FAMINE EARLY WARNING SYSTEMS NETWORK

Mozambique

Monthly Climate and Weather

16 January 2025

Highlights

- La Niña conditions emerged during December 2024. A weak La Niña is expected to persist with a 59% chance through February – April 2025, then transition with a 60% chance to El Niño Southern Oscillation (ENSO)-neutral conditions during March – May 2025, according to the latest ENSO outlook.
- During October - December 2024, rainfall was 20-75% below average across much of Mozambique. During February – April 2025, forecasts indicate that there is a slight tilt in the odds to favor above-average rainfall over pocket areas of northeastern, central and southern Mozambique.
- During October - December 2024, maximum temperatures were 1-5°C above average across much of Mozambique. Minimum temperatures were 1-3°C above average over southern Mozambique and parts of Tete, Manica, and Zambézia, but were 1-4°C below average over the western parts of Niassa and Tete. During February – April 2025, temperature forecasts call for above-average temperatures across the northern half of Mozambique and over portions of the southern provinces.
- During October – December 2024, drier-than-average conditions dominated Mozambique. During the next four weeks, forecasts indicate drought could persist across Mozambique.
- As of late December, stressed vegetation, with Normalized Difference Vegetation Index (NDVI) values below 80% of the average spread across western, central and southern Mozambique, while above-average vegetation conditions (NDVI values > 120% of the average) were observed in northeastern Mozambique.

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.

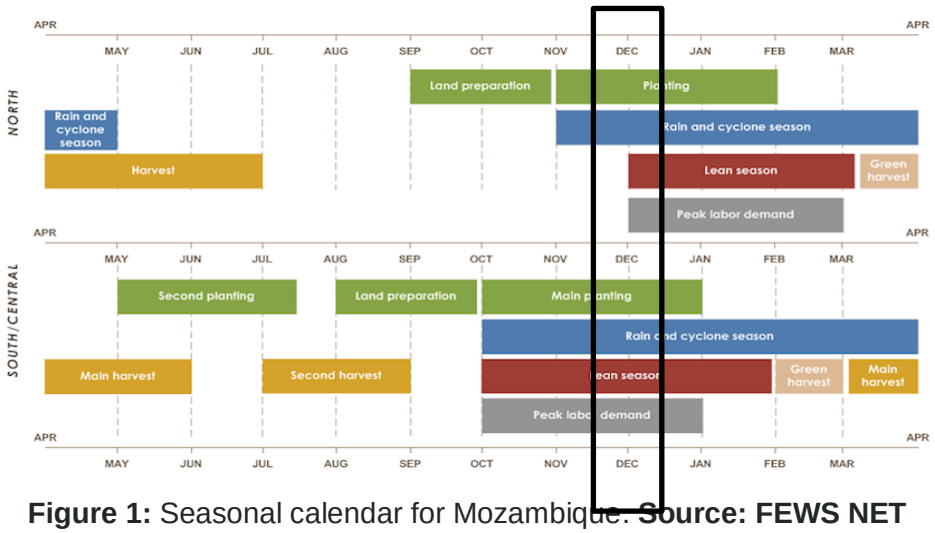


Figure 1: Seasonal calendar for Mozambique. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- As of mid-January, La Niña conditions are present as are reflected by below-average SSTs across the central and east-central equatorial Pacific Ocean. Subsurface cooling strengthened across the equatorial Pacific, with below-average temperatures dominating the central and eastern equatorial Pacific. Low-level wind anomalies were easterly over the western and central Pacific, while upper-level wind anomalies were westerly over the central and eastern Pacific.
- The latest ENSO outlook indicates that a weak La Niña is expected to persist with a 59% chance through February – April 2025, then transition with a 60% chance 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.

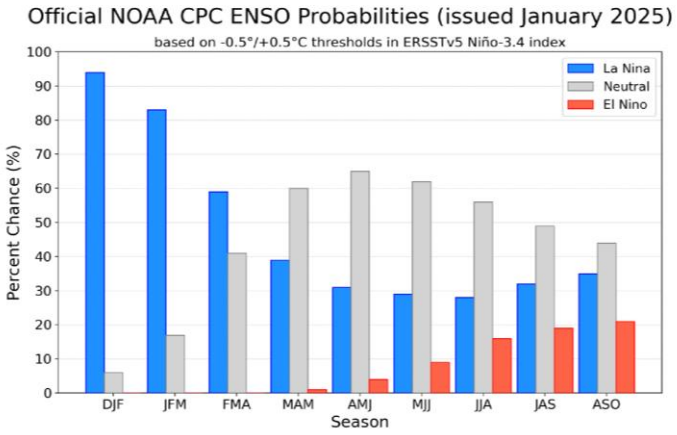


Figure 2: Official CPC ENSO probabilities outlook. **Source: NOAA/NCEP**

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

Extreme Events

- Tropical Cyclone CHIDO made landfall over approximately 30 km south of Pemba City in the Cabo Delgado Province of northeastern Mozambique on 15 December 2024, which resulted in flooding, casualties, infrastructure damages, and many people affected across the Cabo Delgado, Nampula, Niassa, and Tete Provinces.
- At the time of writing, Tropical Cyclone DIKELEDI formed over the South Indian Ocean Basin and was located approximately 781 km north northeast of Port Louis in Mauritius. DIKELEDI is expected to track westward, pass over northern Madagascar, and curve to the southwest near the northern coasts of Mozambique from 13 – 14 January 2025.
- Over the past four weeks, Mozambique, in particular Zambézia, experienced an unusually high number of fire alerts compared to the number of fire alerts during the same period going back to 2012.

Rainfall/Precipitation

Past 3 months (October - December 2024):

- **Totals:** During October - December 2024, rainfall varied between 100-300 mm over Mozambique (**Fig. 3a**). However, rainfall amounts between 300-500 mm were observed over pocket areas of Sofala and Nampula.
- **Anomalies:** During October - December 2024, rainfall was 20-75% below average across much of Mozambique, while rainfall was 20-50% above average over portions of western and eastern Gaza (**Fig. 3b**).

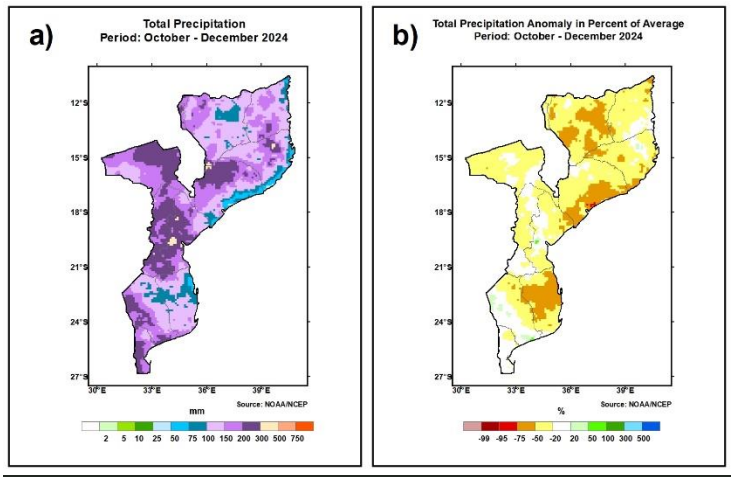


Figure 3: Spatial distribution for October - December 2024 (a) total precipitation and (b) total precipitation anomaly in percent of average. **Source: NOAA/NCEP**

Past 1 month (December 2024):

- **Totals:** During December, Mozambique received rainfall between 25-150 mm (**Fig. 4a**). However, coastal areas of central Mozambique, eastern Gaza, and southern Inhambane registered rainfall less than 25 mm.
- **Anomalies:** During December, rainfall was 20-75% below average across much of Mozambique (**Fig. 4b**). However, rainfall was 75-95% below average along coastal areas of Zambézia, Sofala, Nampula, over Inhambane, and over pocket areas of Niassa, Tete, Gaza, and Maputo. Total rainfall was 75% below average over Inhambane (**Table 1**).

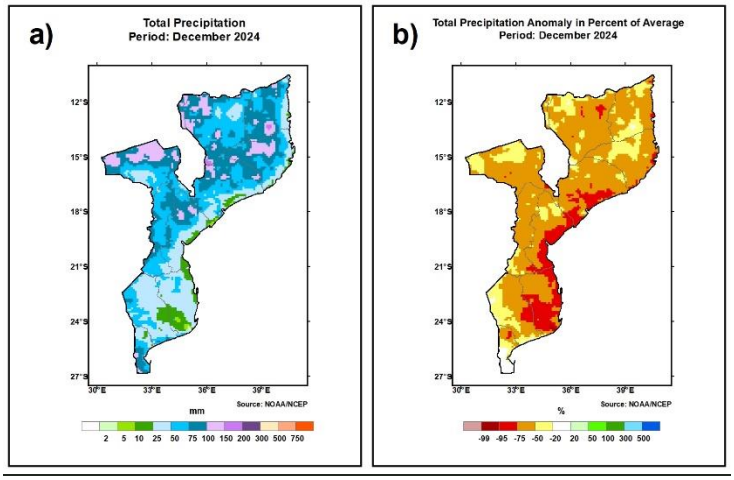


Figure 4: Spatial distribution for December 2024 (a) total precipitation and (b) total precipitation anomaly in percent of average. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (February 2025 and February – April 2025):

- **Monthly:** Precipitation forecasts indicate that there is a slight tilt in the odds to favor above-average rainfall along the Tanzania-Mozambique border, over western, north-central, and south-central Mozambique during February 2025. In contrast, there is a slight tilt in the odds to favor below-average rainfall over areas of Niassa and Inhambane.
- **Seasonal:** Rainfall forecasts indicate that there is a slight tilt in the odds to favor above-average rainfall over pocket areas of northeastern, central and southern Mozambique during February – April 2025 (**Fig. 5**). Probabilities for above average rainfall exceed 40% only over western Tete and southeastern Gaza.

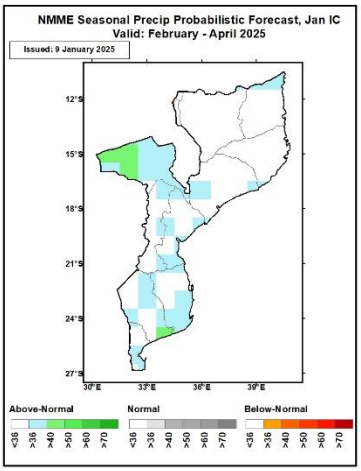


Figure 5: Rainfall forecast for February – April 2025. **Source: NOAA/NCEP**

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	142	-32	76	-54	589	34
Gaza province	159	-12	43	-52	218	30
Inhambane province	117	-47	32	-75	253	39
Manica province	214	-20	71	-59	353	30
Maputo province	188	-11	64	-30		
Nampula province	138	-35	73	-56	577	23
Niassa province	136	-44	79	-57	556	24
Sofala province	200	-25	57	-68	337	36
Tete province	191	-29	83	-57	366	44
Zambézia province	163	-42	66	-66	512	46

Temperature

Past 3 months (October - December 2024):

- **Maximums:** During October - December 2024, maximum temperatures were 1-5°C above average across much of Mozambique, with Tete experiencing the hottest conditions (**Fig. 6a**).
- **Minimums:** During October - December 2024, minimum temperatures were 1-3°C above average over southern Mozambique and parts of Tete, Manica, and Zambézia, but were 1-4°C below average over the western parts of Niassa and Tete (**Fig. 6b**).

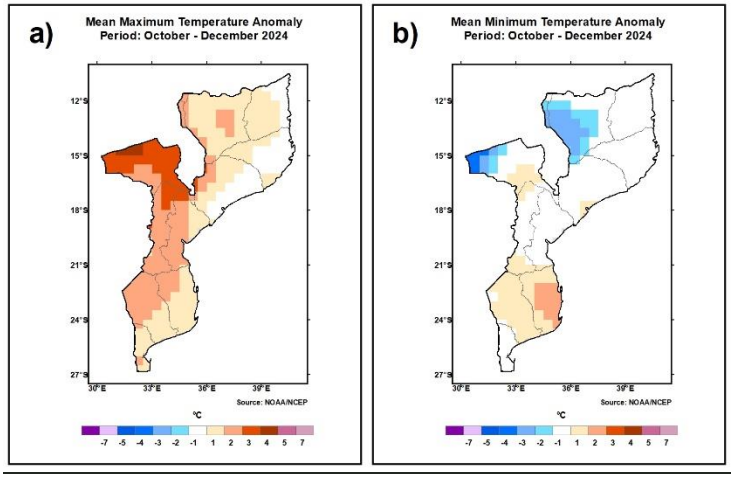


Figure 6: Spatial map for October - December 2024 (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Past 1 month (December 2024):

- **Maximums:** During December, above-average maximum temperatures dominated Mozambique, with Tete, Manica, and Gaza experiencing 4-7°C above-average maximum temperatures (**Fig. 7a**). Maximum temperatures were 6.4°C above average over Tete (**Table 2**).
- **Minimums:** During December, minimum temperatures were 1-3°C above average over southern and central Mozambique (**Fig. 7b**). However, minimum temperatures were 3-4°C over localized area of Inhambane. In contrast, minimum temperatures were 1-3°C below average over Niassa and western Tete.

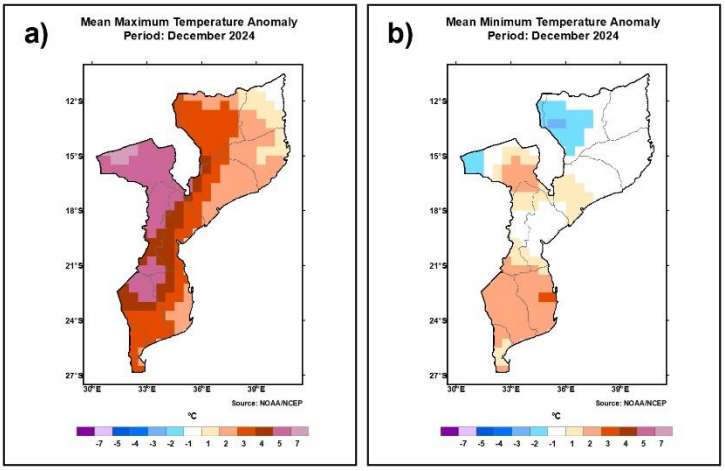


Figure 7: Spatial map for December 2024 (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (February 2025 and February – April 2025):

- **Monthly:** Temperature forecasts indicate that there is a moderate tilt in the odds to favor above-average temperatures over northern Mozambique and localized area of Gaza during February 2025.
- **Seasonal:** Temperature forecasts favor above-average temperatures across the northern half of Mozambique and over portions of the southern provinces during February – April 2025 (**Fig. 8**).

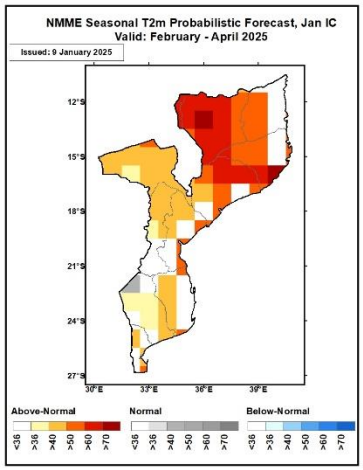


Figure 8: Spatial map for February – April 2025 mean temperatures forecast. **Source: NOAA/NCEP**

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	32/22	1.2/0.5	33/23	1.6/0.3	25	0.3
Gaza province	33/22	2.3/1.4	36/24	4.1/2.4	25	0.2
Inhambane province	31/23	1.9/2	34/25	3.5/2.8	26	0.3
Manica province	33/21	2.7/0.6	35/23	5.2/1.4	23	0.3
Maputo province	32/21	1.8/0.7	34/23	3.2/2		
Nampula province	33/22	1/0.7	34/23	2.2/0.6	25	0.4
Niassa province	32/19	1.9/-1.2	32/20	3.2/-0.9	23	0.4
Sofala province	33/22	2.1/0	35/24	4.2/0.8	25	0.3
Tete province	35/21	3.4/-0.3	36/22	6.4/0.9	23	0.2
Zambézia province	33/22	1.2/0.5	34/23	3/0.9	25	0.4

Flooding and Areas of Inundation

- Currently, there is no flooding in Mozambique.
- The risks for flooding are high over northern Mozambique as Tropical Cyclone DIKELEDI is expected to track southwestward over the Mozambique Channel and nearing the northern coasts of the Mozambique during 13 - 14 January 2025.

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 (October – December 2024):

- During October – December, drier-than-average conditions dominated Mozambique (**Fig. 9a**).

Past 1 month (December 2024):

- During December, drier-than-average conditions prevailed over Mozambique (**Fig. 9b**).

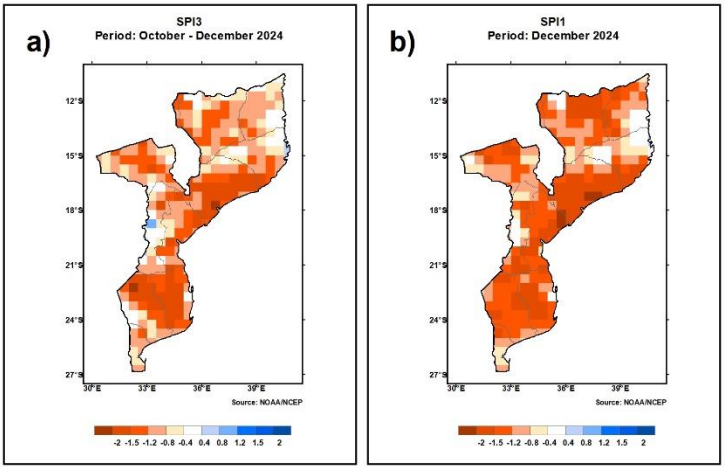


Figure 9: Spatial structure of (a) October - December 2024 Standardized Precipitation Index (SPI) and (b) December 2024 SPI. **Source: NOAA/NCEP**

Current/Forecast (7 November 2024 – 4 February 2025):

- SPI forecast, which is constructed from observed precipitation from 7 November 2024 to 7 January 2025 and forecasted rainfall data from 8 January to 4 February 2025 suggests that drier-than-average conditions could persist across Mozambique over the next four weeks (**Fig. 10**).1

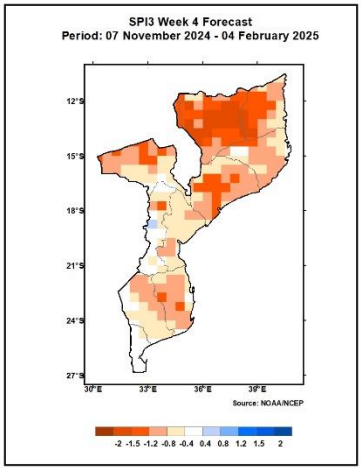


Figure 10: Spatial structure of SPI constructed from observations for 7 November 2024 to 7 January 2025 and 4 weeks forecast ending on 4 February 2025. **Source: NOAA/NCEP**

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 – 31 December 2024):

- During 21 – 31 December, vegetation conditions deteriorated over Mozambique compared to those of the previous month. Stressed vegetation, with NDVI values below 80% of the average spread across western, central and southern Mozambique (**Fig. 11**). In contrast, above-average vegetation conditions (NDVI values > 120% of the average) were observed in northeastern Mozambique.

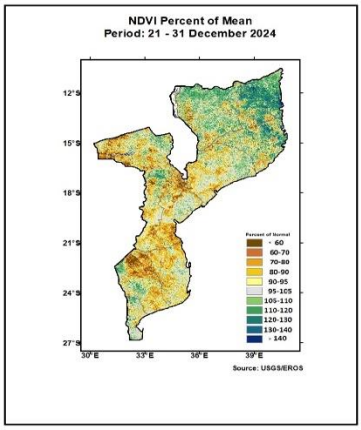


Figure 11: Spatial structure of NDVI anomaly for 21 – 31 December 2024. **Source: USGS/EROS**

Water Requirement Satisfaction Index (WRSI)

- The latest WRSI product showed that maize crop conditions were *near-average* (WRSI value between 90-110% of the median WRSI) over northern Mozambique. However, maize conditions were poor (WRSI < 90 % of the median) over pocket areas of central Mozambique. Mixed conditions varying from *average*, *above-average*, *yet to start*, to *late start* were observed in the southern provinces.

GEOGLAM Crop Monitor

- N/A

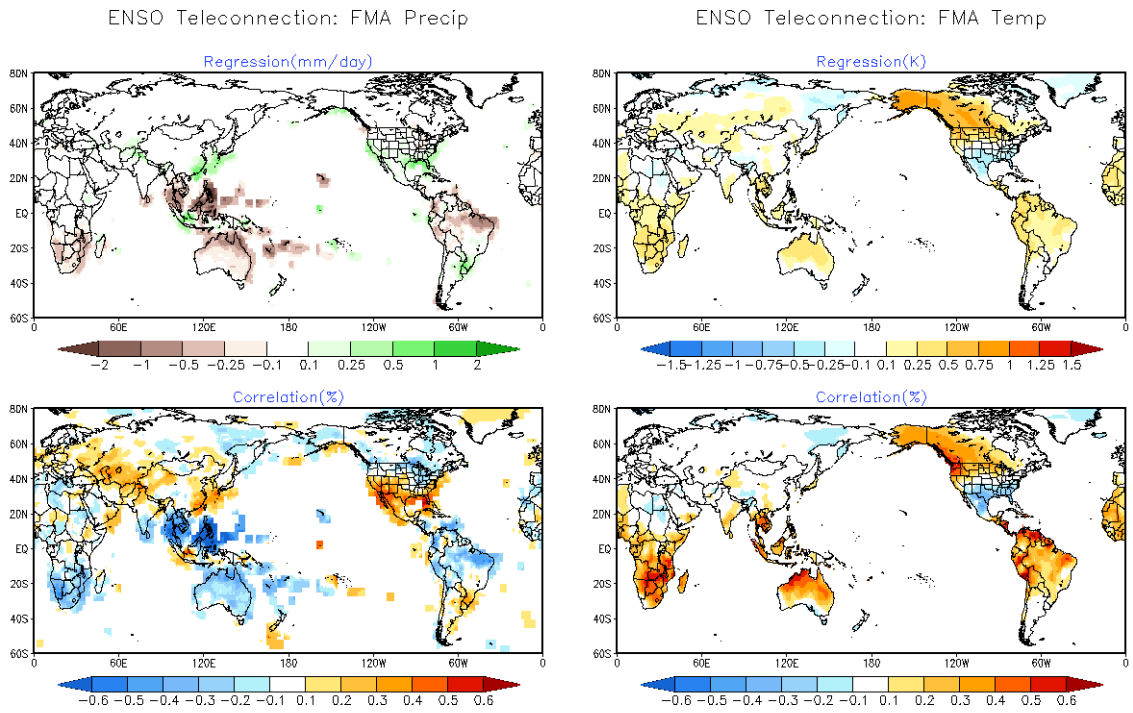
Additional Resources

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

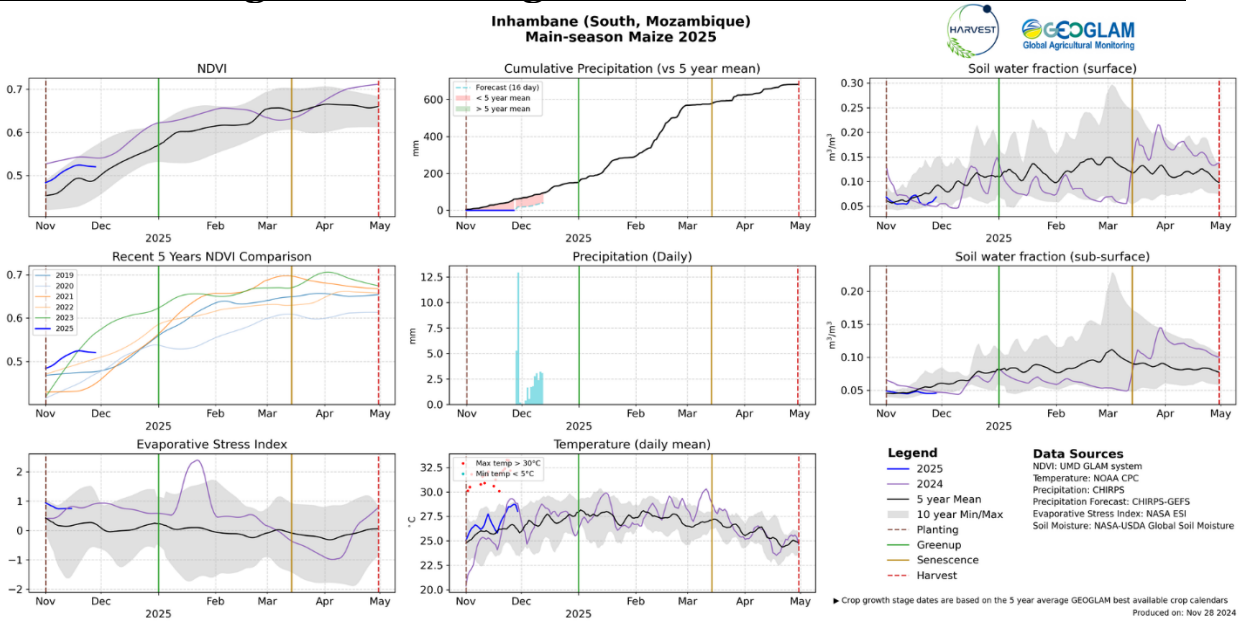
https://www.sadc.int/pillars/meteorology

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

Annex



GEOGLAM Agro-meteorological Earth Observation Indicators:



[Crop Type] Maize
[Location]: Inhambane