

CUMULUS

28 April 2021 – *by J Malherbe, R Kuschke*



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Summary

Wetter conditions return to the summer rainfall region

Following a mostly dry April, conditions are expected to return to a wetter pattern into early May. Upper-air troughs in the westerlies will be positioned more favorably for the South African interior to receive showers and thundershowers. A significant system later this week will be responsible for most of the rain over the central to eastern areas, with a possibility of snow over parts of the Drakensberg (northern parts of the Eastern Cape and Lesotho) by Friday (30th). With the more summer-like circulation pattern ahead, temperatures are on average expected to remain near normal to slightly above normal over most parts, with no indication of a widespread severe frost event during the next week. Moreover, the lack of strong frontal systems over the southwestern parts will result in a continuation of dry conditions over especially the western parts of the winter rainfall region for now.

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

- **General:**

- Temperatures will be near normal to above normal over most of the country, with largest positive deviations over the central to western interior.
- Rainfall will be above normal over the central to southeastern parts, but near normal over most of the rest of the interior. The winter rainfall region is expected to remain dry for the most part according to current forecasts.
- There is no indication of widespread severe frost over the interior during the next few days. Cooler conditions over the Drakensberg and Eastern Highveld towards early next week may be associated with light frost in frost-prone areas.
- Partly cloudy to cloudy and cool conditions will occur over the central to southeastern areas from Thursday (29th), moving into the eastern and northeastern parts during the next few days into the weekend while clearing over the central areas.
- Yet another system is expected to result in scattered showers and thundershowers over the western to central parts by early next week.
- 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 10 – 25°C, with the lower temperatures during the rainy conditions from Friday to Sunday. Minimum temperatures will be in the order of 3 – 10°C, with lowest temperatures expected by Sunday/Monday (2nd/3rd) following the rain.
 - Maximum temperatures over the western maize-production region will range between 15 and 28°C, with lowest temperatures during the weekend. Minimums will be in the order of 9 – 15°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, reaching a maximum by Thursday (29th).

- **Detailed:**

- Wednesday (28th): Sunny to partly cloudy and mild to warm and dry over most of the country. It will become partly cloudy and mild over the central to eastern Northern Cape, western Free State and Eastern Cape with isolated thundershowers. It will be mild to cool over the southern areas where an on-shore flow will result in showers along the Garden Route. Little to no rain is expected over the winter rainfall region, with strong southeasterlies in the southwest. It will be warm to hot over the Limpopo River Valley and Lowveld.
- Thursday (29th): While the northeast will remain mild to warm and dry, partly cloudy to cloudy conditions are expected over the central to southeastern parts with scattered showers and thundershowers, but widespread over the eastern half of the Eastern Cape. It will remain cool in the south with showers along

the Garden Route and strong southeasterlies in the southwest. It will be warm to hot over the Limpopo River Valley and Lowveld.

- Friday (30th): Partly cloudy to cloudy and cooler conditions with scattered showers or thundershowers will move into the northeastern parts, with most areas from the central Free State northwards and eastwards expected to receive some rain. It should remain cloudy with widespread showers over most of KZN and the eastern parts of the Eastern Cape while snow is possible along the Drakensberg, mostly in Lesotho and the northern parts of the Eastern Cape. It will be warm to hot over the Limpopo River Valley and Lowveld.
- Saturday (1st): It will be cloudy and cool with easterly winds over most of the eastern to northeastern half of the country and isolated to scattered showers and thundershowers. The western half of the country should be sunny and warm, becoming hot along the West Coast where an off-shore flow will result in hot, bergwind conditions.
- Sunday (2nd): It will initially be cool to cold over the Eastern Highveld with minimum temperatures in the low single digits – and possible light frost in frost-prone areas. It will remain cloudy to partly cloudy over the northeastern parts, with isolated showers or thundershowers over North West and Gauteng as well as the adjacent areas of neighboring provinces, according to current forecasts. It will also become partly cloudy over the northern parts of the Northern Cape with isolated thundershowers. Warm to hot bergwind conditions will once again occur along the West Coast, spreading southwards over the rest of the winter rainfall region.
- Monday (3rd): It will again initially be cool to cold over the Eastern Highveld with minimum temperatures in the low single digits – and possible light frost in frost-prone areas. It will remain warm to hot over the western parts, spreading also eastwards in the south to include the Eastern Cape. Isolated to scattered thundershowers are expected by the afternoon and evening over the central to western parts of the Northern Cape as well as the interior of the Western Cape, in some cases possibly reaching the coast. The central to northeastern parts of the country will be sunny and mild to warm.

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.

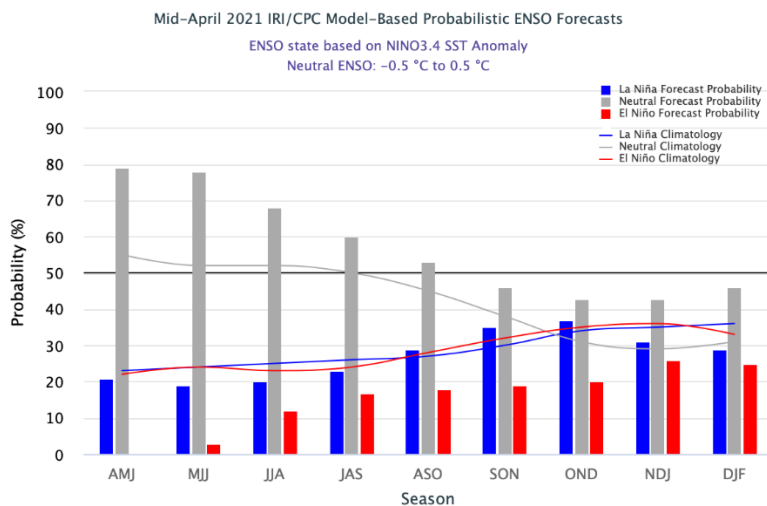
According to the Australian Bureau of Meteorology (Updated 27 April): The El Niño–Southern Oscillation (ENSO) remains neutral. Climate model outlooks indicate this neutral phase will last at least until September. With little sign of El Niño or La Niña developing, the Bureau's ENSO Outlook status is INACTIVE.

Oceanic indicators of ENSO persist at neutral levels, with Pacific sea surface temperatures close to average across most of the equatorial region. Beneath the surface, temperatures are also near-average. The Southern Oscillation Index (SOI), an atmospheric indicator of ENSO, has now seen both the 30-day and 90-day SOI return to neutral levels. Similarly, winds and cloudiness near the Date Line persist at levels consistent with a neutral ENSO state.

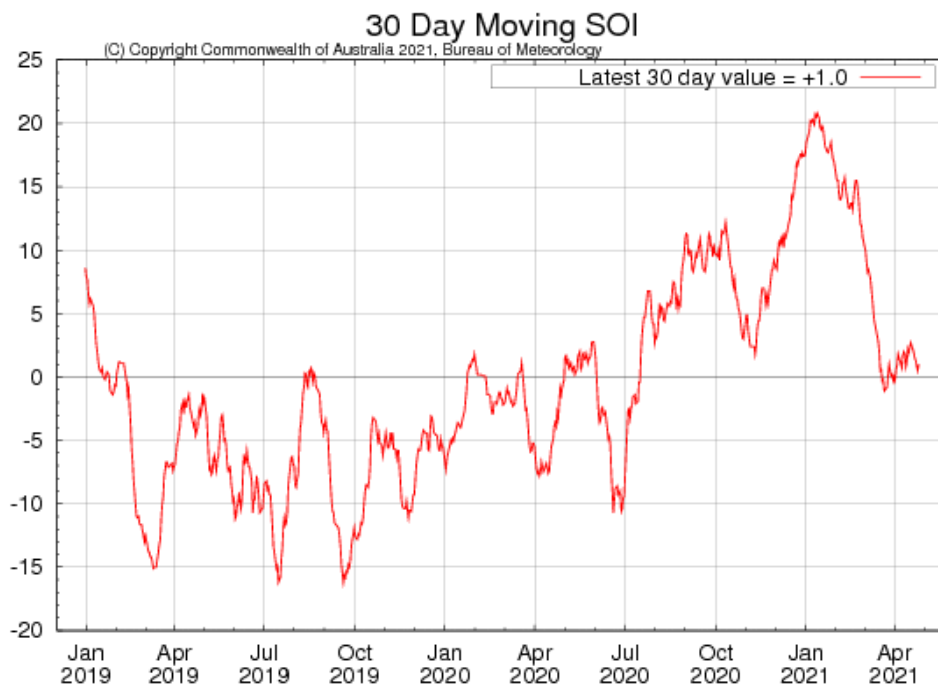
The Southern Annular Mode (SAM) is expected to remain neutral for the coming fortnight.... *(A positive SAM is usually indicative of relatively wet conditions over the summer rainfall region during mid-summer, with drier conditions over the winter rainfall region of South Africa, as witnessed during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



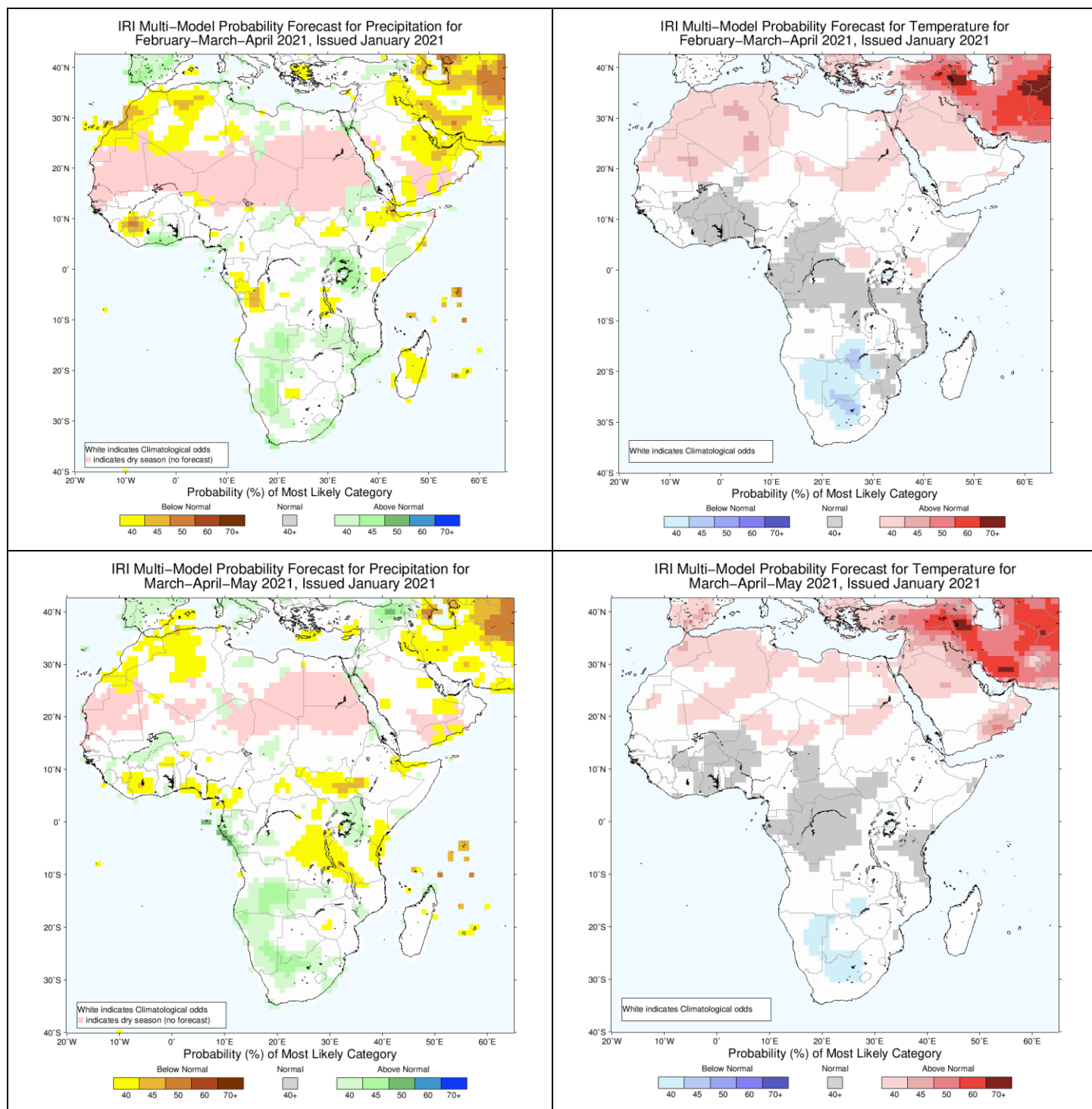
Australian Bureau of Meteorology - <http://www.bom.gov.au>

The Southern Oscillation Index remains in neutral territory (+1.0). This is indicative of atmospheric circulation patterns moving towards neutral conditions.

Seasonal forecasts issued by various international institutions

IRI

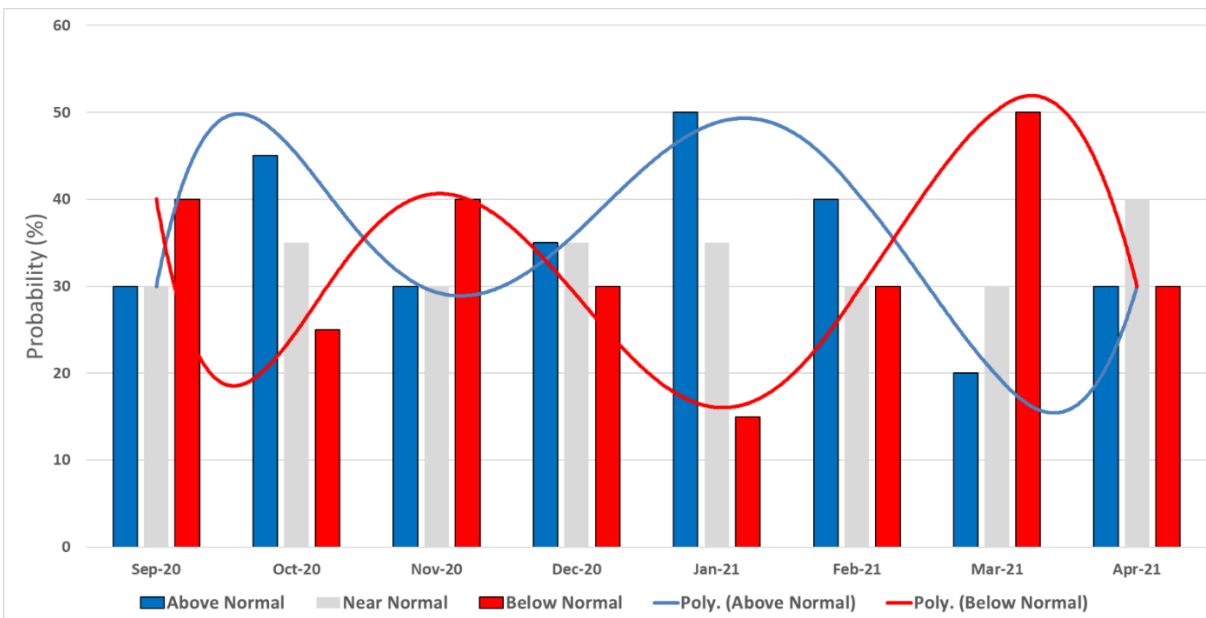
Given the current La Niña conditions, the seasonal forecast by the IRI still favours relatively wet and cool conditions to continue into autumn, with the largest anomalies over the central parts of the country.



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:

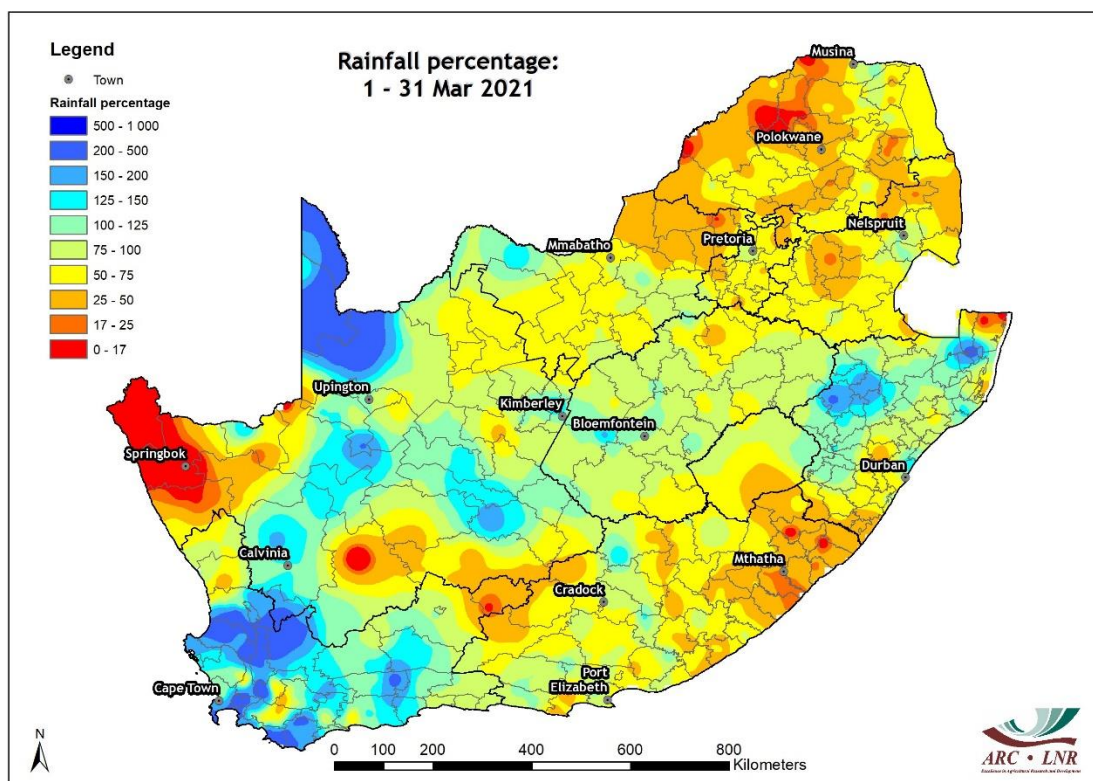


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

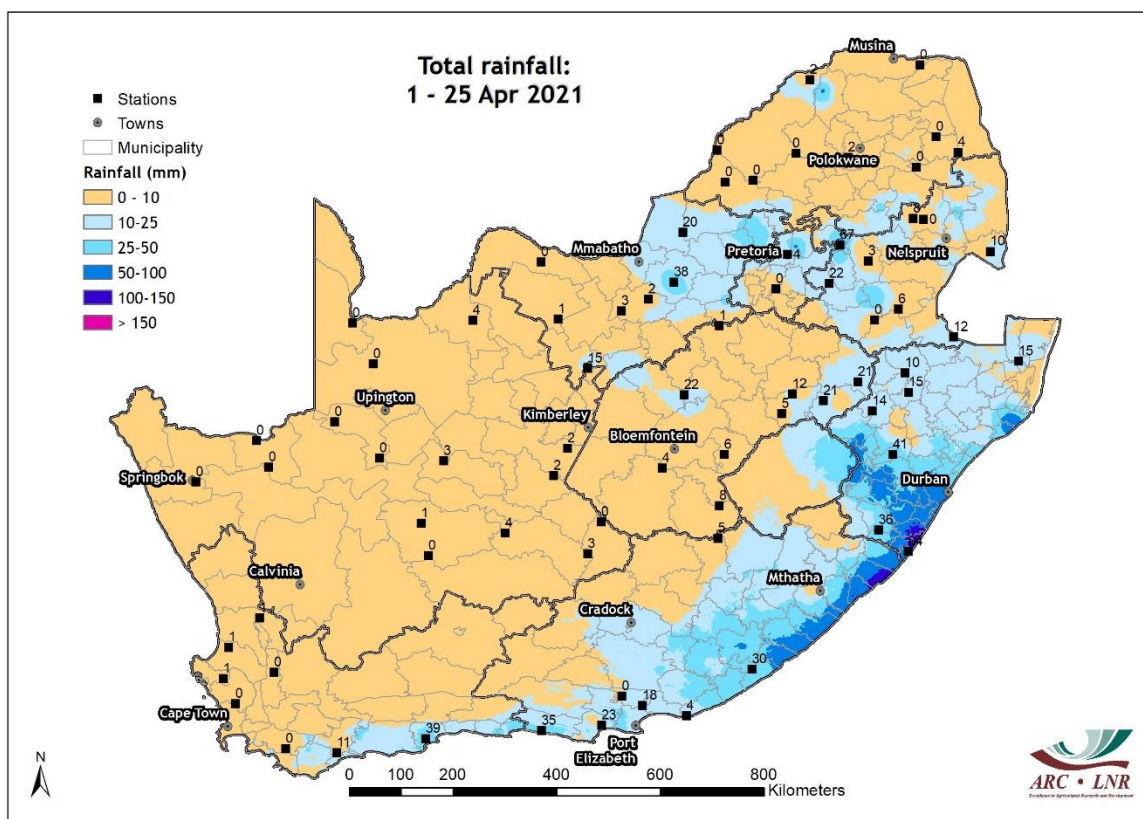
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

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



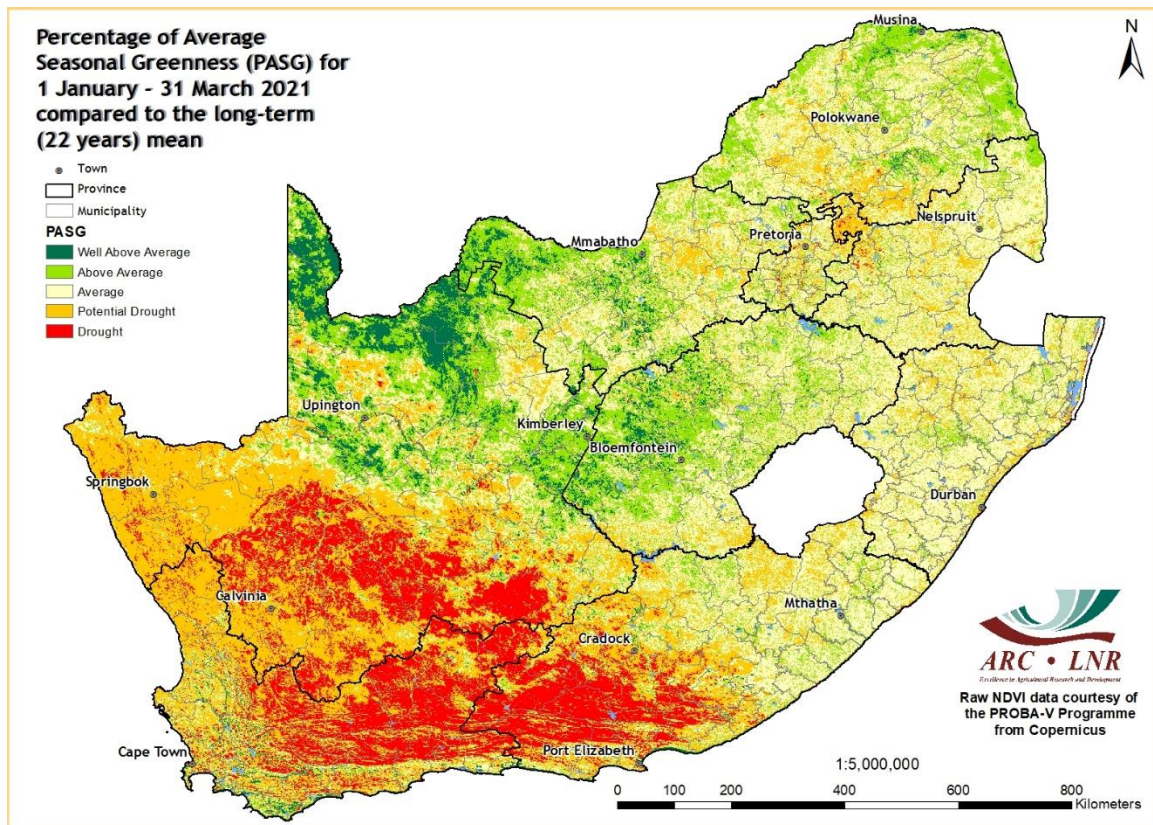
While large parts of the summer rainfall region received below-normal rainfall during March (especially in the northeast), some parts of the central interior received normal to above-normal rainfall while the western to southwestern parts, including most of the winter rainfall region, received above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

Rainfall (mm): 1 – 25 April 2021



April was dry over much of the country, with rainfall over the interior mostly concentrated on the Highveld. Along the coast, significant totals were recorded over the southern KZN and northern Eastern Cape coast. Some rain also occurred along the Garden Route while the winter rainfall region was mostly dry.

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

Two upper-air systems will support rainfall over the country during the next few days. Ridging of the Atlantic ocean Anticyclone to the south will support these systems and will also be responsible for relatively warm conditions over the western interior with cooler conditions over the southern to eastern parts. The first system will be an upper-air trough moving across the interior, supporting a band of showers and thundershowers moving over the central to southeastern, eastern and northeastern parts from Thursday (29th) to Saturday (1st). Cold air advected by the high to the south may result in snow over some higher-lying parts of the Drakensberg. The second will be an upper-air low developing to the west early next week, supporting thundershowers over the western to southern interior by Monday (3rd). The relatively summer-like circulation pattern will result in an absence of significant cold fronts over the winter rainfall region, with little to no rain expected during the next few days according to current forecasts.

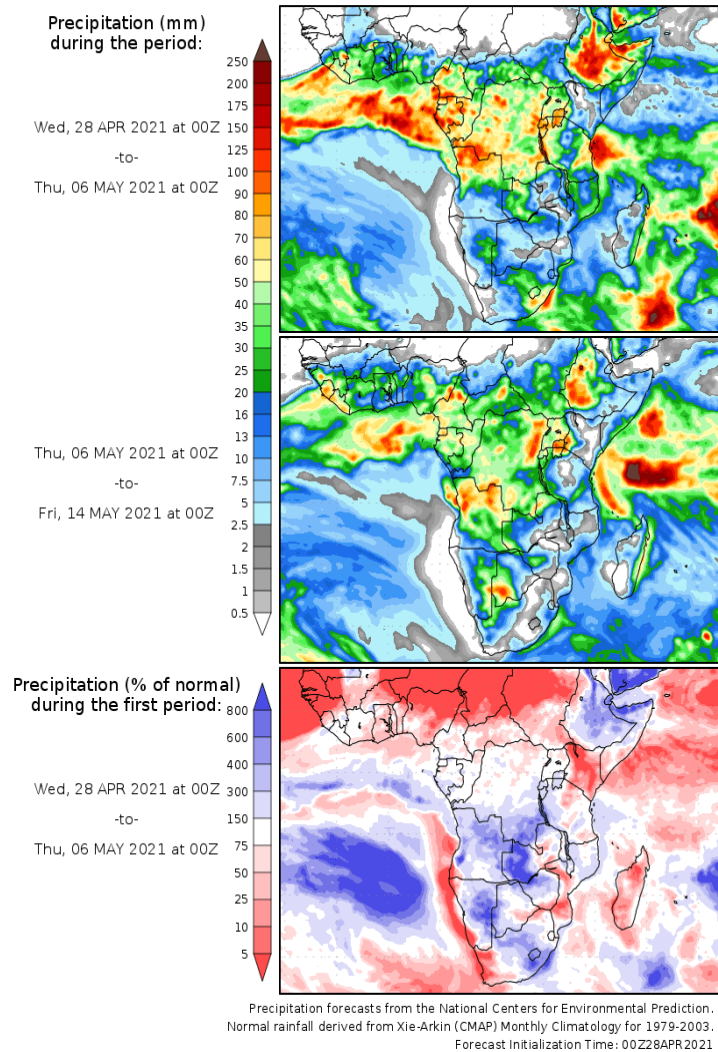
Conditions in main agricultural production regions (28 April – 3 May)

Maize production region: A cool, partly-cloudy to cloudy period with scattered showers and thundershowers will be present from Thursday (29th) to Sunday (2nd) over most of the region. Prior to and following this cooler, cloudy period with precipitation, it will be partly cloudy to sunny, warm and dry. 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 10 – 25°C, with the lower temperatures during the rainy conditions from Friday to Sunday. Minimum temperatures will be in the order of 3 – 10°C, with lowest temperatures expected by Sunday/Monday (2nd/3rd) following the rain, and a possibility of light frost in

frost-prone areas. Maximum temperatures over the western maize-production region will range between 15 and 28°C, with lowest temperatures during the weekend. Minimums will be in the order of 9 – 15°C.

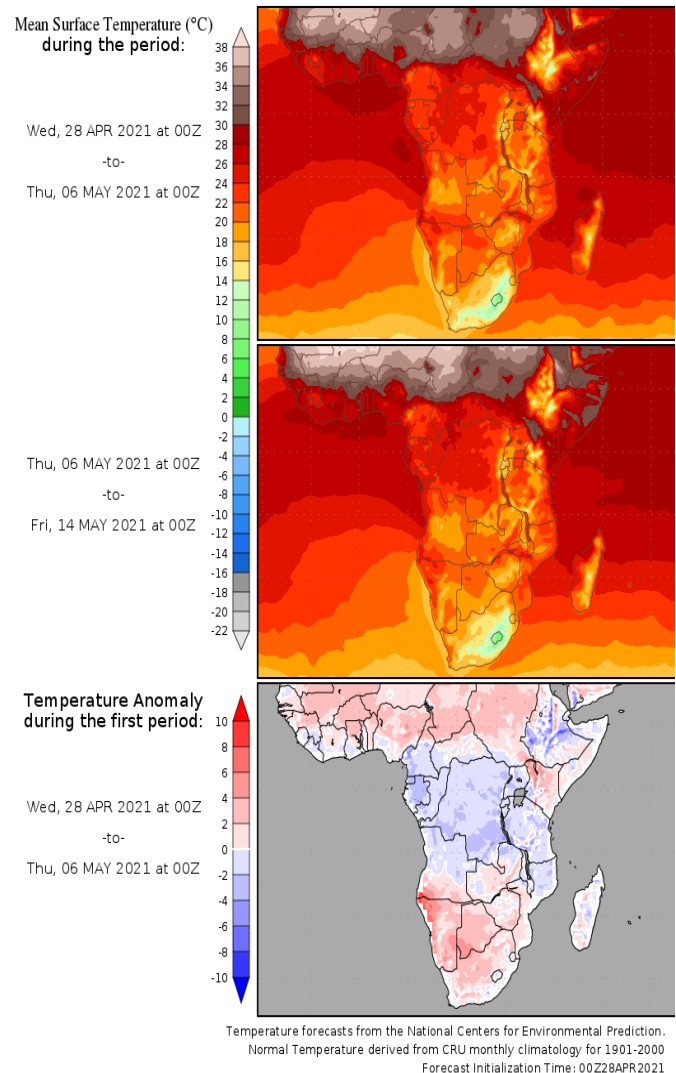
Cape Wine Lands and Ruens: With the circulation somewhat summer-like, southerly to southeasterly winds will prevail for the most part during the period. Southeasterlies will be strong in the southwest, especially on Thursday (29th). The southerly flow will result in relatively cool conditions over the southern parts, with showers along the Garden route on Thursday (29th). Southerly to easterly winds will result in relatively warm conditions over the western parts as well as the northwestern interior. It will become warm to hot over much of the region during the weekend and early next week, when isolated to scattered thundershowers may develop, especially over the interior, as an upper-air trough develops to the west.

Precipitation Forecasts



GRADS/COLA

Temperature Forecasts



GRADS/COLA

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 28 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:

- Thundershowers over the central to eastern interior during the week may be accompanied by hail which should however remain small in most cases.
- Partly cloudy to cloudy conditions with showers over the grain-production areas may affect harvest activities from Thursday (29th) to Sunday (2nd).
- Windy, cold and at sometimes rainy conditions over the southeastern high-lying areas (eastern parts of the Western Cape, Eastern Cape interior into Lesotho) may affect small stock adversely.
- Snow is possible over the Drakensberg, mainly in the northern parts of the Eastern Cape and in Lesotho, on Friday (30th).
- Light frost is possible over frost-prone areas of the Eastern Highveld by Sunday / Monday (2nd/3rd).
- Fresh to strong easterlies to south-easterlies will prevail over the southwestern coastal areas and adjacent interior until Friday (30th). Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.
- Warm to hot bergwind conditions will develop over the West Coast during the weekend, spreading southwards and into the Eastern Cape by Monday (3rd).
- Thundershowers over the southwestern interior by Monday (3rd) may become severe especially over high-lying areas.

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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