FAMINE EARLY WARNING SYSTEMS NETWORK

Zimbabwe

Monthly Climate and Weather

21 November 2024

Highlights

- El Niño Southern Oscillation (ENSO)-neutral conditions continued during October 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 is most likely to emerge in October-December 2024 (57% chance) and is expected to persist through January-March 2025 (61% chance).
- The seasonal rain started in mid-October 2024 in most of Zimbabwe, with the largest totals of 25 to 75mm occurring in central, eastern and northwestern regions.
- Maximum temperatures were 2 to 3^{o}C above-average in southwestern Zimbabwe and 1 to 2^{o}C below-average in central Zimbabwe in October 2024. Minimum temperatures were 3 to 5^{o}C below-average in northern Zimbabwe during the same month.
- The Standardized Precipitation Index (SPI) analysis showed wetter than average conditions in central, northwestern, eastern and southeastern Zimbabwe in October 2024, and drier than average condition in western, southwestern and southern Zimbabwe.
- Based on the North American Multi-Model Ensemble (NMME) models, there is a slight tilt in the odds to favor below-average rainfall in parts of central, southwestern, southern and eastern Zimbabwe during December 2024 – February 2025. There is slight tilt in the odds to favor above-average rainfall in some parts of northern and northwestern Zimbabwe.
- Based on the NMME models, there is a slight to moderate tilt in the odds to favor above-average temperature during Dec 2024 – Feb 2025 across Zimbabwe.

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.

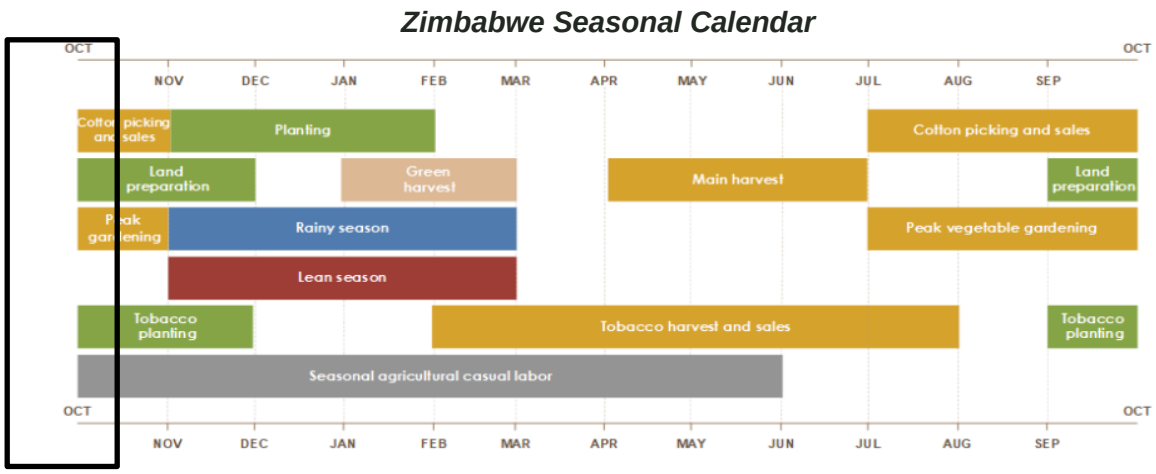

Figure 1: Seasonal calendar for Zimbabwe. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- As of early November 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 is most likely to emerge in October-December 2024 (57% chance) and is expected to persist through January-March 2025 (**Fig. 2**).

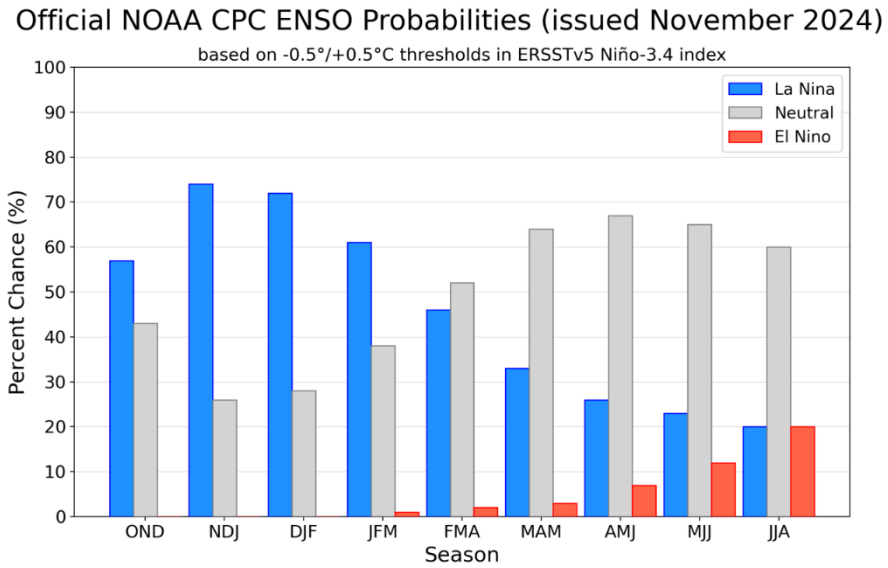

Figure 2: Official ENSO probabilities for the Niño 3.4 Sea surface temperature index (5°N-5°S, 120°W-170°W). **Source: NOAA/NCEP**

- Based on historical record, La Niña episodes are typically associated with wetter than average conditions in Zimbabwe during the November-December-January (NDJ) season.

La Niña events are also associated with cooler than average conditions across Zimbabwe during the NDJ season (**Figure S1**).

Extreme Events

- There were no impacts of tropical storms over the past 30 days across Zimbabwe. Based on available data, no tropical storms are expected in the coming weeks.
- There were no notable fire alerts over the past 4 weeks.
- Stronger-than-average westerly winds at lower level were observed across Zimbabwe over the past 30 days.

Rainfall/Precipitation

Past 3 months (August 2024 – October 2024):

- **Totals:** Most of central, eastern, far western and southeastern regions of Zimbabwe recorded 25 to 75mm total rainfall, while localized regions in eastern Masvingo/southern Manicaland and northwestern Matabeleland North received 75 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, southern, and southeastern Zimbabwe (**Fig. 3b**). Rainfall was above average in parts of northern, northwestern, and northern-central Zimbabwe.

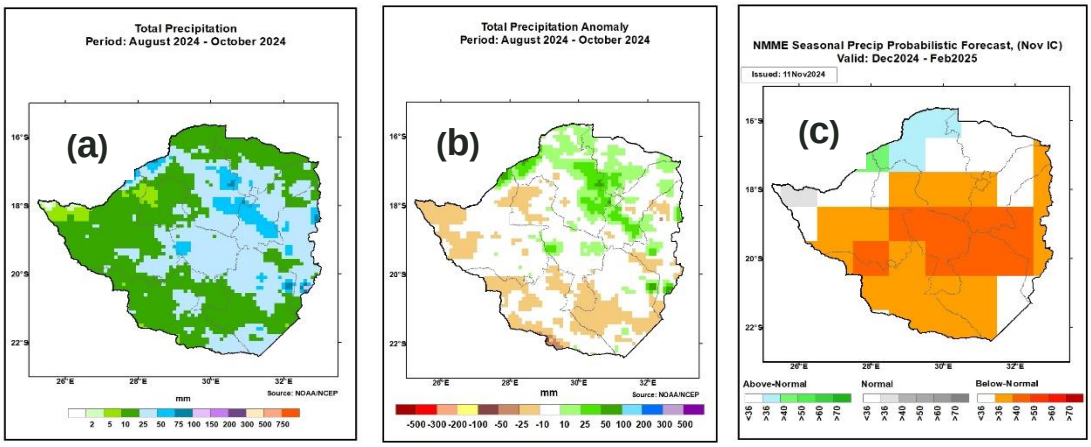

Figure 3: Satellite estimates of precipitation (RFE2) for past 3 months (August 2024 - October 2024). (a) Total accumulation of precipitation and (b) precipitation anomaly. (c) Seasonal precipitation forecast for December 2024 - February 2025. **Source: NOAA/NCEP**

Past 1 Month (October 2024):

- **Totals:** The observed rainfall recorded was around 25 to 75mm in western Mashonaland Central, Harare, western, central and southern Mashonaland East, western, central and eastern Manicaland, southern, central-eastern and northwestern Mashonaland West, central and eastern Midlands, northern Masvingo, and northeastern Matabeleland North **(Fig. 4a**). The rest of Zimbabwe received 10 to 25mm during October **(Table 1).**

- **Anomalies:** Rainfall was above average in northern, eastern and southern Mashonaland West, many parts of Mashonaland Central, eastern and western Mashonaland East, and

some parts of central Manicaland and central Midlands (**Fig. 4b**). In contrast, rainfall was below average in western Matabeleland North, southwestern and southern Matabeleland South, southern Masvingo, and some parts of northwestern Midlands.

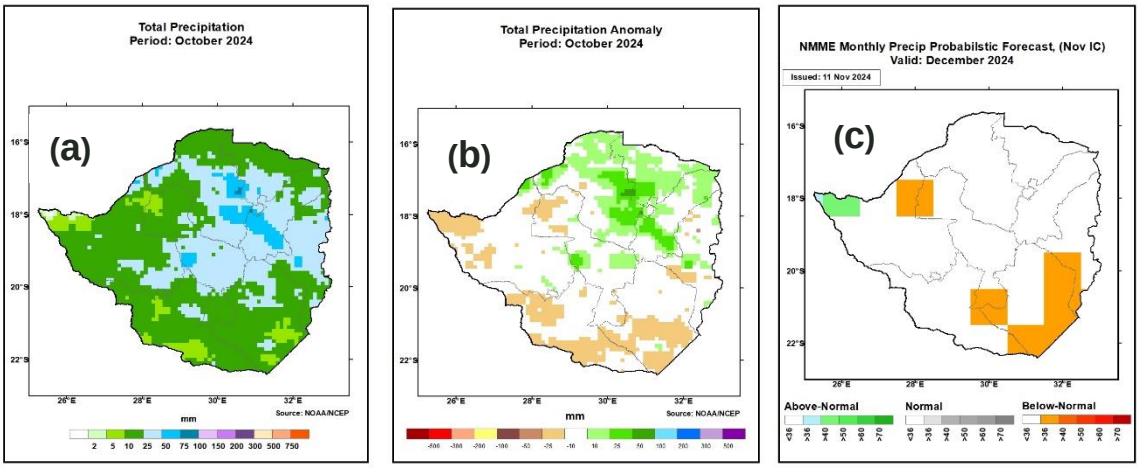

Figure 4: Satellite estimates of precipitation (RFE2) for October 2024. (a) Monthly total accumulation of precipitation and (b) monthly precipitation anomaly. (c) monthly precipitation forecast for December 2024. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (December 2024 and Dec 2024 – Feb 2025):

- **Monthly:** Based on the North American Multi-Model Ensemble (NMME) models (using observations in November 2024 to drive the models), there is a slight tilt in the odds to favor below-average rainfall in some parts of southeastern Zimbabwe during December 2024 (**Fig. 4c)**. There is a slight tilt in the odds to favor above-average rainfall in some parts of far western Matabeleland North province of Zimbabwe (**Fig. 4c**).

- **Seasonal:** Based on the NMME models, there is a slight tilt in the odds to favor below-average rainfall in parts of central, southwestern, southern, and eastern Zimbabwe during December 2024 – February 2025 (**Fig. 3c**). There is slight tilt in the odds to favor above-average rainfall in some parts of northern and northwestern Zimbabwe. **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	34	13	33	14	604	1
Mashonaland Central	25	13	25	14	667	-14

Mashonaland East	38	8	37	11	609	-30
Matabeleland North	20	-5	19	-3	511	-24
Midlands	27	-3	26	0	553	-37
Manicaland	35	1	29	1	619	-24
Harare	46	12	46	14	628	-29
Masvingo	29	-5	19	-8	511	-25
Matabeleland South	22	-9	16	-9	433	-40

Temperature

Past 3 months (August 2024 – October 2024):

- **Maximums:** Maximum temperatures were 1 to 3ºC above average in many parts of northern, western, southern and central-eastern Zimbabwe, with the largest anomalies of 3 to 4ºC occurring in southwestern Matabeleland South, and some regions in eastern Mashonaland West/Mashonaland Central (**Fig. 5a**, **Table 2**). Maximum temperatures were between 25 to 35ºC in much of Zimbabwe.

- **Minimums:** Minimum temperatures were 1 to 2ºC below average in northern Zimbabwe and above average by 1 to 2ºC in southeastern and southwestern Zimbabwe **(Fig. 5b)**. Minimum temperature remained around 10 to 20ºC in many parts of Zimbabwe.

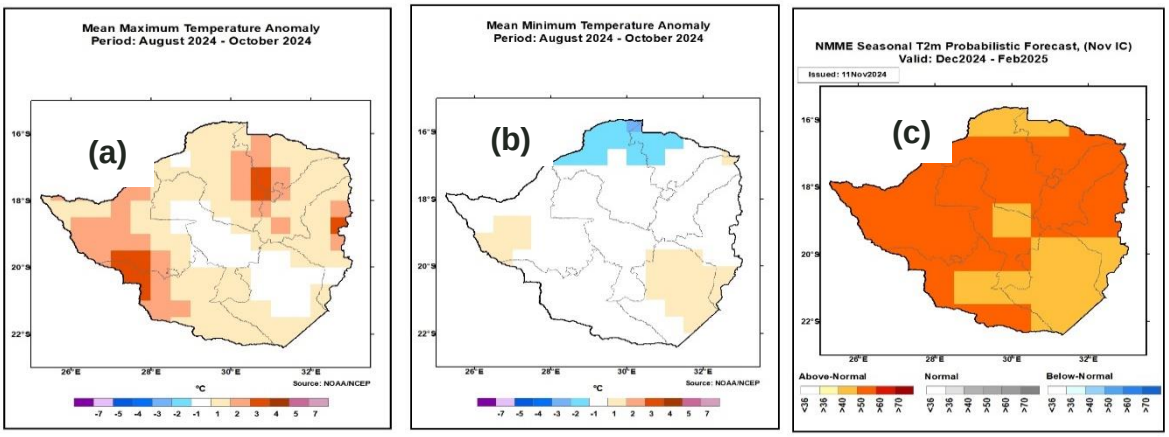

Figure 5: Spatial structure of maximum and minimum temperature anomalies for August 2024 – October 2024: **(a)** maximum temperature anomaly and **(b)** minimum temperatures anomaly. **(c)** Seasonal temperature forecast for December 2024 – February 2025. **Source: NOAA/NCEP**

Past 1 Month (October 2024):

- **Maximums:** Maximum temperatures were 1 to 2ºC above-average in southwestern and southern Matabeleland South and below-average in central Zimbabwe (**Fig. 6a; Table 2**). Maximum temperatures were between 25 to 35ºC in many parts of Zimbabwe.

- **Minimums:** Minimum temperatures were 2 to 5ºC below average in northern and central Mashonaland West and northern Mashonaland Central provinces **(Fig. 6b)**. Minimum temperatures were 1 to 2ºC below average in parts of central and southwestern Zimbabwe. Minimum temperatures were between 10 to 20ºC in many parts of Zimbabwe.

Monthly and Seasonal Forecasts (December 2024 and Dec 2024 – Feb 2025):

- **Monthly:** Based on the NMME models, there is a slight tilt in the odds to favor above-average temperature during December 2024 across Zimbabwe **(Fig. 6c)**.

- **Seasonal:** Based on NMME forecasts, there is a slight to moderate tilt in the odds to favor above-average temperature during Dec 2024 – Feb 2025 across Zimbabwe (**Fig. 5c, Table 2**)

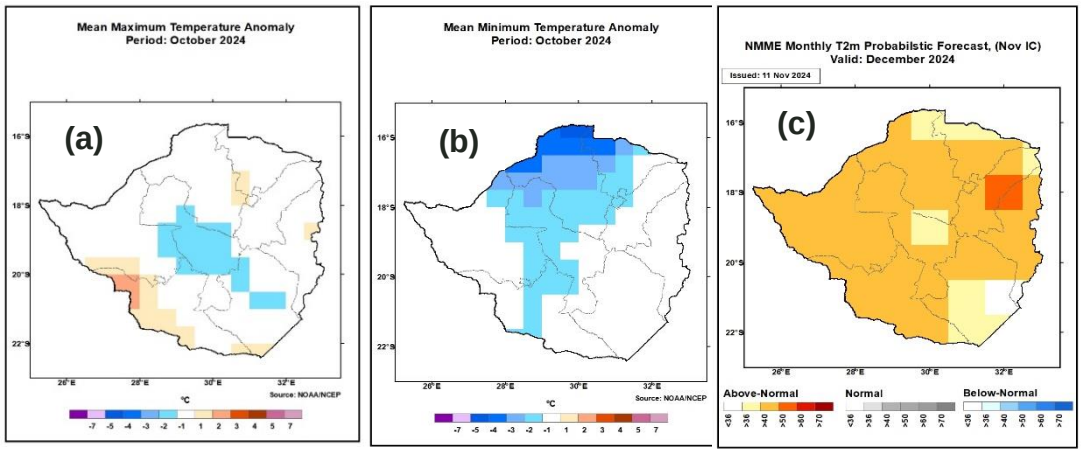

Figure 6: Spatial structure of average October 2024 **(a)** maximum temperature anomaly and **(b)** minimum temperatures anomaly. **(c)** Monthly temperature forecast for December 2024. **Source: NOAA/NCEP**

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	31.0/14.8	1.8/-0.7	31.6/16.6	-0.2/-2.5	23.9	0.5
Mashonaland Central	30.6/14.4	2.0/-0.6	31.4/15.6	0.3/-2.0	22.3	0.5
Mashonaland East	28.2/13.6	1.7/0.5	28.5/15.5	-0.3/-0.4	22.2	0.5
Matabeleland North	31.4/15.5	2.0/0.6	32.3/18.1	0.3/-0.6	24.6	0.6
Midlands	29.5/14.7	1.0/0.4	29.8/16.3	-1.0/-1.3	22.9	0.5
Manicaland	26.9/13.6	1.8/0.8	27.0/16.3	-0.1/-0.4	23.0	0.5

Harare	27.5/11.3	2.4/-0.2	27.7/13.2	0.2/-1.3	21.3	0.6
Masvingo	29.6/15.7	1.0/1.2	30.0/17.3	-0.4/-0.2	24.3	0.6
Matabeleland South	30.0/13.4	1.9/0.2	31.0/15.9	0.8/-0.9	24.0	0.6

Flooding and Areas of Inundation

- Currently there is no flooding in Zimbabwe.
- The forecasts call for above 50% chance for weekly rainfall to be above-normal (above the upper tercile) across much of Zimbabwe during the period 13 - 19 Nov, 2024. There is above 80% chance for above-normal rainfall in central part of Zimbabwe.

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 (August 2024 – October 2024):

- The SPI analysis indicated drier than average condition in southwestern and far-western Zimbabwe and wetter than average conditions existed in parts of eastern-southeastern and some parts of central Zimbabwe.

Past 1 Month (October 2024):

- The SPI analysis for October 2024 indicated wetter than average conditions in eastern, central, western and northwestern Mashonaland West, western Mashonaland Central, western and eastern Mashonaland East, much of Manicaland, western, central and eastern Masvingo, and northern Midlands. The SPI analysis indicated drier than average condition in western, southwestern and some parts of southern Zimbabwe.

Current/Forecast (06Nov2024 – 03Dec2024):

- The SPI forecast suggests wetter than average conditions in northern, northwestern, western, southern, eastern and southeastern Zimbabwe.

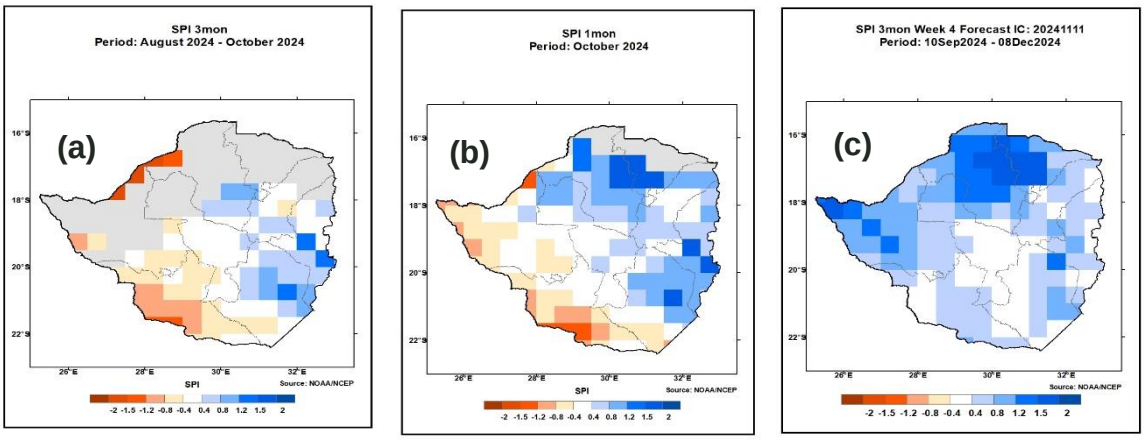

Figure 7: Spatial structure of the Standardized Precipitation Index (SPI) for **(a)** Aug2024 - Oct 2024, **(b)** October 2024, and **(c)** Spatial structure of SPI constructed from observations for 10Sep2024 to 10Nov2024 and 4 weeks forecast ending on 08Dec2024. **Source: NOAA/NCEP**

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 October 2024):

- From 21 – 31 October 2024, the observed NDVI is 70-90% of the long-term average in many parts of Zimbabwe (**Fig. 8**).

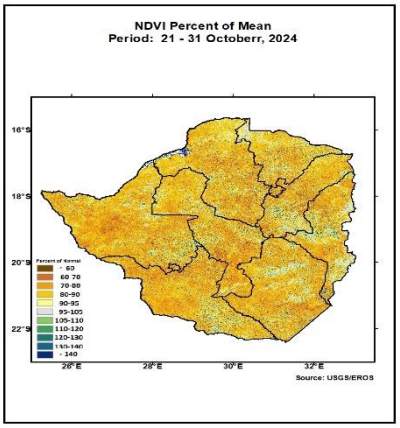

Figure 8: Spatial structure of the Normalized Difference Vegetation Index (NDVI) for period 21-31 October, 2024. **Source: USGS/EROS**

Water Requirement Satisfaction Index (WRSI)

- Not applicable

GEOGLAM Crop Monitor

- The previous season drought is having lasting effects on water supply for irrigated crops in Zimbabwe where the Kariba Dam levels are very low, and seed availability is a concern in some areas.

Additional Resources

- Wheat harvesting is now underway in Zimbabwe. Zimbabwe achieves record wheat crop. According to the Zimbabwean Agricultural Marketing Authority, the country's Agricultural and Rural Development Authority estates, irrigation schemes and joint venture initiatives accounted for 51% of the crop so far.

- The electricity situation in Zimbabwe could worsen as the water necessary for power generation at Lake Kariba is very low.

Annex

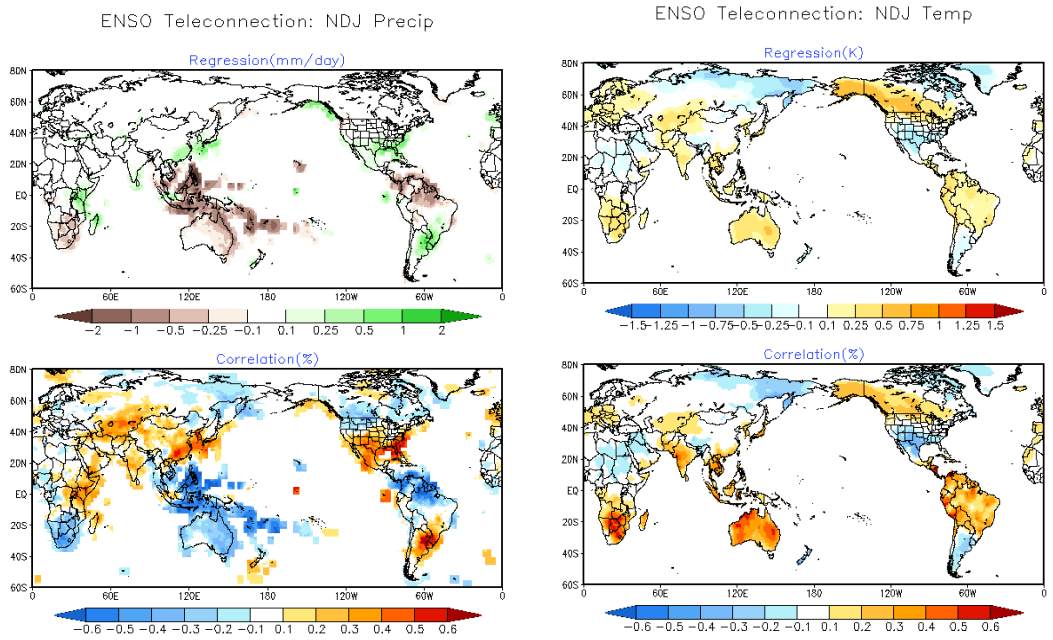

Figure S1: For three month season (November-January; NDJ), precipitation and temperature anomalies are regressed onto the standardized Niño-3.4 index (upper panel). In the bottom panel, the correlation is calculated between Nino-3.4 and the anomalies.