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13 MARCH 2025
by J Malherbe, R Kuschke
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Contents

Summary

Cooler, wet conditions over large parts

With the second half of March approaching, the potential weather-related risks for summer crops include persistent cool and cloudy conditions which may negatively affect needed heat unit accumulation and early frost events. The potential impact of such events is exacerbated by the relatively late planting given dry conditions during the climatological planting window earlier this summer. Cooler, wet conditions during the next few days may be seen as potentially negative, but the same atmospheric circulation patterns promoting late-summer rainfall will diminish the likelihood of an early frost event.

Cooler conditions with abundant cloud cover are expected to develop over most of the interior during the next few days. Relatively large amounts of moisture and cloud cover will lower daytime temperatures, with maximum temperatures over the Eastern Highveld, including the eastern summer-grain production region, expected to peak only in the upper teens on certain days. With upper-air troughs moving through, widespread showers and thundershowers will occur. This will result in above-normal rainfall for this time of the year over the summer-grain production region also, with totals until the middle of next week expected to range between 40 and 80 mm over the eastern parts of the Northern Cape, the southern parts of North West, the Free State and KZN. With atmospheric temperatures decreasing, the incidence of hail may increase somewhat, but these should be small for the most part. The occurrence of severe storms will most likely not exceed the climatological norm for this time of the year given the absence of intense synoptic weather systems and the absence of a sharp wet/dry line in the atmosphere over the country.

Looking further ahead, there are still expectations of a gradual cessation in wet conditions throughout the remainder of the month even though one or two rainfall events are still expected to influence especially the central parts after next week. Current forecasts indicate atmospheric circulation patterns that may push a cold front into the interior during the last few days of the month, but these forecasts are very much uncertain so far ahead of time. The evolution of the forecasts for this period at the end of the month will be tracked and will be discussed if it trends towards an expectation of the potential for an early frost event.

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

- Temperatures will on average be normal to below normal over the central and eastern parts, but above normal over the western interior and winter rainfall region.
- It will be partly cloudy and mild to cloudy and cool with showers or thundershowers on most days over the central to eastern interior, including the summer-grain production region.
- Mornings will be cool over the eastern Highveld, with minimum temperatures ranging between 8 and 12°C.
- Day-time temperatures will be suppressed due to cloud cover over the central to eastern parts, including the summer-grain production region.
- There are no indications of a significant cold event with frost during the next few days until the middle of next week.
- Rainfall will be above normal over most parts, but below normal over the winter rainfall region, Limpopo River Valley and central to northern Lowveld.
- The summer-grain production region will be partly cloudy to cloudy and mild with showers or thundershowers becoming cloudy and cool at times with rain. It will be warm in the west initially. The highest rainfall totals, ranging between 40

and 80 mm in total until the middle of next week, are expected over the central to western parts of the production region.

- **The winter rainfall region** will be partly cloudy to sunny and warm to hot on most days. Windy conditions at times, and strong south-easterlies over the south-western parts coupled with recent dry conditions will enhance the fire danger in the region. Thundershowers may occur over especially the interior initially until Saturday.

Overview of expected conditions over the main agricultural production areas

Two upper-air troughs moving slowly over the western to southern parts of the country will result in instability that will, together with large amounts of moisture from the east associated with surface high-pressure systems ridging around the country, cause showers and thundershowers over most parts of the interior, including the summer-grain production region.

Maize production region:

Abundant cloud cover will suppress daytime temperatures and showers and thundershowers are expected on most days, with cloudy and rainy periods also possible.

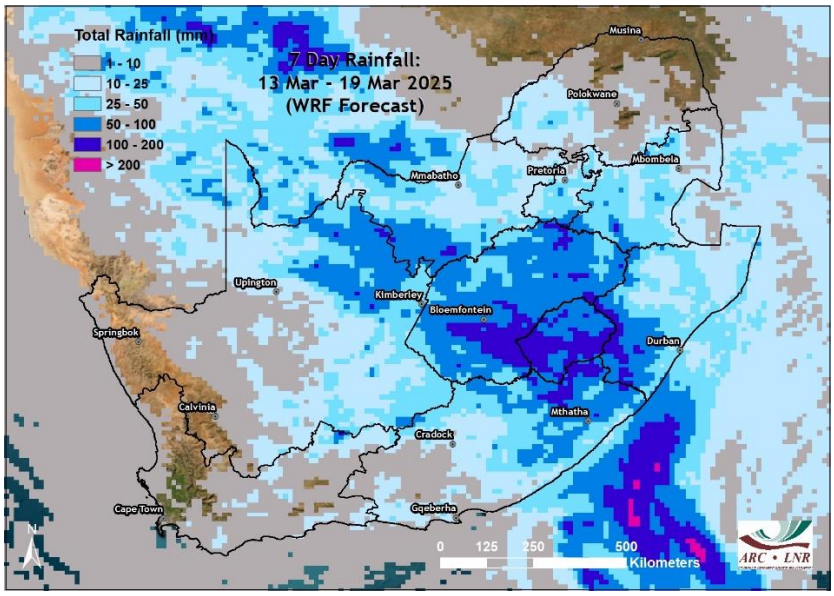
- Maximum temperatures over the eastern grain-production areas will range between 15°C and 25°C. Minimum temperatures will be in the order of 9°C to 13°C.
- Maximum temperatures over the western grain-production areas will range between 19°C and 29°C. Minimum temperatures will be in the order of 12°C to 16°C.
- **Thursday (13th):** Partly cloudy and mild, but warm in the west. Isolated showers and thundershowers are expected but scattered in the east.
- **Friday (14th):** Partly cloudy, mild and windy with isolated showers or thundershowers, becoming scattered over the western to central parts.
- **Saturday (15th):** Cloudy and mild with rain and thundershowers. It will be cool over the central to eastern parts. Only light showers are expected in the east.
- **Sunday (16th):** Partly cloudy to cloudy and mild with showers or thundershowers. It will be cool in the east.
- **Monday to Wednesday (17th- 19th):** Relatively wet conditions with abundant cloud cover and suppressed daytime temperatures are expected to continue during the first half of next week according to current forecasts. Current forecasts indicate a continuation of partly cloudy to cloudy and mild conditions with showers or thundershowers until Wednesday as another rain-bearing system is expected to move across the region. It will be cloudy and cool at times over the central to eastern parts according to current forecasts.

Cape Wine Lands and Ruens:

It will be warm to hot over the interior on several days, with highest maximum temperatures initially until Friday and again during the first half of next week. Strong south-easterly winds at times over the southwestern parts and lightning associated with the occurrence of thundershowers over the interior until Saturday will further enhance the fire danger over the region. It will be cool along the Garden Route initially and on Monday with light showers.

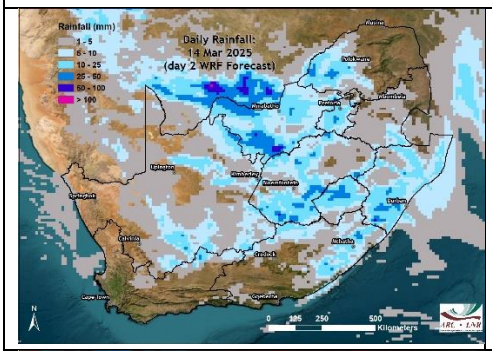
Daily summary of expected conditions (13 – 19 March)

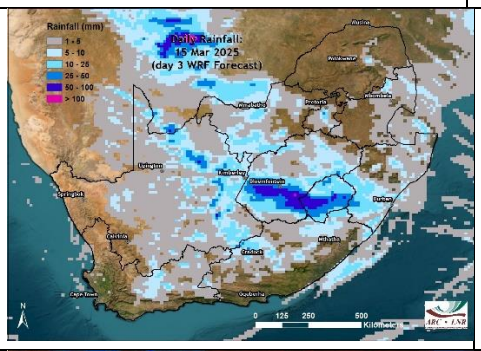
(GFS forecast downscaled using WRF)

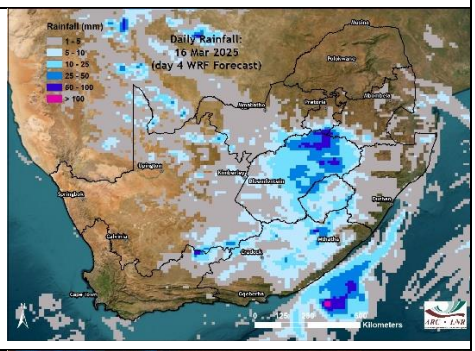


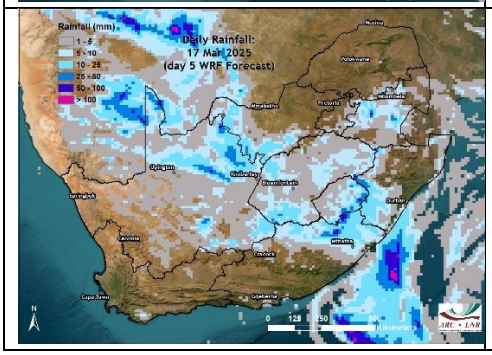
Rainfall

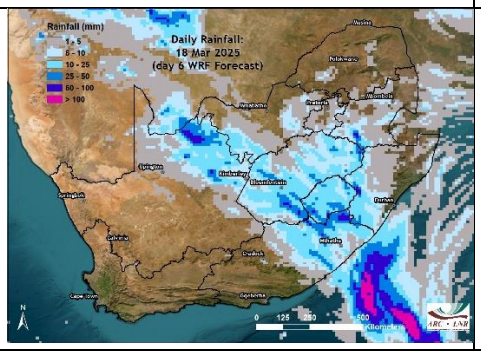
- Most of the interior should receive at least some rain during the next few days.
- Highest totals are expected over some of the central to south-eastern parts of the summer rainfall region where totals will exceed 50 mm.
- Little to no rain is expected over the winter rainfall region and Limpopo River Valley.

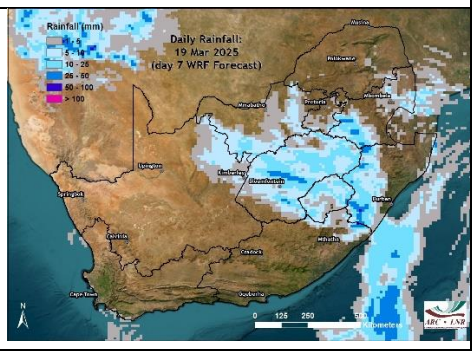




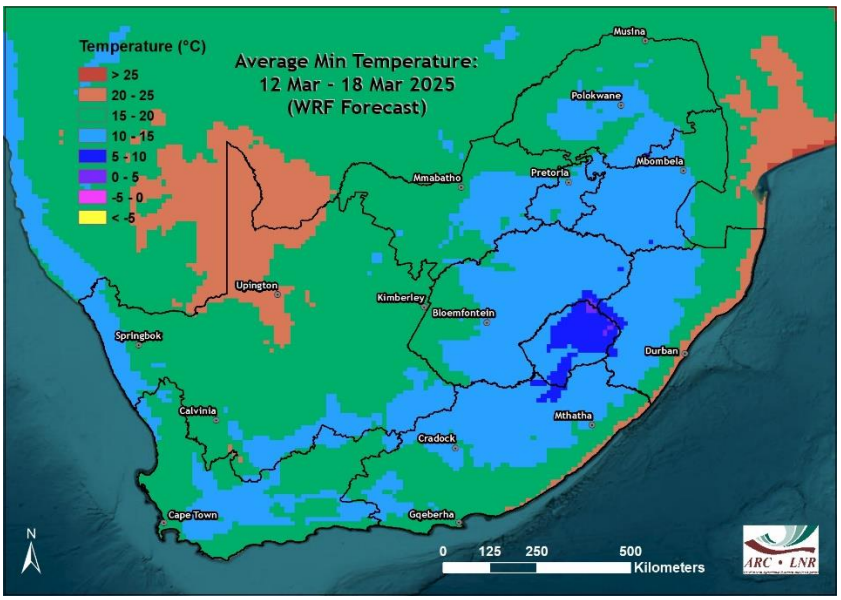






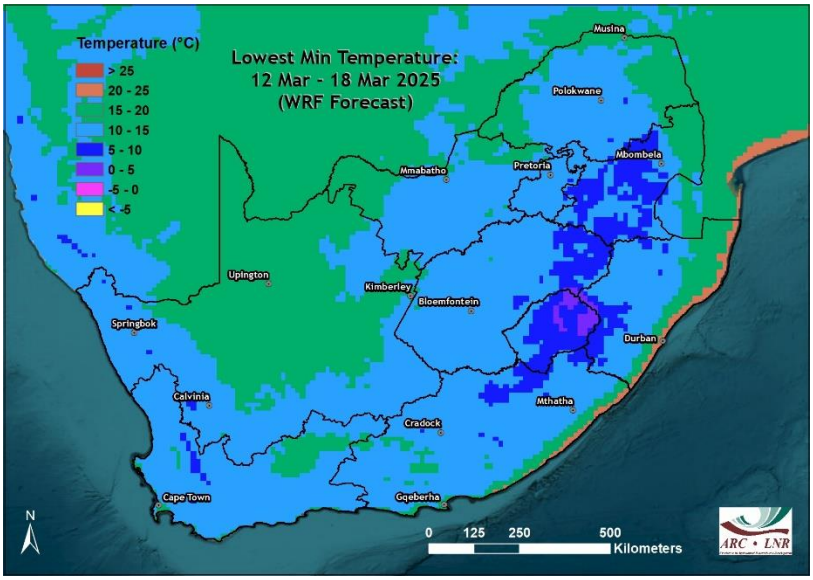


- Showers or thundershowers will occur over the interior during the entire period, focusing especially on the central parts.



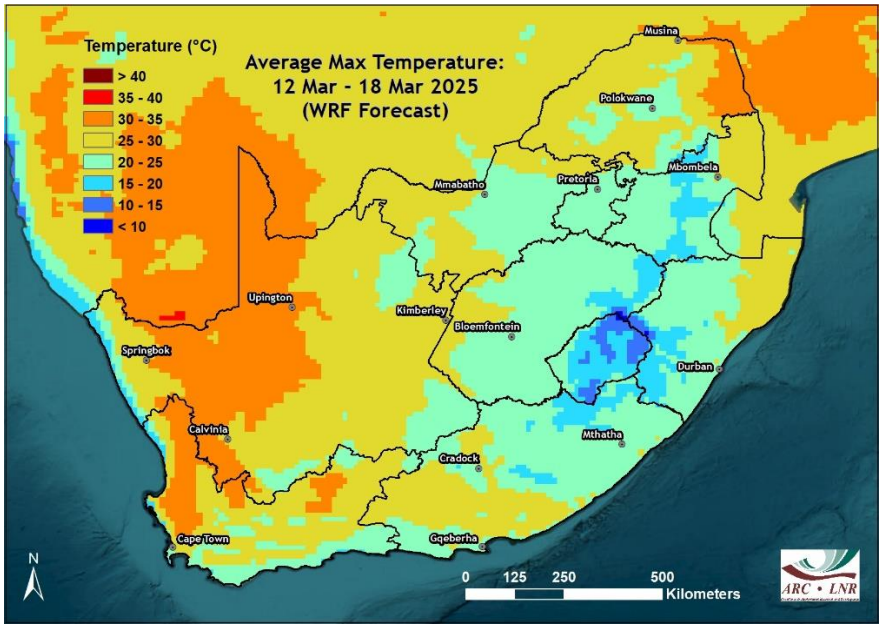
Average minimum temperatures

- Average minimum temperatures will range between 10 and 20°C over most of the country, with higher averages over the northern parts and lower-lying eastern to northeastern parts.



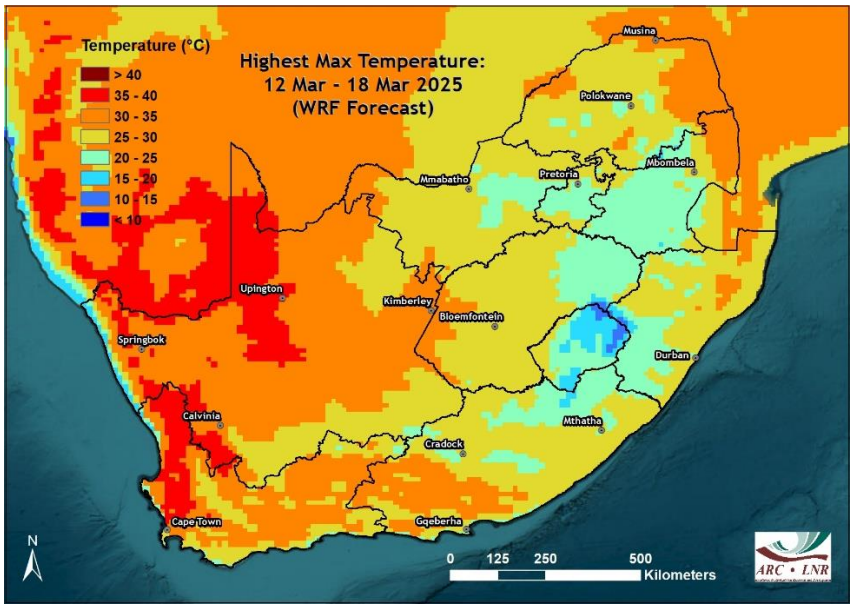
Lowest minimum temperatures

- Lowest minimum temperatures will remain near or above 5°C over the summer-grain production region.
- Lowest minimum temperatures are expected to remain above 15°C over the Lowveld and eastern seaboard.



Average maximum temperatures

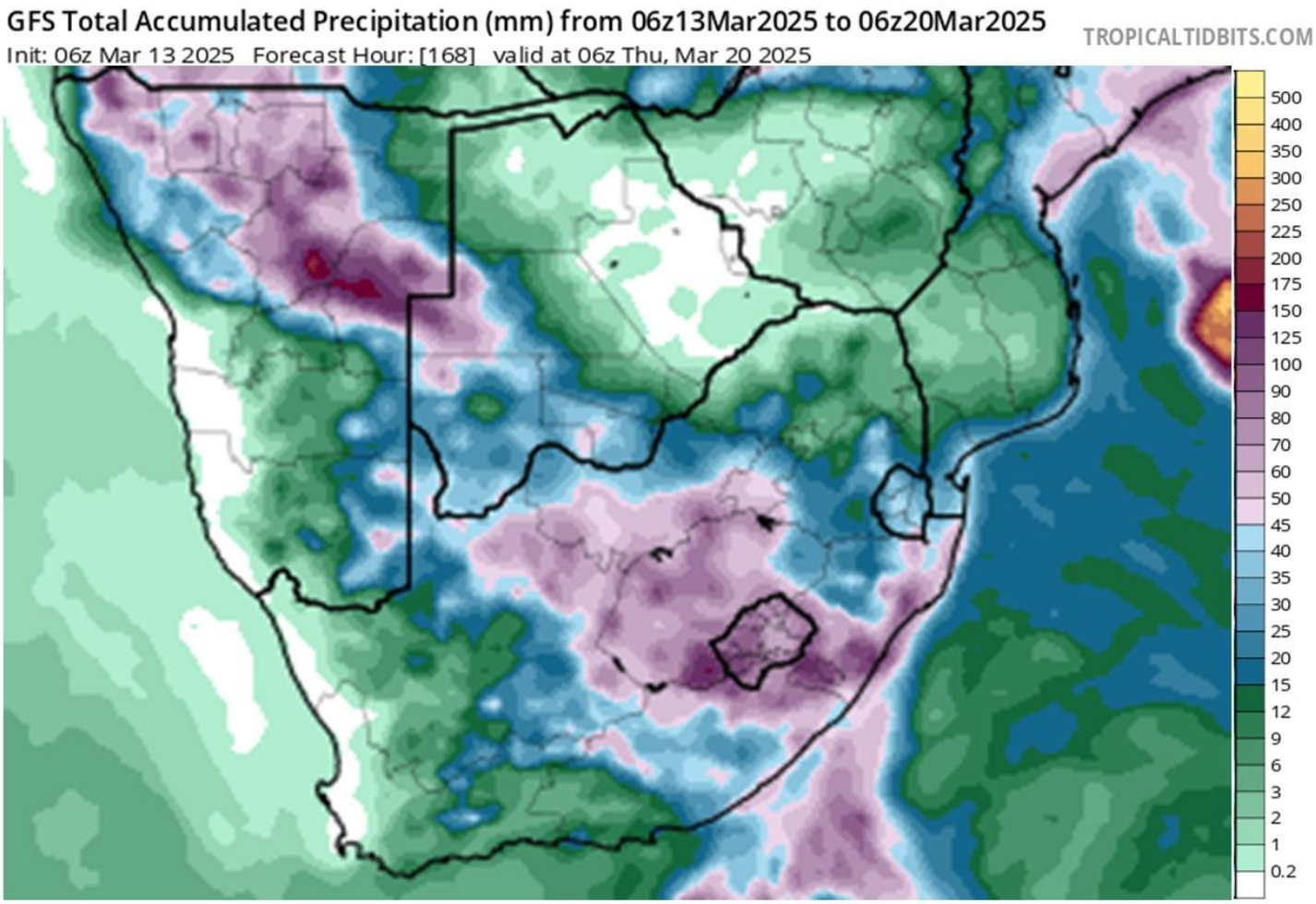
- Average maximum temperatures will range between 20 and 25°C over most of the interior Highveld.
- Average maximum temperatures will exceed 30°C over the north-western interior, western to northern interior of the Western Cape and Lowveld in the north-east.

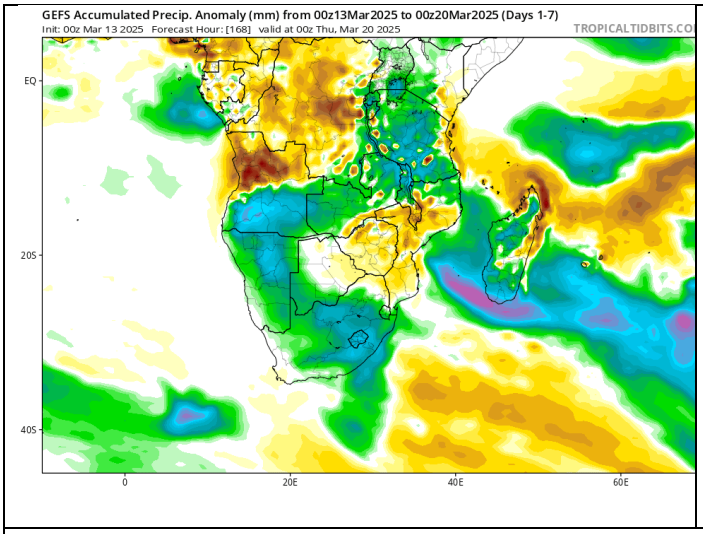


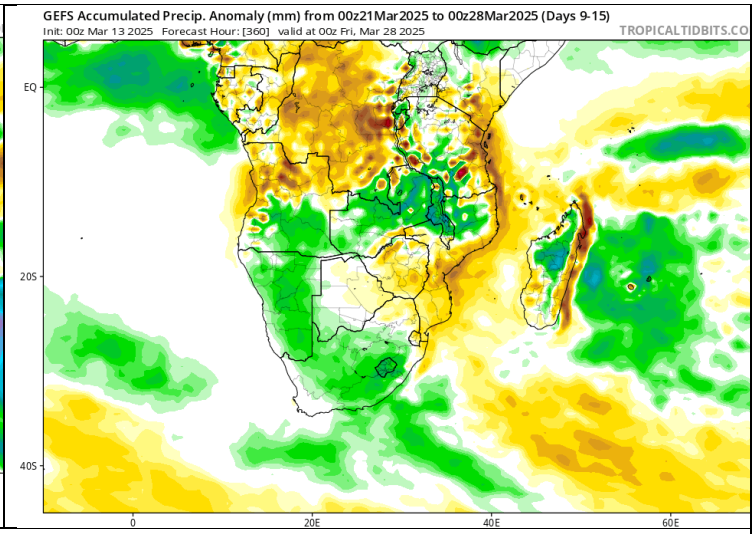
Highest maximum temperatures

- Highest temperatures during the next few days are expected to exceed 35°C over the northern to western parts of the Northern Cape and the western to northern parts of the winter rainfall region, including the Swartland.

Medium term rainfall summary







The GFS ensemble forecast (consisting of several forecasts with small initialization differences) favors above-average rainfall over the summer rainfall region (including the summer-grain production region) during the next few days. Conditions for rain over the interior remain favorable until the end of the month (right).

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

- **Wet conditions may be conducive to various fungal diseases:**
  - Maize production region**: Thursday to Wednesday (13th – 19th).**

- **Cloud cover at times and suppressed maximum temperatures may result in reduced accumulation of heat units:**
  - Maize-production region: **Thursday to Wednesday (13h – 19th).**

- **Cooler, wetter conditions following a hot, dry period can be conducive to various fungal diseases such as root rot:**
  - Maize production region, especially the central to western parts**: Thursday to Wednesday (13th – 19th).**

- **Further rain and low evaporation rates will prolong soil saturation, limiting access to fields for management interventions:**
  - Maize-production region: **Thursday to Wednesday (13th – 19th).**

- **Significant rainfall totals, exceeding 50 mm in 24h, may occur:**
  - KZN coast and adjacent interior: **Thursday and Friday (13th – 14th).**

- **Some thundershowers will tend to become severe and produce strong wind gusts and hail:**
  - Western to central and southern parts of the Northern Cape, interior of the Western Cape, Eastern Cape interior: **Friday and Saturday (14th – 15th).**
  - Central to eastern parts of the Northern Cape, western Free State, western North West, Eastern Cape interior: **Friday to Sunday (14th – 16th).**

- **It will be hot, with maximum temperatures exceeding 35°C:**
  - Central to western interior of the Northern Cape: **Thursday to Friday (13th – 14th).**
  - South-western parts of the Northern Cape: **Friday to Saturday (14th – 15th) and Monday to Wednesday (17th – 19th).**
  - Interior of the winter rainfall region, including the Swartland and Boland: **Friday to Saturday (14th – 15th) and Monday to Wednesday (17th – 19th).**
  - Karoo: **Tuesday to Wednesday (18th – 19th).**

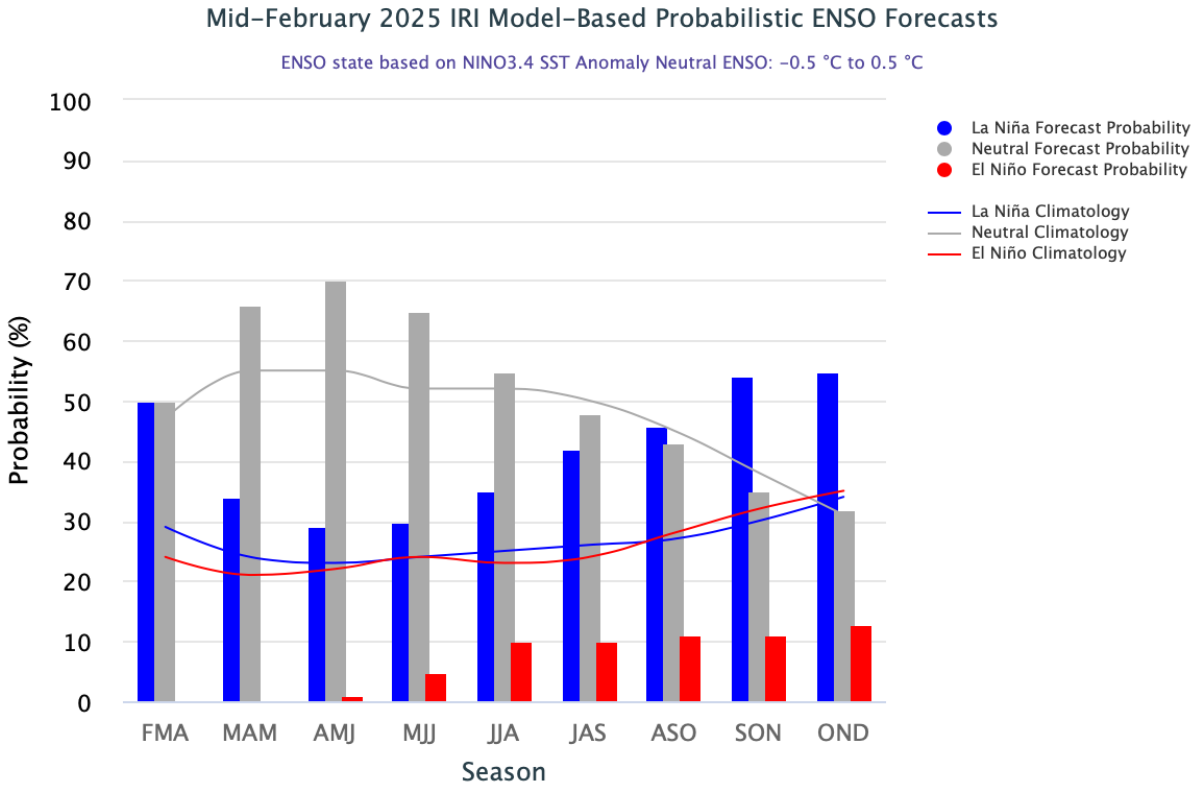
- **Dry, warm to hot and at times windy conditions will increase the fire hazard where vegetation is dry. Lighting at times may further enhance the potential for fires:**
  - Western to south-western parts of the country, including the winter rainfall region: **Thursday to Saturday (13th – 15th) and Monday to Wednesday (17th – 19th).**

Seasonal forecast

Current ENSO conditions:

The ENSO state is still a weak La Niña according to some institutions such as the NOAA Climate Prediction Centre and the IRI. This is based on evidence from the Sea Surface Temperatures which remained below the La Niña thresholds recently and some atmospheric indicators such as the Southern Oscillation Index (SOI) and the strength of the easterly winds over the equatorial central to eastern Pacific Ocean remaining more consistently in La Niña territory. La Niña conditions are expected to persist through March - April 2025. Certain institutions, such as the Australian Bureau of Meteorology still classify this summer as ENSO Neutral (Neither El Niño nor La Niña) based on the reasoning that several indicators are not consistently within the La Niña threshold even though the Equatorial Pacific Sea Surface Temperatures were within the La Niña range during the December – February period. The SOI has recently trended back to neutral values, below the La Niña threshold. The chance for an El Niño event however remains very slim according to their forecast for the rest of the year according the IRI.

The graph below shows the International Research Institute for Climate and Society (IRI) ENSO forecast which maintains the expectation of borderline La Niña or neutral conditions by late summer.



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

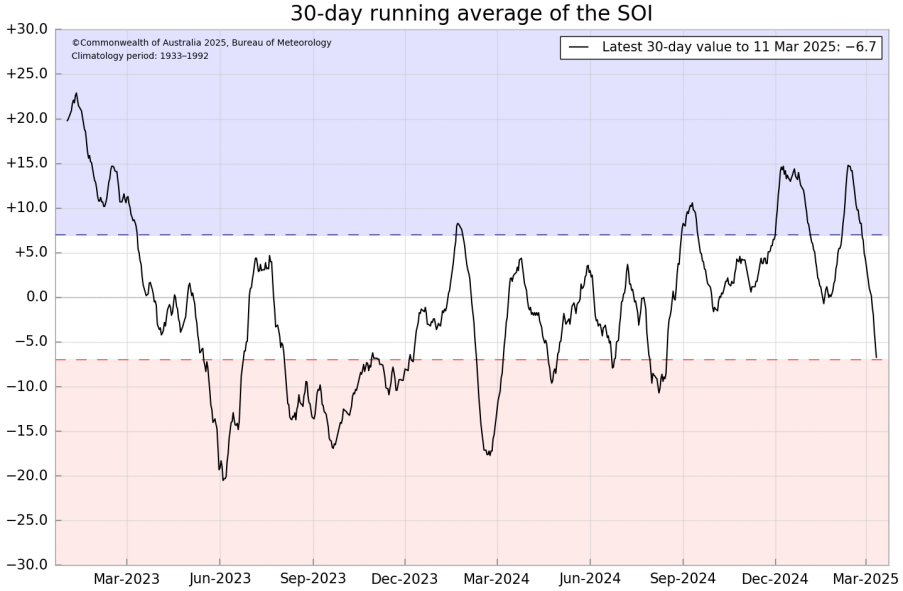
In their most recent update (issued 19 February), the **IRI** notes that “As of mid-February 2025, weak La Niña conditions persist in the equatorial Pacific, marked by cooler-than-average sea surface temperatures in the Niño 3.4 region, which remain slightly below the -0.5°C threshold—a key indicator of La Niña. These conditions have been in place since December 2024, following the initial crossing of the La Niña threshold. The IRI ENSO plume forecasts equal chances (50%) for La Niña and ENSO-neutral conditions for Feb-Apr, 2025. For Mar-May, 2025, onwards to the Jun-Aug, ENSO-neutral conditions are favored. The next two forecast seasons, Jul-Sep and Aug-Oct 2025, do not show a strong preference for La Niña or ENSO-neutral. However, ENSO-neutral conditions are slightly favored in the earlier period, while La Niña conditions are slightly favored in the later period. For Sep-Nov (54%) and Oct-Dec (55%) 2025, La Niña conditions are favored slightly over ENSO-neutral conditions. In summary, there are equal chances of La Niña and ENSO-neutral conditions during Feb-Apr 2025, while ENSO-neutral conditions are favored from Mar-May through the boreal summer. The probability of El Niño remains very low throughout the forecast period.”.

In their most recent update (5 March), the **Australian Bureau of Meteorology** states that “The El Niño Southern Oscillation (ENSO) in the tropical Pacific remains neutral:

- The El Niño–Southern Oscillation (ENSO) remains neutral despite a brief period from December to February when the tropical Pacific shifted towards a La Niña-like state. SSTs in the central tropical Pacific have risen over the past 4 weeks, with the most recent value of Niño3.4 (−0.30 °C for the week ending 2 March) firmly within the neutral range..…….. **http://www.bom.gov.au.**

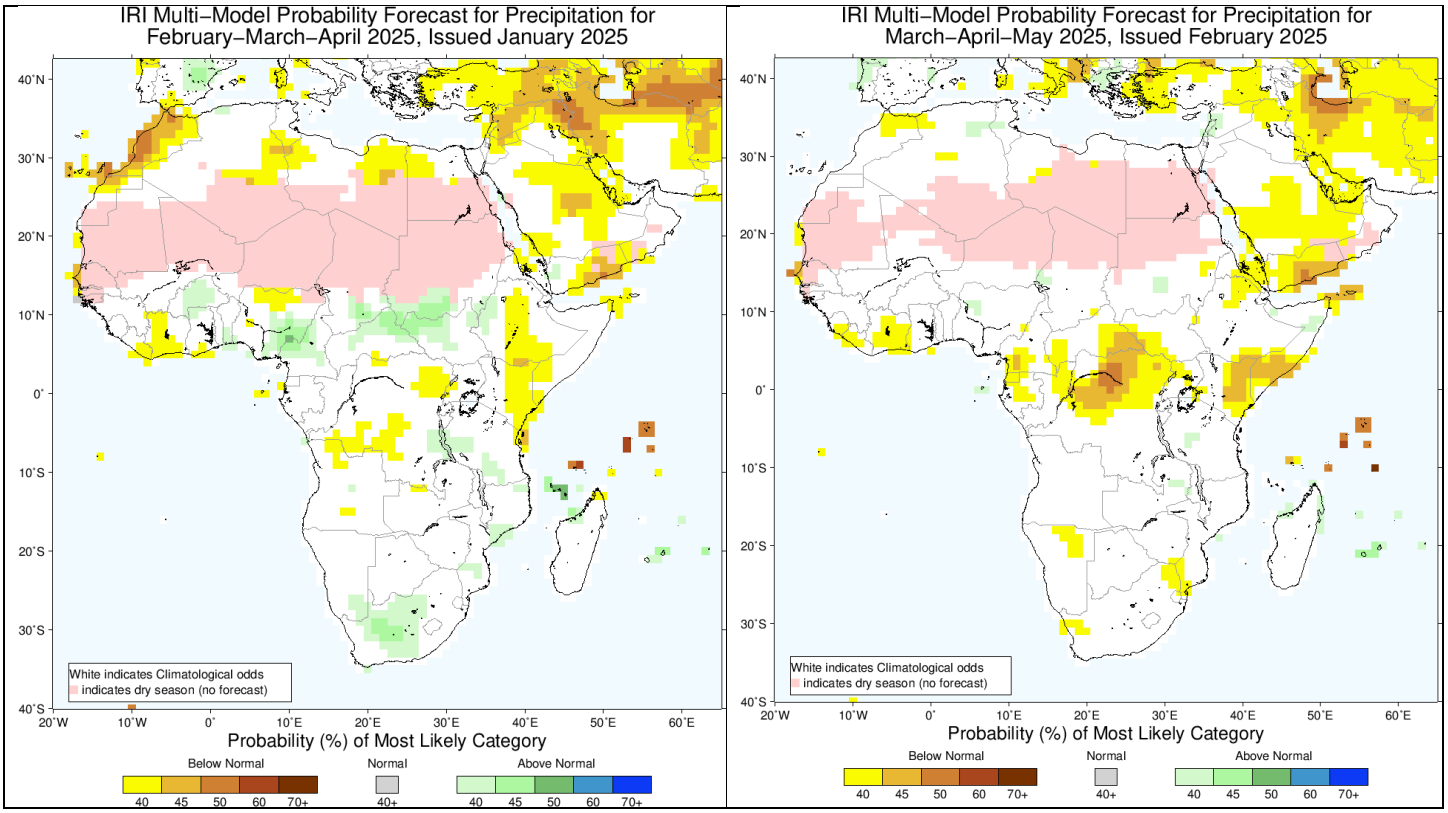
The Southern Annular Mode (SAM) is currently positive, but expected to return to neutral values next week. A positive SAM during mid-to late summer is associated with relatively wet conditions over the summer rainfall region of South Africa.

The 30-day Southern Oscillation Index (SOI) is currently -6.7 and therefore representing atmospheric pressure patterns in the Australia – Pacific region indicative of Neutral conditions. The slow upward trend in the SOI since summer 2023/24 seems to have reached a peak recently.

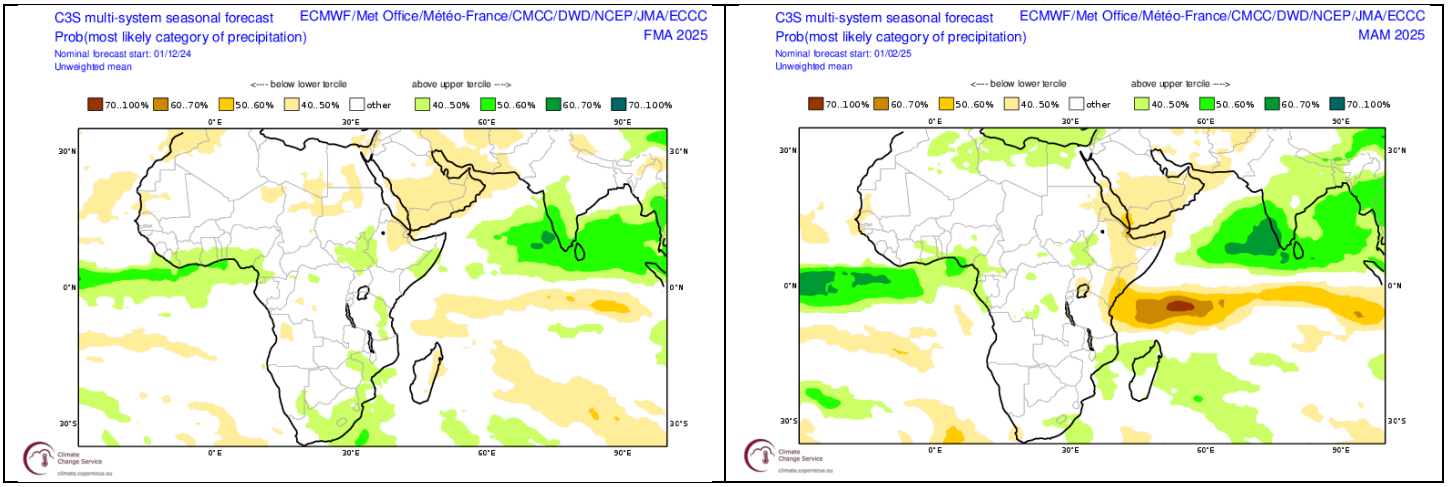


Seasonal forecasts issued by various international institutions

Seasonal forecasts (updated in January and February 2025) remain relatively neutral for late summer given the weak signal from the Pacific Ocean but have trended slightly positive for rainfall over the summer rainfall region. The IRI seasonal forecast (first pair of maps) for the period February to April indicates an enhanced probability for relatively wet conditions over the central interior while the forecast for autumn leans to neither wet nor dry conditions. This is still very much an uncertain forecast due to the weak state of ENSO, or a very late and weak La Niña event according to some institutions. The COPERNICUS multi-model assimilated forecast (second pair of maps) also shows the expectation of relatively wet conditions over large parts of the interior during late summer, together with also a much more subdued, neutral outlook for autumn.



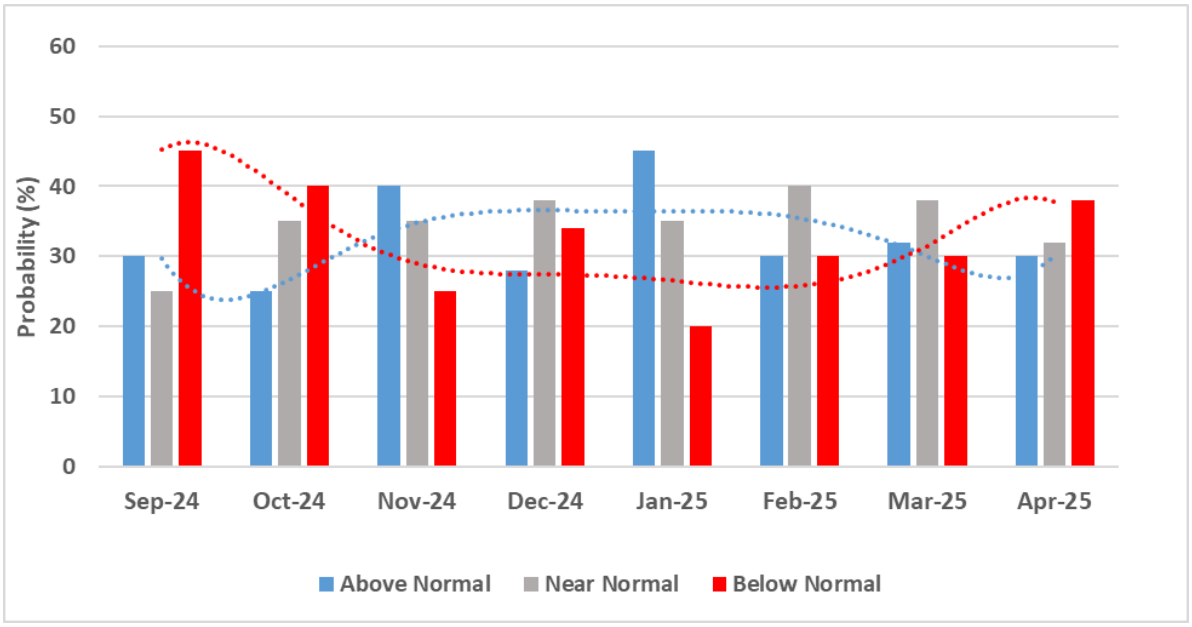
Probabilistic forecasts by the International Research Institute for Climate and Society (IRI) for rainfall for late summer/autumn (February to April 2025, right – Forecast issued in 2025-01) and autumn (March to May 2025, right – Forecast issued in 2025-02).



Probabilistic multi-model forecasts by the ECMWF COPERNICUS Programme for rainfall for late summer/autumn (February to April 2025; left - Forecast issued in 2025-01) and autumn (March to May 2025, right – Forecast issued in 2025-02).

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), associated with the cyclic variability of the global climate system. Summers that are similar to 2024/25 usually experience near normal rainfall in total, with a delayed start and a wetter signal during November and again by January/February.



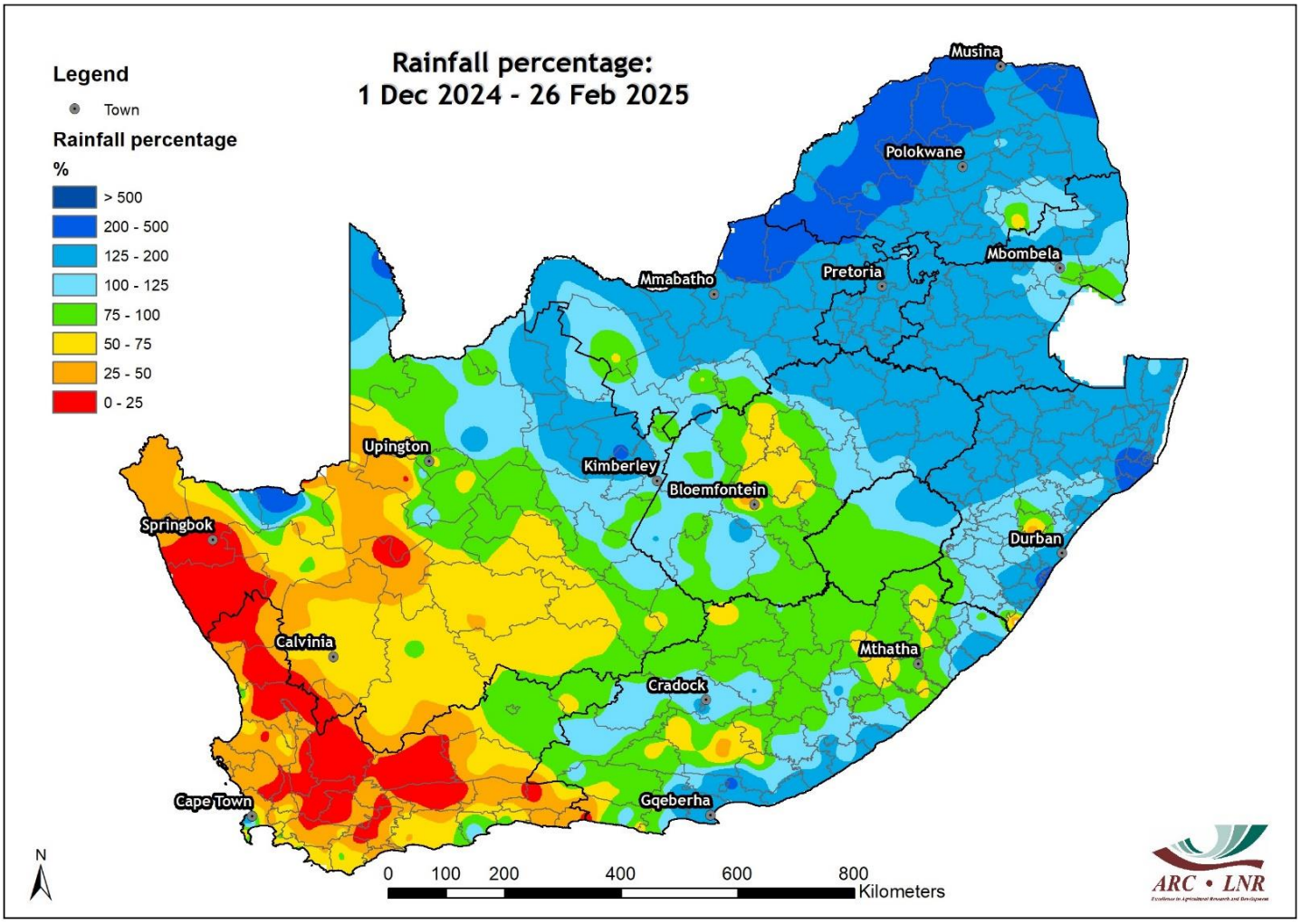
Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2024 – April 2025 (Forecast issued in 2024-10).

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

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

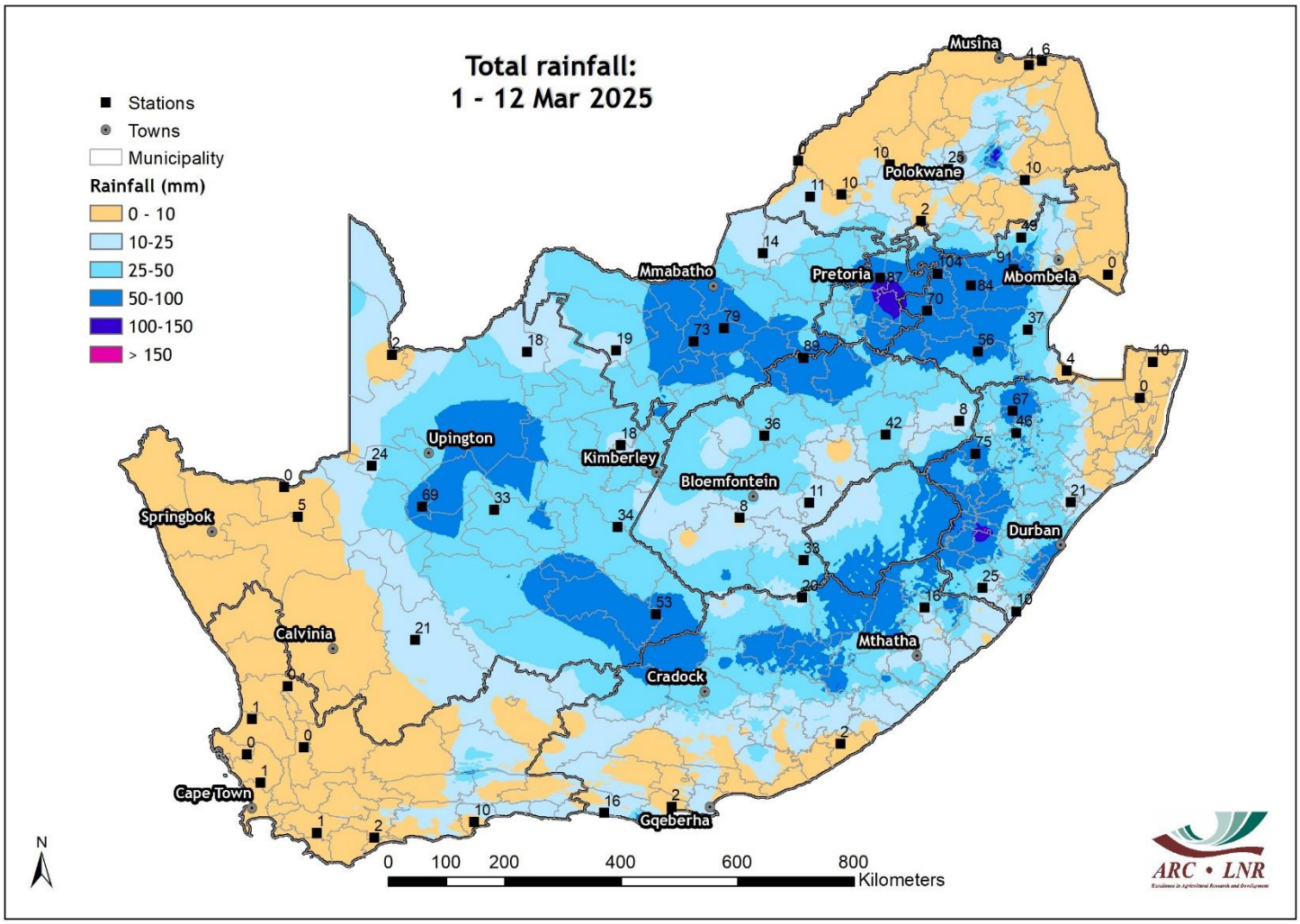
Observed conditions

Rainfall (%): 1 December 2024 - 26 February 2025



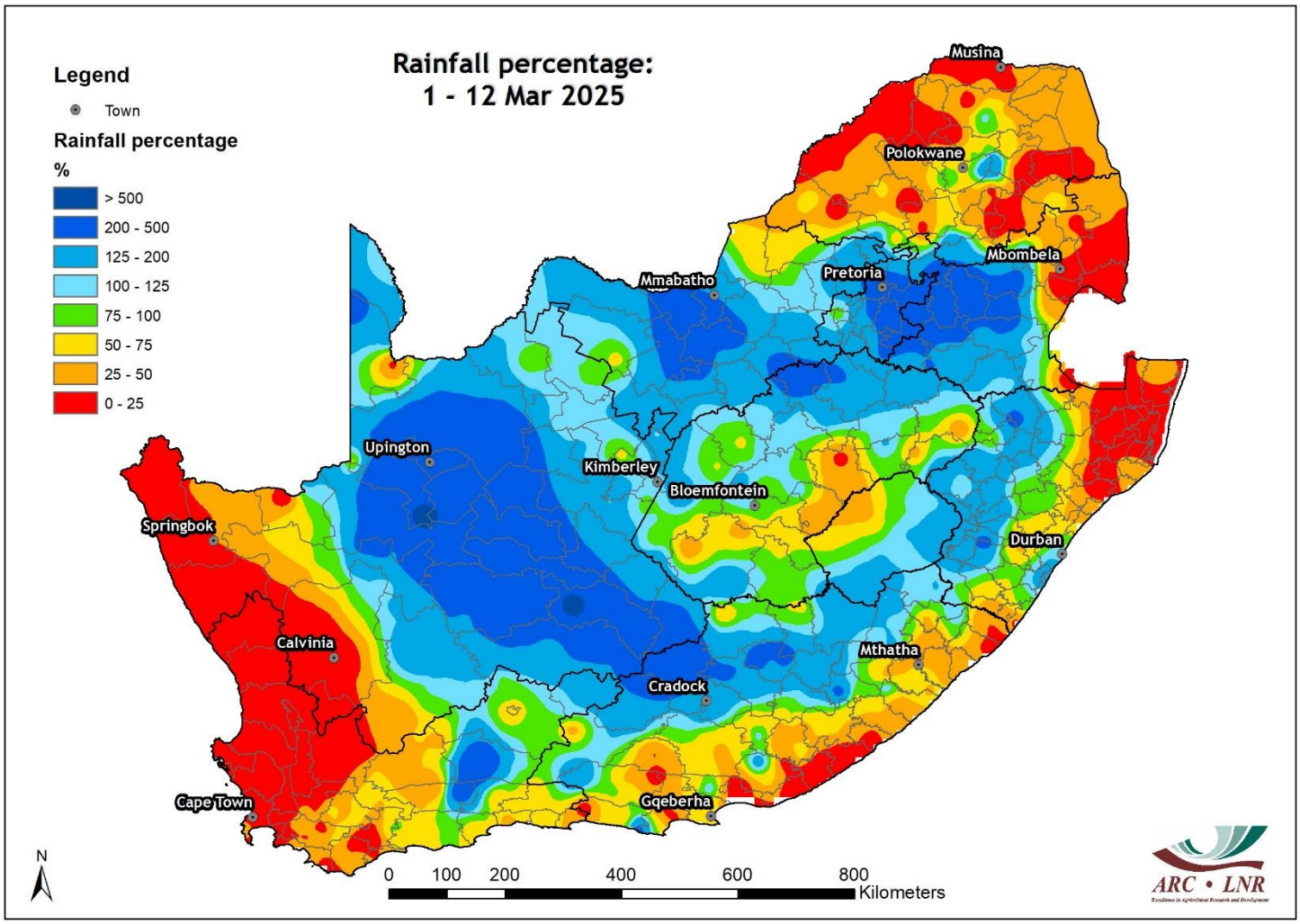
Most of the summer-rainfall region received near-average to above average rainfall for the period 1 December to 26 February. The central to north-western parts of the Free State, including a large part of the western summer-grain production region, received below-average rainfall. Little to no rain occurred over the winter rainfall region.

Rainfall (mm): 1 - 12 March 2025



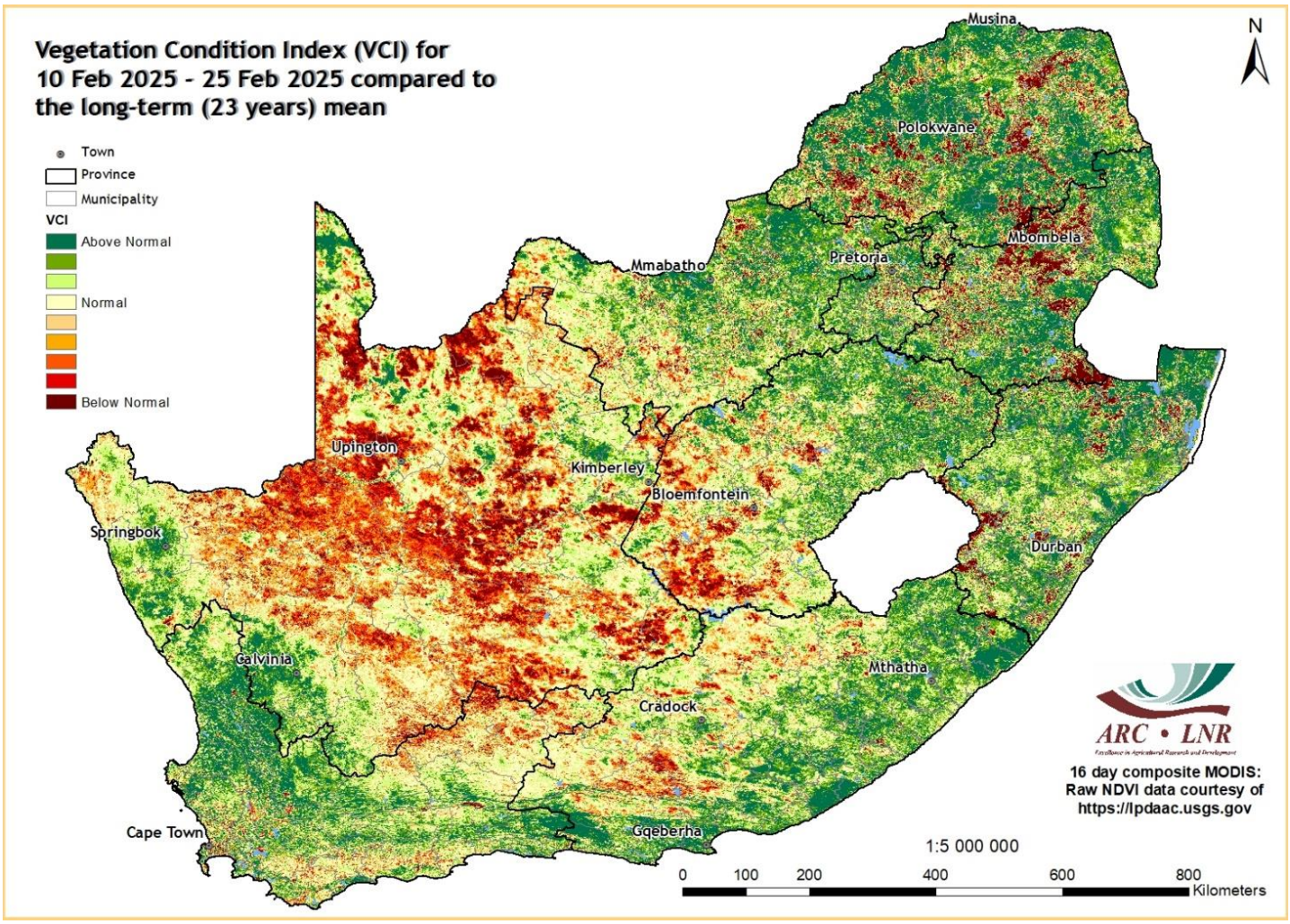
Most of the grain production region in the North West and Mpumalanga received between 50 and 100 mm during March up to the 12th. Most of the central to eastern interior received in excess of 25 mm. Little to no rain was recorded over the lower-lying extreme north-eastern to eastern parts and the winter rainfall region.

Rainfall (% of LT mean): 1 - 12 March 2025



Large parts of the interior, including most of the summer-grain production region, received above average rainfall during the first 12 days of the month. Limpopo, eastern Mpumalanga, the eastern to southern seaboard and the winter rainfall region was relatively dry.

Vegetation Condition Index: Late February 2025



By late February, vegetation activity remained above normal over the northern to eastern and south-eastern parts due to widespread rain from mid-December onwards. Vegetation is stressed over the central to eastern parts of the Northern Cape and into the southern to western Free State (including some of the western grain-production areas) as well as the eastern Karoo due to low rainfall and high temperatures continuing until recently over these areas. Vegetation activity remained above normal over the winter rainfall region following above-normal rainfall during winter, but vegetation activity is below normal over parts of the grain-production regions.

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**