



CUMULUS

11 SEPTEMBER 2024

by J Malherbe, R Kuschke

1 FUTURE 2 FOCUS 3 AGRICULTURE

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Summary

First summer rains expected soon

It has been a dry winter over most of the northern interior. The first rainfall events of the 2024/25 summer are however expected during the next few days, with indications of widespread showers and thundershowers later next week over the summer rainfall region. While totals are not expected to be high, this will represent normal rainfall over many areas and perhaps above-normal rainfall for this time of the year over some parts of the summer-rainfall region.

During the next few days into early next week, most of the interior will remain dry, but showers or thundershowers can occur over the early-summer rainfall areas such as the northern to eastern Free State, KZN and Lesotho at times. Showers will also occur along the eastern seaboard. Isolated thundershowers may develop over a larger area, including the central to eastern parts of the summer rainfall region by early next week. By late next week, there is a possibility that more widespread showers or thundershowers may occur over the central to eastern parts when an upper-air trough moves through.

A cold front will result in cooler conditions over the western to southern and central interior early next week. Current forecasts indicate the possibility of light frost over these areas as far east as the western to southern parts of the Free State and along the Drakensberg. The outlook may still change towards early next week given the relatively long lead time.

Large-scale circulation patterns are shifting to a more positive pattern for rainfall over the summer rainfall region during the second half of September. While this is no guarantee of wet conditions during mid-summer yet, rainfall will be very welcome and will contribute positively to areas where early planting can occur such as the eastern parts of the grain-production region. Current forecasts indicate the possibility of an upper-air trough or low developing by late next week in the vicinity of South Africa, which will be the main contributor for rainfall. Forecasts this far ahead are quite uncertain, and the exact intensity and position of the system will determine the distribution and amount of rain.

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

- It will on average be warmer than normal over the summer rainfall region
- It will be cool over the southwestern parts of the country for this time of the year, including the winter rainfall region.
- The interior will be warmer than normal until the weekend, but cooler air may invade the western to southern and central parts early next week with light frost possibly over these areas, including the southern to western part of the Free State and along the Drakensberg.
- There is no indication currently of widespread and severe frost over the summer-grain production region, with frost only expected over the southern to western parts of the region and high-lying areas along the Drakensberg early next week.
- Rainfall will be below normal over most of the country. More widespread thundershowers are only indicated later next week.
- Warm and windy conditions over most of the interior will result in an enhanced fire danger, especially in areas where lightning is a possibility such as the areas around the Drakensberg.
- **The winter rainfall region** will be cool with light to moderate westerly to southerly winds. It will be cloudy at times with light showers especially in the southwest and south by Sunday and early next week.
- **The summer-grain production region** will be sunny to partly cloudy and warm. Isolated thundershowers are possible over the North West and parts of the Free State, especially closer to Lesotho. Thundershowers will be

somewhat more widespread early next week and located further east to include the northern parts of the Free State and Mpumalanga according to current forecasts. It will also be cooler early next week following warm conditions during the weekend. There is no indication of widespread significant late frost in the region at this stage, but light frost may occur over the southern parts and along the Drakensberg early next week.

Overview of expected conditions over the main agricultural production areas

With ridging high-pressure systems to the south and the development of upper-air troughs in the westerlies according to current forecasts by next week, there is a trend towards somewhat wetter conditions over the summer rainfall region while only light showers are expected over the winter rainfall region during the next few days.

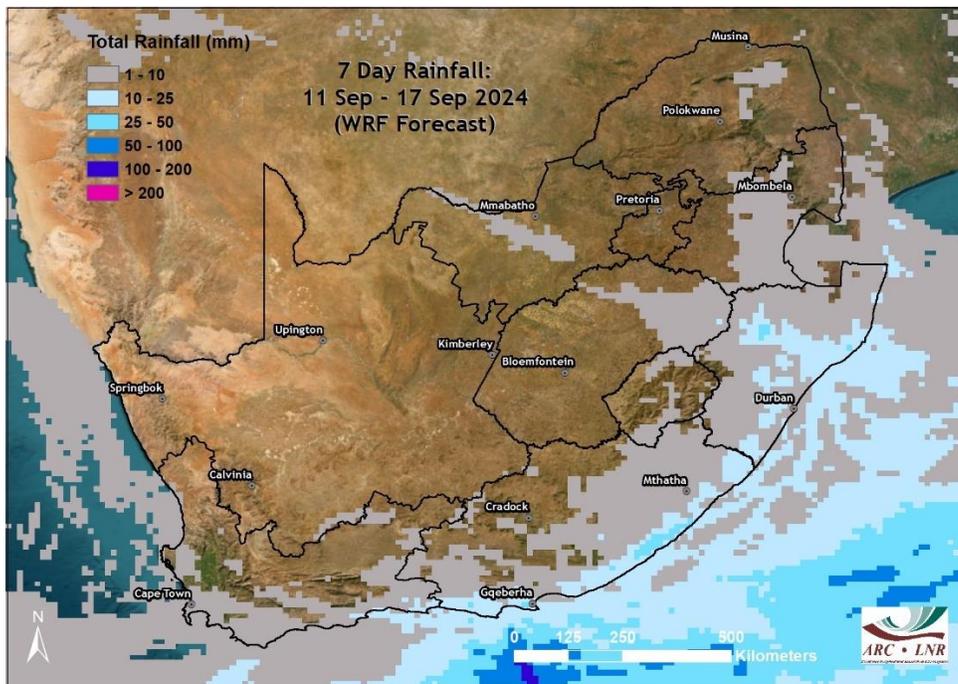
Maize production region: It will be sunny to partly cloudy and warm for the most part. Isolated thundershowers are expected over the region at times, reaching a maximum early next week when isolated to scattered thundershowers may occur over the central to eastern parts of the region. It will be warm for most of the period, but cooler air will invade the region early next week when light frost may occur by Tuesday according to current forecast over the western to southern parts of the region and along the Drakensberg.

- Maximum temperatures over the western maize-production areas will range between 23 and 34°C. Minimum temperatures will be in the order of 4 – 16°C, with lowest temperatures early next week.
- Maximum temperatures over the eastern maize-production region will range between 22 and 32°C. Minimum temperatures will be in the order of 6 - 15°C, with lowest temperatures early next week and mostly along the Drakensberg.
- **Thursday - Saturday (12th – 14th):** Partly cloudy and warm with moderate to strong north-westerly winds. Isolated thundershowers are possible over the eastern to southeastern Free State, especially along the Drakensberg.
- **Sunday (15th):** Partly cloudy and warm with isolated thundershowers over the central parts. It will remain windy over the central to western areas.
- **Monday (16th):** Partly cloudy and warm with isolated to scattered thundershowers over the central parts, moving eastwards during the day. It will become cool over the western to southern parts with south-westerly winds
- **Tuesday to Wednesday (17th – 18th):** Cooler air in the west will result in low minimum temperatures and possible frost over the southern to western areas. It will be mild to warm over the northern to eastern parts according to current forecasts. Current forecasts are not indicative of further thundershowers over the region until Wednesday except possibly in the north. Temperatures will trend higher from Tuesday onwards.

Cape Wine Lands and Ruens: The region will be sunny to partly cloudy and cool most of the time. Light showers may occur in the southwest as a cold front moves through on Sunday. Light showers are also possible initially in the south and again by early next week along the Garden Route. Strong south-easterlies are expected in the southwest by the middle of next week according to current forecasts.

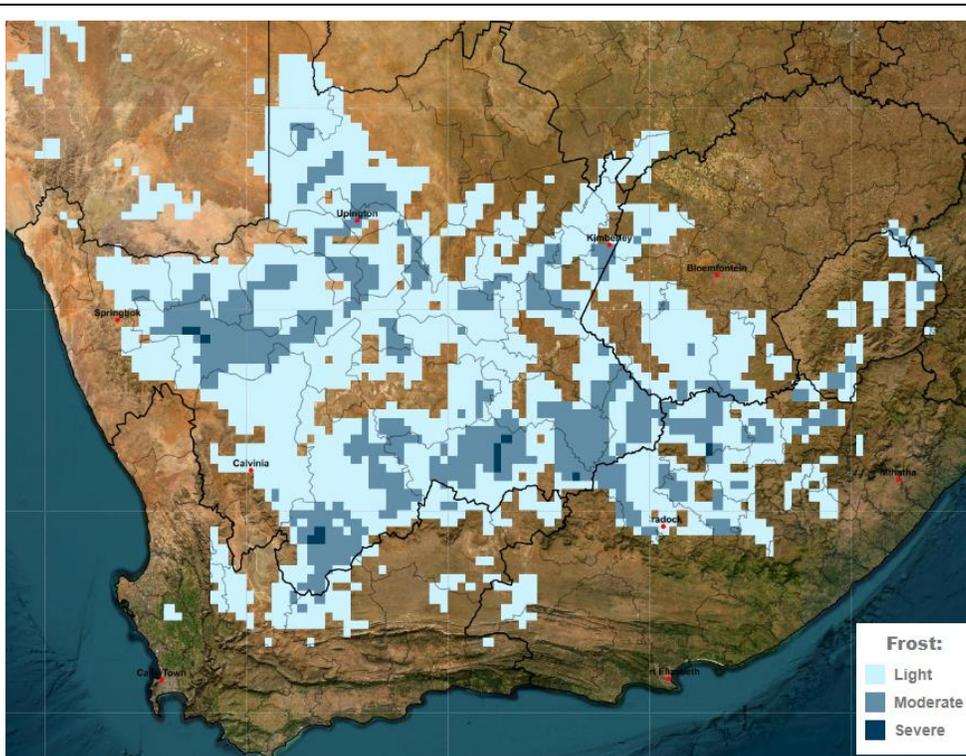
Daily summary of expected conditions (11 – 17 Sept.)

(GFS forecast downscaled using WRF)



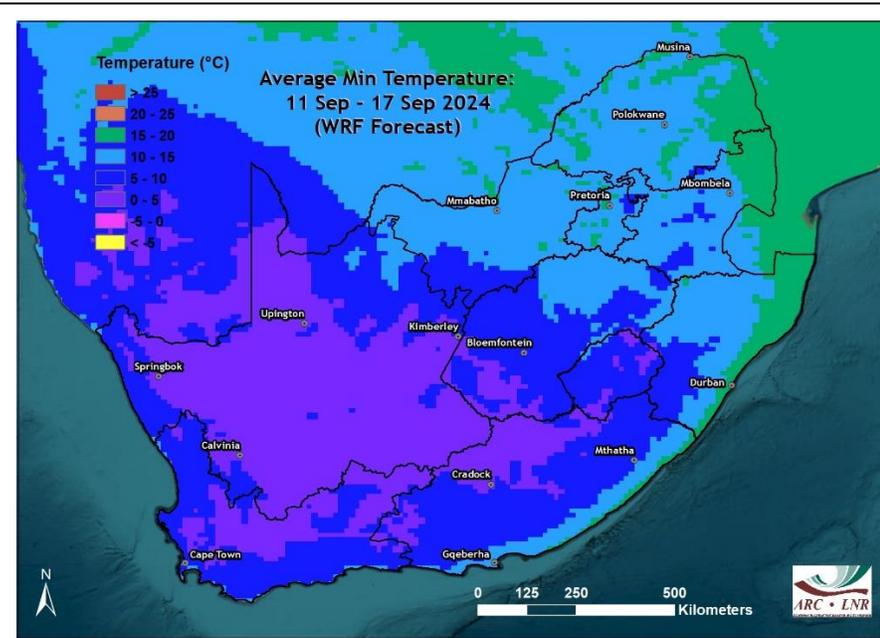
Rainfall

- Most of the interior will be dry during the next few days, but the first thundershowers of the summer will result in some rain over parts of the Free State, North West and Mpumalanga, mostly expected early next week.
- Showers will occur along the southern to eastern coastal region resulting in totals exceeding 10 mm in some areas and exceeding 25 mm over parts of the Eastern Cape coast and KZN coast.



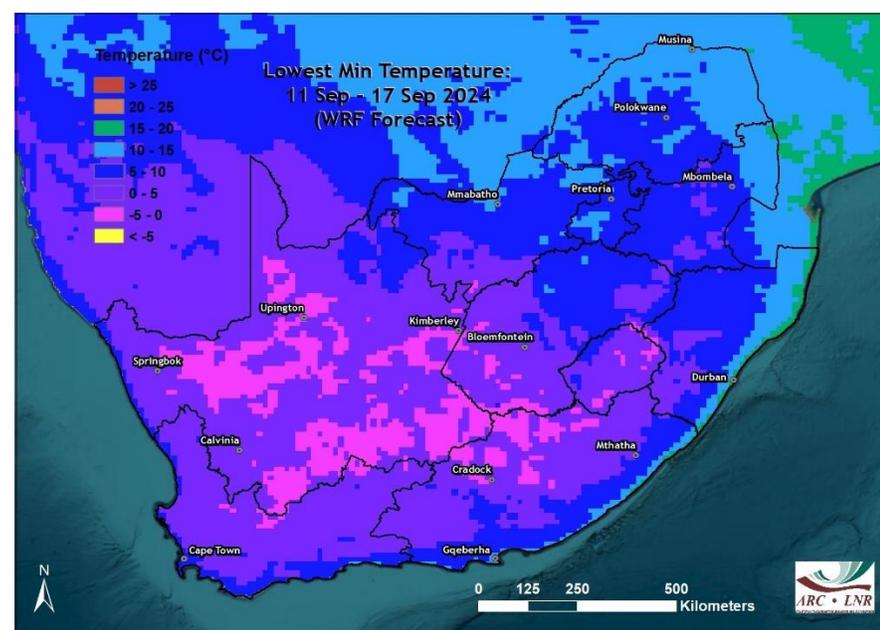
Frost

- Frost will be limited to the central to southern and western interior and are most likely early next week.



Average minimum temperatures

- Average minimum temperatures will be above 10°C over the northeastern half of the country.
- It will be cool to cold on several mornings over the southern to western interior with the average minimum temperature expected to be below 5°C.

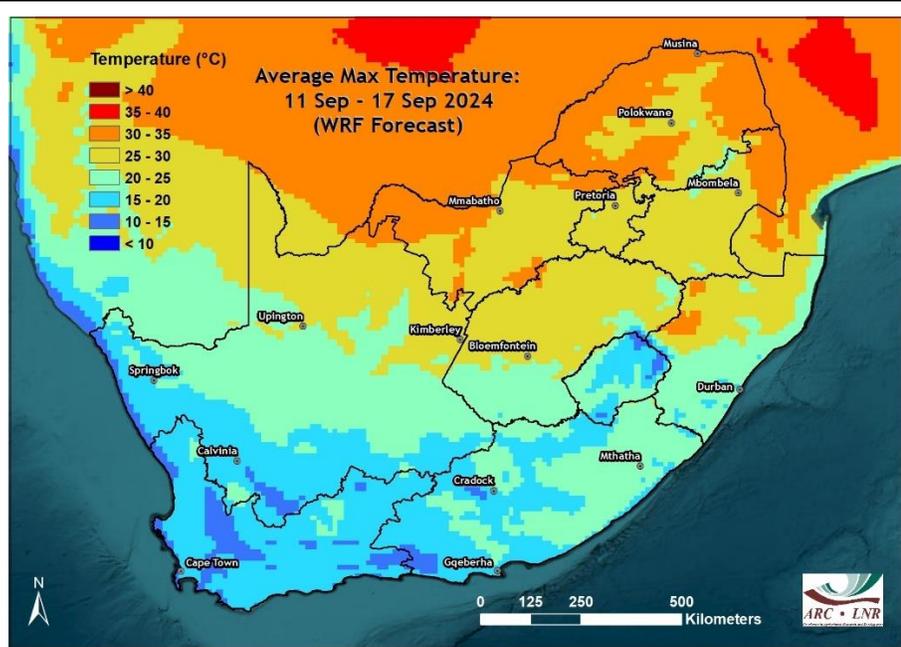


Lowest minimum temperatures

- Lowest minimum temperatures will be below 0°C over the southern to western interior and occur early next week.
- Lowest minimum temperatures will be above 0°C over the summer-grain production region but will be below 0 and 5°C over the areas closer to the Drakensberg and the western to southern Free State.
- Lowest minimum temperatures will remain above 15°C over the eastern to northeastern low-lying areas and eastern seaboard.

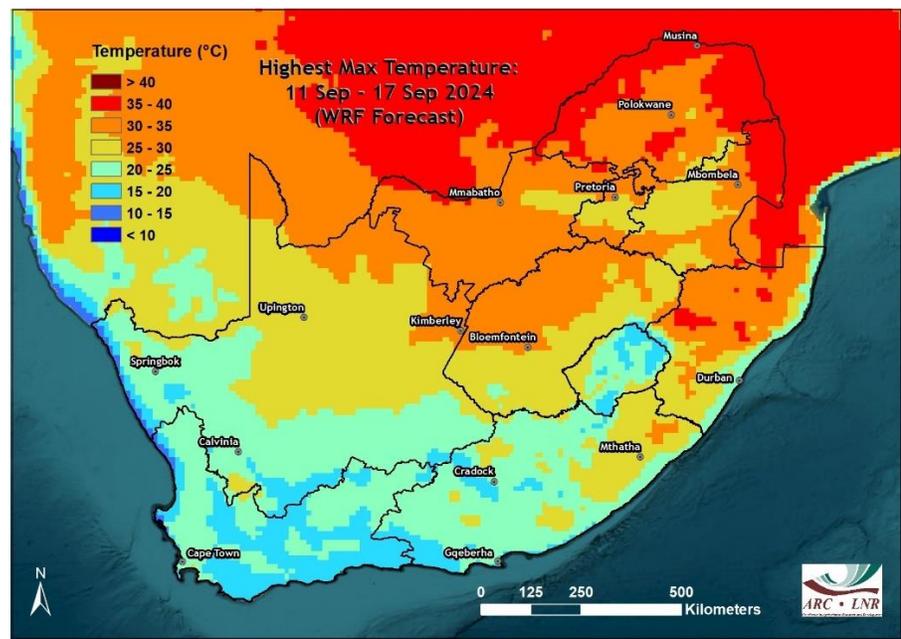
Average maximum temperatures

- Average maximum temperatures will be above 30°C over the northern to northeastern low-lying interior.
- The southern to southwestern parts, west coast and western escarpment will be cooler, with the average maximum temperature between 10 and 20°C.



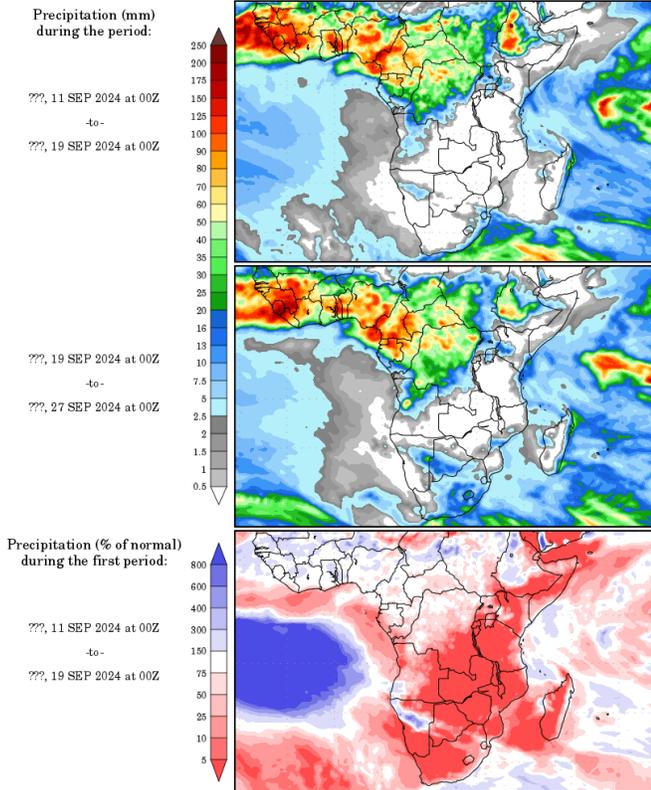
Highest maximum temperatures

- Highest temperatures during the next few days are expected to exceed 35°C over the northern to eastern low-lying interior.



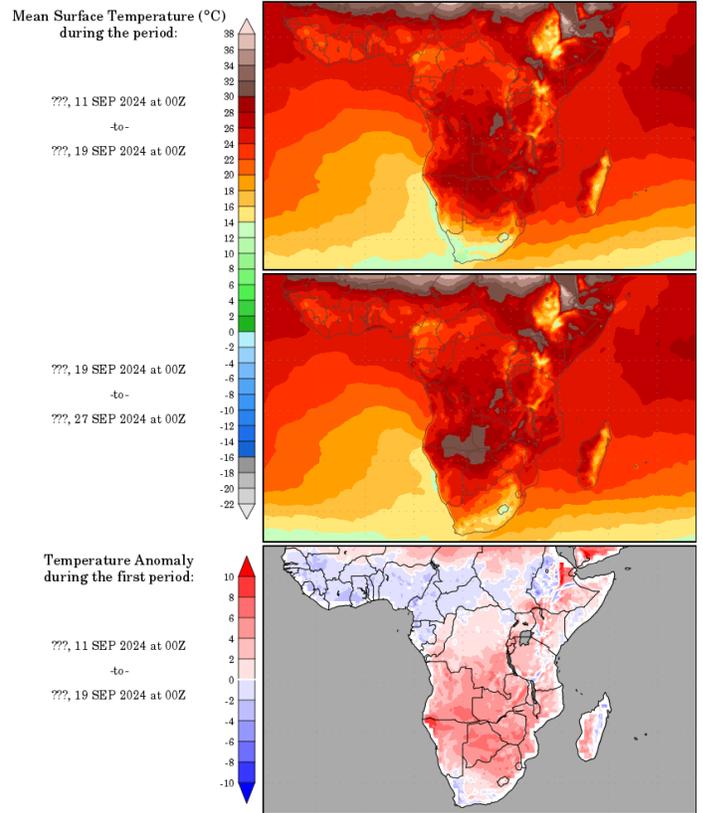
Medium term rainfall and temperature summary

Precipitation Forecasts

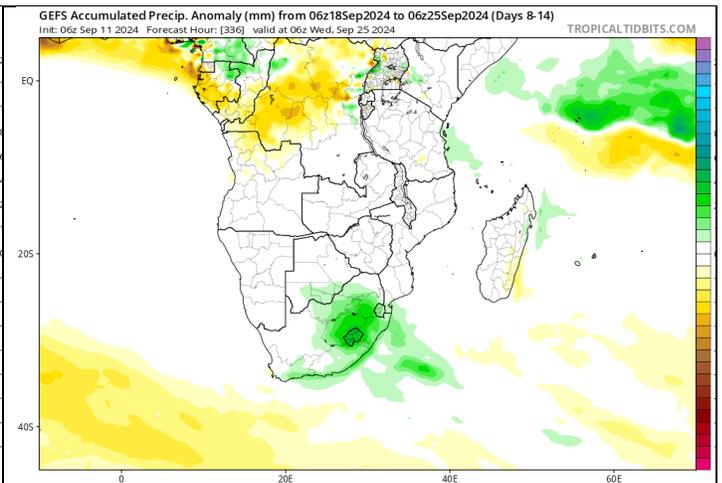
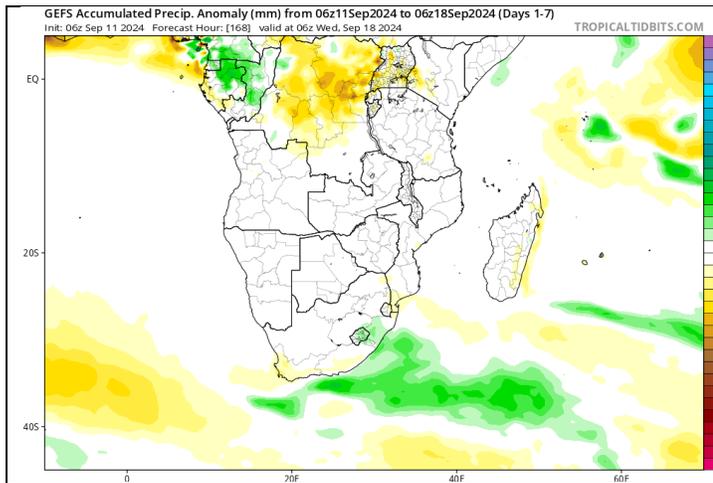


GrADS/COLA

Temperature Forecasts



GrADS/COLA



The GFS ensemble forecast (consisting of several forecasts with small initialization differences) favors above-normal rainfall from late next week onwards (right) over the eastern parts of the country, including the maize-production region. There is no indication of a continuation of wet conditions over the winter rainfall 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 11 September) 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 negatively affect agricultural activities and production:

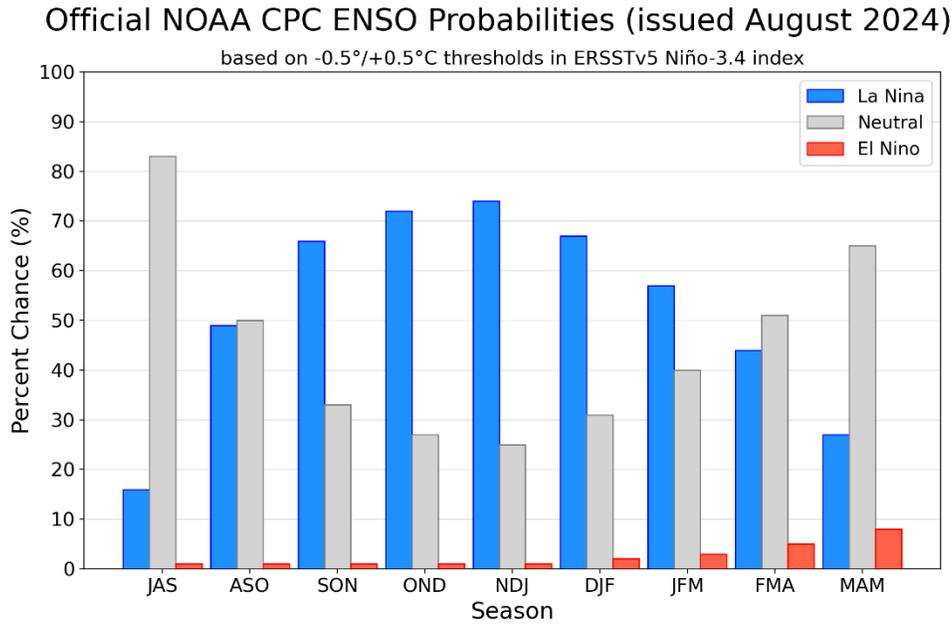
- **Low minimum temperatures will occur with possible light frost:**
 - Southern to western interior including the southern escarpment: **Monday and Tuesday (16th, 17th).**
 - Drakensberg and adjacent parts of the summer-grain production region, Eastern Cape interior: **Tuesday (17th).**
- **Warm, dry and windy conditions with dry vegetation will increase the fire hazard:**
 - Western to southern, central to eastern and northeastern interior: **Thursday to Sunday (12th- 15th).**
 - Drakensberg and adjacent parts where lightning could ignite veld fires: **Thursday to Sunday (12th- 15th).**
- **Cold conditions with showers at times may adversely affect small stock:**
 - Karoo regions of the Western and Eastern Cape provinces: **Sunday to Tuesday (15th- 17th).**
- **It will be hot, with maximum temperatures exceeding 35°C:**
 - Limpopo River Valley: **Friday to Monday (13th- 16th).**
 - Lowveld: **Thursday to Monday (12th- 16th).**
 - Northern KZN: **Thursday to Saturday (12th- 14th).**

Seasonal forecast

Current ENSO conditions:

ENSO is in neutral state, but there are several indications that a La Nia will develop during the next few months.

The International Research Institute for Climate and Society (IRI)'s latest ENSO forecast 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>

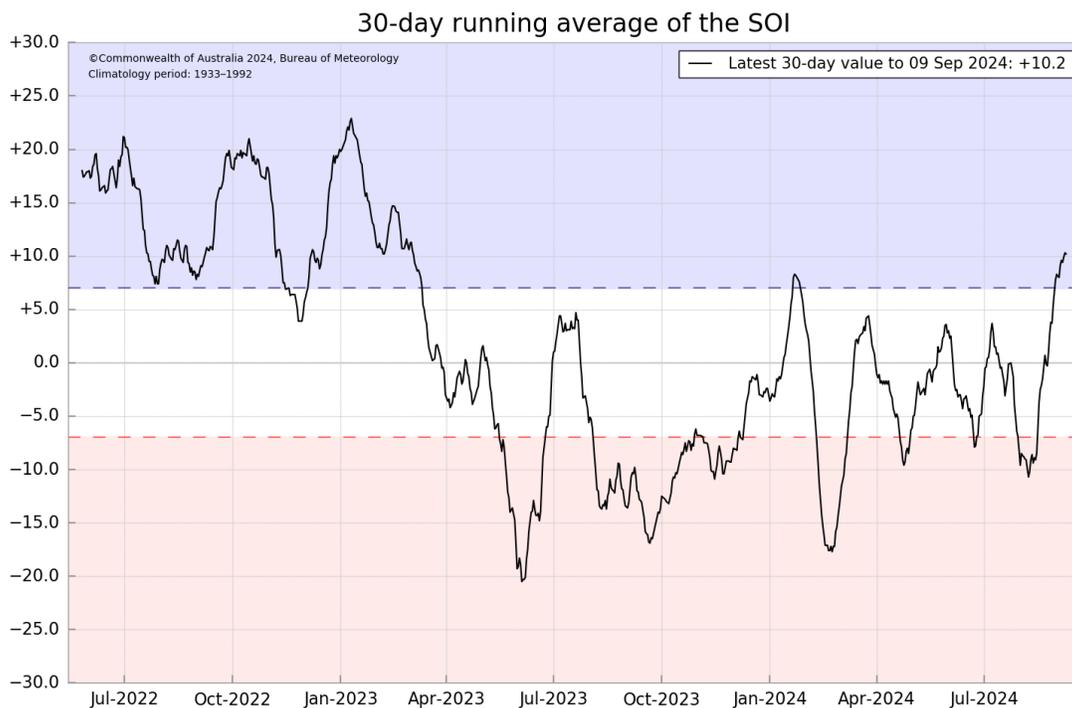
In their most recent update (issued 19 August), the IRI notes the “As of mid-August 2024, ENSO-neutral conditions persist in the western equatorial Pacific, and oceanic and atmospheric indicators also align with an ENSO-neutral state. The IRI ENSO prediction plume forecasts ENSO-neutral conditions for Aug-Oct, and Sep-Nov, 2024. Borderline La Niña conditions are forecasted during Oct-Dec, and Nov-Jan, but with very weakly elevated probabilities. ENSO-neutral conditions subsequently re-emerge as the most likely during the boreal winter and spring of 2025.”... <https://iri.columbia.edu>

In their most recent update (3 September), the Australian Bureau of Meteorology states that “The El Niño–Southern Oscillation (ENSO) is currently neutral. Sea surface temperatures (SSTs) in the central equatorial Pacific Ocean are ENSO-neutral, having gradually cooled from El Niño levels since December 2023. This cooling is being sustained by deep waters surfacing in the central and eastern Pacific. Atmospheric patterns, including cloud and trade winds, remain largely ENSO-neutral.

Three of 7 climate models suggest the possibility of SSTs in the tropical Pacific exceeding the La Niña threshold (below $-0.8\text{ }^{\circ}\text{C}$) from October, while the remaining 4 models, including the Bureau's, suggest SSTs are likely to remain at ENSO-neutral values (between $-0.8\text{ }^{\circ}\text{C}$ to $+0.8\text{ }^{\circ}\text{C}$) throughout the forecast period. This means it is possible a La Niña may develop in coming months.

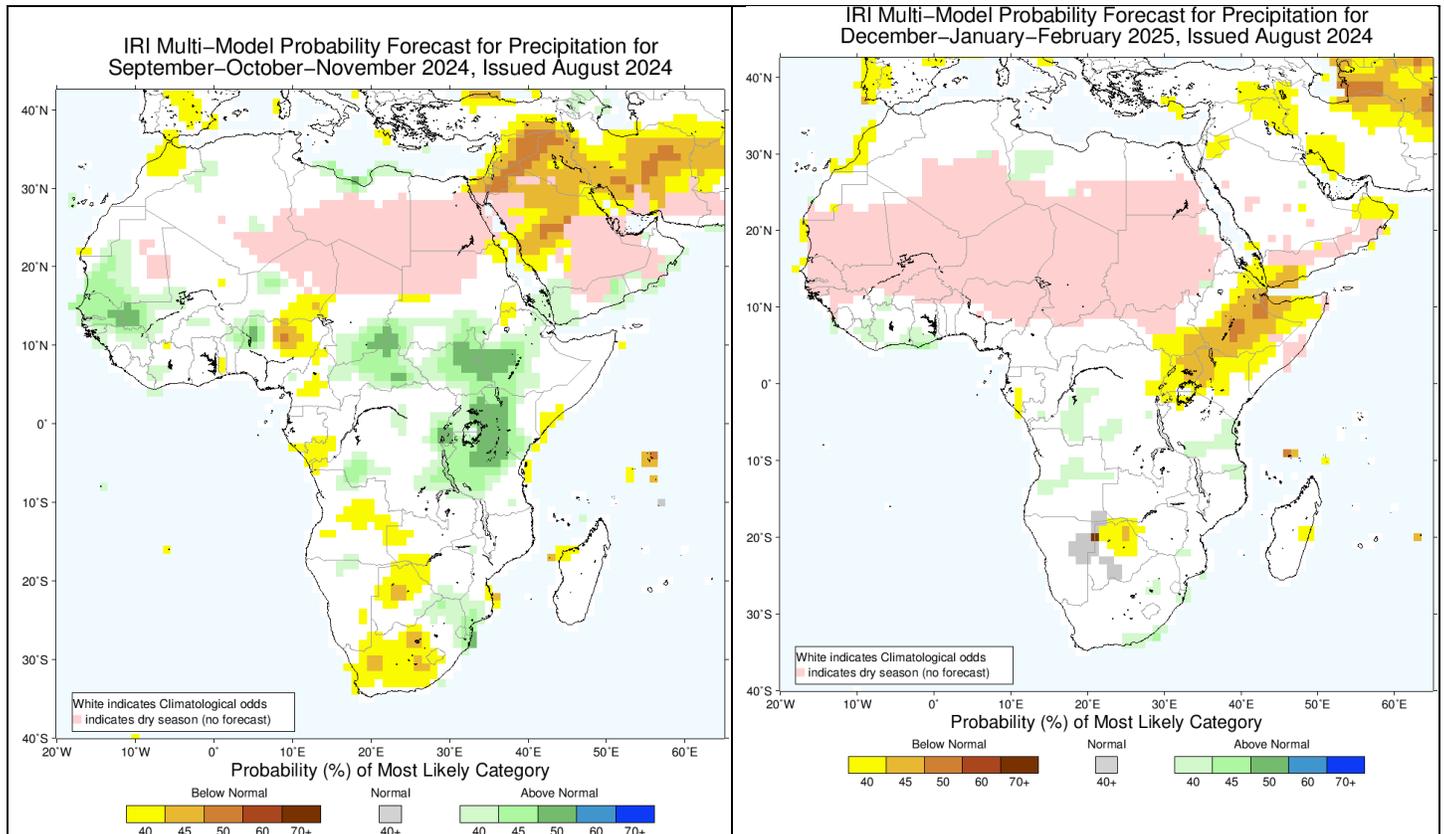
A pulse of the Madden–Julian Oscillation (MJO) is currently in the Maritime Continent region to Australia's north (as at 1 September). Most models suggest the pulse will either maintain its strength or strengthen slightly as the MJO progresses over the Maritime Continent in the coming week. When the MJO is in the Maritime Continent at this time of year, it may contribute towards strengthening trade winds, which can assist with La Niña development.”... - <http://www.bom.gov.au>.

The 30-day Southern Oscillation Index (SOI) is currently +10.2 and therefore indicative of atmospheric pressure patterns in the Australia – Pacific region indicative of La Niña conditions.



Seasonal forecasts issued by various international institutions

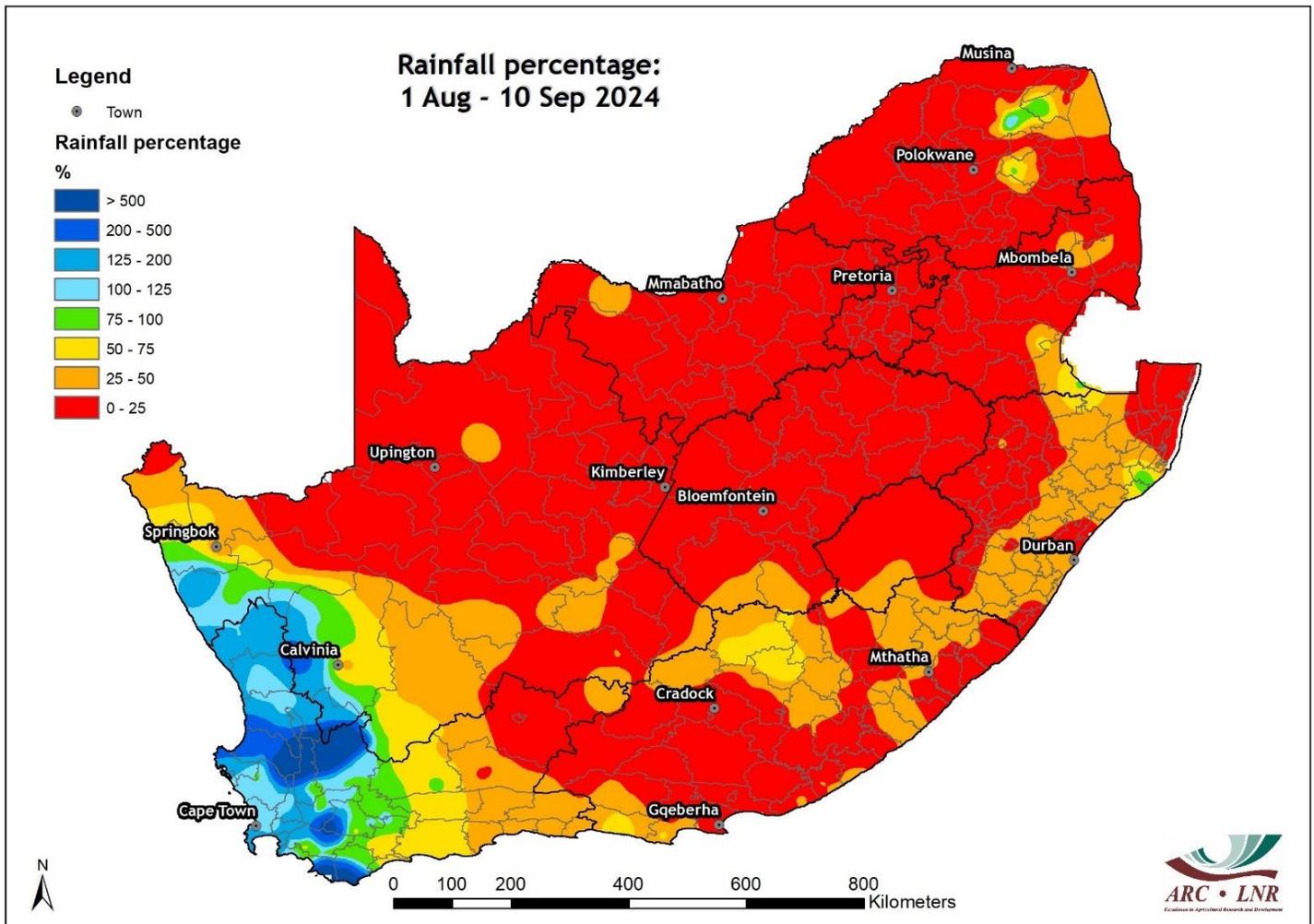
Seasonal forecasts (updated in August 2024) are relatively neutral for summer given the weak signal from the Pacific Ocean. For example, the IRI seasonal forecast for December to February doesn't indicate a clear signal for either wet or dry conditions.



Probabilistic forecasts by the International Research Institute for Climate and Society (IRI) for rainfall for spring (September-November 2024; left - Forecast issued in 2024-08) and late summer (December to February 2024/25, right - Forecast issued in 2024-08).

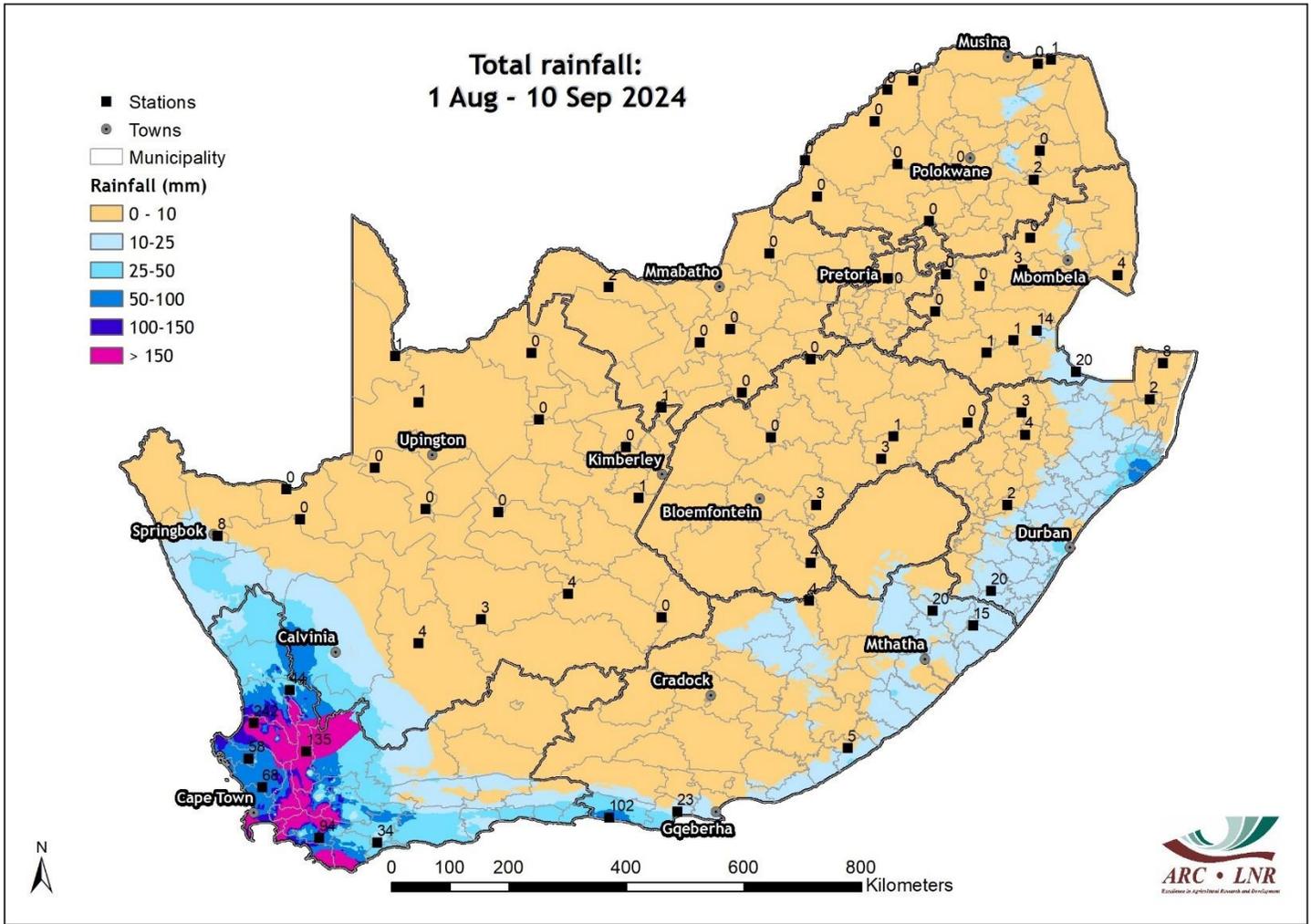
Observed conditions

Rainfall (% of long-term mean): 1 August – 10 September 2024



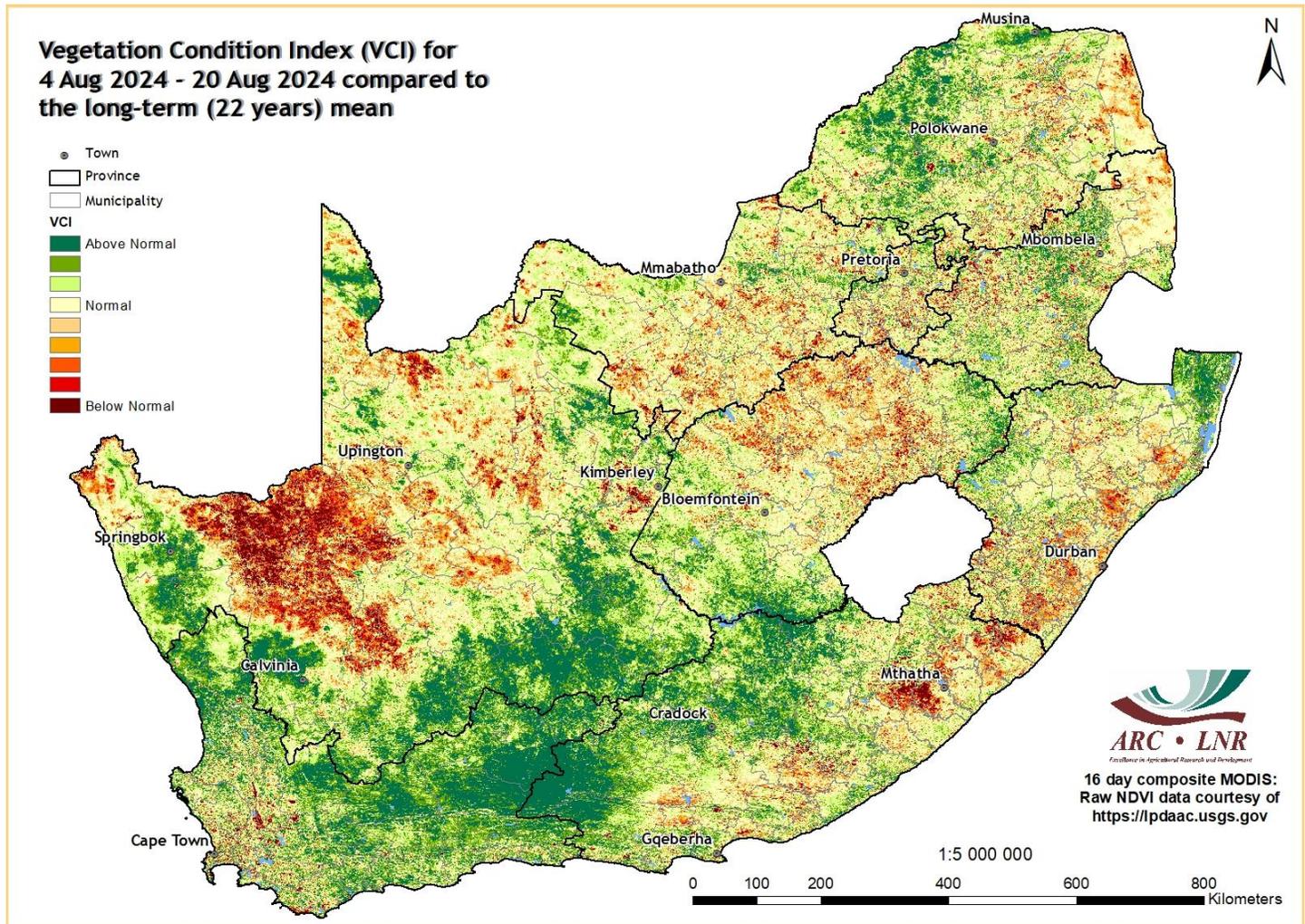
The interior was mostly dry during late winter into early September while above-average rainfall continued over the winter rainfall region.

Rainfall (mm): 1 August – 10 September



So far during August and early September, it's been dry over the interior. Light falls have occurred over the Eastern Cape and KZN as well as parts of the Eastern Highveld and escarpment in the east and northeast. Significant totals were observed over the winter rainfall region with mountainous areas receiving in excess of 150 mm during the period.

Vegetation Condition Index: Mid-August 2024



By mid-August, vegetation activity still reflects the drier conditions during mid-to-late summer 2023/24 over part of the maize-production region, the Lowveld and parts of the western interior. Widespread above-normal rainfall over the southwestern parts has resulted in above-normal vegetation activity over these areas, including the winter rainfall region.

