



CUMULUS

23 JANUARY 2025

by J Malherbe, R Kuschke

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Summary

Drier pattern continues

Drier conditions are expected to continue over most parts during the next few days. Maximum temperatures will remain high over large areas, especially over the central to western parts of the country. While the large-scale circulation patterns remain unfavorable, as reflected in above-normal convection and rainfall over the south-west Indian Ocean, most of the summer rainfall region will be dry and hot. A band of isolated thundershowers will be present over the eastern summer rainfall region initially and during the weekend when it will be very hot and dry over the central parts. Current forecasts indicate a redevelopment of thundershowers over the central to western parts next week. An upper-air trough to the west may result in somewhat more widespread thundershowers over the central parts next week, including possibly the central to western parts of the summer-grain production region. This will depend on the location and strength of the upper-air trough to the west. However, with large amounts of tropical moisture still confined to the areas to the east of the subcontinent, the chance for widespread above-normal rainfall over the country or summer-grain production region specifically remains slim.

Following the gradual contraction of wet conditions towards the northeast during mid-January, drier conditions have started dominating over the interior. It is not rare for a warmer, drier period during mid-January, coupled with cyclonic activity in the south-west Indian Ocean, to occur even during La Niña events. During most years, these conditions are replaced by a return to wetter conditions over the interior by early February. While forecast models still don't indicate widespread rain over the summer rainfall region during the next two weeks, the forecasted redistribution of convection along the equator during early February indicates a more favorable large-scale environment for a possible return of widespread rain over the interior during the first half of the month (February). The pattern will be monitored and discussed further next week.

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

- Temperatures will on average be above normal.
- Rainfall will be below normal, but near normal over the central parts.
- Rain is expected along the Garden Route, but most of the western parts of the winter rainfall region will be dry.
- Isolated thundershowers will occur over the eastern parts until the weekend. The area of thundershowers will shift back into the central parts and become scattered over the central to southern parts early next week.
- Rainfall totals will be low especially over the eastern parts of the summer rainfall region.
- The summer-grain production region will generally be warm and dry. The central to northern and eastern parts of the region are expected to receive very limited rainfall while the far western to southern parts may receive normal to above normal rainfall for this time of the year, according to current forecasts. The rain over the western parts of the region is expected to occur by next week and the forecast is still uncertain. It will be warm and sunny for this time of the year, with maximum temperatures above 35°C over the central to western parts on several days.
- **The winter rainfall region** will be sunny to partly cloudy and warm. It will become hot on several days over the Swartland and Boland. Widespread showers are possible along the Garden Route by Sunday and Monday when it will be cooler over the southern half of the region.

Overview of expected conditions over the main agricultural production areas

With most of the large-scale moisture and convection currently located to the northeast of South Africa over the south-west Indian Ocean, the summer-grain production region will experience sunny and dry conditions with below-normal rainfall in most areas. An upper-air trough to the southwest may result in scattered showers and thundershowers over the central to western parts next week, but forecasts are still uncertain. Rainfall extent and intensity may be limited in the absence of tropical moisture while large-scale patterns are unfavourable as is currently the case.

Maize production region:

It will remain warm to hot and relatively sunny. Isolated to scattered convective thundershowers are expected over the region, especially over the western parts. High evaporation rates and distribution of rainfall will result in a drying trend over much of the region.

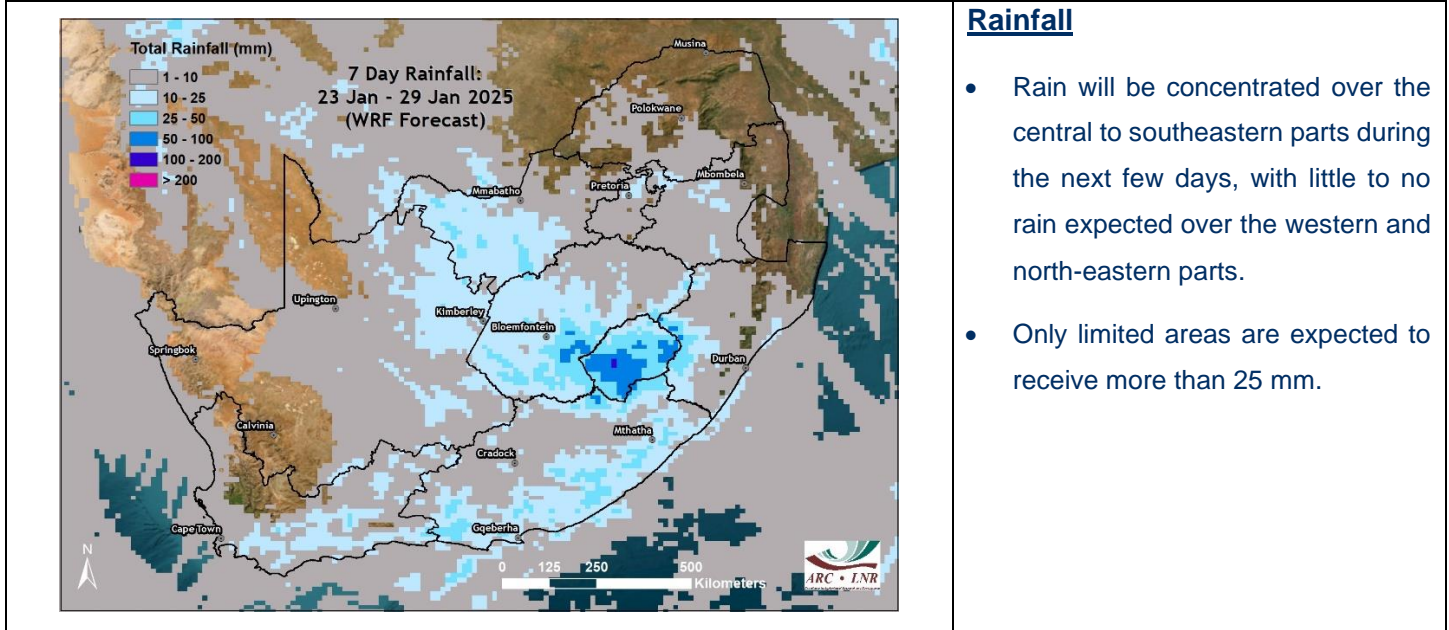
- Maximum temperatures over the eastern maize-production areas will range between 27°C and 31°C. Minimum temperatures will be in the order of 13°C to 17°C.
- Maximum temperatures over the western maize-production areas will range between 31°C and 37°C, with the higher temperatures further west. Minimum temperatures will be in the order of 16°C to 21°C.
- **Thursday (23rd):** Partly cloudy and warm, but hot in the west. Isolated thundershowers are possible but scattered over the north-eastern Free State into southern Mpumalanga.
- **Friday (24th):** Partly cloudy and warm with isolated thundershowers in the east. The central to western parts will be hot with moderate westerly winds.
- **Saturday (25th):** Partly cloudy and warm with isolated thundershowers in the east. The central to western parts will be hot.
- **Sunday (26th):** Partly cloudy and warm, but hot over the central to western parts. Isolated thundershowers are possible.
- **Monday (27th):** Partly cloudy and warm, with scattered thundershowers, but isolated in the east.
- **Tuesday to Wednesday (28th – 29th):** Current forecasts indicate a continuation of thundershowers over the region, but due to the weakening of the upper-air trough, falls will likely become more isolated, and it may become hot again in the western and central parts.

Cape Wine Lands and Ruens:

The region will be partly cloudy and warm for the most part. It will be hot over the Boland, Swartland and further north along the west coast and escarpment especially from Saturday to Tuesday. It will be cloudy and cool over the southern parts with showers along the Garden Route on Sunday and Monday. Strong south-easterly winds are expected over the southwestern parts from Sunday onwards, becoming easterly towards the middle of the week.

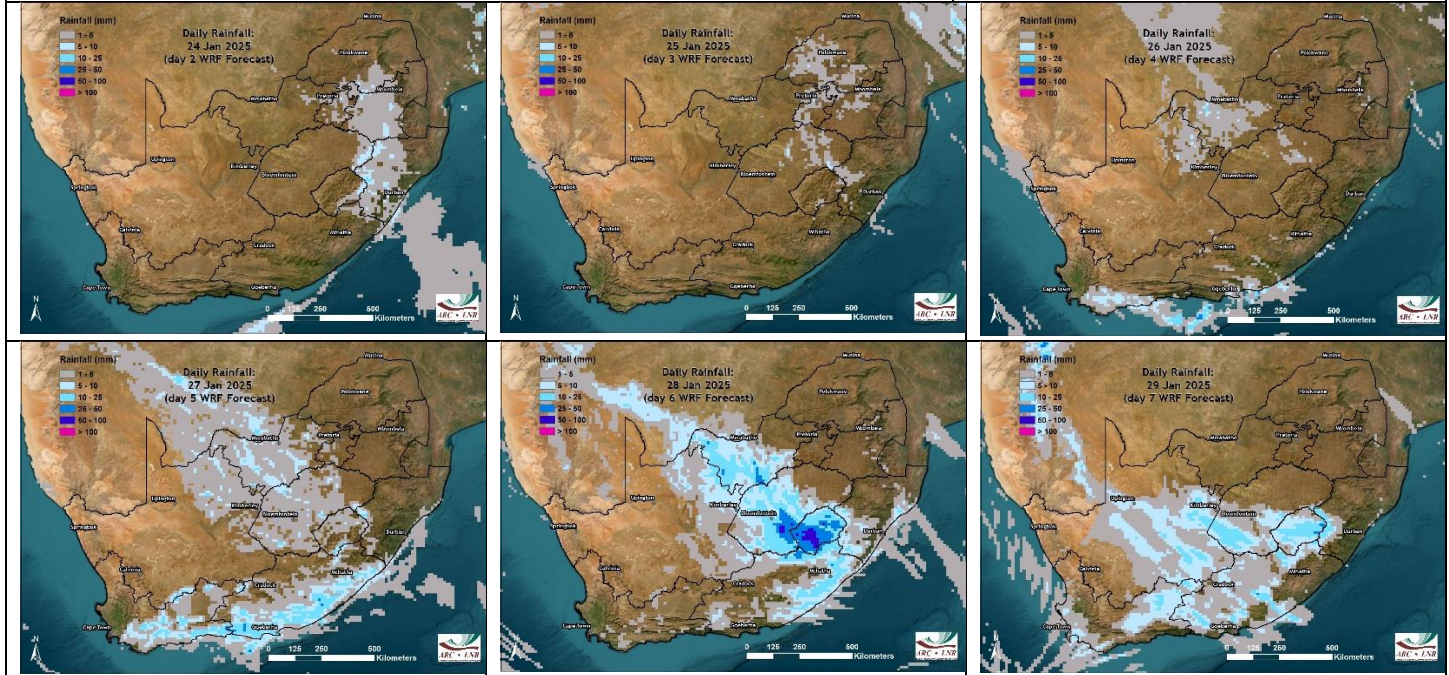
Daily summary of expected conditions (23 – 29 Jan)

(GFS forecast downscaled using WRF)

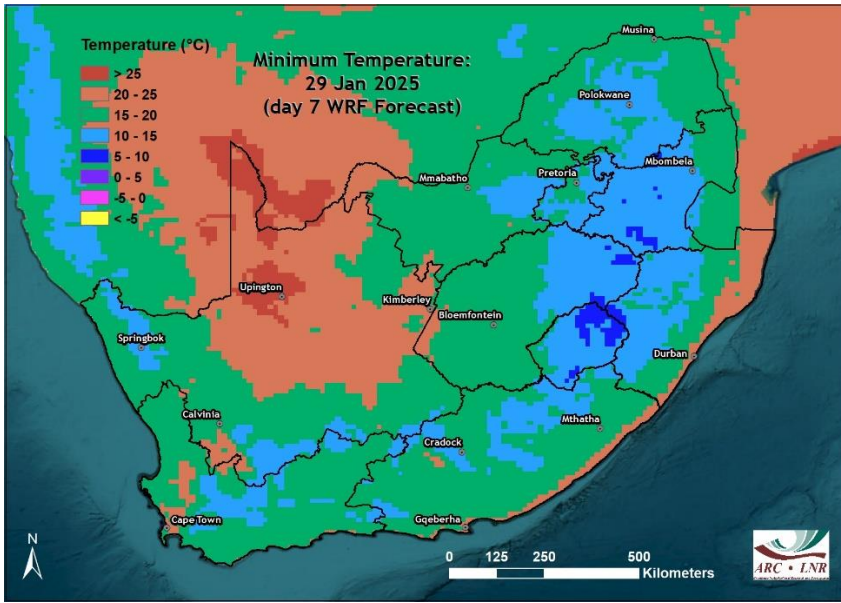


Rainfall

- Rain will be concentrated over the central to southeastern parts during the next few days, with little to no rain expected over the western and north-eastern parts.
- Only limited areas are expected to receive more than 25 mm.

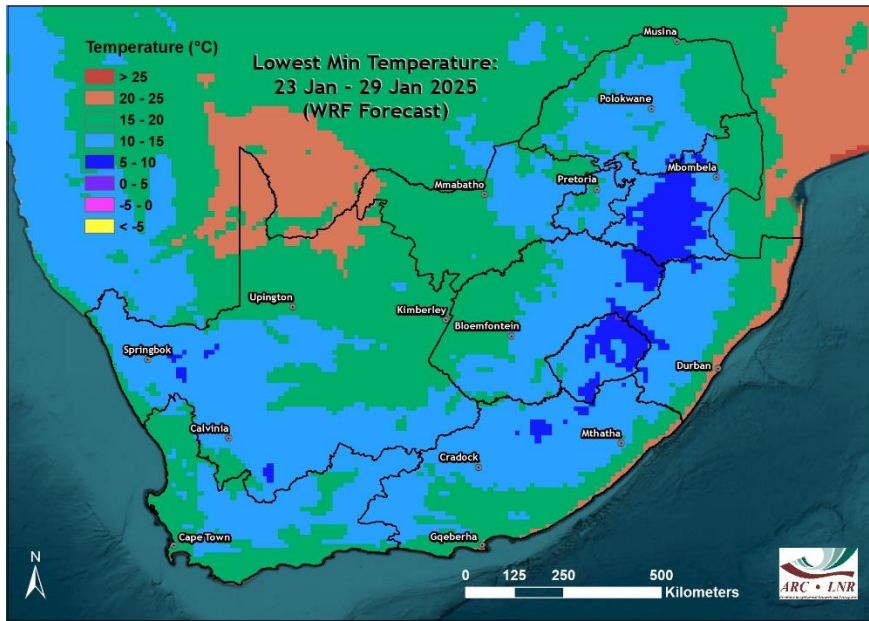


- Isolated thundershowers are expected over the eastern parts at first and during the weekend. .
- Thundershowers will gradually shift westwards and become scattered over the central to southern and south-eastern parts next week.



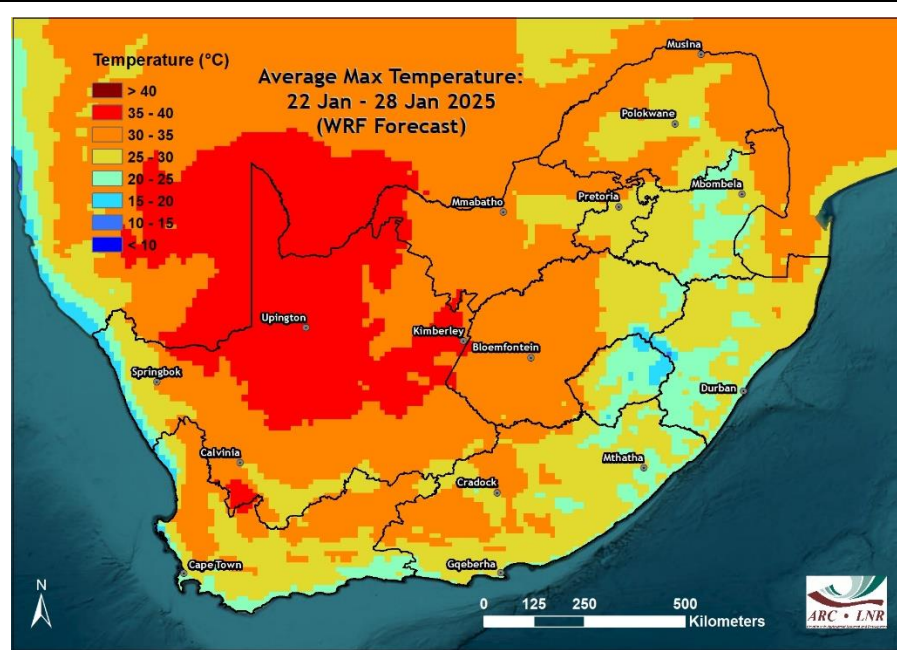
Average minimum temperatures

- Average minimum temperatures will range between 10 and 20°C over most of the country.



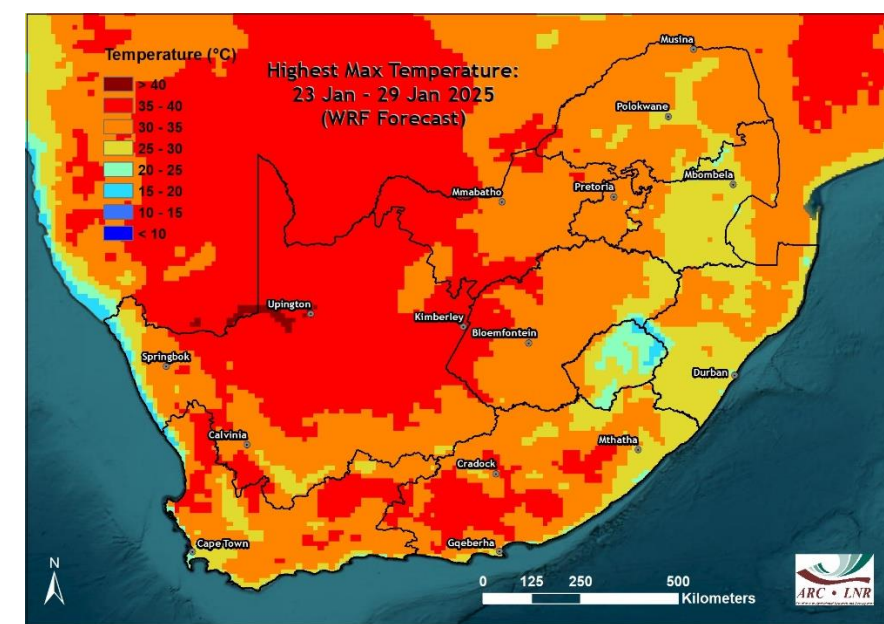
Lowest minimum temperatures

- Lowest minimum temperatures will remain above 5°C over the summer-grain production region.



Average maximum temperatures

- Average maximum temperatures will range between 25 and 30°C over most of the north-eastern interior and southern to south-eastern and eastern parts.
- Average maximum temperatures will range between 35 and 40°C over most of the Northern Cape interior.



Highest maximum temperatures

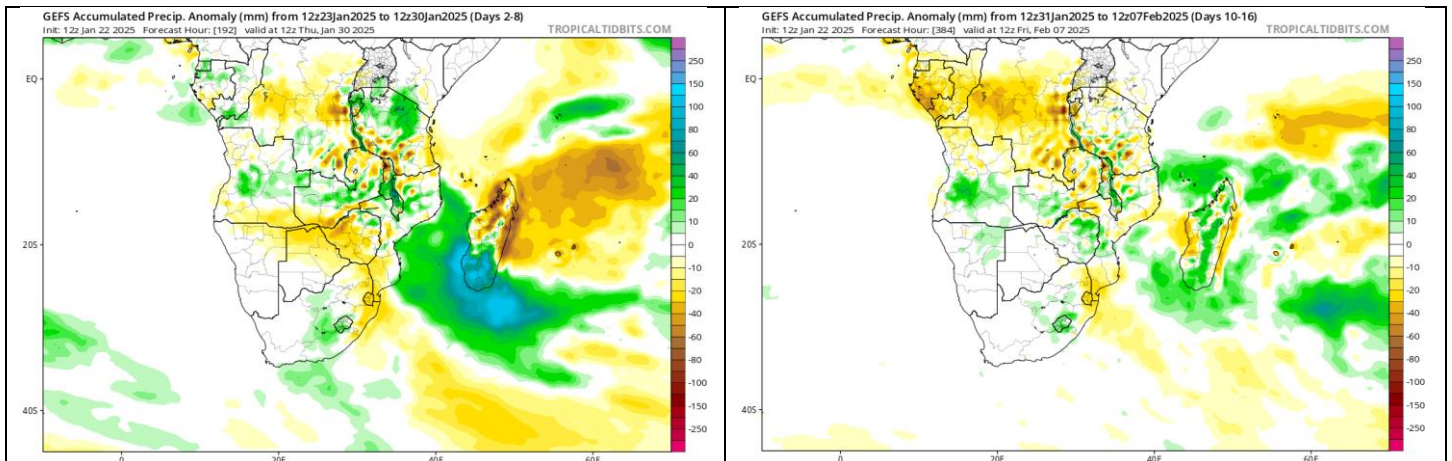
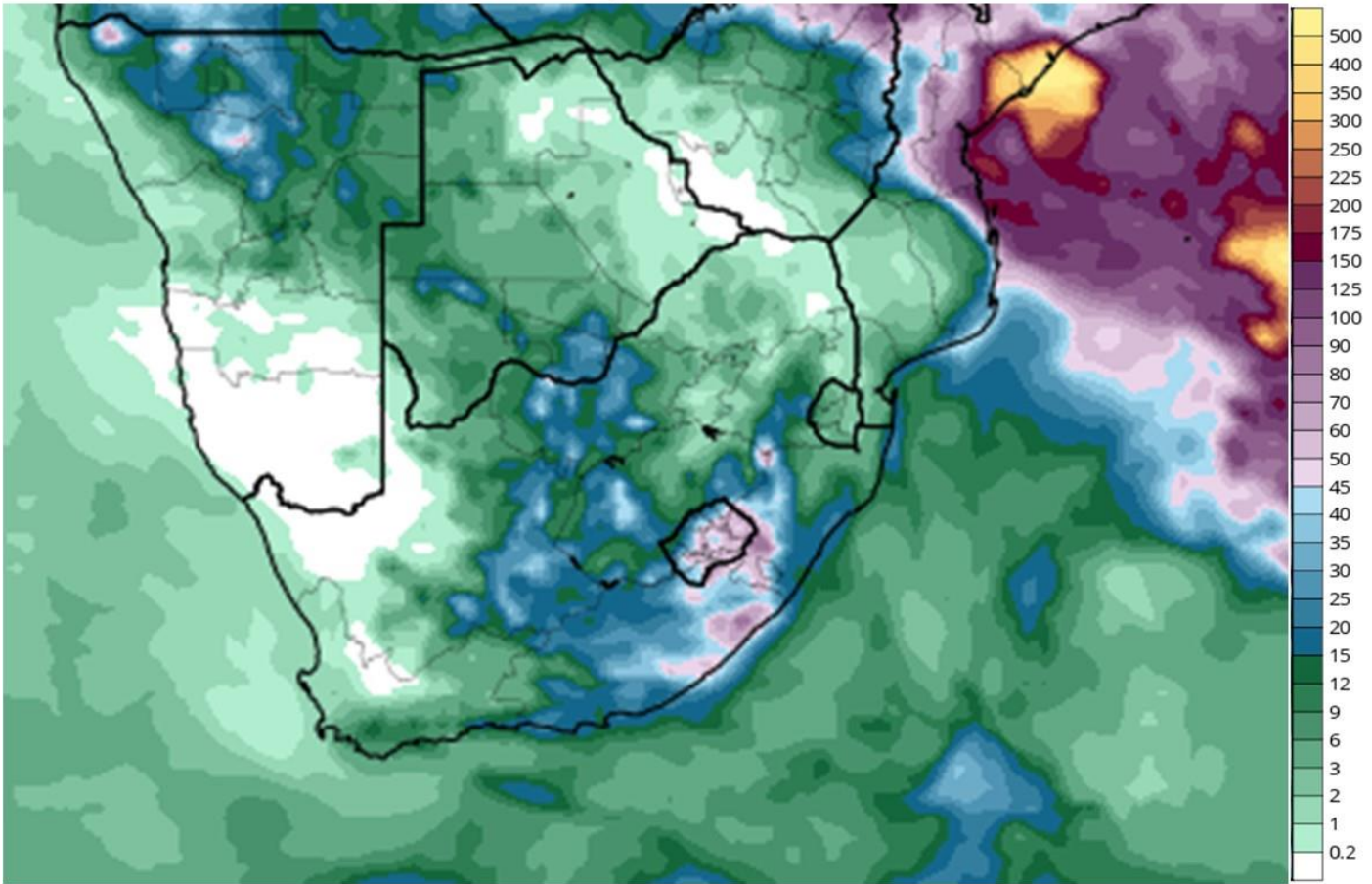
- Highest temperatures during the next few days are expected to exceed 35°C over large parts of the cape provinces as well as the western parts of the North West and Free State provinces.

Medium term rainfall and temperature summary

GFS Total Accumulated Precipitation (mm) from 06z23Jan2025 to 12z31Jan2025

Init: 06z Jan 23 2025 Forecast Hour: [198] valid at 12z Fri, Jan 31 2025

TROPICALTIDBITS.COM



The GFS ensemble forecast (consisting of several forecasts with small initialization differences) favors below average rainfall over most of South Africa while large-scale tropical activity remains to the east of the subcontinent in the Mozambique Channel (left). However, some thundershowers over the central parts of the country next week may result in above-average rainfall over some of those areas. Conditions may remain similar, with relatively dry conditions over the subcontinent, during the first week of February (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 23 January) 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:

- **Some thundershowers will tend to become severe and produce strong wind gusts and hail:**
 - Central to eastern parts of the Northern Cape, western to central Free State, southwestern North West: **Sunday to Monday (26th – 27th).**
 - Western to central parts of the Eastern Cape, eastern to northern parts of the Western Cape, southern parts of the Northern Cape: **Monday to Wednesday (27th – 29th).**
- **Dry, warm to hot and windy conditions at times will increase the fire hazard where vegetation is dry:**
 - Western to southern interior: **Thursday to Monday (23rd – 27th).**
- **Hot, dry conditions can be conducive to stalk rot where maize is in the flowering and grain-filling stages:**
 - Maize production region, especially the central to western parts.
- **It will be hot, with maximum temperatures exceeding 35°C:**
 - Interior of the Northern Cape: **Thursday to Wednesday (23rd – 29th).**
 - The Karoo: **Thursday to Sunday (23rd – 26th).**
 - Interior of the winter rainfall region, including the Swartland and Boland: **Friday to Tuesday (24th – 28th).**
 - Northern KZN: **Thursday to Monday (23rd – 27th).**
 - Lowveld and northern to eastern parts of the Limpopo River Valley: **Thursday to Tuesday (23rd – 27th).**
 - Western to central and northern Free State and North West: **Friday to Sunday (23rd – 26th).**

Seasonal forecast

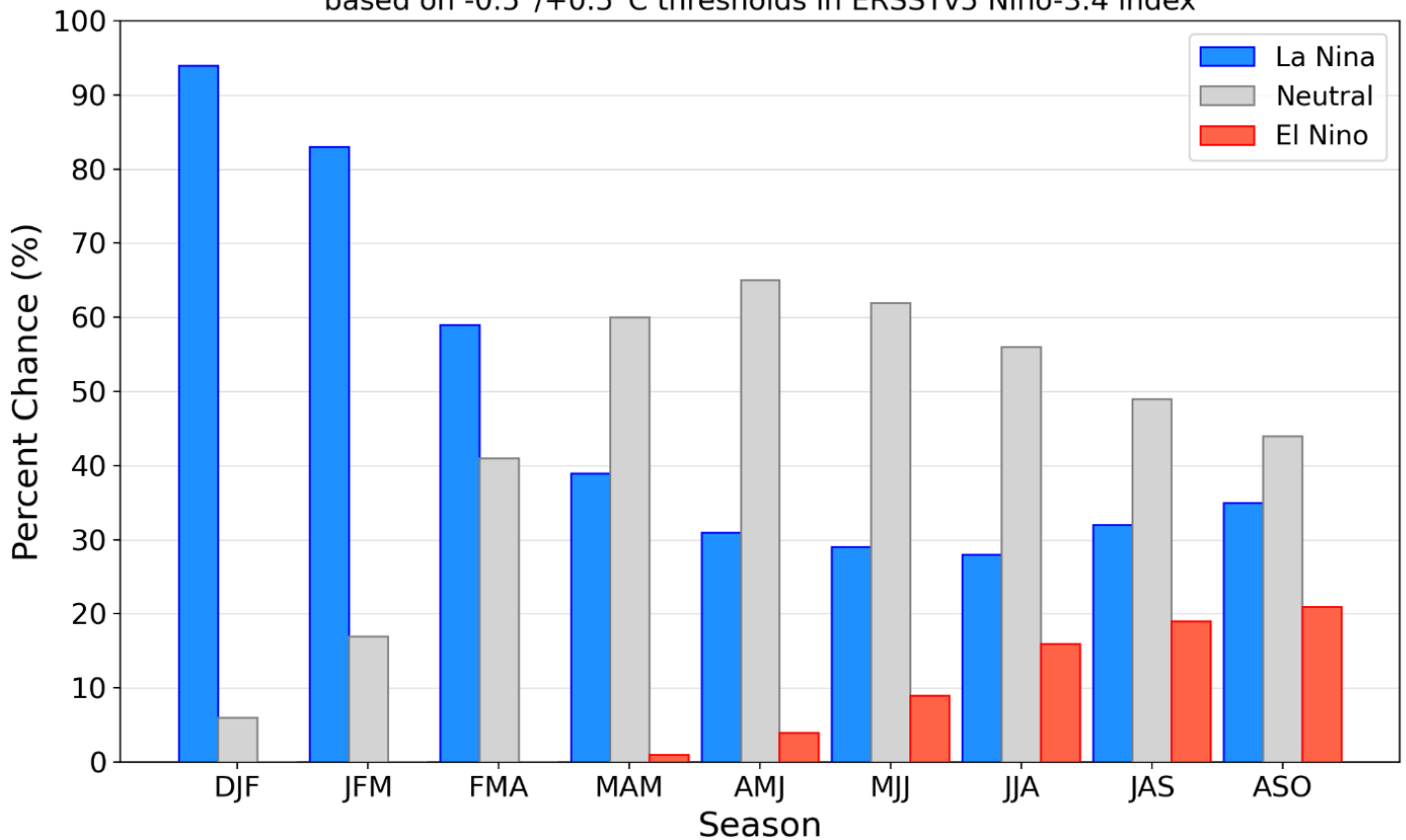
Current ENSO conditions:

The ENSO state has finally been declared to be a weak La Niña by the NOAA Climate Prediction Centre. This is based on evidence from the Sea Surface Temperatures which remained below the La Niña thresholds during the last few weeks and with atmospheric indicators such as the Southern Oscillation Index (SOI) and the strength of the easterly winds over the equatorial central to eastern Pacific Ocean now more consistently remaining in La Niña territory. La Niña conditions are expected to persist through February-April 2025. Certain institutions, such as the Australian Bureau of Meteorology still classify this summer as ENSO Neutral (Neither El Niño nor La Niña).

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 mid-summer:

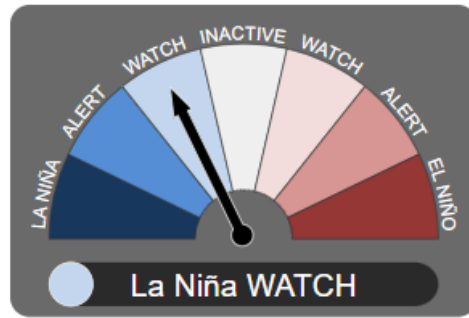
Official NOAA CPC ENSO Probabilities (issued January 2025)

based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index



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 9 January), the IRI notes that “As of mid-December 2024, ENSO-neutral conditions persist in the equatorial Pacific, and both oceanic and atmospheric indicators remain in an ENSO-neutral state. The IRI ENSO prediction plume forecasts slightly higher chances (59%) for ENSO-neutral conditions for Dec-Feb. 2025, with a continuation of ENSO-neutral conditions from Jan-Mar. 2025 to Jul-Sep, 2025. For Aug-Oct 2025, no specific ENSO category emerges as favored. In summary, ENSO-neutral conditions are expected to persist through the *austral summer, autumn, and winter* of 2025.....According to the most recent official CPC ENSO Outlook (issued on December 12, 2024), the La Nina onset is forecasted in Nov-Jan 2024, with 59% chances; however, the objective IRI model-based ENSO outlook forecasts indicate the continuation of ENSO-neutral conditions for Dec-Feb, 2025.”

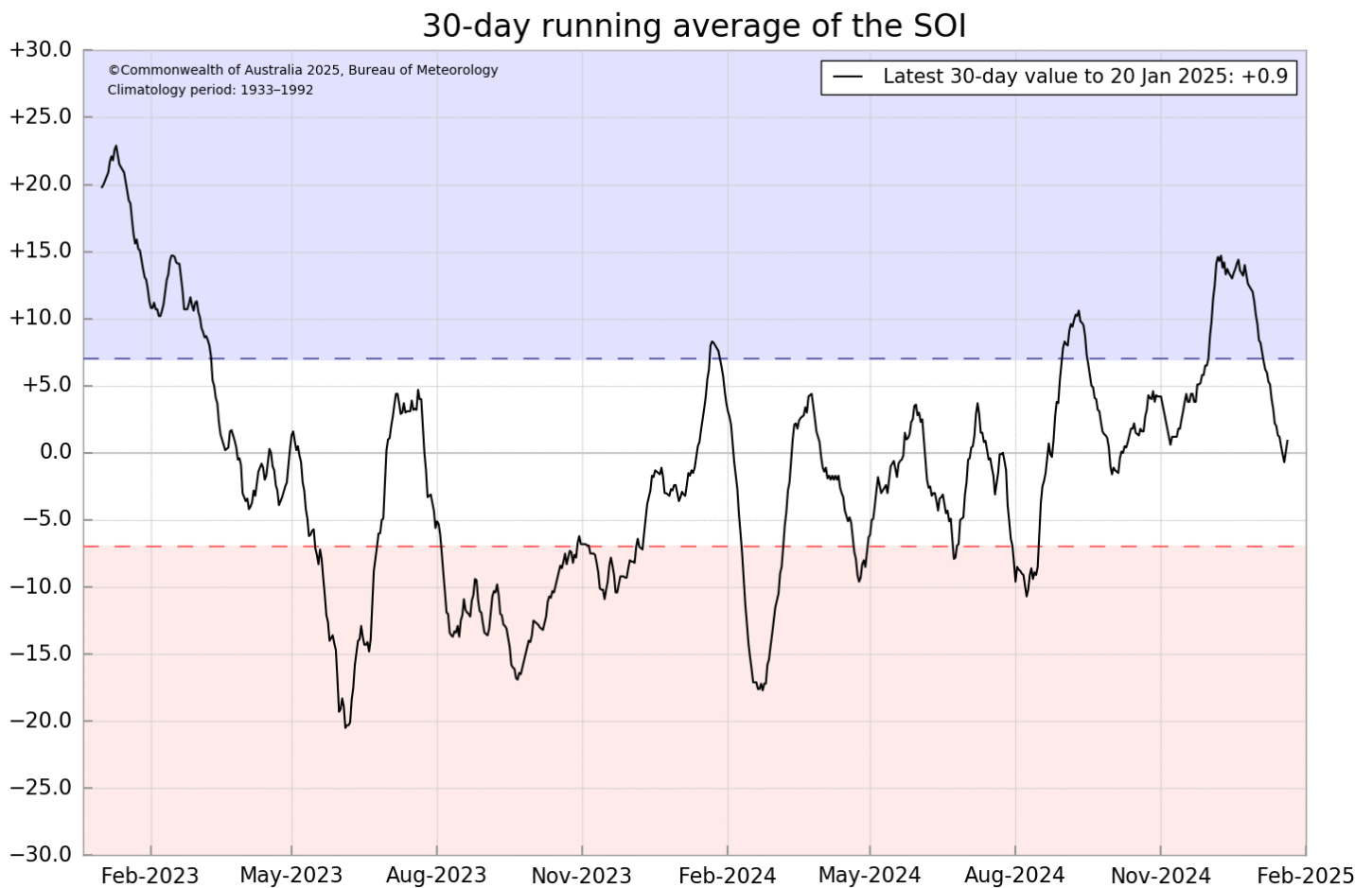
The **Australian Bureau of Meteorology** has stated that atmospheric indicators have recently remained more consistently within La Niña thresholds while SSTs are already at La Niña levels. This has increased the chance for a La Niña to be declared should the atmospheric indicators remain within La Niña thresholds. In their most recent update (21 January), the **Australian Bureau of Meteorology** states that “The El Niño Southern Oscillation (ENSO) in the tropical Pacific remains neutral. While many of the indicators have recently met the threshold for La Niña they have not been sustained for levels or duration sufficient to warrant La Niña status:

- The El Niño–Southern Oscillation (ENSO) has remained neutral for the past 6 months, despite changes in sea surface temperature patterns consistent with a developing La Niña.
- Since late December, conditions across the tropical Pacific have been more La Niña like, with both oceanic and atmospheric indicators beginning to align. However, until a sustained atmospheric and oceanic response is observed, the Bureau's ENSO status remains neutral.
- All surveyed international models have a neutral ENSO outlook from March until at least June.
- Historically, it is very late in the typical ENSO cycle for a La Niña event to develop, with La Niña also tending to have a weaker association with Australian temperature and rainfall patterns during summer compared to winter and spring.

<http://www.bom.gov.au>

The Southern Annular Mode (SAM) is currently neutral. A neutral SAM during mid-to late summer is not strongly associated with either wet or dry conditions generally across South Africa. The index is expected to remain neutral over the next few weeks.

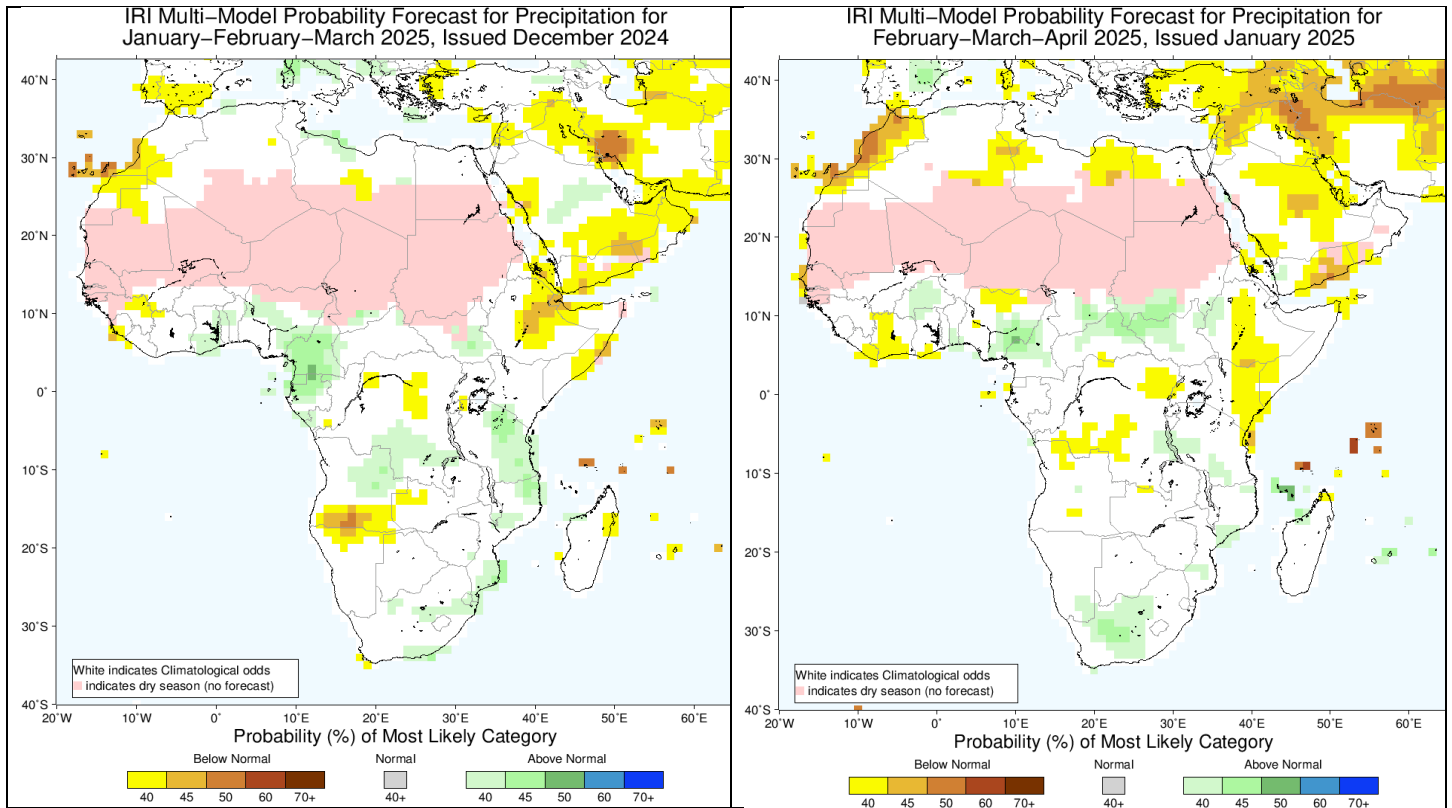
The 30-day Southern Oscillation Index (SOI) is currently +0.9 and therefore representing atmospheric pressure patterns in the Australia – Pacific region indicative of ENSO Neutral conditions. The SOI is still slowly trending positive.



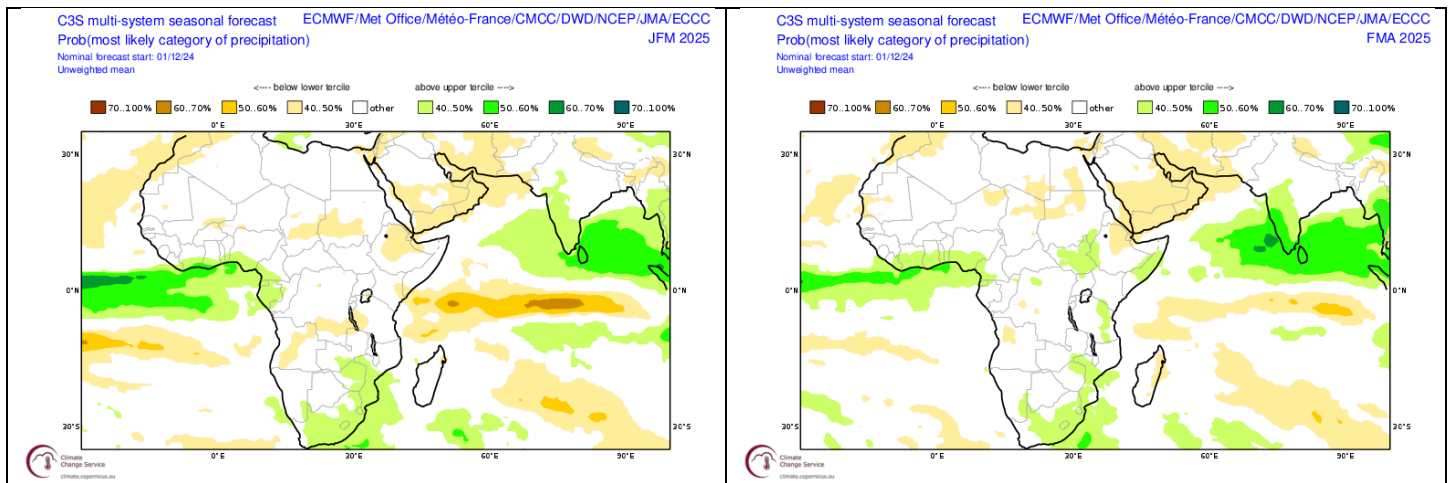
Australian Bureau of Meteorology - <http://www.bom.gov.au>

Seasonal forecasts issued by various international institutions

Seasonal forecasts (updated in December 2024 and January 2025) remain relatively neutral for 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 for the period January to April (first pair of maps) indicates an enhanced probability for relatively wet conditions over the central interior. The drier signal to the north, shown in earlier forecasts, has now disappeared due to the cooling trend in the equatorial Pacific. This is still very much an uncertain forecast due to the weak state of ENSO. The COPERNICUS multi-model assimilated forecast (second pair of maps) also shows the expectation of relatively wet conditions over large parts of the interior, but this is also a very conservative outlook, associated with the very late development of a weak La Niña.



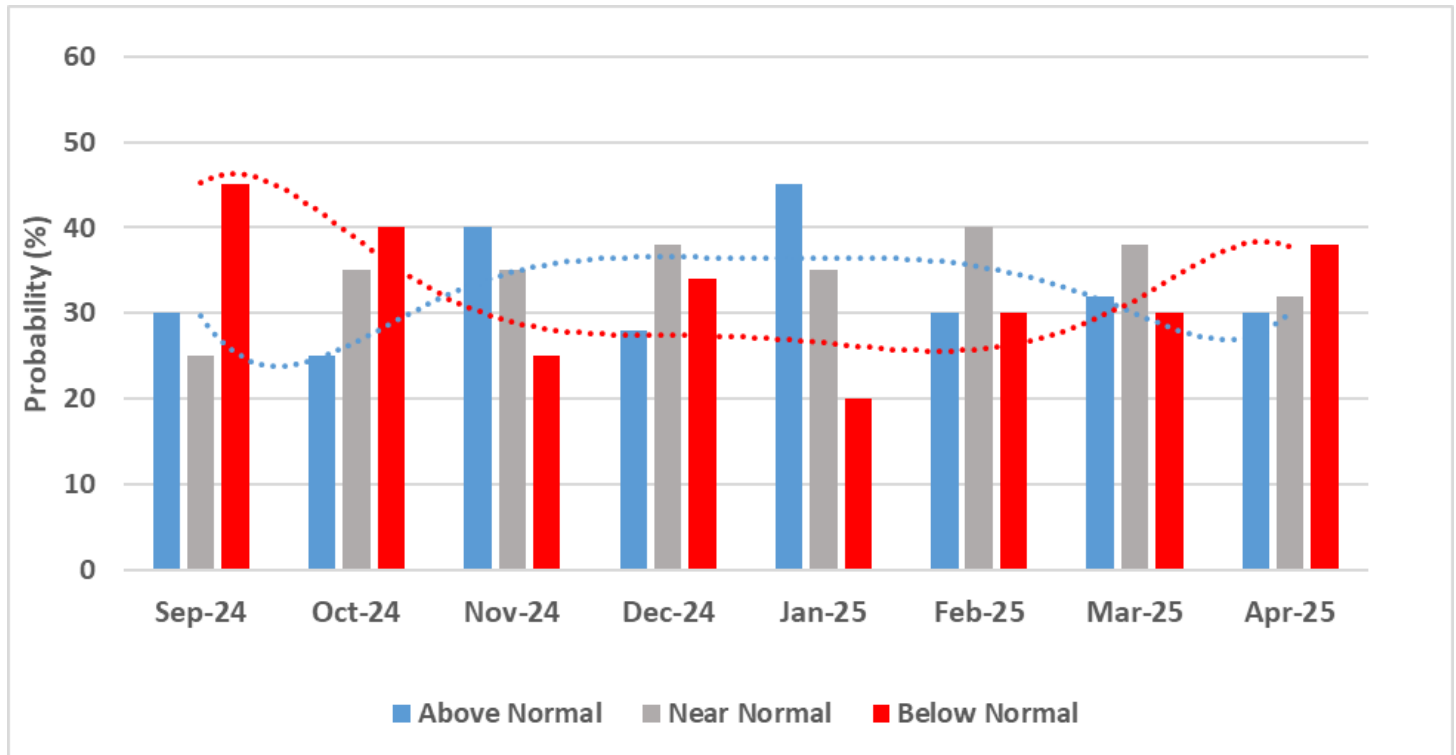
Probabilistic forecasts by the International Research Institute for Climate and Society (IRI) for rainfall for summer (January to March 2025; left - Forecast issued in 2024-12) and late summer/autumn (February to April 2025, right – Forecast issued in 2025-01).



Probabilistic multi-model forecasts by the ECMWF COPERNICUS Programme for rainfall for mid-to-late summer (January to March 2025; left - Forecast issued in 2024-12) and late summer (February to April 2025, right – Forecast issued in 2024-12).

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.



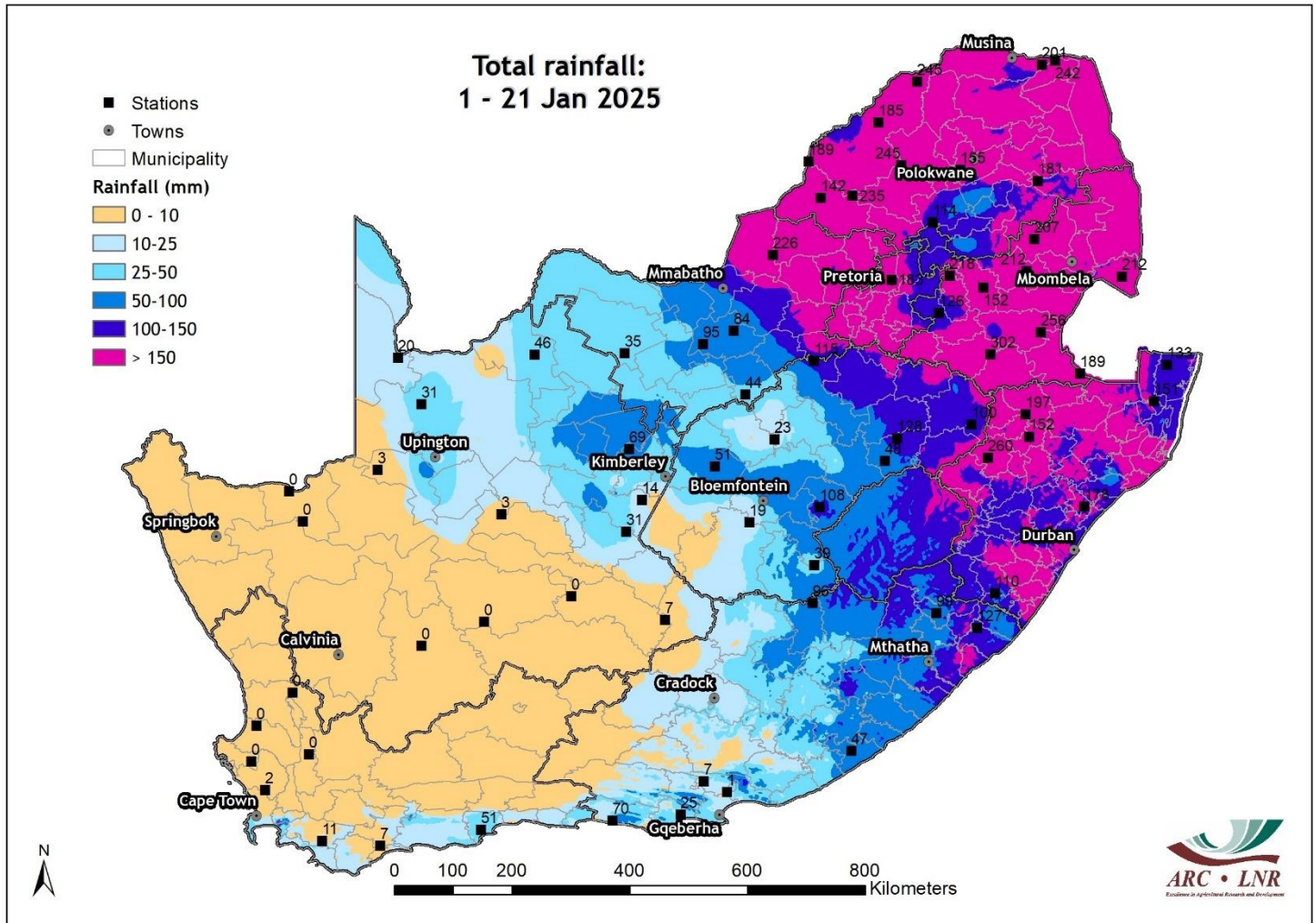
Probabilistic forecast for rainfall over the summer rainfall region, based on the natural cyclic nature of the climate system as seen in decadal variability, per month for the period September 2024 – April 2025 (Forecast issued in 2024-10).

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

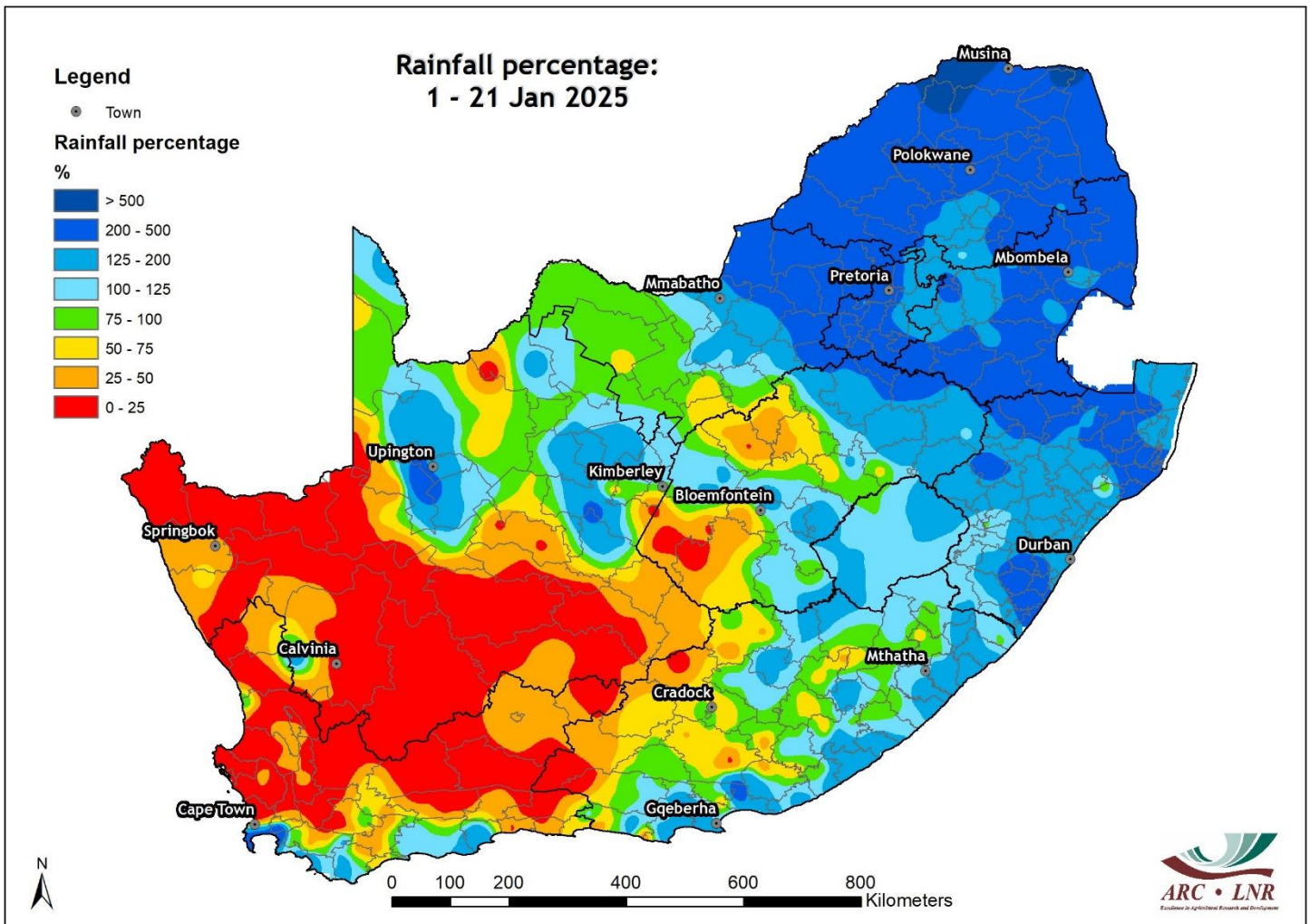
Observed conditions

Rainfall (mm): 1 - 21 Jan 2025



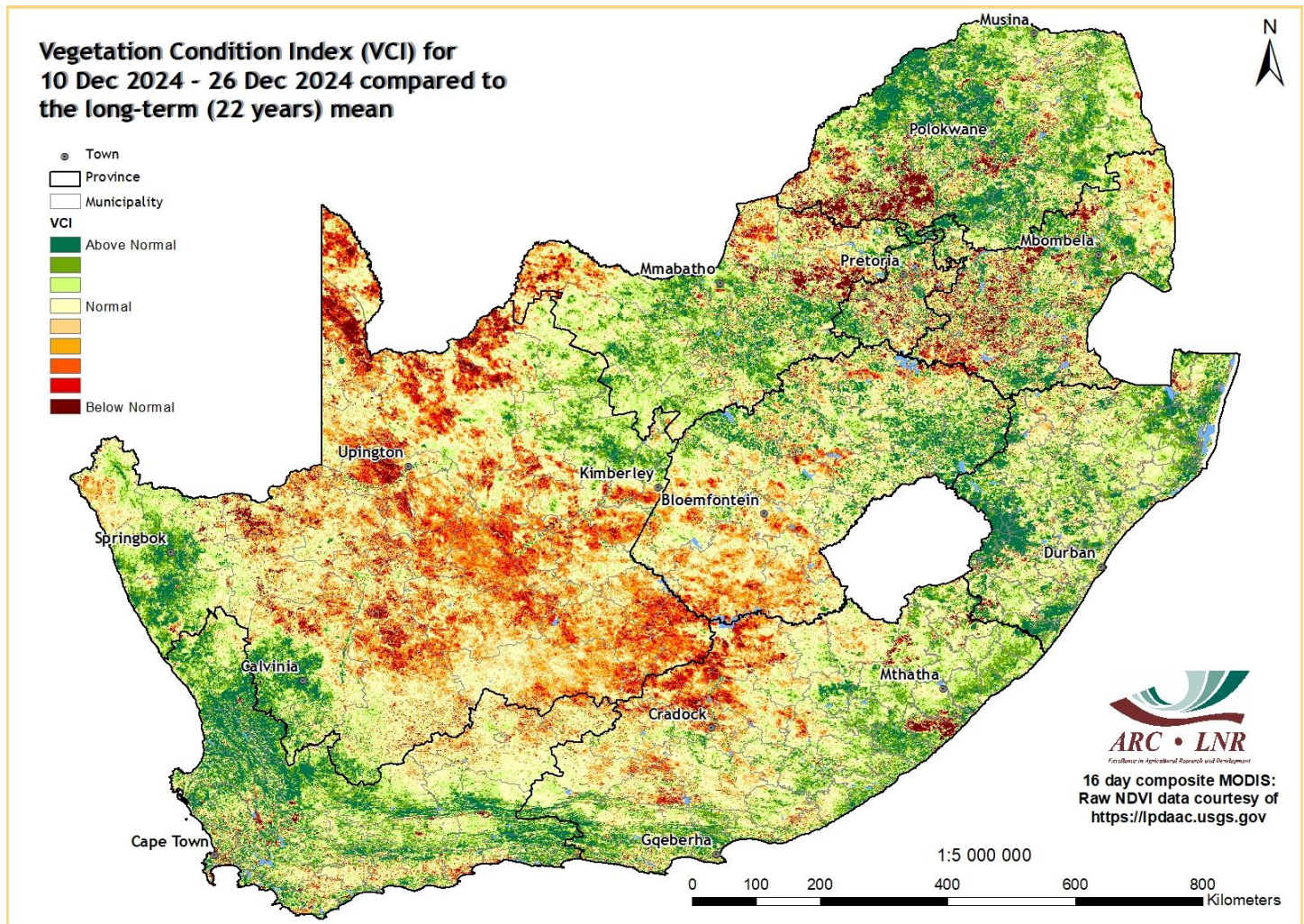
Most of the northeastern parts of the country received more than 150mm of rain during the first 21 days of January 2025. Much of the central parts of the country (including the western parts of the summer-grain-production region) received less than 50 mm of rain while it was dry in the west.

Rainfall (% of long-term mean): 1 - 21 Jan 2025



Most of the central to north-eastern parts received above-average rainfall so far in January. The south-western areas were dry for this time of the year. The western parts of the summer-grain production region received near-average to below-average rainfall.

Vegetation Condition Index: Late December 2024



By late December 2024, vegetation activity recovered over the north-eastern parts due to widespread rain from mid-December onwards. Vegetation was stressed over most of the Northern Cape and south-western half of the Free State, associated with warm and dry conditions. Vegetation activity was above normal over the winter rainfall region following above-normal rainfall during winter.

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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