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World Food
Programme

South Sudan – Seasonal Monitor

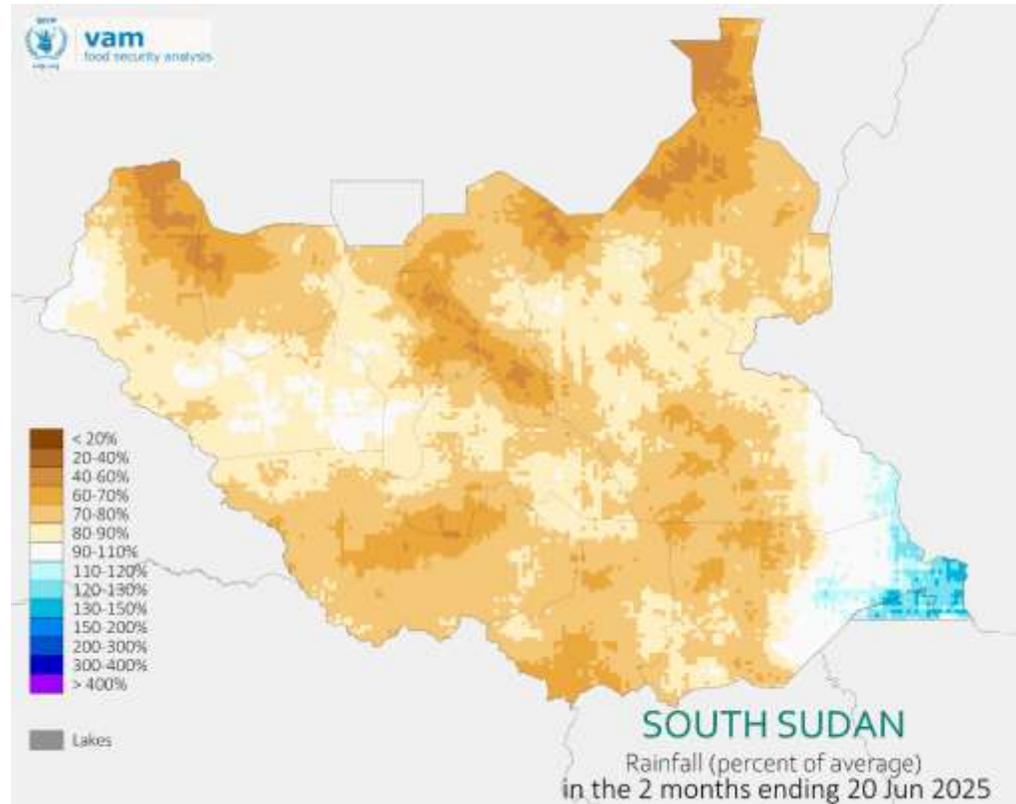
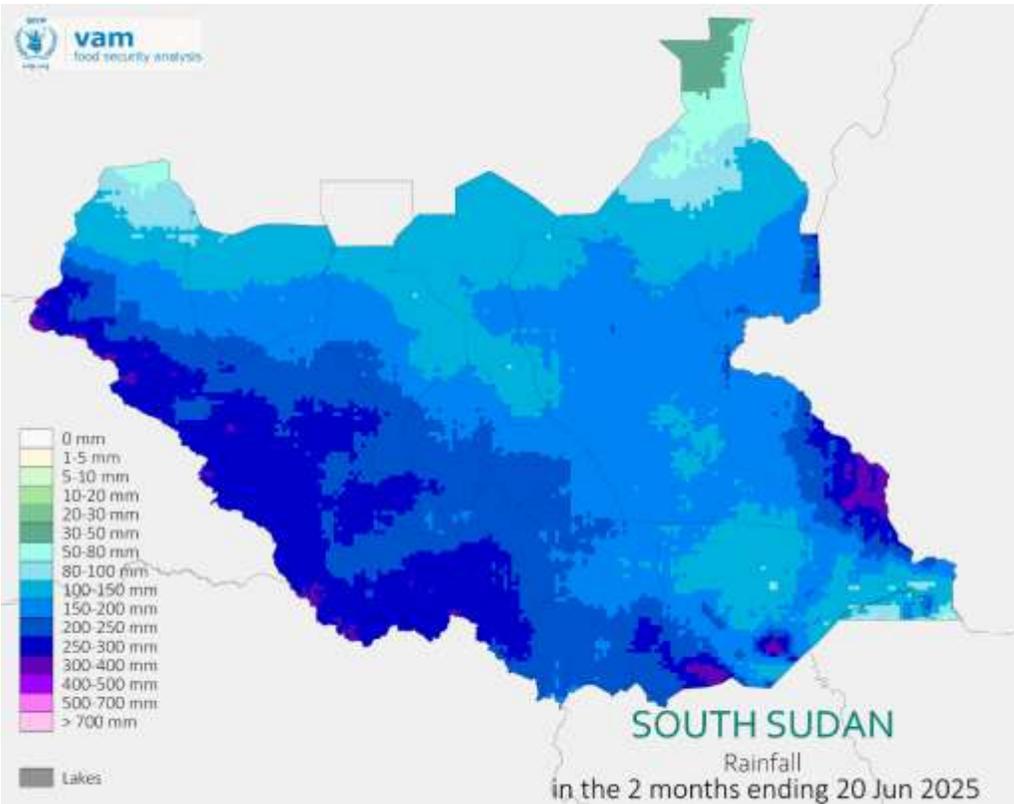
June 2025

Summary

- During the first phase of the 2025 rainfall season, rainfall deficits dominated across most of the country. In the northern areas this is of little concern as the growing season is still starting in earnest, but in the main producing areas of the Greenbelt (Western and Central Equatoria), some moderate impacts on crops may worsen if rains do not improve soon.
- A number of seasonal forecasts indicate a high likelihood of wetter than average conditions throughout the core rainfall season (July-September) and beyond. While leading to good conditions for crop development, excessive local rainfall worsens flood conditions that are expected in the second half of 2025. Wetter than average conditions are also forecast over the Great Lakes catchments in mid-2025 – this is the driest phase of the year in these regions and hence no major effect on lake levels is expected.
- Lake levels remain at historically high or near record levels. The extent of flooding in the Sudd main wetland area and in Upper Nile is still declining towards the seasonal minimum. However, the current extent is the highest ever recorded, which means that the baseline for the 2025 flood is very high.
- We expect a major flooding event in South Sudan during the second half of 2025. The 2025 flood may reach extents similar to 2024, but a larger event cannot be excluded since:
 - The seasonal flood extent baseline (seasonal minimum) is likely to be the highest ever.
 - Above average rainfall in-country and reduced evaporation losses will contribute to exacerbate the flood extent
 - White Nile river levels along the Sudd are above the 2020-2024 average and the previous year's levels
- In terms of timing, the most likely scenario for the evolution of the 2025 flooding is as follows:
 - The flood extent should reach its seasonal minimum soon and start increasing thereafter, reaching a maximum during October-December (the seasonal flood maximum)

Rainfall Season 2025

South Sudan: The 2025 Rainfall Season So Far



Rainfall in the two months ending June 20, 2025, as amounts (left) and as a proportion of the long-term average (right). Blue and purple (brown and orange) shades correspond to above (below) average rainfall.

The first phase of the rainfall season in South Sudan (March to June) have been drier than average across most of the country – rainfall deficits are widespread from late April to late June. The only exception remains Kapoeta East where a wetter than average early season compensates for the more recent dryness in June. In northern regions, deficits are not yet relevant since these areas have only now started their rainfall season. In more southern areas the drier than average conditions led to some impacts on the first cropping cycle. Given the long growing period, the current situation offers no major concern, as long as the rains improve in the near future.

South Sudan: The 2025 Rainfall Season – Short Range Outlook

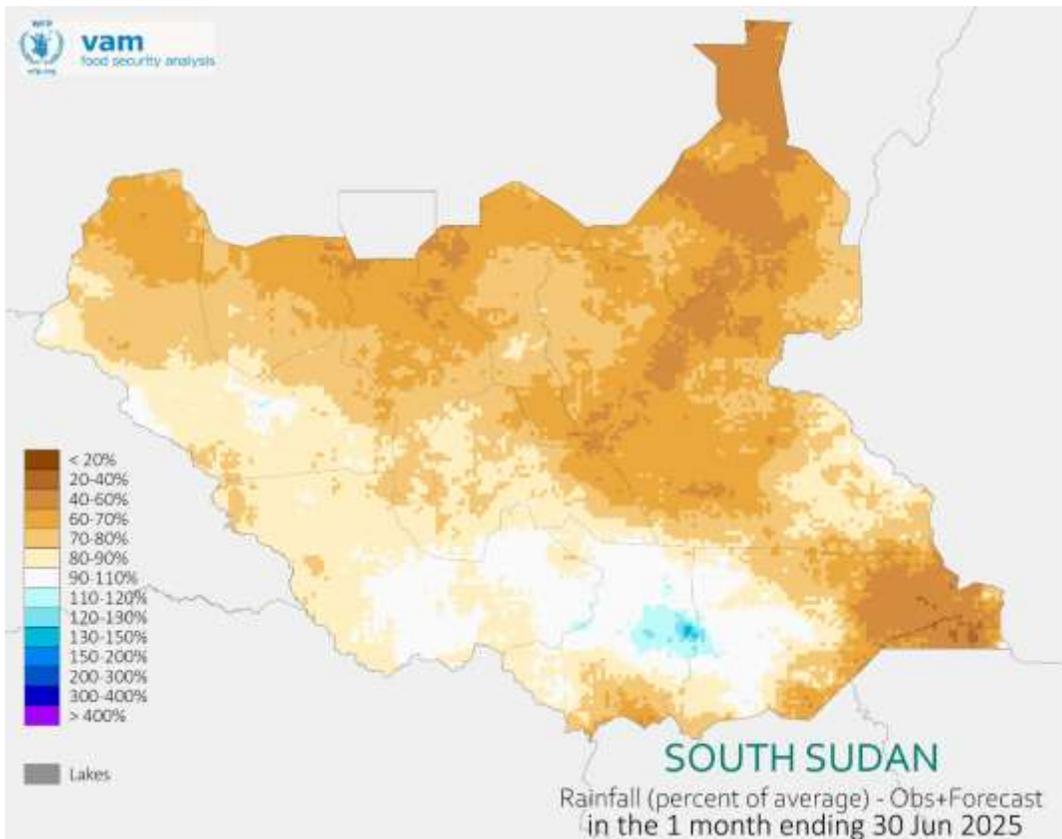
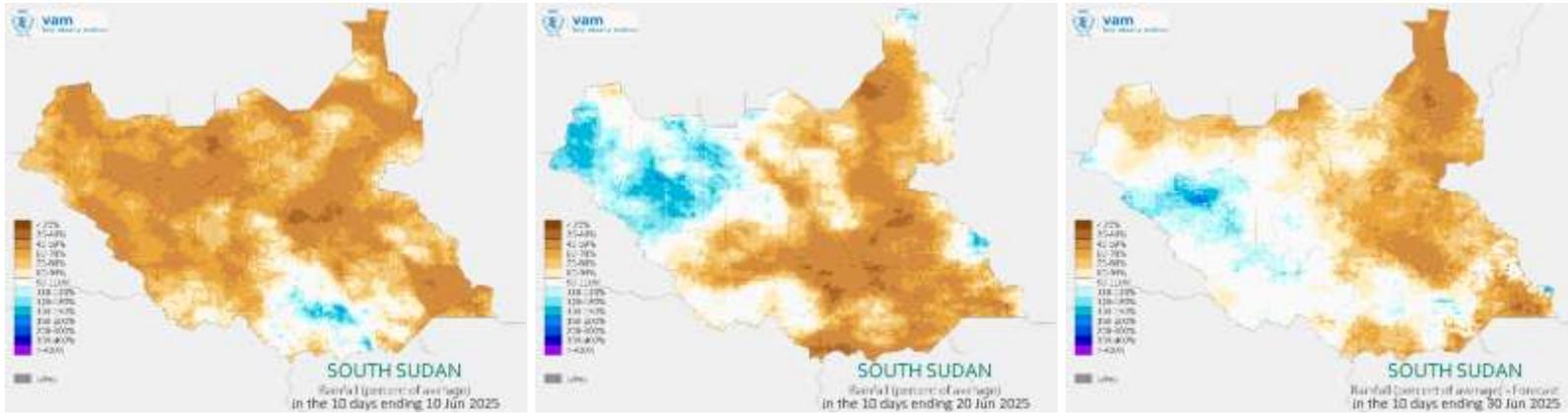
June has been characterized by a generalized drier than average situation across the country. The situation will not change until the end of the month, according to short range forecasts. We note the pronounced dryness in Eastern Equatoria during June in marked contrast with earlier much wetter than average conditions from March to May.

This continues earlier conditions and tendencies that have affected the country since the early stages of the rainfall season.

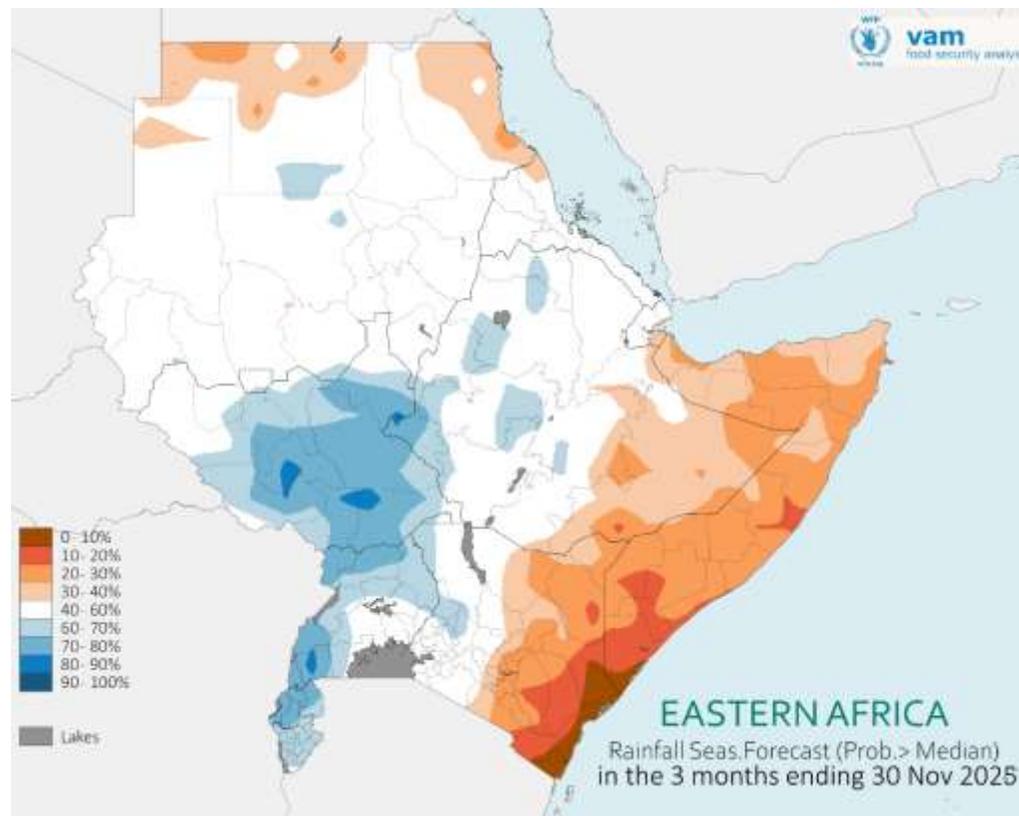
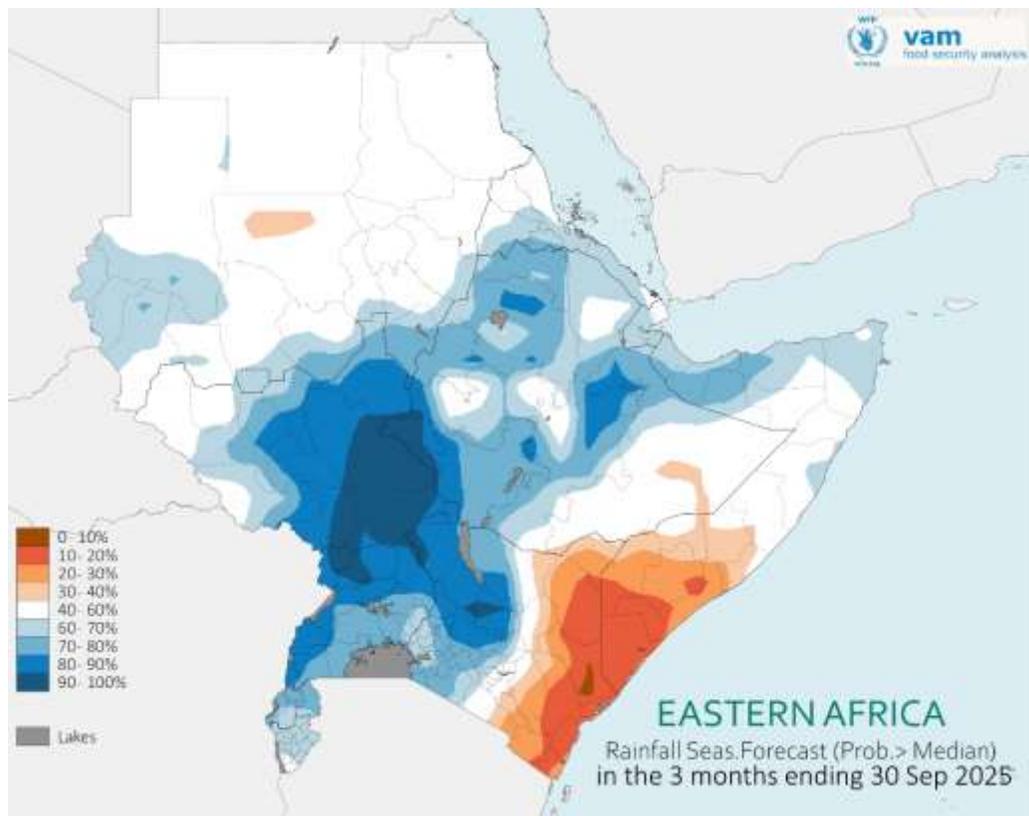
While the situation so far is of little concern, improvements in rainfall amount and frequency will be needed from July onwards to avoid meaningful impacts on the early stages of the cropping season in the northern areas and for the coming cropping cycles in the Greenbelt regions.

Forecasts for early July indicate wetter than average conditions may be finally materializing in accordance with longer range forecasts.

Actual rainfall anomaly for early and mid-June (top left and center) and short-range rainfall anomaly forecast for late June (top right) Left, monthly actual+forecast cumulative rainfall anomaly for June. Blue and purple (orange and brown) shades correspond to above (below) average rainfall.



Outlook for Mid 2025



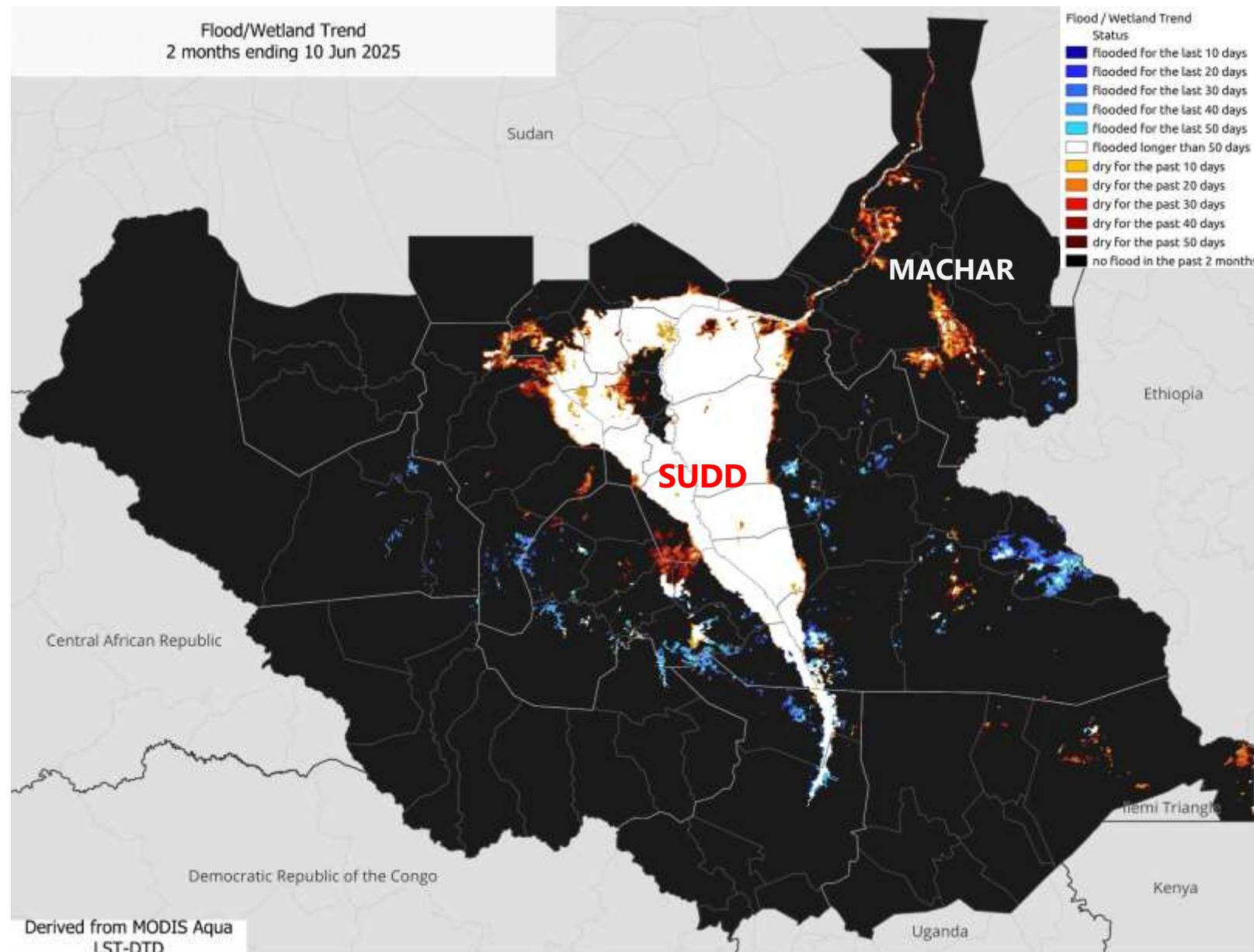
*Rainfall forecast for the 3-month periods **June-August 2025**, and **August-October 2025** as the likelihood of exceeding the long-term median. Blue (orange) shades for likely wetter (drier) than usual conditions*

Seasonal forecasts for South Sudan indicate a high likelihood of wetter than average conditions throughout most of the growing season. This tendency is particularly pronounced during the core phase of the season (July-September) and is also present (though less markedly) during the later stages of the season from September to November. This should lead to good conditions for crop development this season and result in good cereal and pasture production levels across most of the country.

On the other hand, excessive local rainfall will contribute to worsen flood conditions that are expected during the second half of 2025. Wetter than average conditions are also expected to extend across the Great Lakes catchments (Uganda and surroundings) – mostly this period is the driest phase of the rainfall season over their catchments, so their impact on lake levels will be more moderate than if it had occurred during a typically wetter phase. Continuation of wetter conditions into late 2025 and beyond may prime the Lake for even higher levels in mid 2026.

Current Flood Extent Situation

South Sudan: Current Flood Extent Dynamics



By mid June 2025, the major flood areas in South Sudan are still in a decreasing phase. Flood areas in Upper Nile are now dried up, while in the core Sudd wetlands there has been further drying at the edges of the wetland in the Warrap – Unity border.

Some transient, localized flooding and accumulation of surface water (areas in blue shades) are noticeable in some areas of Pibor (Jonglei) and at the southern tip of the Sudd wetlands.

The flood extent in the main Sudd area may decrease a bit further towards the usual seasonal minimum that should now come in early July at the earliest.

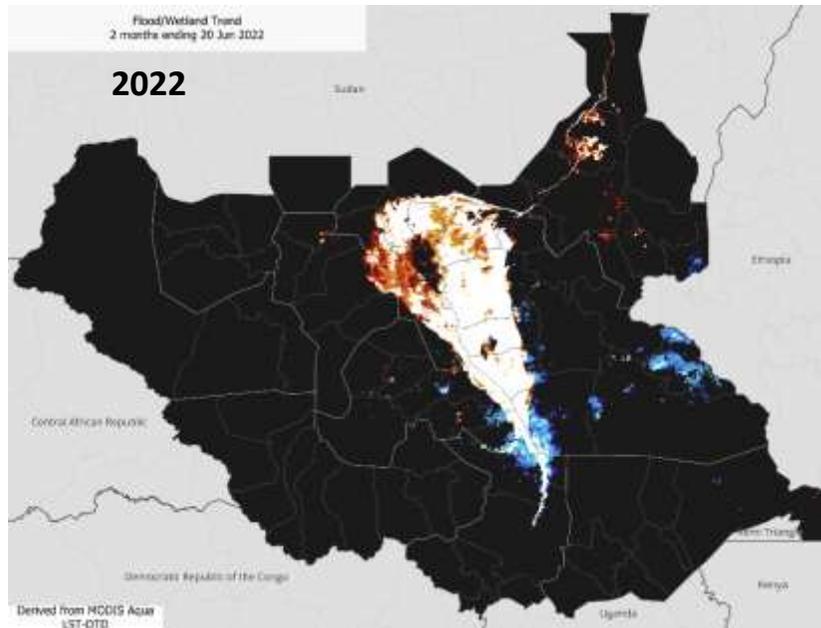
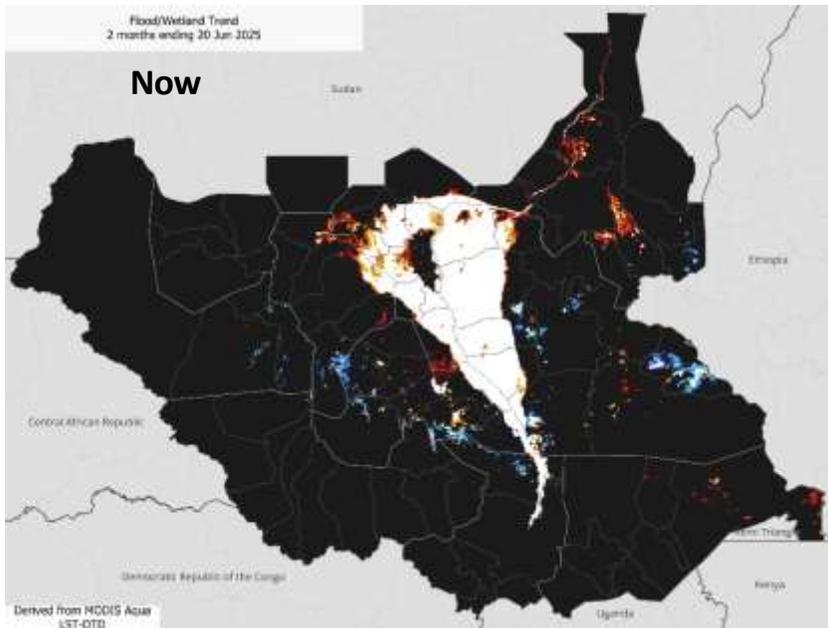
Note however, that the current flood extent in the Sudd is the highest so far recorded for this time of the year. This has implications for the flood outlook in 2025.

Map shows recent changes in the extent of flood / wetland areas derived from MODIS land-surface temperature data.

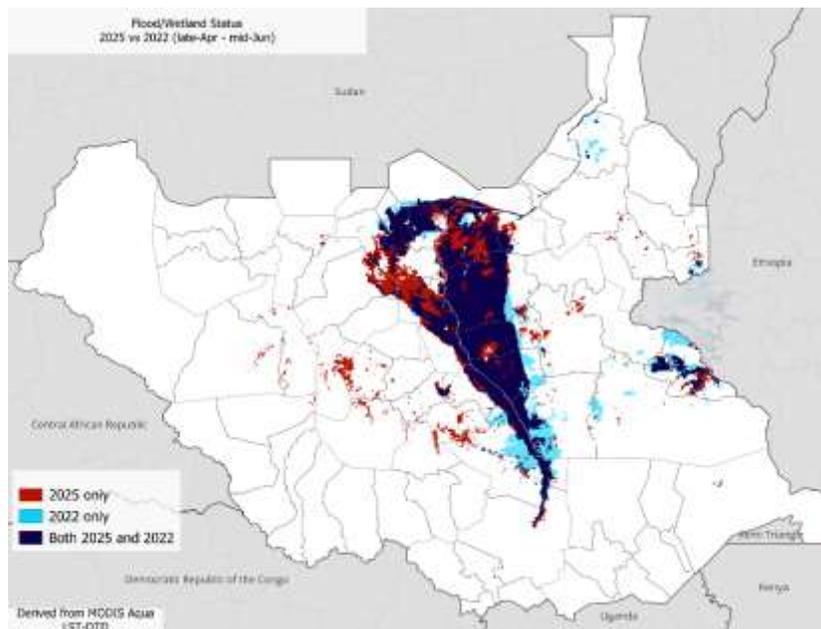
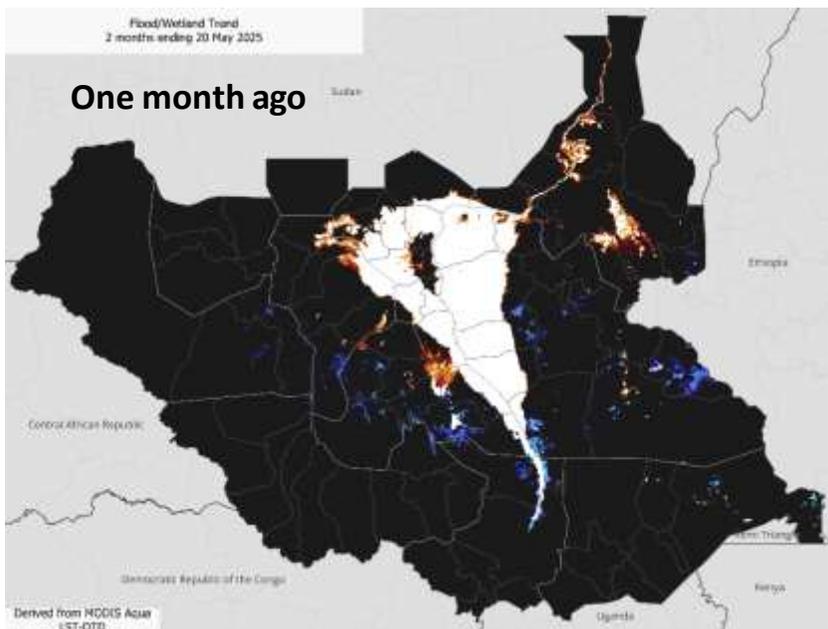
Colour codes are as follows:

- BLUE:** Areas of recent flood / wetland expansion in the past 2 months. The lighter the blue, the closer to two months in flood
- WHITE:** Areas continuously under flood/wetland status for at least the past 2 months
- ORANGE:** Areas that have dried up in the past 2 months. The darker the orange the closer to two months in dry state

South Sudan: Flood Extent Dynamics, recent and inter-annual changes



The main Sudd flooded area in the centre of the country (in white in the maps) is approaching the seasonal minimum, and the current extent has visibly decreased from one month ago (left above and below), particularly in northern Warrap and White Nile.



While in its decreasing phase, the flood extent remains at record levels for this time of the year. Hence, it shows a moderately larger extent than in 2022 (see top left and right). The differences between the two years (map right below), show larger flooding extent in 2025 in northern areas of Warrap and Unity.

Top left: Current situation

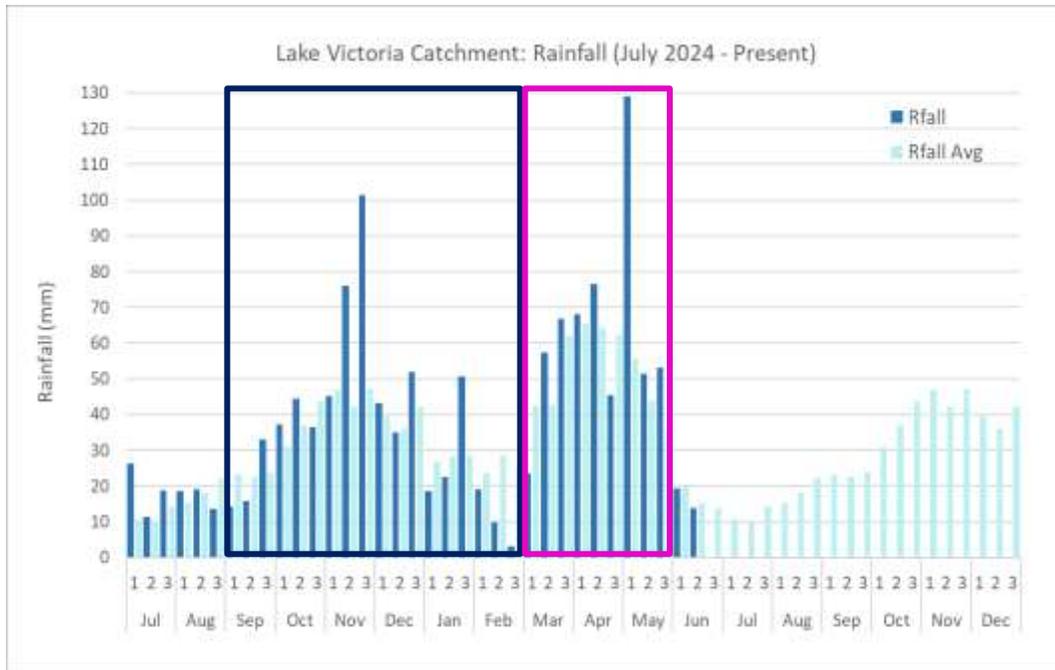
Top right: Same time last year

Bottom left: Situation one month ago

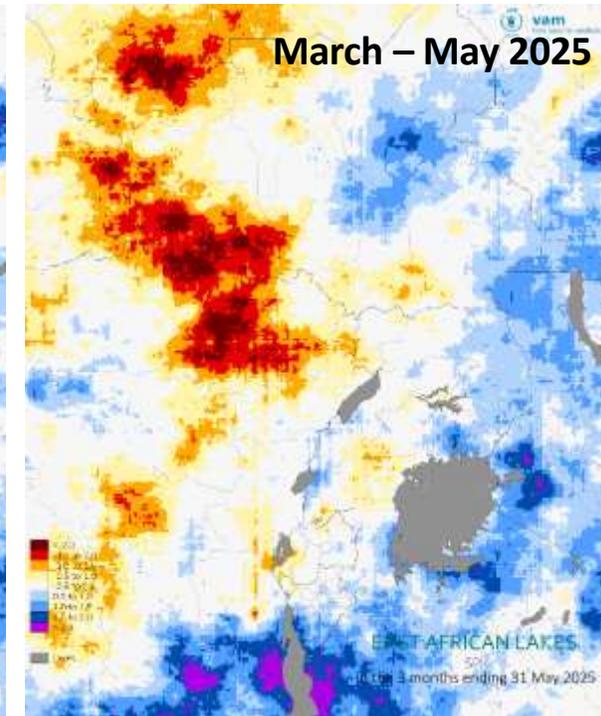
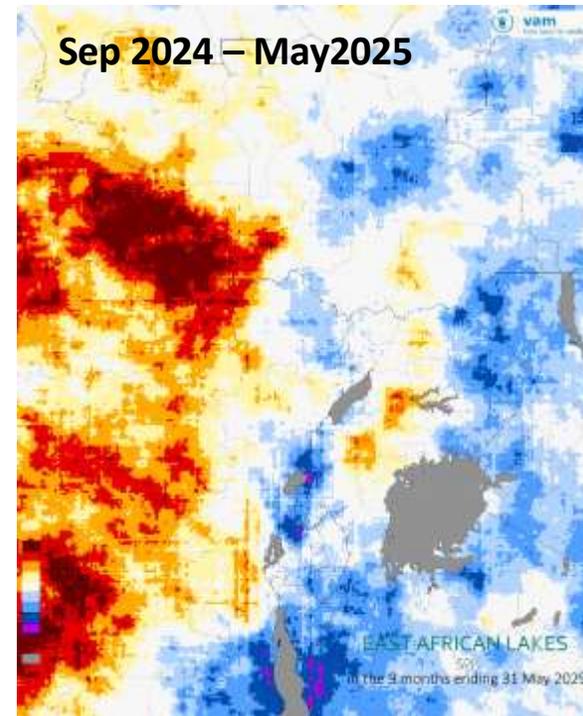
Bottom right: current vs 2022 flooding in mid-May. Red: flooded in 2022, Blue flooded in 2025, Dark Blue: flooded in both years

Lake Victoria Basin Rainfall / Lake and River Levels

Recent Rainfall Patterns Over Lake Victoria Catchment (July 2024 – present)



Time series of actual rainfall (dark blue bars) and mean long term rainfall (light blue bars) for the Lake Victoria basin since July 2024. Note exceptionally heavy rains in November 2024. The current rainfall season (March to May) has been slightly wetter than average.



SPI (a rainfall anomaly) for the 9-month period ending in May 2025 (left) and for the 3-month period March-May 2025 (right) for the region of the higher White Nile catchment. Blue and purple (orange and red) colours correspond to above (below) average rainfall.

In the 6 months ending in February 2025, the Lake Victoria basin has gone through a significantly wetter than average phase (blue period in the chart above), mostly due to the exceptionally strong rainfall in November 2024, which led to a small transitory peak in Lake Victoria levels. During the main rainfall period of March to May, rainfall has remained moderately above average but early May registered a very large rainfall peak.

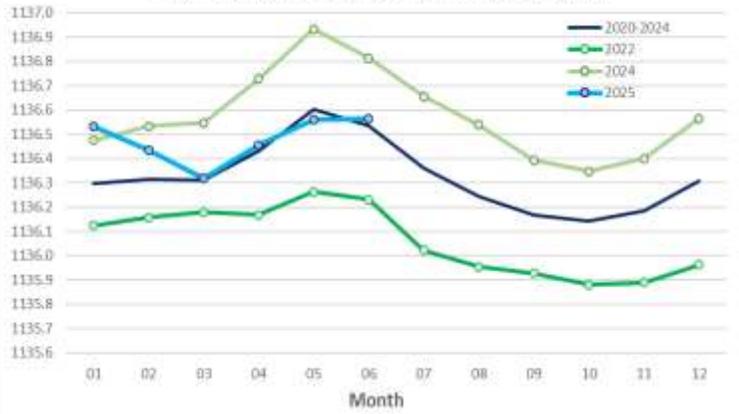
Overall, the past nine months have been wetter than average and this intensified in March to May. Seasonal forecasts indicate wetter than average conditions across these regions for the next few months. For now, the next months coincide with the drier period around the catchment, but wet conditions should extend beyond that and into the next rainfall peak in Oct-Dec. Lake Victoria is therefore expected to remain with elevated levels well into 2026.

Lake Levels - Satellite Altimetry

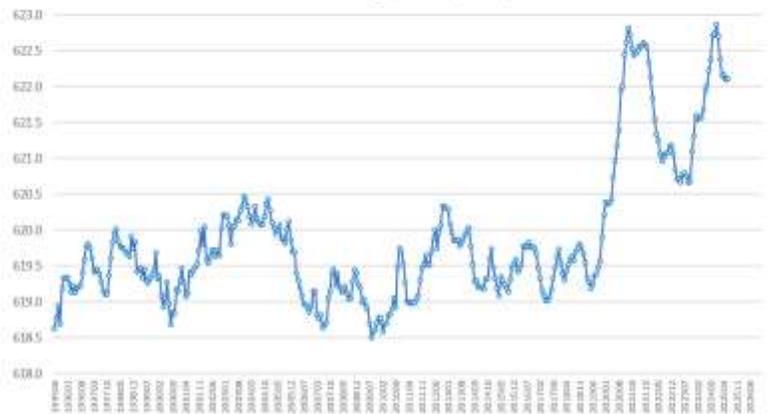
Lake Victoria Height (monthly means)



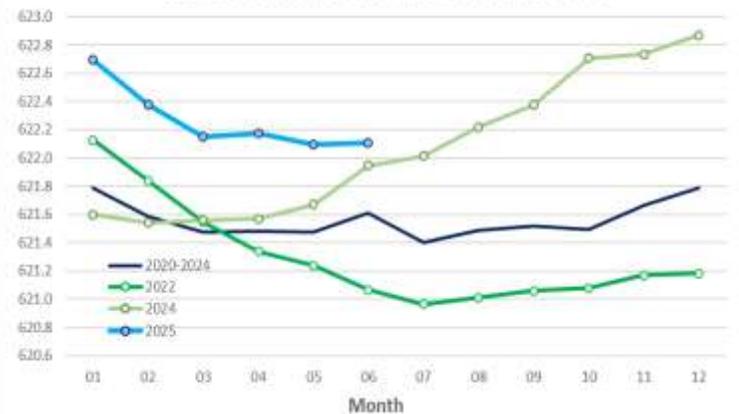
Lake Victoria levels: Post-flood mean and selected years



Lake Albert Height (monthly means)



Lake Albert levels: Post-flood mean and selected years



Lake Victoria levels have a maximum in May (after the main rainfall peaks) and a minimum in October (at the end of the driest stage of the season).

Lake Victoria reached its all-time record level in May 2024 and remained at or near record levels for most of that year. In 2025, levels decreased and are tracking close to the average of the 2020-2024 enhanced flooding period.

Lake Albert has a maximum in December-January and another less defined one in June. All time record levels were reached in late 2024, and have since then decreased, but remain the highest on record for this time of the year.

Lake Victoria peak lake levels do not directly relate to the flood extent in South Sudan later in the same year: Lake Victoria 2022 peak level was the lowest within 2020-2024 and was followed by the record flood extent; 2023 reached similar levels as 2022 and was followed by the lowest flood extent.

Lake Albert did reach a peak in late 2021 – early 2022 prior to the 2022 record floods; the recent peak at the end of 2024 was the all-time record level and levels have been fairly stable since March.

Lakes in the Nile Basin upstream of South Sudan



Flood Outlook for South Sudan in 2025

Flood Outlook for 2025

We expect a major flooding event to occur in South Sudan in 2025, possibly with similar magnitude to the one of 2024, but with a significant possibility that flood extent could be larger. Relevant information and the basis for this outlook are summarized below:

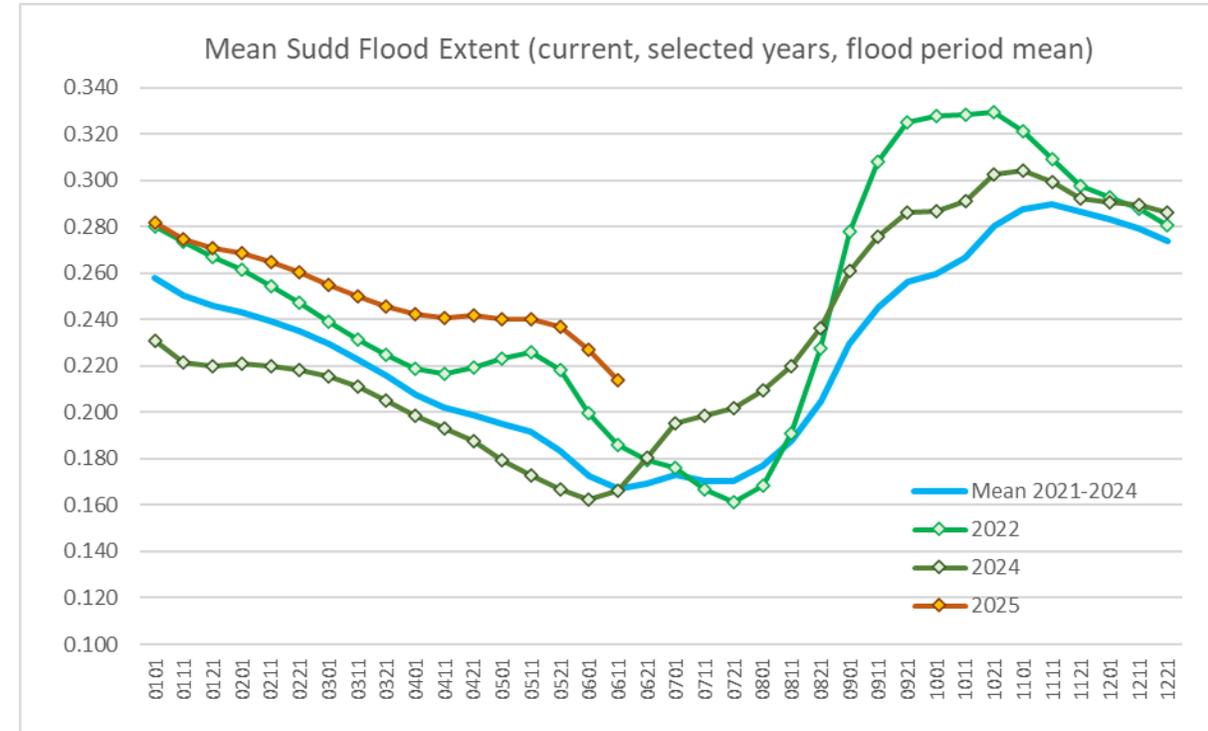
- The current flood extent in the Sudd core area is still decreasing but is higher than in all previous years and the seasonal minimum is very likely to be the highest on record. This means that the flood baseline, the point of departure for the seasonal increase in flooded area is the highest ever.
- Seasonal forecasts predict much wetter than usual conditions across South Sudan for the whole rainfall season (June-October and possibly beyond). This implies an enhanced local contribution to the flood extent and reduced evaporation losses due to lower temperatures and increased humidity.
- Water levels along the White Nile (from altimetry data) are elevated relative to the recent 2020-24 mean.

Based on these indications, South Sudan should see another major flood event in 2025. This is likely to be at least similar to the 2024 extent, but larger extents cannot be ruled out, given the record baseline and enhanced rainfall across the country.

In terms of the timing of the event: the seasonal minimum usually occurs in June-July after which the flood extent increases to a seasonal peak that occurs mostly in October-November. Given the elevated baseline, it maybe that flood extent may start rising earlier, as soon as seasonal rains start in earnest.

The seasonal peak is usually fairly broad, and it is more appropriate to speak of an extended flood maximum that will last approximately from October to December. Note that the record event of 2022 had a somewhat earlier peak (from mid-September).

Careful and frequent monitoring of all drivers involved will be essential this season.



Sudd wetland extent derived from thermal satellite data. Current year 2025, 2024 (previous large flood extent), 2022 (record extent) and 2021-2024 average.

METHODOLOGY:

All satellite data (rainfall, vegetation index and land surface temperature) both current and historical are stored and processed at the WFP-HQ Humanitarian Data Cube AWS cloud system.

Rainfall: Primary dekadal data (CHIRPS) from Univ California St Barbara Climate Hazards Centre (<https://www.chc.ucsb.edu/data/chirps>).

Various accumulations are computed on a dekadal basis and anomalies derived relative to a 25 year-long mean (1994-2018). Rainfall charts from WFP Seasonal Explorer (https://dataviz.vam.wfp.org/seasonal_explorer/rainfall_vegetation/visualizations)

Land Surface Temperature: Primary data from MODIS-AQUA (NASA), cloud cleared and gap-filled, both daytime and nighttime images. Thermal amplitude derived from difference between the two. Long term averages 2002-2018 used to derive anomalies.

Vegetation Index: Primary data from MODIS-AQUA and TERRA (NASA), cloud cleared and gap-filled. Long term averages 2002-2018 used to derive anomalies.

Flood Extent: Derived from thermal amplitude data: pixels where thermal amplitude is below a certain threshold are classified to flood (otherwise no flood). Thresholds are derived using Otsu's method, resulting in time varying but spatially fixed threshold values. Temporal sums are used to derive duration of flood images; binary sequences over 2 months are coded into flood extent dynamic maps. Cross checks against high resolution data and inundation estimates from

Lake and river levels: Obtained from the Theya Hydroweb free public service:

<https://www.theia-land.fr/en/product/water-levels-of-rivers-and-lakes-hydroweb/>

These are composed of satellite altimetry estimates, now from Sentinel-6 data.

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