FAMINE EARLY WARNING SYSTEMS NETWORK

Zimbabwe

Monthly Climate and Weather

19 December 2024

Highlights

- El Niño Southern Oscillation (ENSO)-neutral conditions continued during November 2024. Equatorial sea surface temperatures (SSTs) are above average in the western Pacific and near-to-below-average in the central and eastern Pacific Ocean in the last four weeks.
- Based on dynamical models, La Niña conditions are most likely to emerge in November 2024 - January 2025 (59% chance), with a transition to ENSO-neutral most likely by March-May 2025 (61% chance).
- During November 2024, 75 to 150mm was recorded in many parts of central, eastern, southeastern and northwestern Zimbabwe. The remaining areas received 25-75mm.
- Maximum temperatures were 1 to 3^{o}C above-average in northern, eastern, western, southwestern and far-southern Zimbabwe in November 2024. Minimum temperatures were 1 to 4^{o}C below average in northeastern Zimbabwe and above-average in southeastern Zimbabwe.
- The SPI analysis for November 2024 indicated wetter than average conditions in parts of eastern and southeastern Zimbabwe and drier than average condition in western, southwestern and some parts of southern and northern Zimbabwe.
- Based on the North American Multi-Model Ensemble (NMME) models, there is a slight to moderate tilt in the odds to favor above-average rainfall across Zimbabwe during January 2025.
- Based on the NMME models, there is a slight tilt in the odds to favor above-average temperature in parts of northern, eastern and southern Zimbabwe during January 2025.

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.

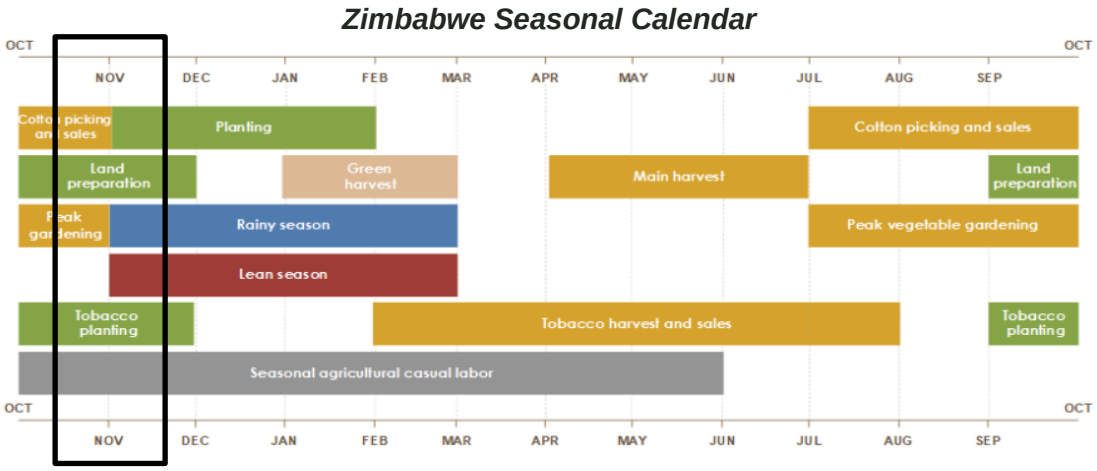

Figure 1: Seasonal calendar for Zimbabwe. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- As of early December 2024, near-to-below-average SSTs persisted in the east-central and eastern Pacific Ocean, while above-average SSTs persisted in the western Pacific in the last four weeks.

- Based on dynamical models, La Niña conditions are most likely to emerge in November 2024 - January 2025 (59% chance), with a transition to ENSO-neutral most likely by March-May 2025 (61% chance). (**Fig. 2**).

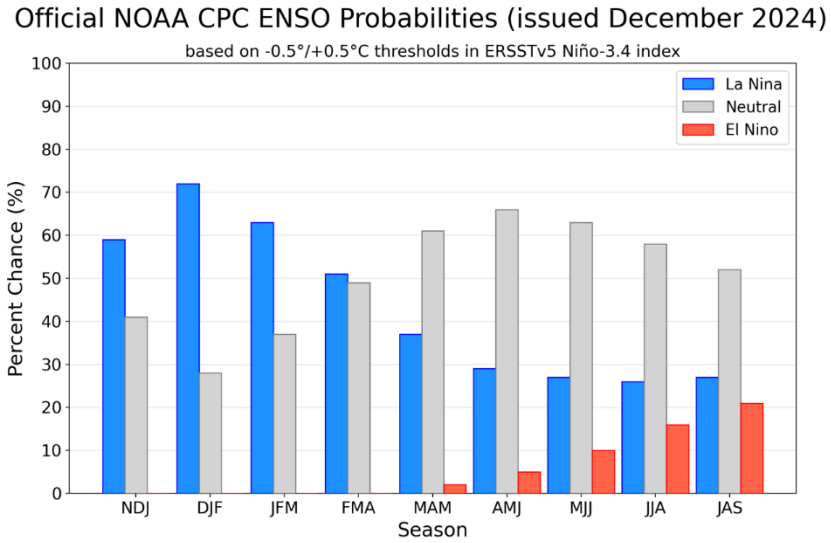

Figure 2: Official ENSO probabilities for the Niño 3.4 Sea surface temperature index (5°N-5°S, 120°W-170°W). **Source: NOAA/NCEP**

- Based on historical record, La Niña episodes are typically associated with wetter than average conditions in Zimbabwe during the December-January-February (DJF) season. La Niña events are also associated with cooler than average conditions across Zimbabwe during the DJF season (**Figure S1**).

Extreme Events

- There were no impacts of tropical storms over the past 30 days across Zimbabwe.
- Tropical Cyclone Chido has formed in the southern Indian Ocean to northeast of Madagascar. It could bring strong wind and rain in northern parts of Madagascar on December 13. Same weather system could also bring a strong wind and rain across northern and north-eastern Mozambique and eastern Zimbabwe on 15-16 December.
- There were 47 notable fire alerts in Manicaland, Zimbabwe over the past 4 weeks.
- There were no notable wind anomalies over the past 30 days across Zimbabwe.

Rainfall/Precipitation

Past 3 months (September 2024 – November 2024):

- **Totals:** Most of central, eastern, southeastern and far-western regions of Zimbabwe recorded 100 to 200mm total rainfall, while northern, southwestern and southern regions of Zimbabwe received 50 to 100mm total rainfall (**Fig. 3a**). **Table 1** shows the average rainfall for provinces of Zimbabwe.

- **Anomalies:** The observed rainfall was 10 to 25mm below average in parts of western and southern Zimbabwe (**Fig. 3b**). Rainfall was above average in parts of northern, northwestern, central, northeastern and southeastern Zimbabwe.

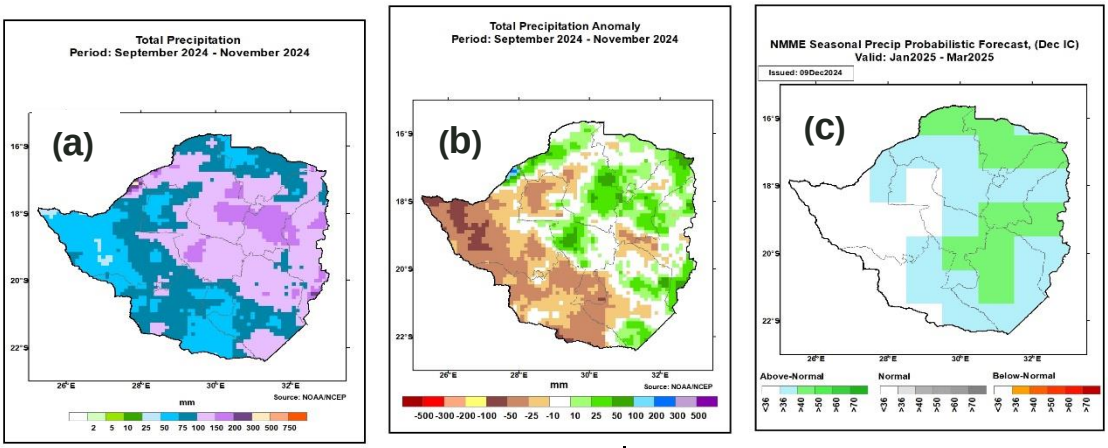

Figure 3: Satellite estimates of precipitation (RFE2) for past 3 months (September 2024 – November 2024). (a) Total accumulation of precipitation and (b) precipitation anomaly. (c) Seasonal precipitation forecast for January 2025 - March 2025. **Source: NOAA/NCEP**

Past 1 Month (November 2024):

- **Totals:** During November, 75 to 150mm total rainfall was recorded in many parts of Mashonaland East and Manicaland, western Mashonaland Central, northern, southern and southeastern Mashonaland West, parts of eastern, central and southern Midlands, northern, eastern and southern Masvingo, and some parts of northern Matabeleland North and southern Matabeleland South regions of Zimbabwe **(Fig. 4a**). The rest of Zimbabwe received 25 to 75mm during the month **(Table 1).**

- **Anomalies:** Rainfall was above average in northern and southern Manicaland, eastern and central Mashonaland East, central-southern Masvingo, central-southern Midlands, and some parts of northwestern and southeastern Midlands (**Fig. 4b**). In contrast, rainfall was below average in western, southern and eastern Matabeleland North, northern Midlands, central Mashonaland West, and many parts of Matabeleland South.

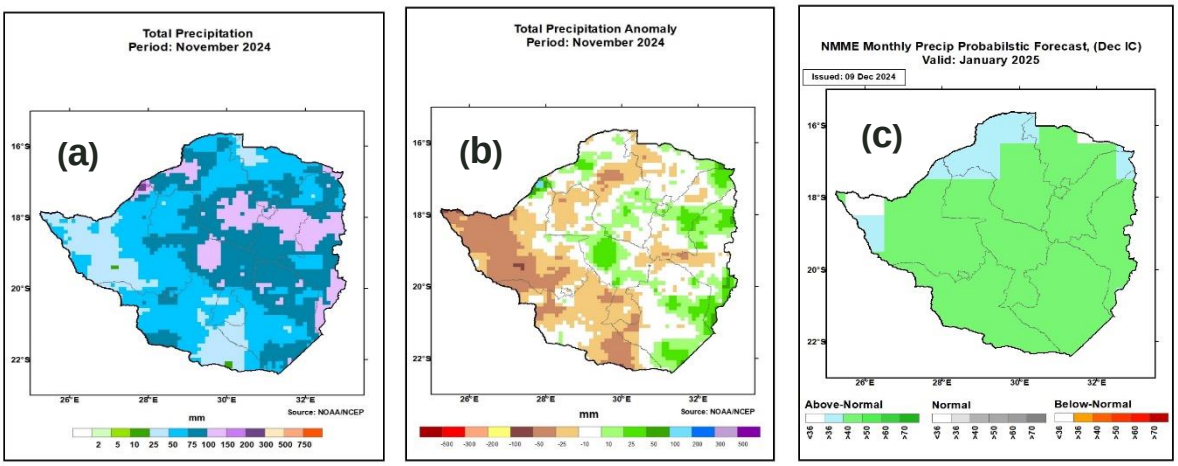

Figure 4: Satellite estimates of precipitation (RFE2) for November 2024. (a) Monthly total accumulation of precipitation and (b) monthly precipitation anomaly. (c) Monthly precipitation forecast for January 2025. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (January 2025 and Jan 2025 – Mar 2025):

- **Monthly:** Based on the North American Multi-Model Ensemble (NMME) models (using observations in December 2024 to drive the models), there is a slight to moderate tilt in the odds to favor above-average rainfall across Zimbabwe during January 2025 (**Fig. 4c)**.

- **Seasonal:** Based on the NMME models, there is a slight to moderate tilt in the odds to favor above-average rainfall in parts of northern, northwestern, central, eastern and southern parts during January 2025 – March 2025 (**Fig. 3c**). **Table 1** gives the total climatological/average accumulation for 3-month forecast period and forecasted rainfall anomaly for the provinces of Zimbabwe.

Table 1: The total observed rainfall and anomaly from climatology for past 1- and 3-months for the provinces of Zimbabwe. For seasonal forecast, the total climatological/average accumulation for 3-month forecast period and forecasted rainfall anomaly are shown.

Location	Past 3-Month		Past 1-Month		Seasonal Forecast	
	Total (mm)	Anomaly (mm)	Total (mm)	Anomaly (mm)	Climatology (mm)	Anomaly (mm)
Mashonaland West	120	14	87	1	499	65
Mashonaland Central	94	12	69	0	552	91
Mashonaland East	129	14	91	5	489	68

Matabeleland North	78	-25	58	-20	407	30
Midlands	105	-2	78	1	427	38
Manicaland	128	12	97	14	516	74
Harare	151	26	105	13	499	56
Masvingo	102	1	75	7	407	55
Matabeleland South	78	-26	57	-17	328	20

Temperature

Past 3 months (September 2024 – November 2024):

- **Maximums:** Maximum temperatures were 1 to 2ºC above average in northern, northeastern, western and southern Zimbabwe, with the largest anomalies of 2 to 4ºC occurring in southwestern Matabeleland South, southern Matabeleland North, and pocket areas in western Mashonaland Central and eastern Mashonaland West (**Fig. 5a**, **Table 2**). Maximum temperatures were between 25 to 35ºC in much of Zimbabwe.

- **Minimums:** Minimum temperatures were 1 to 3ºC below average in northern and northwestern Zimbabwe and above average by 1 to 2ºC in southeastern Zimbabwe **(Fig. 5b)**. Minimum temperature remained between 15 to 20ºC in many parts of Zimbabwe.

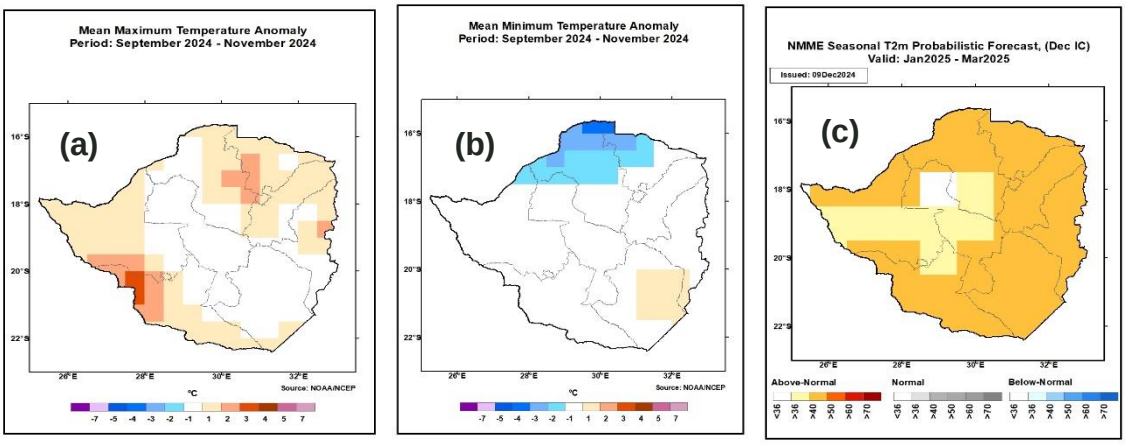

Figure 5: Spatial structure of maximum and minimum temperature anomalies for September 2024 – November 2024: **(a)** maximum temperature anomaly and **(b)** minimum temperatures anomaly. **(c)** Seasonal temperature forecast for January 2025 – March 2025. **Source: NOAA/NCEP**

Past 1 Month (November 2024):

- **Maximums:** Maximum temperatures were 1 to 3ºC above average in parts of northern, eastern, western, southwestern and far-southern Zimbabwe (**Fig. 6a; Table 2**). Maximum temperatures were between 25 to 35ºC in many parts of Zimbabwe.

- **Minimums:** Minimum temperatures were 1 to 4ºC below average in northern and central Mashonaland West and northern Mashonaland Central provinces **(Fig. 6b)**. Minimum temperatures were 1 to 2ºC above average in parts of central and southeastern Zimbabwe. Minimum temperatures were between 15 to 25ºC in many parts of Zimbabwe.

Monthly and Seasonal Forecasts (January 2025 and Jan 2025 – Mar 2025):

- **Monthly:** Based on the NMME models, there is a slight tilt in the odds to favor above-average temperature in northern, eastern and southern Zimbabwe during January 2025.

- **Seasonal:** Based on NMME forecasts, there is a slight tilt in the odds to favor above-average temperature during Jan 2025 – Mar 2025 across Zimbabwe (**Fig. 5c, Table 2**).

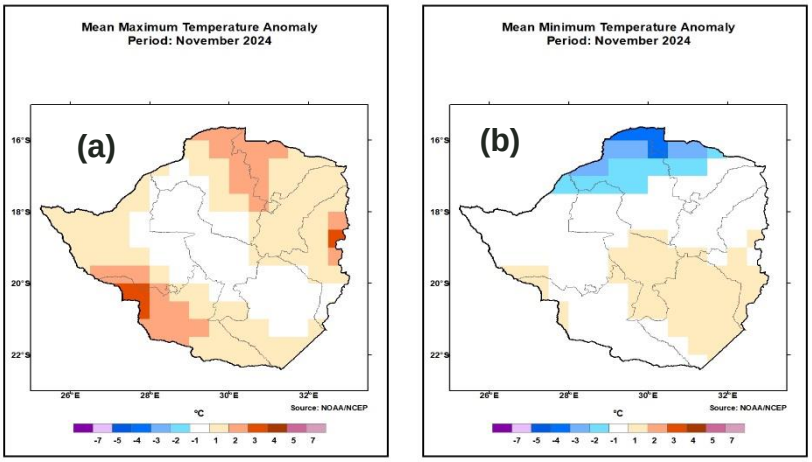

Figure 6: Spatial structure of average November 2024 **(a)** maximum temperature anomaly and **(b)** minimum temperatures anomaly. **Source: NOAA/NCEP**

Table 2: The average maximum temperature and deviations from climatology for the past 1- and 3-months for the provinces of Zimbabwe. For seasonal forecast, the climatological/average temperatures values and forecasted temperature anomalies are provided.

Location	Past 3-Month		Past 1-Month		Seasonal Forecast	
	Max/Min Temperature (ºC)	Max/Min Anomaly (ºC)	Max/Min Temperature (ºC)	Max/Min Anomaly (ºC)	Temperature Climatology (ºC)	Above/Below Average
Mashonaland West	32.1/17.0	1.2/-1.4	32.4/18.8	1.4/-1.3	23.3	0.3
Mashonaland Central	32.0/16.7	1.7/-1.2	33.0/18.8	2.1/-1.2	21.7	0.3
Mashonaland East	29.1/15.9	1.1/0.4	29.9/18.1	1.4/0.7	21.5	0.3
Matabeleland North	32.2/18.0	1.3/0.2	32.1/20.0	1.2/0.4	24.0	0.3
Midlands	30.1/16.9	0.1/0.0	30.4/19.1	0.4/0.6	22.3	0.3

Manicaland	27.7/15.6	1.1/0.6	28.9/17.8	1.7/1.0	22.4	0.3
Harare	28.3/13.9	1.6/-0.2	28.6/16.6	1.4/0.4	20.7	0.3
Masvingo	30.3/18.0	0.3/0.8	31.7/20.7	0.9/1.4	23.8	0.4
Matabeleland South	31.1/16.4	1.4/0.2	32.0/19.1	1.9/0.8	23.5	0.4

Flooding and Areas of Inundation

- Currently there is no flooding in Zimbabwe.
- Tropical Cyclone Chido could bring a strong wind and heavy rain across northern and north-eastern Mozambique and eastern Zimbabwe on 15-16 December.

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 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.

Past 3 Months (September 2024 – November 2024):

- The SPI analysis for the past 3-months indicated drier than average condition in western, southwestern and southern Zimbabwe (**Fig. 7a**). Wetter than average conditions existed in parts of eastern and central-northeastern Zimbabwe.

Past 1 Month (November 2024):

- The SPI analysis for November 2024 indicated wetter than average conditions in many parts of Manicaland, eastern Masvingo and central Mashonaland West (**Fig. 7b**). The SPI analysis indicated drier than average condition in western, southwestern and some parts of southern and northern Zimbabwe.

Current/Forecast (09 October 2024 – 06 January 2025):

- The SPI forecast suggests drier than average conditions in many parts of northern, northeastern, western, southwestern, southern, and central Zimbabwe (**Fig. 7c**).

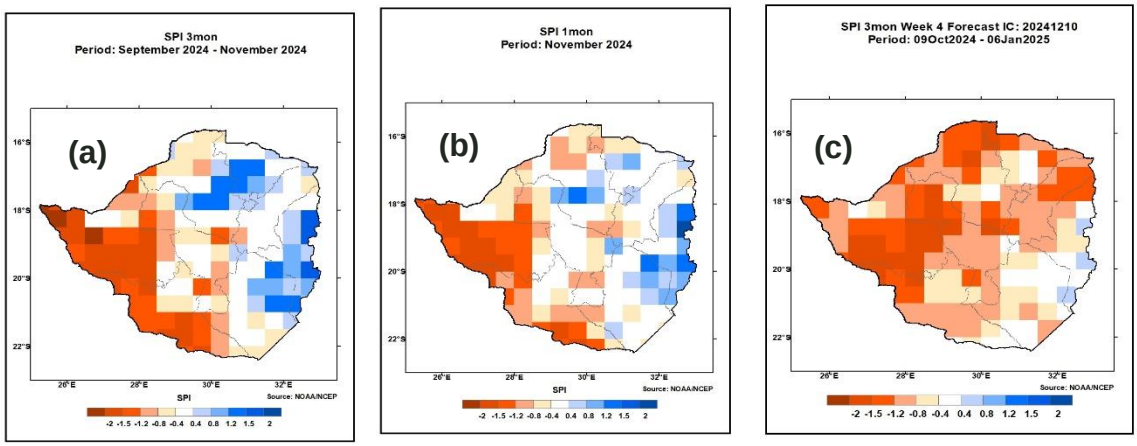

Figure 7: Spatial structure of the Standardized Precipitation Index (SPI) for **(a)** September 2024 - November 2024, **(b)** November 2024, and **(c)** Spatial structure of SPI constructed from observations for 09 October 2024 to 09 December 2024 and 4 weeks forecast ending on 06 January 2025. **Source: 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.

Past 1 Decadal period (21-31 November 2024):

- From 21 – 31 November 2024, the observed NDVI is 70-90% of the long-term average in western, southern and northern Zimbabwe and 105-130% of the long-term average in some parts of central-eastern, southeastern and northwestern Zimbabwe (**Fig. 8**).

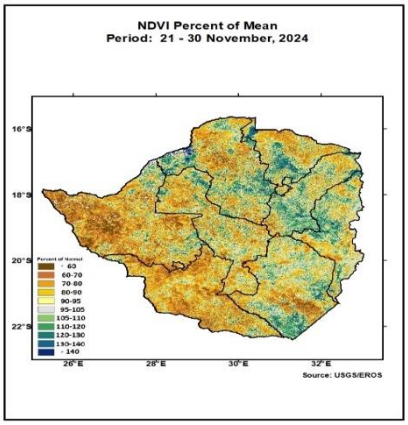

Figure 8: Spatial structure of the Normalized Difference Vegetation Index (NDVI) for period 21-31 November, 2024. **Source: USGS/EROS**

Water Requirement Satisfaction Index (WRSI)

- During the third dekad (10-day period) of November 2024, maize crops conditions were "good" in the northern, central, eastern and southeastern regions of Zimbabwe according to the WRSI analysis.

GEOGLAM Crop Monitor

- In Zimbabwe, planting of main season cereals is now underway and conditions are mostly favourable. Some countries in South Africa, including Zimbabwe, are implementing subsidy support to promote production outcomes.

Additional Resources

- https://fews.net/global/global-weather-hazards/december-2024-0
- https://www.cpc.ncep.noaa.gov/products/international/africa/expert/week1.jpg
- https://www.cpc.ncep.noaa.gov/products/international/africa/expert/week2.jpg

Annex

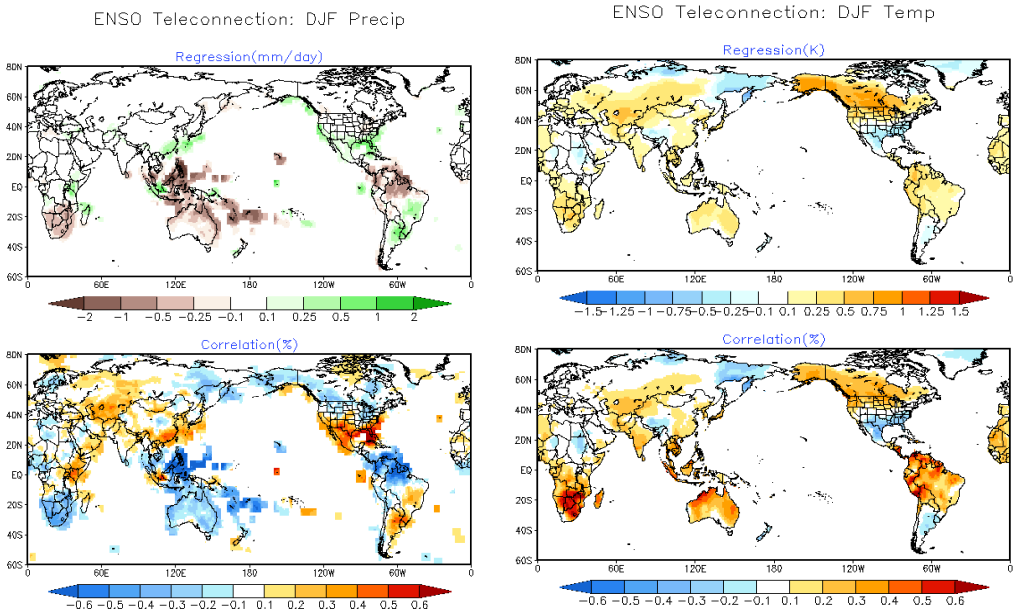

Figure S1: For three month season (November-January; NDJ), precipitation and temperature anomalies are regressed onto the standardized Niño-3.4 index (upper panel). In the bottom panel, the correlation is calculated between Nino-3.4 and the anomalies.