FAMINE EARLY WARNING SYSTEMS NETWORK

South Sudan

Monthly Climate and Weather

20 March 2025

Highlights

- Below-average sea surface temperatures (SSTs) weakened in the central and east-central equatorial Pacific Ocean during February 2025. El Niño Southern Oscillation (ENSO)-neutral is favored to develop in the next month and persist through the Northern Hemisphere during June - August 2025 with a 62% chance, according to the latest ENSO outlook.
- Based on historical records, La Niña-neutral conditions are associated with near average rainfall and near-average mean temperatures in South Sudan during April – June (MAM) season.
- During February 2025, many areas of southwestern, northeastern and central parts of the country received 5-50 mm rainfall, with the highest rainfall of 50 mm being recorded in the far western areas of Western Equatoria state. The remaining areas remained dry.
- The North American Multi-Model Ensemble (NMME) models indicate average to below-average rainfall for April 2025, except over Eastern Equatoria, Central Equatoria, Jonglei and Unity states, which show slightly above average rainfall.
- During February 2025, maximum temperatures were 1 to 4°C above average over most parts of the country, while minimum temperatures were 1-3°C below average over southern, central, and northern regions of the country.
- The NMME models suggest that most of South Sudan will experience above average temperatures in April 2025 and April - June (AMJ) 2025, with probabilities exceeding

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.

50 to 60% in western, southwestern and northeastern parts of the country for AMJ 2025.

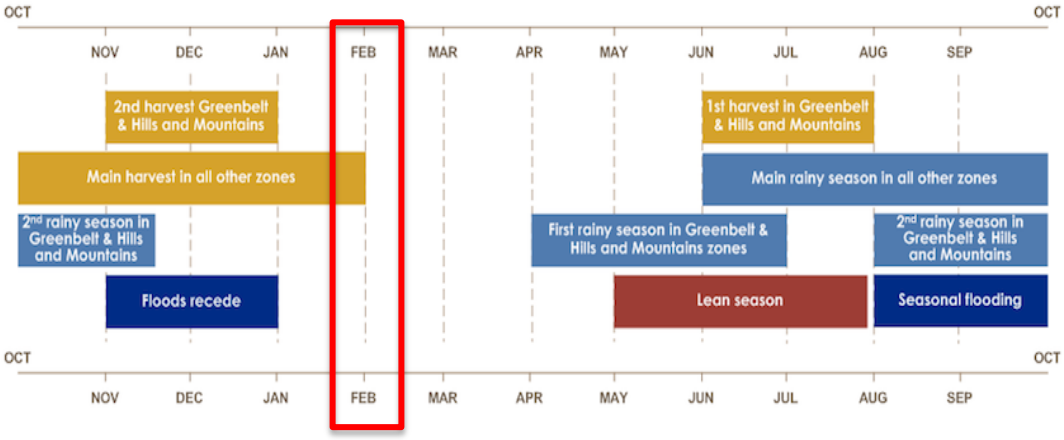


Figure 1: Seasonal calendar for South Sudan. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- During February to mid-March 2025, below-average SSTs weakened in the central and east-central equatorial Pacific Ocean. Below-average subsurface temperatures also weakened, but negative anomalies persisted at depth in the eastern Pacific and extended down to 200m in the central Pacific. Low-level wind anomalies remained easterly over the western and central Pacific, while upper-level wind anomalies were westerly over the east-central Pacific. Collectively, the coupled ocean-atmosphere system suggests weakening of La Niña with a tendency toward ENSO-neutral condition.

- The latest ENSO outlook indicates that ENSO-neutral condition is favored to develop in the next month and expected to persist with a 62% chance during June-August 2025 (Fig. 2). The latest update of the NOAA Climate Prediction Center's El Niño/Southern Oscillation diagnostic discussion can be found here.

- La Niña-neutral conditions are typically associated with near-average rainfall and near-average mean temperatures in South Sudan during the April-June (AMJ) season (**Fig. S1**).

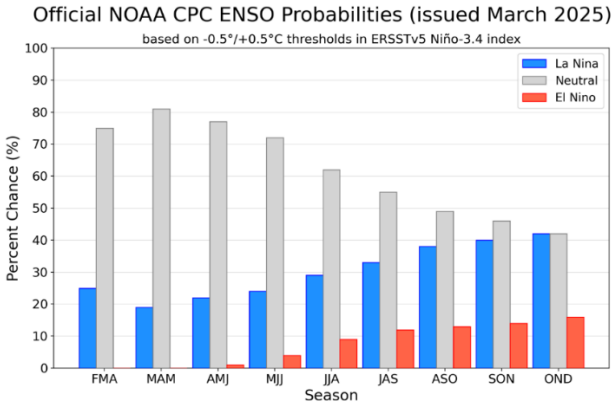


Figure 2: Official CPC ENSO probabilities outlook. **Source: NOAA/NCEP**

Extreme Events

- The Sudd wetlands in South Sudan were still experiencing inundation but with improvements along the upstream Nile and Lol rivers.
- There were no notable forest fires over the past 30 days across South Sudan.
- South Sudan had no notable wind anomalies over the past 30 days.

Rainfall/Precipitation

Past 3 Months (December 2024 to February 2025):

- **Totals:** The southwestern, southern, eastern and central parts of South Sudan received rainfall totals between 5-50 mm. The far southern borders in Western Equatoria recorded heavy rainfall totals in excess of 100 mm **(Fig. 3a**).

- **Anomalies:** Rainfall was below average in most of eastern, southern, central and western parts of South Sudan, with the largest rainfall deficits (50-200 mm) occurring in the western, southern and eastern parts of the country. On the other hand, isolated areas in southern Upper Nile, northern Jonglei, and western Unity states experienced slightly above average rainfall of 10-25 mm **(Fig. 3b)**.

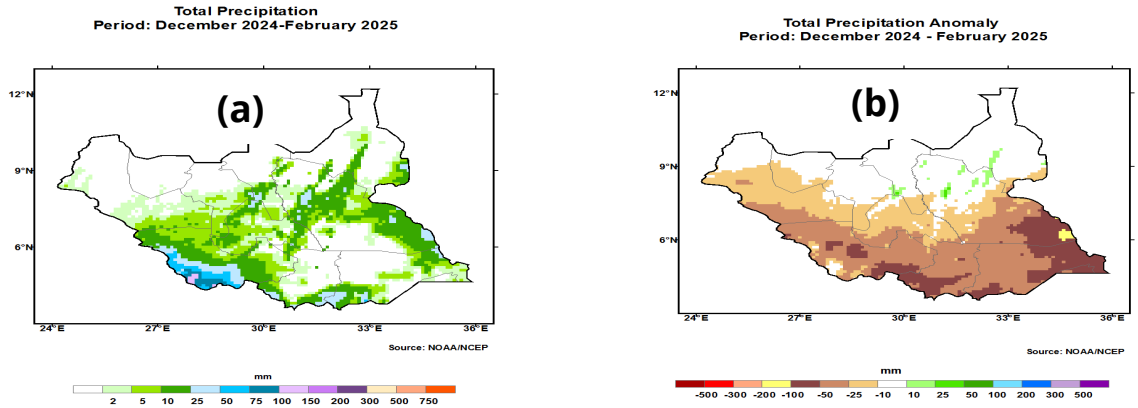


Figure 3: Spatial distribution for December 2024-February 2025: (a) total precipitation and (b) total precipitation anomaly. **Source: NOAA/NCEP**

Past 1 Month (February 2025):

- **Totals:** Monthly rainfall totals of 5-50 mm were registered in the southwestern region of Western Equatoria, Warrap, Unity, Lakes, Jonglei and Upper Nile. Much of the remaining parts of the country remained largely dry (**Fig. 4a)**.

- **Anomalies:** Rainfall was 10-50 mm below-average in much of eastern, western and southern parts of the country. A very small pocket in eastern Upper Nile received 10-25 mm above average rainfall (**Fig. 4b**).

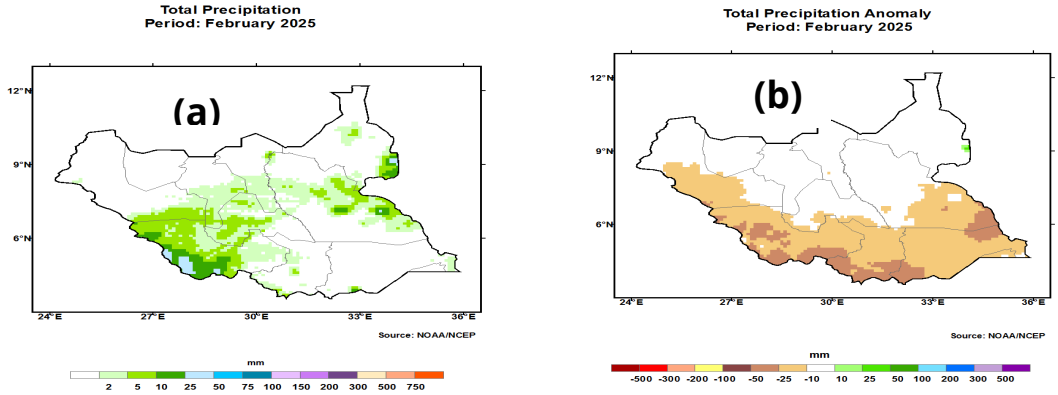


Figure 4: Spatial distribution for February 2025: (a) total precipitation and (b) total precipitation anomaly. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (April 2025 and April 2025-June 2025):

- **Monthly:** The NMME model forecast suggests there are no dominant below or above average tercile categories with probabilities above 40% over South Sudan. However, the southern parts of Eastern Equatoria exhibits enhanced probability exceeding 40% for above average rainfall (**Fig. 5a**).
- **Seasonal:** The NMME seasonal rainfall forecast shows above 40% chance for above normal rainfall over Jonglei, Eastern Equatoria, northern Central Equatoria, eastern Lakes, eastern Western Equatoria and eastern Upper Nile. (**Fig. 5b**).

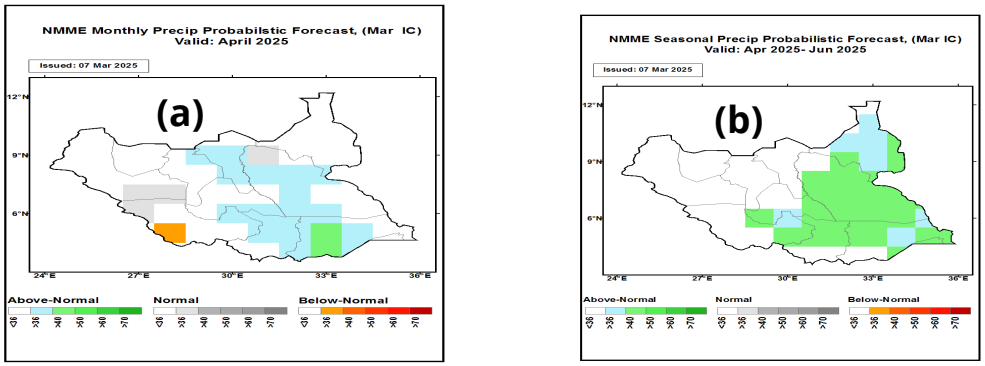


Figure 5: Rainfall forecast for (a) April 2025 and (b) April 2025 – June 2025. **Source: NOAA/NCEP**

Temperature

Past 3 months (December 2024 – February 2025):

- **Maximums:** Most of South Sudan recorded mean maximum temperatures of 30-40°C. Compared to the long-term average, many areas experienced 1-4°C above-average mean maximum temperatures (**Fig. 6a**).
- **Minimums:** Much of South Sudan recorded mean minimum temperatures between 10-25°C. The southwestern Western Equatoria state saw above-average temperatures of 1 to 2°C. The remaining parts of the country recorded average to below-average (1-3°C) minimum temperatures (**Fig. 6b**).

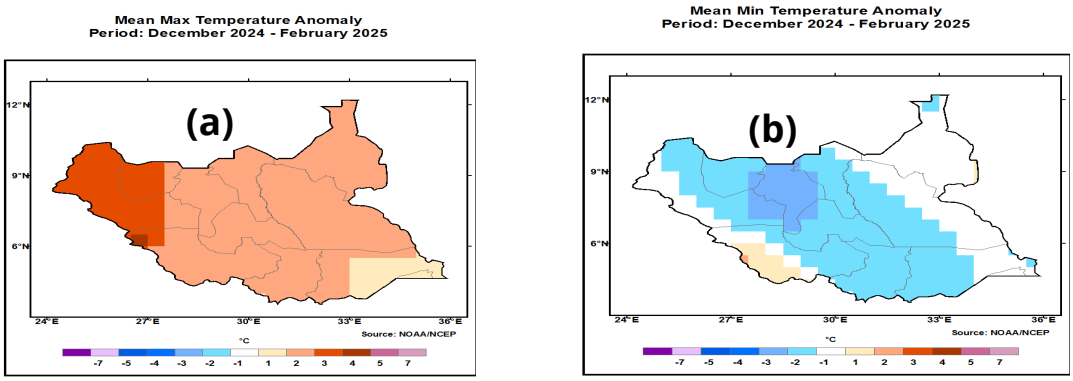


Figure 6: Spatial map for December 2024 – February 2025: (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Past 1 month (February 2025):

- **Maximums:** In February, South Sudan reported average maximum temperatures between 30-40°C, with the highest temperatures exceeding 35°C covering most parts of South Sudan. Temperatures were generally 1 to 4°C above average over most parts of South Sudan (**Fig. 7a**).
- **Minimums:** In February, much of South Sudan recorded mean minimum temperatures between 10-25°C. Compared to the long-term average, most parts of country experienced average to below average (1-3°C) minimum temperatures. On the other hand, western boarder of Western Equatoria regions reported 1 to 2°C above average minimum temperatures (**Fig. 7b**).

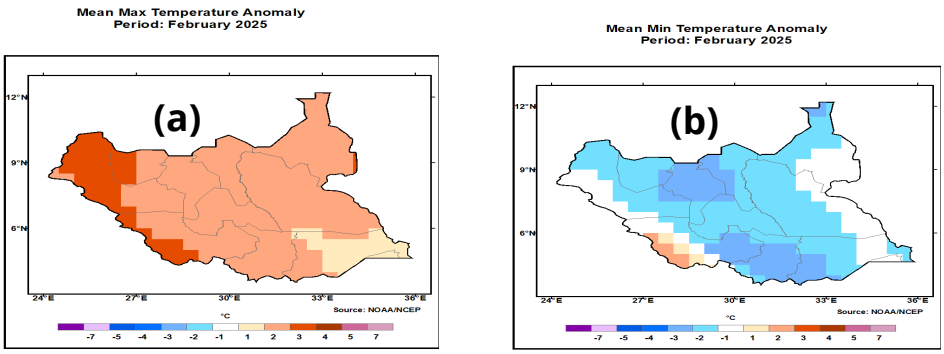


Figure 7: Spatial map for February 2025: (a) maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

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

- **Monthly:** During April 2025, probabilities for above-average mean temperatures will likely exceed 40 to 60% over much of the country (**Fig. 8a**).
- **Seasonal:** Above-average mean temperatures are expected over most parts of country, except over southeastern regions where no dominant tercile category is indicated. Probabilities for above-average temperatures are greater than 60% over Western Bahr el Ghazal, Western Equatoria, northern Unity and northwestern Upper Nile states (**Fig. 8b**).

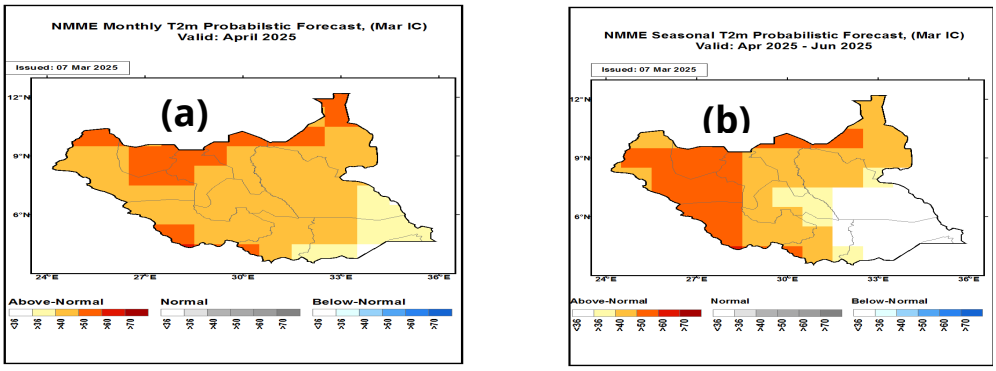


Figure 8: Spatial map for (a) April 2025 mean temperatures forecast and (b) April 2025 – June 2025 mean temperatures forecast. **Source: NOAA/NCEP**

Flooding and Areas of Inundation

In South Sudan, the Sudd marshlands, in the states of Jonglei, Unity, and Upper Nile experienced the most severe inundation, impacting a large portion of the population due to rising water levels from heavy rains and controlled water releases from Lake Victoria. Recent reports indicated that over a million people were affected across multiple counties, with significant displacement occurring in Northern Bahr el Ghazal and Unity states. A month into the cholera outbreak, suspected cases continue to be recorded in flood-hit locations.

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 (December 2024-February 2025):

- The SPI analysis for December 2024 to February 2025 indicated drier-than-average conditions across southern, southeastern and southwestern parts of South Sudan. On the other hand, northern, central, northwestern and northeastern areas experienced wetter-than-average conditions (**Fig. 9a**).

Past 1 month (February 2025):

- The SPI analysis for January 2025 indicates that climatologically dry conditions were observed in southern, southwestern and southeastern parts of South Sudan. However, northern, central, northwestern and northeastern parts of the country experienced wetter-than-average conditions (**Fig. 9b**).

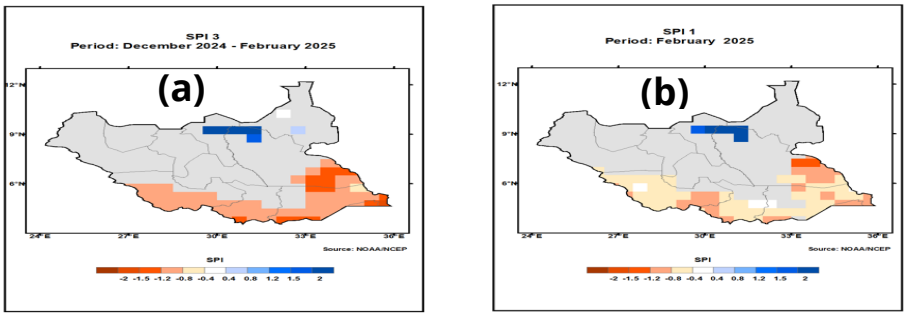


Figure 9: Spatial structure of Standardized Precipitation Index (SPI) (a) December 2024 – February 2025 (b) February 2025. Source: NOAA/NCEP. **Source: NOAA/NCEP**

Current/Forecast (29 December 2024 to 28 March 2025):

- The SPI forecast suggests that drier-than-average conditions will cover pockets of southeastern Eastern Equatoria and southwestern Western Equatoria, while wetter-than-average conditions are expected in northern Unity, northern Jonglei, and isolated areas in western Lakes, eastern Jonglei, and southern Upper Nile state

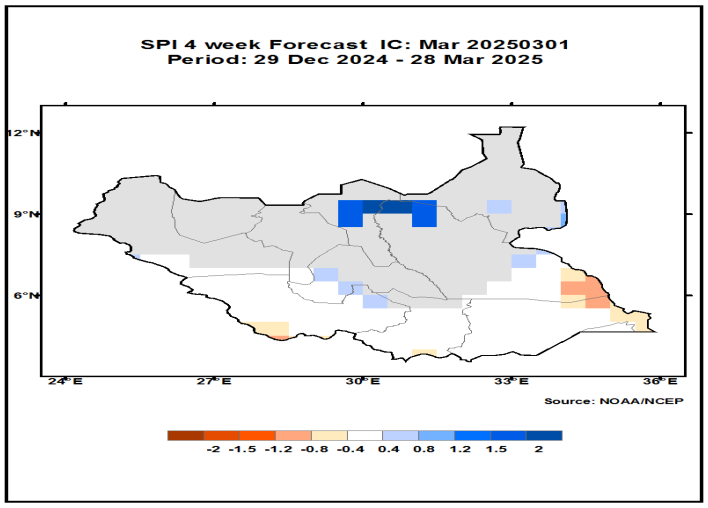


Figure 10: Spatial structure of SPI constructed from observations for 29 December 2024 to 28 February 2025 and 4 weeks forecast ending on 28 March 2025. **Source: NOAA/NCEP**

Water Requirement Satisfaction Index (WRSI)

- WRSI values during the 3rd Dekad of February 2025 indicated poor conditions for crop in South Sudan.

GEOGLAM Crop Monitor

In **South Sudan** harvesting of main seasons cereals mostly finalized in January under mixed conditions. Much of East Africa experienced above-average temperature conditions in February 2025, with areas of South Sudan experiencing temperatures exceeding 40°C. Forecast of below-average March to May rains could worsen drought conditions and hinder the total area under cultivation this season in South Sudan.

Additional Resources

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

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

https://fews.net/node/32023/print/download

Annex:

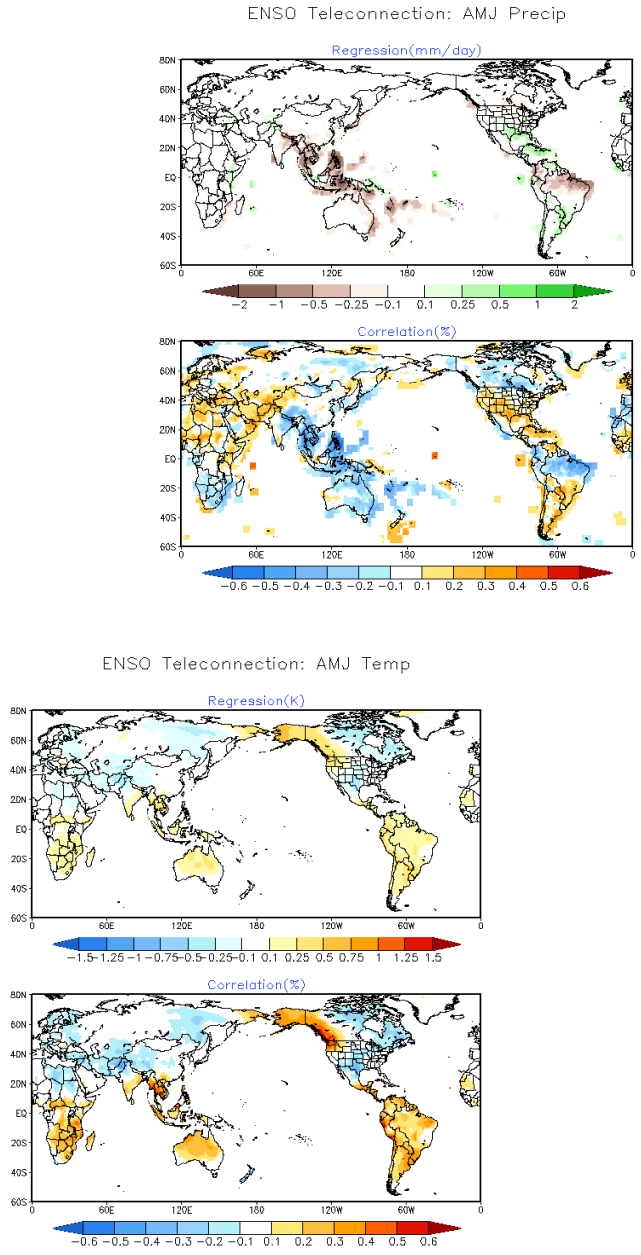
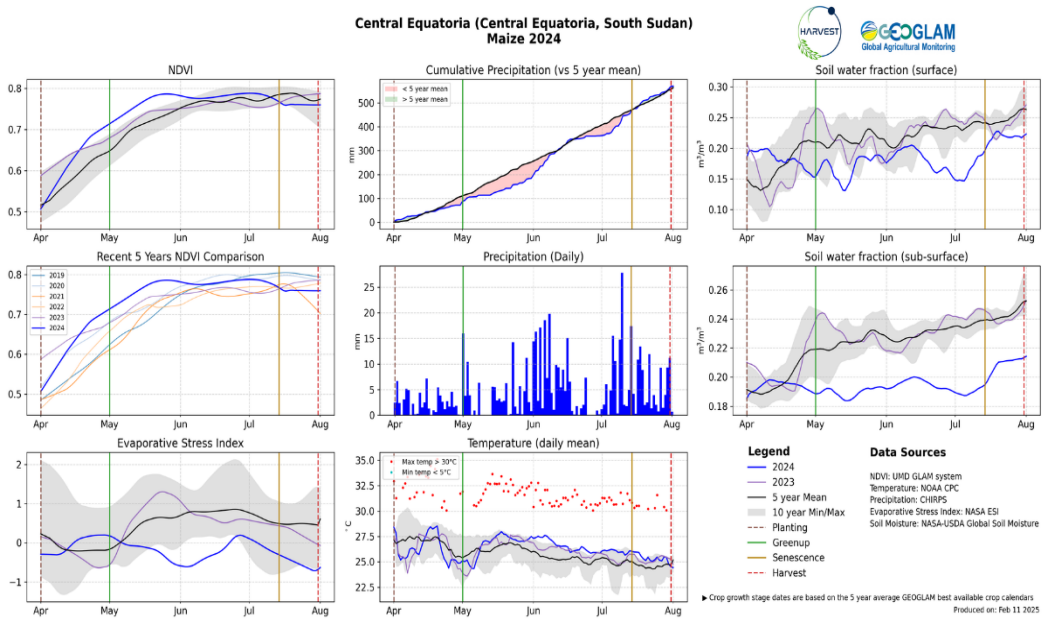


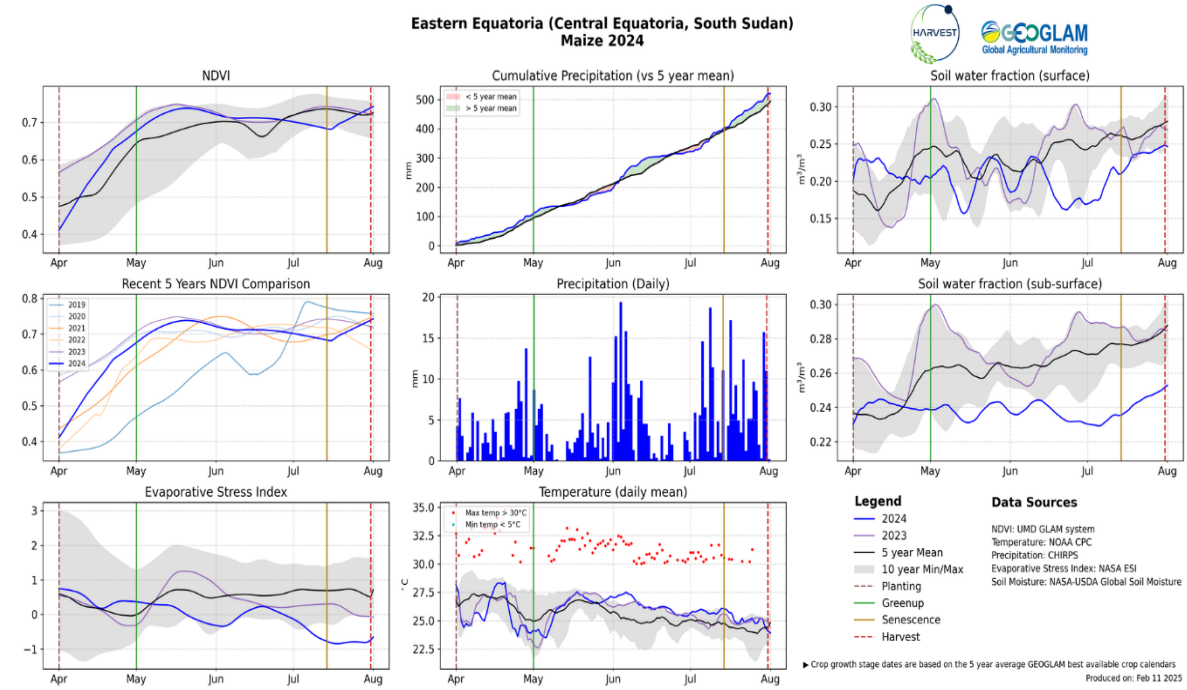
Figure S1: For three month season (AMJ), precipitation and temperature anomalies are regressed onto the standardized Niño-3.4 index (upper panel). In the bottom panel, the correlation is calculated between Nino-3.4 and the anomalies.

GEOGLAM Agro-meteorological Earth Observation Indicators:
Second-Season Maize

Central Equatoria:



Eastern Equatoria:



Western Equatoria: