

CUMULUS



20 April 2021 – by J Malherbe, R Kuschke

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Summary

Drier conditions continue over most parts

It's been relatively dry over most areas since March, including much of the northern parts of the summer-grain production region. The next few days will remain relatively dry for the most part, but precipitation will occur over the southeastern to eastern parts, mostly in the form of thundershowers. There is no indication yet of a strong cold front making its way into the country and rainfall is expected to be negligible over the winter rainfall region according to current outlooks. In general, dry and mild to warm conditions for the most part will be conducive to the ripening of summer crops. The western parts of the interior are expected to become hot on several days.

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

- **General:**

- Temperatures will be near normal over the southeastern to eastern areas, but above normal over the western to southern parts of the country.
- Rainfall will be below normal for this time of the year except over the southeastern to eastern parts.
- There is no indication of early frost over the interior during the next few days.
- Sunny to partly cloudy and warm conditions will again dominate across the interior, but the southeastern to eastern parts will experience partly cloudy to cloudy and cooler conditions on some days with isolated to scattered showers and thundershowers.
- Conditions over the summer-grain production region will remain mostly conducive to the ripening of the crop.
- Temperatures over the summer-grain production area will be near normal:
 - Maximum temperatures over the eastern maize-production areas will be in the order of 18 – 27°C, with cooler conditions early in the period. Minimum temperatures will be in the order of 6 – 13°C.
 - Maximum temperatures over the western maize-production region will range between 23 and 28°C. Minimums will be in the order of 11 – 16°C.
- The winter rainfall region is expected to receive very little to no rain during the next few days.
- Fresh to strong south-easterlies will persist over the southwestern coastal areas initially.

- **Detailed:**

- Tuesday (20th): Partly cloudy to cloudy and cool over the southeastern interior with showers or thundershowers while also cloudy and windy along the coastal belt of the Eastern Cape and KZN. The eastern to northeastern interior will be sunny to partly cloudy and mild, with light showers along the escarpment. The rest of the country will be partly cloudy and warm, but hot to very hot over the western to southern interior as well as the West Coast.
- Wednesday (21st): It will become warmer over the country and will remain dry over most areas. Residual showers or thundershowers are expected along the coast and adjacent interior of the Eastern Cape and southern KZN. Hot to very hot conditions will continue over the western to southern interior and the West Coast.
- Thursday (22nd): Isolated to scattered thundershowers are expected over the eastern to southeastern interior (central to eastern Free State, KZN), reaching a maximum along the Drakensberg. Showers are also possible along the eastern coastal belt of the Eastern Cape and KZN. It will remain hot to very hot over the western to southern interior and West Coast.
- Friday (23rd): It will remain partly cloudy and mild to cool over the eastern parts with isolated to scattered thundershowers (now focusing mostly on KZN and Mpumalanga into southeastern Limpopo). Light showers

are still possible along the coast of KZN. The rest of the country should remain warm and dry, but hot over the western to southern parts.

- Saturday and Sunday (24th/25th): Sunny and mild to warm over the country with no rain. High cloud will be present over the western half. Light showers are possible over the southwestern parts of the winter rainfall region according to current forecasts, but no significant rain is expected. Temperatures over the western parts will be slightly lower than during the preceding days. It will become hot over the Lowveld and Limpopo River Valley.
- Monday (26th): It will remain warm and dry over the country, but hot over the Lowveld and Limpopo River Basin. Isolated thundershowers are possible over the northwestern to central and southern Northern Cape and interior of the Eastern Cape and Western Cape Provinces.

Seasonal overview

ENSO and seasonal forecasts

Due to the weakening of the La-Niña signal, it can be expected that seasonal outlooks at the end of summer, for the interior of South Africa, will trend somewhat drier.

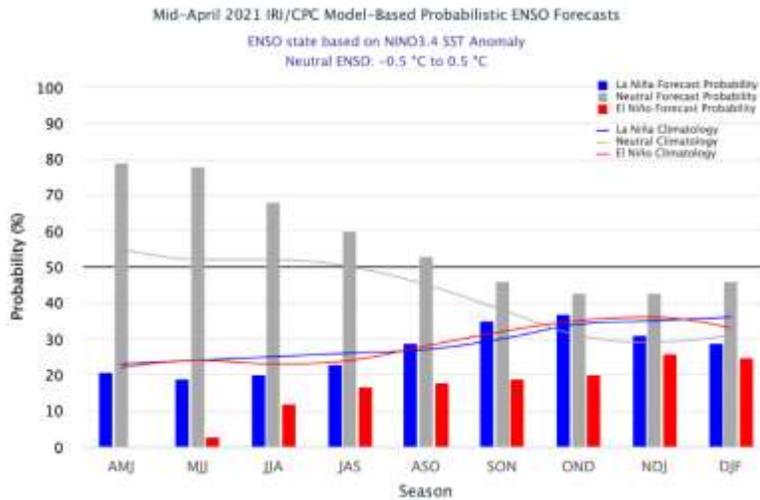
According to the Australian Bureau of Meteorology (Updated 13 April): The El Niño–Southern Oscillation (ENSO) is neutral, and with no sign of El Niño or La Niña developing, the Bureau's ENSO Outlook is INACTIVE. Climate model outlooks suggest the tropical Pacific Ocean will remain at neutral ENSO levels at least until September.

Tropical Pacific Ocean sea surface temperatures continue at ENSO-neutral values. Below the surface, much of the central to eastern tropical Pacific has warmed over the past few months, and is now at near-average temperatures. Atmospheric indicators are also at neutral ENSO levels. The Southern Oscillation Index (SOI) is close to zero, while trade winds are mostly near average. Cloudiness near the Date Line has increased in the past week to above-average levels, in contrast to almost all of the preceding 12 months when below-average cloudiness was a feature across the region. The return to ENSO-neutral conditions in autumn is typical of the life cycle of ENSO events.

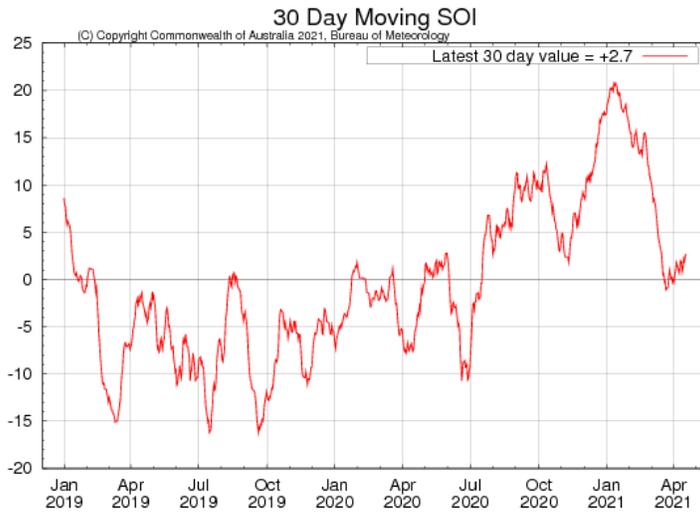
The Southern Annular Mode (SAM) is expected to remain neutral for the coming fortnight. *(A positive SAM is usually indicative of relatively wet conditions over the summer rainfall region during mid-summer, with drier conditions over the winter rainfall region of South Africa, as witnessed during early February)*

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

According to the IRI (Updated 19 April): In mid-April, SSTs in the east-central Pacific are roughly 0.4 degree C below average, and the evolution of most key atmospheric variables are consistent with weakening La Niña conditions. A large majority of the model forecasts predict SSTs to return to near-normal during spring, though a La Niña advisory remains in effect for now. The new official CPC/IRI outlook issued earlier this month is similar to these model forecasts, calling for a transition in Apr-May-Jun, which is likely to happen in April or May. A La Niña advisory remains in effect.....**International Research Institute for Climate and Society**- <http://iri.columbia.edu/>



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



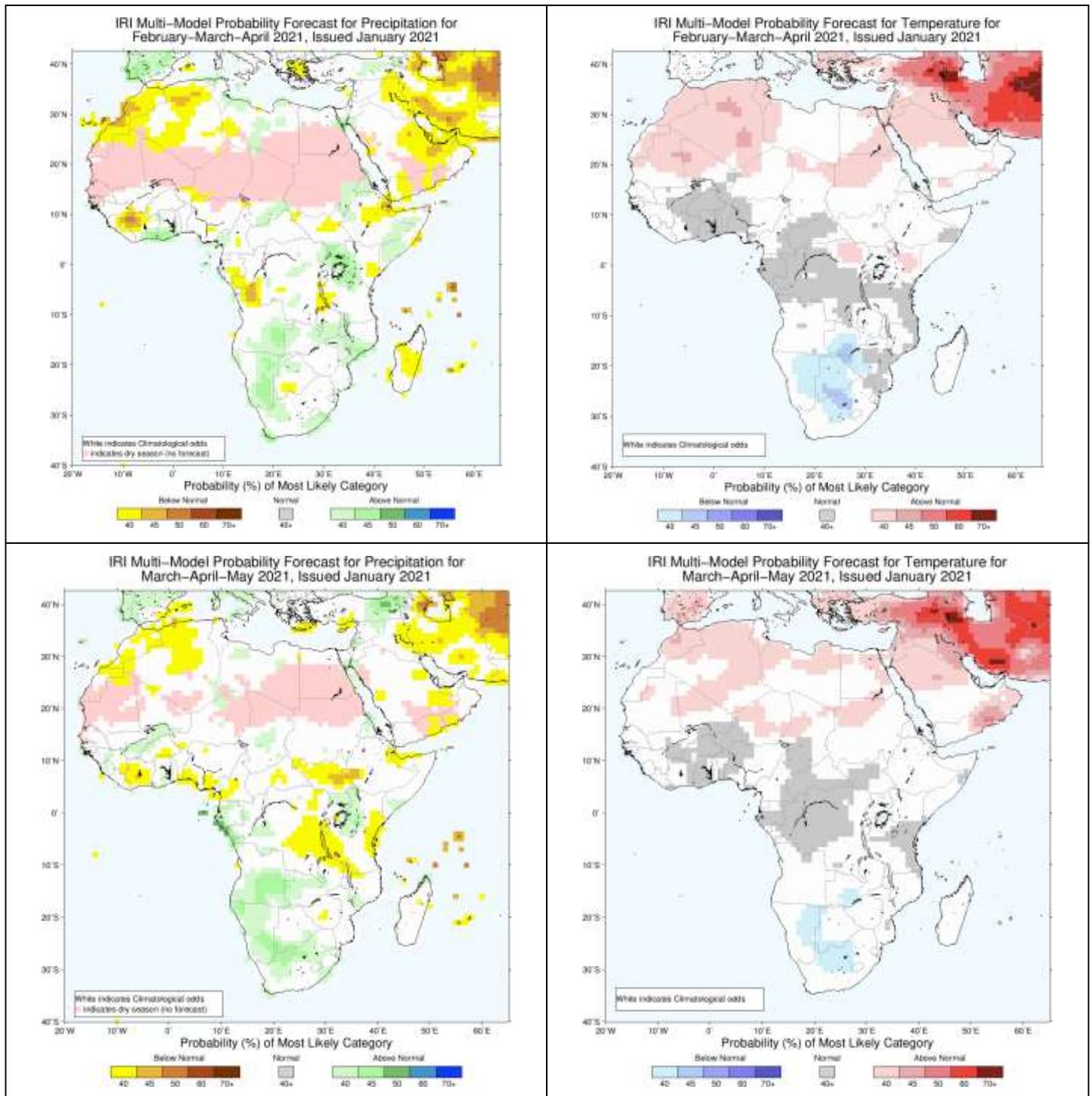
Australian Bureau of Meteorology - <http://www.bom.gov.au>

The Southern Oscillation Index remains in neutral territory (+2.7). This is indicative of atmospheric circulation patterns moving towards neutral conditions.

Seasonal forecasts issued by various international institutions

IRI

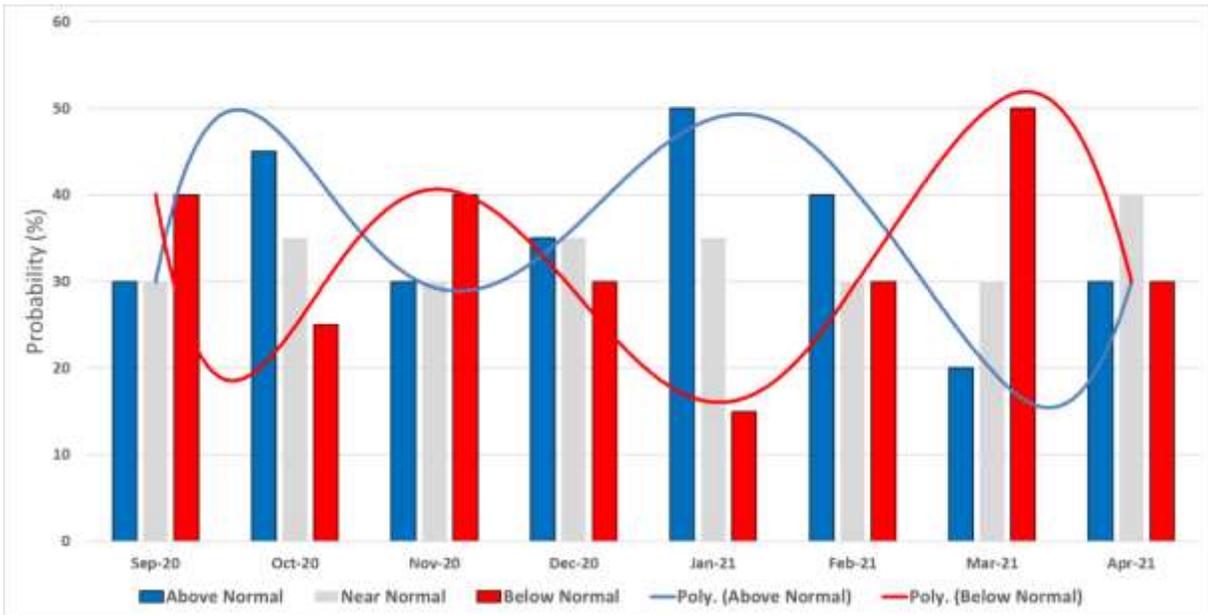
Given the current La Niña conditions, the seasonal forecast by the IRI still favours relatively wet and cool conditions to continue into autumn, with the largest anomalies over the central parts of the country.



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:

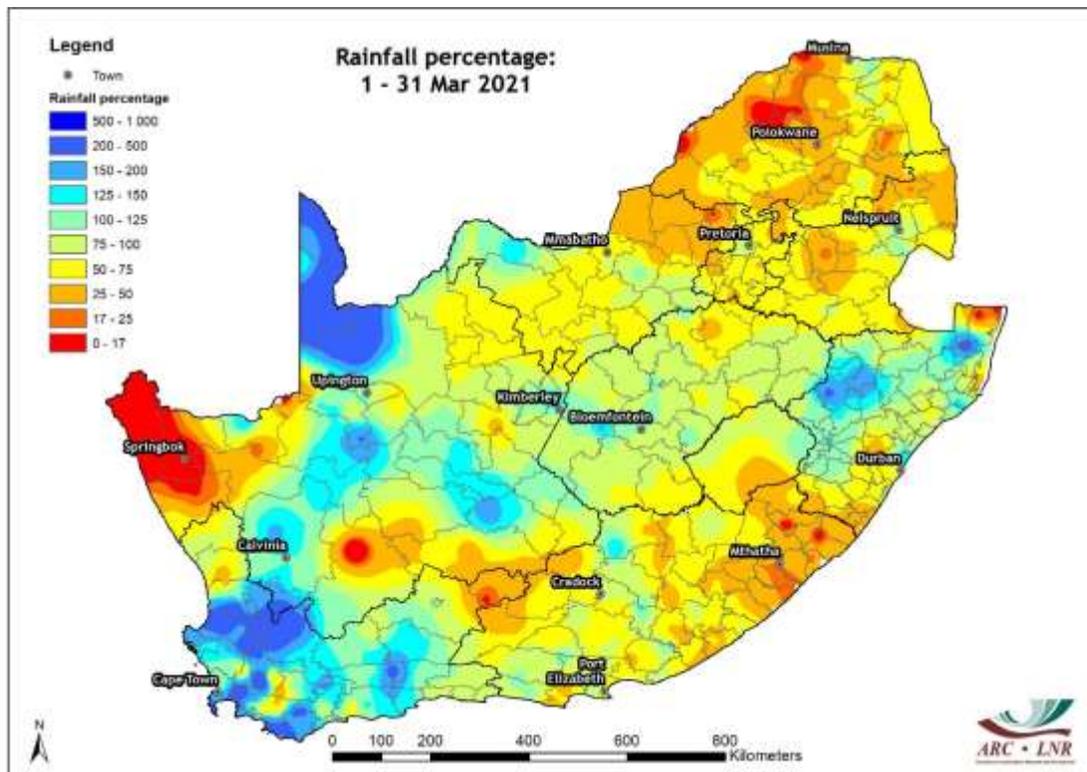


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

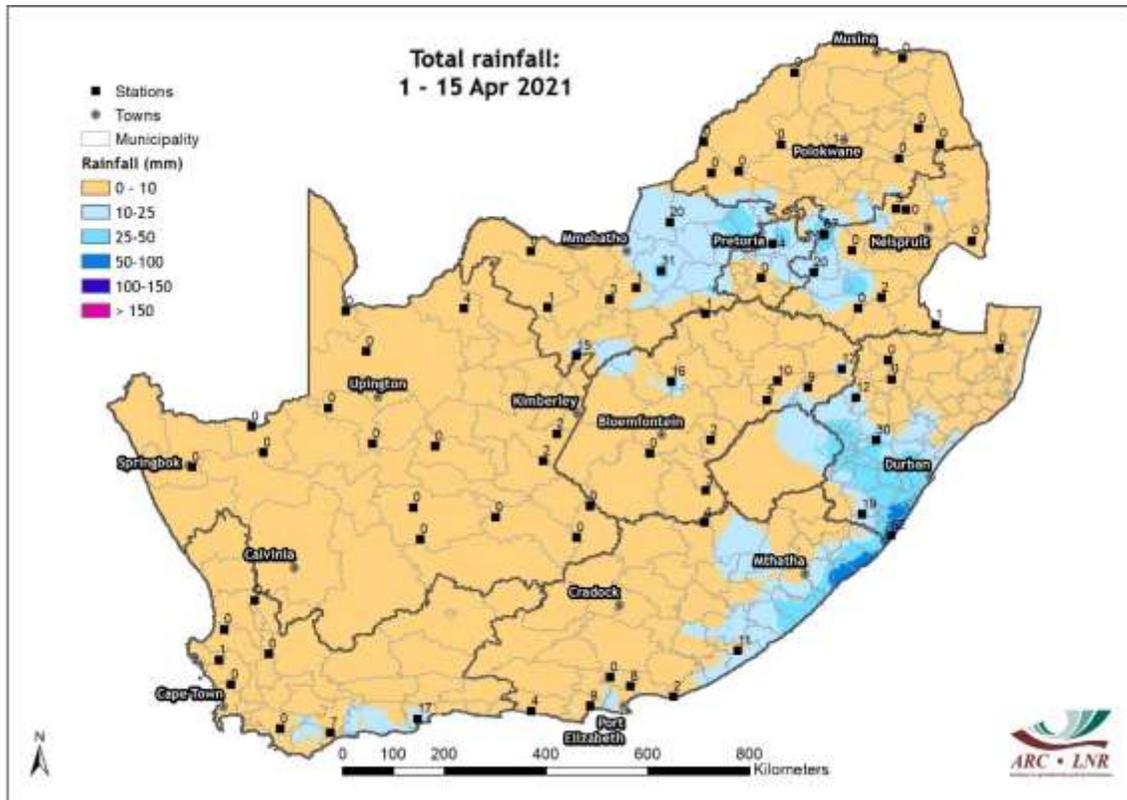
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

Rainfall (% of long-term mean): March 2021



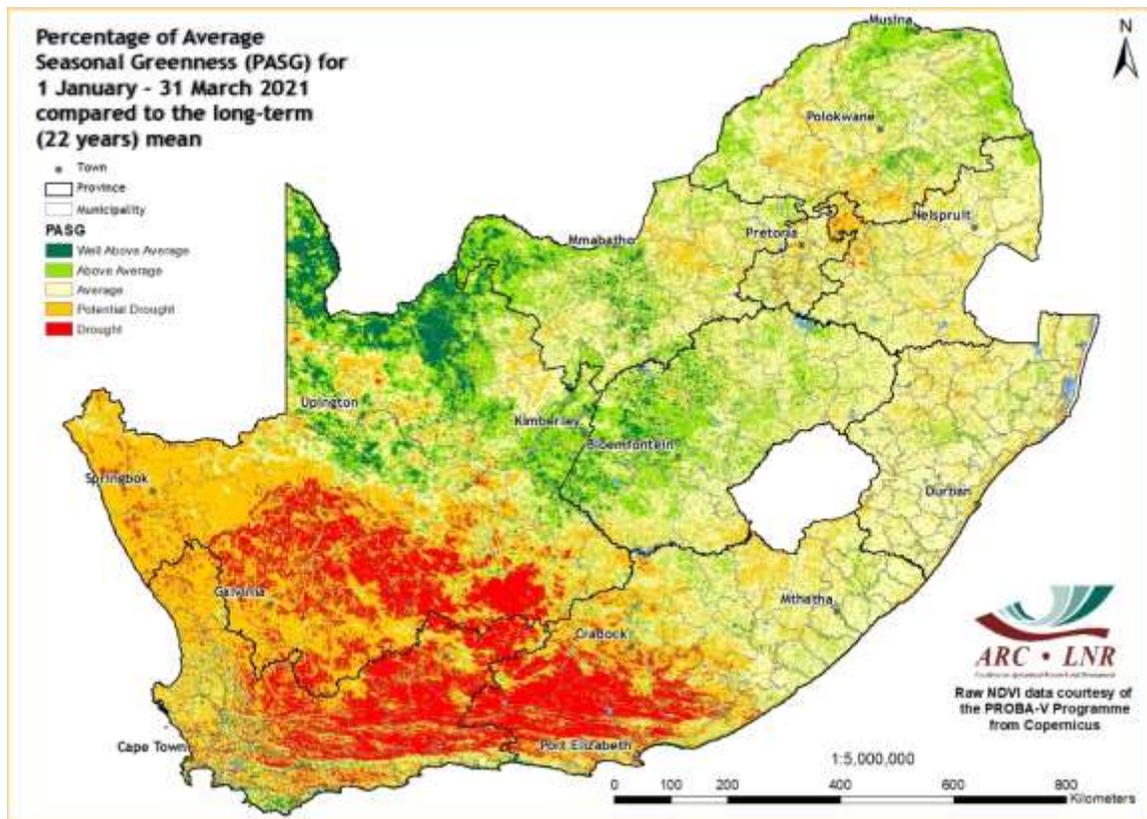
While large parts of the summer rainfall region received below-normal rainfall during March (especially in the northeast), some parts of the central interior received normal to above-normal rainfall while the western to southwestern parts, including most of the winter rainfall region, received above normal rainfall.

Rainfall (mm): 1 – 15 April 2021



The first half of April was mostly dry except for some thundershowers over the Highveld and southeastwards towards the southern coastal parts of KZN and the Eastern Cape Coast. Some light showers also occurred over the Garden Route.

Percentage of Average Seasonal Greenness: 1 January – 31 March 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

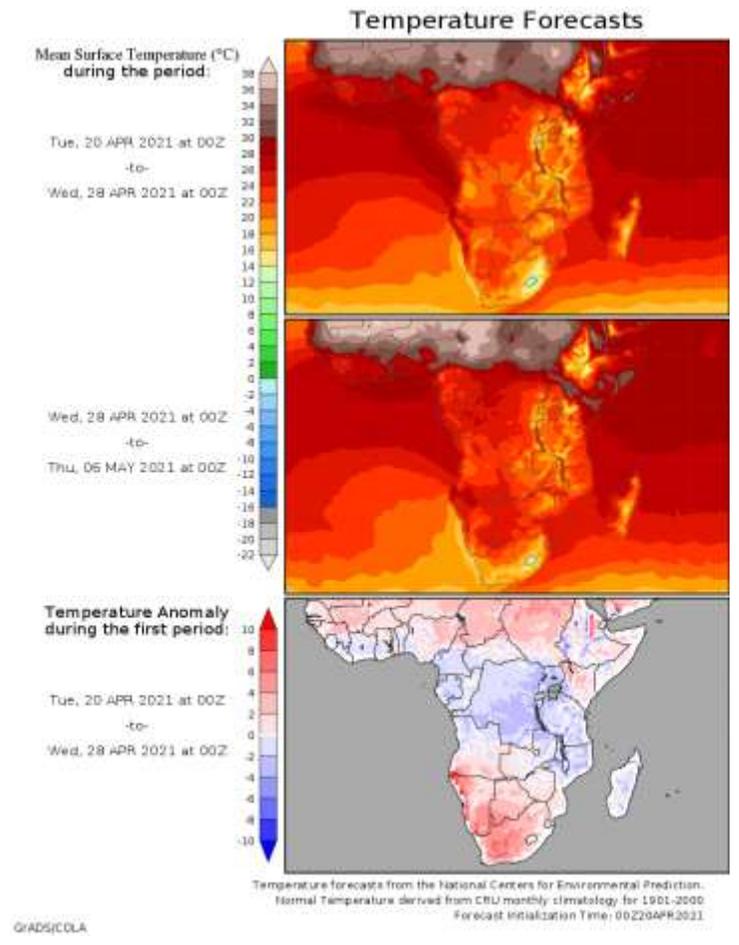
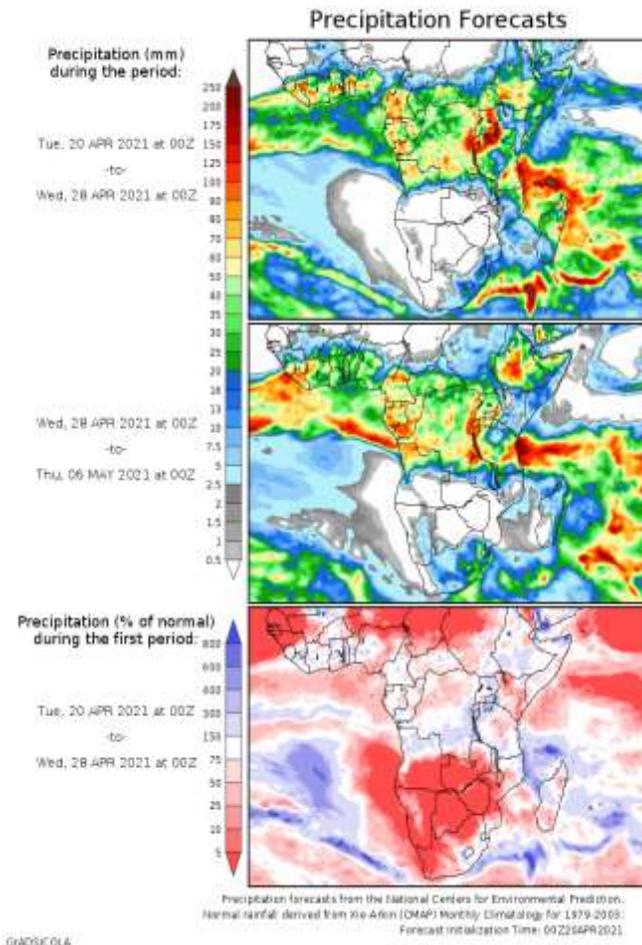
While conditions will be largely unfavorable for rainfall over the interior, the development of a cut-off low over the southeastern parts, strengthening towards the east, together with a ridging high-pressure system at the surface, will support thundershower development over some of the eastern areas later this week. Given dry/wet air-mass interaction and relatively strong upper-air winds during the strengthening of the upper-air system, some thundershowers may become severe. An off-shore flow in the west will result in high maximum temperatures there.

Conditions in main agricultural production regions (20 - 26 April)

Maize production region: Conditions over this region will generally be supportive of a ripening harvest. Scattered thundershowers are expected over the southern to eastern areas on Thursday and Friday (22nd/23rd). Thundershowers during this time of the year may easily produce hail, even though small in most cases. The rest of the period should see fine to partly cloudy and warm conditions dominating the entire area. Maximum temperatures over the eastern maize-production areas will be in the order of 18 – 27°C, with cooler conditions early in the period. Minimum temperatures will be in the order of 6 – 13°C. Maximum temperatures over the western maize-production region will range between 23 and 28°C. Minimums will be in the order of 11 – 16°C.

Cape Wine Lands and Ruens: It will be sunny to partly cloudy and warm for the most part, becoming hot over the interior during the week. It will be somewhat cooler during the weekend when light showers are possible in the southwest

by Saturday afternoon/evening according to current forecasts. Fresh to strong easterlies to south-easterlies will prevail over the southern coastal areas until Wednesday (21st).



GFS rainfall forecast – <https://mag.ncep.noaa.gov>

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 20 April) 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:

- It will be warm with fresh westerly winds in the afternoons over the central to western parts of the Northern Cape. Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.
- Fresh to strong easterlies to south-easterlies will prevail over the southwestern coastal areas and adjacent interior until Wednesday (21st). Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.
- The western to northwestern interior is expected to remain hot during the week.
- Thundershowers over the Drakensberg, eastern Free State, western to northern KZN and Mpumalanga may become severe on Thursday and Friday (22nd/23rd).

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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