

CUMULUS

4 May 2023

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WE GET
AGRICULTURE'S *heartbeat*

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Photo credit: Google

Summary

More thundershowers over the summer rainfall region

Thundershowers are expected to continue through the weekend and into early next week over the summer rainfall region, affecting mostly the central to northeastern parts. Due to somewhat more extensive cloud cover over the central to northeastern parts as showers and thundershowers are expected to become more widespread, temperatures will trend downward and it will become cooler over these areas during the weekend and early next week. These expected wetter conditions will be associated with a sharp upper-air trough moving through. The lower atmospheric temperatures this time of the year together with the instability associated with the sharp trough may result in some thundershowers becoming severe and produce large amounts of hail, but this feature is typical to this time of the year with regard to thundershowers. It is expected to clear over these areas by Tuesday next week.

Cooler Atlantic air will also invade the southern to western parts of the country, resulting in cooler conditions over the western to southern parts of the country too from Sunday into next week. As conditions are expected to clear from early next week, the anti-cyclonic flow over the interior will result in berg-wind conditions over the western parts, with hot conditions developing over the western parts of the Northern Cape during next week.

Once again, the occurrence of frost during the next few days will be limited to isolated areas over the high-lying southern interior and areas in and surrounding the Drakensberg.

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

General:

- Temperatures will on average be above normal for this time of the year.
- Rainfall will on average be above normal over the central to eastern and north-eastern parts, but below normal over the rest of the country, including the winter rainfall region.
- Little to no frost is expected except over the climatologically cold high-lying parts of the southern escarpment and into the Drakensberg.
- It will be warm to hot for this time of the year over the Limpopo River Valley and Lowveld until Sunday.
- It will become hot over the western interior, especially the Lower Orange River Valley, by Tuesday and Wednesday.
- Isolated to scattered thundershowers are expected over the central to eastern parts, becoming more widespread during the weekend and clearing by Tuesday.
- It may be cloudy and cool at times with scattered showers and thundershowers over the grain production region from late Saturday until Monday when it will clear from the west.
- A cold front may result in light showers, mostly over the southern parts of the winter rainfall region and along the Garden Route, on Saturday.
- The summer-grain production region will be somewhat cooler than the previous few weeks. The lower temperatures will mostly be associated with more extensive cloud cover with the rainfall event during the weekend and early next week. Current forecasts are not indicative of widespread frost, but the cooler conditions following the rain by Tuesday may result in some isolated frost patches over the eastern high-lying areas:
 - Maximum temperatures over the eastern maize-production areas will be in the order of 15 – 26°C, with lowest maxima by Sunday and Monday. Minimum temperatures will be in the order of 7 – 12°C, with lowest values by early next week and focused on the areas adjacent to the Drakensberg.
 - Maximum temperatures over the western maize-production region will range between 17 and 28°C, with lowest temperatures on Sunday. Minimums will be in the order of 11 - 15°C.

Overview of expected conditions over the main agricultural production areas

The main event during the next few days will be the movement of a sharp upper-air trough over the summer rainfall region. This system will result in somewhat more widespread thundershowers over the northeastern parts of the country from Saturday to Monday, moving from west to east over the region, with rain and cloud cover expected to clear from the west by Monday. Associated with the upper-air trough, a cold front will brush the southern parts on Saturday.

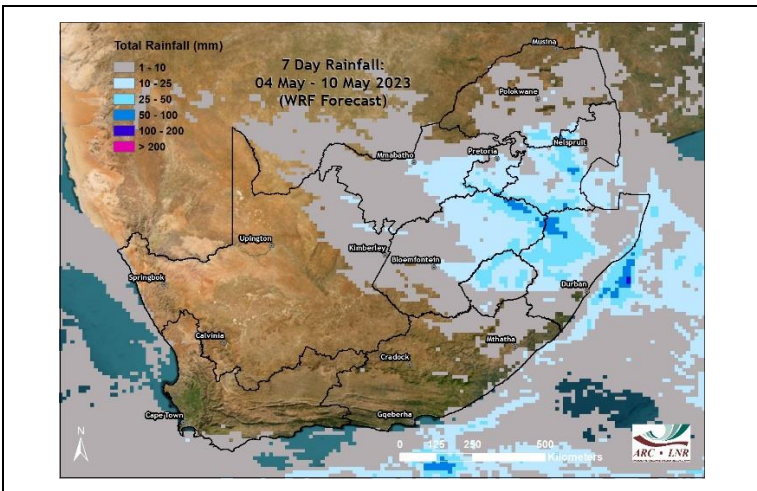
Maize production region: The region is expected to experience fairly widespread showers and thundershowers over the weekend and until Monday, clearing from the west. There will be some cloudy and cool spells during this time, but it should warm up again after Monday:

- Maximum temperatures over the eastern maize-production areas will be in the order of 15 – 26°C, with lowest maxima by Sunday and Monday. Minimum temperatures will be in the order of 7 – 12°C, with lowest values by early next week and focused on the areas adjacent to the Drakensberg.
 - Maximum temperatures over the western maize-production region will range between 17 and 28°C, with lowest temperatures on Sunday. Minimums will be in the order of 11 - 15°C..
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- **Thursday (4th):** Partly cloudy and warm with scattered thundershowers, except in the southwest.
 - **Friday (5th):** Partly cloudy and warm with isolated thundershowers.
 - **Saturday (6th):** Partly cloudy and warm scattered thundershowers over the central to western parts.
 - **Sunday (7th):** Partly cloudy to cloudy and mild to cool with scattered thundershowers.
 - **Monday (8th):** Cloudy and mild to cool over the northern and eastern parts with scattered showers and thundershowers. It will be partly cloudy to sunny and dry in the west according to current forecasts.
 - **Tuesday (9th):** Partly cloudy to cloudy and cool in the far east with isolated to scattered showers and thundershowers. The remainder of the region should be partly cloudy to sunny and mild.
 - **Wednesday (10th):** Sunny to partly cloudy and mild.

Cape Wine Lands and Ruens: It will be sunny to partly cloudy and mild over the region for the most part. A cold front may result in cloudy and windy conditions with light showers on Saturday, mostly over the southern parts according to current forecasts. It will become warm over the western to northern parts from Tuesday as the western parts of the country warms due to off-shore flow.

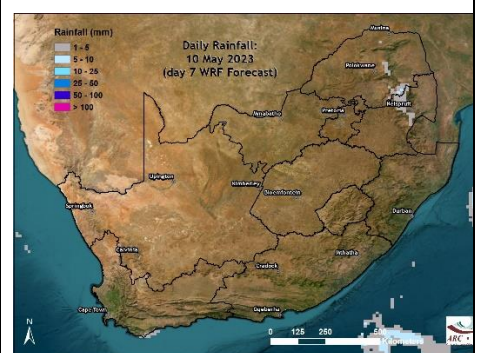
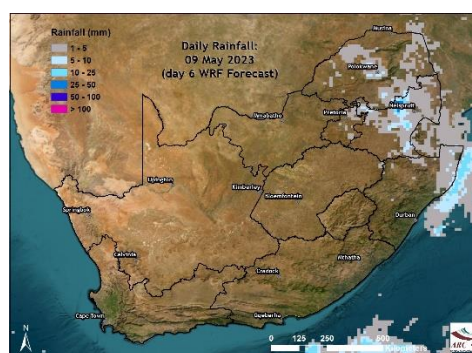
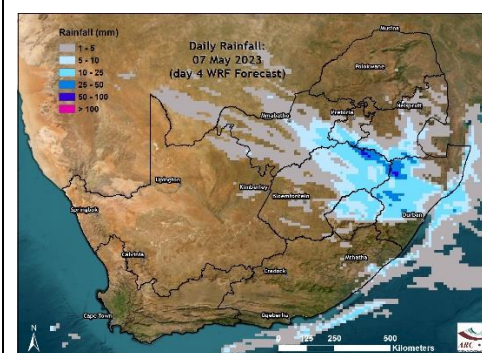
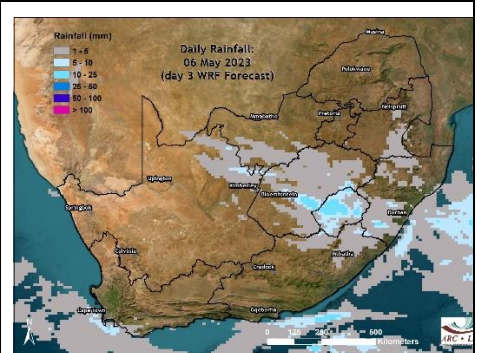
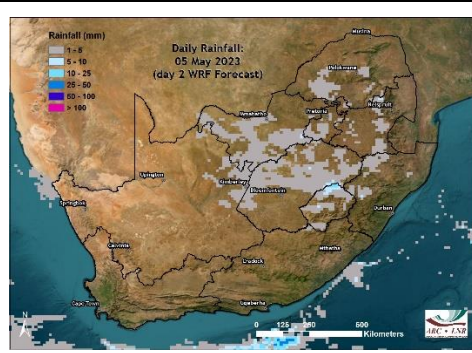
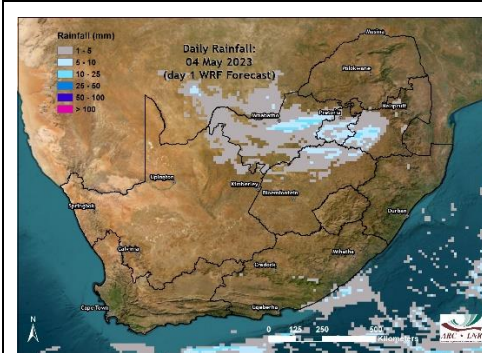
Daily summary of expected conditions

(GFS forecast downscaled using WRF)

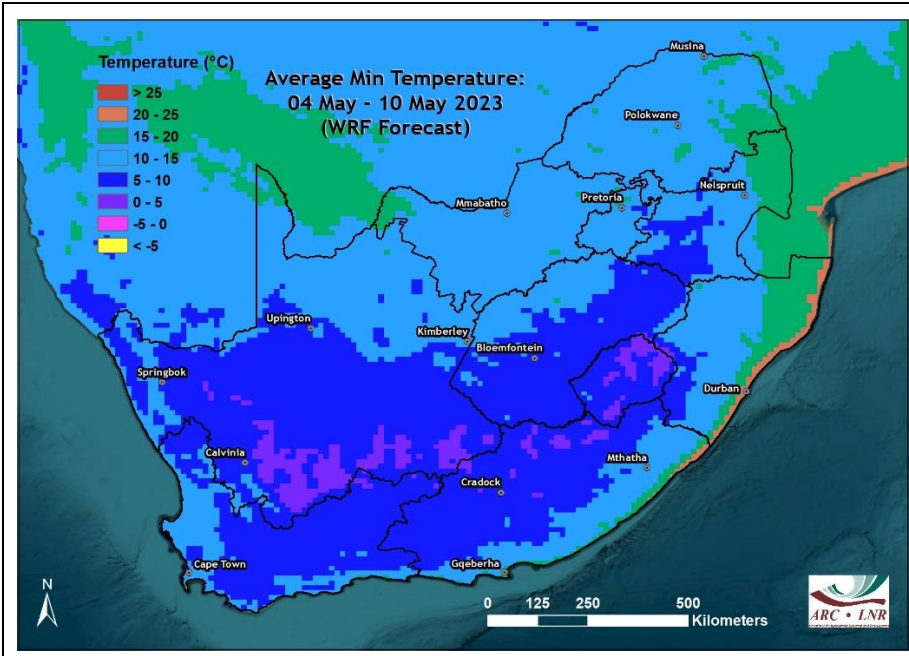


Rainfall

- Thundershowers will occur over the central to eastern to northeastern parts until Monday, when it will clear from the west.
- Relatively widespread showers and thundershowers are possible from Saturday to Sunday over the central to eastern and northeastern parts.
- Very little rain over the winter rainfall region.
- The western to southern interior should remain dry.

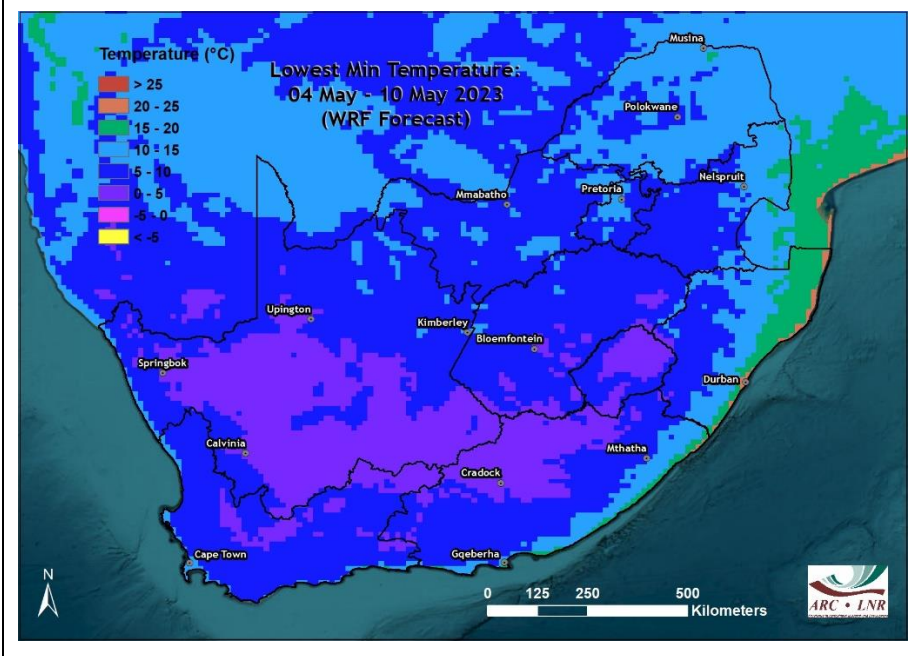


- Thundershowers will focus over the North West / Gauteng / Mpumalanga area initially.
- The main focus area for showers and thundershowers will shift southwards into the Free State and KZN on Friday and Saturday.
- Some showers are possible over the southwestern and southern parts of the winter rainfall region and along the Garden Route on Saturday.
- Showers and thundershowers, with cloudy and cooler conditions, shift northeastwards on Sunday and Monday, clearing from the west.
- Cloudy and rainy along the eastern seaboard on Sunday and Monday, clearing from the south early Tuesday.
- Mostly dry by Tuesday except for far east / north-east.



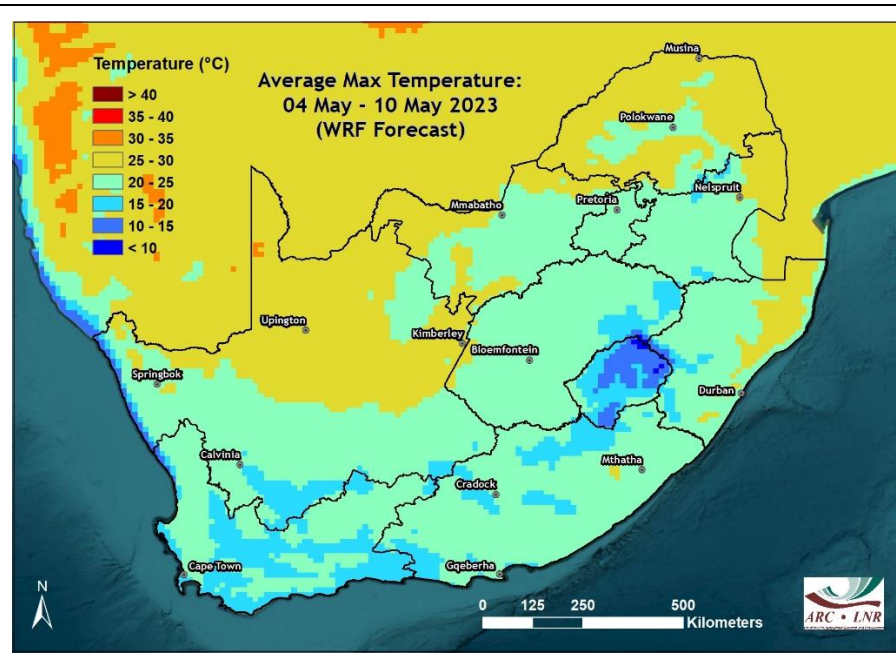
Average minimum temperatures

- Average minimum temperatures will be relatively high for this time of the year.
- Average minimum temperatures over North West and Gauteng as well as the northern Free State will be above 10°C.
- Average minimum temperatures over the high-lying southern escarpment and into the Drakensberg up to Lesotho will be below 5°C.



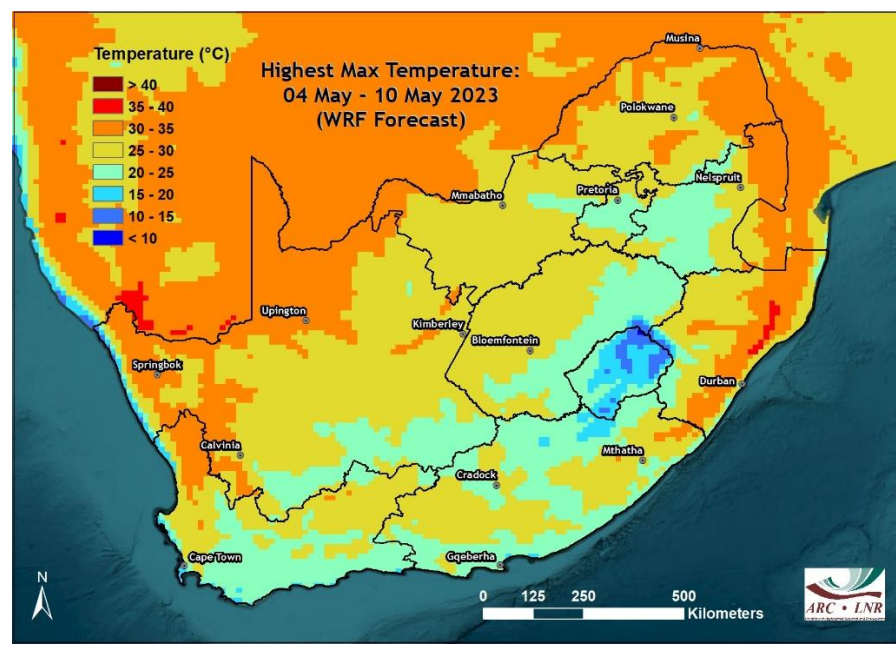
Lowest minimum temperatures

- Lowest minimum temperatures over almost the entire grain production area will remain above 5°C.
- Lowest minimum temperatures over the Free State are expected on the 4th.
- Lowest minimum temperatures indicated over the southern to western parts of the country will occur on the 7th and 8th, when colder, dry air will invade the interior from the southwest. However, these are mostly expected to remain above 0°C.



Average maximum temperatures

- Maximum temperatures will be normal to above normal for this time of the year.
- Average maximum temperatures over the maize-production region will range between 20 and 30°C, but somewhat lower closer to the Drakensberg.
- Average maximum temperatures over the warmer northern and northeastern parts of the country will range between 25 and 30°C.

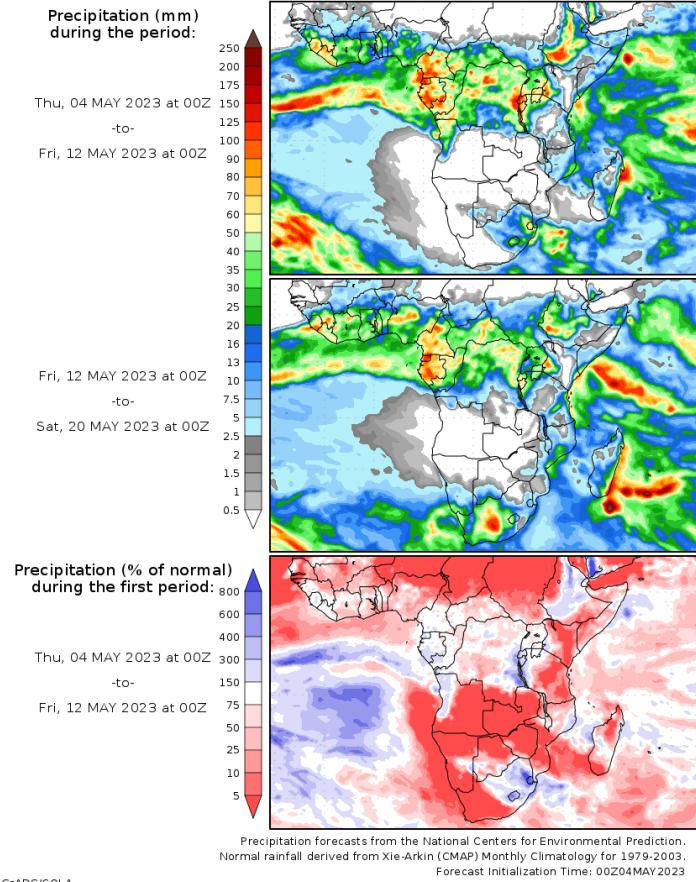


Highest maximum temperatures

- Hot conditions (>35°C) over the eastern parts of KZN will occur on Saturday.
- Maximum temperatures will exceed 30°C over the Lowveld until Sunday.
- Hot conditions (>35°C) in the west, mostly along the Orange River, will occur by Tuesday and Wednesday next week.

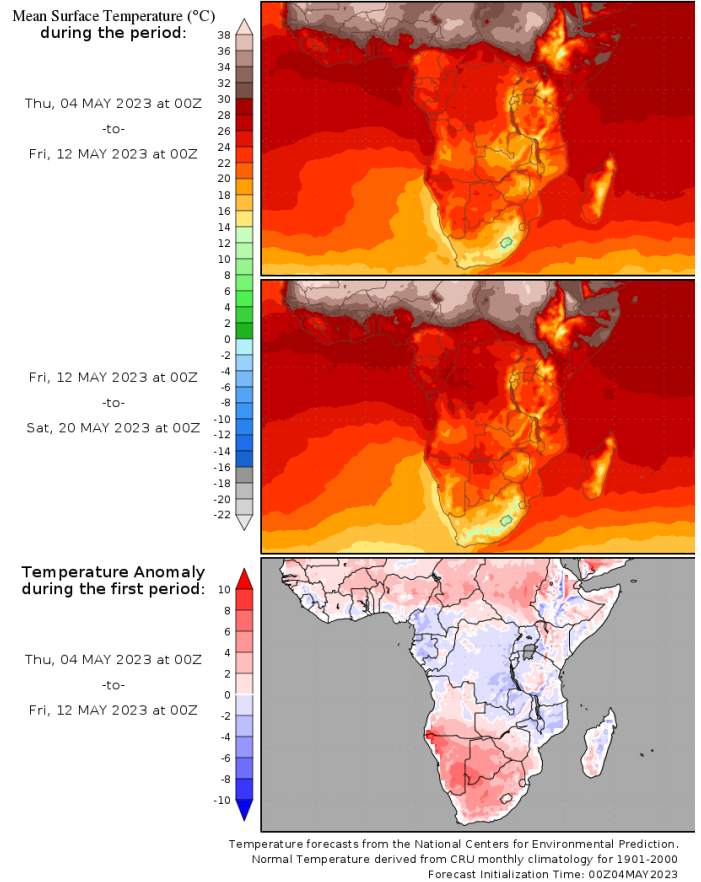
Medium term rainfall and temperature summary

Precipitation Forecasts



GrADS/COLA

Temperature Forecasts



GrADS/COLA

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 only 2 weather model (GFS and the ECMWF model) considered here in the beginning of a week-long (starting 4 May) 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 / ECMWF models) of weather conditions during the coming week, the following may be deduced:

- **It will be hot:**
 - Over the Lowveld and northern KZN: **Saturday (6th).**
 - Orange River Valley: **Tuesday and Wednesday (9th, 10th).**
- **It will be windy, enhancing the fire hazard where vegetation is dry:**
 - Central to eastern and southern Northern Cape, western Free State, northern parts of the Eastern Cape (north-westerly to westerly winds): **Friday and Saturday (5th- 6th).**
- **Cloudy, wet and cool conditions may disrupt harvesting activities:**
 - Central to eastern maize-production region: **Saturday to Monday (6th – 8th).**
- **Some thundershowers may become severe:**
 - Thundershowers that occur over the central to eastern parts may cause large amounts of mostly small hail, as can be expected during thundershowers during the colder seasons: **Thursday to Monday (4th – 8th).**

Seasonal forecast

Seasonal forecasts for autumn over South Africa are less indicative of wet conditions than earlier, reflecting global atmospheric circulation patterns now neutral and out of the La Niña state that has been present for much of the last few years.

ENSO observations and forecasts indicate that the 2022/23 La Niña has come to an end. ENSO neutral conditions are present. Over the Western Equatorial Pacific Ocean, westerly wind anomalies are present, indicating atmospheric circulation over this region favoring the development of warmer surface water anomalies and El Niño. Moreover, Eastern Equatorial Pacific surface water temperatures have been rising recently, also indicating a potential trend towards El Niño conditions later.

The Australian Bureau of Meteorology points out that the Equatorial Pacific continues to warm

(Updated 26 April): The El Niño–Southern Oscillation (ENSO) is currently neutral (neither La Niña nor El Niño). Oceanic and atmospheric indicators for the tropical Pacific Ocean are at neutral ENSO levels. However, there are signs El Niño may form during winter. Therefore, the ENSO Outlook is at El Niño WATCH. This means there is approximately a 50% chance of El Niño in 2023.

International climate models suggest neutral ENSO conditions are most likely to persist through autumn. From July, all but one of the models indicate El Niño thresholds will be met or exceeded, with all models meeting El Niño thresholds by August. Current ENSO outlooks extending beyond autumn should be viewed with some caution as they typically have lower forecast accuracy than forecasts made during other times of the year.

The Madden-Julian Oscillation (MJO) is expected to weaken in the coming days before possibly strengthening over the Maritime Continent in early May.

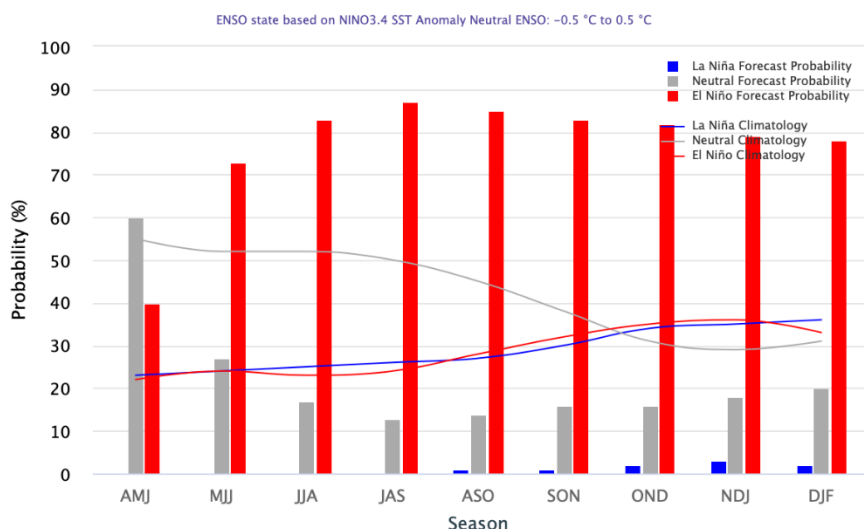
The Southern Annular Mode (SAM) index is currently neutral and is expected to remain mostly neutral over the coming 3 weeks. A neutral SAM has little influence on the Australian climate.... *Australian Bureau of Meteorology* - <http://www.bom.gov.au>

With ENSO neutral conditions present, there is little to no strong indication for either wet or dry conditions over the summer rainfall region, especially given the time of the year. ENSO Neutral conditions are expected to remain in place at least until the winter. The Southern Annular Mode (SAM) is neutral, and its association with rainfall over the summer rainfall region during this time of the year is weak. Current seasonal forecasts lean towards drier conditions during the winter over the winter rainfall region.

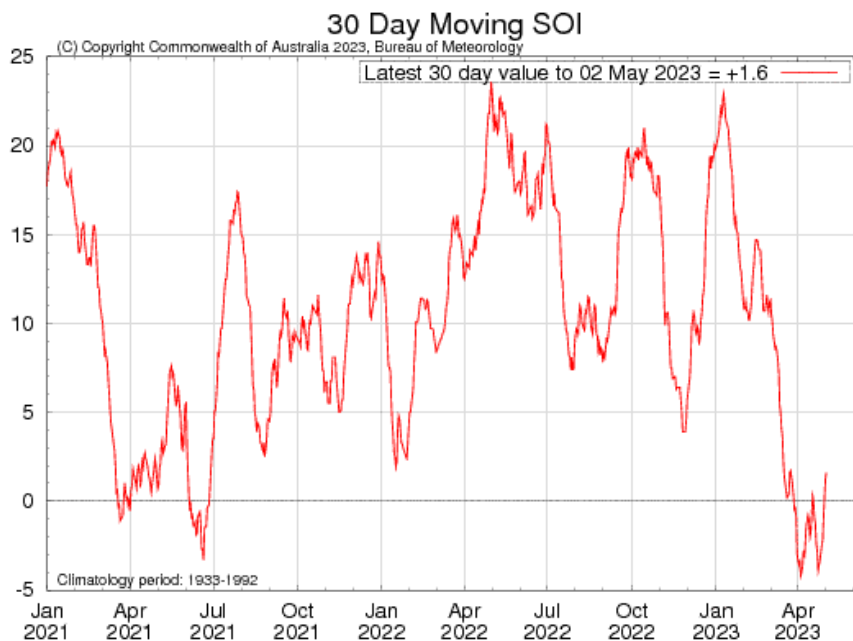
The International Research Institute for Climate and Society (IRI) also indicate that ENSO is in neutral state

According to the IRI (Updated 19 April): In mid-April 2023, the previous negative sea surface temperature anomalies in the central-eastern equatorial Pacific weakened further, and the basin is now in an ENSO-neutral state (as of 12 April 2023, the last observed value in the NINO3.4 region was 0.1 °C). Key oceanic and atmospheric variables are now consistent with ENSO-neutral conditions. CPC issued an El Niño watch in April 2023, signaling the start of the warm phase of the ENSO. Most models in the IRI ENSO prediction plume forecast SSTs in the El Niño starting from May-Jul, 2023 (73% chance), while the likelihood of the ENSO-neutral state remains low (27% chance). Going forward the El Niño becomes the dominant category during the entire forecast period with probabilities in the 78-87%. ENSO-neutral is the next most-likely category, with probabilities remaining in the range of 13-20%.....*International Research Institute for Climate and Society*-
<http://iri.columbia.edu/>

Mid-April 2023 IRI Model-Based Probabilistic ENSO Forecasts



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

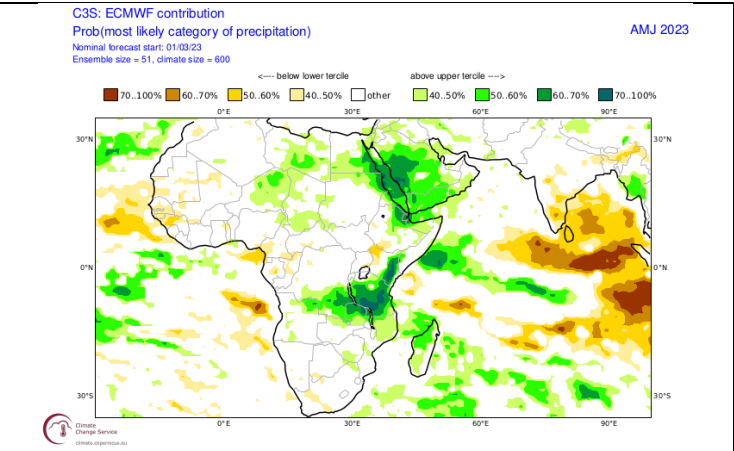
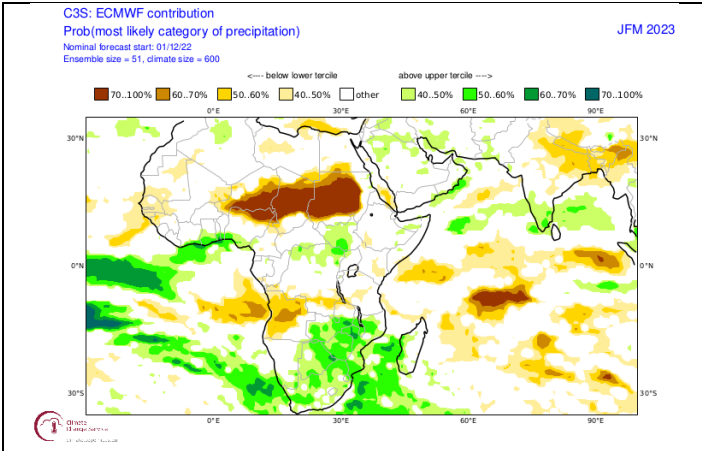


Australian Bureau of Meteorology - <http://www.bom.gov.au>

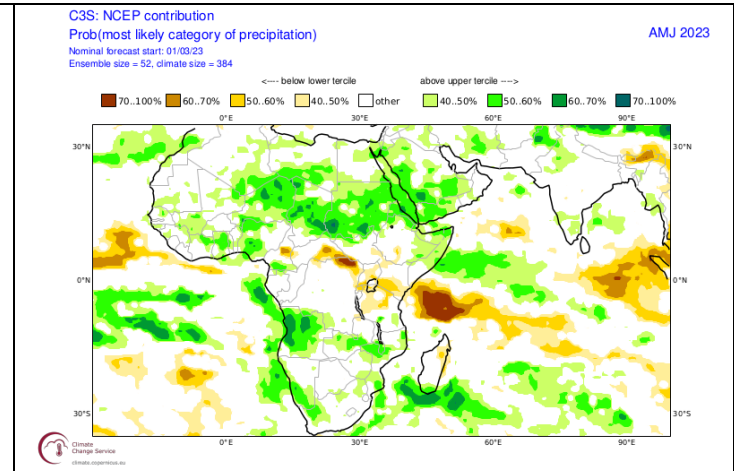
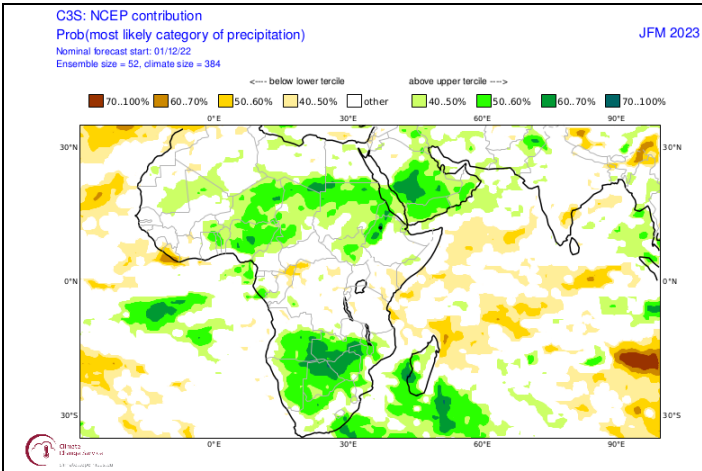
The Southern Oscillation Index is in neutral territory (+1.6). This is indicative of atmospheric circulation patterns not being associated with La Niña conditions anymore.

Seasonal forecasts issued by various international institutions

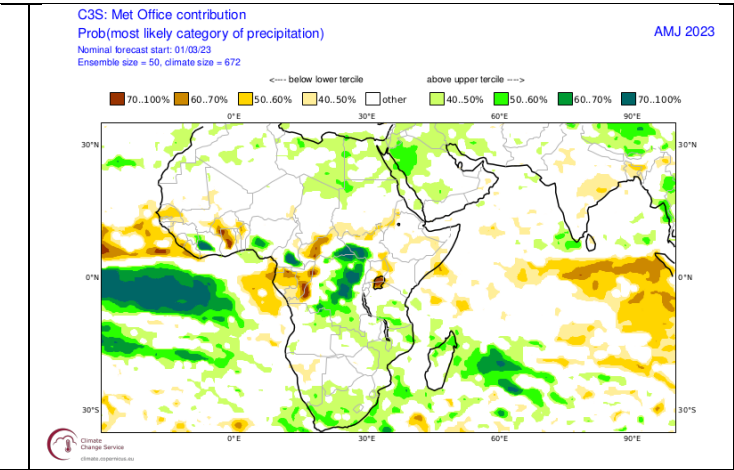
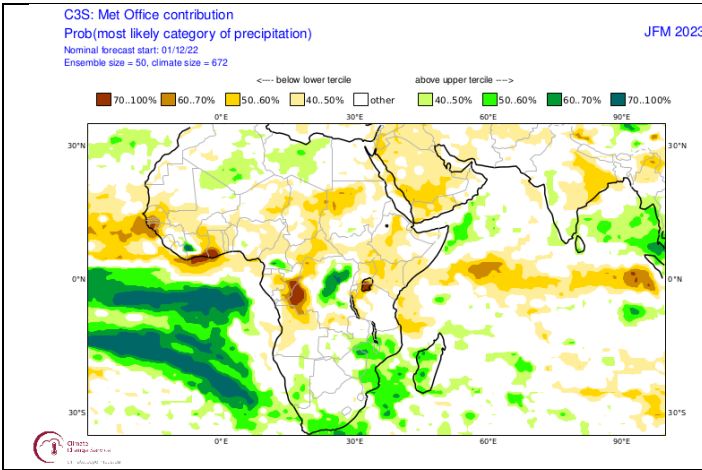
Seasonal forecasts (updated in October 2022) by these institutions, as published by the COPERNICUS Programme (<https://climate.copernicus.eu/seasonal-forecasts>) for autumn to early winter, reflect weak signals with regard to rainfall anomalies over both the interior and the winter rainfall region, as opposed to the late summer forecast that was dominated by the 2022/23 La Niña event that has come to an end.



Probabilistic forecasts by the European Centre for Medium-Range Weather Forecasts for rainfall for late-summer (January-March 2023; left – Forecast issued 2022-12) and autumn to early winter (April-June 2023; right - Forecast issued in 2023-03).



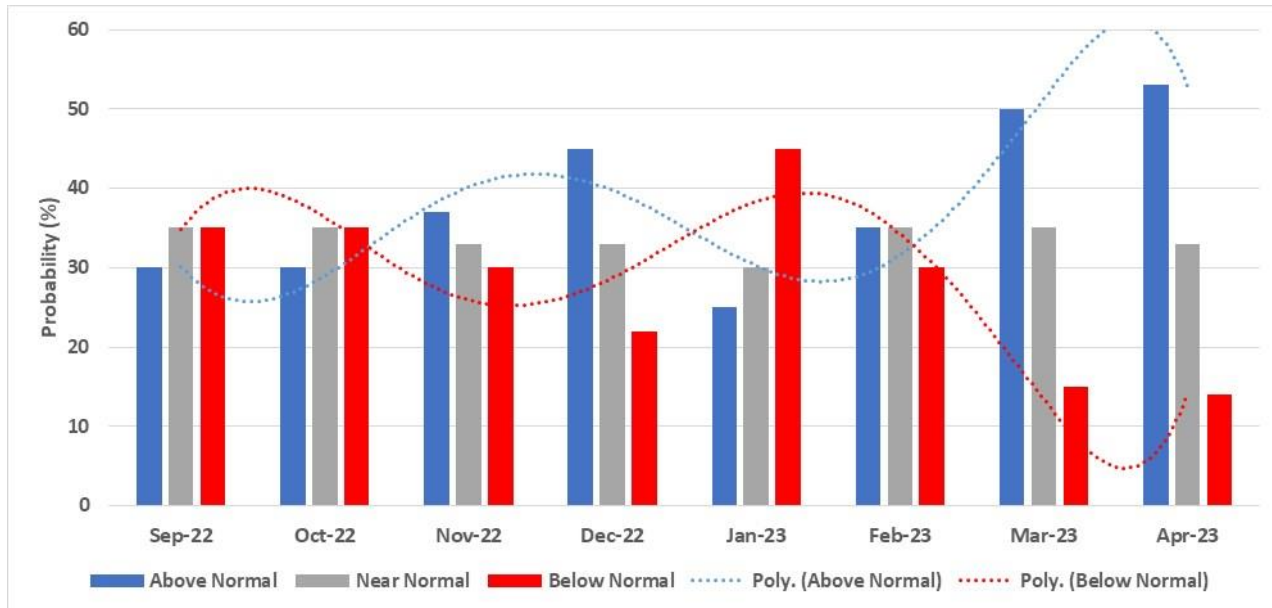
Same as above, but forecasts issued by the National Centres for Environmental Prediction.



Same as above, but forecasts issued by the UK Met Office.

CUMULUS seasonal outlook

This outlook is based on the typical observed rainfall patterns over the **north-eastern half** of the country (including most of the summer grain production region), as associated with the cyclic variability of the global climate system. Summers that are similar to 2022/23 more often experience a seasonal rainfall curve that compares to normal conditions as indicated in the bar graph below, with wetter conditions focussing on November to December and again from mid-February to April while drier than normal conditions focus on October and January to mid-February:



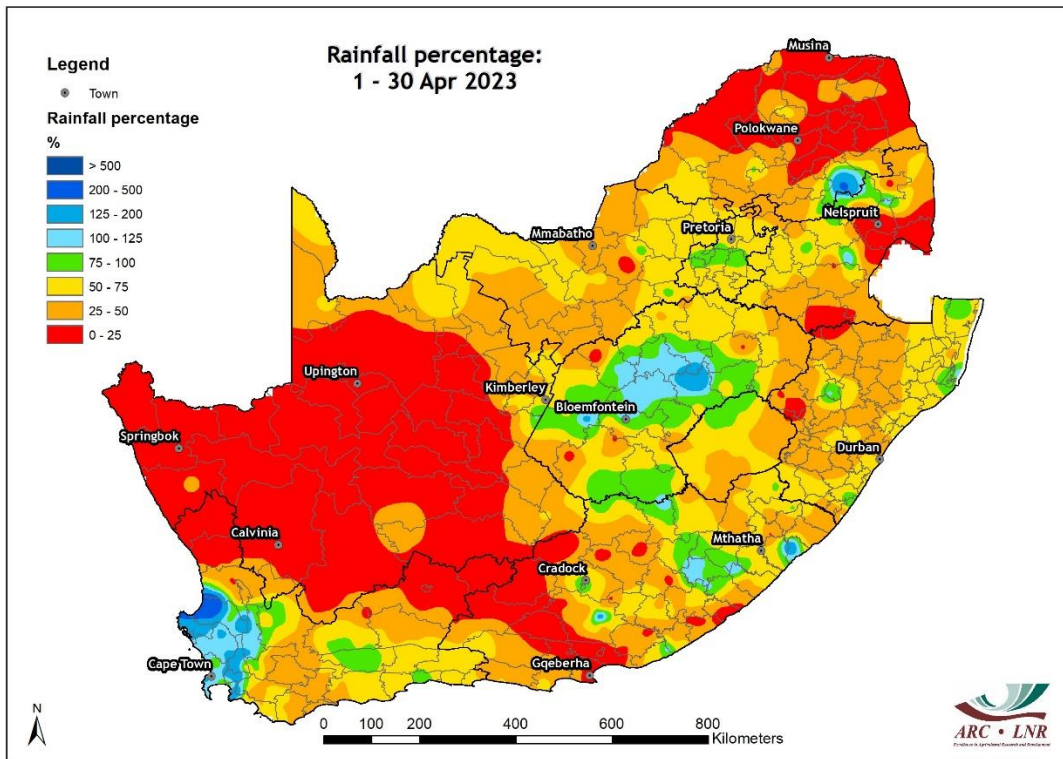
Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2022 – April 2023 (Forecast issued in 2022-10).

Typical patterns during similar summers, over the north-eastern half of the summer rainfall region, are:

- September – 9 October: Relatively dry conditions over the north-eastern half of the summer rainfall region
- 10 October – 10 November: Near-normal rainfall over the north-eastern half of the summer rainfall region
- 10 November – end of December: Near-normal to above-normal rainfall over the north-eastern half of the summer rainfall region
- January – mid-February: Below-normal rainfall over the north-eastern half of the summer rainfall region
- Mid-February - April: Above-normal rainfall over the north-eastern half of the summer rainfall region

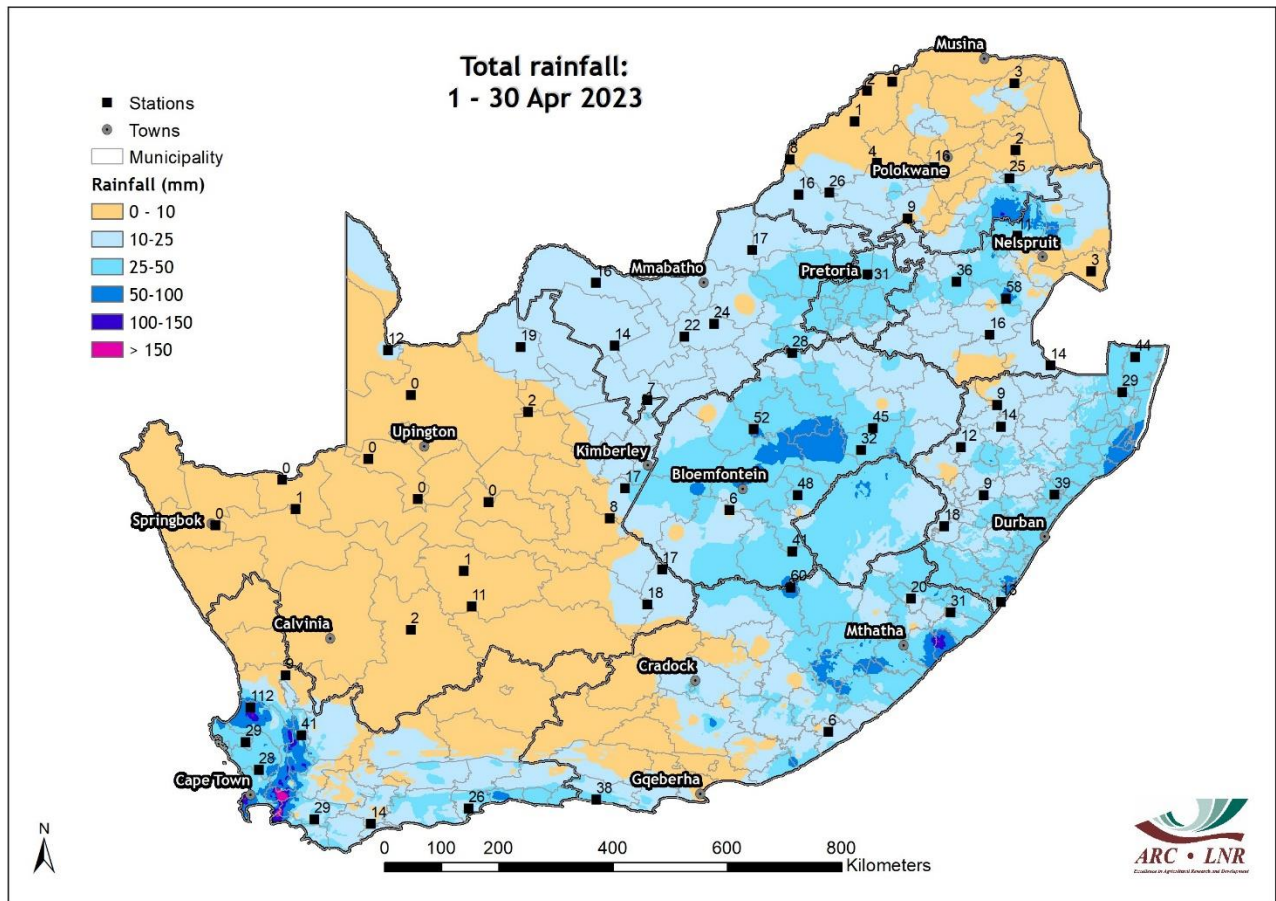
Observed conditions

Rainfall (% of long-term mean): April 2023



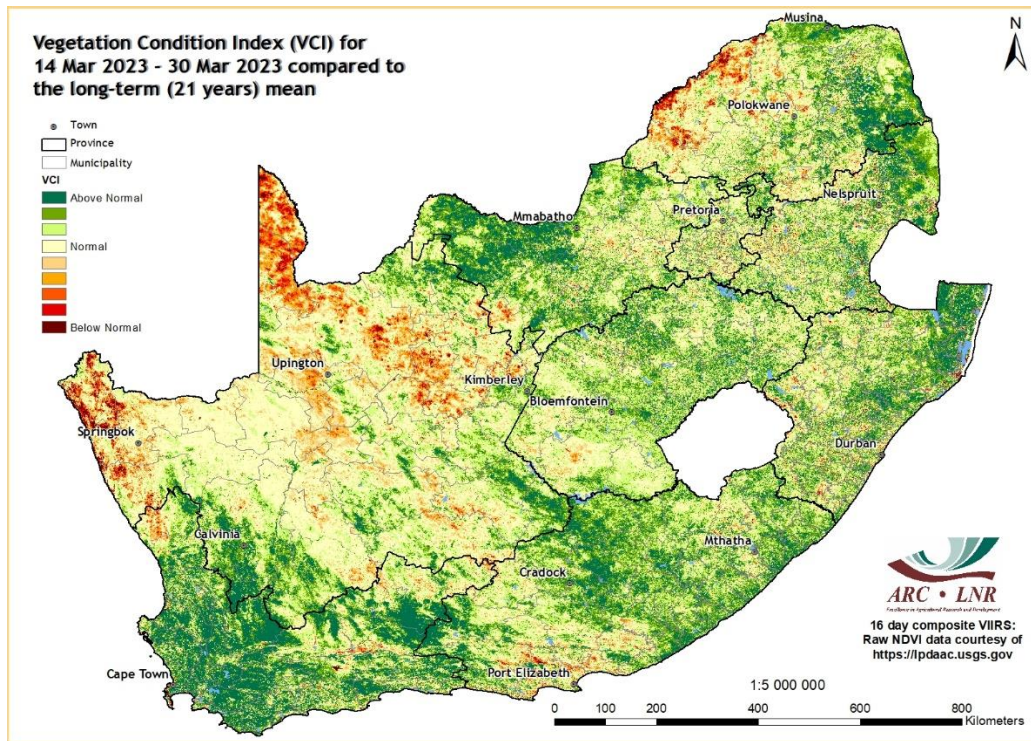
Most of the country received below average rainfall during April, except for the western parts of the winter rainfall region as well as the central parts of the Free State where rainfall was normal to above normal.

Rainfall (mm): April 2023



Large parts of the summer rainfall region received at least some rain during April, but totals were generally on the low side. Some areas that received in excess of 50 mm during the month include the Boland and parts of the Swartland, central parts of the Free State as well as areas along the coast of KZN into the northeastern coastal areas of the Eastern Cape.

Vegetation Condition Index: March 2023



By mid- to late-March, vegetation activity still reflected widespread above-normal rainfall since mid-October over most of the interior. The winter rainfall region and large areas in the south benefitted from above-normal rain since December. Due to drier conditions setting in, vegetation activity over the Northern Cape western parts of Limpopo was below normal.

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:

Accumulations of GFS 6-hourly rainfall fields, done in Google Earth Engine

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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YOUNG PEOPLE

SEE THE FUTURE

Differently



The way in which **young people see the future** speaks of a positive attitude – and of the choice to be relevant in a new era. AgriSeker shares this excitement about the future of agriculture in South Africa. Our motto is 'A certain future', after all.

AgriSeker is motivated to make a contribution to the future of our country with a dedicated focus on agriculture through knowledge, understanding and participation in this sector. Our focus is on producers and young people, because for agriculture to survive, we need you.

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