FAMINE EARLY WARNING SYSTEMS NETWORK

Mozambique

Monthly Climate and Weather

21 November 2024

Highlights

- El Niño Southern Oscillation (ENSO)-neutral conditions continued during October. According to the latest outlook, a weak and short-duration La Niña is most likely to emerge during October – December 2024 and persist through January – March 2025.
- During August - October 2024, rainfall increased over Mozambique. Cumulative rainfall was 20-300% above average in western and southern Mozambique, whereas rainfall total was 20-75% below average in the south-central and northeastern regions. During December 2024 – February 2025, while above-average rainfall is predicted over northern Mozambique, below-average rainfall is anticipated in the southern provinces.
- During August - October 2024, maximum temperatures were 1-3°C above average across the western half of Mozambique. Minimum temperatures were 1-3°C above average (below average) over Inhambane and parts of Gaza and Manica (Niassa and part of Tete). During December 2024 – February 2025, above-average temperatures are expected over much of Mozambique.
- During August – October, drier-than-average conditions were observed over parts of Zambézia and Nampula. During the next four weeks, drought forecasts indicated that drier-than-average conditions could develop over local areas of Zambézia, Manica, and Inhambane.
- Below-average vegetation conditions persisted across western and north-central Mozambique, whereas above-average conditions were observed in the southern and 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.

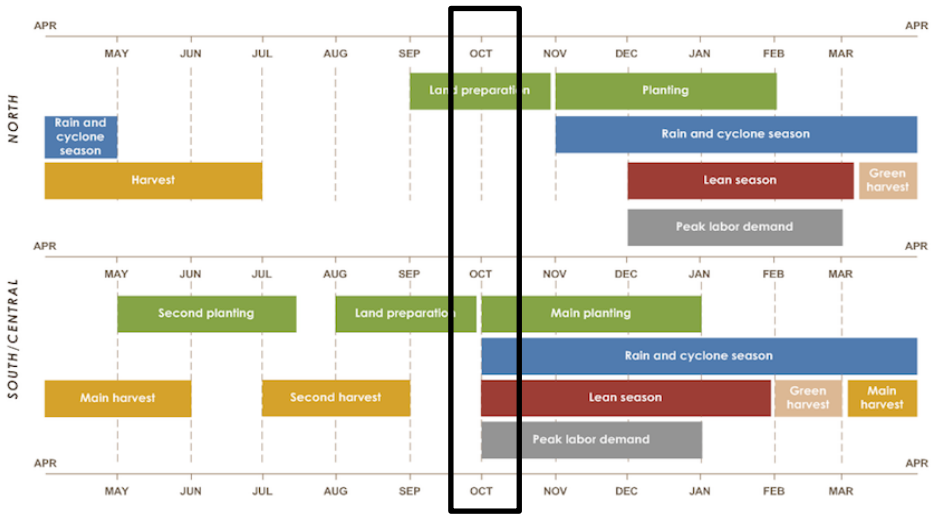


Figure 1: Seasonal calendar for Mozambique. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- As of mid-November, SSTs were near-average across the central and eastern equatorial Pacific. Negative subsurface temperature anomalies persisted across the east-central and eastern Pacific. Low-level wind anomalies were easterly over a small region of the east-central equatorial Pacific; while upper-level wind anomalies were near-average, reflecting ENSO neutral conditions.
- The latest outlook indicates a weak and short-duration La Niña over the upcoming few seasons. La Niña is most likely to emerge with a 57% chance during October – December 2024 and persist through January – March 2025 (**Fig. 2**). The latest update of the NOAA Climate Prediction Center's El Niño/Southern Oscillation diagnostic discussion can be found here.

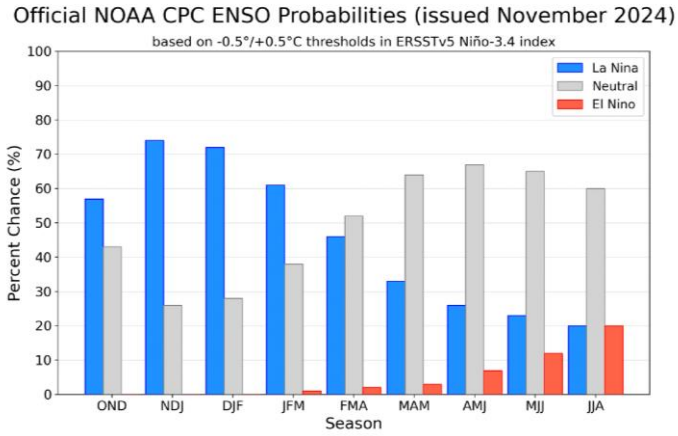


Figure 2: Official CPC ENSO probabilities outlook. **Source: NOAA/NCEP**

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

Extreme Events

- Over the past 30 days, a low-pressure system over the Channel of Mozambique resulted in stronger-than-average southerly winds over eastern Mozambique.

Rainfall/Precipitation

Past 3 months (August - October 2024):

- **Totals:** During August - October 2024, a widespread distribution in rainfall was observed in Mozambique, with the southern and central regions receiving total rainfall between 25-100 mm (**Fig. 3a**). However, local areas of Maputo, Gaza, Sofala, Zambézia, and Cabo Delgado registered cumulative rainfall over 100 mm.
- **Anomalies:** During August - October 2024, Gaza, Tete, and parts of Manica; Sofala; and Nampula saw rainfall between 20-300% above average, whereas portions of Gaza, Inhambane, Manica, Zambézia, Niassa, Nampula, and Cabo Delgado received rainfall between 20-75% below average (**Fig. 3b**). Total rainfall was 169% above average over Tete (**Table 1**).

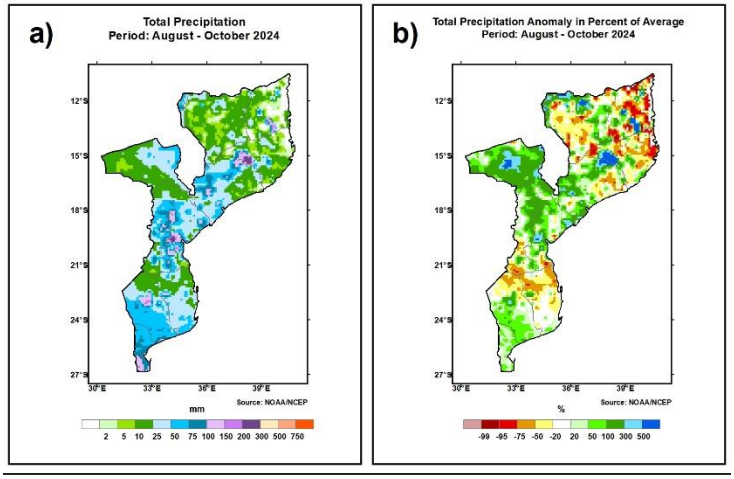


Figure 3: Spatial distribution for August - October 2024 (a) total precipitation and (b) total precipitation anomaly in percent of average. **Source: NOAA/NCEP**

Past 1 month (October 2024):

- **Totals:** During October, Mozambique experienced an increase in rainfall, with rainfall accumulation varying between 10-75mm throughout the country (**Fig. 4a**). Pocket areas in Sofala received more than 100 mm in rainfall.
- **Anomalies:** During October, rainfall was 50-300% above-average over Maputo, southern Gaza, Tete, northern Manica, western Sofala, parts of Zambézia, Niassa, and Nampula, while rainfall was 20-75% below average over parts of Gaza, Inhambane, Manica, Zambézia, Nampula, Niassa, and Cabo Delgado (**Fig. 4b**).

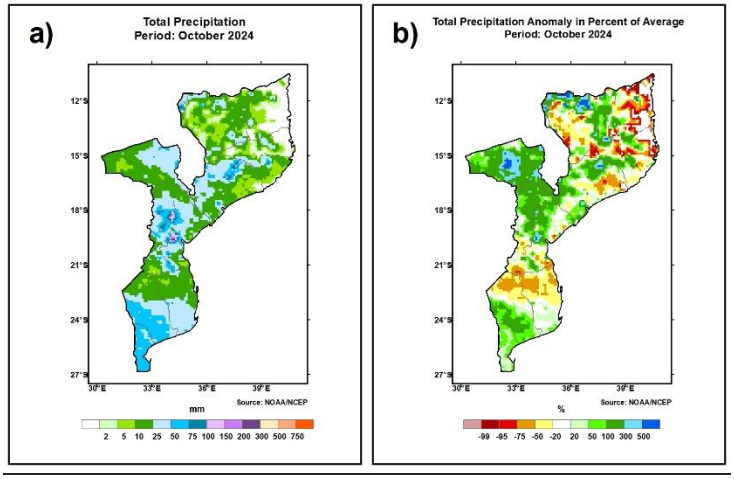


Figure 4: Spatial distribution for October 2024 (a) total precipitation and (b) total precipitation anomaly in percent of average. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (December 2024 and December 2024 – February 2025):

- **Monthly:** During December 2024, above-average rainfall is predicted over Cabo Delgado, Nampula, Zambézia, and parts of Niassa, whereas below-average rainfall is anticipated over Gaza and portions of Maputo, Inhambane, and Manica (**Fig. 5a**).
- **Seasonal:** During December 2024 – February 2025, while above-average rainfall is predicted across Niassa, Cabo Delgado, and parts of Nampula and Zambézia, below-average rainfall is expected in Manica, portions of Gaza, and Inhambane (**Fig. 5b**).

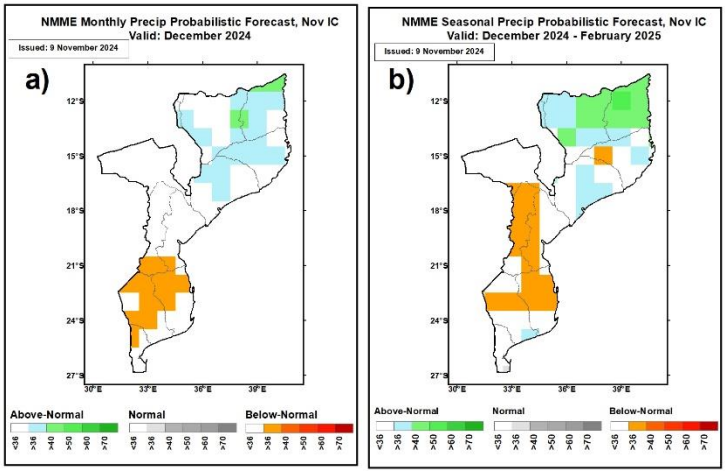


Figure 5: Rainfall forecast for (a) December 2024 and (b) December 2024 – February 2025.
Source:
NOAA/NCEP

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	16	36	6	-15	589	114
Gaza province	54	35	38	34	367	-19
Inhambane province	36	-17	26	-15	382	-14
Manica province	46	51	35	76	592	-8
Maputo province	83	46	57	51		
Nampula province	26	46	12	9	651	59
Niassa province	16	49	14	99	698	85
Sofala province	59	89	38	70	507	2
Tete province	27	169	25	203	625	16
Zambézia province	45	83	27	52	644	36

Temperature

Past 3 months (August - October 2024):

- **Maximums:** During August - October 2024, maximum temperatures were 1-3°C above average across the western half of Mozambique, but were near-average elsewhere (**Fig. 6a**).
- **Minimums:** During August - October 2024, minimum temperatures were 1-3°C above average over Inhambane, Gaza, and part of Manica (**Fig. 6b**). In contrast, minimum temperatures were 1-3°C below average over Niassa and part of Tete.

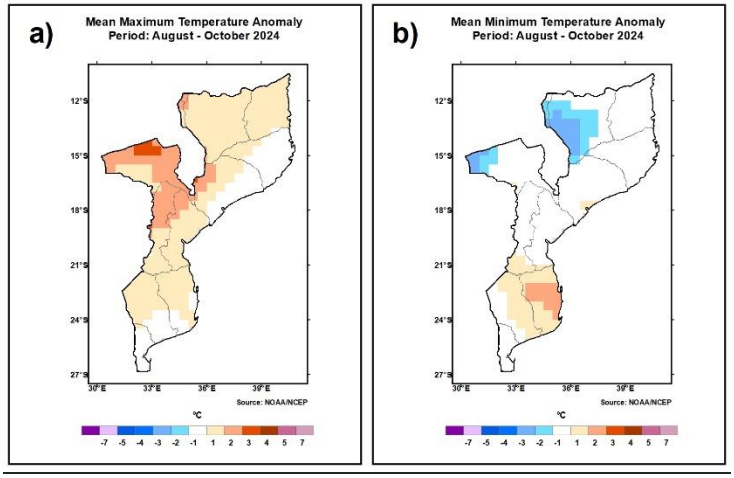


Figure 6: Spatial map for August - October 2024 (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Past 1 month (October 2024):

- **Maximums:** During October, maximum temperatures were 1-3°C above average over pocket areas of Gaza, Inhambane, Manica, Tete, Sofala, Niassa, and Cabo Delgado (**Fig. 7a**). In contrast, maximum temperatures were 1-2°C below-average over small areas in eastern Zambézia.
- **Minimums:** During October, minimum temperatures were 1-4°C below average over Niassa, part of Tete, Manica, Sofala, and Zambézia, while minimum temperatures were 1-2°C above average over Inhambane (**Fig. 7b**). Minimum temperatures were 1.8°C below average over Niassa (**Table 2**).

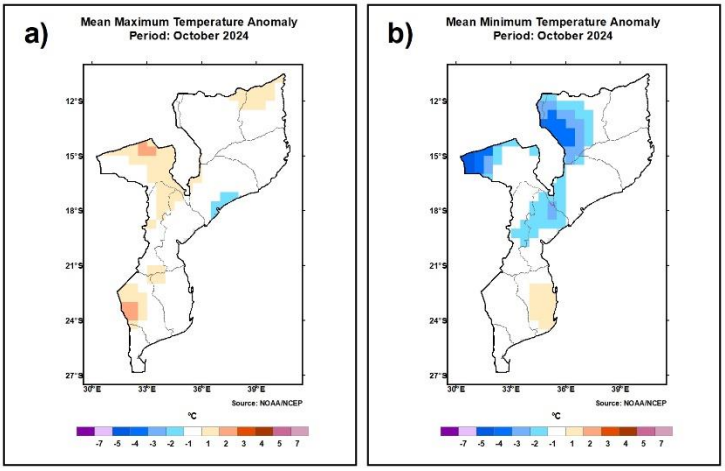


Figure 7: Spatial map for October 2024 (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (December 2024 and December 2024 – February 2025):

- **Monthly:** During December 2024, above-average temperatures are forecasted over central and southern Mozambique and pocket areas in the northern regions (**Fig. 8a**).
- **Seasonal:** During December 2024 – February 2025, above-average temperatures are expected across Mozambique (**Fig. 8b**).

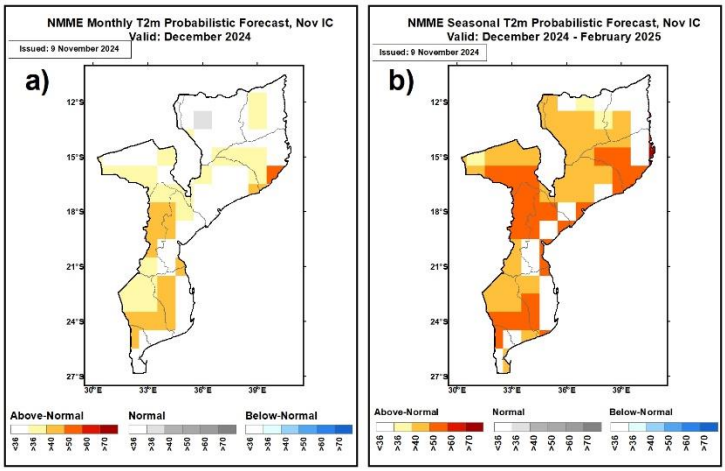


Figure 8: Spatial map for (a) December 2024 mean temperatures forecast and (b) December 2024 – February 2025 mean temperatures forecast. **Source: NOAA/NCEP**

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	31/19	1.3/0.5	32/21	0.8/0.3	26	0.2
Gaza province	30/17	1.4/1.2	31/19	1.0/0.3	27	0.6
Inhambane province	28/19	1.2/1.9	29/21	0.3/1.0	28	0.5
Manica province	30/17	2.1/0.6	31/18	0.8/-0.3	25	0.5
Maputo province	29/16	0.8/0.2	29/18	0.6/-0.6		
Nampula province	30/19	0.8/0.3	31/20	-0.3/0.3	27	0.4
Niassa province	30/16	1.6/-1.2	31/17	0.7/-1.8	25	0.2
Sofala province	30/18	1.8/-0.1	31/19	0.5/-1.1	28	0.5
Tete province	32/18	2.5/-0.2	33/20	1.3/-1.1	26	0.4
Zambézia province	30/18	1.2/0.3	31/20	-0.2/-0.2	27	0.3

Flooding and Areas of Inundation

- Currently, there is no flooding in Mozambique.
- Concerns for flooding are nonexistent or minimal for Mozambique over the next 30 days.

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 (August – October 2024):

- During August – October, while western and northern Mozambique were seasonally dry, portions of Zambézia and Nampula experienced drier-than-average conditions (**Fig. 9a**).

Past 1 month (October 2024):

- During October, drier-than-average conditions were observed over local areas of Niassa, Cabo Delgado, Nampula, and Zambézia (**Fig. 9b**).

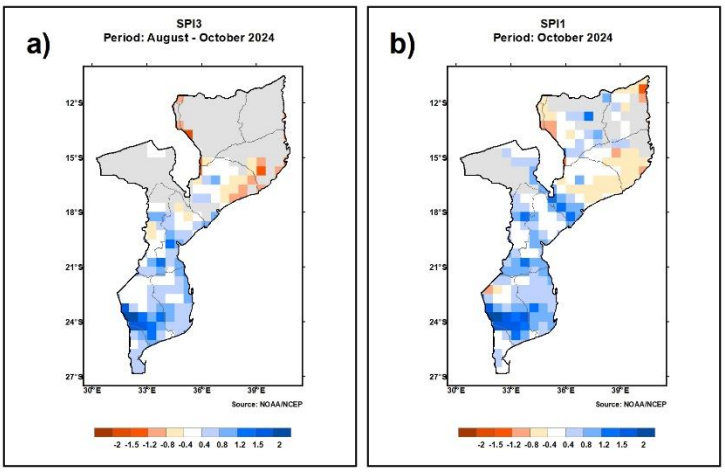


Figure 9: Spatial structure of (a) August - October 2024 Standardized Precipitation Index (SPI) and (b) October 2024 SPI. **Source: NOAA/NCEP**

Current/Forecast (05 September – 03 December 2024):

- SPI forecast, which is constructed from observed precipitation from 5 September 2024 to 5 November 2024 and forecasted rainfall data from 6 November to 3 December 2024 suggests that drier-than-average conditions may develop over local areas of Zambézia, Manica, and Inhambane (**Fig. 10**).

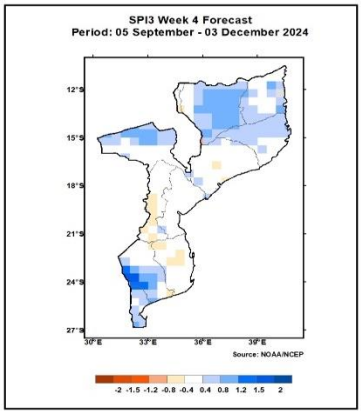


Figure 10: Spatial structure of SPI constructed from observations for 5 September to 5 November 2024 and 4 weeks forecast ending on 3 December 2024. **Source: NOAA/NCEP**

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 October 2024):

- From 21 – 31 October, poor (NDVI values between 60-90% of the average) vegetation conditions persisted over the western and north-central regions of Mozambique, while above-average vegetation conditions were observed in the southern and central parts of the country (**Fig. 11**).

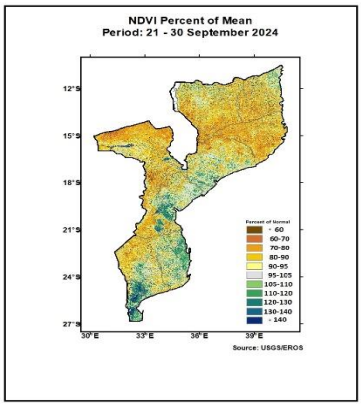


Figure 11: Spatial structure of NDVI anomaly for 21 – 31 October 2024. **Source: USGS/EROS**

Water Requirement Satisfaction Index (WRSI)

- NA

GEOGLAM Crop Monitor

- NA

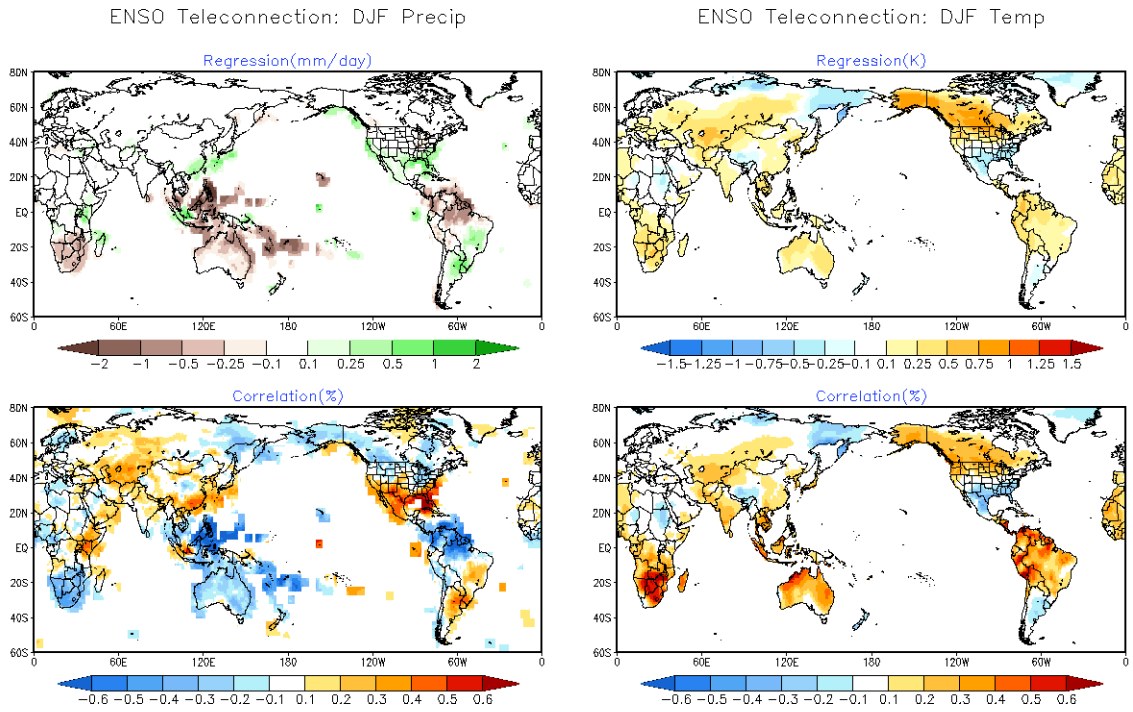
Additional Resources

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]

[Location]: