FAMINE EARLY WARNING SYSTEMS NETWORK

Mozambique

Monthly Climate and Weather

19 December 2024

Highlights

- El Niño Southern Oscillation (ENSO)-neutral conditions continued during November. A weak and short-duration La Niña is most likely to emerge during November 2024 – January 2025, with a transition to ENSO-neutral during March – May 2025, according to the latest ENSO outlook.
- During September - November 2024, rainfall increased over Mozambique, with the central, southwestern, and northeast regions receiving rainfall surpluses between 50-300% of the average. During January – March 2025, seasonal rainfall forecasts call for above-average rainfall over most areas of Mozambique.
- During September - November 2024, maximum temperatures were 1-3°C above average across the western half of Mozambique. Minimum temperatures were 1-3°C above average in southeastern Mozambique, but were 1-4°C below average in the west and northwest provinces. During January – March 2025, seasonal temperature forecasts indicate above-average temperatures for Mozambique.
- During September – November 2024, local areas in south-central and north-central Mozambique experienced drier-than-average conditions. During the next four weeks, drought forecasts indicate prevailing drier-than-average conditions across Mozambique.
- Planting main season cereals is underway in Mozambique. Planting conditions are favorable in the southeastern, central, and north-central parts of the country.

The FEWS NET Monthly Climate and Weather information bulletin is based on current weather and climate information and monthly and seasonal outlooks from the NOAA CPC. Information on crops, soil moisture, flooding, and evapotranspiration data were produced by FEWS NET, USGS, NASA and USDA. Various sources were used to assess impacts of extreme conditions. Questions or comments about this product may be directed to Dr. Wassila Thiaw, Head, International Desks/NOAA, wassila.thiaw@noaa.gov. Questions about the USAID FEWS NET activity may be directed to Dr. James Verdin, Program Manager, FEWS NET/USAID, jverdin@usaid.gov.

Figure 1: Seasonal calendar for Mozambique. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- As of mid-December, ENSO-neutral conditions continued, with near-average sea-surface temperatures (SSTs) across the central and eastern equatorial Pacific Ocean. Below-average subsurface ocean temperatures persisted across the east-central and eastern equatorial Pacific. Low-level wind anomalies were easterly over the western and central Pacific, while upper-level wind anomalies were westerly.
- The latest ENSO outlook indicates that a weak and short-duration La Niña is most likely to emerge with a 59% chance during November 2024 – January 2025, with a transition to ENSO-neutral conditions during March – May 2025 (**Fig. 2**). The latest update of the NOAA Climate Prediction Center's ENSO diagnostic discussion can be found here.

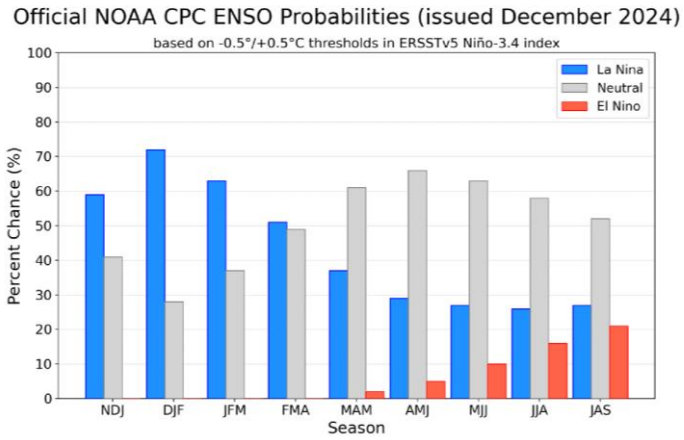


Figure 2: Official CPC ENSO probabilities outlook. **Source: NOAA/NCEP**

- Based on historical record, La Niña conditions are associated with above-average rainfall and below-average mean temperatures over Mozambique during January – March.

Extreme Events

- At the time of writing, Tropical Cyclone Chido is located approximately at 714 km north of Antananarivo, Madagascar. Tropical Cyclone Chido is expected to traverse the Channel of Mozambique and make landfall over Nampula in northeastern Mozambique on 15 December 2024.
- Over the past 30 days, low-level wind anomalies were southerly along coastal areas of eastern Mozambique.

Rainfall/Precipitation

Past 3 months (September - November 2024):

- **Totals:** During September - November 2024, high rainfall amounts (100-300 mm) were observed in central and southern Mozambique (**Fig. 3a**). Lower rainfall totals between 25-100 mm were received in the northern and western provinces.
- **Anomalies:** During September - November 2024, while rainfall was 50-300% above average in central, northeastern, and southwestern Mozambique, rainfall accumulation was 20-75% below average over pocket areas of the southeast and northwestern regions (**Fig. 3b**). Total rainfall was 59% above average over Sofala (**Table 1**).

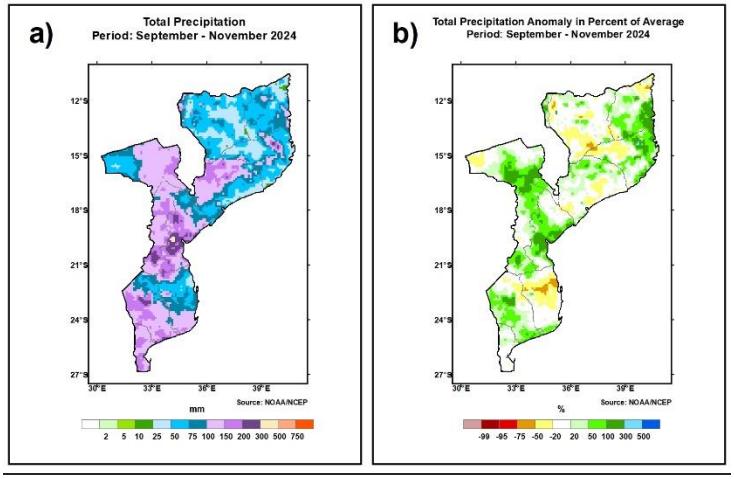


Figure 3: Spatial distribution for September - November 2024 (a) total precipitation and (b) total precipitation anomaly in percent of average. **Source: NOAA/NCEP**

Past 1 month (November 2024):

- **Totals:** During November, rainfall varied between 25-150 mm over Mozambique. However, rainfall amounts exceeding 150 mm were received in the central provinces and pocket areas of the northern and southern regions (**Fig. 4a**).

- **Anomalies:** During November, most areas of Mozambique registered near to above-average rainfall, with the central and northeastern provinces indicating surpluses between 50-300% of the average (**Fig. 4b**). In contrast, local areas of the southeast and northwestern provinces experienced deficits ranging between 20-75% of the average.

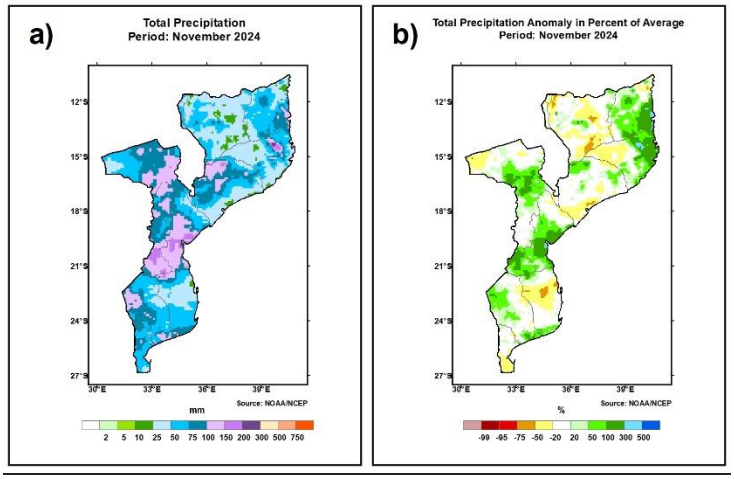


Figure 4: Spatial distribution for November 2024 (a) total precipitation and (b) total precipitation anomaly in percent of average. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (January 2025 and January – March 2025):

- **Monthly:** During January 2025, forecasts call for above-average rainfall over most areas of Mozambique, except for local areas of the northeast which may receive below-average rainfall (**Fig. 5a**). Probabilities for above average rainfall exceed 40% only at few places in the western and southwestern regions.

- **Seasonal:** During January – March 2025, forecasts indicate above-average rainfall over much of Mozambique, except for local areas of the northwest which could receive below-average rainfall (**Fig. 5b**). Probabilities for above average rainfall exceed 40% only at few places in the western, southeastern, and northeastern regions.

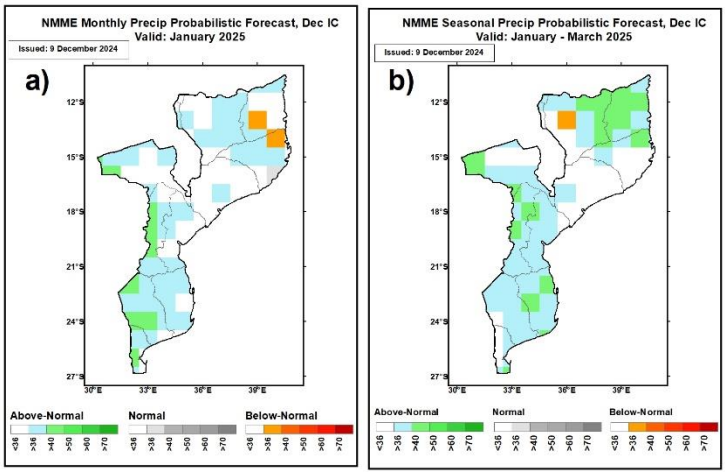


Figure 5: Rainfall forecast for (a) January 2025 and (b) January – March 2025. **Source: NOAA/NCEP**

Table 1: Total rainfall and anomalies for the past three months and one month and seasonal rainfall climatology and anomaly forecast over provinces of Mozambique.

Location	Past 3-Month		Past 1-Month		Seasonal Forecast	
	Total (mm)	Anomaly (%)	Total (mm)	Anomaly (%)	Climatology (mm)	Anomaly (mm)
Cabo Delgado province	66	46	59	71	661	58
Gaza province	131	35	77	27	303	29
Inhambane province	93	-8	59	-4	336	46
Manica province	146	45	108	51	511	63
Maputo province	148	13	67	-14		
Nampula province	69	39	53	57	693	53
Niassa province	57	0	43	-8	718	37
Sofala province	149	59	104	65	460	70
Tete province	109	39	84	24	553	56
Zambézia province	102	13	70	6	645	61

Temperature

Past 3 months (September - November 2024):

- **Maximums:** During September - November 2024, maximum temperatures were 1-3°C above average across the western half of Mozambique, with Tete and northern Manica experiencing the hottest conditions (**Fig. 6a**). Maximum temperatures were 2.3°C above average over Tete (**Table 2**).
- **Minimums:** During September - November 2024, minimum temperatures were 1-3°C above average in southeastern Mozambique (**Fig. 6b**). In contrast, minimum temperatures were 1-3°C below average over parts of the west and northwest provinces.

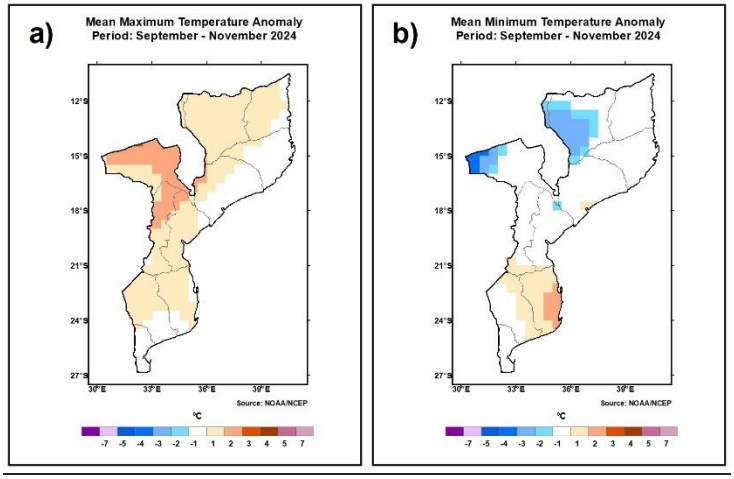


Figure 6: Spatial map for September - November 2024 (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Past 1 month (November 2024):

- **Maximums:** During November, above-average maximum temperatures dominated over Mozambique, with Tete experiencing 1-4°C above average maximum temperatures (**Fig. 7a**).
- **Minimums:** During November, while minimum temperatures were 1-3°C above average in southeastern and northeastern Mozambique, minimum temperatures were 1-4°C below average over parts of the west and northwest regions (**Fig. 7b**).

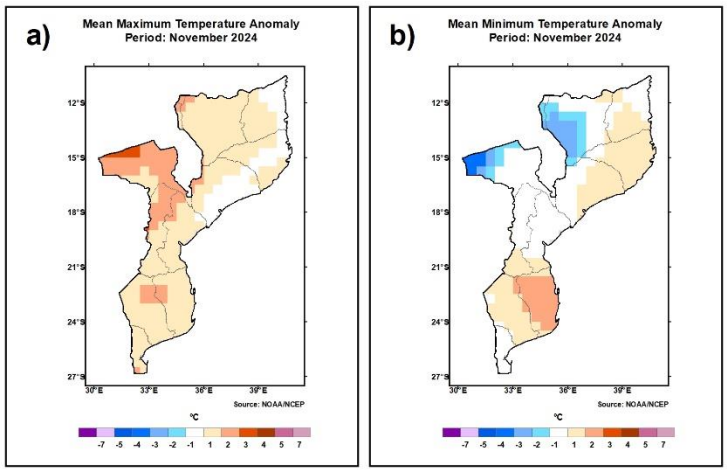


Figure 7: Spatial map for November 2024 (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (January 2025 and January – March 2025):

- **Monthly:** During January 2025, forecasts indicate an increased chance for above-average temperatures across Mozambique, particularly in the northern provinces (**Fig. 8a**).
- **Seasonal:** During January – March 2025, above-average temperatures are forecasted across Mozambique (**Fig. 8b**).

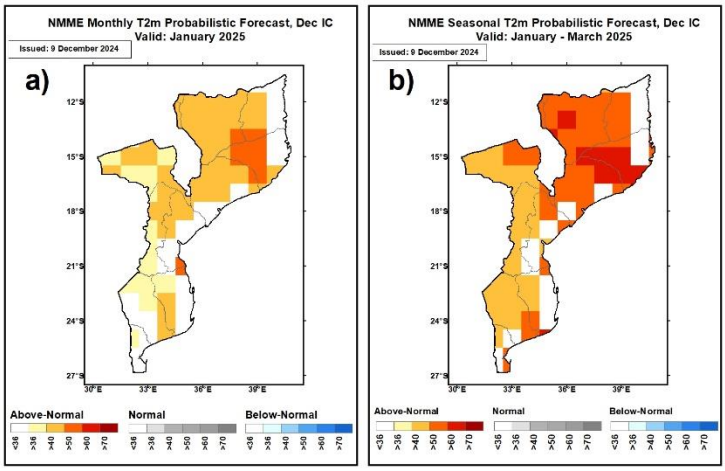


Figure 8: Spatial map for (a) January 2025 mean temperatures forecast and (b) January – March 2025 mean temperatures forecast. **Source: NOAA/NCEP**

Table 2: Maximum temperature and minimum temperature and anomaly for the past three months and one month and seasonal mean temperatures and anomaly forecast over provinces of Mozambique.

Location	Past 3-Month		Past 1-Month		Seasonal Forecast	
	Max/Min Temp (°C)	Max/Min Anomaly (°C)	Max/Min Temp (°C)	Max/Min Anomaly (°C)	Temp (°C)	Above/Below-average (°C)
Cabo Delgado province	32/21	1.2/0.6	33/21	1.1/0.9	26	0.3
Gaza province	32/20	1.2/1	33/21	1.7/1.4	27	0.5
Inhambane province	29/21	1.1/1.8	31/23	1.7/2.2	27	0.5
Manica province	31/19	1.7/0.4	33/19	1.9/0.9	25	0.3
Maputo province	30/18	0.8/0.1	32/20	1.7/0.7		
Nampula province	32/21	0.7/0.7	33/21	1.1/1.3	26	0.4

Niassa province	31/17	1.5/-1.3	33/16	1.8/-0.9	24	0.4
Sofala province	32/20	1.5/-0.2	33/20	1.7/0.2	27	0.3
Tete province	34/20	2.3/-0.5	35/17	2.5/-0.8	25	0.3
Zambézia province	32/20	0.8/0.4	33/19	1/0.9	26	0.4

Flooding and Areas of Inundation

- Currently, there is no flooding in Mozambique.
- The risks for flooding are high over Nampula in northern Mozambique as Tropical Cyclone Chido is expected to make landfall over the region on 15 December 2024.

Drought and Dryness

The Standardized Precipitation Index (SPI) is used to characterize meteorological drought. SPI compares the precipitation over a specific period of time with the climatology from that same period. Therefore, the SPI values can be thought of as the number of standard deviations that the observed anomaly deviates from the climatology. The 1-month SPI values are a good representation of the monthly precipitation anomaly as well as the soil moisture and vegetation health. The 3-month SPI values are a good representation of seasonal precipitation anomalies. The Standardized Precipitation Evapotranspiration Index (SPEI) is similar to the SPI, but it also takes evapotranspiration into account (and therefore the impact of temperatures on water demand).

Past 3 months (September – November 2024):

- During September – November, local areas of south-central and north-central Mozambique experienced drier-than-average conditions (**Fig. 9a**).

Past 1 month (November 2024):

- During November, drier-than-average conditions were observed in the southern provinces and local areas of the north-central and northern regions (**Fig. 9b**).

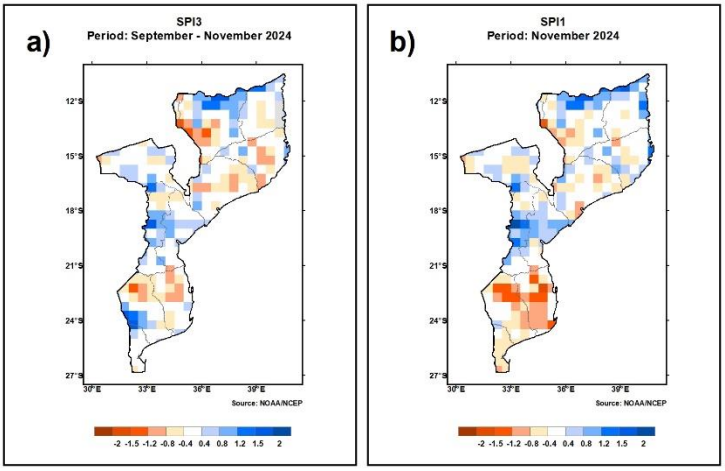


Figure 9: Spatial structure of (a) September - November 2024 Standardized Precipitation Index (SPI) and (b) November 2024 SPI. **Source: NOAA/NCEP**

Current/Forecast (10 October – 07 January 2025):

- SPI forecast, which is constructed from observed precipitation from 10 October 2024 to 10 December 2024 and forecasted rainfall data from 11 December to 7 January 2025 suggests that drier-than-average conditions could prevail across Mozambique over the next four weeks (**Fig. 10**).

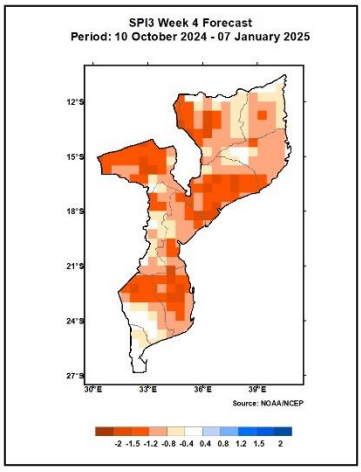


Figure 10: Spatial structure of SPI constructed from observations for 10 October to 10 December 2024 and 4 weeks forecast ending on 7 January 2025. **Source: NOAA/NCEP**

Normalized Difference Vegetation Index (NDVI)

NDVI is a measure of vegetation health, where high NDVI values are indicative of healthy, dense vegetation, and low NDVI values are indicative of less or no vegetation. Therefore, negative NDVI anomalies suggest deteriorated vegetation health relative to the long-term average.

Current (21 – 30 November 2024):

- From 21 – 30 November, vegetation conditions improved (NDVI values > 120% of the average) in most areas of Mozambique (**Fig. 11**). However, poor (NDVI values between 60-90% of the average) vegetation conditions persisted over areas of the southwest, west, and north-central provinces.

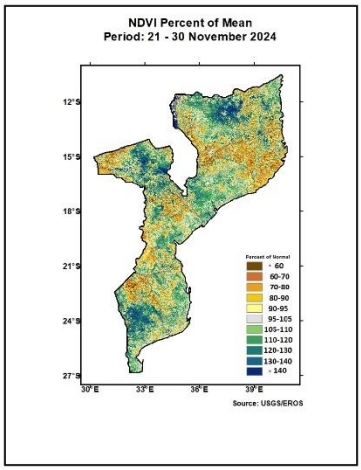


Figure 11: Spatial structure of NDVI anomaly for 21 – 30 November 2024. **Source: USGS/EROS**

Water Requirement Satisfaction Index (WRSI)

- Maize crop conditions were *near-average* (WRSI value between 90-110% of the median WRSI) over the northern two-thirds of Mozambique. However, mixed conditions varying from *average*, *above-average*, *yet to start*, to *late start* were observed in the southern provinces, according to the latest WRSI analysis.

GEOGLAM Crop Monitor

- Planting for main season cereals is underway in Mozambique; conditions are *favorable* in the southeastern, central, and north-central parts of the country, according to the latest crop monitor.

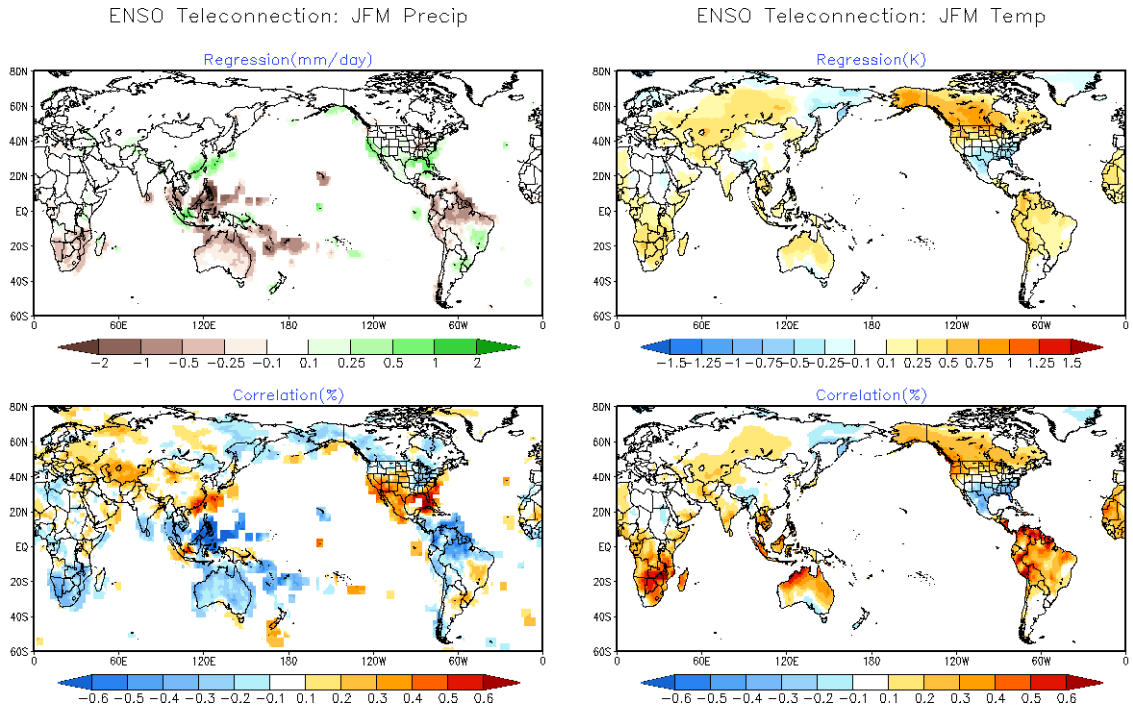
Additional Resources

https://www.inam.gov.mz/index.php/pt/

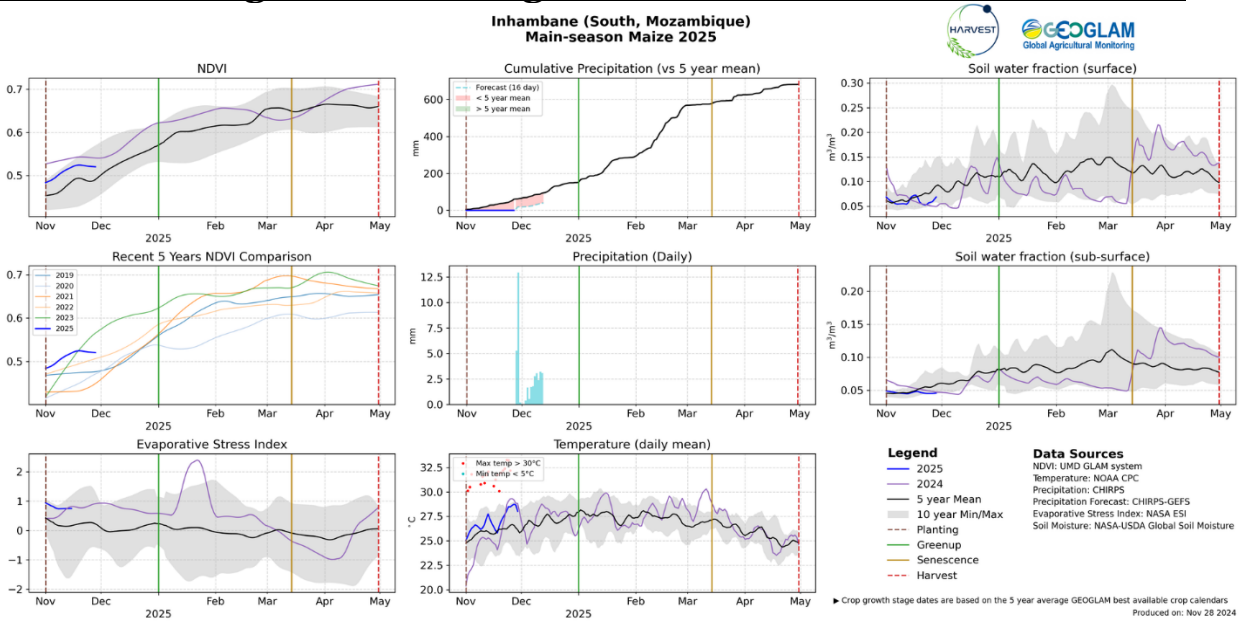
https://www.sadc.int/pillars/meteorology

https://fews.net/southern-africa/mozambique

Annex



GEOGLAM Agro-meteorological Earth Observation Indicators:



[Crop Type] Maize
[Location]: Inhambane