



# CUMULUS

24 OCTOBER 2024

by J Malherbe, R Kuschke

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# Summary

## Drier conditions ahead, light frost possible in some areas

Another cold front will impact the country during the next few days. The system will move into the winter rainfall region on Saturday. It will affect areas quite far up the west coast and western escarpment, especially for this time of the year, with light showers expected as far north as southern Namibia. The system will move across the interior from the southwest and will bring cooler, windy conditions with cold mornings for this time of the year to large parts of the interior. Light frost is possible over parts of the central to western and southern interior early next week. A deep low will be present over the southern parts and will be responsible for the influx of cool to cold air from the southwest over the interior. The system will also be present as a deep cut-off low in the upper air over the southern parts. Ahead of the system it will be warm to hot during the weekend while a band of thundershowers may develop over the northeastern parts. These thundershowers will again tend to become severe as is often the case during early summer, given the strong winds aloft (due to the deep upper-air low in the south) and dry air invading from the west.

With the cool dry air once again invading the country from the west it can be expected that drier conditions will prevail for a while, but there are some models that indicate a shift in large-scale atmospheric conditions that will result in a better distribution of rainfall over the interior towards the second week in November.

### 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.
- Cold, dry air will invade the interior from the west on Sunday, resulting in sunny, windy and cool conditions over most of the interior and cold mornings with possible frost early in the week over parts of the central to southern and western interior.
- Rainfall will be below normal over most of the country, but above normal over the southern parts and winter rainfall region.
- No rain is expected over the central interior.
- Rain and showers with cool to cold and windy conditions will develop over the southwestern parts on Sunday, moving further east over the southern parts (including the southern to western interior) and clearing by Tuesday from the west.
- A band of thundershowers will develop over the northeastern parts on Saturday and Sunday, with redevelopment expected on Monday, but further east.
- It should be dry over most of the country by Tuesday except for showers over the southeastern parts and further north along the eastern escarpment and further east.
- The windy and rainy conditions in the southeast will clear by Wednesday while it will remain dry over the interior.
- **The winter rainfall region** It will be sunny and mild initially, but it will become cloudy, windy and cold by Saturday with showers over the entire region, persisting until early Tuesday.
- **The summer-grain production region** will be sunny and dry most of the time. Thundershowers will develop over the central to eastern parts of the region on Saturday and Sunday, but this will clear from the west as dry westerly winds will invade most of the region by Monday and Tuesday with showers possible only over the far eastern parts. It will be cool to cold in the mornings next week.

# Overview of expected conditions over the main agricultural production areas

The upper-air low to the south during the weekend may result in some thundershowers over the eastern parts of the region by Sunday and early next week. More significantly, the surface cold front and dry westerly winds will result in sunny and dry conditions for a few days starting early next week, with low minimum temperatures for this time of the year early next week.

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

**It will be relatively dry of over the summer-grain production region during the next few days except for possibly some thundershowers over the central to eastern parts by Saturday/Sunday and early next week. Evaporation will be high given the sunny and windy conditions expected most of the time and relatively high temperatures early in the period.**

- Maximum temperatures over the eastern maize-production areas will range between 20°C and 31°C, with highest temperatures during the weekend and lowest temperatures early next week. Minimum temperatures will be in the order of 5°C to 13°C, with lowest temperatures towards the high-lying areas early next week.
- Maximum temperatures over the western maize-production areas will range between 19°C and 32°C, with lowest temperatures early next week and towards the southwest. Minimum temperatures will be in the order of 5°C to 17°C, with lowest temperatures early next week and also towards the southwest.
- **Thursday to Saturday (24<sup>th</sup>-26<sup>th</sup>):** Sunny and warm. It will become windy over the western parts by Friday, with moderate to fresh westerly winds possible by Saturday afternoon also over the central parts. Isolated thundershowers may develop by Saturday afternoon over the central to eastern parts.
- **Sunday (27<sup>th</sup>):** Partly cloudy and warm with fresh north-westerly winds. It will be hot in the north and east. Scattered thundershowers will develop over the northern to eastern parts in the afternoon.
- **Monday to Wednesday (21<sup>st</sup> – 23<sup>rd</sup>):** Sunny and mild with moderate to fresh south-westerly to westerly winds. It will be cool in the mornings. Light frost is possible over the far-western parts in the mornings on Monday and Tuesday. It is possible that some thundershowers may still develop over the eastern parts by Monday, but most of the region should be dry and cool with westerly winds. Showers may also develop early in the week over the far-southeastern to far-eastern parts of the region, mostly along the Drakensberg.

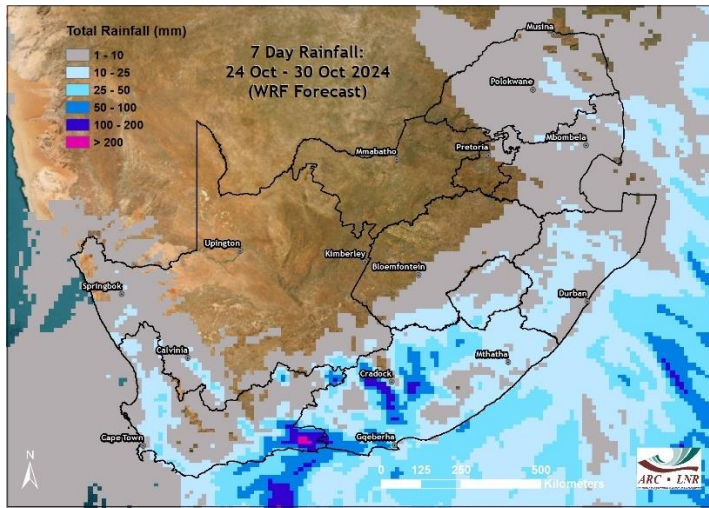
## ***Cape Wine Lands and Ruens:***

The region is expected to be mild and dry initially, but it will be unseasonably cool to cold, windy and rainy during the weekend, with showers expected to continue into early next week. It is expected to clear by Tuesday with mild and dry conditions returning according to current forecasts.



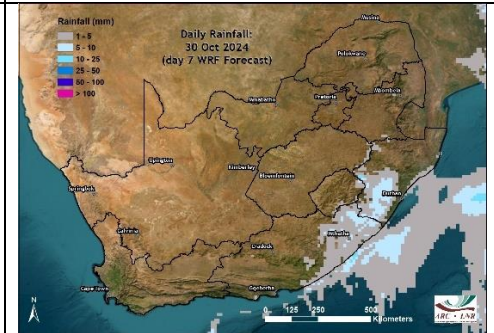
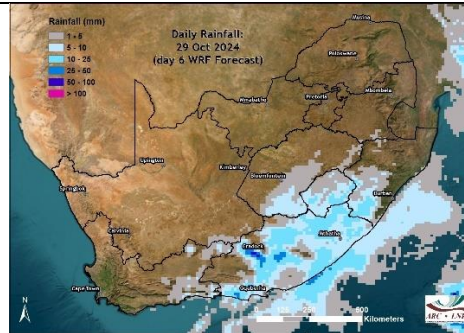
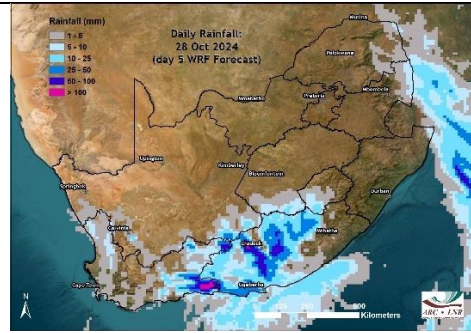
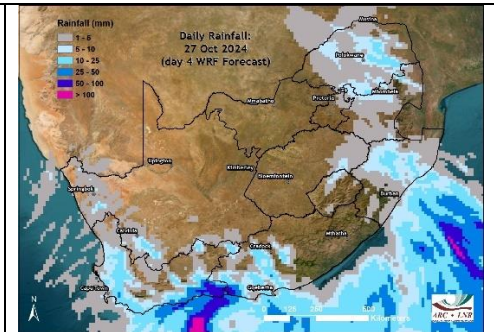
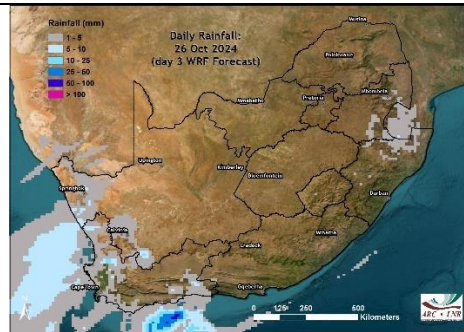
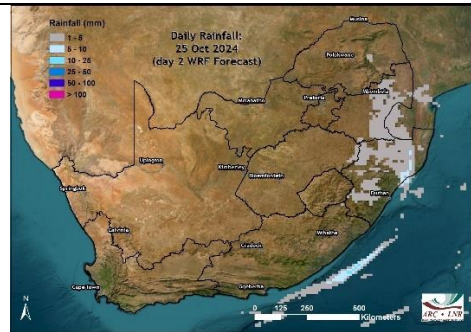
# Daily summary of expected conditions (24 – 30 Oct.)

(GFS forecast downscaled using WRF)

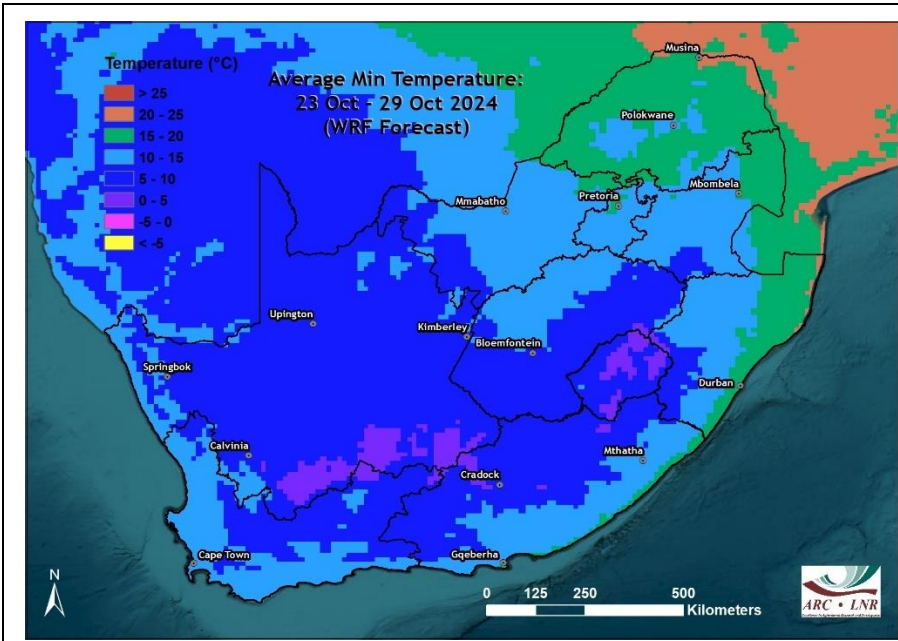


## Rainfall

- The central parts will remain dry. Thundershowers over the eastern to northeastern parts may only produce relatively low totals.
- Significant rainfall totals may occur over parts of the Eastern Cape and Western Cape.

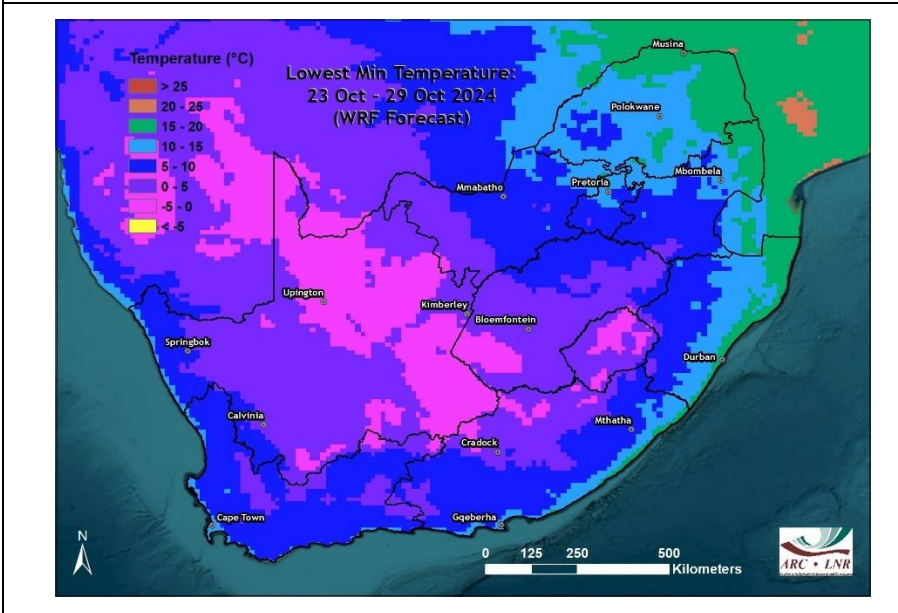


- No rain is expected over the central interior.
- It will be dry for the most part during the first few days across the country.
- Showers will develop over the southwestern parts by Sunday while a band of thundershowers will develop over the northeastern parts.
- The showers over the southern parts will extend eastwards during the early part of next week and clear in the west by Tuesday. The band of thundershowers will move further east and exit the country by Monday.
- It will be dry over the interior during the remainder of the week but the southeastern parts will experience showers until Wednesday.



### Average minimum temperatures

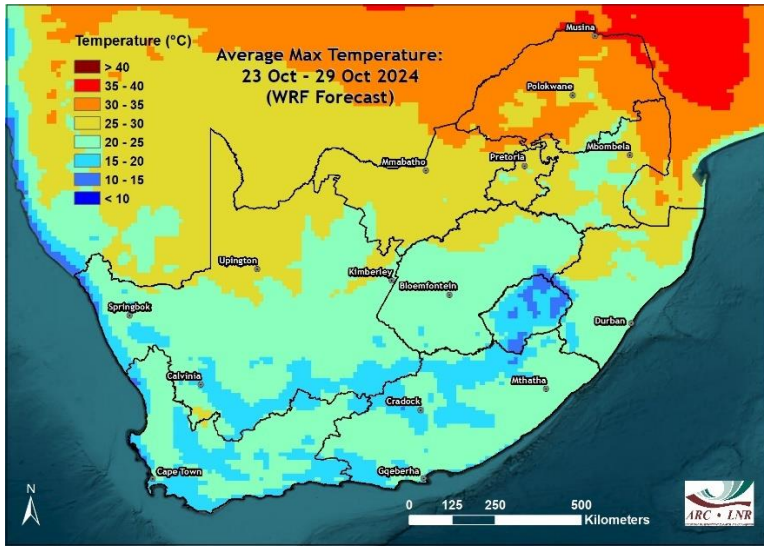
- Average minimum temperatures will range between 5 and 15°C over most parts, which is low for this time of the year.



### Lowest minimum temperatures

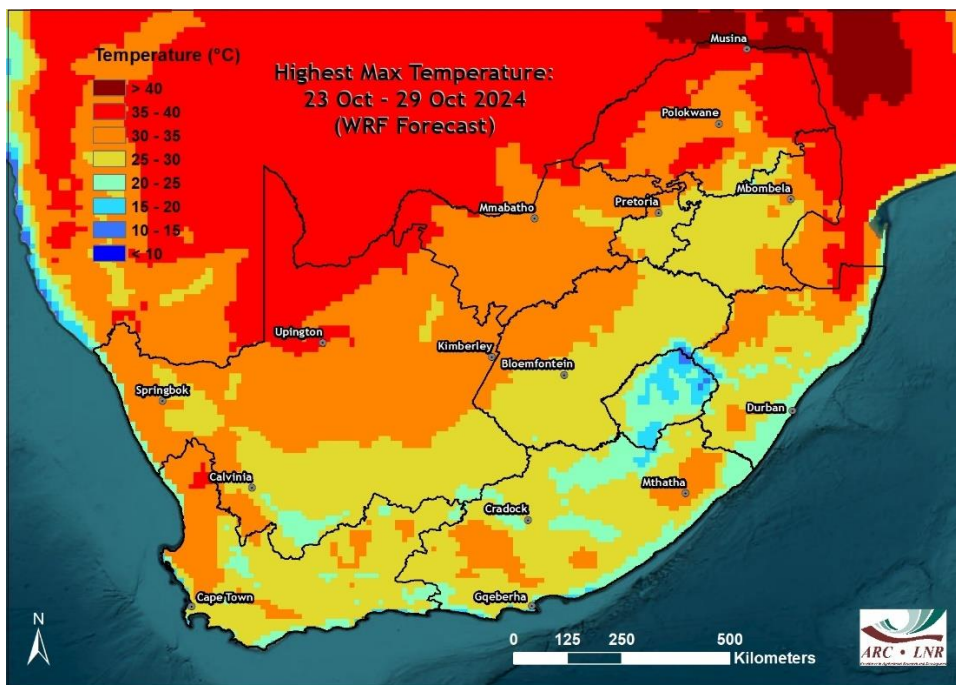
- Some areas over the central to western parts and southern escarpment may experience minimum temperatures close to 0°C early next week with the possibility of frost in places.
- Lowest minimum temperatures will remain above 15°C over the Limpopo River Valley and Lowveld.





### Average maximum temperatures

- Average maximum temperatures will be above 25°C over the northern parts of the country and below 25°C over the southern half of the country, with lower temperatures over the southern escarpment and along the Garden Route.

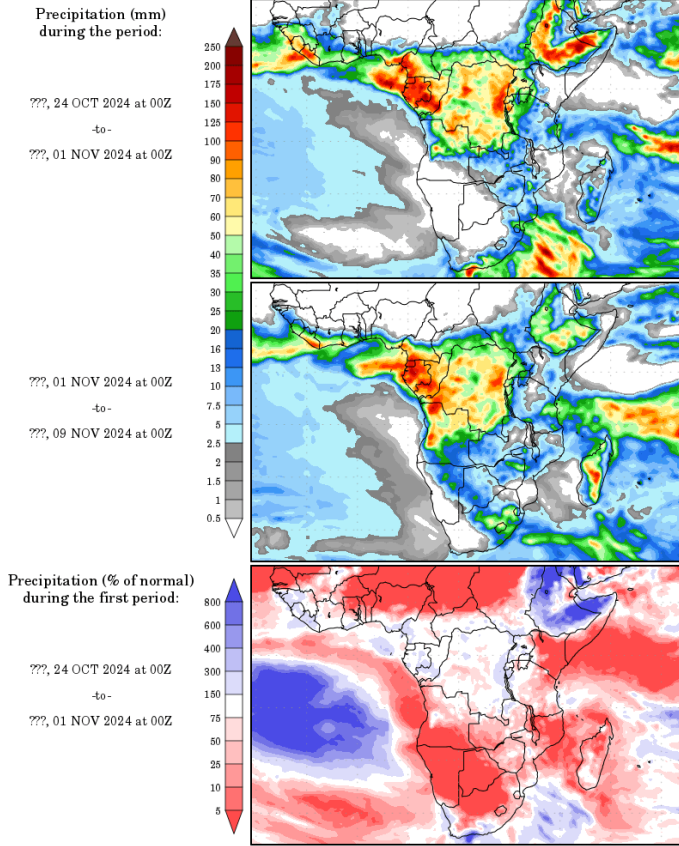


### Highest maximum temperatures

- Highest temperatures during the next few days are expected to exceed 35°C over the Limpopo River Valley, Lowveld and extreme northern parts of the Northern Cape where it will be cooler from Saturday onwards.

# Medium term rainfall and temperature summary

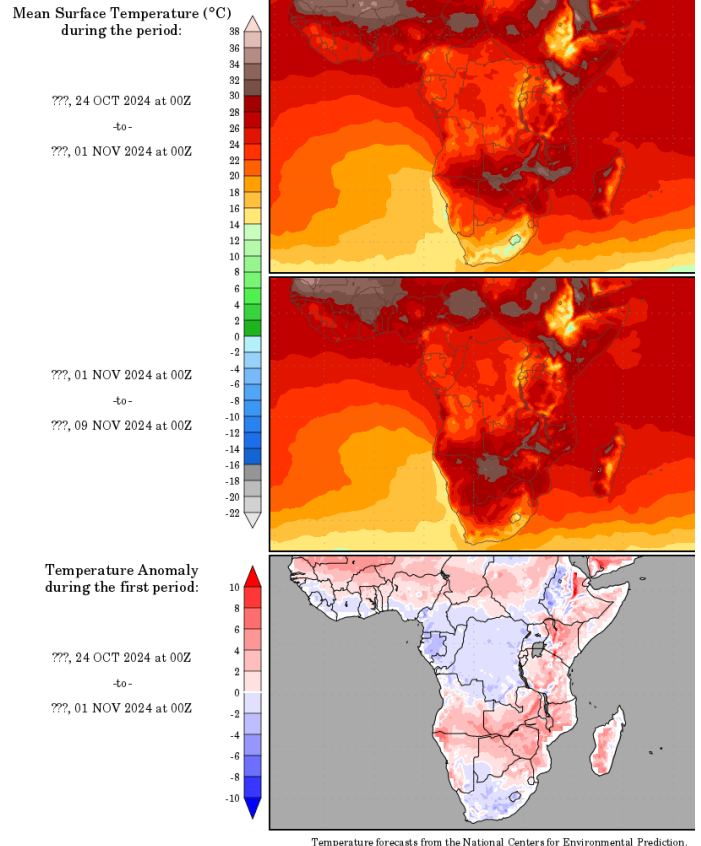
## Precipitation Forecasts



Precipitation forecasts from the National Centers for Environmental Prediction.  
 Normal rainfall derived from Xie-Arkin (CMAP) Monthly Climatology for 1979-2003.  
 Forecast Initialization Time: 00Z24OCT2024

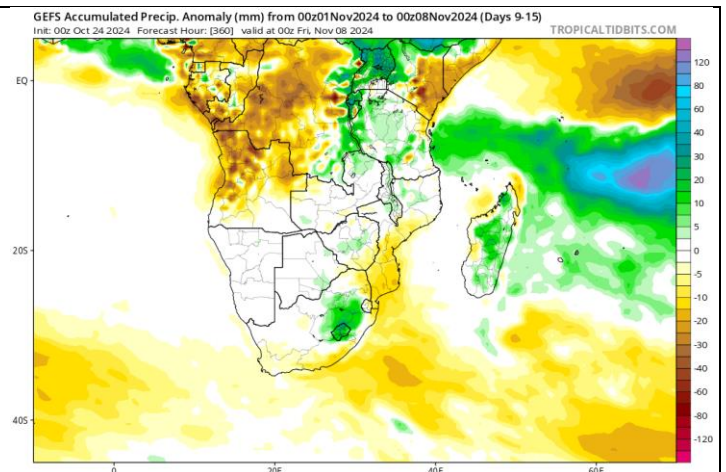
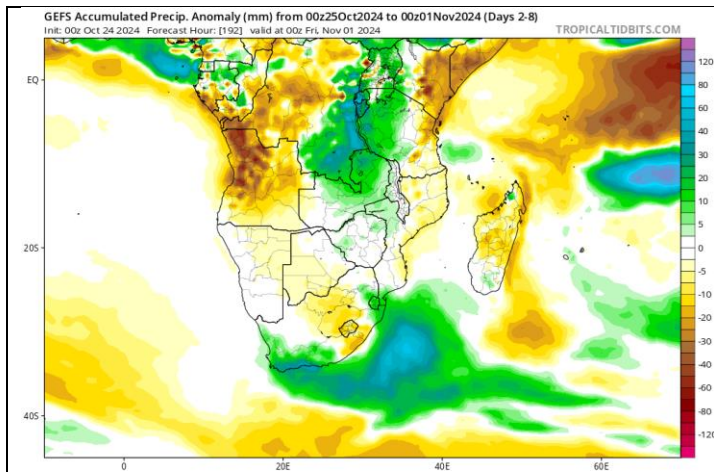
GrADS/COLA

## Temperature Forecasts



Temperature forecasts from the National Centers for Environmental Prediction.  
 Normal Temperature derived from CRU monthly climatology for 1901-2000.  
 Forecast Initialization Time: 00Z24OCT2024

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, later during the first week of November.**



# 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 24 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:**

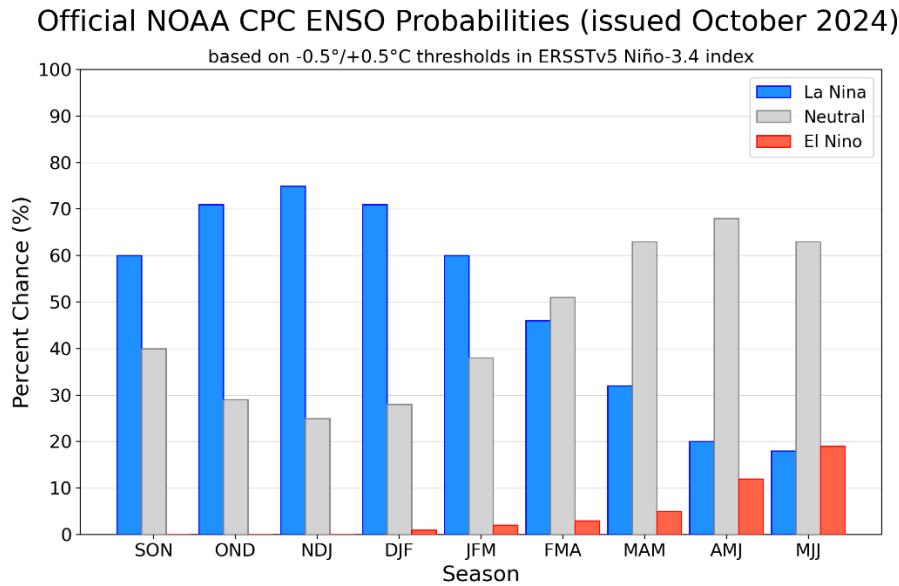
- **Windy conditions will increase the fire hazard where vegetation is dry:**
  - Western to central interior: **Saturday to Monday (26<sup>th</sup> - 28<sup>th</sup>).**
  - Northeastern interior: **Sunday and Monday (27<sup>th</sup> – 28<sup>th</sup>).**
- **It will be hot, with maximum temperatures exceeding 35°C:**
  - Limpopo River Valley: **Friday to Tuesday (25<sup>th</sup> – 29<sup>th</sup>)**
  - Lowveld: **Sunday to Tuesday (27<sup>th</sup> – 29<sup>th</sup>)**
- **Low minimum temperatures will occur with possible light frost:**
  - Parts of the central to western interior, southern escarpment: **Monday to Tuesday (28<sup>th</sup> – 29<sup>th</sup>).**
- **Thundershowers may become severe, producing strong winds and hail:**
  - Within the band of thundershowers that will develop over the eastern parts of North West, north-eastern Free State: **Sunday (27<sup>th</sup>).**
  - Within the band of thundershowers that will develop over parts of Limpopo, KZN and Mpumalanga: **Sunday and Monday (27<sup>th</sup> – 28<sup>th</sup>).**
- **Significant daily rainfall totals may occur (exceeding 50 mm in 24h):**
  - Along the Garden Route in the Western Cape: **Sunday and Monday (27<sup>th</sup> – 28<sup>th</sup>).**
- **Strong, disruptive winds are possible:**
  - Karoo, especially the southern parts: **Sunday and Monday (27<sup>th</sup> – 28<sup>th</sup>).**
- **Cold, wet and windy conditions may negatively impact small stock:**
  - Western escarpment (northern parts of the Western Cape, western parts of the Northern Cape): **Sunday to Monday (27<sup>th</sup> – 28<sup>th</sup>).**
  - Karoo, southern escarpment: **Sunday to Tuesday (27<sup>th</sup> – 29<sup>th</sup>).**
  - Interior of the Eastern Cape: **Monday to Tuesday (28<sup>th</sup> – 29<sup>th</sup>).**

# Seasonal forecast

## Current ENSO conditions:

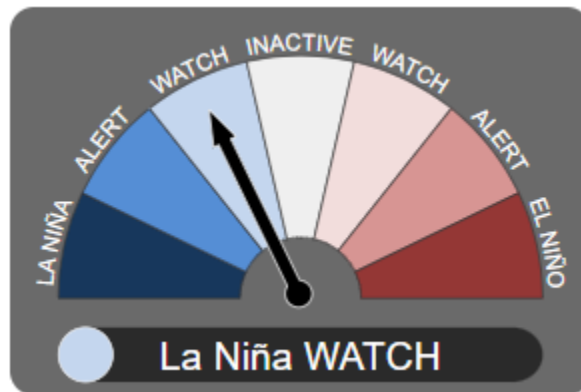
ENSO is in neutral state, but there are several indications that a La Niña will develop during the next few months. Especially the atmospheric indicators, such as trade winds along the equator and cloud patterns, are leaning more strongly towards a developing La Niña. The IRI forecast leans more strongly 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>*

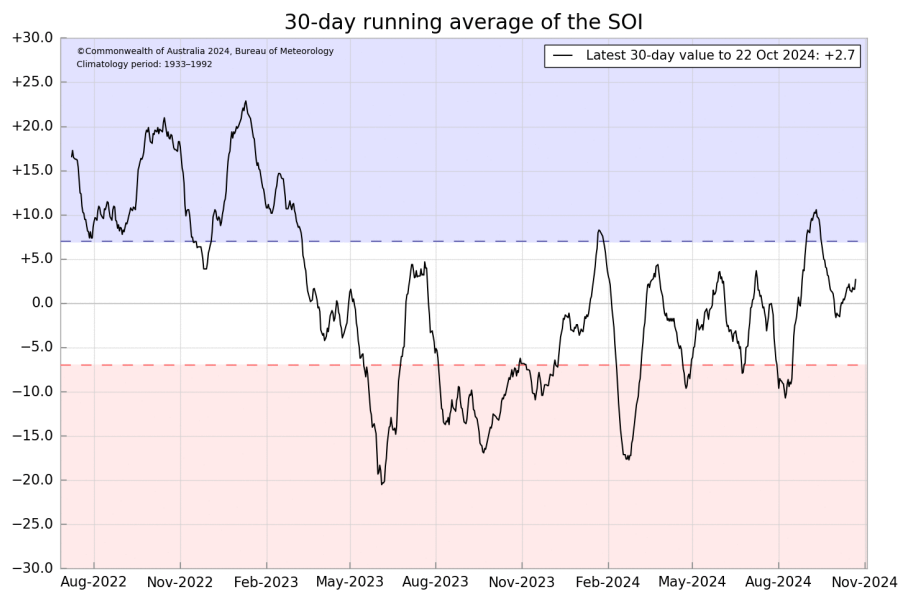
In their most recent update (issued 10 October), the **IRI** notes that “As of mid-September 2024, ENSO-neutral conditions persist in the western equatorial Pacific, while oceanic and atmospheric indicators started to show signs of La Niña development, including a sustained strengthening of trade winds, 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  $+2.7$  and therefore representing atmospheric pressure patterns in the Australia – Pacific region indicative of ENSO Neutral conditions. The SOI is however slowly trending more positive.

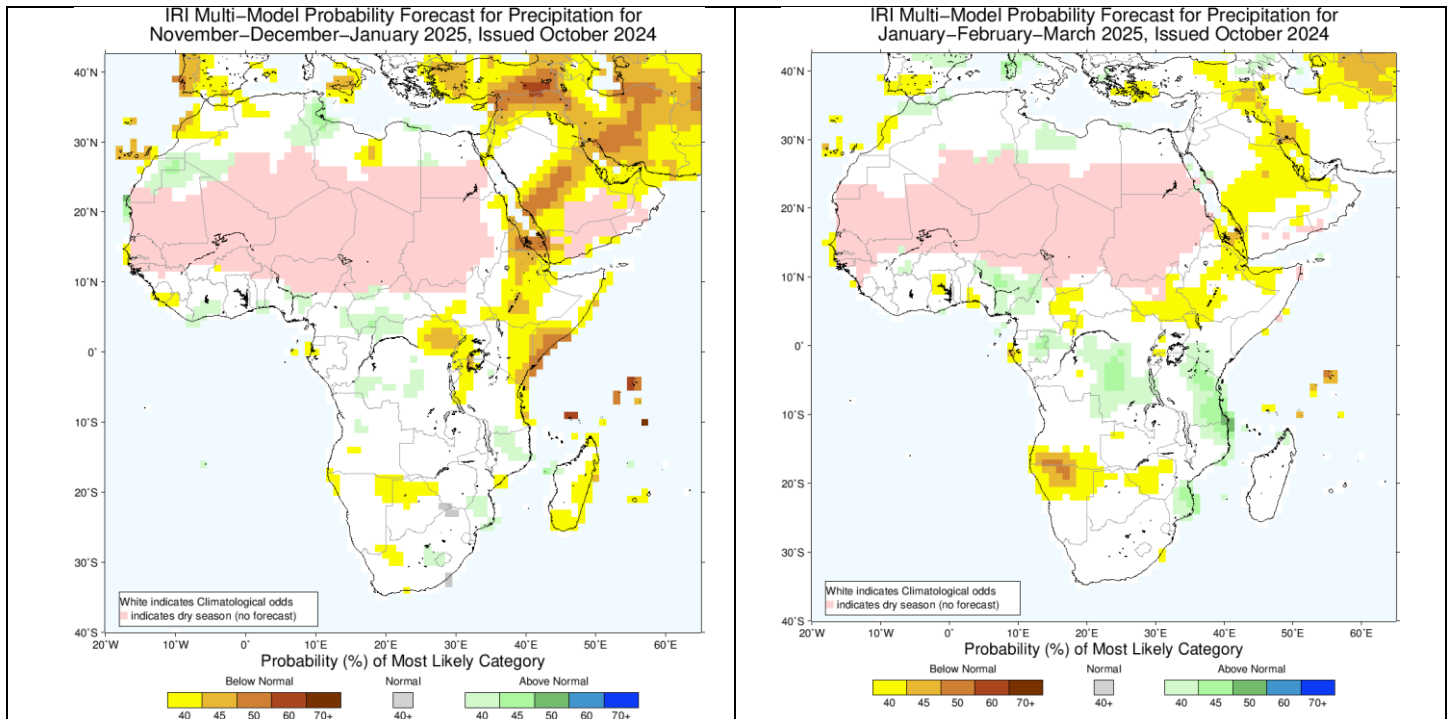


**Australian Bureau of Meteorology** - <http://www.bom.gov.au>

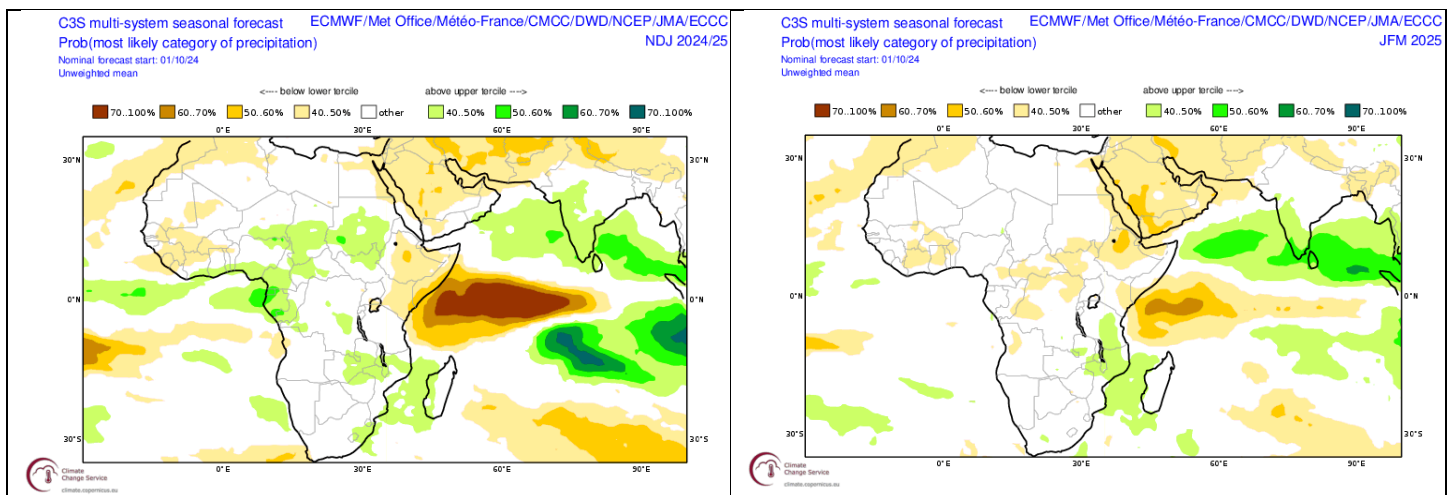


# Seasonal forecasts issued by various international institutions

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.



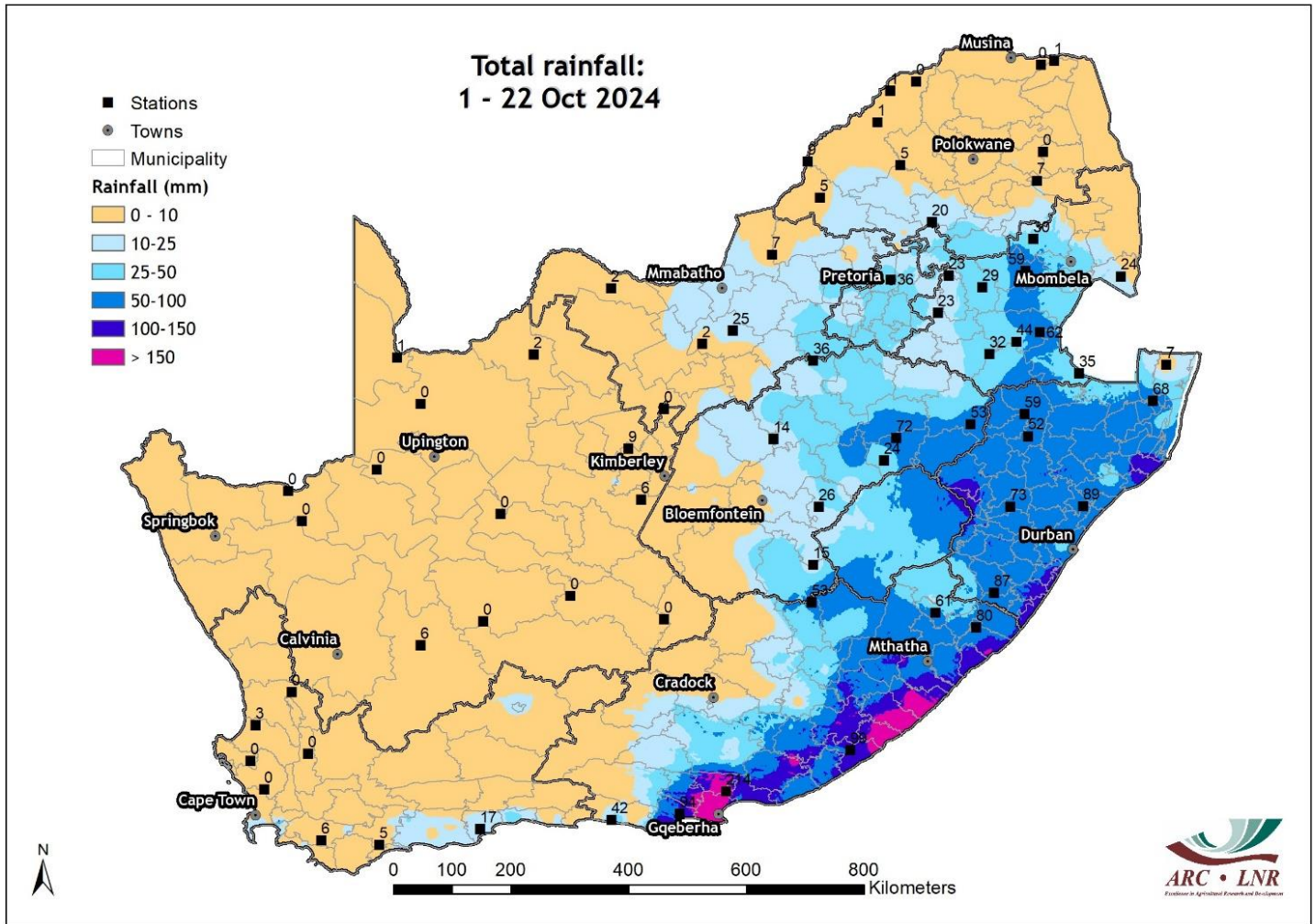
**Probabilistic forecasts by the International Research Institute for Climate and Society (IRI) for rainfall for early summer (November-January 2024/25; left - Forecast issued in 2024-10) and late summer (January to March 2025, right – Forecast issued in 2024-10).**



**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).**

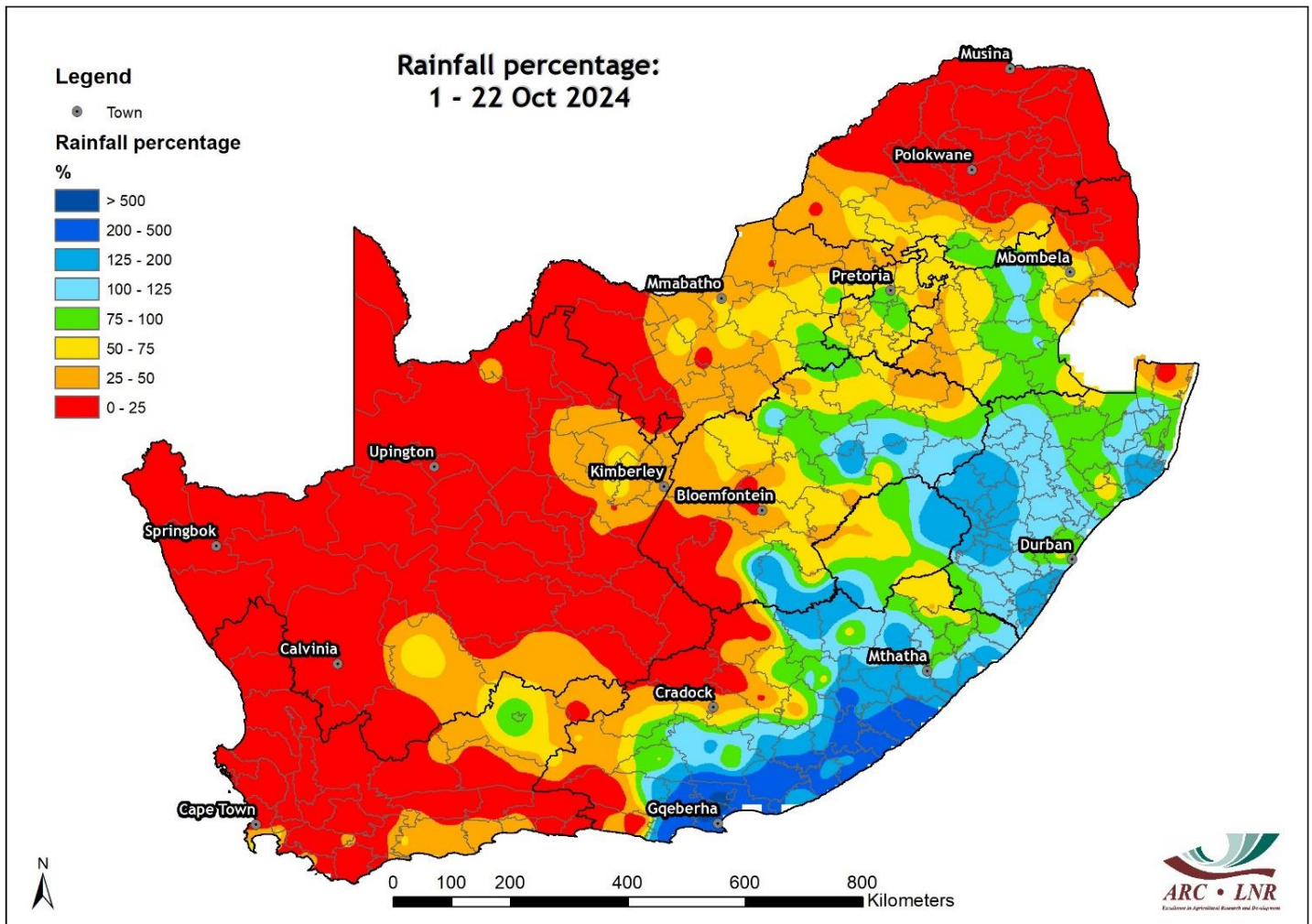
# Observed conditions

## Rainfall (mm): 1 - 22 Oct 2024



*The coastal belt and adjacent interior of the Eastern Cape received in excess of 150 mm of rain during October so far. Most of the summer-grain production region received between 10 and 40 mm of rain, with totals exceeding 50 mm over the far eastern parts of the region.*

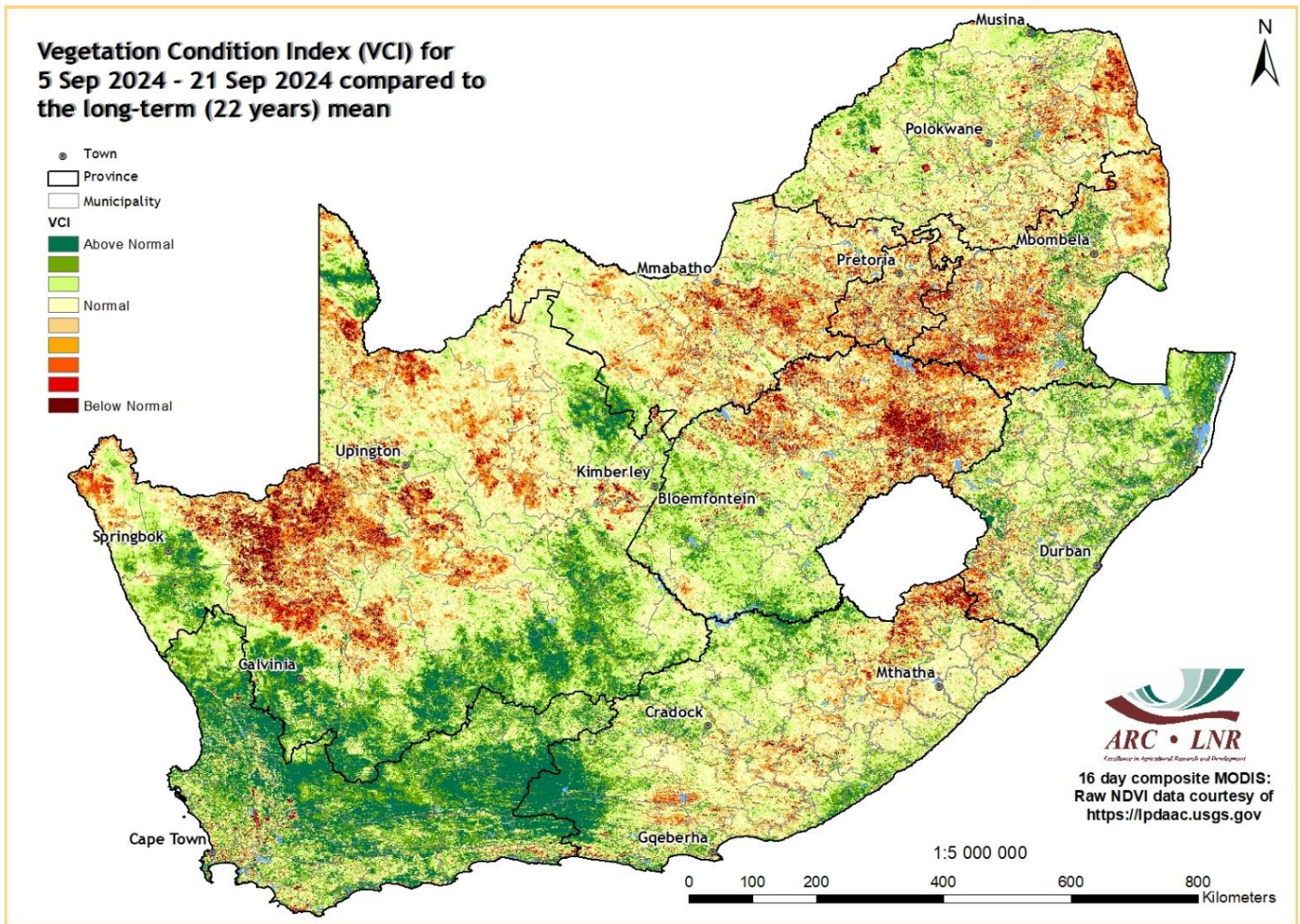
# Rainfall (% of long-term mean): 1 - 22 Oct 2024



*The far eastern to southeastern parts of the country received above-average rainfall during October so far, but most of the northern to western parts received below-average rainfall.*



# 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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