

CUMULUS

30 March 2021 – by J Malherbe, R Kuschke

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Summary

Dry autumn weather continues

It will remain sunny to partly cloudy and dry for the most part during the next few days over the interior. The southern to eastern coastal belt and adjacent interior will benefit from an on-shore flow from time to time with some rain and showers expected. A lack of significant cold fronts will keep the winter rainfall region mostly dry whilst the anticyclonic circulation over the interior will result in relatively warm conditions. Especially day-time temperatures are expected to be somewhat higher than normal for this time of the year – and more so over the central to western and southwestern interior.

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

- **General:**

- Temperatures will be above normal for this time of the year, with largest positive deviations expected over the central to western and southwestern interior.
- Rainfall will be below normal for this time of the year over both the winter and summer rainfall regions.
- Isolated thundershowers are expected over the central to southeastern parts from Tuesday (30th) to Thursday (1st) and somewhat further east on Friday (2nd).
- Sunny to partly cloudy and warm conditions will dominate across the interior.
- Light showers are expected along the Garden Route from Wednesday (31st) until Friday (2nd).
- Cooler conditions with rain and showers are expected along the southeastern to eastern coastal belt and adjacent interiors of the Eastern Cape and KZN from Thursday (1st) until Saturday (3rd).
- Conditions over the summer-grain production region will be conducive to the ripening of the crop.
- Temperatures over the summer-grain production area will be relatively high while sunny to partly cloudy conditions with little to no precipitation will dominate:
 - Maximum temperatures over the eastern maize-production areas will be in the order of 21 – 27°C. Minimum temperatures will be in the order of 9 – 17°C.
 - Maximum temperatures over the western maize-production region will range between 26 and 32°C. Minimums will be in the order of 15 – 19°C.

- **Detailed:**

- Tuesday (30th): Partly cloudy and warm, becoming hot over the western to southern interior. Very isolated thundershowers are possible over the northern parts of the central interior and Eastern Highveld.
- Wednesday (31st): Partly cloudy and warm to hot. Isolated thundershowers are possible over the central to southeastern interior. It will become cloudy and cooler over the southern half of the winter rainfall region and the Garden Route with light showers.
- Thursday (1st): It will remain warm over the interior, but hot over the western parts and northeastern areas (Lowveld and Limpopo River Valley). Isolated thundershowers are expected over the central to southeastern parts, becoming scattered over the Lesotho and southern to central and eastern KZN. Light showers are expected initially along the Garden Route, with an on-shore flow resulting in somewhat cooler conditions over the southern interior.
- Friday (2nd): Some residual isolated thundershowers are possible over the central to eastern parts, including the Eastern Highveld. It will become cloudy with rain and showers along the Garden Route and into the Little Karoo. It will remain warm to hot over the interior while the on-shore flow in the south will keep the southern parts cooler. Rain and showers will move up the southeastern to eastern coastal belt and adjacent interior during the day.
- Saturday (3rd): It will remain warm and dry across most of the interior, becoming hot over the western parts. Light rain and showers are still expected along the eastern coastal belt initially while isolated showers or

thundershowers may occur over central to northern KZN and into Mpumalanga, especially along the escarpment.

- Sunday (4th): Sunny, warm and dry weather will dominate. It will be hot over the central to western parts.
- Monday (5th): It will remain warm to hot and dry across the country except for somewhat cooler conditions in the south and southeast where an onshore flow will result in light showers along the southeastern coastal belt.

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 30 March): The Bureau's ENSO Outlook has moved from LA NIÑA to INACTIVE as most El Niño–Southern Oscillation (ENSO) indicators have now returned to neutral levels. Climate model outlooks suggest the Pacific will remain at neutral ENSO levels at least until the winter.

Tropical Pacific Ocean sea surface temperatures have persisted at ENSO-neutral values for several weeks. Below the surface, much of the tropical Pacific is now at near average temperatures. Atmospheric indicators are also generally at neutral ENSO levels. The Southern Oscillation Index (SOI) is close to zero, while trade winds are currently being enhanced by the Madden–Julian Oscillation (MJO). Only cloudiness near the Date Line continues to show a weak La Niña-like signature.

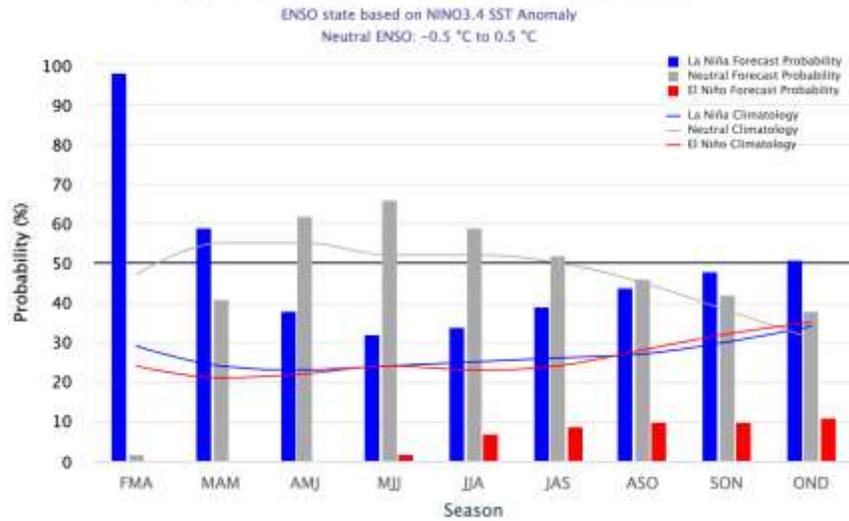
These changes are consistent with climate model outlooks, which have indicated a return to ENSO neutral during the southern hemisphere autumn, with little indication of a return to La Niña patterns in the coming months. A return to ENSO neutral conditions in autumn is also typical of the life cycle of ENSO events. All models indicate ENSO will remain neutral until at least the end of the southern winter.

The Southern Annular Mode (SAM) is currently neutral and expected to remain neutral for the coming fortnight. A neutral SAM has little influence on Australian rainfall..... *(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)*

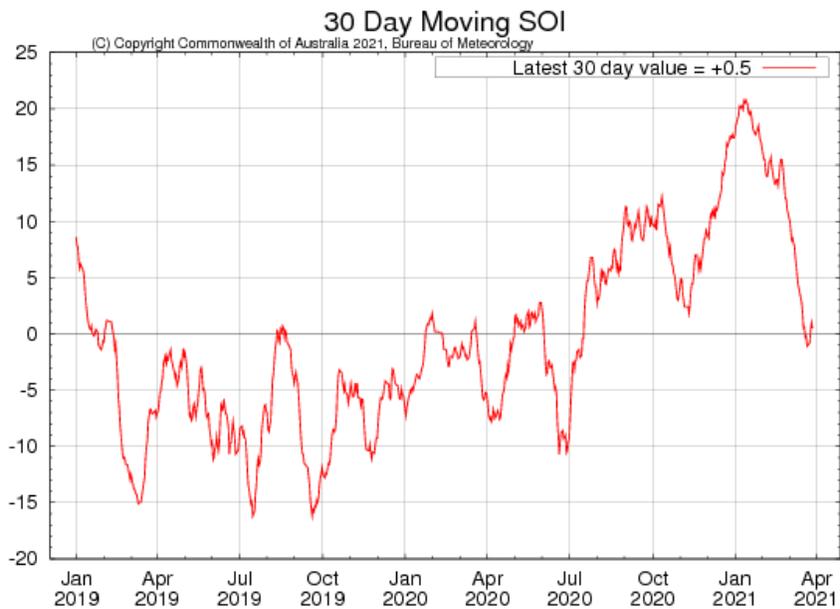
.....**Australian Bureau of Meteorology** - <http://www.bom.gov.au>

According to the IRI (Updated 11 March): In mid-February, SSTs in the east-central Pacific are roughly 1.1 degree C below average, and most key atmospheric variables are consistent with continued La Niña conditions. A large majority of the model forecasts predict SSTs to be cooler than the threshold of La Niña SST conditions through the *SH summer*, dissipating during spring. The new official CPC/IRI outlook issued earlier this month is similar to these model forecasts, calling for a 82% chance of La Niña for the Feb-Mar-Apr season, and a likely transition in Apr-may-Jun. A La Niña advisory remains in effect.....**International Research Institute for Climate and Society**- <http://iri.columbia.edu/>

Early-March 2021 CPC/IRI Official Probabilistic ENSO Forecasts



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



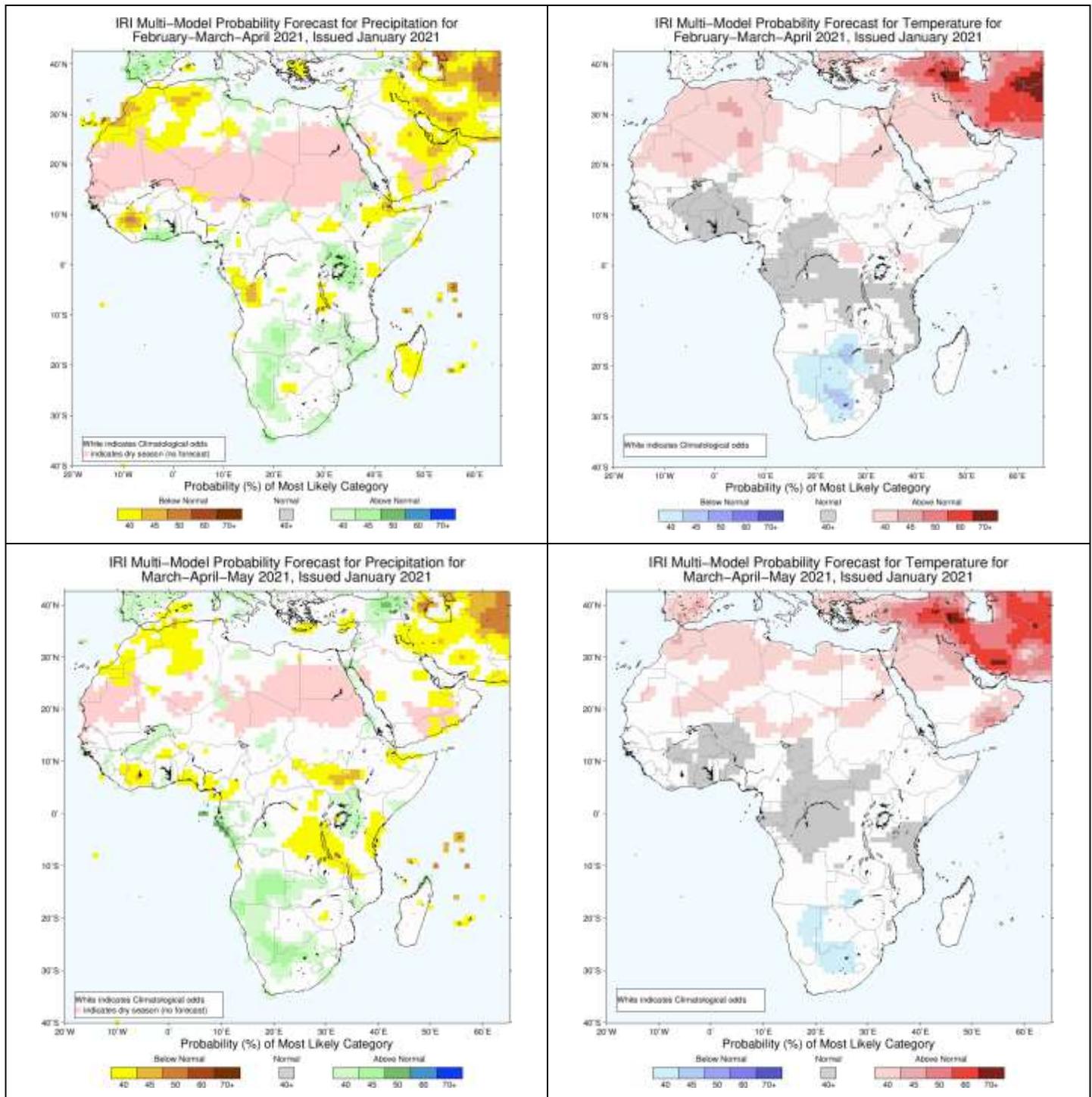
Australian Bureau of Meteorology - <http://www.bom.gov.au>

The Southern Oscillation Index is now near zero (0.5). This is indicative of atmospheric circulation patterns moving towards neutral conditions.

Seasonal forecasts issued by various international institutions

IRI

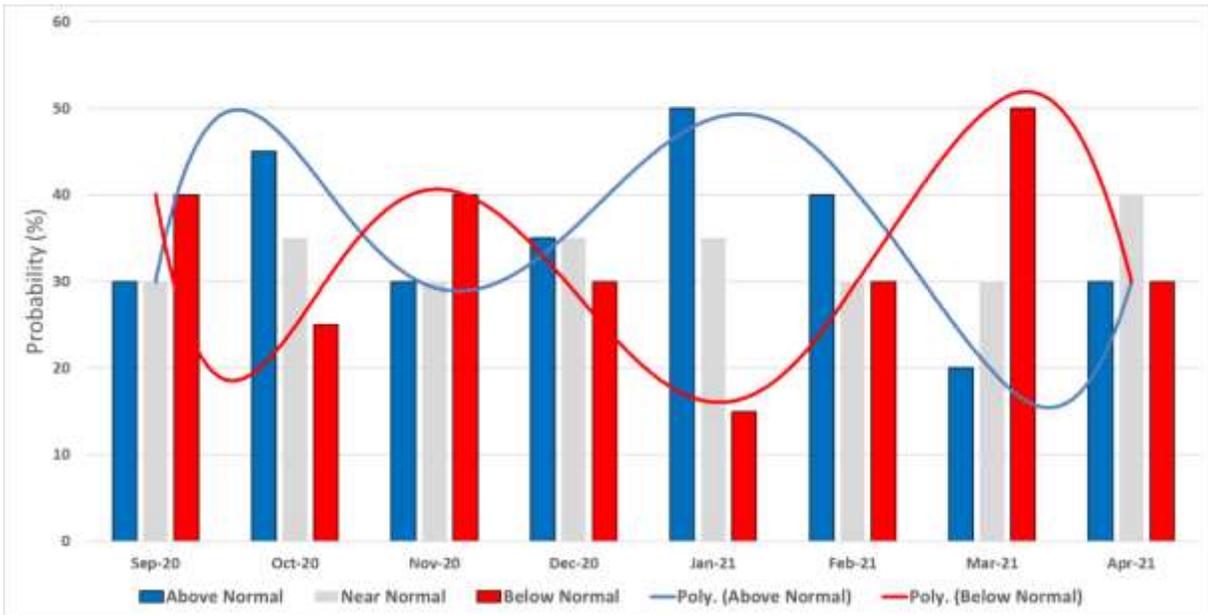
Given the current La Niña conditions, the seasonal forecast by the IRI still favours relatively wet and cool conditions to continue into autumn, with the largest anomalies over the central parts of the country.



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:

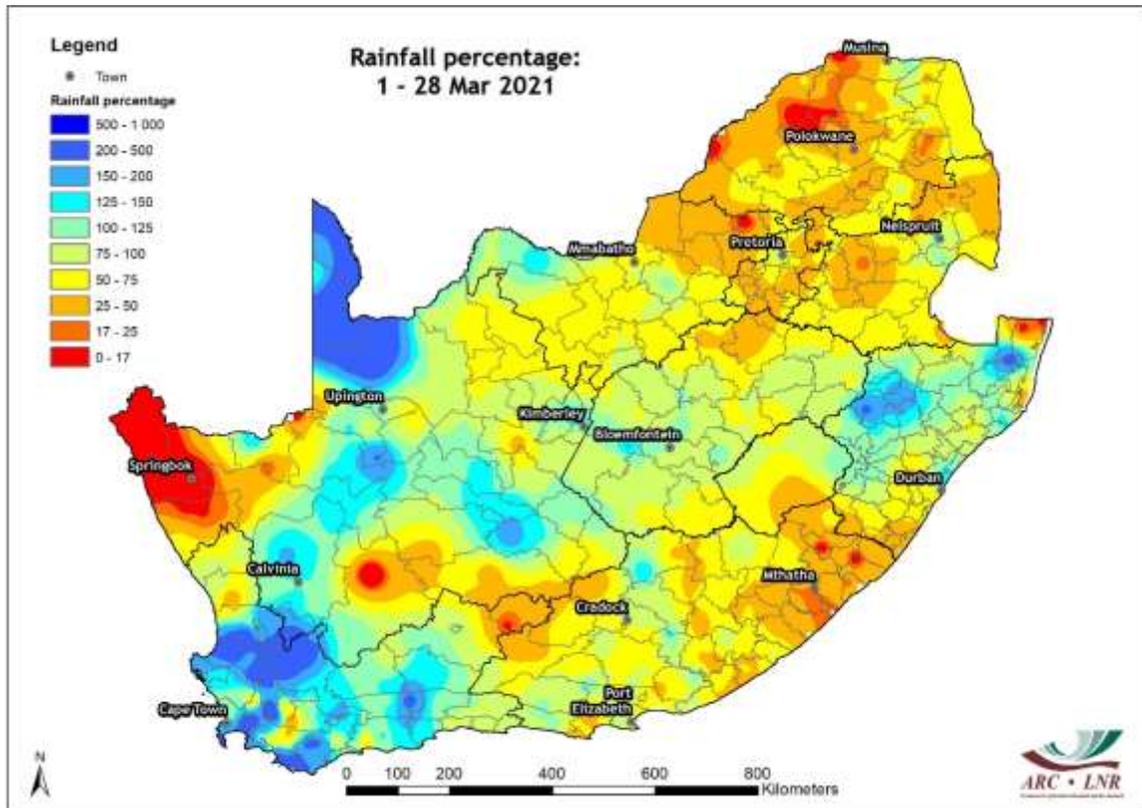


Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2020 – April 2021 (Forecast issued in 2020-09).

Typical patterns during similar summers are:

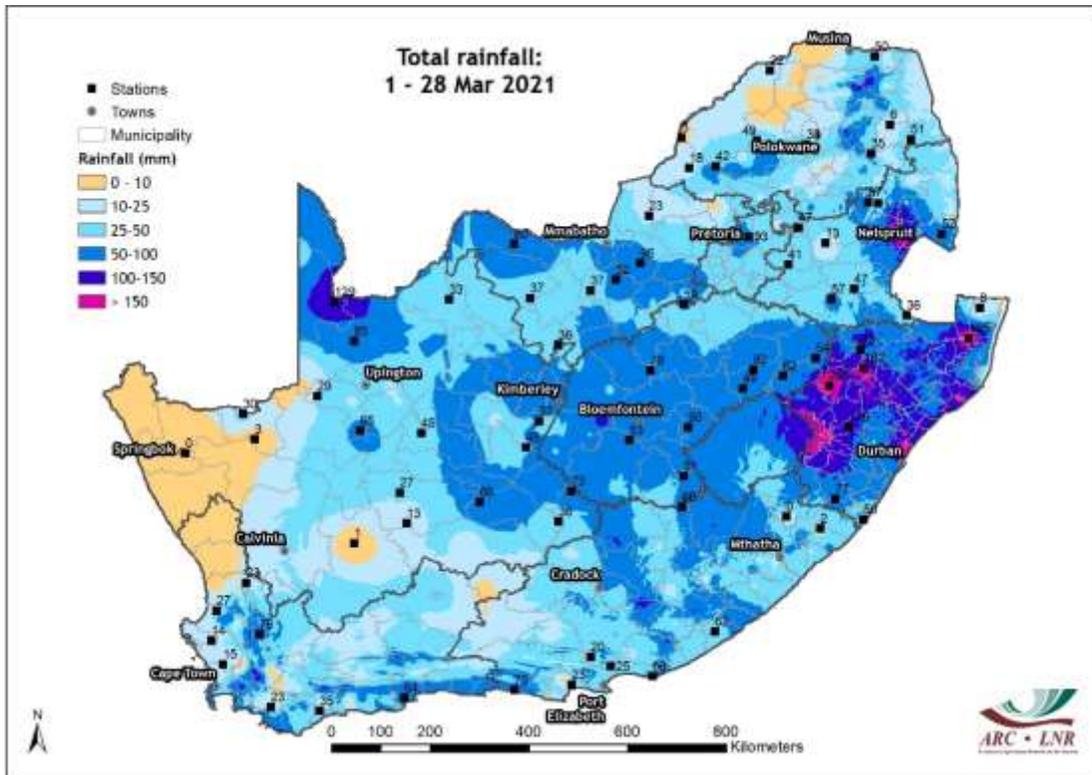
- Late September – 20 October: Relatively wet conditions over the summer rainfall region
- Late October – 20 November: Mostly drier than normal conditions
- Late November - December: Near-normal rainfall over the summer rainfall region
- January – late February: Normal to above-normal rainfall over the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

Rainfall (% of long-term mean): 1 – 28 March 2021



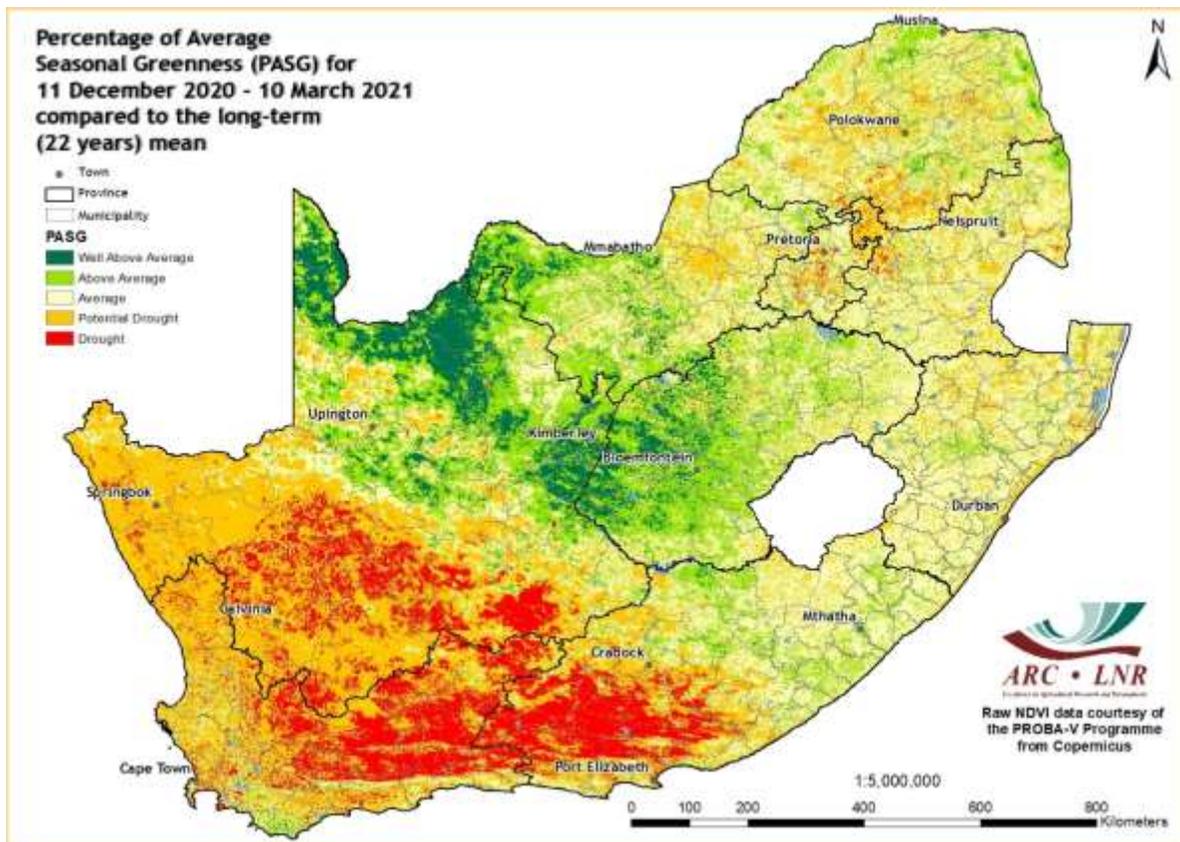
While large parts of the summer rainfall region received below-normal rainfall during March (especially in the northeast), some parts of the central interior received normal to above-normal rainfall while the western to southwestern parts, including most of the winter rainfall region, received above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

Rainfall (mm): 1 – 28 March 2021



Most parts of the country received some rain during the first 4 weeks of March. While totals were relatively low over the northeastern and southwestern interior, most of the central interior into KZN received in excess of 50 mm in total.

Percentage of Average Seasonal Greenness: 11 December – 10 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

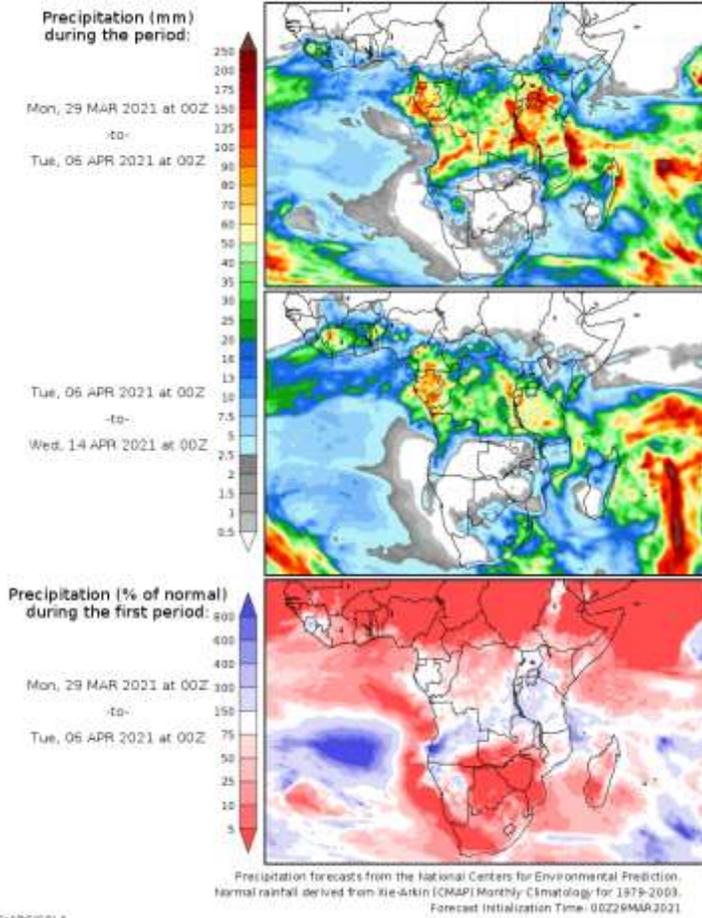
While upper-air troughs and frontal systems will brush the southern parts of the country from time to time, together with ridging highs resulting in showers along the coastal belt and adjacent interior from time to time, the main feature of the circulation pattern during the next few days will be anticyclonic surface and upper-air conditions across the interior. These should keep rain at a minimum while sunny conditions will result in relatively high maximum temperatures especially over the western parts as well as in the Limpopo River Valley at times.

Conditions in main agricultural production regions (30 March – 5 April)

Maize production region: Partly cloudy and warm conditions will dominate. Isolated thundershowers will occur over especially the central to western parts of the region until Thursday (1st), shifting to the eastern parts from Friday until Saturday (remaining very isolated in nature). Conditions will favour the ripening of the crop. Maximum temperatures over the eastern maize-production areas will be in the order of 21 – 27°C. Minimum temperatures will be in the order of 9 – 17°C. Maximum temperatures over the western maize-production region will range between 26 and 32°C. Minimums will be in the order of 15 – 19°C.

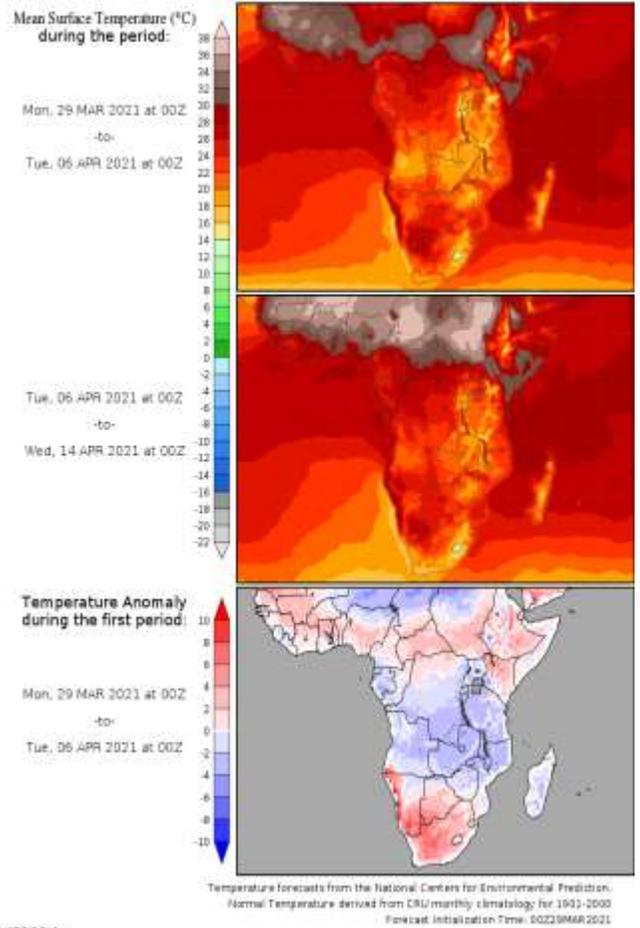
Cape Wine Lands and Ruens: It will be sunny to partly cloudy and warm for the most part. It will become warmer to hot during the weekend and early next week. Frontal systems will result in cooler conditions on Wednesday (31st) and Friday (2nd), with light showers mostly in the south and along the Garden Route.

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 30 March) 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 to hot and windy over the central to western and southern parts of the Northern Cape until Friday (2nd). Where vegetation is dry, these conditions may be conducive to the development and spread of wild fires.
- It will be hot in the Limpopo River Valley on Friday and Saturday (2nd/3rd).
- The western to northwestern interior is expected to become hot especially from Sunday (4th) into early next week according to current forecasts.
- Given relatively low atmospheric temperatures by this time of autumn, thundershowers over the interior (only isolated thundershowers) may at times be associated with hail – these should for the most part be small.

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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