FAMINE EARLY WARNING SYSTEMS NETWORK

South Sudan

Monthly Climate and Weather

15 May 2025

Highlights

- In April 2025, El Niño Southern Oscillation (ENSO)-neutral conditions continued, with near-average sea surface temperatures (SSTs) dominating across central and east-central equatorial Pacific Ocean. The ENSO-neutral is expected to continue with 74% chance through June to August 2025 and persist with over 50% chance through August-October 2025, 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 May – July (MJJ) season.

- During April 2025, much of South Sudan received 10-200 mm rainfall, with the highest rainfall of 100 to 200 mm being recorded in the eastern region of Eastern Equatoria, eastern Jonglei and in eastern pockets of eastern Upper Niles state. On the other hand, the Western Equatoria and Central Equatoria states show extreme dry conditions.

- The North American Multi-Model Ensemble (NMME) models indicate above-average rainfall during June 2025 over eastern parts of South Sudan, except over small pockets in western parts of Western Equatoria, which show below average rainfall.

- During April 2025, maximum temperatures were 1 to 3°C above average over eastern pockets of Upper Nile, western parts of Western Equatoria and Western and Eastern Bahr el Ghazal, while minimum temperatures were 1-2°C below average over eastern Northern Bahr el Ghazal, Warrap, Unity and northern Upper Nile. However, minimum temperatures were 1 to 2°C above average over the western boarder of Western Equatoria.

- The NMME models suggest that most of South Sudan will experience above average temperatures in June 2025. On the other hand, models are forecasting below average temperatures over Eastern Equatoria.

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.

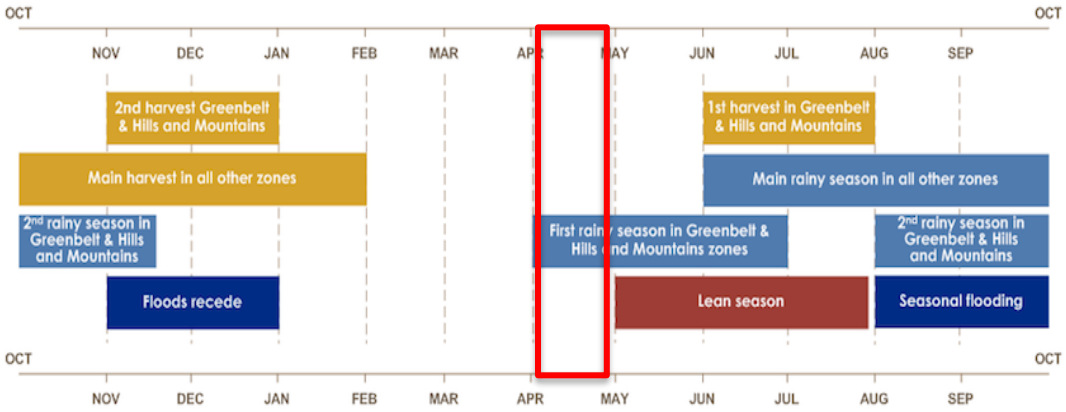


Figure 1: Seasonal calendar for South Sudan. **Source: FEWS NET**

Current Climate Modes and Teleconnections

- In April 2025, ENSO-neutral continued, with near-average sea surface temperatures (SSTs) covering most of the equatorial Pacific Ocean. Subsurface temperatures were mostly near average in the central and eastern Pacific Ocean, with above-average subsurface temperatures remaining at depth in the western Pacific. The low-level and upper-level winds were near average across the equatorial Pacific. Convection remained suppressed near and west of the Date Line and was enhanced near Indonesia. Collectively, the coupled ocean-atmosphere system was ENSO-neutral.

- The ENSO neutral condition will continue with 74% chance during June to August 2025 and persist with more than 50% through August-October 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 May-July (MJJ) season (**Fig. S1**).

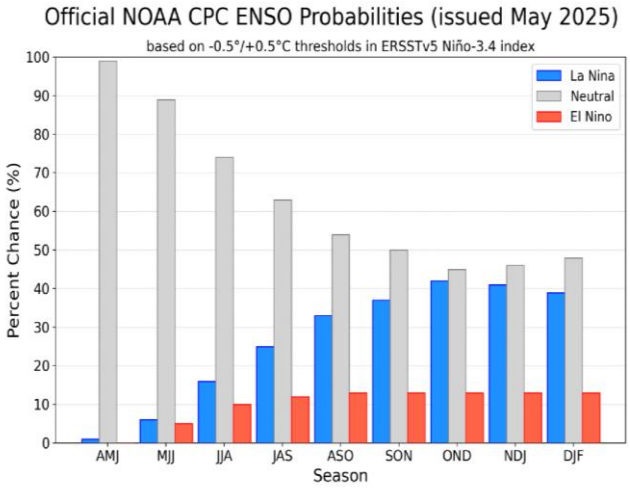


Figure 2: Official CPC ENSO probabilities outlook. **Source: NOAA/NCEP**

Extreme Events

- The Sudd wetlands in South Sudan are still experiencing inundation but with much 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 (February 2025 to April 2025):

- **Totals:** South Sudan **received** rainfall totals between 10-300 mm. The southwestern borders in Western Equatoria and Eastern Equatoria recorded heavy rainfall totals in excess of 200 mm **(Fig. 3a**).

- **Anomalies:** Rainfall was below average in much of southern and western South Sudan, with the largest rainfall deficits (10-200 mm) occurring in the Central Equatoria, Western Equatoria, Western Bahr el Ghazal, Northern Bahr el Ghazal, southern Jonglei, and Unity states. On the other hand, Eastern Equatoria, central Jonglei, and Upper Nile experienced above average rainfall of 10-200 mm **(Fig. 3b)**.

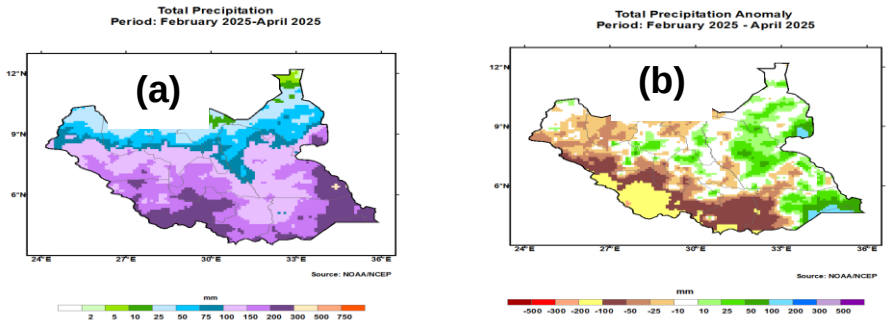


Figure 3: Spatial distribution for February 2025-April 2025: (a) total precipitation and (b) total precipitation anomaly. **Source: NOAA/NCEP**

Past 1 Month (April 2025):

- **Totals:** Monthly rainfall totals between 10-200 mm were registered across the country. The central, western, southern, and eastern parts of South Sudan recorded heavy rainfall totals in excess of 100 mm (**Fig. 4a)**.

- **Anomalies:** Rainfall was 10-100 mm below average in Western Equatoria and Central Equatoria. Conversely, rest parts of the country received 10-100 mm above average rainfall (**Fig. 4b**).

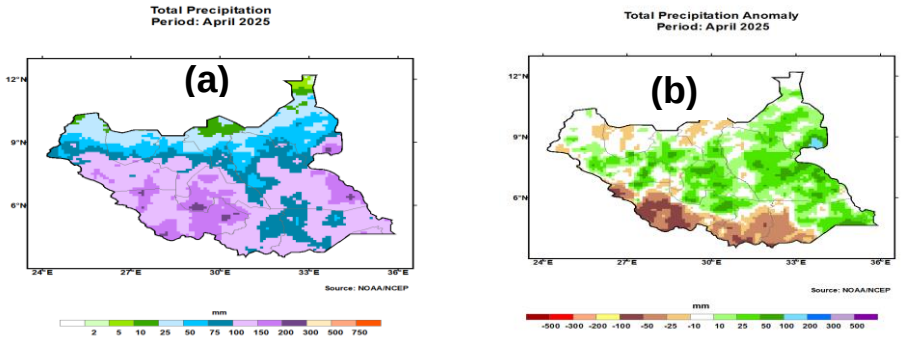


Figure 4: Spatial distribution for April 2025: (a) total precipitation and (b) total precipitation anomaly. **Source: NOAA/NCEP**

Monthly and Seasonal Forecasts (June 2025 and Jun 2025-Aug 2025):

- **Monthly:** The NMME model forecast suggests enhanced probability exceeding 50% for above average rainfall over Eastern Equatoria, Central Equatoria, Upper Nile, and Jonglei. However, the far western tip of Western Equatoria exhibits more than 40% chance for below normal rainfall. (**Fig. 5a**).

- **Seasonal:** The NMME seasonal rainfall forecast shows above 50% chance for above normal rainfall over Eastern Equatoria, Upper Nile, eastern and central Jonglei, and the far northern tip of Western Bahr el Ghazal. Conversely, model is suggesting higher probabilities for below average rainfall in isolated area over the western boarder of Western Bahr el Ghazal. (**Fig. 5b**).

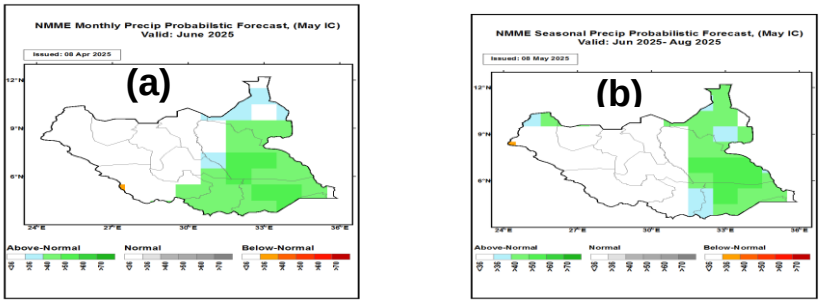


Figure 5: Rainfall forecast for (a) June 2025 and (b) June 2025 – August 2025. **Source: NOAA/NCEP**

Temperature

Past 3 months (February 2025 – April 2025):

- **Maximums:** Most of South Sudan recorded mean maximum temperatures of 30-40°C. Compared to the long-term average, Western Bahr el Ghazal, Central Bahr el Ghazal, western parts of Western Equatoria, Central Equatoria, and Upper Nile experienced 1-4°C above average mean maximum temperatures (**Fig. 6a**).
- **Minimums:** Much of South Sudan recorded mean minimum temperatures between 15-20°C. The western boarders of Western Equatoria state saw above average temperatures of 1 to 2°C. The remaining parts of the country recorded average to below average (1-3ºC) minimum temperatures (**Fig. 6b**).

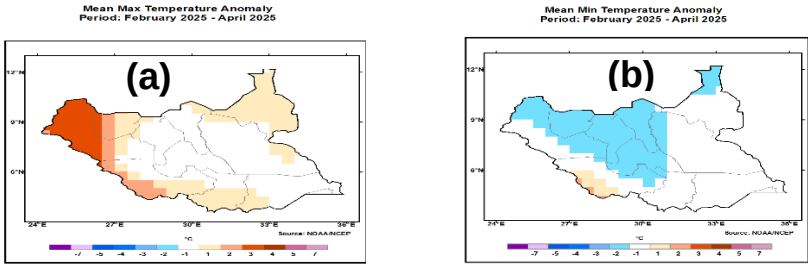


Figure 6: Spatial map for February 2025 – April 2025: (a) mean maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

Past 1 month (April 2025):

- **Maximums:** In April, South Sudan reported average maximum temperatures between 30-45°C, with the highest temperatures exceeding 35°C covering most parts of South Sudan. Temperatures were generally 1 to 4°C above average over Western Bahr el Ghazal, Northern Bahr el Ghazal, western boarders of Western Equatoria, and the eastern tip of Upper Nile (**Fig. 7a**).
- **Minimums:** In April, much of South Sudan recorded mean minimum temperatures between 15-30°C. Compared to the long-term average, eastern Northern Bahr el Ghazal, Warrap, Unity, and Lakes experienced below average (1-3°C) minimum temperatures. On the other hand, western boarders of Western Equatoria regions reported 1 to 2°C above average minimum temperatures (**Fig. 7b**).

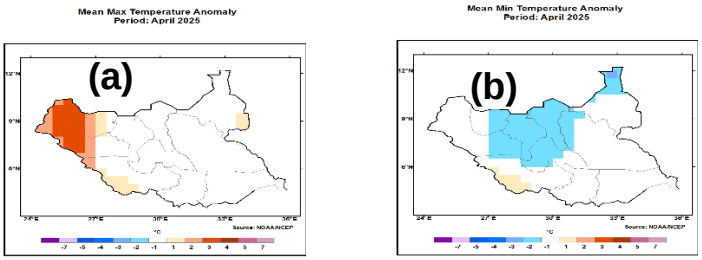


Figure 7: Spatial map for April 2025: (a) maximum temperature anomaly and (b) mean minimum temperature anomaly. **Source: NOAA/NCEP**

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

- **Monthly:** During June 2025, probabilities for above average mean temperatures will likely exceed 40 % over much of the country, except over southeastern region of Eastern Equatoria where weak probabilities for below average temperature are indicated (**Fig. 8a**).
- **Seasonal:** Enhanced probabilities exceeding 40% are expected for above average mean temperatures over western and northern parts of the country. Weak probabilities for below average temperatures are forecasted in southern Eastern Equatoria states (**Fig. 8b**).

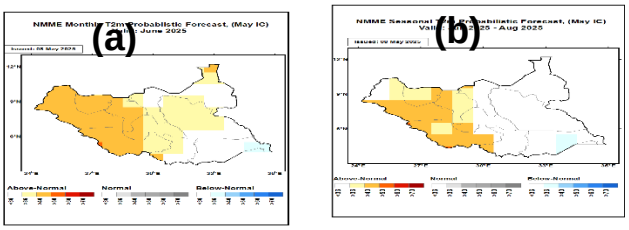


Figure 8: Spatial map for mean temperature forecasts for (a) June 2025 and (b) June 2025 – Aug 2025. **Source: NOAA/NCEP**

Flooding and Areas of Inundation

In South Sudan, the inundation condition has improved in Sudd marshlands and states of Jonglei, Unity, and Upper Nile due to rising water levels from heavy rains and controlled water releases from Lake Victoria. It affected a large portion of the population.

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 (February -April 2025):

- The SPI analysis for February to April 2025 indicated drier-than-average conditions across southern, central, and southeastern Jonglei and western parts of South Sudan. On the other hand, Eastern Equatoria, Unity, southwestern Nile and western Jonglei states experienced wetter-than-average conditions (**Fig. 9a**).

Past 1 month (April 2025):

- The SPI analysis for April 2025 indicates that climatologically dry conditions were observed in southern, central, southeastern Jonglei and western parts of South Sudan. However, Eastern Equatoria, Unity, western Upper Nile and western parts of Jonglei states experienced wetter-than-average conditions (**Fig. 9b**).

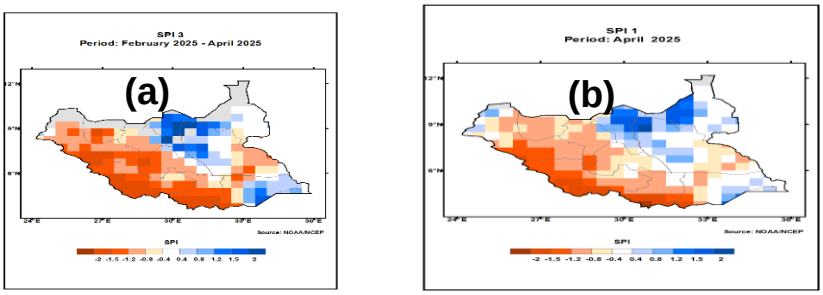


Figure 9: Spatial structure of Standardized Precipitation Index (SPI) for (a) February 2025 – April 2025 (b) April 2025. Source: NOAA/NCEP. **Source: NOAA/NCEP**

Current/Forecast (28 February 2025 to 28 May 2025):

- The SPI forecast during April 2025 suggests that wetter-than-average conditions are expected in Eastern Equatoria, Upper Nile, Unity, and western parts of Jonglei states. However, the southern and western parts of the country expect drier-than-average conditions.

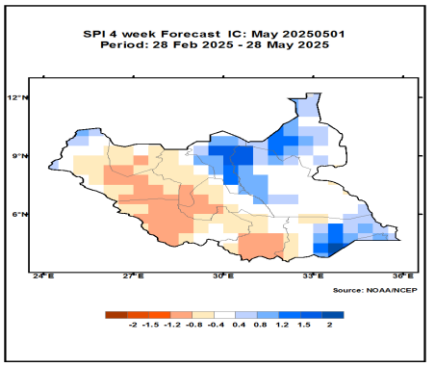


Figure 10: Spatial structure of SPI constructed from observations for 28 February 2025 to 28 April 2025 and 4 weeks forecast ending on 28 May 2025. **Source: NOAA/NCEP**

Water Requirement Satisfaction Index (WRSI)

- WRSI values during the 3rd Dekad of April 2025 indicated good to very good conditions for crops in Eastern Equatoria and eastern parts of Central Equatoria states in South Sudan.

GEOGLAM Crop Monitor

In **South Sudan**, planting of first season cereals is just beginning, and rainfall delays and deficits are impacting most areas. Seasonal rains typically start in April but have varied in performance, and below-average rains in western parts of Western Equatoria have negatively impacted soil moisture levels and vegetation conditions. Conversely, planting conditions are favorable in the unimodal regions of Nile Sobat located in the northeastern quadrant of the country and in Kapoeta located in the southeast due to comparatively better rainfall performance in recent weeks. Overall, the conditions in the northeast and southeast **South Sudan** are favorable as rainfall outcomes in the past several months leading up to this season have been generally adequate.

Additional Resources

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

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

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

Annex:

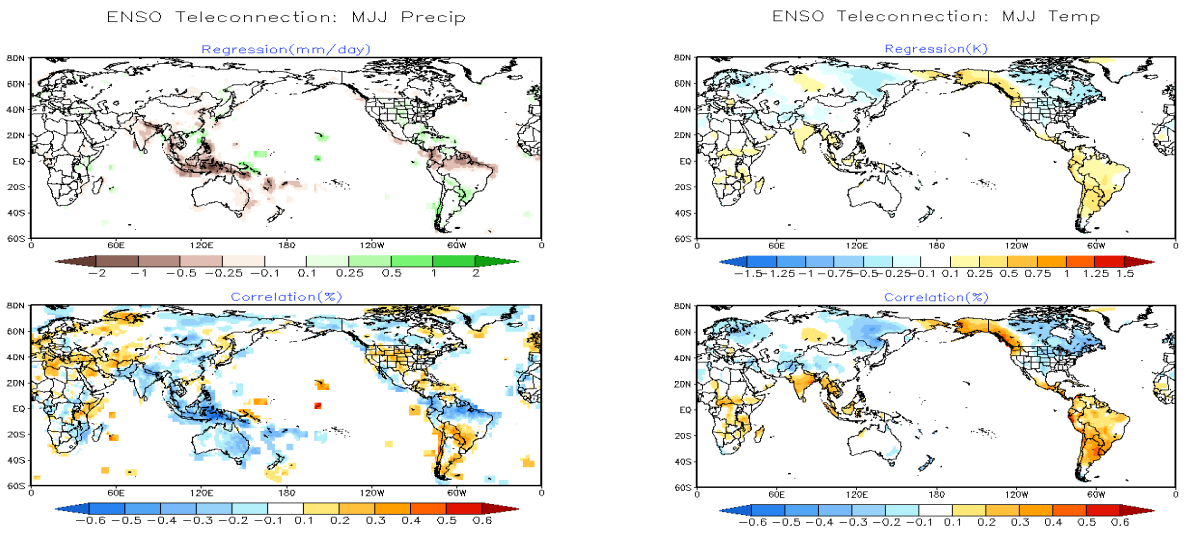
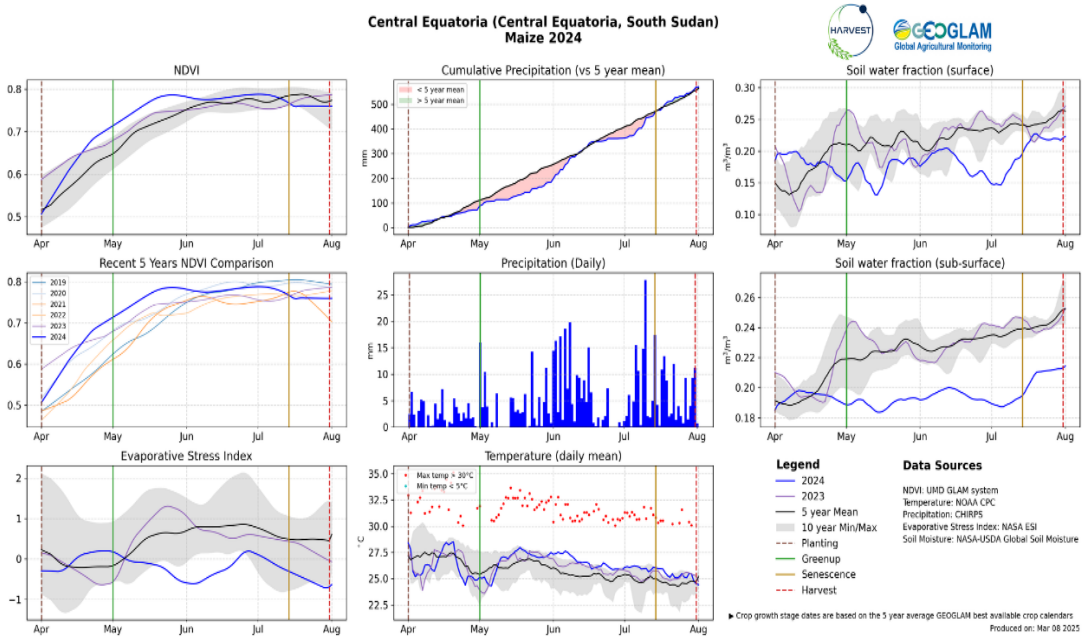


Figure S1: For three month season (MJJ), precipitation and temperature anomalies are regressed onto the standardized Niño-3.4 index (upper panel). In the bottom panel, the correlation is calculated between Nino-3.4 and the anomalies.

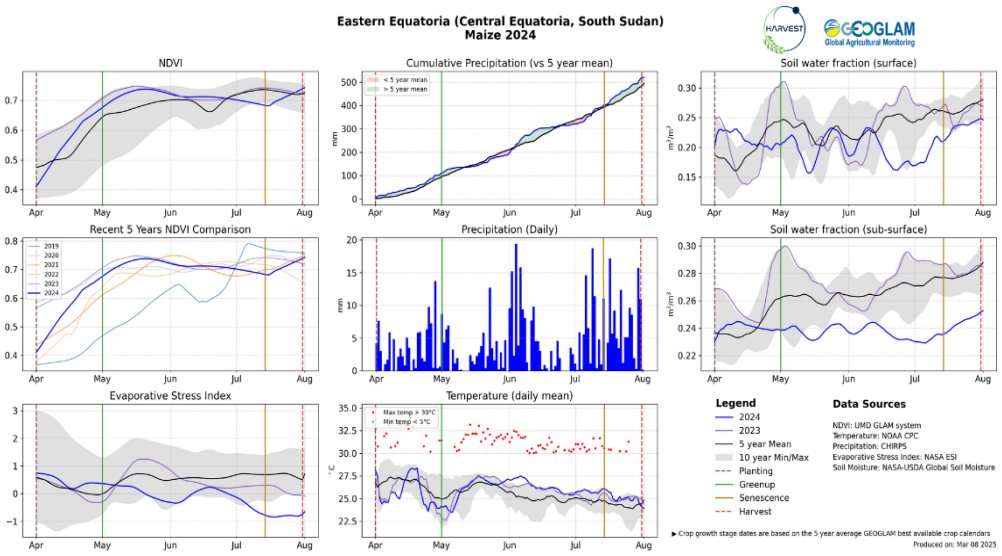
GEOGLAM Agro-meteorological Earth Observation Indicators:

Second-Season Maize

Central Equatoria:



Eastern Equatoria:



Western Equatoria: