



# CUMULUS

17 OCTOBER 2024

by J Malherbe, R Kuschke

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# Contents

**Summary ..... 3**  
 Thundershowers later, mostly in the east..... 3  
**Overview of expected conditions over the main agricultural production areas..... 4**  
**Daily summary of expected conditions (17 – 22 Oct.) ..... 5**  
**Medium term rainfall and temperature summary ..... 8**  
**Possible extreme conditions - relevant to agriculture ..... 9**  
**Seasonal forecast ..... 10**  
 Current ENSO conditions: ..... 10  
 Seasonal forecasts issued by various international institutions ..... 12  
**Observed conditions ..... 13**  
 Rainfall (% of long-term mean): 1 - 15 Oct 2024..... 13  
 Rainfall (mm): 1 - 15 Oct 2024 ..... 14  
 Vegetation Condition Index: September 2024..... 15  
**Sources of information ..... 16**




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# Summary

## Thundershowers later, mostly in the east

Conditions are trending more favorable for early summer rainfall over the eastern parts of the interior, including Mpumalanga and northeastern parts of the Free State during the next few days. Large-scale atmospheric circulation patterns remain rather unfavorable for widespread above-normal rainfall across the southern African subcontinent, but parts of the Highveld, including the early planting areas in the east of the summer-grain production region, may see some widespread thundershowers on Sunday and early next week due to an upper-air low to the south. Thundershowers during early summer and during such conditions have an enhanced tendency to become severe.

It will be cool for this time of the year on average over large parts of the country. Cold conditions are expected over the southern to southeastern parts early next week when the upper-air low moves over the region together with a strong influx of cold air from the southeast. With the cold air in the southeast and associated upper-air lows moving across the southeastern parts of the country, the broad pattern remains like that of the first half of the month, keeping much of the interior dry. The pattern however allows for the development of thundershowers over the eastern parts, which is typical of spring and early summer even though large areas should still receive below-normal rainfall.

### **The following is a summary of weather conditions during the next few days (until early next week):**

- Temperatures will on average be near normal, but below normal over the southern parts.
- The southern to western parts will be under the influence of cooler westerly to southerly winds most of the time, keeping it cool with low minimum temperatures.
- Rainfall will be below normal over most of the country, but above normal over the Eastern Highveld, KZN and eastern parts of the Eastern Cape.
- A band of isolated thundershowers will be present over the central to southeastern parts on Thursday.
- It will become cloudy, windy and cold over the southeastern parts on Saturday with widespread showers and thundershowers.
- Thundershowers will spread northwards over the eastern to northeastern parts, including the central to eastern summer-grain production region, on Sunday and early next week.
- **The winter rainfall region** will be mild to cool most of the time. Some showers are expected over the southern to eastern parts on Friday and Saturday, but the rest of the region is expected to remain dry during the period. It will become warm over the western to northwestern parts early next week with easterly winds over the region. Strong southeasterlies may develop in the southwest early next week.
- **The summer-grain production region** will experience early summer thundershowers on several days. It will be warm during the weekend and cool by early next week. Rainfall totals may be above average over the eastern parts of the region.

# Overview of expected conditions over the main agricultural production areas

An upper-air trough will result in thundershowers over the eastern to northeastern parts early next week, including the central to eastern parts of the summer-grain production region. The rest of the period will be relatively dry except for isolated thundershowers over parts of the interior.

## ***Maize production region:***

**It will be mild during the next few days with thundershowers at times. While scattered thundershowers are possible initially over the western to central parts, the best distribution of thundershowers may occur early next week over the central to eastern parts.**

- Maximum temperatures over the eastern maize-production areas will range between 12°C and 30°C, with highest temperatures during the weekend and lowest temperatures early next week. Minimum temperatures will be in the order of 7°C to 16°C.
- Maximum temperatures over the western maize-production areas will range between 25°C and 32°C. Minimum temperatures will be in the order of 11°C to 17°C.
- **Thursday (17<sup>th</sup>):** Partly cloudy and mild to warm with moderate north-westerly winds. Scattered thundershowers are possible over the western to central parts.
- **Friday to Saturday (18<sup>th</sup> to 19<sup>th</sup>):** Sunny to partly cloudy, warm and windy.
- **Sunday (20<sup>th</sup>):** Sunny to partly cloudy, warm and windy. It will become cloudy with scattered thundershowers over the central to eastern parts while also becoming cooler with fresh easterly winds over the entire region later.
- **Monday to Wednesday (21<sup>st</sup> – 23<sup>rd</sup>):** The region may experience scattered thundershowers on Monday and Tuesday, while it will also be cooler and windy. It should clear from the west by Wednesday according to current forecasts.

## ***Cape Wine Lands and Ruens:***

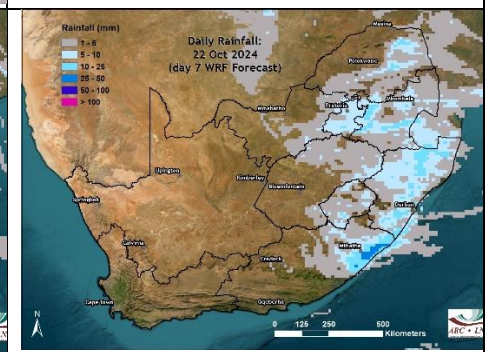
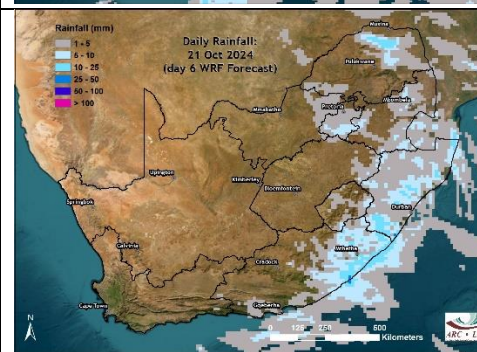
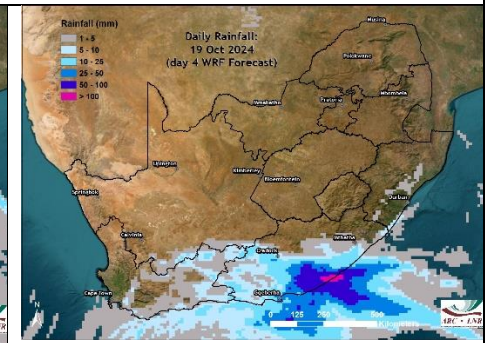
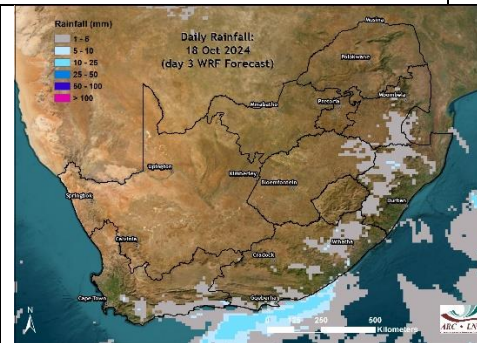
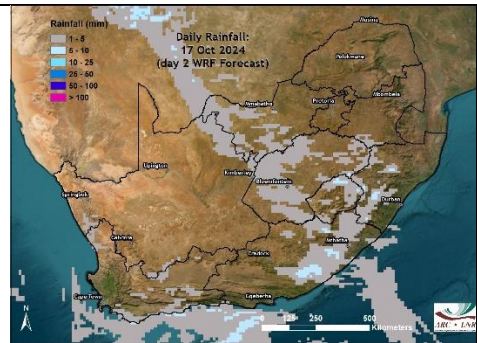
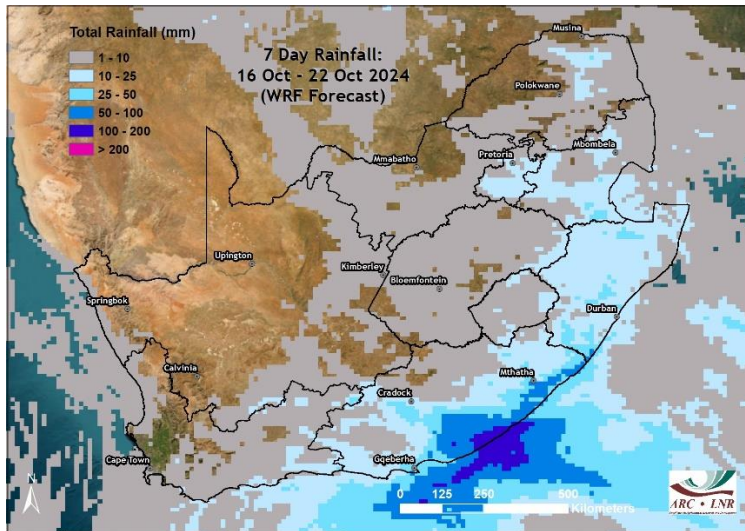
The region will be mild to cool, becoming warm over the western to north-western parts early next week when easterly winds will start dominating with strong south-easterlies in the southwest. Showers are possible over the southern to eastern parts on Friday and Saturday, but the rest of the region should remain dry for the most part.

# Daily summary of expected conditions (17 – 22 Oct.)

(GFS forecast downscaled using WRF)

## Rainfall

- The central to southern and eastern parts of the country will receive rain during the period. Totals may exceed 25 mm over some of the eastern to southeastern parts. Most areas over the central to northern interior will receive only light falls.



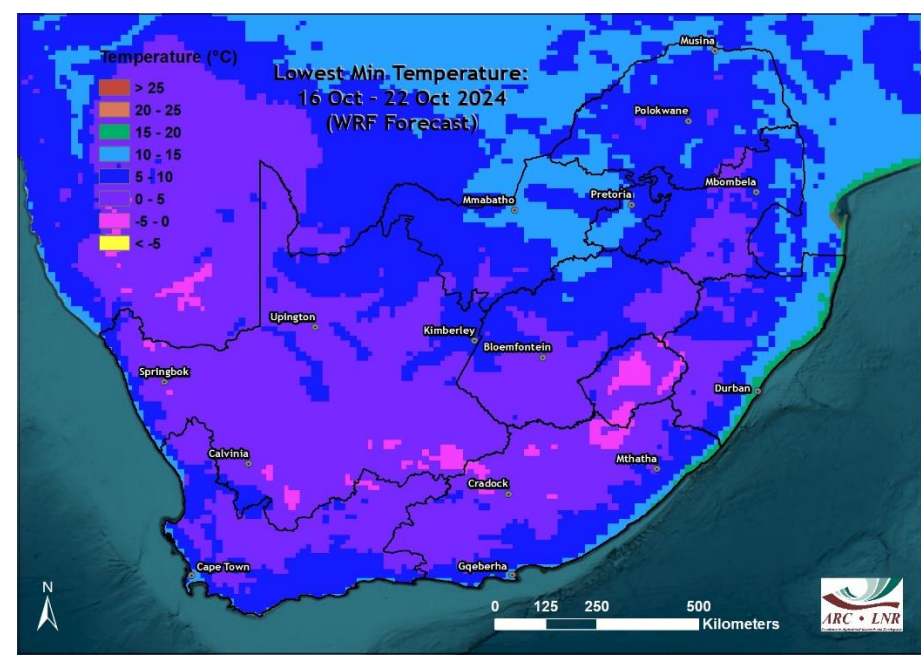
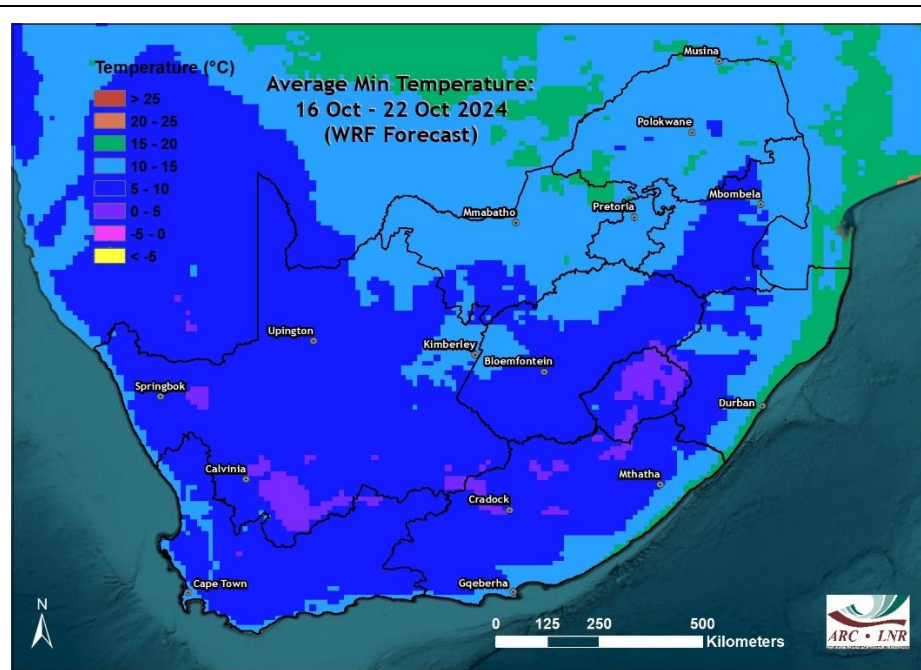
- Isolated thundershowers will occur over the central to south-eastern parts initially (Thursday).
- Thundershowers will relocate further east over the interior on Friday.
- Widespread rain and thundershowers may occur over the southeastern parts on Saturday, spreading northwards over KZN, Mpumalanga, Gauteng, northeastern Free State, eastern North West and Limpopo on Sunday and into early next week.

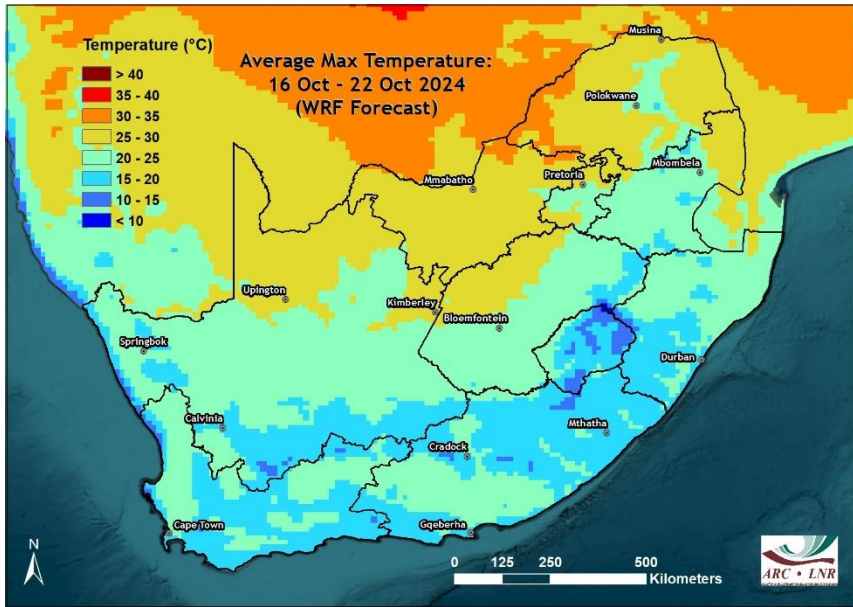
### Average minimum temperatures

- Average minimum temperatures will range between 5 and 15°C over most parts.

### Lowest minimum temperatures

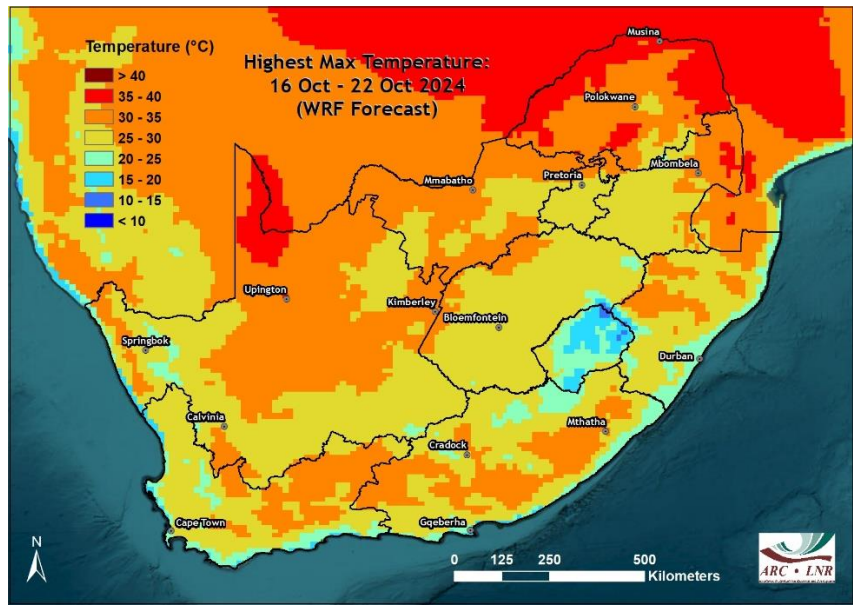
- Lowest minimum temperatures will remain above 5°C over most of the summer-grain production region, with lower temperatures possible over the eastern high-lying areas including along the Drakensberg.
- Lowest minimum temperatures will be close to freezing over the southern escarpment.





**Average maximum temperatures**

- Average maximum temperatures will be above 25°C over the northern parts of the country and below 20°C over the southern half of the country.

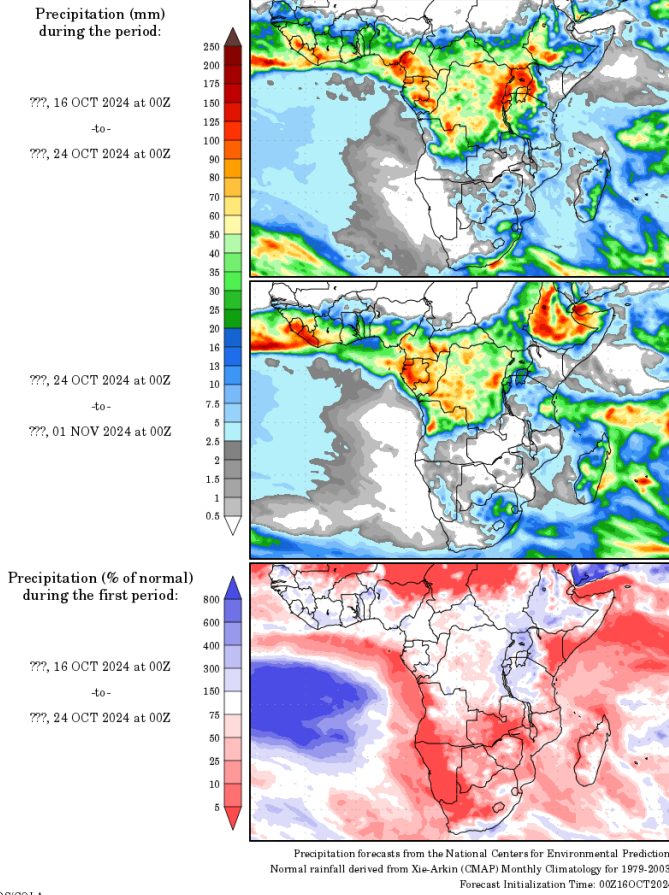


**Highest maximum temperatures**

- Highest temperatures during the next few days are expected to exceed 35°C over the Limpopo River Valley, Lowveld and northern parts of the Northern Cape.

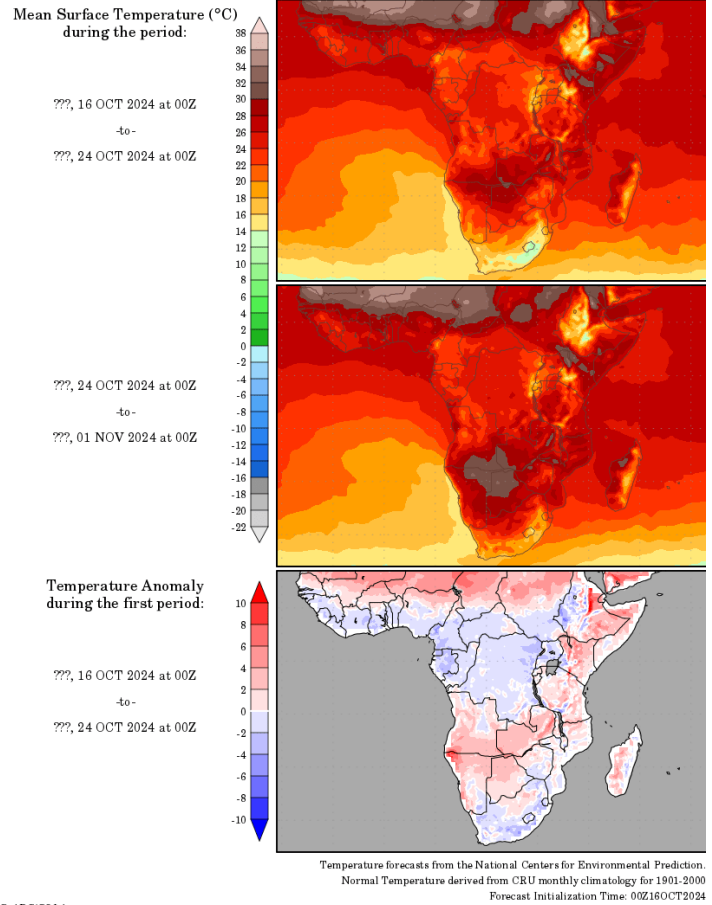
# Medium term rainfall and temperature summary

## Precipitation Forecasts

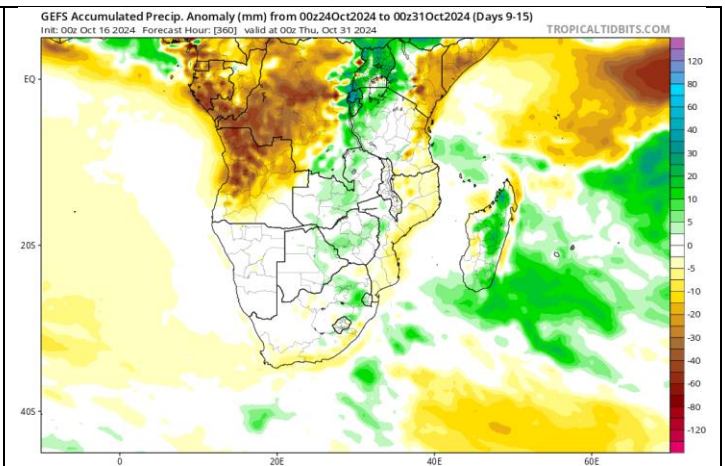
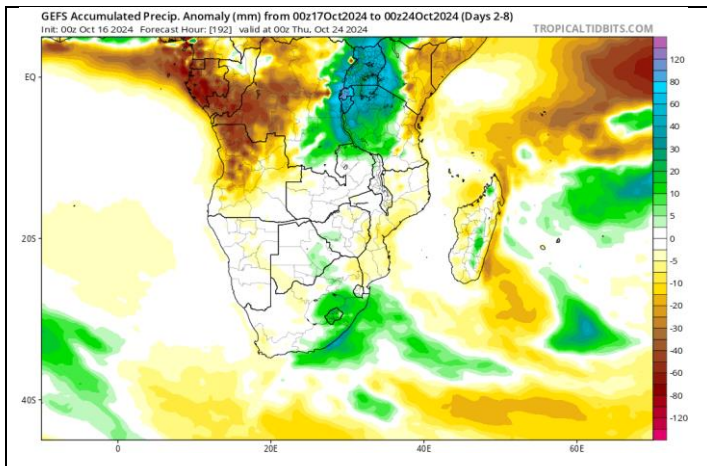


GrADS/COLA

## Temperature Forecasts



GrADS/COLA



**The GFS ensemble forecast (consisting of several forecasts with small initialization differences) favors below-average rainfall through most of October over southern Africa, but above-average rainfall over some of the eastern parts of the country, including parts of the summer-grain production region.**



# 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 17 October) 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 / ECMWF models) of weather conditions during the coming week, the following may negatively affect agricultural activities and production:**

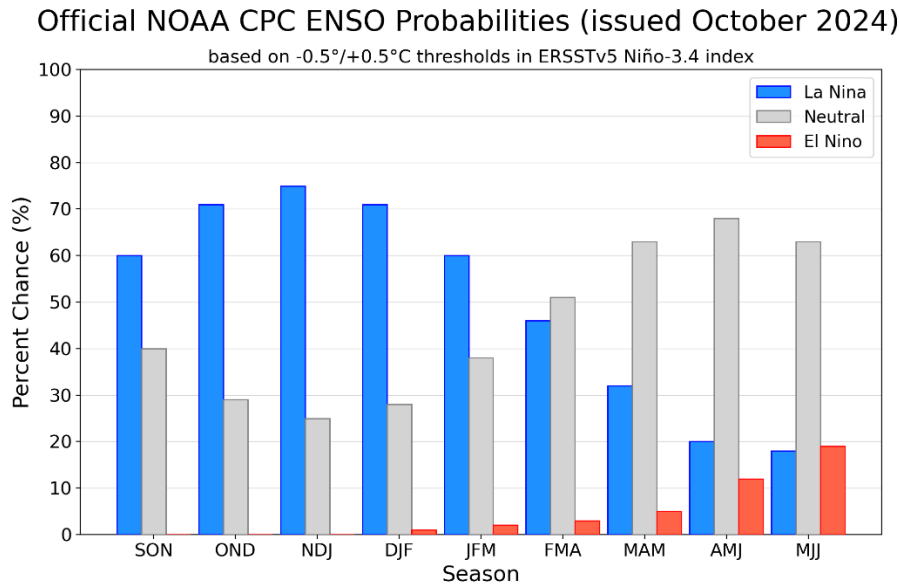
- **Warm, dry and windy conditions will increase the fire hazard where vegetation is dry:**
  - Western to central, southern and south-eastern interior: **Thursday to Saturday (17<sup>th</sup> - 19<sup>th</sup>).**
  - Southwestern coastal areas: **Early next week.**
- **It will be hot, with maximum temperatures exceeding 35°C:**
  - Lowveld and Limpopo River Valley: **Friday to Sunday (18<sup>th</sup> – 20<sup>th</sup>)**
- **Low minimum temperatures will occur with possible light frost:**
  - Southern escarpment and further east up to the southern Drakensberg: **Sunday to Tuesday (20<sup>th</sup> – 22<sup>nd</sup>).**
- **Thundershowers may become severe, producing strong winds and hail:**
  - Northern KZN and Mpumalanga: **Sunday (20<sup>th</sup>).**
  - Eastern North West, Gauteng, western Mpumalanga, northeastern Free State, southern Limpopo: **Monday and Tuesday (21<sup>st</sup>, 22<sup>nd</sup>).**
- **Cold, wet and windy conditions may negatively impact small stock:**
  - Karoo, southern escarpment: **Friday and Saturday (18<sup>th</sup> – 19<sup>th</sup>).**
  - Interior of the Eastern Cape: **Saturday (18<sup>th</sup>) until early next week.**

# Seasonal forecast

## Current ENSO conditions:

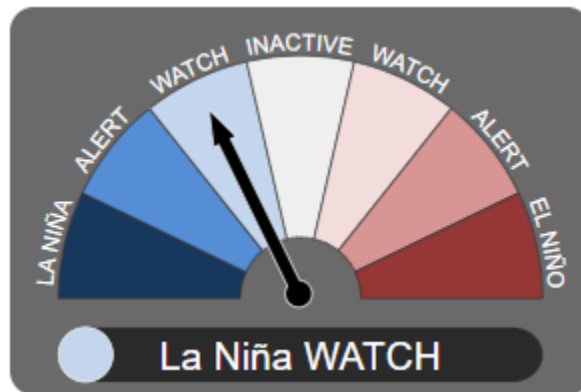
ENSO is in neutral state, but there are several indications that a La Niña will develop during the next few months. Especially the atmospheric indicators, such as trade winds along the equator and cloud patterns, are leaning more strongly towards a developing La Niña. The IRI forecast leans more strongly to the expectation of a La Niña during the coming summer, while the Australian Bureau of Meteorology model data more strongly leans towards ENSO neutral conditions this coming summer.

The graph below shows the International Research Institute for Climate and Society (IRI)'s latest ENSO forecast which maintains the expectation of borderline La Niña conditions by mid-summer:



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

Likewise, the Australian Bureau of Meteorology keeps their outlook to “La Niña Watch” .....



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

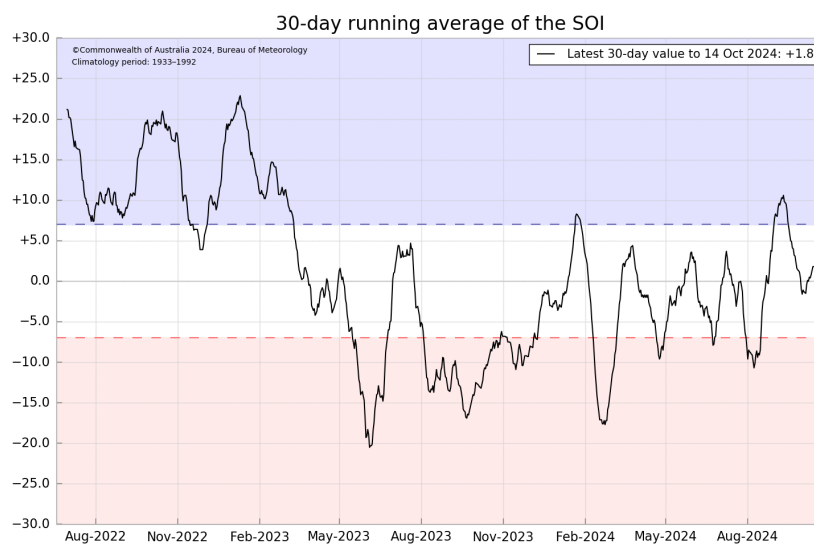
In their most recent update (issued 10 October), the **IRI** notes that “As of mid-September 2024, ENSO-neutral conditions persist in the western equatorial Pacific, while oceanic and atmospheric indicators started to show signs of La Niña development, including a sustained strengthening of trade winds, and reduced convection over the central-eastern Pacific during last two months. In line with the strengthened trades, the subsurface cold temperature anomalies have also strengthened during recent weeks. The IRI ENSO prediction plume forecasts equal chances for ENSO-neutral conditions and La Nina for Sep-Nov, 2024. Borderline La Niña conditions are forecasted during Oct-Dec (60% chances) that continue during the boreal winter. ENSO-neutral conditions subsequently re-emerge as the most likely during the boreal spring and remain so till the end of the forecast period.”.... <https://iri.columbia.edu>

In their most recent update (15 October), the **Australian Bureau of Meteorology** states that “The El Niño–Southern Oscillation (ENSO) is neutral, with both sea surface temperatures (SSTs) in the central equatorial Pacific Ocean and atmospheric patterns at ENSO-neutral levels. Atmospheric indices, such as those related to patterns of surface pressure, cloud and trade winds, are broadly consistent with an ENSO-neutral state. Although some have displayed La Niña-like signals over the past several weeks, these signals have not been consistent.

The Bureau's model suggests SSTs are likely to remain within the ENSO-neutral thresholds ( $-0.8\text{ }^{\circ}\text{C}$  to  $+0.8\text{ }^{\circ}\text{C}$ ) throughout the forecast period to February 2025.

Of the 6 other climate models surveyed, 4 also suggest SSTs will remain within the ENSO-neutral thresholds. Only one model suggests SSTs in the tropical Pacific are likely to exceed the La Niña threshold (below  $-0.8\text{ }^{\circ}\text{C}$ ) throughout November to January, with another forecasting SSTs to briefly exceed the threshold, but only during December and January. The chance of a La Niña event developing in the coming months has decreased compared to recent outlooks. If a La Niña were to develop, it is forecast to be relatively weak (in terms of the strength of the SST anomaly) and short-lived, with all models forecasting neutral values in February..”... - <http://www.bom.gov.au>.

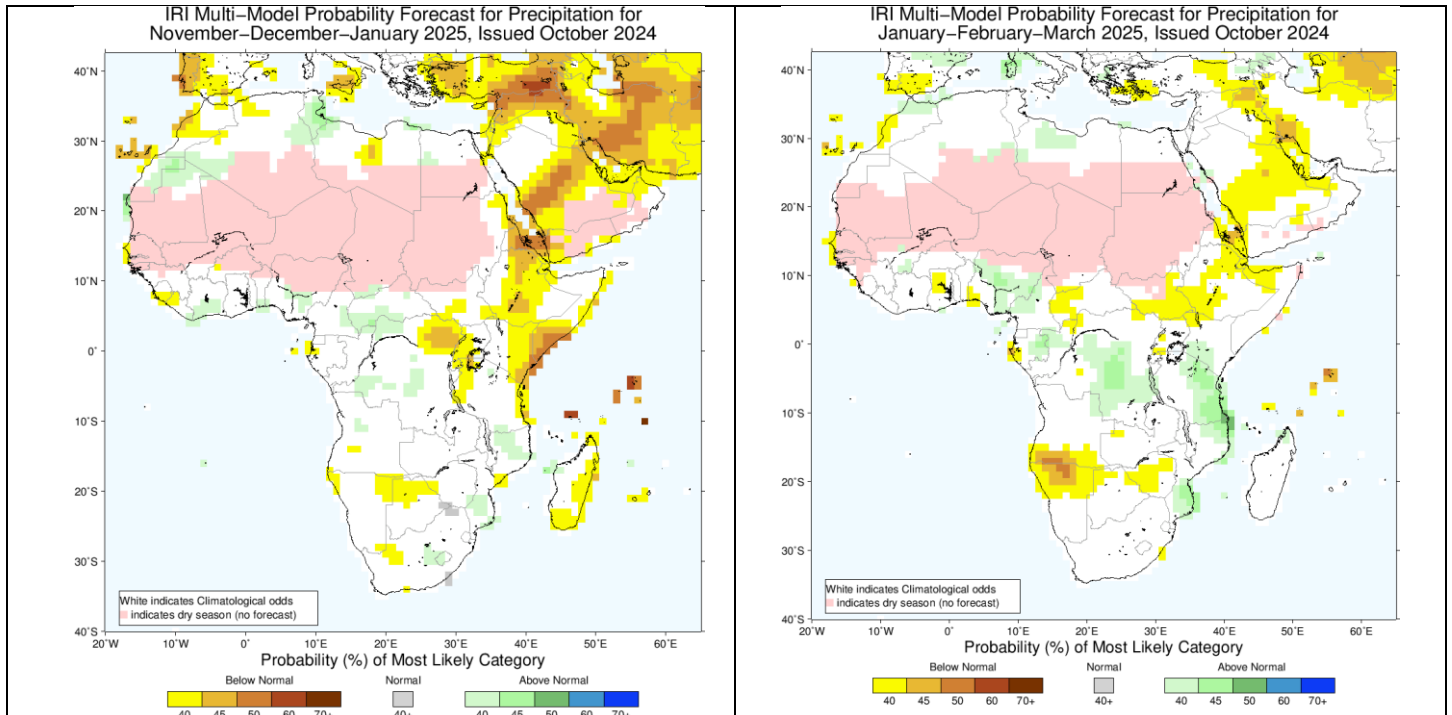
The 30-day Southern Oscillation Index (SOI) is currently +1.8 and therefore representing atmospheric pressure patterns in the Australia – Pacific region indicative of ENSO Neutral conditions.



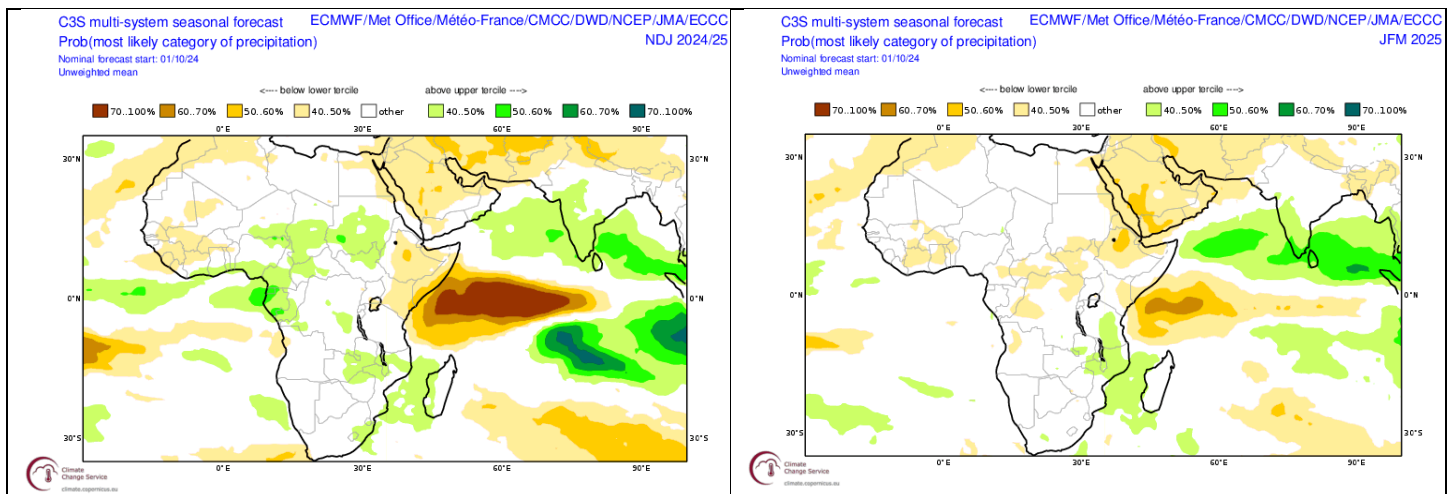
**Australian Bureau of Meteorology** - <http://www.bom.gov.au>

# Seasonal forecasts issued by various international institutions

Seasonal forecasts (updated in October 2024) remain relatively neutral for summer given the weak signal from the Pacific Ocean. For example, the IRI seasonal forecast for January to March doesn't indicate a clear signal for either wet or dry conditions over the summer rainfall region of South Africa. The overall signal over the subcontinent, with a dry bias over northern Botswana and Namibia, is associated with a larger-scale dry signal as would be present during weak El Niño conditions. With the uncertainty regarding further development of a La Niña, these forecasts will likely be adjusted later. The multi-model assimilated forecast (second pair of maps) also doesn't show any strong wet or dry signal over the summer rainfall region.



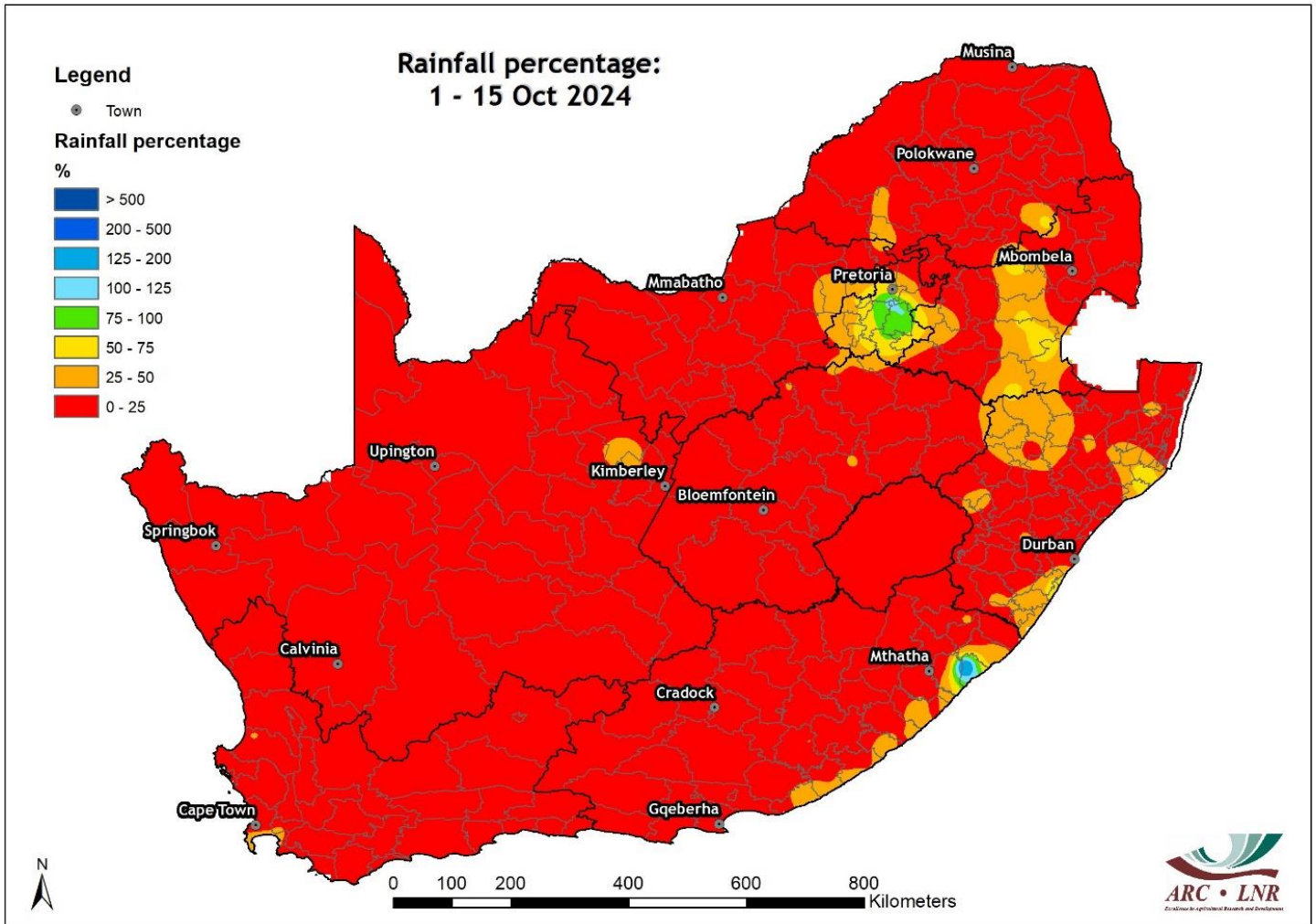
**Probabilistic forecasts by the International Research Institute for Climate and Society (IRI) for rainfall for early summer (November-January 2024/25; left - Forecast issued in 2024-10) and late summer (January to March 2025, right – Forecast issued in 2024-10).**



**Probabilistic multi-model forecasts by the ECMWF Copernicus Programme for rainfall for mid-summer (November-January 2024/25; left - Forecast issued in 2024-10) and late summer (January to March 2025, right – Forecast issued in 2024-10).**

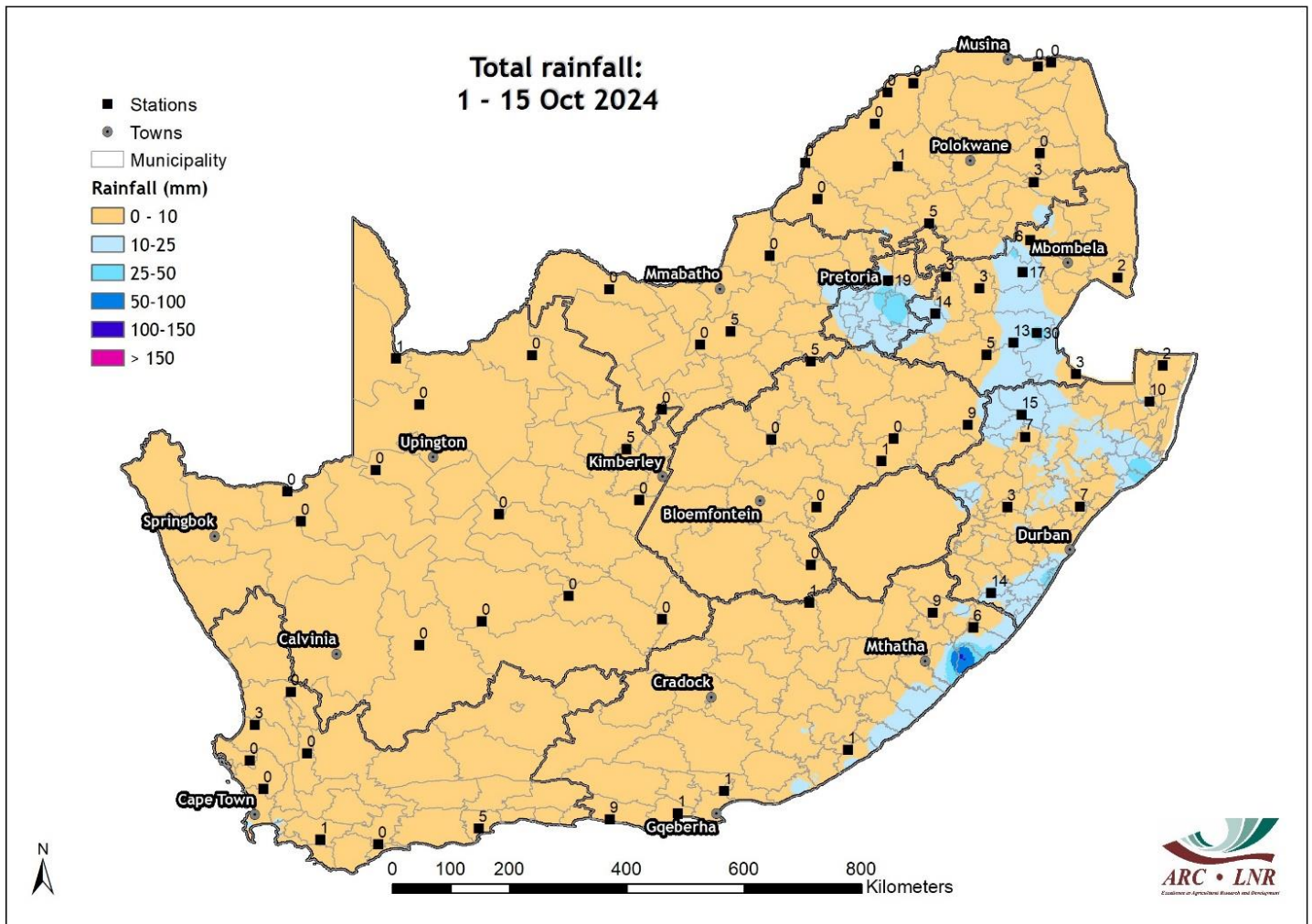
# Observed conditions

## Rainfall (% of long-term mean): 1 - 15 Oct 2024



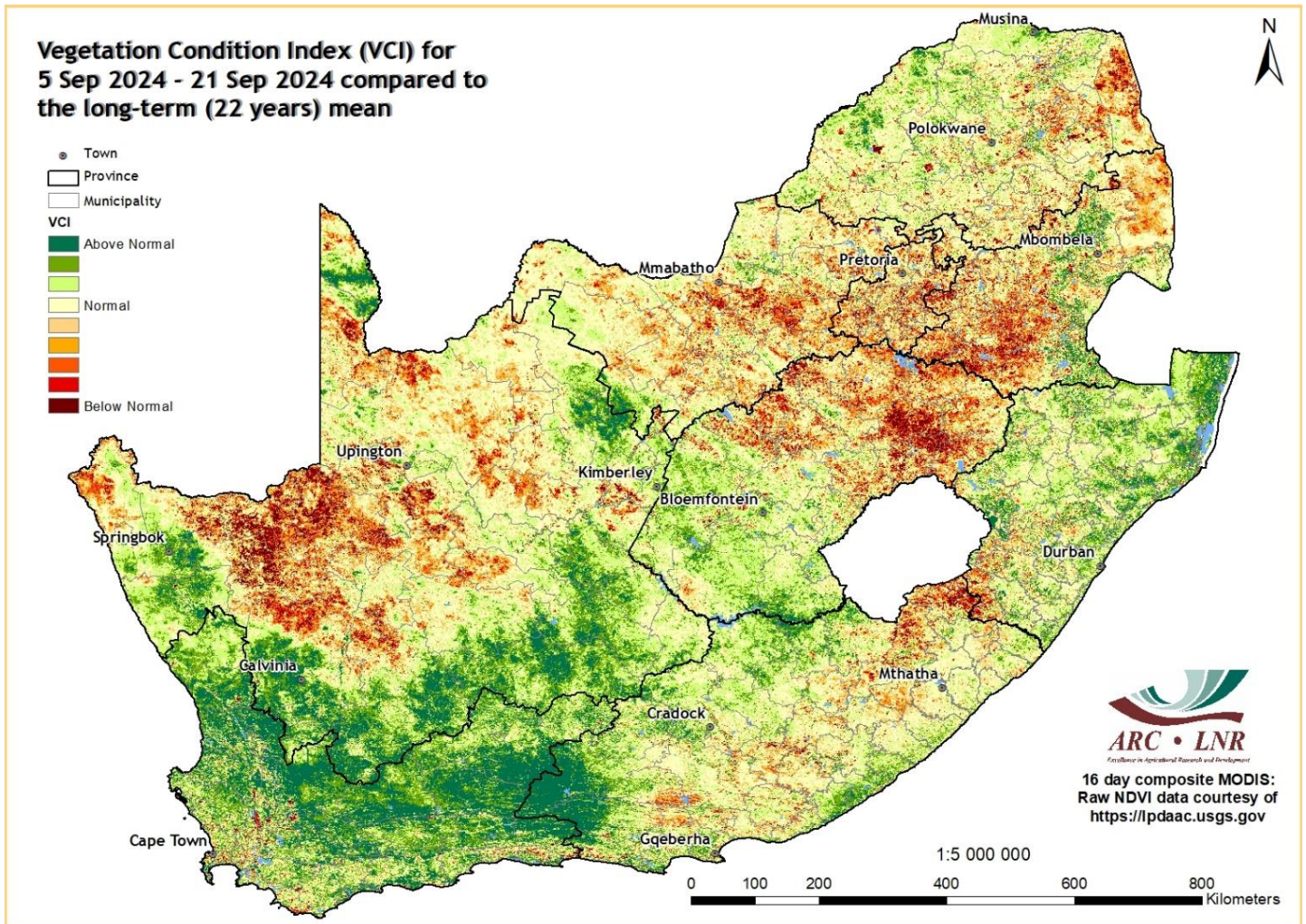
*Most of the country has been dry during October so far.*

# Rainfall (mm): 1 - 15 Oct 2024



*Most of the country hasn't received rain so far during October. Parts of the Eastern Highveld received some rain during the last two days.*

# Vegetation Condition Index: September 2024



*During September, vegetation activity still reflected the drier conditions during mid-to-late summer 2023/24 over parts of the maize-production region, especially western Mpumalanga and northern parts of the Free State. Vegetation activity is also below normal over the central to northern parts of the Northern Cape. Widespread above-normal rainfall over the southwestern parts has resulted in above-normal vegetation activity over these areas, including the winter rainfall region.*

# 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:**

WRF model downscaling of GFS forecasts.

## **Fires:**

MODIS data, distributed by the Land Processes Distributed Active Data Center (LP DAAC), located at the US Geological Survey's EROS Data Center

## **Soil moisture:**

<https://nasagrace.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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Together we can make a contribution to the Future of our Country with a dedicated Focus on Agriculture

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