





FAMINE EARLY WARNING SYSTEMS NETWORK

South Sudan

Monthly Climate and Weather

19 June 2025

Highlights

- In May 2025, El Niño Southern Oscillation (ENSO)-neutral conditions continued, with nearaverage sea surface temperatures (SSTs) across central and east-central equatorial Pacific Ocean in summer 2025. ENSO-neutral condition is expected to continue with 82% chance through June to August 2025 and may continue into winter 2025-2026, with 48% chance of neutral and 41% chance of La Niña in November-January 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 June – August (JJA) season.
- During May 2025, much of South Sudan received 100-300 mm, with the largest amounts in excess of 200 mm occurring in the western and far eastern states. On the other hand, areas in northern border states and central parts of Eastern Equatoria State received 10-100 mm rainfall.
- The North American Multi-Model Ensemble (NMME) models indicate above average rainfall during July 2025 over eastern parts of South Sudan. Western region of Western Bahr el Ghazal and Northern Bahr el Ghazal expect below average rainfall.
- During May 2025, maximum temperatures were 1 to 3°C above average over western, northern, and eastern parts of the country, while minimum temperatures were 1-2°C below average over Warrap, Unity and northern Upper Nile. Minimum temperatures were 1 to 2°C above average over the western boarder of Western Equatoria.
- The NMME models suggest that western and northern South Sudan will experience above average temperatures in July 2025. On the other hand, models are forecasting below average temperatures over western Jonglei and southern 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 May 2025, ENSO-neutral conditions persisted, with sea surface temperatures (SSTs) near average over most of the equatorial Pacific Ocean. Subsurface ocean temperatures were near-to-above average across 180°-100°W, with above-average subsurface ocean temperatures at depth in the central and western Pacific. During the month, low-level winds were easterly over the east-central Pacific, while upper-level winds were mostly near average across the equatorial Pacific Ocean. Collectively, the coupled ocean-atmosphere system in the tropical Pacific reflected ENSO-neutral condition.
- The ENSO-neutral condition is expected to continue with 82% chance through June to August 2025 and may continue into winter 2025-2026, with 48% chance of neutral and 41% chance of La Niña in November 2025 -January 2026 (Fig. 2). The latest update of the NOAA Climate Prediction Center's El Niño/Southern Oscillation diagnostic discussion can be found <u>here</u>.
- ENSO-neutral conditions are typically associated with near average <u>rainfall</u> and near average mean <u>temperatures</u> in South Sudan during the June-August (JJA) 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 (March 2025 to May 2025):

- <u>Totals</u>: Most of South Sudan received rainfall totals between 100-500 mm, while the far northern border areas of Western Bahr el Ghazal, Northern Bahr el Ghazal, and Upper Nile states recorded 10-100 mm. Rainfall totals exceeded 300 mm in southern Western Bahr el Ghazal, southern Warrap, most of Western Equatoria, southern Central Equatoria, southern and eastern Eastern Equatoria, eastern Jonglei, and southeastern parts of Upper Nile (Fig. 3a).
- <u>Anomalies</u>: Rainfall deficits of more than 100 mm were observed in the southern parts of Western Equatoria and Central Equatoria and in the western borders of Eastern Equatoria states. Lower deficits between 25 - 100 mm covered most parts of Western Bahr el Ghazal, Northern Bahr el Ghazal, northern parts of Warrap, Unity, western Jonglei, and the northern tip of Upper Nile state (Fig. 3b).



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

Past 1 Month (May 2025):

- <u>Totals</u>: Monthly rainfall totals between 10-300 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**).
- <u>Anomalies</u>: Rainfall was 10-100 mm above average in eastern parts of Eastern Equatoria, eastern Jonglei, eastern Upper Nile, eastern Western Bahr el Ghazal, eastern Western Equatoria and central Lakes. The remaining parts of the country received 10-100 mm below average rainfall (**Fig. 4b**).





Monthly and Seasonal Forecasts (July 2025 and Jul 2025-Sep 2025):

- <u>Monthly:</u> The NMME model forecast suggests enhanced probability exceeding 50% for above average rainfall over Eastern Equatoria, Jonglei, western Upper Nile, and southeastern Central Equatoria. However, northern parts of Western Bahr el Ghazal, Northern Bahr el Ghazal, and northwestern Warrap expect more than 40% chance for below normal rainfall. (Fig. 5a).
- <u>Seasonal:</u> The NMME seasonal rainfall forecast shows above 50% chance for above normal rainfall over Upper Nile, eastern and central Jonglei, southern pocket of Central Equatoria, southern tip of Northern Bahr el Ghazal, and eastern parts of Western Bahr el Ghazal. Conversely, model is suggesting higher probabilities for below average rainfall in isolated area over the north-central Lakes (Fig. 5b).



Figure 5: Rainfall forecast for (a) July 2025 and (b) July 2025 – September 2025. Source: NOAA/NCEP

Temperature

Past 3 months (March 2025 – May 2025):

 <u>Maximums</u>: Most of South Sudan recorded mean maximum temperatures of 30-45°C. Compared to the long-term average, Western Bahr el Ghazal, Northern Bahr el Ghazal, western parts of Western Equatoria, and eastern Upper Nile experienced 1-4°C above average mean maximum temperatures (Fig. 6a). <u>Minimums</u>: Much of South Sudan recorded mean minimum temperatures between 15-25°C. The western boarders of Western Equatoria state saw 1 to 4°C above average temperatures. Isolated areas in southwestern Western Equatoria state recorded 1-3°C below average minimum temperatures (Fig. 6b).



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

Past 1 month (May 2025):

- <u>Maximums</u>: In May, South Sudan reported maximum temperatures between 25-40°C, with the highest temperatures exceeding 35°C covering most parts of South Sudan. Temperatures were generally 1 to 3°C above average over Western Bahr el Ghazal, Northern Bahr el Ghazal, western borders of Western Equatoria, southern Central Equatoria, Jonglei, Unity, and Upper Nile states (Fig. 7a).
- <u>Minimums</u>: In May, much of South Sudan recorded mean minimum temperatures between 15-30°C. Compared to the long-term average, eastern Northern Bahr el Ghazal, Warrap, western Unity, northern Lakes, and northern Upper Nile experienced 1-2°C below average minimum temperatures. On the other hand, western borders of Western Equatoria state reported 1 to 2°C above average minimum temperatures (Fig. 7b).



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

Monthly and Seasonal Forecasts (July 2025 and July–Sep 2025):

- <u>Monthly</u>: During July 2025, probabilities for above average mean temperatures will likely exceed 40 % over western and northern parts of the country, including Western Bahr el Ghazal, Northern Bahr el Ghazal, Western Equatoria, Warrap, and Lakes states (Fig. 8a).
- <u>Seasonal</u>: Enhanced probabilities exceeding 40% are expected for above average mean temperatures over western and northern parts of the country and at isolated areas in eastern Unity state (**Fig. 8b**).



Figure 8: Spatial map for mean temperature forecasts for (a) July 2025 and (b) July 2025 – Sep 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. The inundation was due to rising water levels from heavy rains and controlled water releases from Lake Victoria. The onset of the June to September (JJAS) rainfall season is expected to be earlier than normal over most regions. Across northern parts of the Greater Horn of Africa, where the JJAS season contributes over 50 percent of annual rainfall, precipitation outcomes are expected to be above-normal. The forecast increases the risk of flooding and inundation, particularly over Sudd Wetlands in **South Sudan** as rivers flow downstream.

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 (March -May 2025):

• The SPI analysis for March to May 2025 indicated drier than average conditions across southern, central, northern, and western parts of South Sudan and over southeastern Jonglei and northern Unitiy states. On the other hand, southeastern Eastern Equatoria, northern Unity, and northwestern Jonglei states experienced wetter than average conditions (**Fig. 9a**).

Past 1 month (May 2025):

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





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

Current/Forecast (31 March 2025 to 28 June 2025):

• The SPI forecast during May 2025 suggests wetter than average conditions in Eastern Equatoria, Upper Nile, Unity, small pockets of Western Bahr el Ghazal, and northwestern 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 31 March 2025 to 31 May 2025 and 4 weeks forecast ending on 28 June 2025. **Source: NOAA/NCEP**

Water Requirement Satisfaction Index (WRSI)

• <u>WRSI</u> values during the 3rd Dekad of May 2025 indicated very good conditions for crops in much of the South Sudan.

GEOGLAM Crop Monitor

In **South Sudan**, first season cereals are in the vegetative to reproductive stage in bimodal regions of Western and Central Equatoria, while planting continues in unimodal regions of the country. There is concern in south and western areas that received below normal rainfall for the April to May period. Conversely, conditions remain favorable in the Greater Upper Nile region and in the Southeast where rainfall outcomes were near to above average. Forecast of above average precipitation across most areas for the June to September period is expected to benefit crop establishment and development, but the rains also increase the risk of river overflows and flooding. Peak rainfall typically occurs between July and August and contributes more than half of the annual precipitation.

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 (JJA), 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: <u>First-Season Maize</u>

Central Equatoria:



Eastern Equatoria:



Western Equatoria:



