM values will persist for the coming fortnight..... *(A positive SAM is usually indicative of relatively wet conditions over the summer rainfall region during mid-summer, with drier conditions over the winter rainfall region of South Africa, as witnessed during early February)*

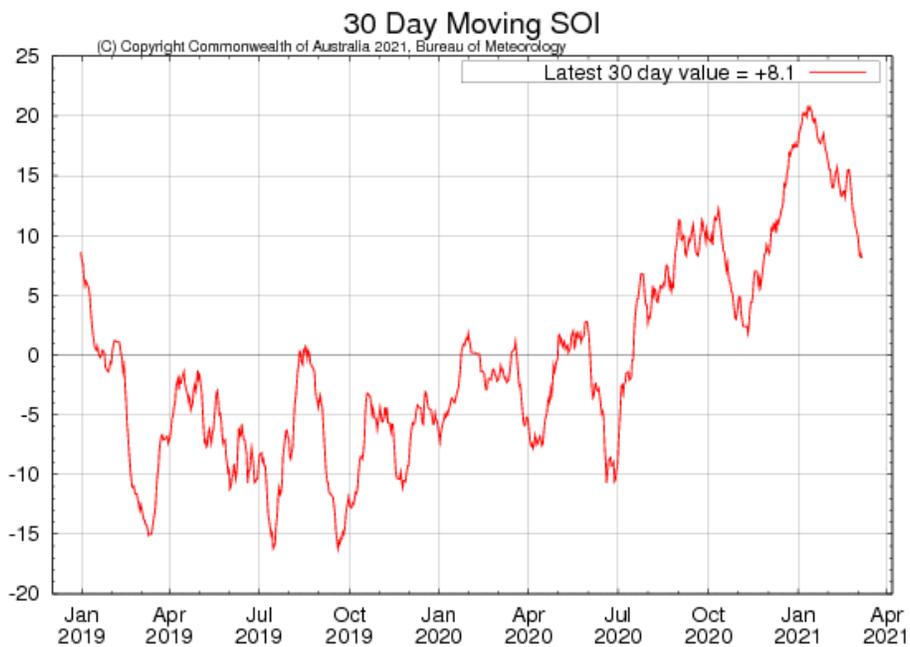
.....**Australian Bureau of Meteorology** - <http://www.bom.gov.au>

**According to the IRI** (Updated 11 February): La Niña persisted in January, reflected by below-average sea surface temperatures (SST) anomalies extending from the western to east-central Pacific Ocean. SSTs returned to near average in the eastern Pacific Ocean by the end of the month, as indicated by the latest weekly Niño-3 and Niño-1+2 index values of -0.3°C and -0.2°C, respectively. However, the latest weekly Niño index values in the central (Niño-4) and east-central (Niño-3.4) Pacific Ocean were -1.1°C and -0.7°C. The below-average SSTs were supported by negative subsurface temperature anomalies, which extended from the surface to at least ~150m below the surface between 160°E and 130°W. Low-level wind anomalies remained easterly from the western to east-central (~140°W) tropical Pacific, with the largest amplitude near the Date Line. Upper-level wind anomalies were westerly across most of the tropical Pacific. Tropical convection continued to be suppressed over the western and central Pacific and enhanced around the Philippines and Indonesia, while both the Southern Oscillation and Equatorial Southern Oscillation remained positive. Overall, the coupled ocean-atmosphere system remains consistent with La Niña.

Most of the models in the IRI/CPC plume predict a transition to ENSO-neutral during the *Southern Hemisphere autumn* 2021. The forecaster consensus is in agreement with this transition and then predicts a continuation of ENSO-neutral at least through the *Southern Hemisphere winter*. In part, due to the inherent uncertainty in predictions made at this time of year, the forecast for the Southern Hemisphere spring remains split (~50%) between La Niña and the combination of the other two possibilities (El Niño and Neutral). In summary, there is a ~60% chance of a transition from La Niña to ENSO-Neutral during the April-June period.....**International Research Institute for Climate and Society**- <http://iri.columbia.edu/>



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



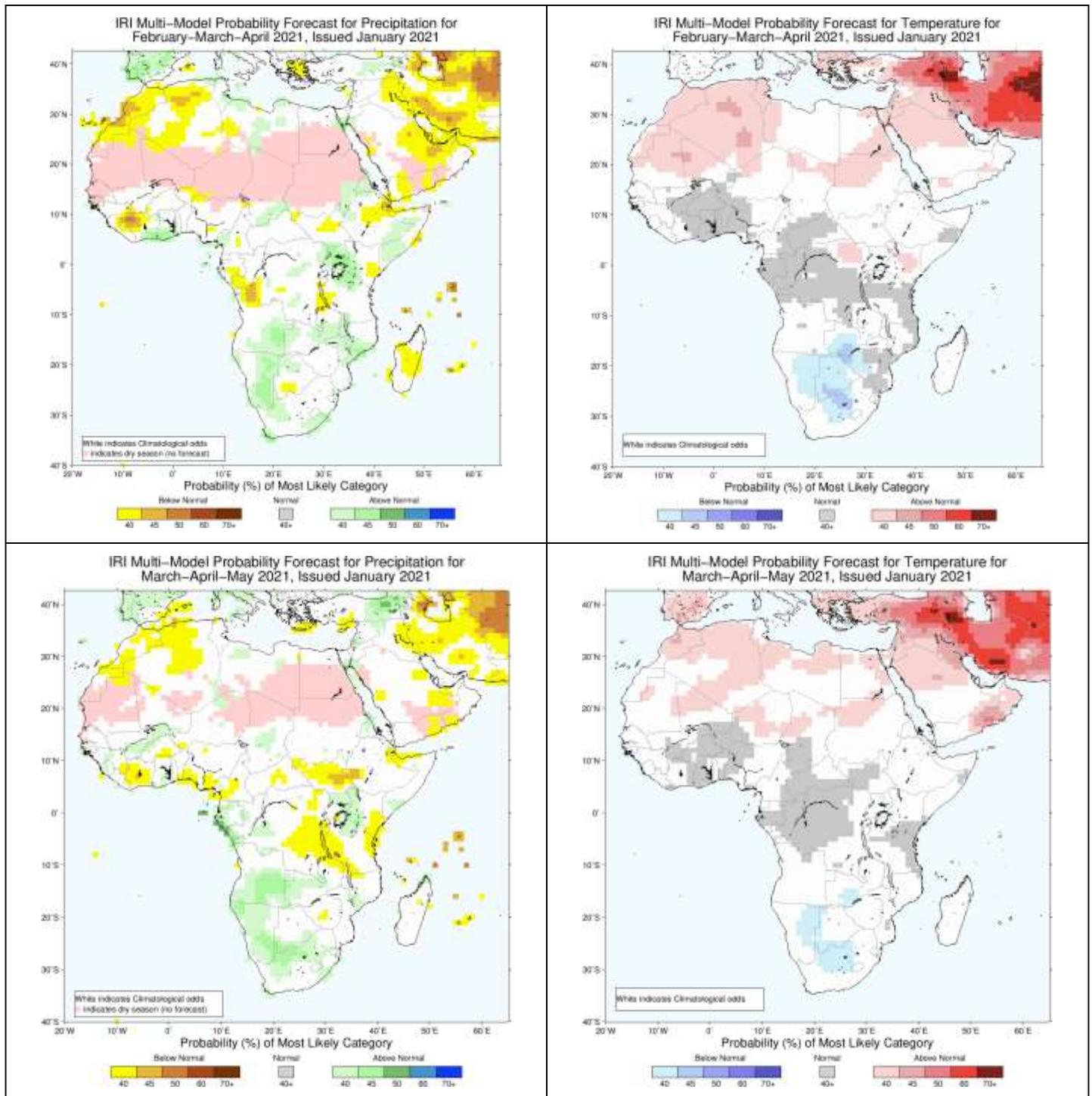
Australian Bureau of Meteorology - <http://www.bom.gov.au>

**The Southern Oscillation Index has recently trended lower, but it at +8.1 still well above the La Niña threshold. This is indicative of atmospheric circulation patterns consistent with La Niña conditions.**

## Seasonal forecasts issued by various international institutions

### IRI

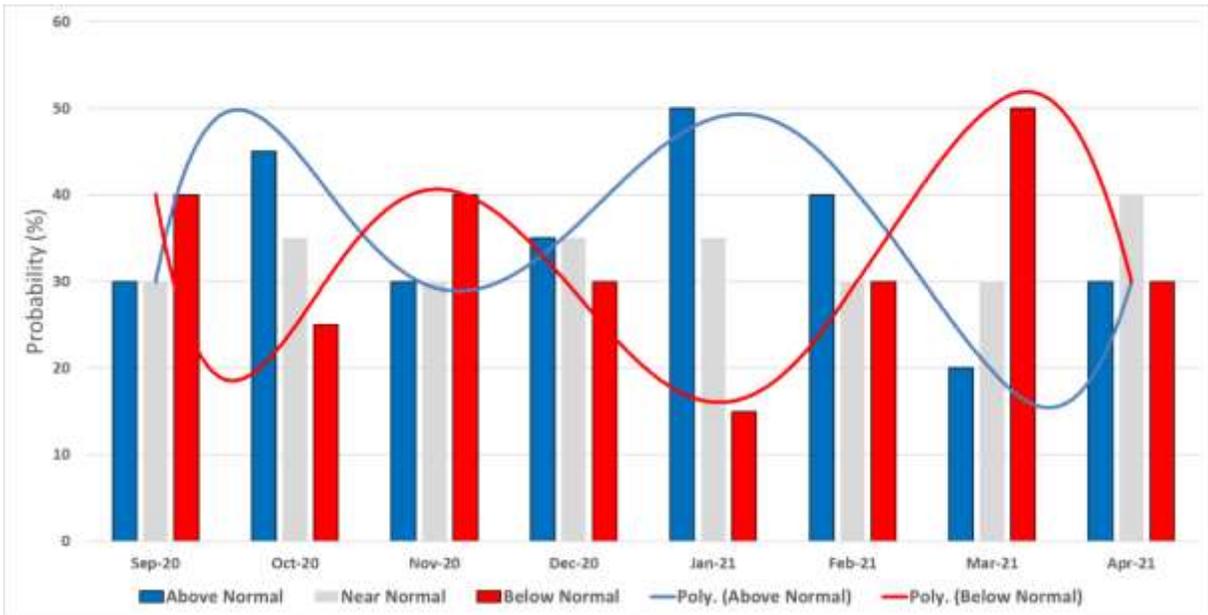
Given the current La Niña conditions, the seasonal forecast by the IRI still favours relatively wet and cool conditions to continue into autumn, with the largest anomalies over the central parts of the country.



Probabilistic forecasts for rainfall (left) and temperatures (right) for late-summer (February – April 2021; top) and autumn (March – May 2021; bottom) (Forecast issued in 2021-01 by the IRI - <http://iri.columbia.edu>).

## 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:

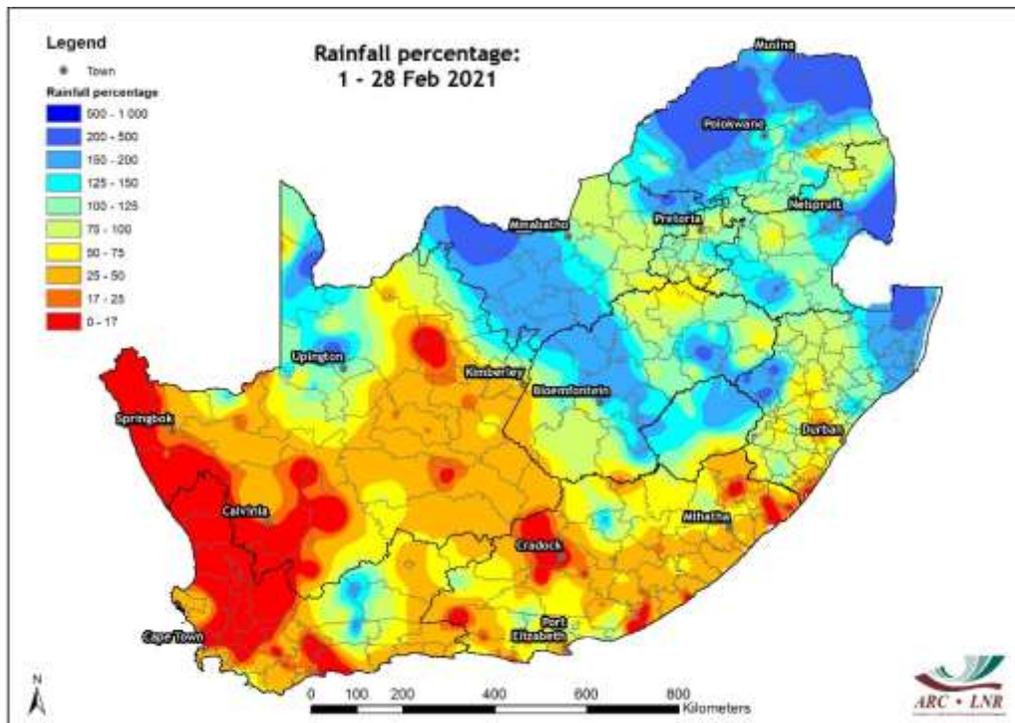


***Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).***

Typical patterns during similar summers are:

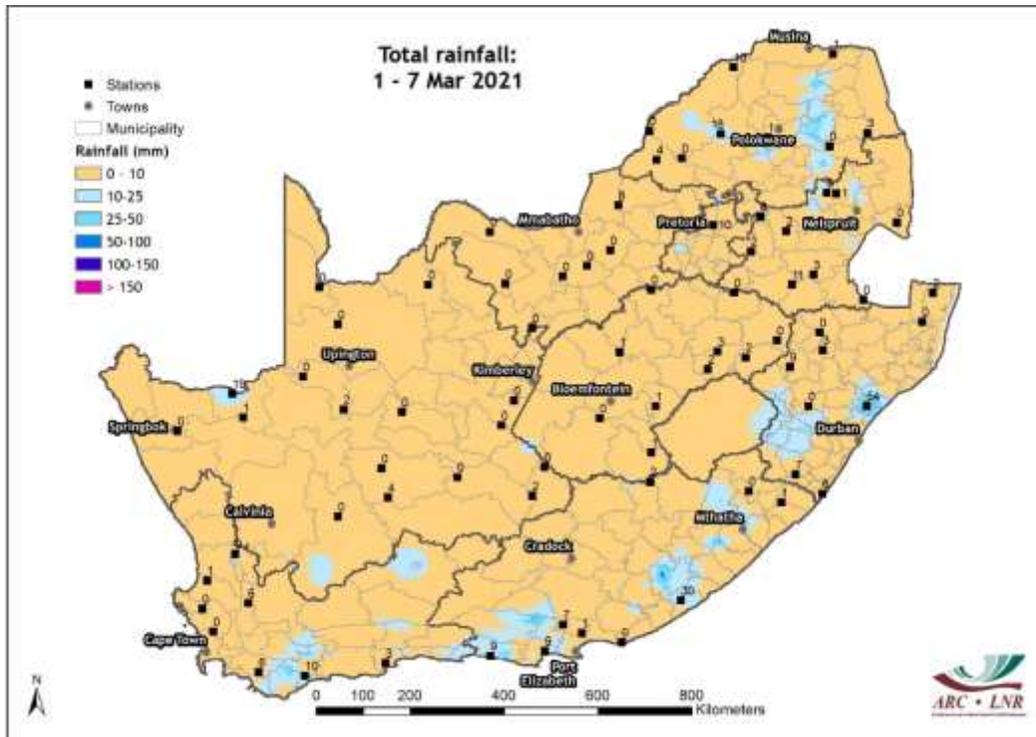
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

## Rainfall (% of long-term mean): February 2021



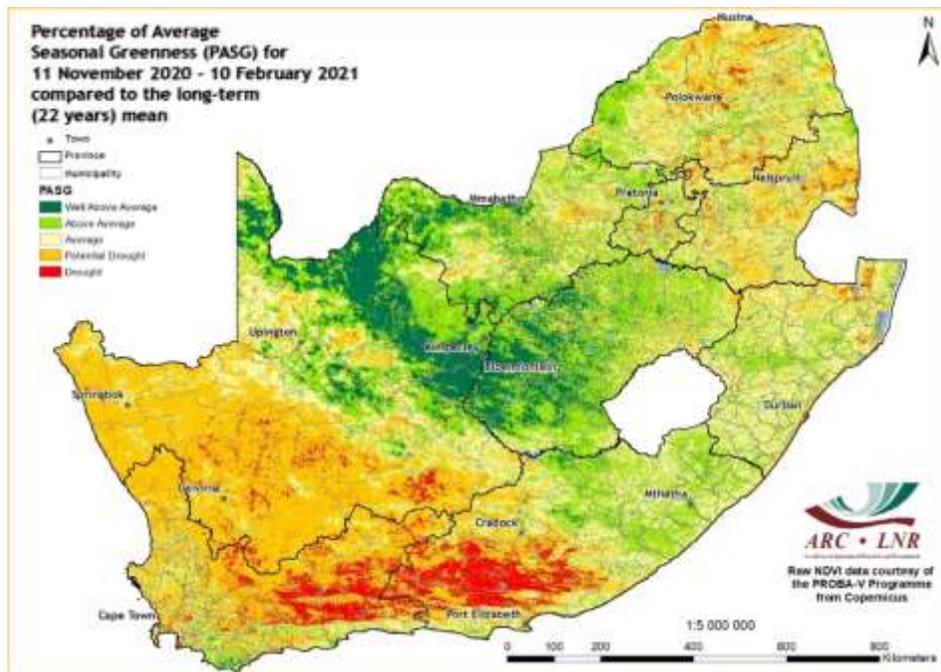
*Rainfall during February 2021 was once again above normal over much of the summer rainfall region, but larger areas of the region received normal to below normal rainfall than during January.*

## Rainfall (mm): 1 – 7 March 2021



*Very little rain occurred during the first few days of March.*

## Percentage of Average Seasonal Greenness: 11 November – 10 February 2021



*Above-normal rainfall over the summer rainfall region during the current and previous summer, especially over the central to northern parts of the country, had a very positive effect on vegetation activity during this period. Parts of the Karoo still show the effect of relatively dry conditions.*

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

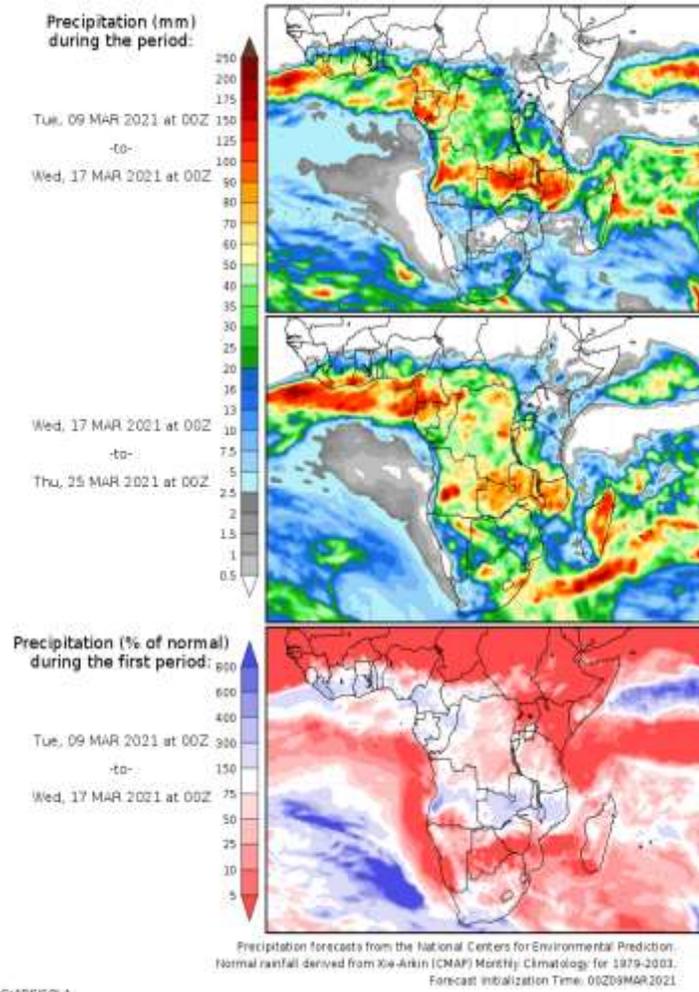
Cold fronts will result in some relatively early rains over the winter rainfall region, spreading also along the Garden Route, during the next few days. The upper-air will be relatively unfavorable for rain over the interior during most of the time. As a high-pressure system ridges around the country by Friday and some upper-air instability occurs in the northeast, scattered thundershowers are possible (by Friday) over the Highveld. With the development of an upper-air trough to the southwest of the country, thundershowers will relocate to the central and southeastern parts through the weekend and into early next week.

### Conditions in main agricultural production regions (9 – 15 March)

**Maize production region:** Partly cloudy and warm conditions will dominate. The first few days will be dry, but isolated to scattered thundershowers will develop by Thursday (11<sup>th</sup>) over the eastern areas, spreading westwards by Friday (12<sup>th</sup>) when it will be somewhat more widespread over the eastern to central parts of the region where a few storms may become severe. Thundershowers will remain in place over the western parts during the weekend and into next week, becoming more widespread and extending further east again by early next week. Temperatures will be slightly above normal for this time of the year. Maximum temperatures over the western maize-production areas will be in the order of 28 – 33°C, with cooler conditions expected by the weekend. Minimum temperatures will be in the order of 13 – 18°C. Maximum temperatures over the eastern maize-production region will range between 24 and 31°C, with lowest values expected by Friday when relatively widespread thundershowers are expected. Minimums will be in the order of 9 – 14°C.

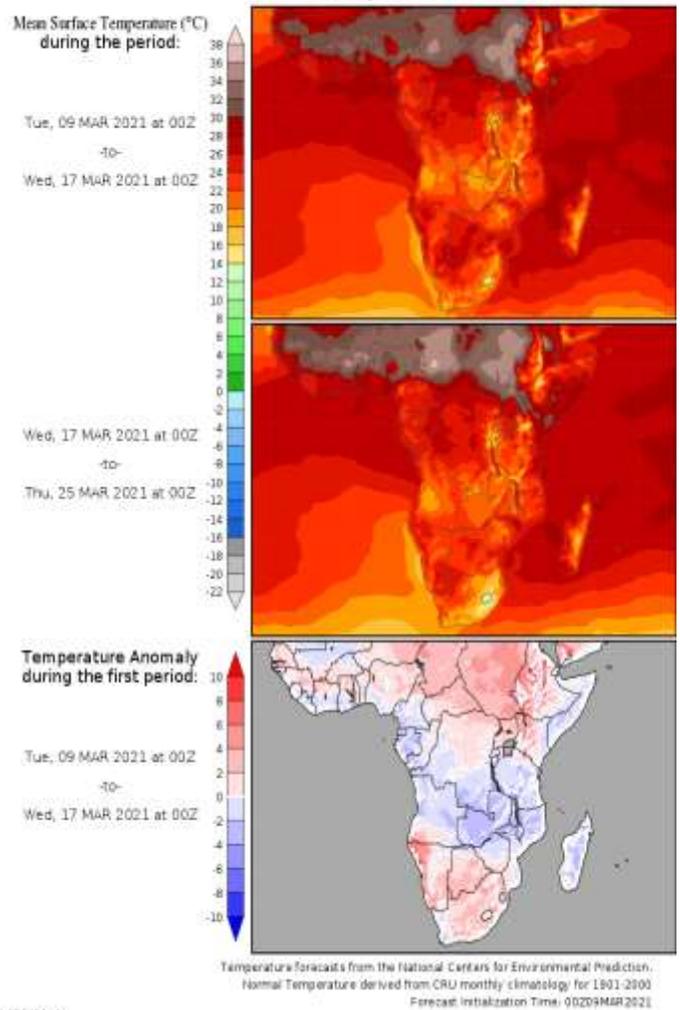
**Cape Wine Lands and Ruens:** Cloudy and rainy conditions with strong westerly winds will occur until Thursday (11<sup>th</sup>). More widespread showers are expected by Saturday evening. It will be relatively warm between these two rainfall/frontal events, around Friday (12<sup>th</sup>). It will be mild with southerly winds going into next week according to current forecasts.

### Precipitation Forecasts



GrADS/COLA

### Temperature Forecasts



GrADS/COLA

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 9 March) period. It is therefore advised to keep track of warnings that may be issued by the SAWS ([www.weathersa.co.za](http://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:

- It will be cool, wet and windy over the southern and southwestern areas, especially high-lying areas, until Thursday (11<sup>th</sup>). These conditions may adversely affect small stock.
- Strong westerly winds are expected over the southwestern parts of the country until Thursday (11<sup>th</sup>).
- It will be very hot and humid over the Lowveld and Limpopo River Valley until Thursday (11<sup>th</sup>).
- It will become hot and windy over the western, central and southern interior on Friday and Saturday (12<sup>th</sup>, 13<sup>th</sup>), but very hot over the eastern half of the Karoo towards the southeast coast. Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.
- Thundershowers over southwestern Mpumalanga, Gauteng and northeastern Free State may become severe on Friday (12<sup>th</sup>). These should however be fairly isolated events.

## 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](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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