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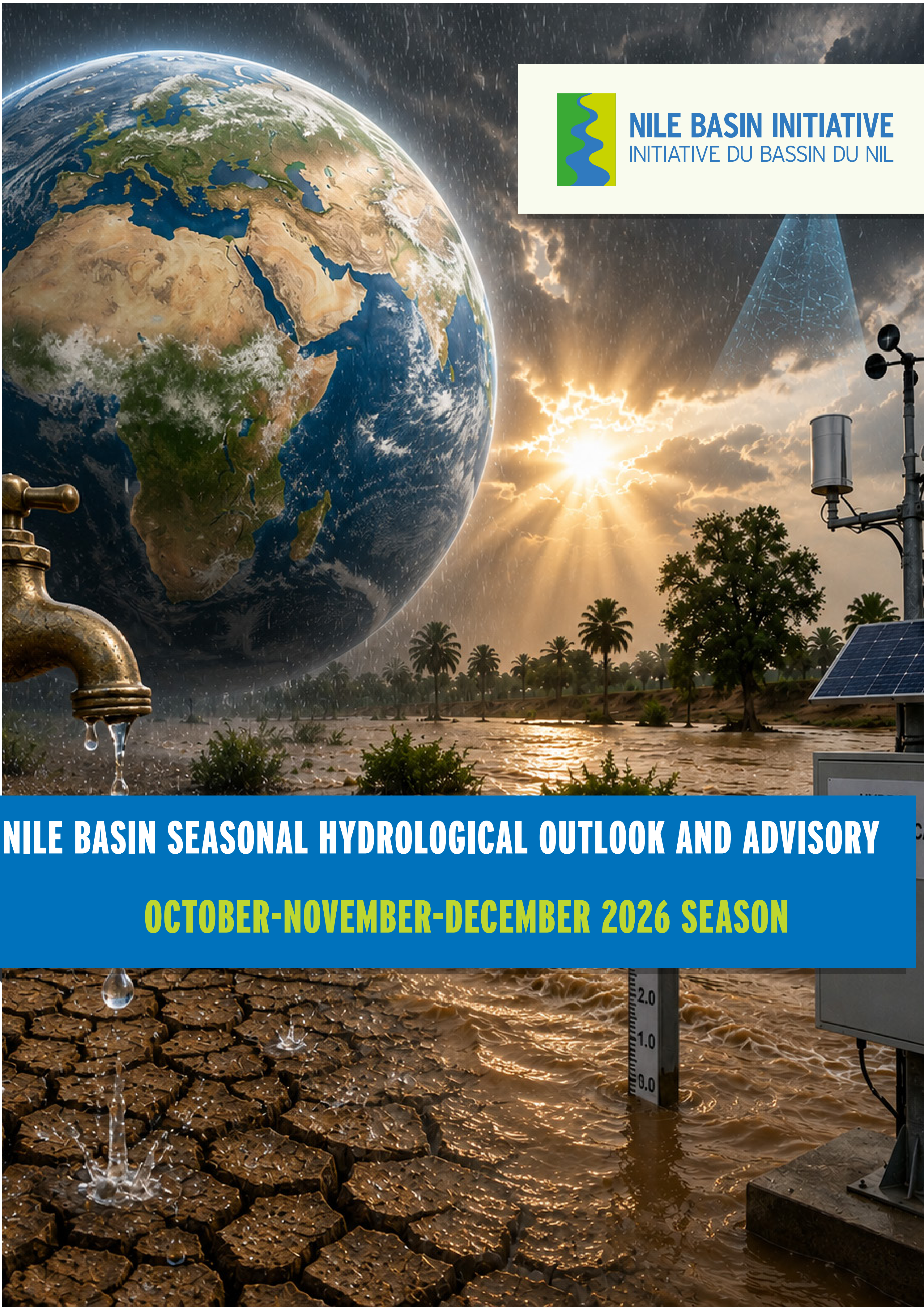

NILE BASIN SEASONAL HYDROLOGICAL OUTLOOK AND ADVISORY

OCTOBER-NOVEMBER-DECEMBER 2026 SEASON

FORWARD

Dear Partners and Stakeholders,

It is with a renewed sense of urgency — and a measure of relief — that I present this Nile Basin Seasonal Hydrological Outlook and Advisory for the October–November–December (OND) 2026 season. Where our JJAS 2026 outlook called on Member States to brace for drought, this report calls on us to brace for its opposite: a season of recovery, but one that carries its own climate and hydrological hazards.

The regional climate outlook issued by the IGAD Climate Prediction and Applications Centre (ICPAC), together with the National Meteorological and Hydrological Services of the Greater Horn of Africa, at the 74th Greater Horn of Africa Climate Outlook Forum on the 18th August 2026 in Kigali, Rwanda, pointed to an increased likelihood of wetter-than-normal conditions across much of the Horn of Africa region in this OND season. A strengthening El Niño, combined with a positive Indian Ocean Dipole, is expected to drive enhanced rainfall over the Nile Equatorial Lakes region, southern Ethiopia, and parts of Kenya — the same climatic configuration observed in the 1997 and 2023 analogue years, both remembered for the floods they brought as much as the relief.

This is welcome news for a basin left hydrologically stressed by the preceding JJAS season, in which below-normal rainfall drew down our lakes, constrained our reservoirs, and curtailed hydropower generation across multiple Member States especially in Eastern Nile region. The rains now forecast for Uganda, Rwanda, Burundi, western Tanzania, western Kenya, and southern Ethiopia offer a genuine opportunity to replenish Lake Victoria, Kyoga, and Albert, to ease pressure on the Kagera and Ruzizi hydropower systems, and to restore soil moisture and water availability for millions of smallholder farmers and pastoralists in the basin.

Yet I must be candid: a rapid swing from drought to surplus is rarely a gentle one. The very catchments most starved of water in recent months — their soils compacted, their drainage channels silted, their communities focused on conserving rather than shedding water — are often the least prepared for what follows. The Kagera floodplain, the Lake Victoria shoreline, the Nyanza and Rift Valley counties of Kenya, and the lowlands of the Baro-Akobo-Sobat system all carry elevated flood risk this OND season. Meanwhile, Sudan, northern South Sudan, and central and northern Ethiopia should expect little relief from this outlook and must continue to plan for continued water scarcity.

I therefore urge national governments, water resource managers, disaster risk reduction authorities, and humanitarian agencies to treat this Advisory not as a signal to stand down, but as a signal to pivot — from drought contingency to flood preparedness — with the same discipline and urgency we asked of you three months ago. Reservoir operators should optimise storage capture without compromising flood-control buffers. Local authorities should clear drainage infrastructure and update flood-response plans before the rains intensify. And all Member States should keep faith with the transboundary data-sharing that allows an early warning in the equatorial lakes to become timely action downstream.

My gratitude, as ever, goes to the German Federal Ministry for Economic Cooperation and Development (BMZ) through GIZ, whose support under the project 'Support to Transboundary Cooperation in the Nile Basin' continues to make this work possible, and to ICPAC, the Lake Victoria Basin Commission (LVBC), and the World Meteorological Organization (WMO) for their unwavering scientific partnership. I also thank the Heads of National Hydrological Services and the technical experts of the Regional Expert Working Group, whose vigilance allows us to turn forecasts into foresight.

The Nile gives and it takes in the same breath, often within the same year. Our shared responsibility is to be ready for both.

Sincerely,

Dr. Eng. Nestor Niyonzima

Excutive Dirctor

Nile Basin Initiative

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1. INTRODUCTION

The Nile Basin, spanning eleven riparian countries across north-eastern and equatorial Africa, sustains the livelihoods of over 300 million people through its vast network of rivers, lakes, and wetlands. The basin's hydrological dynamics are shaped by two distinct rainy seasons: the March–April–May (MAM) long rains and the October–November–December (OND) short rains, together with the June–July-August-September (JJAS) Ethiopian summer monsoon (Kiremt), which is the single most hydrologically significant period for the Eastern Nile system.

The OND season is the principal rainy season for the Nile Equatorial Lakes (NEL) region. It contributes up to 40% of total annual rainfall in parts of Rwanda, Burundi, Tanzania, and Uganda, and up to 70% of annual rainfall in parts of southern Ethiopia and Kenya. For the Ethiopian Highlands and the Eastern Nile system, OND marks the transition from the Kiremt flood season into the dry season, while for South Sudan and Sudan it is generally a recession period following the JJAS Nile flood peak. The performance of the OND rains therefore has major implications for agriculture, livestock, water availability, food security, public health, infrastructure, energy, and regional trade across the equatorial and southern parts of the basin.

This Outlook and Advisory is prepared by the Nile Basin Regional Expert Working Group (REWG) on Hydrology to provide timely, evidence-based climatic and hydrological intelligence to water resources planners and managers, disaster risk reduction authorities, hydropower and water supply schemes operators, and humanitarian agencies across the basin. It is underpinned by the regional climate outlook issued by the IGAD Climate Prediction and Applications Centre (ICPAC) at the 74th Greater Horn of Africa Climate Outlook Forum (GHACOF 74), convened as a hybrid event in Kigali, Rwanda, on 17–18 August 2026, and attended by representatives of the ten IGAD Member States together with national sector representatives, NGOs, humanitarian agencies, and development partners.

This technical report translates the ICPAC's officially released OND 2026 regional climate outlook (GHACOF 74 Technical Statement, 18 August 2026, Kigali, Rwanda) into Nile Basin Seasonal Hydrological implications. Country-level river-flow and lake-level numerical forecasts in NBI's own outlooks are produced using regional and national hydrometric station data and simulation models reviewed by technical sessions of the REWG on Hydrology. The sectoral and country implications below are therefore expert-informed qualitative assessments derived from the verified ICPAC climate outlook, publicly reported GHACOF 74 briefings, and the established hydrological behaviour of the basin (including the JJAS 2026 performance record). The forum reviewed and documented the progress and impacts of the ongoing June to September (JJAS) 2026 season, released the co-generated and consolidated Basin wide hydrological outlook for the October-December (OND) 2026 season, examined its implications, and developed advisories and management strategies for water sectors.

The advisory aims to support proactive early warning, contingency planning, and coordinated transboundary water management decisions under the wetter-than-normal conditions now anticipated for large parts of the basin, while also flagging those areas where drought conditions established during JJAS 2026 are likely to persist. It is co-created in the spirit of the NBI's mandate to promote the equitable, sustainable, and integrated management of the shared Nile water resources for the benefit of all riparian states.

2. TOOLS AND SYSTEM

The hydrological assessments and advisories in this outlook draw on the suite of monitoring, forecasting, and early-warning systems maintained by the Nile Basin Initiative and its regional partners:

- **Nile Basin Regional Hydrological Monitoring System**: A collaborative network of stations and a data management system providing real-time hydrological data on river, lake, rainfall, and water quality variables, telemetrically transmitted to national and regional data centres across the basin, (https://nilebasin.org/hydromet/about).
- **Nile Basin River Flow Forecasting System (NB-RFFS)**: Provides River flow forecast information at selected locations for the short term and at a seasonal time scale, using observed river and lake levels as a reference.
- **Eastern Nile Flood Forecasting and Early Warning System (EN-FFEWS)**: An integrated real-time system providing 10-day rainfall and discharge forecasts across 77 catchments and 44 gauging locations, delivering early warnings for riverine floods in the Lake Tana, Baro-Akobo-Sobat, Blue Nile, and Tekeze-Setit-Atbara sub-basins, (enffews.nilebasin.org).
- **Nile Basin Flash Flood Early Warning System (NB-FFEWS)**: A web-based system providing near-real-time and 48-hour-lead-time forecasts of flash flood occurrence to support community preparedness, (https://flashfloodalert.nilebasin.org/).
- **Nile Basin Drought Early Warning System (Nile DEWS)**: An integrated platform generating drought information across eight indices covering meteorological, hydrological, agricultural, and composite drought conditions basin-wide.
- **East Africa Hazards Watch (ICPAC)**: A hydrological forecasting system delivering key hydrological variables at locations of interest to support water resources management and disaster resilience, (https://eahazardswatch.icpac.net/mapviewer/).
- **WMO Global Hydrological Status and Outlook System (HydroSOS)**: Provides standardised information on the current state of water resources and outlooks at the sub-seasonal to seasonal scale (https://wmohydrosos.ceh.ac.uk/).
- **Nile Hydropower Optimization and Flow Management Decision Support System**

  A web-based decision support platform developed to help Nile Basin authorities better manage water releases and hydropower operations while reducing flood risks along the Nile, from Lake Victoria in Uganda to Bor in South Sudan. By combining forecasts, and scenario testing, it balances hydropower generation needs, flood protection, and water management across Uganda's Nalubaale, Kiira, Karuma and Bujagali stations, while supporting transboundary cooperation with the downstream countries and communities. The DSS was commissioned to help Uganda's Ministry of Water and Environment and the South Sudan Ministry of Water Resources and Irrigation, with backing from GIZ, the Nile Basin Initiative, to better manage releases from Lake Victoria into the White Nile. It forecasts flows from two weeks to nine months ahead and lets planners test different dam-cascade operating rules to gauge downstream flood risk.

3. PERFORMANCE OF JUNE - SEPTEMBER (JJAS) 2026

3.1 Climate

The JJAS 2026 season, covered in detail in the NBI's June–July-August-September 2026 Seasonal Hydrological Outlook and Advisory, verified largely as forecast. The ICPAC's GHACOF 73 outlook (issued 18–19 May 2026) had projected a high likelihood of about 40–80% probability — of below-normal rainfall across the core Ethiopian Highlands, South Sudan, Uganda, Rwanda, Burundi, and western/central Kenya (Figure 1), under El Niño-like conditions analogous to 1997 and 2023, with basin-wide above-normal temperatures amplifying evaporative losses due to enhanced evaporative demand of the atmosphere..

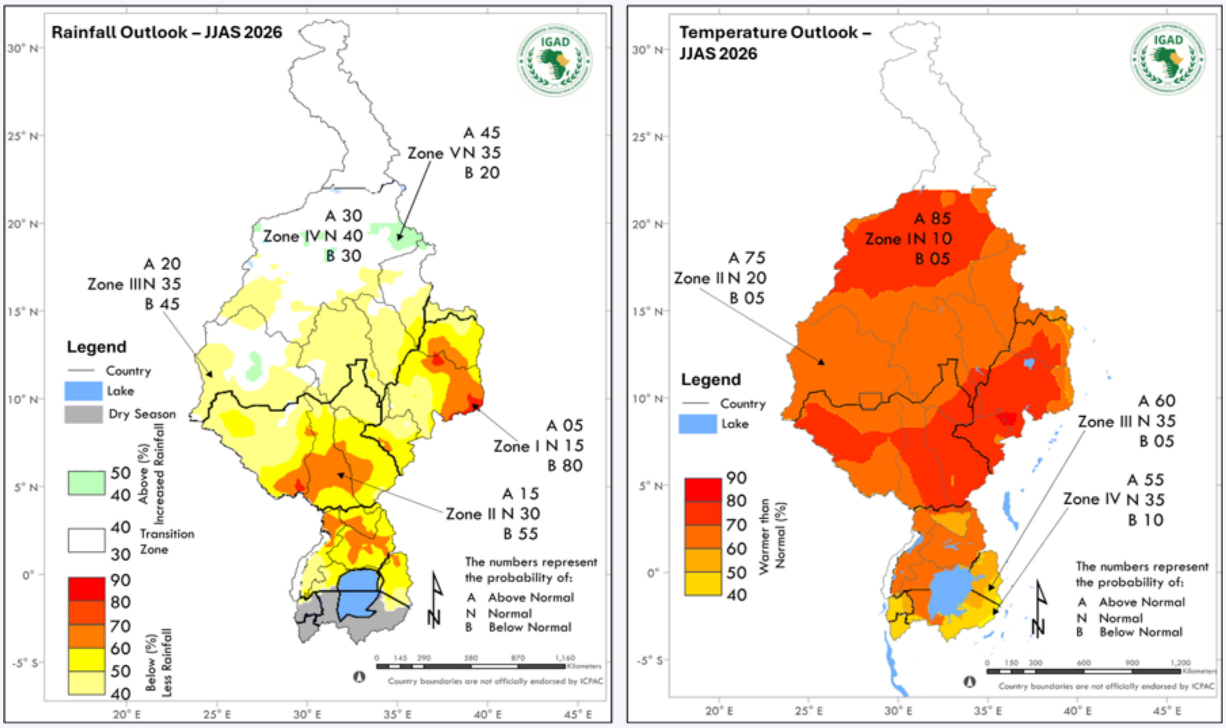


Figure 1: Nile River Basin JJAS 2026 Climate Outlook extracted from the ICPAC's 73rd GHACOF Climate Outlook released 19th May 2026.

The observations on the ground have confirmed the JJAS outlook in most parts of the basin with exceptions of some few localised areas in the basin with enhanced localised rainfall and temperature being registered as above normal and below normal respectively. Based on recent data from satellite rainfall measurements and hydrological monitoring, the Nile Basin experienced negative rainfall anomalies—meaning below-average precipitation—over most parts of the Ethiopian Highlands, particularly around Lake Tana where the Blue Nile originates, during June and August 2026 (Figure 2). More specifically, rainfall recorded during June, July and August 2026 was approximately 230mm below the historical average in affected areas of the Blue Nile Basin. This severe rainfall deficit had immediate hydrological consequences, with a significant decline in water levels occurring in June-July 2026, which was highly unusual since the Blue Nile typically only experiences seasonal drops in May and June, with officials attributing the unseasonal drop to delayed rainfall.

As predicted in May, the region of Equatorial Lakes also experienced enhanced drier than normal period which resulted increased loss of water and soil moisture due to increased evaporative demand of the atmosphere as indicated by observed decline in rivers and lake water levels.

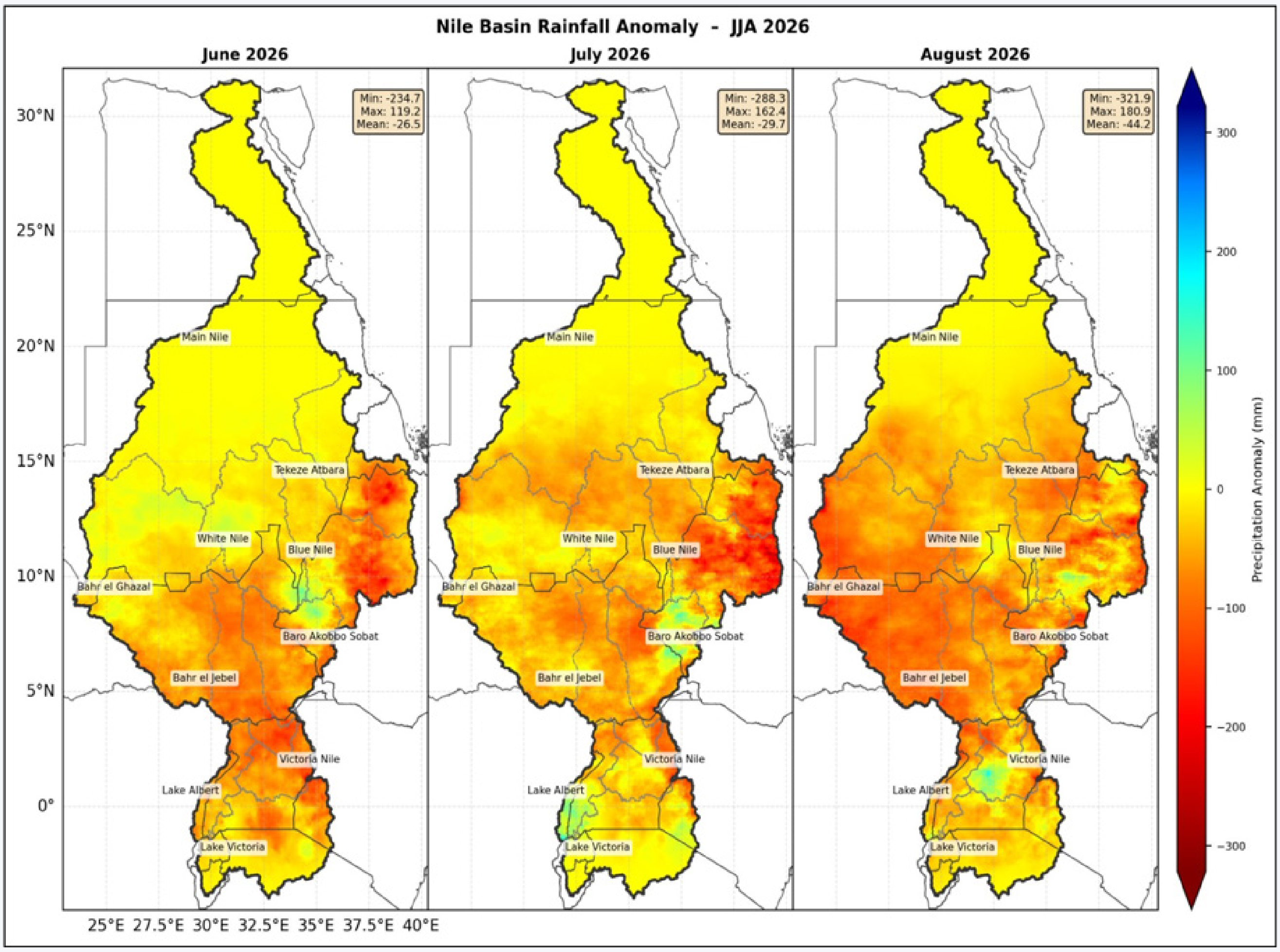


Figure 2: Nile Basin rainfall anomaly for June-July-August 2026

These below-average precipitation patterns were consistent with the seasonal forecast issued by the Nile Basin Regional Expert Working Group (REWG) on Hydrology, which predicted that much of the Nile Basin catchment was likely to experience below-normal rainfall during the June–September season, with a 40–90 percent probability of below-average precipitation, particularly affecting the Ethiopian Highlands. The rainfall deficit across these three critical months significantly impacted downstream water availability in Sudan and created water supply challenges in major population centers.

3.2 Hydrological Implications

Preceding this JJAS 2026, the MAM 2026 season had generally been above-normal, with rainfall exceeding the long-term mean by 20–30% in parts of South Sudan, Uganda, Rwanda, Burundi, Tanzania and central-western Kenya; this was reflected in rising water levels at all monitored water bodies. However, in JJAS ground observations showed a consistent downward trend throughout the June-August-September period across the Nile Equatorial Lakes (NEL) region, indicating a transition from the rainy season of March-April-May to the dry season in June-July-August. The decline was gradual but persistent across the NEL region (Figure 3, Figure 4 and Figure 5).

- Kagera River water level and flows at Kyaka Ferry, declined sharply through the season, well below the 1997 and 2023 analogue while the observed water level at Nsongezi remained relatively above the 2023 in most parts of the JJAS season (Figure 3) demonstrating variability with the river system.

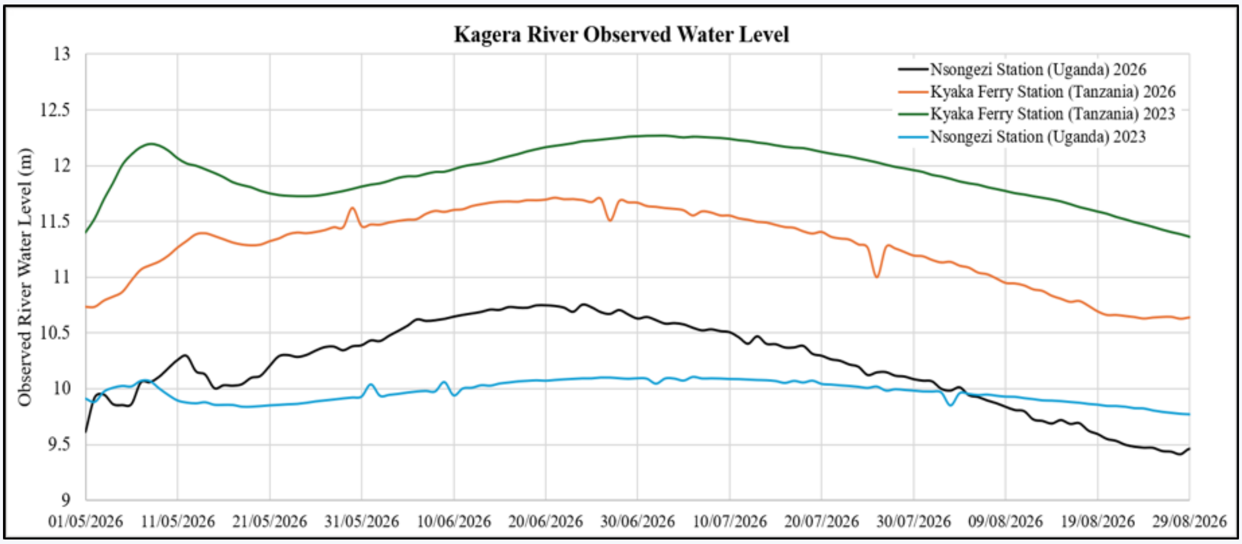


Figure 3: Kagera River observed water levels at Kyaka Ferry and Nsongezi Hydrological Stations for the June-July-August 2026 Season..

- Mara River experienced a steady decline water level and discharge across the three regional monitoring stations located in Kenya and Tanzania from May to September 2026, dropping from 3.8m at Nyansurura to 0.8 m at Mara Rianda/Bridge station in Kenya) while Mara River at Nyansurura and Kogatende in Tanzania (Figure 4). The declining water levels in Mara River paradoxically facilitated wildebeest crossing by reducing drowning risks and crocodile predation during the critical late July-early August migration window, they simultaneously triggered an acute ecosystem crisis: the low flow (0.8-5.0 m^3/s) provided insufficient drinking water for approximately 1 million migrating animals, creating severe scarcity by late July and August, while riparian vegetation stress diminishes post-crossing grazing opportunities. This hydrological squeeze intensifies predator-prey imbalances and might have forced the animals into competition for stagnant, contaminated pools.

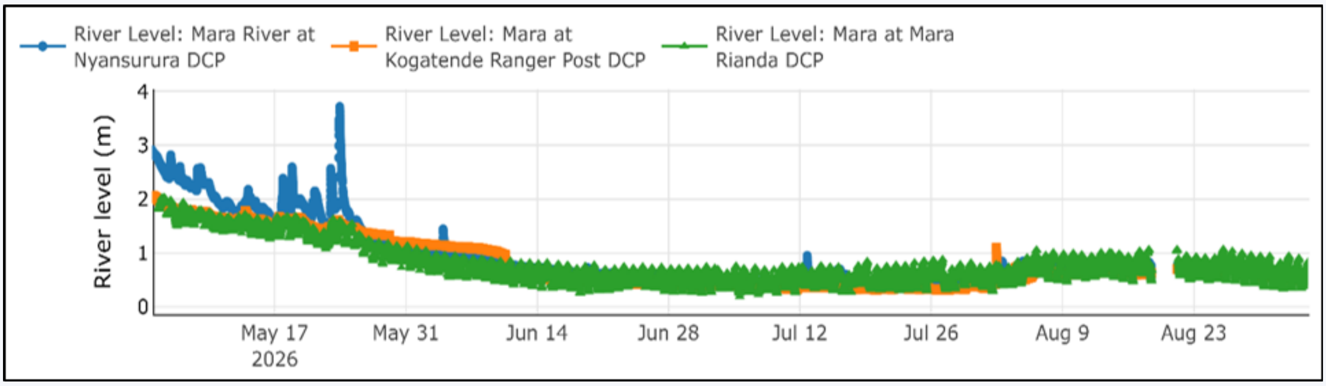


Figure 4: Kagera River observed water levels at Kyaka Ferry and Nsongezi Hydrological Stations for the June-July-August 2026 Season.

- In the Albert Nile system, the pronounced decline in both Lake Albert water levels and discharge at Laropi Station during the June-August 2026 period, demonstrated the hydrological stress resulting from the below-average rainfall anomalies across the Nile Basin (Figure 5). Lake Albert's water level peaked at approximately13.5 meters in late May 2026 but subsequently declined consistently throughout June, July, and August, reaching approximately 12.6-12.7 meters by late August—a total drop of nearly 0.8 meters over three months. Correspondingly, discharge at Laropi Station followed a similar declining trajectory, decreasing from a peak of over 2,200 m^3/s in late May to approximately 2,100 m^3/s by late August. These concurrent declines in both lake level and river discharge reflect the severe rainfall deficit documented in the basin during this period and have significant implications for South Sudan: the reducing water levels threaten the country's domestic water supply, constrain irrigation water availability for agriculture during the growing season, diminish hydropower generation capacity, and indicate persistent water stress across the White Nile system.

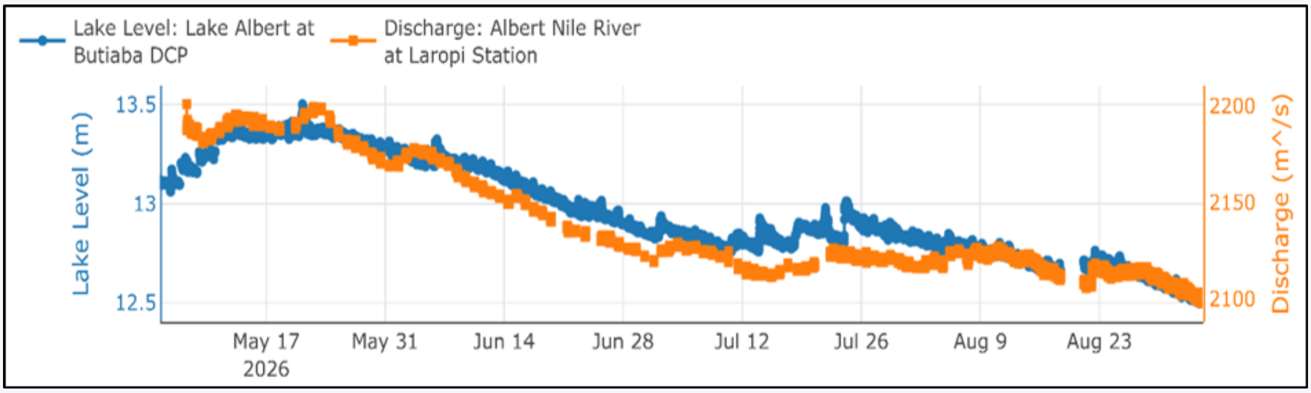


Figure 5: Strong correlation observed between the decline of L. Albert Water level at Butiaba station with declining discharge at Laropi hydrological station data during the June-September period.

- Consistent decline in water levels was observed across Lake Victoria, Lake Kyoga, and Lake Albert during the June-September 2026 season, with Lake Victoria experiencing the most pronounced drop by approximately 1.5 meters over three months—while Lake Albert at both Kasenyi (DR Congo) and Butiaba (Uganda) stations declined by about 0.6m (Figure 6). This widespread decline across the major lakes reflects the basin-wide below-normal rainfall conditions documented during this period, with the forecasting of 40-90 percent probability of below-average precipitation, which directly reduced inflows to these critical water storage systems. The hydrological implications are severe and multifaceted: the declining lake levels diminish water availability for domestic consumption and irrigation across East Africa, reduce hydropower generation capacity at key dams dependent on these lakes, threaten aquatic ecosystems and fisheries that support millions of livelihoods, and create cascading water stress downstream in Sudan and Egypt.

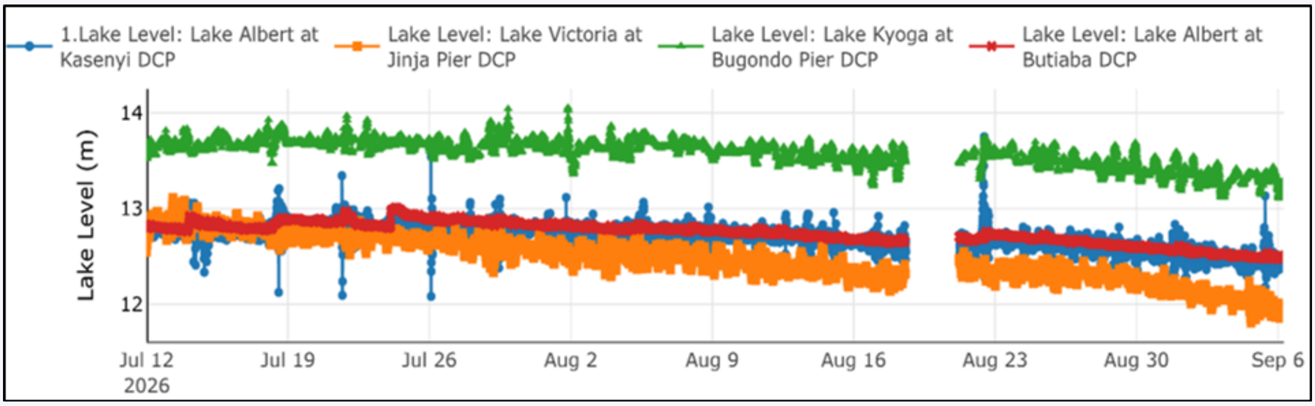


Figure 6: Observed water levels trends for Lake Victoria, Kyoga and Albert during the JJAS 2026 Season.

- Furthermore, the persistent downward trajectory suggests that unless significant rainfall occurs during the OND 2026 seasons, the region will face acute water scarcity challenges that could exacerbate food insecurity due to reduced agricultural productivity, increase competition for transboundary water resources among riparian states and regional cooperation mechanisms

In the Blue Nile and Main Nile, the observed decline in water levels at Khartoum and Halfaya stations respectively during the June-September 2026 season, was consistent downward trends registered across many river stations in the Eastern Nile region (Figure 7). It reflected the severe rainfall deficit in the Blue Nile Basin documented during June and July 2026, with the rainfall anomaly reaching approximately 230mm below historical averages. The hydrological implications for water availability have been severe and immediate: the declining Blue Nile levels directly contributed to the water crisis documented in Khartoum in July 2026, forcing the shutdown of intake pumps at major water treatment plants and threatening domestic water supply for hundreds of thousands of residents in Sudan's capital. Additionally, reduced river levels severely constrain irrigation water availability for agricultural production across Sudan and downstream countries, threatening food security during the critical growing season, while declining water depths impede navigation and hydropower generation. The sustained downward trajectory through August suggests that unless significant rainfall occurs during September or recovery flows materialize, the region will face prolonged water scarcity that demands urgent implementation of water rationing measures, emergency supply alternatives, and enhanced regional coordination mechanisms to manage transboundary water resources equitably.

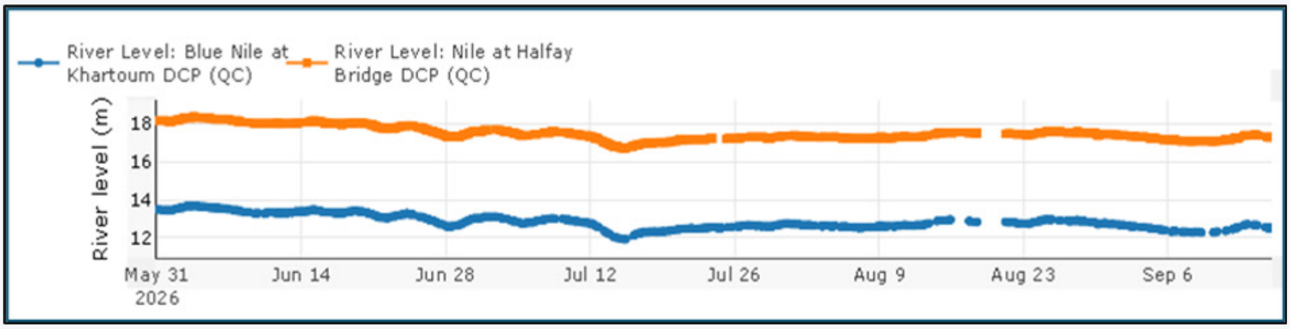


Figure 7: Observed water levels trends in the Blue Nile River at Khartoum Station and Main Nile River at Halfaya hydrological Station during the JJAS 2026 Season

The resulting hydrological implications point to suppressed surface runoff, and declining river flows across the Blue Nile, Atbara, Sobat, Bahr el Ghazal and White Nile systems, with the Kagera River felt well below its 1997/2023 analogue flows as same with major river flowing to the Lake Victoria. The Lake Victoria's level forecast to recede from its mid-May peak of about 1,136.1 amsl to roughly 1,135.5 m in September; White Nile outflows from Lakes Victoria, Kyoga and Albert were likewise expected to decline from over 2,200 m³/s toward 1,800–1,850 m³/s by end of September.

These deficits carry cross-sectoral consequences — constrained reservoir filling at facilities, reduced hydropower generation potential in Burundi, Ethiopia, Sudan, Rwanda, Uganda and Tanzania, heightened irrigation and urban water-supply stress, and elevated evaporative losses — with downstream Sudan and Egypt bearing the greatest cumulative risk from upstream deficits, prompting basin-wide advisories to activate drought contingency and reservoir-conservation measures across Member States.

Lake Tana and reservoir filling at major storage's facilities including GERD was constrained below 2023 and 2025 in Jun-August due to depressed JJAS rainfall, with hydropower generation capacity reduced across major stations as indicated by the altimetric water level measurements on Lake Tana (Figure 8). However, in NEL region JJAS being a dry period and with enhance drier levels, countries were advised to activate drought operation protocols, prioritise storage conservation, promote drought-tolerant crop varieties, and strengthen joint drought contingency planning among Member States.

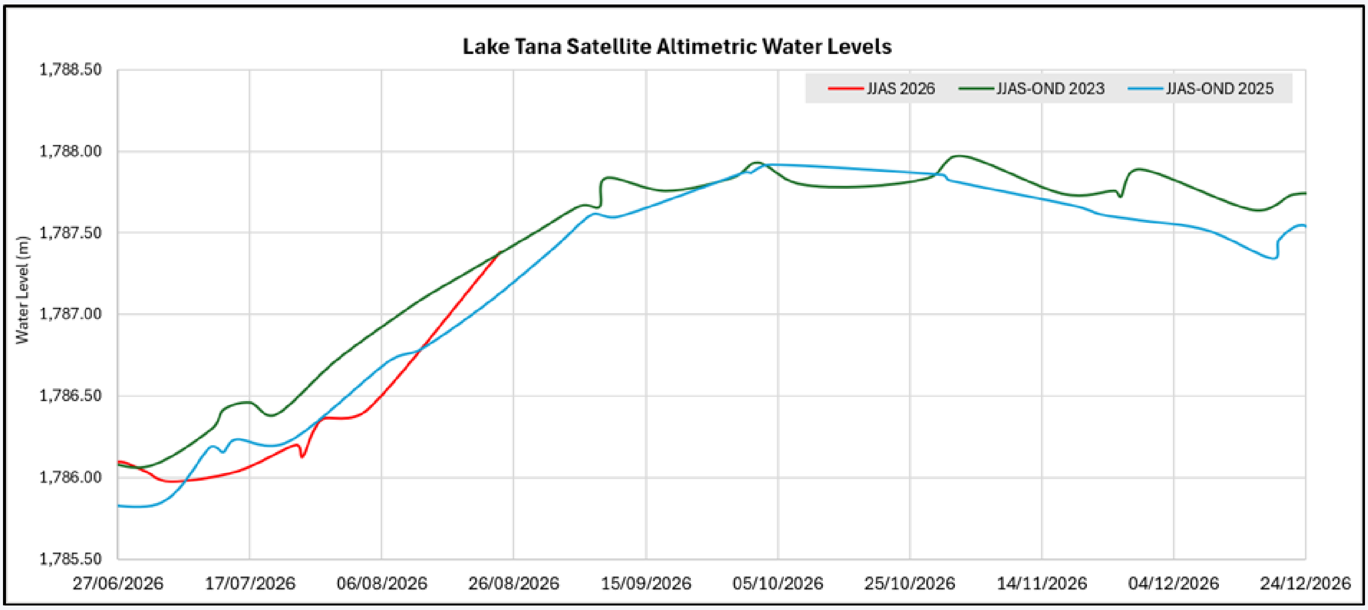


Figure 8: Lake Tana Satellite derived Altimetric Surface Water Levels

However, this dry JJAS baseline is an important starting condition for OND 2026. Many reservoirs, lakes, and soil moisture reserves enter the October–December season at below-normal levels, meaning the wetter conditions now forecast are, in the first instance, a recovery signal rather than a surplus. Catchments and drainage infrastructure that spent the preceding months under drought management are, in many cases, poorly conditioned to shed a rapid return of intense rainfall, a factor that shapes much of the risk assessment in this report.

3.2.1 Implications on Nile Basin Groundwater System

The Nile Basin plays host to major transboundary groundwater systems commonly known as aquifers: Kagera Aquifer shared by Burundi, Rwanda Tanzania and Uganda, Mt. Elgon Aquifer shared by Kenya and Uganda and Gedaref-Adigrat Aquifer shared by Ethiopia and Sudan as well as other groundwater system such as Nubian Sandstone Aquifer System (NSAS) and Alluvial and Alluvial and Weathered Crystalline Aquifers, that depend on rivers and rainfall for recharge.

However, as was expected, the JJAS 2026 season presented a hydrologically stressed scenario for the Nile Basin, with the convergence of below-normal rainfall across major contributing catchments and basin-wide above-normal temperatures likely to translate into reduced river flows, constrained reservoir filling, elevated evaporative losses from lakes and reservoirs due to enhanced evaporative demand of the atmosphere in which most river flows decline necessitating hydropower shortfalls.

Therefore, the JJAS 2026 season severely constrained groundwater recharge in for both deep and shallow aquifers due a convergence of reduced precipitation and elevated temperatures suppressed surface runoff generation, diminish tributary inflows, accelerate evapotranspiration losses from soils and open water bodies, and constrain the seasonal recharge of major lakes, wetlands, and reservoirs. This directly impacts groundwater recharge mechanisms across the basin.

a) Kagera Aquifer

Reduced groundwater recharge was anticipated in the Kagera Aquifer system as a result of depressed rainfall and enhanced evaporative losses depleting the enhanced MAM 2026 recharge. Regional ground observation stations in Burundi, Rwanda and Tanzania indicated consistent draw down while stations in Uganda indicated rising trend in groundwater levels during the JJAS 2026 season (Figure 9).

The dual-axis graph (Figure 10) revealed the hydrological connection between surface water (Kagera River) and groundwater at the Kagera River basin during the JJAS 2026 recession period. However, the relationship needs to be explored further for both dry and wet seasons. The synchronous trends between the surface water and groundwater indicated lateral groundwater recharge from the Kagera River during high-flow periods, with groundwater drawdown as river recession accelerates. The 1.6 m river decline mirrors the JJAS 2026 below-normal rainfall documented in the basin outlook which is equally reflected in the groundwater as a result for depressed recharge.

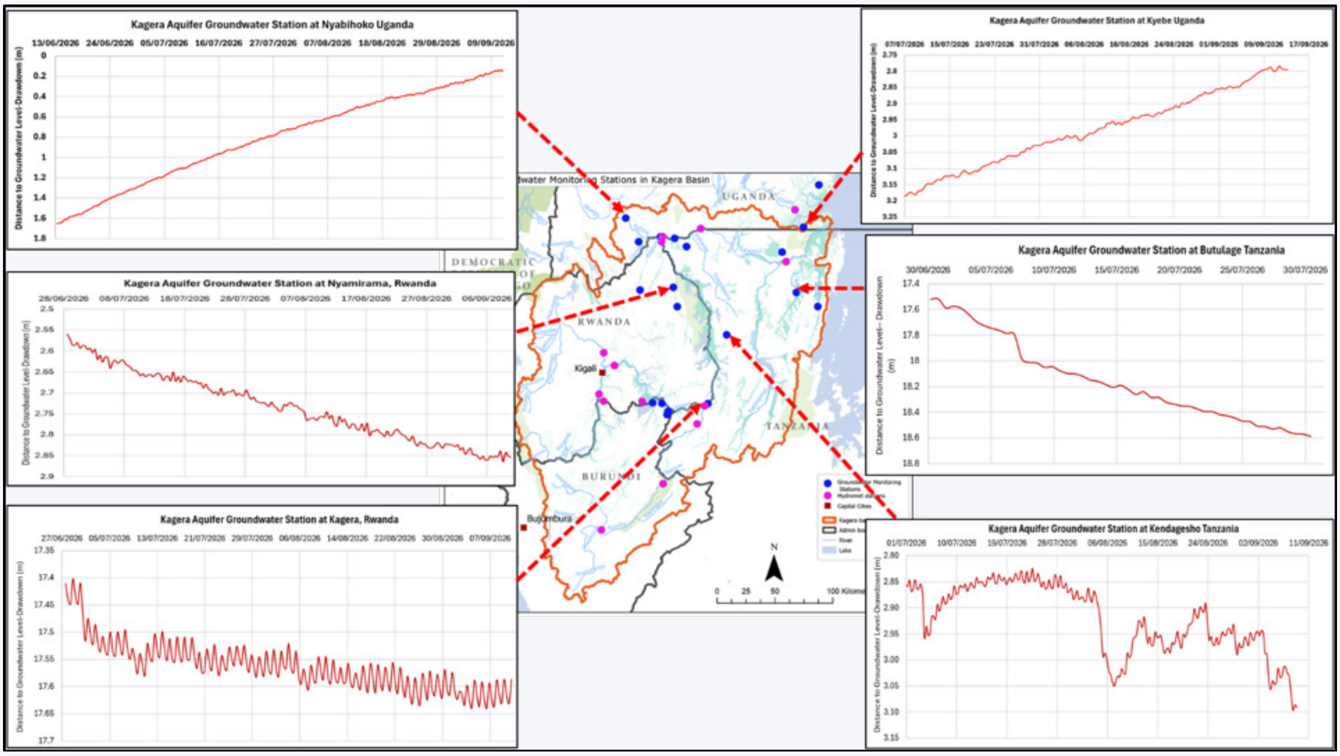


Figure 9: Kagera Aquifer groundwater levels trends in Rwanda, Tanzania and Uganda during the JJAS 2026 season.

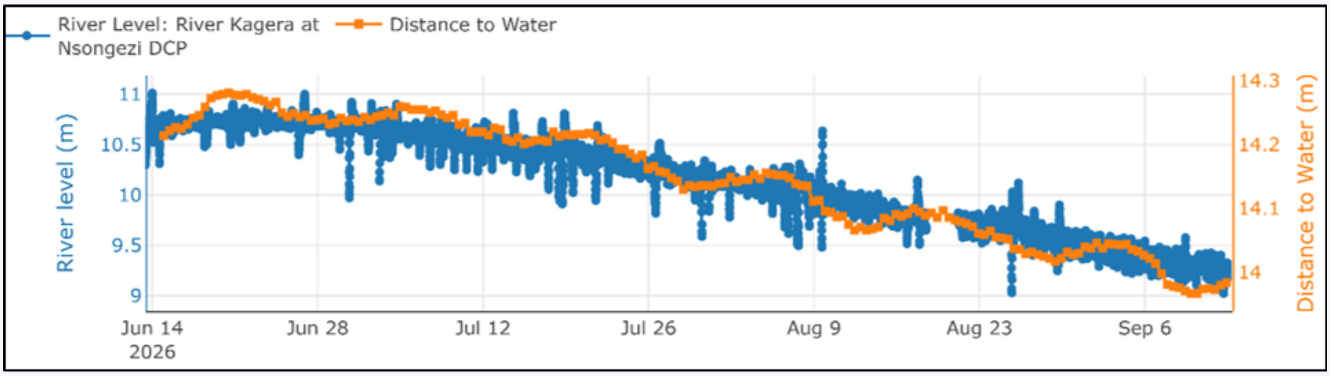


Figure 10: Compering Kagera River Water Level monitored at Nsongezi Station with Groundwater Level at nearest station at Ruborogota

There is strong linkage and correlation of this imbalance to the water security risk challenges in the basin where deepening groundwater suggests declining water table stability—critical for communities dependent on shallow wells in the Kagera catchment. Therefore, despite the drawdown, groundwater remained a significant source of water to several communities in the basin during the JJAS 2026 season where the surface water diminished and declined in quality.

The shift from June's wet-season high to September's recession signals the shift toward the dry season, consistent with the JJAS 2026 forecast of constrained flow conditions. This pattern is typical of East African river basins and underscores why Egypt, Sudan, and downstream Nile users need the equatorial lake recovery signal the above normal rainfall forecast for OND 2026.

3.2.2 Observed Flood Occurrence JJAS 2026

a) Flash Flood Forecasting and Occurrences in the Nile Basin

The Nile Basin Flash Flood Early Warning System (NB-FFEWS) issues daily 48-hour forecasts when flood-triggering conditions are anticipated across the Basin. These forecasts are sent directly to national authorities to support immediate preparedness and early action.

Between June and September 2026, the system produced operational forecasts for Nile Basin countries. The forecasts for 24 June 2026 and 13 August 2026, presented in the figures, were selected as representative examples of how the system operates (Figure 10 and Figure 11). These examples illustrate how the NB-FFEWS produces forecasts, identifies the location and severity of potential flash flood hazards, and estimates the populations and areas at risk. They form the basis for interpreting the figures presented here and should be understood as illustrative snapshots drawn from the many forecasts generated daily, rather than as the full set produced during the reporting period.

Across the reporting period, flash flood risk was highest in Ethiopia and Sudan. Ethiopia consistently recorded the largest forecast population at risk, while Sudan had the greatest number of high and very high severity hotspots. South Sudan also faced localized impacts, although at substantially lower levels.

Recurring flood-risk hotspots were identified in Oromia, Amhara, Tigray, and Southern Ethiopia, and in Sudan's West Kurdufan, Central Darfur, West Darfur, South Kurdufan, and Al Qadarif States. Exposure peaked in August, when more than 760,000 people in Ethiopia were estimated to be at risk. Sudan also experienced repeated clusters of high and very high severity alerts, requiring heightened preparedness and response planning.

By contrast, much of the upstream Equatorial Nile region including Burundi, Rwanda, Kenya, Uganda, Tanzania, and parts of the Democratic Republic of the Congo experienced relatively dry conditions. The selected forecast bulletins therefore indicated few or no significant flash flood impacts in these countries. This contrast reflects uneven rainfall across the Basin, with wetter conditions in eastern and northeastern areas and generally below average flood generating conditions in upstream catchments. Overall, the forecasts show that the NB-FFEWS can identify emerging flash flood hotspots and deliver actionable early warning information to national authorities. They also highlight the need for continued investment in preparedness, targeted warning dissemination, contingency planning, and community level response, especially in areas repeatedly classified as high risk.

In summary, the 24 June and 13 August 2026 forecasts provide representative examples for interpreting the figures and show how daily 48-hour NB-FFEWS outputs translate into information on hazard location, severity, and exposed populations. The June–September results indicate that risk was concentrated mainly in Ethiopia and Sudan, with localized impacts in South Sudan and generally lower risk across the upstream Equatorial Nile region, providing a practical basis for timely preparedness and early action (Figure 11and Figure 12)

Flash Flood Forecast and Early Warning for the Nile Basin countries

Time of Forecast: 24-06-2026 00:00

Forecast Period: 24-06-2026 00:00 - 26-06-2026 00:00

Summary of Flash Flood Forecast and Early Warning for Nile Basin Countries

		Number of impacted locations			Population at risk in the affected areas		
Severity	Administrative unit	Medium	High	Very High	Medium	High	Very High
	Burundi						
	Democratic Republic of the Congo						
	Ethiopia	8			78,770		
	Kenya						
	Rwanda						
	South Sudan						
	Sudan	9	5	1	3,535	1,784	4,644
	Tanzania						
	Uganda						

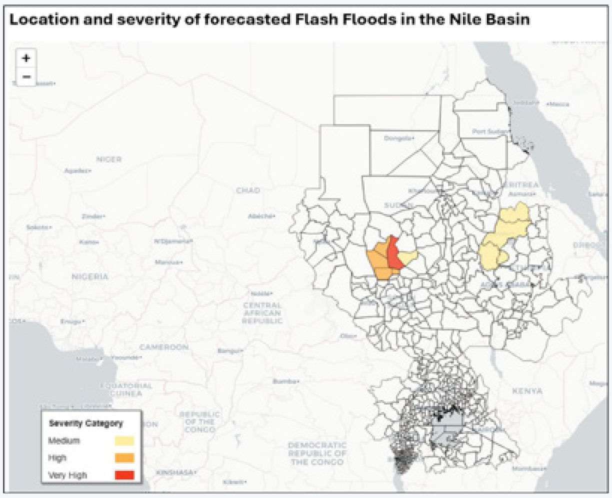


Figure 11: Flash Flood prediction and occurrence Ethiopia and Sudan in June 2026

Flash Flood Forecast and Early Warning for the Nile Basin countries

Time of Forecast: 13-08-2026 00:00

Forecast Period: 13-08-2026 00:00 - 15-08-2026 00:00

Summary of Flash Flood Forecast and Early Warning for Nile Basin Countries

		Number of impacted locations			Population at risk in the affected areas		
Severity	Administrative unit	Medium	High	Very High	Medium	High	Very High
	Burundi						
	Democratic Republic of the Congo						
	Ethiopia	13			761,926		
	Kenya						
	Rwanda						
	South Sudan						
	Sudan	6	13	8	1,815	55,066	2,702
	Tanzania						
	Uganda						

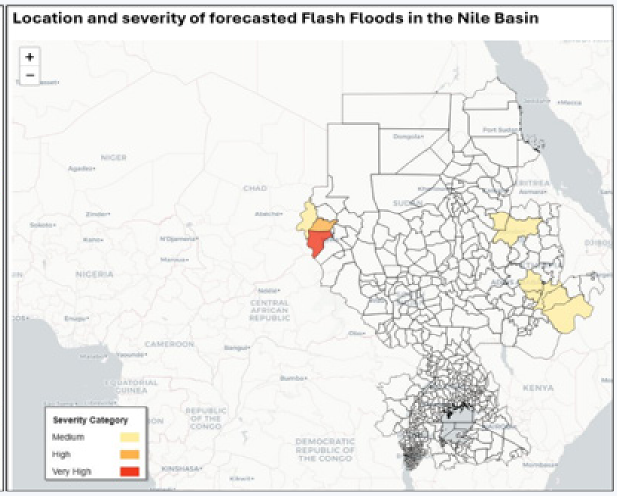


Figure 12: Flash Flood prediction and occurrence Ethiopia and Sudan in August 2026.

b) Riverine Flood Occurrence in the Eastern Nile

The JJAS is the main rainy season in the Eastern Nile region, supporting water demand and replenishing storage. However, forecasts indicated that the region would receive below-average rainfall compared with the long-term mean. As a result, streamflow in the major tributaries was also expected to decline due to below-normal rainfall conditions and rising temperatures. Overall, the observed conditions largely aligned with the forecast, with some localized exceptions. One notable exception was the Baro River at Gambella in the Baro-Akobo-Sobat (BAS) sub-basin, where flooding concerns were observed (Figure 13 and Figure 14). During the JJAS season, the Baro River remained at high levels. The river did not overtop its banks to cause flooding problems in the area, as it backflowed into the tributary River (Jejebe).

Another localized flooding event occurred along the Ribb River in the Lake Tana sub-basin during the JJAS season. While no casualties or property damage have been reported, the river overtopped its banks and caused significant inundation in the surrounding area. The Eastern Nile Flood Forecasting and Early Warning System also predicted possible flooding in several other locations. The system uses near-real-time rainfall forecasts from the WRF model, configured for the Eastern Nile region, to generate three-day real-time streamflow forecasts using GFS as the boundary condition, and extending these forecasts to a 10-day lead time.

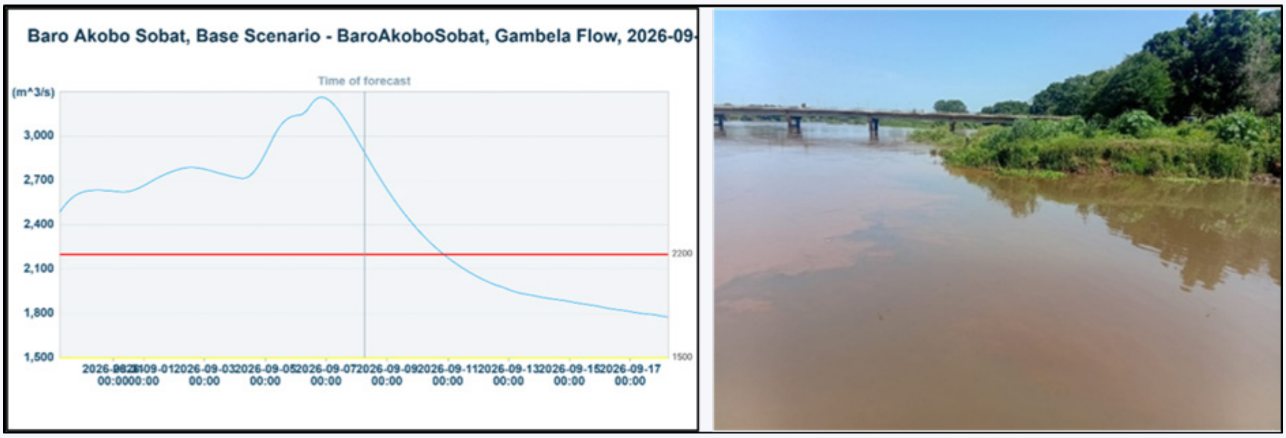


Figure 13: Forecasted River flow at Baro Gambella (EN-FFEWS) and observed flooding at Baro Gambella Bridge

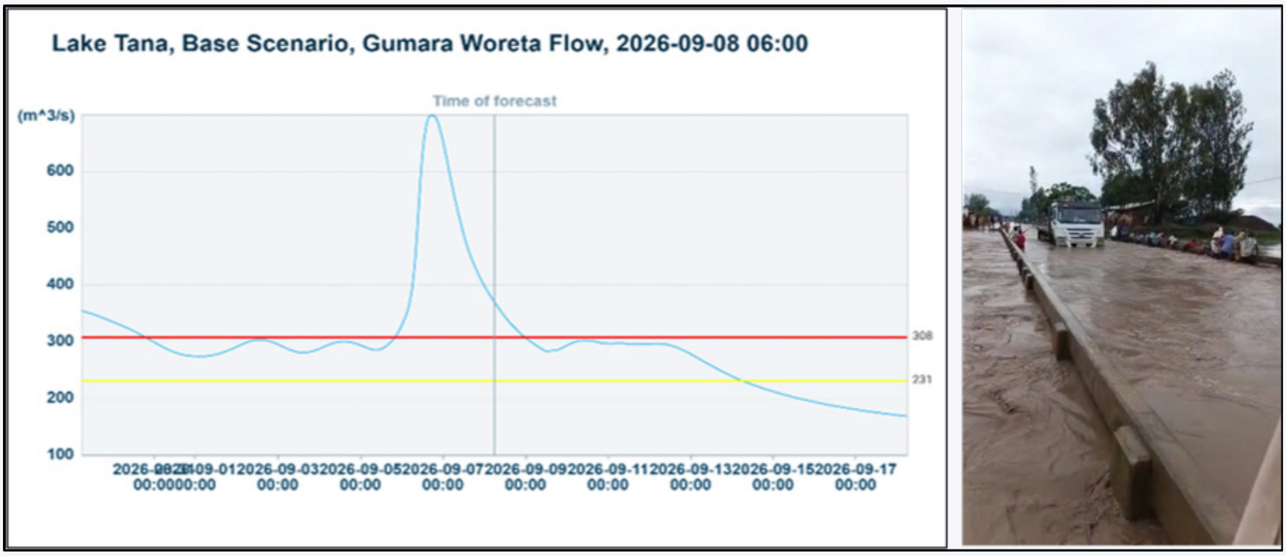


Figure 14: Forecasted River flow at Gumara Woreta (EN-FFEWS) and observed flooding at Gumara Bridge in the Lake Tana sub-basin

Additional locations forecasted to experience flooding included Akado and Birhane Selam in the BAS sub-basin; Roseires, Wad Medani, Kamlin, and Khartoum in the Blue Nile sub-basin; Atbara in the Tekeze-Setit-Atbara (TSA) sub-basin; and Addis Zemen, Kola Diba, and Dirba in the Lake Tana sub-basin (Figure 15). However, the actual occurrence of flooding in these areas could not be verified from available sources.

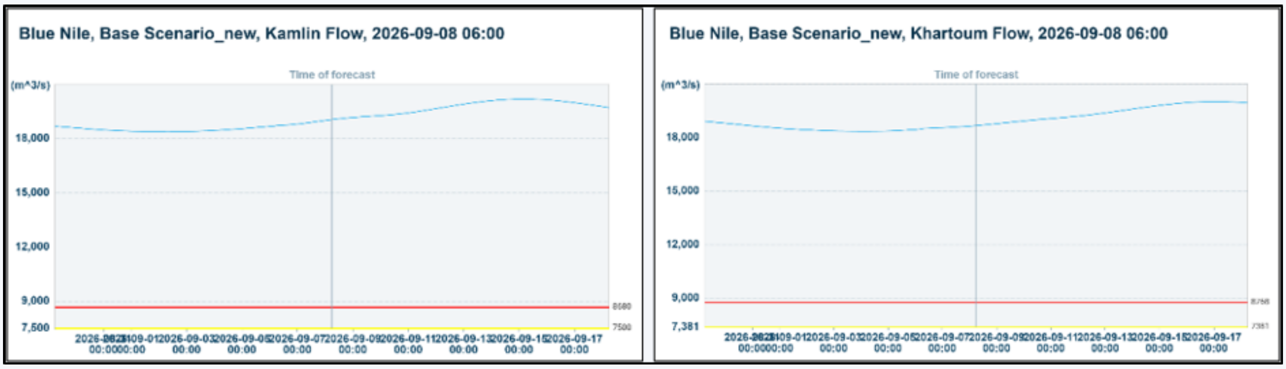


Figure 15: Forecasted River flow at Kamlin and Khartoum (EN-FFEWS) in the BN sub-basin, Sudan

4. OCTOBER-NOVEMBER-DECEMBER (OND) 2026 OUTLOOK

4.1 Climate Outlook

The ICPAC, together with the National Meteorological and Hydrological Services (NMHSs) of the Greater Horn of Africa and partners, released the regional climate outlook for OND 2026 at GHACOF 74, held as a hybrid event in Kigali, Rwanda, on 17–18 August 2026 (Figure 16). The outlook indicates an increased likelihood of wetter-than-normal conditions over most of the region. Key findings:

- El Niño has developed in the equatorial Pacific and is expected to strengthen further through the remainder of 2026. The analysis assesses an 81% probability of a very strong El Niño event, with conditions expected to persist into the March–May 2027 long-rains season with a 97% probability.
- The Indian Ocean Dipole (IOD) is expected to be in a positive phase through the season, reinforcing the wet signal — the classic El Niño/positive-IOD combination associated with enhanced OND rainfall over the Greater Horn of Africa.
- The year 1997 and 2023 have again been identified as the most relevant analogues. Both were strong El Niño/positive-IOD years in which wetter-than-normal conditions — and, in 1997, severe regional flooding — were recorded across much of the Greater Horn of Africa during OND.
- About 90% probability of enhanced rainfall is indicated over southern Ethiopia, central-to-southern Somalia, north-eastern Kenya and western Tanzania (Kasulu, Kibondo, Kigoma).
- A high probability of seasonal rainfall exceeding 300 mm is indicated over large parts of the of the Horn of Africa region, with seasonal totals exceeding 400 mm likely across central-to-southern Somalia, central Kenya, the Lake Victoria Basin, Burundi, western Rwanda, and western Tanzania — all core Nile Equatorial Lakes catchments.
- Early-to-normal onset is more likely across the eastern and southern parts of the region, including Somalia, central and eastern Kenya, southern Ethiopia, and most of Tanzania.
- Despite the wetter seasonal signal, dry spells of up to 10 consecutive days are possible over southern Ethiopia, Somalia, north-eastern Uganda, and South Sudan, with northern Kenya likely to see dry spells of up to eight days — underscoring that an above-normal season can still include damaging within-season rainfall gaps for rainfed agriculture.
- Above-average temperatures are likely basin-wide, with the highest probabilities over eastern Kenya, Ethiopia, Eritrea, Djibouti, and much of Somalia, implying continued elevated evapotranspiration even as rainfall recovers.

In Zone I - Equatorial Lakes & Southern Basin (most favorable), the probability of Above Normal (A: 75%), Normal (N: 20%), Below Normal (B: 5%) hence expected Rainfall of a above 400 mm in parts of Lake Victoria Basin, Burundi, western Rwanda, and western Tanzania. The GREEN zone indicates a stronger wetter-than-normal signal.

In Zone II - Northeastern & Highland Regions, the probability of Above Normal (A: 45%), Normal (N: 35%), Below Normal (B: 20%) hence the expected rainfall is moderate enhancement over parts of northern Kenya and Ethiopia representing a mixed conditions with above-normal lean.

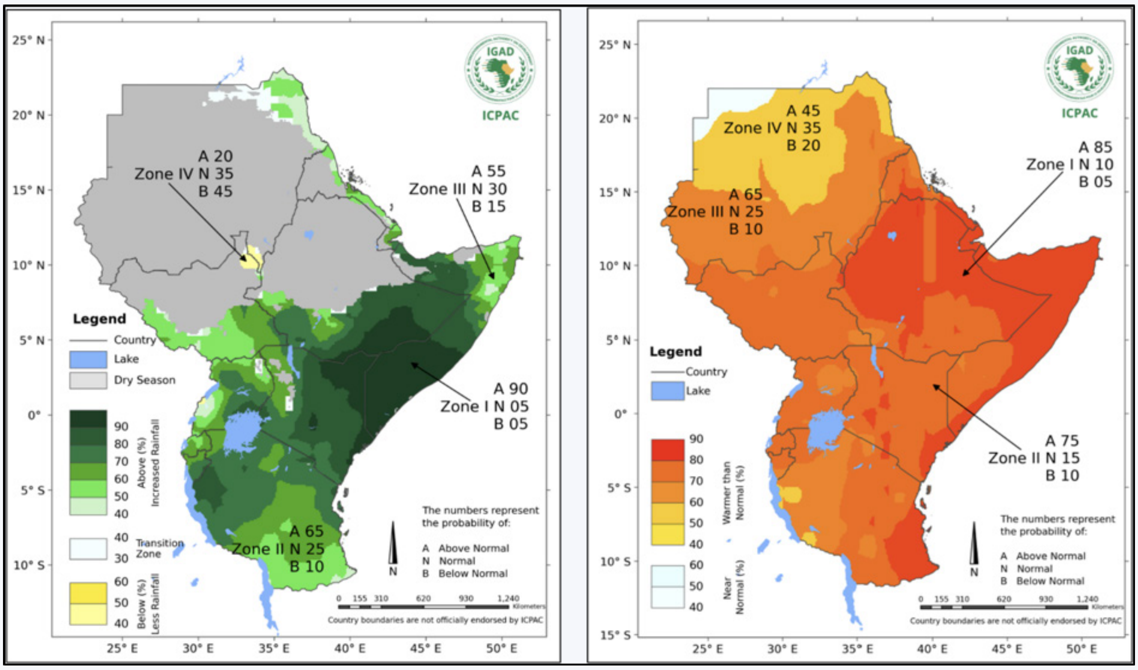


Figure 16: Horn of Africa Climate Outlook- Rainfall and Surface Temperature- for OND 2026 Season (Source: ICPAC's 74th GHACOF 2026).

IIn Zone III - Western & Northern Sudan, the probability of Above Normal (A: 55%), Normal (N: 30%), Below Normal (B: 15%) where favourable conditions are expected, though less pronounced than equatorial zones

For the Nile Basin specifically, the OND signal is most consequential for the Nile Equatorial Lakes (NEL) region — Uganda, Rwanda, Burundi, western Tanzania, and western Kenya — where OND is the dominant rainy season, and for the Sobat/Baro-Akobo and southern Ethiopian catchments, where OND rains sustain post-Kiremt recession flows.The OND 2026 season represents a dramatic reversal from the dry JJAS 2026 season (Figure 17). El Niño has developed and is expected to strengthen further during the remainder of 2026, with the Indian Ocean Dipole also expected to be in the positive phase, leading to enhanced rainfall over the basin region during the OND season.

For Sudan and Egypt, OND is climatologically onset of a low-flow/recession period on the main Nile and Blue Nile, so the wetter signal mainly affects White Nile and equatorial lake contributions rather than the Blue Nile flood pulse, which peaks in JJAS and recedes regardless of the OND season type.

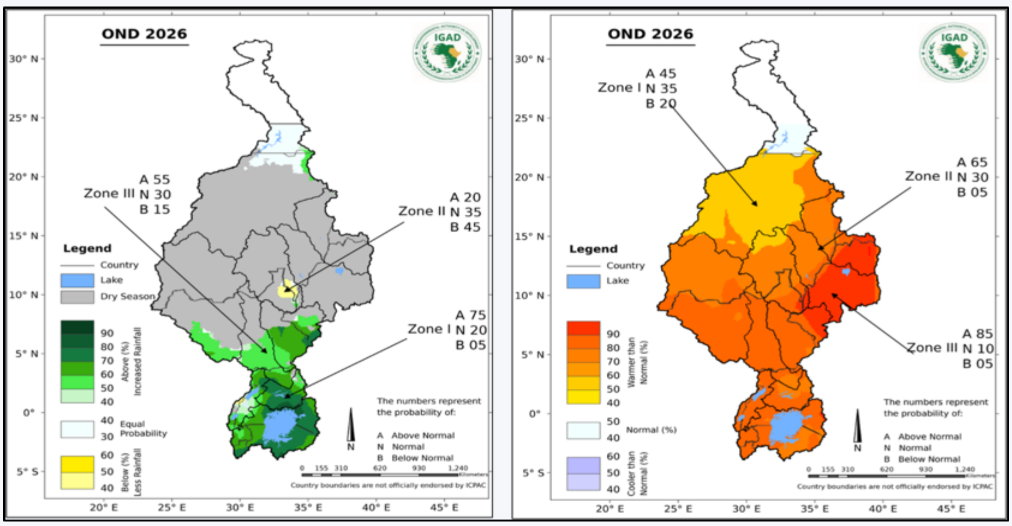


Figure 17: Nile Basin Climate Outlook- Rainfall and Surface Temperature- for OND 2026 season

4.2 Hydrological Implications

4.2.1 Impacts on river levels and flows

- **Kagera, Ruvubu, Nyabarongo/Akagera system (Burundi, Rwanda, Tanzania)**: Above-normal rainfall (>400 mm) is expected to drive a marked recovery in flows from the depressed JJAS 2026 baseline. Flood risk is expected to return to the Kagera floodplain and its tributaries — including the Ruvubu at Gitega and Muyinga — by November–December, potentially with the kind of rapid rises previously observed in the MAM 2026 season.

- **Nzoia, Yala, Nyando, Sondu, Mara, Gucha-Migori (Kenya)**: Flows are expected to rebound sharply from the JJAS low-flow trajectory. Shoreline and floodplain areas around Lake Victoria remain flood-prone, and renewed high rainfall raises riverine and flash-flood risk in the Nyanza and western Rift Valley counties — the same catchments that saw the Migori and Nyando rivers breach their banks during MAM 2026.

- **Victoria Nile, Albert Nile, Semliki (Uganda, DRC)**: Increased inflows from Uganda, Rwanda, Burundi, and the Albertine Rift catchments are expected to reverse the JJAS decline in Lake Victoria, Kyoga, and Albert outflows, with a lagged but potentially significant rise in Albert Nile discharge into South Sudan.

- **Baro-Akobo-Sobat and southern Blue Nile tributaries (Ethiopia)**: Continued to above-normal rainfall over southern Ethiopia — within the 90% enhanced-rainfall probability zone — supports sustained, and potentially elevated, flows into the White Nile system via the Sobat, offsetting part of the JJAS deficit and extending the flood-risk window in the Baro-Akobo-Sobat sub-basin later into the year than usual.

- **Bahr el Jebel, Bahr el Ghazal (South Sudan)**: Some recovery in Bahr el Jebel inflow is likely as equatorial lake outflows increase, while Bahr el Ghazal and the far-northern catchments — outside the strongest OND signal — are expected to see only limited change from the JJAS baseline.

- **Main Nile, Blue Nile, Atbara (Sudan)**: OND is climatologically the recession limb of the annual flood; near-normal to slightly enhanced White Nile contributions are possible via increased equatorial lake outflows, but no major change is expected to the Blue Nile flood regime, which is governed primarily by the already-passed depressed JJAS Ethiopian Kiremt rains.

4.2.2 Impacts on the Lakes Levels and Reservoirs

Lake Victoria, Kyoga, and Albert: The wetter OND outlook is expected to arrest the JJAS decline and support a partial-to-substantial recovery in lake water levels through November–December. Water levels are nonetheless likely to remain below the 2024 observed but above 2025 observed lake water levels given the depth of the JJAS deficit, and the pace of recovery will depend on rainfall over the lake how much of the enhanced rainfall is absorbed by depleted soil moisture before it reaches the lakes (Figure 18, Figure 19 and Figure 20).

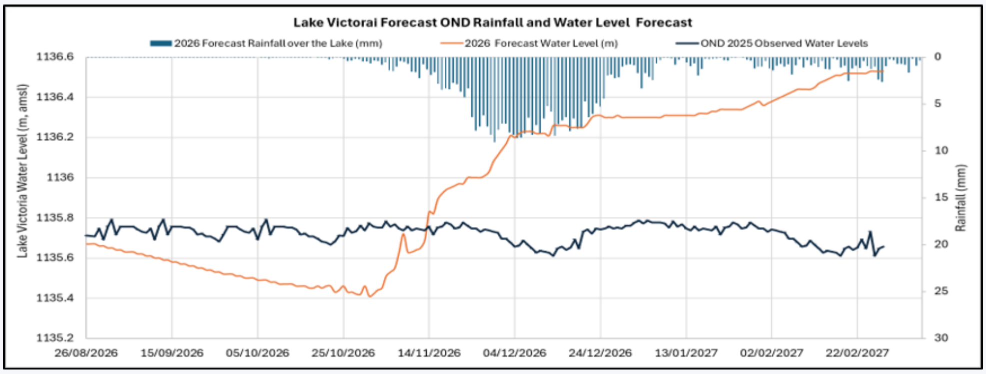


Figure 18: Lake Victoria rainfall and water level forecast for the OND 2026

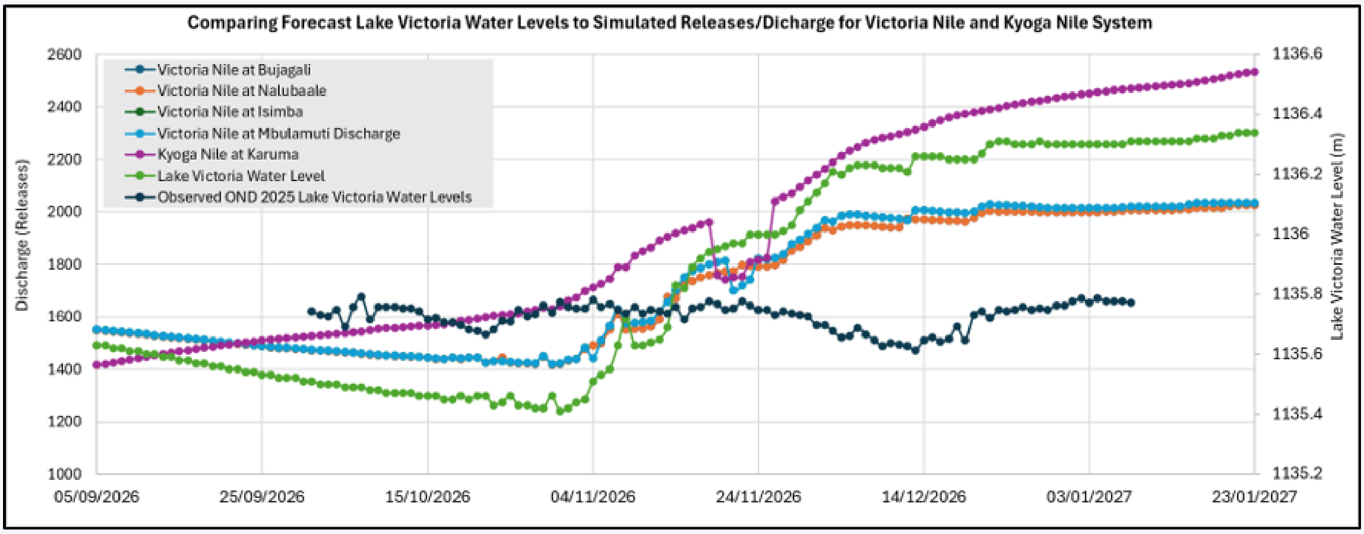


Figure 19: Forecast of trend, levels and discharge of the Victoria Nile and Kyoga Nile System for the OND 2026.

GERD, Lake Tana, Roseires, Sennar, Merowe: Reservoir inflows in Ethiopia and Sudan should benefit from continued southern Ethiopian rains, aiding a partial recovery of storage drawn down during JJAS. However, the main annual filling opportunity — the Blue Nile flood pulse where depressed rainfall of the JJAS season was observed and already passed for the year, so any OND gains will be incremental rather than transformative for these reservoirs.

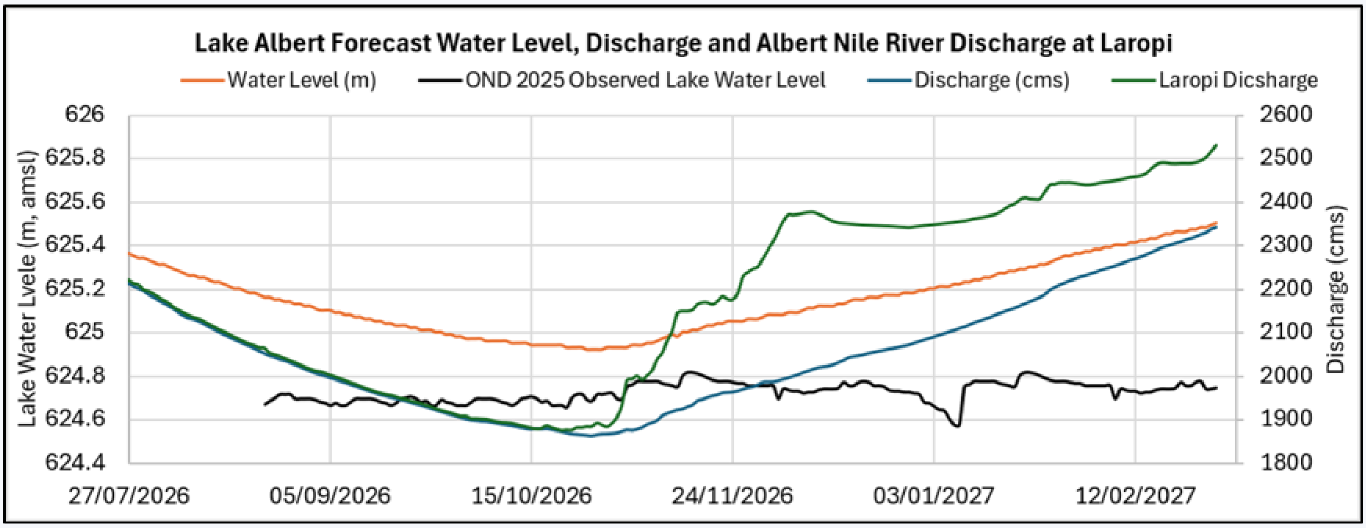


Figure 20: Forecast Lake water levels and river discharge for the Albert Nile system for the OND 2026

Rusumo, hydropower stations (Burundi, Rwanda, Tanzania): Improved Kagera and Ruzizi flows should ease the JJAS-driven hydropower generation constraints affecting REGIDESO (Burundi) and regional grids fed by Rusumo, but with a lag, as reservoirs and river systems first replenish depleted storage before sustained generation gains materialise.

Therefore, the central risk picture for OND 2026 is therefore a rapid swing from drought to flood risk across the Nile Equatorial Lakes region and southern Ethiopia/Kenya, set against continued drought conditions in the central and northern basin (Sudan, northern South Sudan, and parts of northern/central Ethiopia), where OND contributes comparatively little to annual totals and JJAS deficits are unlikely to be materially offset. Above-normal temperatures basin-wide will sustain high evaporative demand throughout, meaning that even enhanced rainfall may only partially translate into runoff and storage recovery.

4.2.3 Nile Basin Groundwater System

The OND 2026 season is characterized by a very strong El Niño event combined with positive Indian Ocean Dipole (IOD) conditions, which collectively forecast substantially elevated likelihood of wetter-than-normal rainfall across equatorial East Africa. This dual climate forcing is anticipated to have significant hydrological implications for the three major transboundary aquifers in the Nile Basin. For the Gedaref-Adigrat Aquifer—which is shared between Sudan and Ethiopia and experiences critical recharge primarily during the monsoon months of June through September—the wetter conditions forecast for OND 2026 may provide modest supplementary recharge during the transition period, though the peak recharge season will have concluded. The Mt Elgon Aquifer, which covers approximately 4,900 km2 across the Kenya-Uganda border and relies on infiltration from precipitation on mountain slopes and runoff from temporary drainage networks, is likely to experience enhanced groundwater recharge given the anticipated enhanced rainfall expected to improve water availability and facilitate recovery in areas affected by below-average rainfall earlier in the year. Similarly, the Kagera Aquifer—which receives recharge through direct precipitation, surface runoff, river infiltration when river stage exceeds groundwater levels, and interaction with wetlands in its low-elevation areas—is expected to benefit substantially from the wetter forecasts, potentially increasing aquifer storage and water table elevations across its 6,300 square kilometer expanse spanning Burundi, Rwanda, Uganda, and Tanzania. However, water managers must balance these positive recharge prospects against the substantially elevated risk of excessive rainfall and flooding across equatorial East Africa, which could impact groundwater quality through accelerated contaminant transport and require careful management of surface runoff to maximize infiltration and aquifer recharge while minimizing flood-related hazards.

The wetter OND 2026 outlook presents a significant opportunity for groundwater system recovery across major transboundary aquifers in the Nile Basin. However, the rapid transition from drought to flood conditions presents distinct challenges requiring careful management of groundwater quality and infrastructure protection.

Table 1: Projected implication of OND 2026 season on the Nile Basin Groundwater System

AQUIFER SYSTEM	COUNTRIES/ AREA	EXPECTED ENHANCEMENT	RECHARGE MECHANISMS & WATER AVAILABILITY	OPPORTUNITIES	RISKS & CHALLENGES
KAGERA Aquifer (6,300 km^2)	Burundi, Rwanda, Tanzania, Uganda	Substantial recovery anticipated given enhanced OND rainfall forecast (400+ mm in western regions)	• Direct precipitation infiltration • River infiltration as Kagera, Ruvubu, and Nyabarongo/ Akagera flows increase • Interaction with wetlands in low-elevation areas	Water Table Rise Anticipated elevation recovery as aquifer storage increases across system	Water Quality Rapid water table rise + intense rainfall = increased contaminant transport Accelerated infiltration of surface pollutants into shallow wells
MT. ELGON Aquifer (4,900 km^2)	MT. ELGON Aquifer (4,900 km^2) Kenya, Uganda	Significant recovery from enhanced OND rainfall on mountain slopes and increased run-off from temporary drainage networks	Improved Groundwater Storage Enhanced water availability for communities in Kenya-Uganda border region, supporting: • Domestic water supply • Pastoral water needs	Regional Water Security Enhanced water availability supports food security and pastoral livelihoods	Infrastructure Threat Flooding on mountain slopes mobilizes contaminants Landslide risk threatens groundwater infrastructure in high-rainfall zones
GEDAREF-ADIGRAT Aquifer	Ethiopia, Sudan	Modest supplementary recharge during OND transition period; peak recharge season (June-September monsoon) already concluded	Limited OND Contribution OND rains in Sudan are weak (main rainy season ended) System remains dependent on stored reserves and slow lateral flow from upstream regions	Modest contribution to annual recharge cycle	Limited OND Impact Minimal local recharge during OND System stress in Sudan likely to persist
NUBIAN SANDSTONE AQUIFER (NSAS	Multi-national; major transboundary system	Increased tributary inflows during OND may enhance lateral recharge pathways, particularly from southern catchments	Enhanced lateral recharge pathways from southern tributaries as surface water increases	Potential for incremental deep aquifer recharge	Monitoring Need Sustained observation required Deep aquifer response lags surface water changes by months to years

5. COUNTRY OUTLOOK AND IMPLICATIONS

This section provides a summary of current situations and implications of the projected climate and hydrological outlook in the Nile Basin Member States for the JJAS 2026 Seasonal.

5.1 Burundi

Burundi has a surface area of 27,834 km2 of which about 48% is within the Nile Basin hence constituting 0.4 percent of the basin drainage area (Figure 21). The annual rainfall varies between 850mm and 1,600 mm with an average mean rainfall of 1,100 mm. The low-land areas of Burundi are sometimes affected by floods during heavy rains. The flood prone areas include the shorelines of Lake Tanganyika, Rweru and Cyhoha and some parts of the small streams and rivers such as Ruvyironza, Rusizi and Ruvubu.

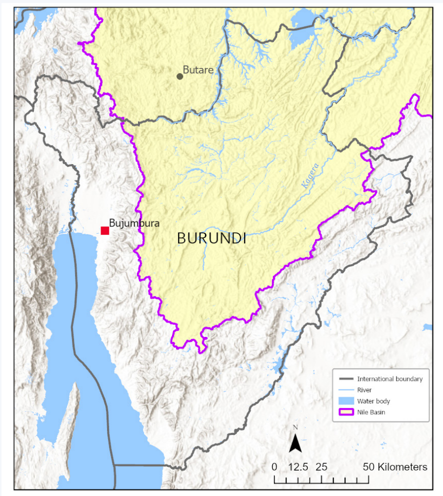


Figure 21: Map of Burundi within the Nile Basin

5.1.1 Performance of the JJAS 2026 Season and Impacts

Burundi's JJAS 2026 season was characterised by below-normal to near-normal conditions consistent with the region-wide El Niño-driven deficit. The Ruvubu River and Ruzizi Rivers — Burundi's principal transboundary hydropower resources — saw dry-season flows constrained through the season (Figure 22), with the Rwegura, Mugere, Jiji, Mulembwe, and Ruzibazi hydropower plants facing reduced generation capacity and REGIDESO implementing selective load-shedding. Reduced flow on the Ruvubu also lowered the probable REGIDESO share of generation from the Rusumo Hydropower Station. This followed an MAM 2026 season that had itself brought severe riverine flooding, landslides, and displacement in Bujumbura, Gatumba, Rumonge, Cibitoke, Kirundo, and Makamba.

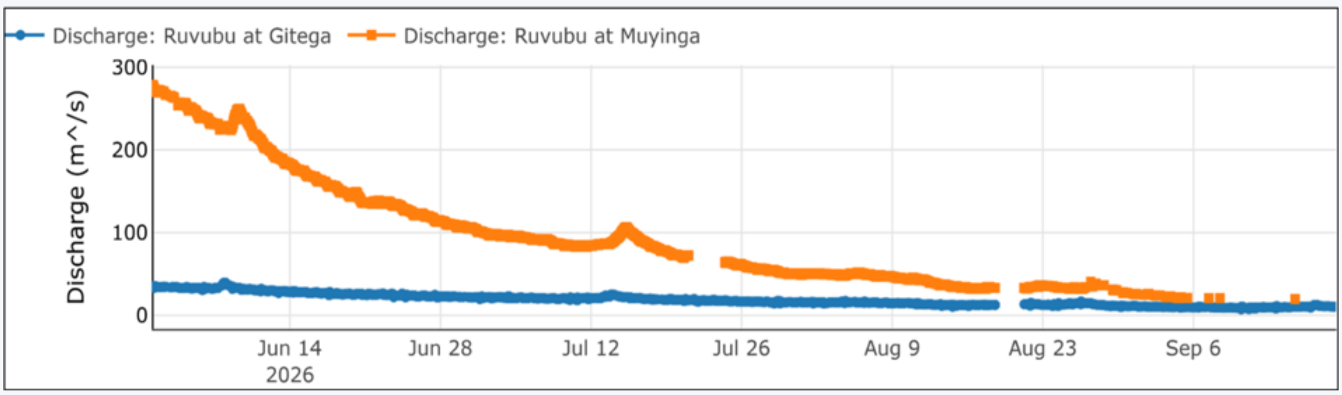


Figure 22: Ruvubu River observed declining discharge at Gitega and Muyinga stations during the JJAS 2026.

5.1.2 Climate and Hydrological Outlook for OND 2026 and Implications

OND 2026 rainfall over Burundi is expected to be above-normal, indicating an increased likelihood of a wetter than normal condition with more than 50-60% probability particularly in central and southern part of the country (Figure 23)— likely to exceed 400 mm for the season, among the highest-confidence wet signals in the entire Greater Horn of Africa outlook. The predicted precipitation ranging from 440 mm to 640 mm is expected for the SOND 2026 season.

This is expected to drive a marked recovery in Ruvubu and Ruzizi flows from the JJAS lows, easing pressure on REGIDESO's hydropower fleet, but re-introducing flood and landslide risk to the same low-lying, lakeshore, and riverine areas — Bujumbura Municipality, Gatumba, and Lake Tanganyika's coastal provinces — that were affected during MAM 2026. The Burundian government, alongside regional partners, has publicly signalled the need to step up flood preparedness ahead of the OND 2026 rains given the strength of the forecast El Niño signal.

Ruvubu River flow forecast at Muyinga indicates an early peak in the end of September and mid-October then declining to lower flows by the end of December with an arrangement of 165-312m3/s. The outlook suggests improved water security across the Kagera basin transboundary region for the remainder of 2026, benefiting both the Rusumo Hydropower project's generation capacity and Kagera Sugar's irrigation needs.

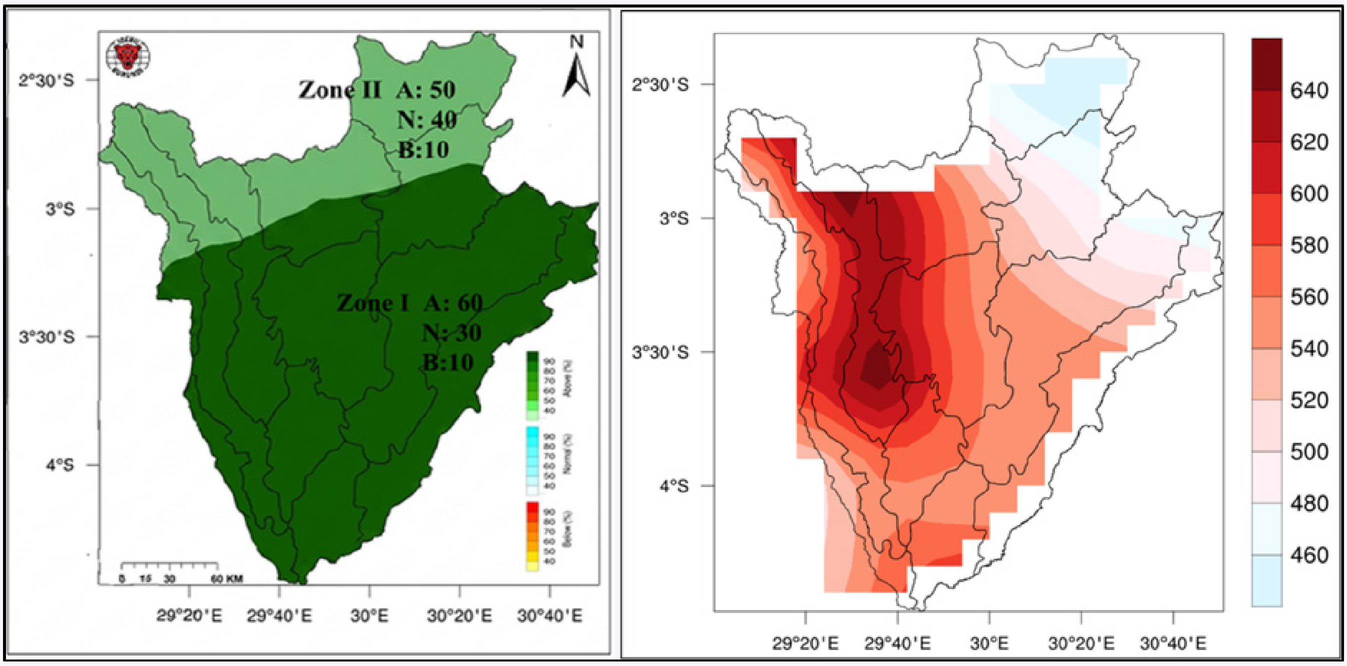


Figure 23: Burundi Rainfall forecast for SOND 2026 (Source IGEBU)

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for Burundi.

i. Pre-position flood and landslide response capacity in Bujumbura Municipality, Gatumba, Rumonge, Cibitoke, Kirundo, and Makamba ahead of the OND onset.

ii. Clear and rehabilitate urban and rural drainage channels before the rains intensify, building on lessons from the MAM 2026 flooding.

iii. Optimise reservoir and river-system operations at Rwegura, Mugere, Jiji, Mulembwe, and Ruzibazi to capture the OND recovery for storage while preserving flood-control buffers.

iv. Monitor Lake Tanganyika levels closely, given the lake's rapid rise during the MAM 2026 flooding and its renewed flood-risk potential this OND.

v. Continue joint IGEBU/REGIDESO coordination on hydropower dispatch planning as Ruvubu and Ruzizi flows recover.

5.2 Democratic Republic of Congo

The Democratic Republic of the Congo (DR Congo) is a country in Central Africa with a land surface area of 2.3 million km2. The Country is drained mainly by the Congo River. About 1% of the country drains to the Nile River Basin constituting about 0.7% of the Nile Basin area (Figure 24). The Nile Basin in DRC is predominantly found in the northeastern part of the country. The region experiences a tropical climate with distinct wet and dry seasons. The climate in the region is influenced by both the equatorial and tropical monsoon systems, and the hydrological patterns are driven by rainfall, temperature, and the runoff from the surrounding highlands.

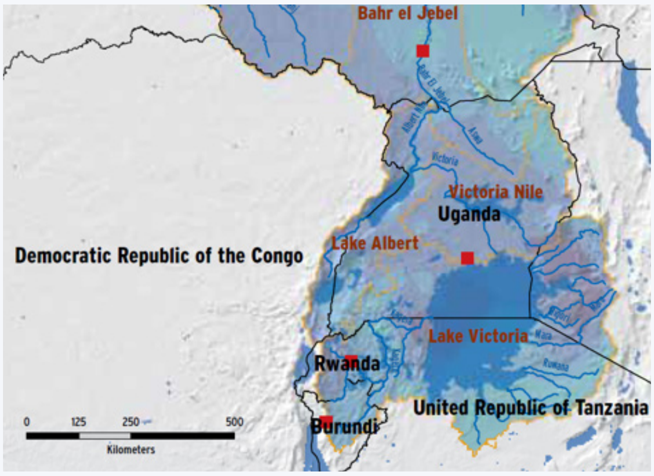


Figure 24: Map with Nile Basin part in DR Congo

Despite the small part of the country in the Nile Basin relative to the country's size, the impact of the climate and hydrology is still considerable as it shares borders with five other NBI Member States (Burundi, Rwanda, South Sudan, Uganda, and Tanzania). The shared water resources of Lake Albert, Lake Edward and Semliki River between DR Congo and Uganda constitute the Albertine River system and are vital for both countries to support the lives and livelihood of several communities. The Rutshuru and Rwindi River flow into Lake Eward while Semliki River flows out of Lake Edward into Lake Albert hence hold significant hydrological consideration for the Albert Nile system.

5.2.1 Performance of the JJAS 2026 Seasonal and Impacts

The Nile Basin portion of DR Congo (the Semliki catchment and the shared Lake Edward/Lake Albert waters) recorded below-average rainfall anomalies during JJAS 2026, broadly consistent with the drier signal across the Nile Equatorial Lakes region, alongside localized heavy-rainfall extremes such as those recorded in Bukavu. JJAS 2026, by contrast, brought near-normal to below-normal rainfall with warmer-than-average temperatures, moderating water stress hence the declining water level driven by mostly evaporative demand of the atmosphere and reducing soil moisture around the Lakes Edward–Albert system (Figure 25 and Figure 26).

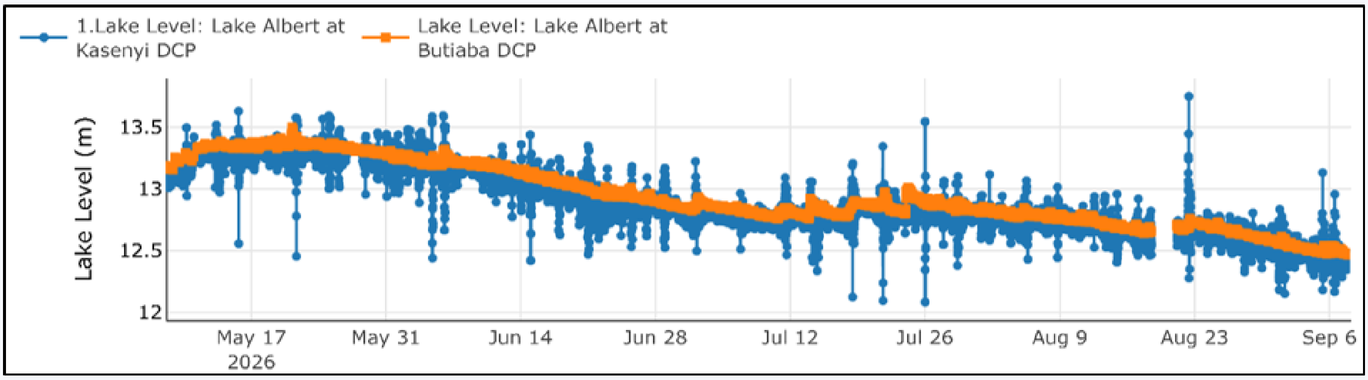


Figure 25: Observed Water levels for Lake Albert at Kasenyi Station (DR Congo) and Butiaba (Uganda) Station during the JJAS 2026 Season

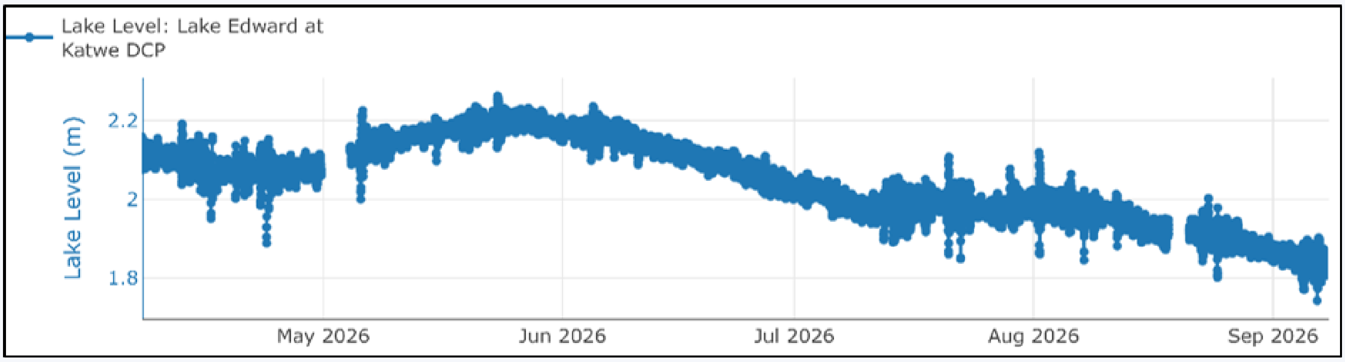


Figure 26: Observed Water levels for Lake Albert at Katwe Station (Uganda) during the JJAS 2026

5.2.2 Climate and Hydrological Outlook for OND 2026 and Implications

OND 2026 rainfall over the Albertine region is expected to be near to above normal with 40-50% probability, slightly lower wetter signal predicted across the Nile Equatorial Lakes. This should might not adequately support a recovery in Lake Edward, increased Semliki River inflows to Lake Albert. Therefore, Lake Albert levels rise predicted might flow from the direct rainfall and Kyoga Nile system will be above the observed lake levels of OND 2025 (Figure 20).

5.2.3 Recommendations and Advisories

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for DR Congo.

i. Strengthen continuous monitoring of rainfall, river flows, and lake levels in the Semliki River, Lake Edward, and Lake Albert systems for adaptive planning and management.

ii. Enhance preparedness for localized floods, landslides, and soil erosion in Rutshuru and Rwindi mountainous and escarpment areas through community awareness.

iii. Strengthen cross-border coordination and information sharing with Uganda under the Nile Basin Initiative framework as lake levels recover.

iv. Monitor water quality and aquatic ecosystems in Lake Edward and Lake Albert to safeguard fisheries and livelihoods as flows increase.

5.3 Egypt

Egypt has a land area of 1,001,450 km2, dominated by arid desert conditions, but its economic life is strongly concentrated along the Nile River system where it constitutes about 10.95% and 32.6% of the Nile Basin area and of total area of the country respectively. Consequently, the Nile River accounts for the water that sustains most national agriculture, population settlements, and major economic activities, while most Egypt's surrounding areas receive insufficient rainfall for large-scale crop production without irrigation.

As a result, practically all productive and densely populated land is located within the Nile Valley and Nile Delta, where irrigation withdrawals, municipal water supply, and industrial water needs are supplied from Nile flows (Figure 27).

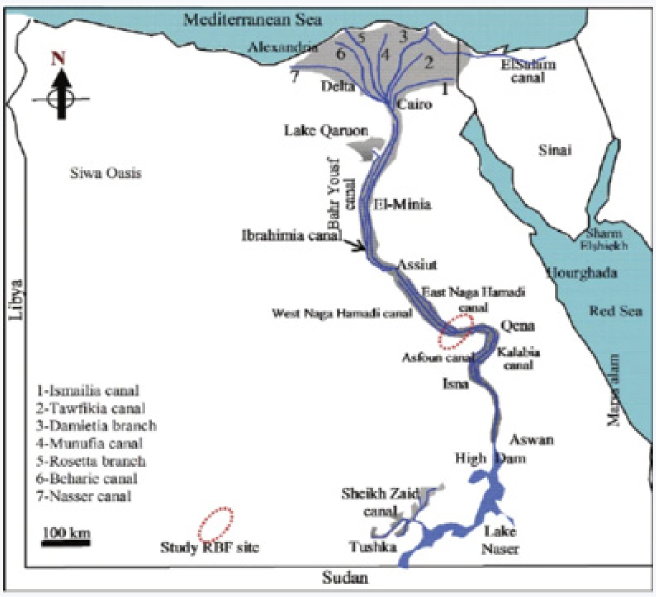


Figure 27: Map of Egypt with River Nile

5.3.1 Performance of the JJAS 2026 Season and Impacts

As the most downstream Nile Basin country, Egypt's water supply during JJAS 2026 depended entirely on upstream transboundary inflows delivered via the Blue Nile/Main Nile and, more gradually, the White Nile. The basin-wide below-normal JJAS rainfall signal and constrained reservoir filling at GERD and other upstream storage facilities translated into reduced hydropower generation capacity risk for Egypt, consistent with the broader downstream implications flagged in the NBI's JJAS 2026 Outlook. Leveraging on the satellite altimetric measurement on Aswan High Dam water level indicated that the JJAS 2026 season has been on the decline dropping below the JJAS 2025 by mid-August 2026 and entirely below 2023 similar period (Figure 28).

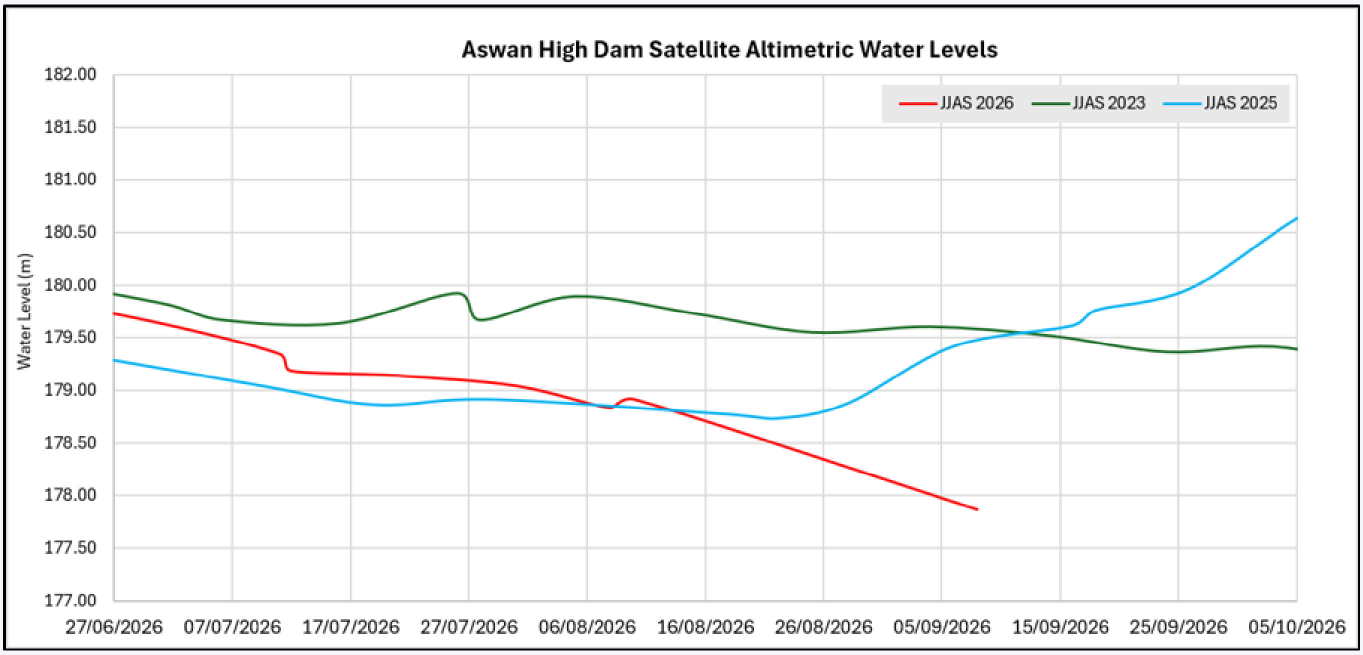


Figure 28: Satellite altimetric water level measurement for Aswan High Dam during the 2026 JJAS Season

5.3.2 Climate and Hydrological Outlook for OND 2026 and Implications

Egypt is not a primary OND rainfall zone and receives no material direct rainfall benefit from the ICPAC OND 2026 outlook. Nile flow into Egypt during OND primarily reflects the JJAS Blue Nile flood pulse already delivered and routed through Sudan, with only a limited additional boost possible from increased White Nile/equatorial-lake contributions as Uganda, Rwanda, Burundi, and southern Ethiopia recover from the JJAS deficit. Aswan High Dam inflows should therefore be expected to improve only modestly on arrival of the JJAS pulses from the Blue Nile and with a lag relative to the scale of recovery seen upstream in the equatorial lakes.

5.3.3 Recommendations and Advisories

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for Egypt.

Continue standard Aswan High Dam operations, planning for only modest inflow improvement relative to the JJAS deficit.

Monitor NBI, ICPAC, and upstream Member State bulletins closely for any late-season increase in White Nile/equatorial-lake contributions.

Maintain participation in NBI transboundary data-sharing mechanisms to track the pace of upstream hydrological recovery.

Practice water conservation measures and efficient water use technologies for both irrigation and water supply.

5.4 Ethiopia

Ethiopia is a landlocked country located in the Horn of Africa region of East Africa with a land surface area of about 1.1 million Km2 of which about 33% is within the Nile Basin, constituting about 12% of the basin area. The Blue Nile known as Abbay, Baro Akobo, Mereb and Tekeze are the main tributaries of the Nile River (Figure 29). Abbay is the source of the Blue Nile. It accounts for 20% of Ethiopia's land area, for about 50% of its total average annual flows which emanate from the Ethiopian highlands.

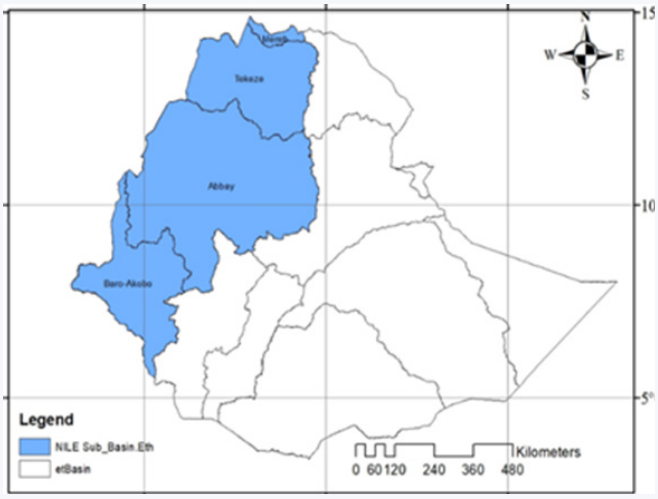


Figure 29: Map with Nile Basin part in Ethiopia

The rivers of the Abbay basin contribute on average about 62% of Nile River flows. Together with the contribution of Baro Akobo and Tekeze rivers, Ethiopia accounts for at least 85% of the flows to the Nile River.

5.4.1 Performance of the JJAS 2026 Seasonal Impacts

Ethiopia's Belg (FMAM) season was predominantly normal to above-normal, though excessive rainfall in the Rift Valley basin triggered flooding and a landslide in the Gamo zone. JJAS 2026 — the country's principal Kiremt season and source of 85% of Nile River flows — verified the forecast below-normal to near-normal signal across most basins: reservoir water balances at Tana Beles, Gilgel Gibe I, Gibe III, and Koka all tracked below historical averages, with Koka in particular experiencing a critical, atypical drawdown. The Ogaden, Wabishebele, and Genale-Dawa basins saw below-normal rainfall causing water-supply and hydropower reductions, while the Baro Akobo and parts of the Abbay basin recorded above-normal conditions. The most affected regions include Tigray, Afar, Somali, and northeastern regions which experienced the worst deficits, with observations of below-normal rainfall ranging between 60% to 80% in northeastern areas. These are pastoral and agropastoral zones most dependent on reliable Kiremt rains. Moderately affected areas include Amhara, Oromia, and Gambela which experienced 40–70% deficits during June to September period affecting reservoir filling, crop production across cropping zones.

The Lake Tana is a "canary in the coal mine" for the broader Nile Basin water crisis in 2026. The depressed rainfall of JJAS 2026 resulted in a slow rise of the lake levels getting to the JJAS 2023 levels by the end of August 2026 representing about 1.5m rise (Figure 30)

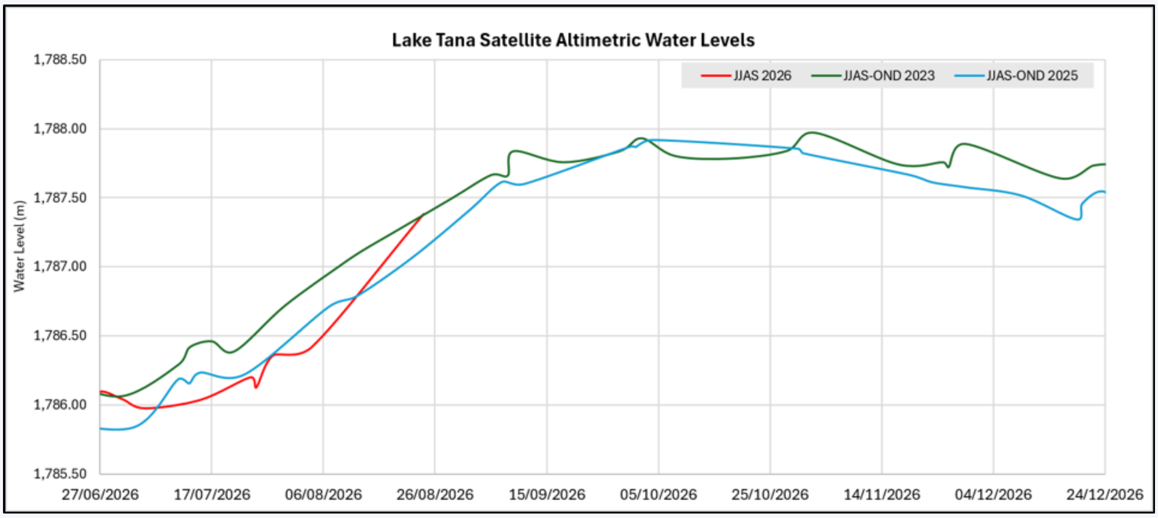


Figure 30: Lake Tana Satellite Altimetric water level for JJAS-OND 2023 and 2025 compared with JJAS 2026

5.4.2 Climate and Hydrological Outlook for OND 2026 Season and Implications

For OND 2026, southern Ethiopia sits within ICPAC's 90% enhanced-rainfall probability zone — among the strongest wet signals in the region — while central and northern Ethiopia are expected to see comparatively limited change. This mostly supports continued above-normal flows into the Baro-Akobo-Sobat system, extending the flood-risk period for lowland Gambella communities later into the year than typical, and offering some relief to water supply and hydropower systems in the south. However, because the Blue Nile's main annual filling window (the Kiremt flood pulse) has already passed, OND rains provide only incremental — not transformative — recovery for GERD, Lake Tana, and the Gibe/Koka, Tekeze, Tana Belse reservoirs, which remained below their historical averages through the Jun-September 2026 season. Southern Ethiopia should also anticipate dry-spell risk of up to 10 consecutive days even within an overall wetter season being predicted.

5.4.3 Recommendations and Advisories

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for stakeholders in Ethiopia.

i. Manage Gibe, Omo, and southern Ethiopian reservoirs for flood safety as southern rains intensify, while continuing drought-oriented operations for basins with limited OND signal.

ii. Extend Baro-Akobo-Sobat flood-forecasting lead times given the likelihood of a later-than-usual flood-risk window this year.

iii. iSustain drought response and water-supply contingency measures in the Ogaden, Wabishebele, and Genale-Dawa basins, which fall outside the strongest OND wet signal.

iv. Coordinate closely with Ethiopian Electric Power (EEP) on reservoir management at Tana Beles, Gibe, and Koka to balance incremental OND inflows against continued drought-year storage deficits.

v. Continue multi-channel dissemination of flood and drought advisories to irrigation managers, pastoral communities, and urban water utilities

5.5 Kenya

Kenya falls within the Lake Victoria basin in the Horn of Africa region of East Africa with a land surface area of about 583,370 km2. The Lake Victoria basin represents 8.5% of the basin drainage area in Kenya and about 1.5% in the Nile River Basin (Figure 31). The major rivers in Kenya draining into Lake Victoria are Nzoia, Mara, Nyando, Sondu-Miriu and Gucha-Migori. Lake Victoria serves as a primary source of food and income for many people living along its shores due to its vast fisheries. It provides vital transportation routes between various towns along the shoreline as well as Kenya and neighboring countries. The lake also plays a significant role in regulating the local climate, making it a crucial part of the Kenyan economy and ecosystem. various towns along the shoreline as well as Kenya and neighboring countries. The lake also plays a significant role in regulating the local climate, making it a crucial part of the Kenyan economy and ecosystem.

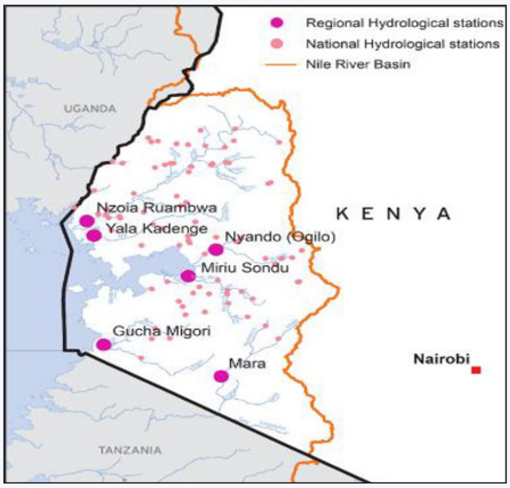


Figure 31: Map of part of the Nile Basin in Kenya

5.5.1 Performance of the JJAS 2026 Season and Impacts

The JJA 2026 season in Kenya was influenced by the southeast monsoon winds and an emerging El Niño phenomenon, which resulted in near-average to below-average rainfall across most parts of the country, occasioning receding river flows. Incidences of light rains were however witnessed in the months of June and July 2026 in parts of the Lake Victoria basin. The MAM 2026 season brought near-to-above-average rainfall across the Lake Victoria basin, with rapid flow increases on the Nzoia, Yala, Nyando, Mara, Sondu, and Gucha-Migori rivers that surpassed flood alarm levels occasioning the Migori and Nyando rivers burst their banks in Migori town and at Ahero market, prompting bridge closures and evacuations. However, observations indicated that the JJAS 2026 reverted to the forecasted below-normal, warmer-than-average signal, with rivers in the Lake Victoria basin receding sharply. Gucha-Migori was projected to fall from over 150 m3/s in May-June to under 22 m3/s by mid-September as reflected in the observed water level (Figure 32), with similarly steep declines observed on the Nyando (Figure 33), Nzoia, Mara and Sondu.

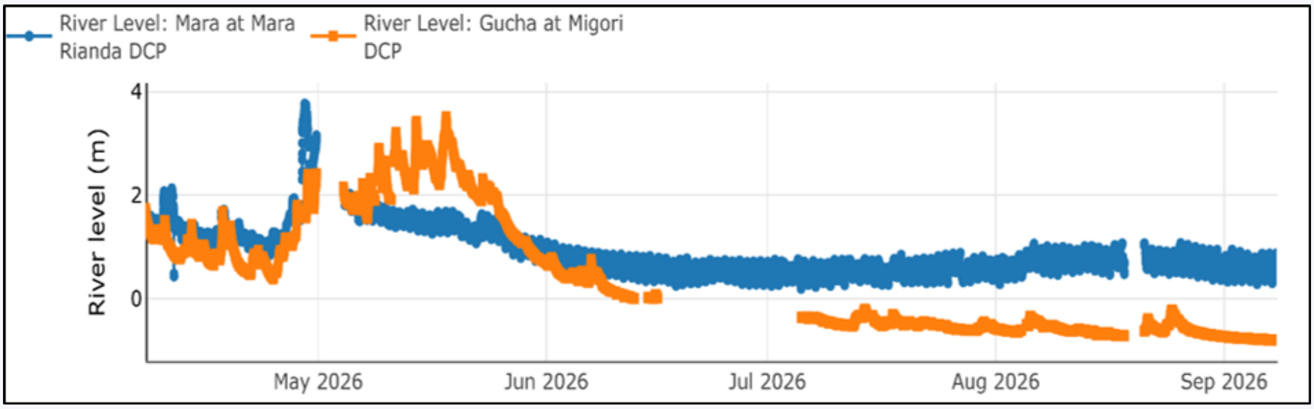


Figure 32: Mara and Gucha-Migori River observed decline water levels during the in JJAS 2026.

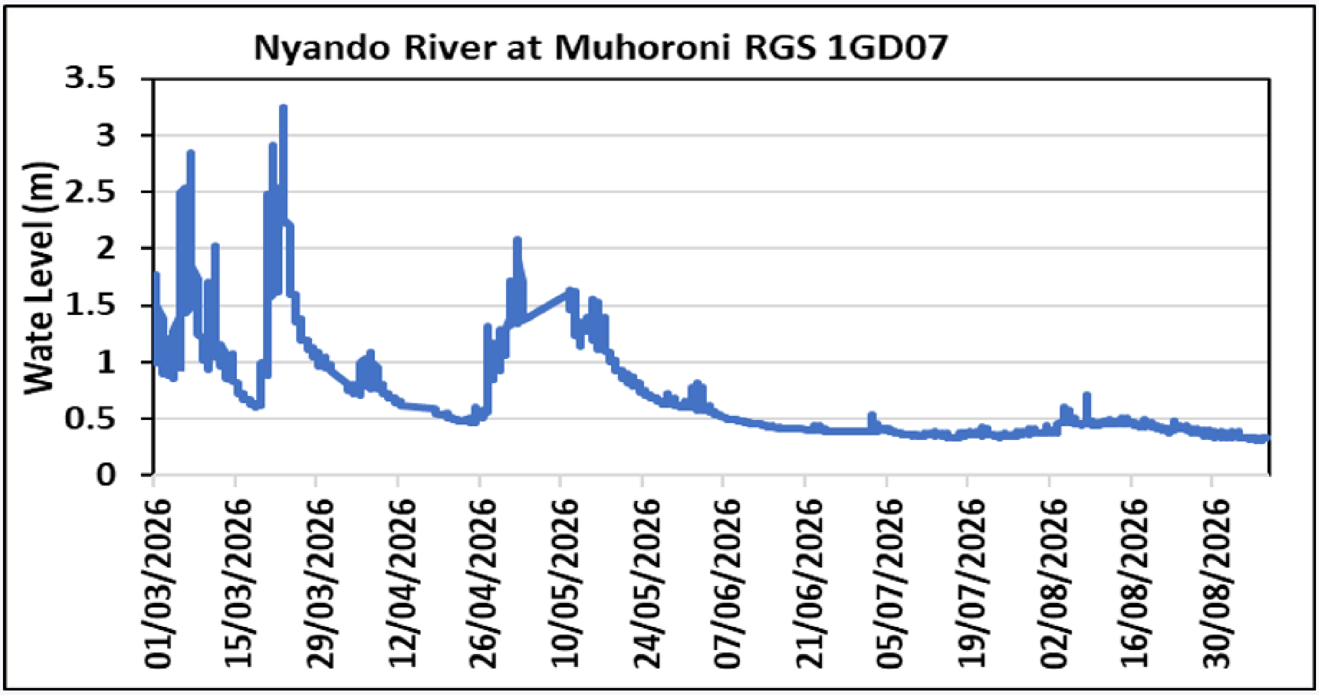


Figure 33: JJAS 2026 Observed water levels on Nyando River within the sub-basin of Lake Victoria in Kenya.

5.5.2 Climate and Hydrological Outlook for OND 2026

The Kenya Meteorological Services Authority (KMSA) climate outlook for the October-November-December (OND) 2026 indicates an above average rainfall expected in over 80% of the Country where seasonal totals could again exceed 400 mm over the Lake Victoria basin. This points to a sharp rebound in Nzoia, Yala, Nyando, Sondu, Mara, and Gucha-Migori flows from the observed JJAS low-flows trends, restoring and likely exceeding the flood risk observed during MAM 2026 in the region, including the same Migori and Ahero areas affected earlier in the year. Forecast flows indicate about 40 -75% above normal flows across the Kenyan Lake Victoria Rivers Mara, Gucha Migori (Figure 34), Sondu-Miriu, Nzoia and Nyando indicating the likelihood of bank overtopping and flood risks in the low-lying areas of the above rivers with the worst scenario for Nzoia (Ruambwa/Budalang'i flood plains) and Nyando (Ahero/Kano plains).

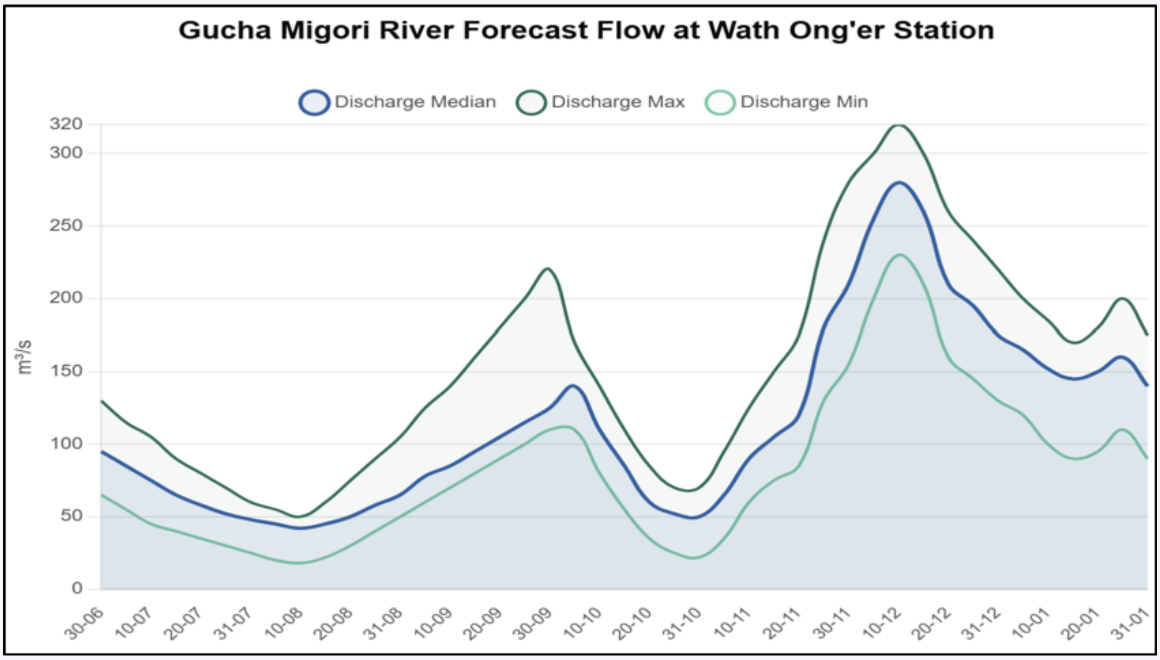


Figure 34: Gucha-Migori River forecast flow at Wath Ong'er hydrological station for the OND 2026 period

5.5.3 Recommendations and Advisories

Rising river flows above the normal are expected across the Nzoia, Yala, Nyando, Sondu, Gucha-Migori and Mara sub basins.The rivers are likely to experience above normal flows throughout the OND 2026 season. The shoreline areas are at risk of inundation due to sustained high lake water level and the anticipated above normal inflows. Therefore, the following interventions and advisories are therefore proposed.

i. Maintain and rehabilitate hydrological monitoring network for continuous flow monitoring and updates.

ii. Provide flood alerts and community based early watch advisories to the communities in the Nzoia, Nyando, Yala, Sondu, Mara, and Gucha-Migori rivers and their tributaries.

iii. Promptly repair and restore damaged infrastructure such as roads, Bridges and Culverts.

iv. Unblock and desilt drainage structures before the onset of the rains.

v. Implement Flood Disaster Response Plans at the County and National levels.

vi. Reactivate the flood early-warning and bridge/road-closure protocols used during the MAM 2026 flooding on the Migori and Nyando rivers, given the eminent elevated rainfall.

vii. Maintain and repair dykes along the lower Nzoia and Nyando rivers ahead of the OND onset.

viii. Undertake water-pollution surveillance on point-pollution sources as runoff picks up accumulated dry-season contaminants.

5.6 Rwanda

Rwanda is in the most upstream part of the Nile Basin with a land surface area of about 26,338 km2 with about 76% in the Nile River Basin representing 0.6% of the Nile Basin drainage area. The Rwandan's hydrographic system is split into two basins divided by the Congo-Nile ridge, with water systems to the west of the ridge flowing into the Congo Basin, whereas those to the east of the ridge discharge into the Nile Basin (Figure 35). The country is increasingly experiencing the impacts of climate change. Rainfall has become increasingly intense, and the variability is predicted to increase by 5% to 10%.

Changes in temperature and precipitation and their distributions are the key drivers of climate and weather-related disasters that negatively affect Rwandans. Historically, droughts, floods, and landslides have resulted in infrastructure damage, loss of lives, livelihood and property, and increased soil erosion and water pollution.

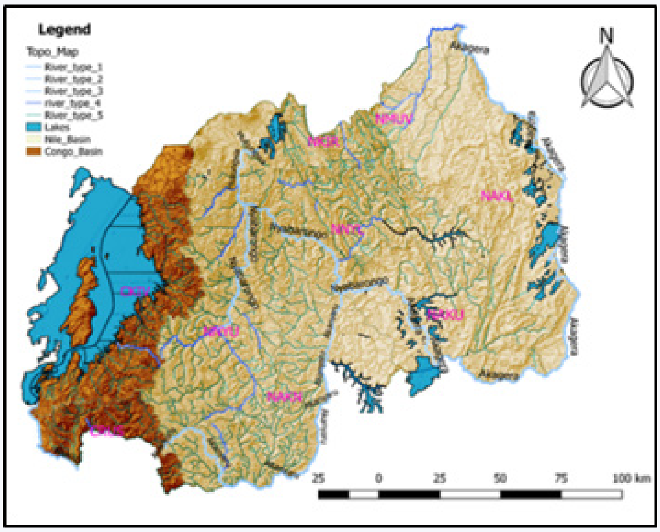


Figure 35: River Drainage network in Rwanda

5.6.1 Performance of the JJAS 2026 Season and Impacts

Rwanda's JJAS 2026 season dry season with below normal rainfall that was expected, which was confirmed by declining river and lake levels at Akagera (Kanzenze, Gatore) and Lake Rweru hydrological monitoring stations (Figure 36). The JJAS succeeded MAM season that saw a significant toll from flash floods and landslides in some parts with 145 disaster incidents, 29 deaths, and damage to about 225 hectares of crops were recorded between March and May 2026. The JJAS 2026, Rwanda's main dry season, then saw the forecast below-normal rainfall verify, with Akagera River flows at Kanzenze and Gatore decline by roughly 65% from June to September, reducing inflows to Lake Rweru and constraining Rusumo Hydropower Station generation, agricultural production, and domestic water supply.

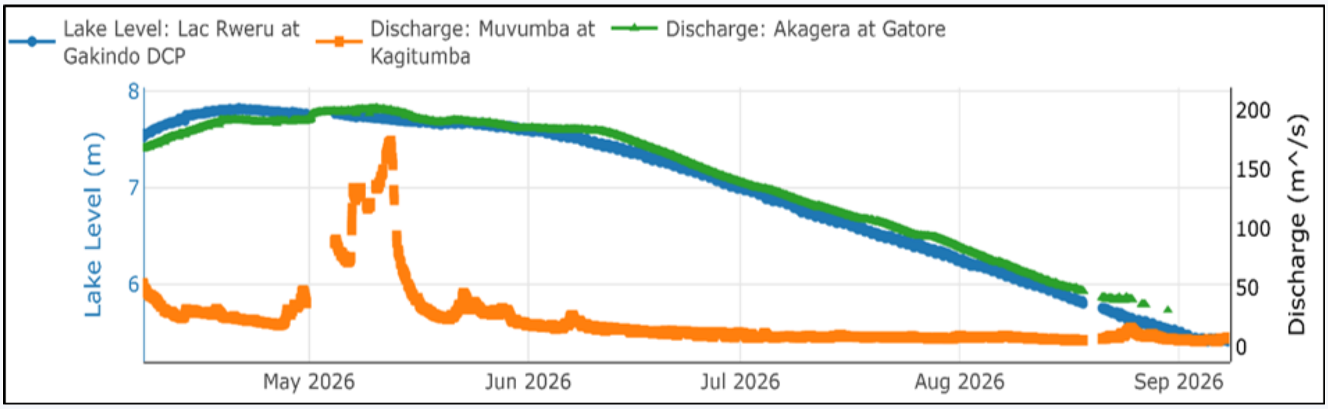


Figure 36: Observed water levels of Akagera River System (Lake Rweru Water Level at Gakindo, Flow at Gatore) and Mavumba River flow at Kagitumba during the period of June-September 2026.

5.6.2 Climate and Hydrological Outlook for OND 2026 and Implications

Western Rwanda lies within ICPAC's high-confidence OND rainfall zone, with seasonal totals expected to exceed 400 mm—among the region's strongest wet signals. The increased rainfall is likely to restore Akagera and Nyabarongo flows, replenish Lake Rweru, and boost inflows to Rusumo. The Akagera forecast flow at Kanzenze indicated a probability of above normal peaking at about 110 cubic meters per second (cms) in the first week of October and last week of December while the forecast peak outflow from Lake Rweru is expected to about 140cms in similar periods (Figure 37). This increased flow is expected in several rivers hence will mostly likely result to heighten flood and landslide risks, especially in the mountainous volcanic districts of Musanze, Burera, Nyabihu, and Ngororero, where MAM 2026 caused substantial loss of life.

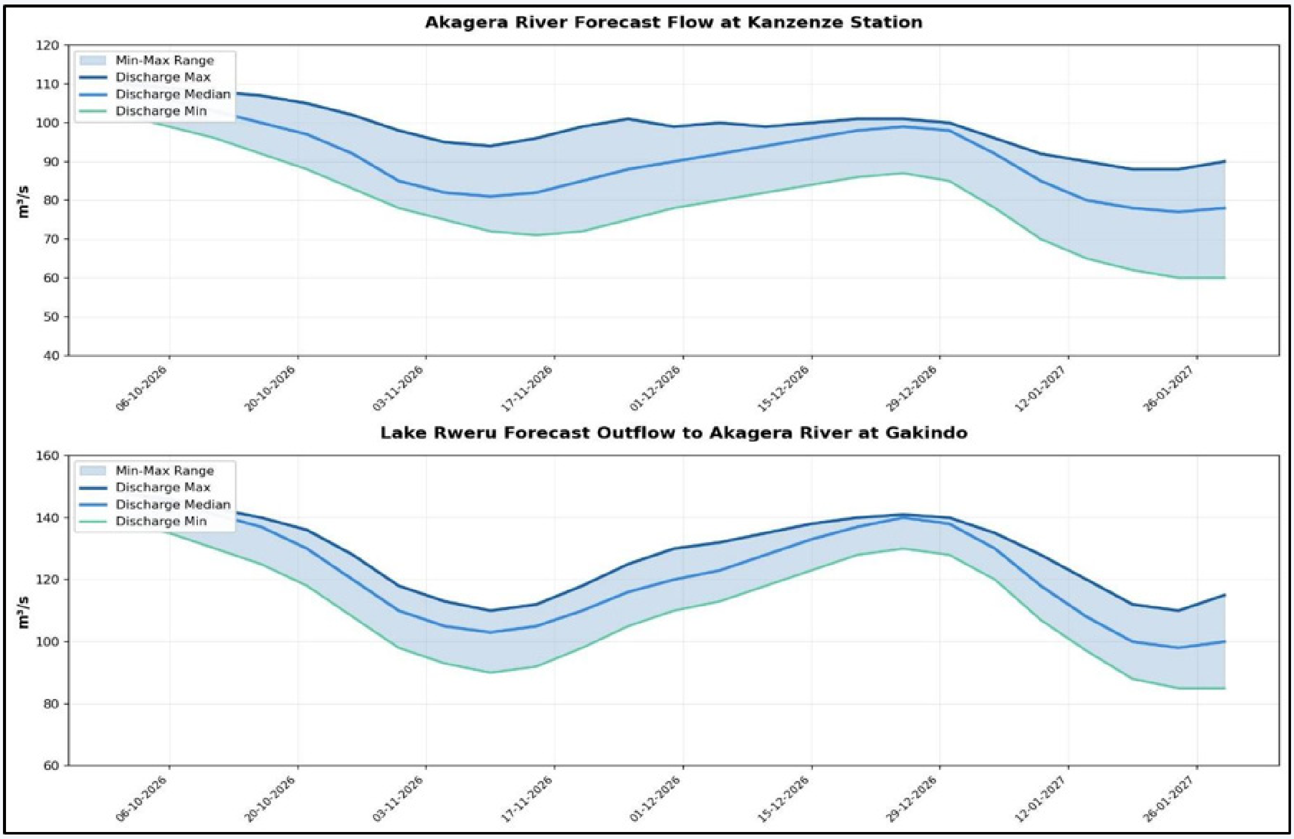


Figure 37: Forecast flow of Akagera River at Kanzenze Station and Lake Rweru Outflow covering OND 2026

5.6.3 Recommendations and Advisories

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for stakeholders in Ethiopia.

i. Activate flood and landslide contingency plans in Musanze, Burera, Nyabihu, and Ngororero, drawing directly on the March–May 2026 disaster response experience.

ii. Desilt drainage channels and inspect flood-control infrastructure (including the volcanoes-region flood-control works) ahead of the OND onset.

iii. Optimise dam and small-reservoir operations through collaboration between the Rwanda Water Resources Board (RWB) and dam operators to capture the OND recovery for storage.

iv. Continue monitoring and forecasting of Akagera River flows and Lake Rweru levels, issuing regular updates to inform rapid intervention.

v. Strengthen rural early-warning dissemination given the scale of casualties recorded in the preceding MAM 2026 season.

5.7 South Sudan

South Sudan is in the mid-stream part of the Nile Basin covering an area of about 644,329 km2 with about 98% in the Nile River Basin representing 20% of the basin drainage area. The country drainage system consists of four basins namely, White Nile, Bahr El Jebel, Sobat and Bahr El Ghazal (Figure 38). The Sudd wetland, located within Bahr-El Jebel and Bahr El Ghazel basins, is a regionally important hydrological feature in addition to the Machar Marshes in Sobat Sub basin.

The country received annual rainfall of 500mm to 1800mm. Most rivers in South Sudan are transboundary in nature-shared with neighbouring countries of Uganda, Sudan, Ethiopia and Kenya. These rivers are monitored by an eighth hydrometric station of which seven are either manual and/or automatic and one is manual. Under the NBI-Hydro met Project, five of these stations have been upgraded into fully functional regional hydrological observatories, enhancing real-time data acquisition and basin-wide interoperability. Furthermore, the re-activation of 18 flood emergency gauge stations under the Regional Climate Resilience Program (South Sudan Project) has significantly strengthened the country's capacity for hydrological monitoring, flood forecasting, and early warning dissemination during the 2026 flood season.

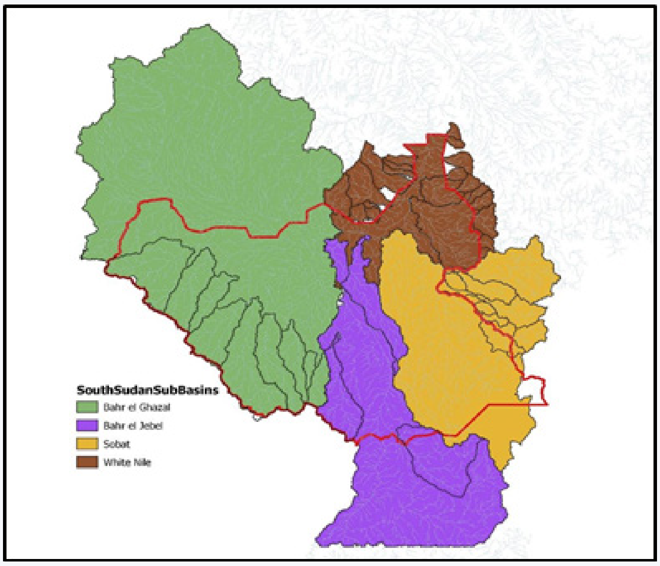


Figure 38: Sub-basins in South Sudan

5.7.1 Performance of the JJAS 2026 Season and Impacts

The JJAS 2026 outlook projected a 40-90 percent probability of below-average precipitation across much of the Nile Basin catchment, with South Sudan specifically identified as an area likely to record reduced rainfall. The outlook compared climatic conditions to strong El Niño events of 1997 and 2023, with a high probability of suppressed rainfall across core contributing catchments, compounded by basin-wide above-normal temperatures that will significantly amplify evaporative losses and hydrological stress. For South Sudan specifically, high chances (>80%) of below normal rainfall and higher chances (>85%) of above normal temperatures were expected in the four basins (Bahr-el-Ghazal, Sabat, Bahr-el-Jebel and White Nile).

The hydrological observation at key regional and national gauging stations of Bahr el Jebel River at Nimule, Aswa, Juba Mangala, and Sobat River at Anakdiar and White Nile at Malakal indicated declining trends in river water levels and flows during the JJAS 2026 (Figure 39 and Figure 41). The sectorial implications include reduced river flows and declining water levels across the four major basins of South Sudan hence constrain water supply for domestic use, livestock, and irrigation schemes and reduced soil moisture availability will impact rainfed farming systems, which are critical for food security in South Sudan. Flash flood incidences were recorded in Malakal on 18th June 2026 submerging the central market and nearby residential areas. Several houses were inundated, with clear disruption to local livelihoods. The high temperatures have increased evaporation, leading to more stress to water sources and fast drying up of water harvesting facilities.

On a positive note, the high temperatures increased evaporation of permanently inundated lands thereby opening access for relief and humanitarian organisations operating in the flooded areas of South Sudan.

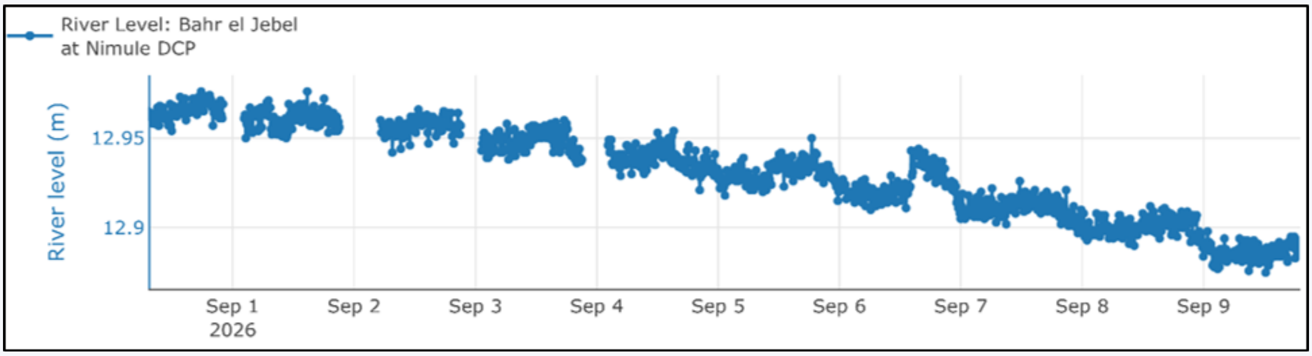


Figure 39: Observed declining river water level at Bahr el Jebel River during the September 2026

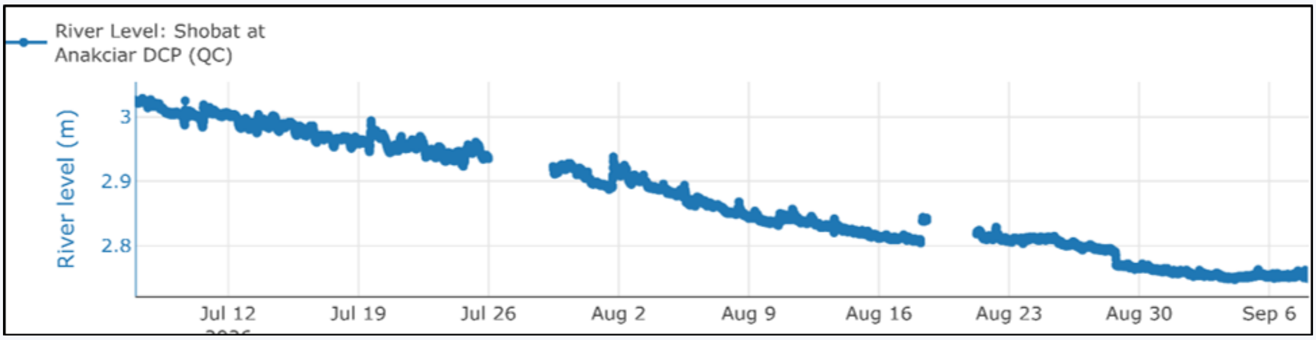


Figure 40: Observed declining water level of Sobat River during the JJAS 2026

However, observation of the White Nile River at Malakal station indicated increased water level rise most likely influenced by increased flow from Baro Akobo Sobat catchment while Bhar el Jebel River flow at Mangala remined on the decline mostly due to reduced inflow from the upstream and depressed JJAS local rainfall (Figure 41 and Figure 42).

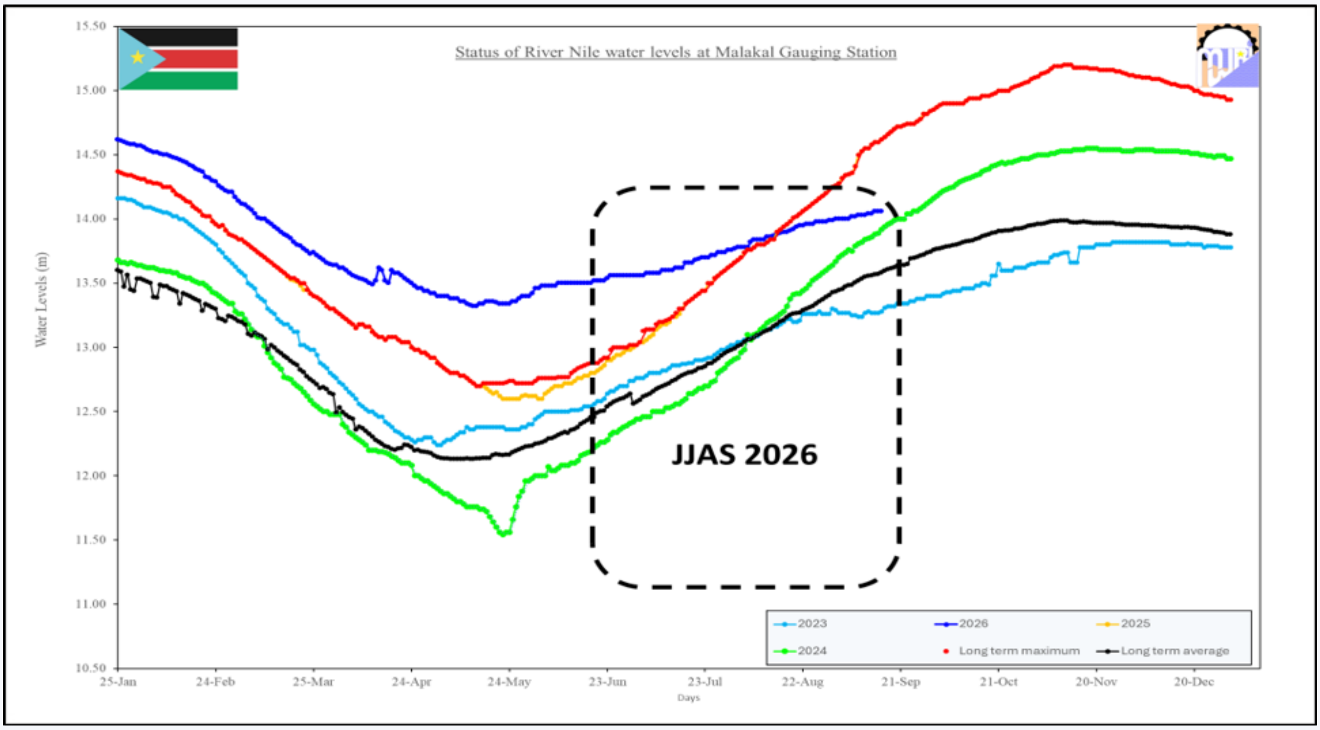


Figure 41: JJAS river water levels observations at Malakal gauge station

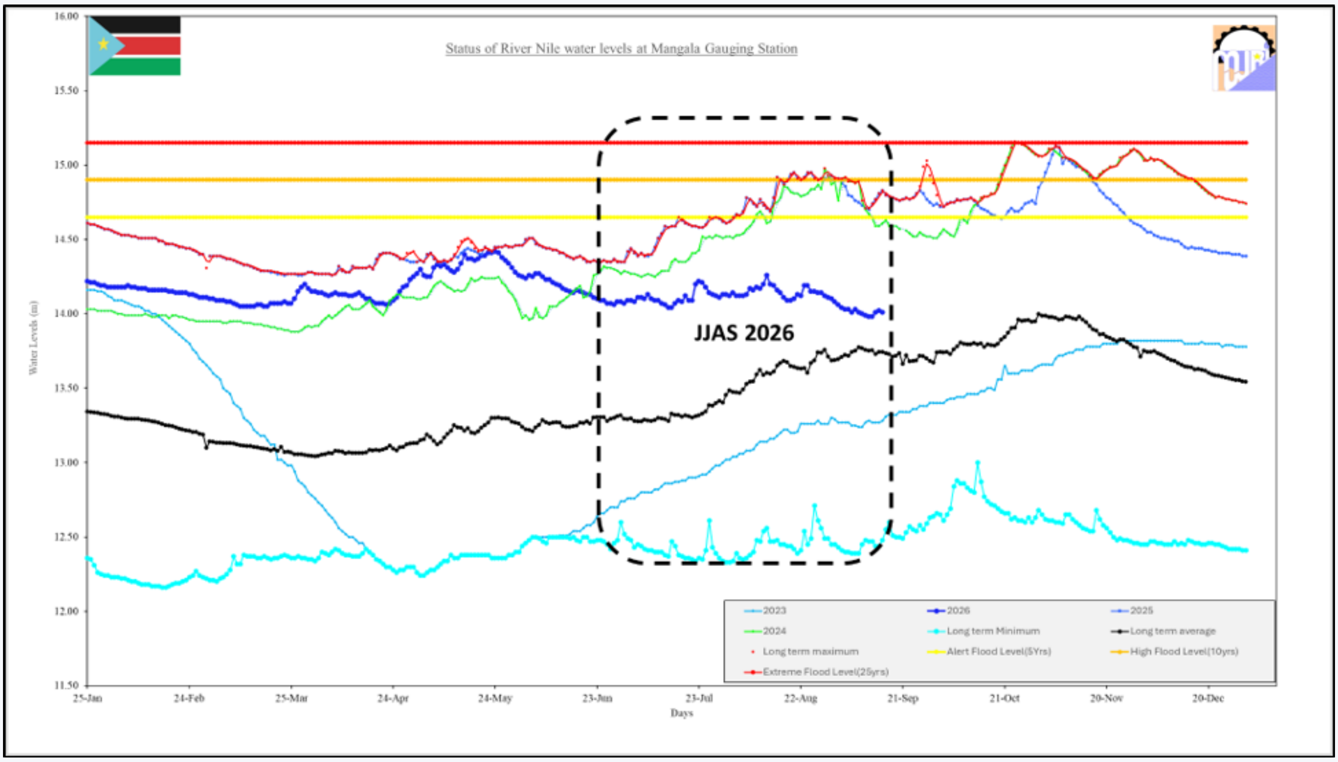
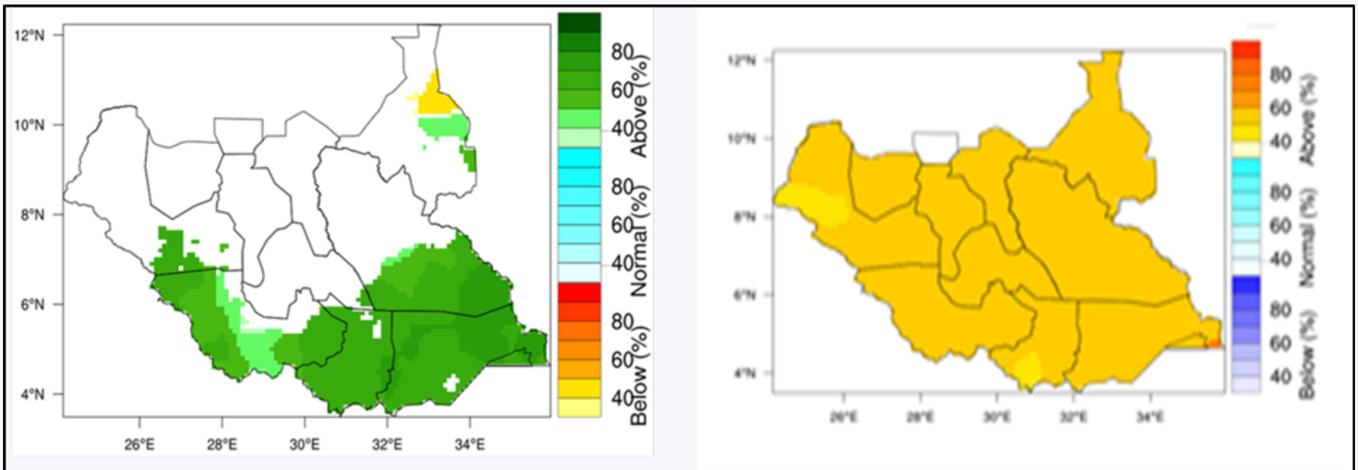


Figure 42: JJAS observations at Mangala Gauge Station

5.7.2 Climate and Hydrological Outlook for OND 2026 and Implications

The OND 2026 rainfall is expected to be mixed across South Sudan: southern and eastern catchments feeding the equatorial lake system are more likely to see wetter conditions consistent with the broader Nile Equatorial Lakes signal, supporting some recovery in Bahr el Jebel and White Nile inflow as Lake Victoria, Kyoga, and Albert outflows increase (Figure 43). Further north — in Bahr el Ghazal and parts of the Sobat basin — the OND signal is comparatively weak, meaning limited change from the JJAS baseline should be expected. Given the flash-flood fatalities recorded during MAM 2026, renewed and potentially intensified rainfall in the equatorial south carries meaningful risk to Central and Eastern Equatoria as well. Temperature across most of South Sudan are predicted to be above normal.



(a) OND 2026: Rainfall outlook **(b) OND 2026: Temperature outlook**

Figure 43:Rainfall and Temperature outlook OND2026

5.6.3 Recommendations and Advisories

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for stakeholders in South Sudan.

i. Continue clearing drainage infrastructure and repairing worn-out dykes in Juba, Bor, and the Malakal corridor ahead of renewed equatorial inflows.

ii. iMaintain flash-flood readiness in Central Equatoria (Juba, Kajokeji) and Western Bahr-el-Ghazal (Wau), given the fatal events recorded during MAM 2026.

iii. Continue desilting hafirs to increase water-harvesting capacity, particularly in areas with a weaker OND wet signal.

iv. Sustain continuous monitoring of river water levels and flows at Nimule, Juba, Mangala Malakal and Anakdier, and update flood/drought preparedness and response plans.

v. Promote transboundary hydro-meteorological data sharing with Uganda, Ethiopia and Sudan to anticipate equatorial-lake and Sobat-driven inflow changes.

vi. Dike Repair and Drainage Installation

5.8 Sudan

Sudan has a total land area of approximately 1.864 million km², of which about 1.4 million km² lies within the Nile River Basin, representing nearly 75% of the national territory and approximately 44% of the total Nile Basin drainage area. Within Sudan, the basin comprises the Blue Nile, White Nile, and Atbara River sub-basins. The Blue Nile and White Nile converge at Khartoum, forming the main Nile River, which flows northward for approximately 1,755 km before entering Egypt and reaching the High Aswan Dam (Figure 44). The hydrological regime of the Nile in Sudan is characterized by pronounced seasonality driven by monsoonal rainfall over the Ethiopian Highlands, with the majority of annual discharge occurring during the July–October period. This seasonal pattern is primarily, which contributes most of the flow to the Blue Nile and Atbara River, while the White Nile provides a more regulated baseflow, driven by rainfall over Equatorial Nile systems.

The Nile constitutes a critical socio-economic and environmental resource for Sudan. It supports extensive irrigated agriculture, supplying water for key crops such as cotton, wheat, and sorghum, and underpins some of the country's most productive agricultural systems. The river also plays a central role in hydropower generation, with major infrastructure such as the Merowe Dam depending on sustained river flows for electricity production. In addition, Nile flows contribute to the recharge of major groundwater systems. The Nile functions as an important inland transportation corridor supporting regional trade and connectivity.

Sudan is one of the most downstream countries within the Nile River system, receiving the majority of its surface water inflows from upstream transboundary sources, including both the Eastern Nile and the Equatorial Nile systems. The White Nile flood regime in Sudan is primarily influenced by inflows from the Equatorial Nile (Bahr el-Jebel) and the Sobat River, the latter draining the Baro–Akobo sub-basin in southwestern Ethiopia.

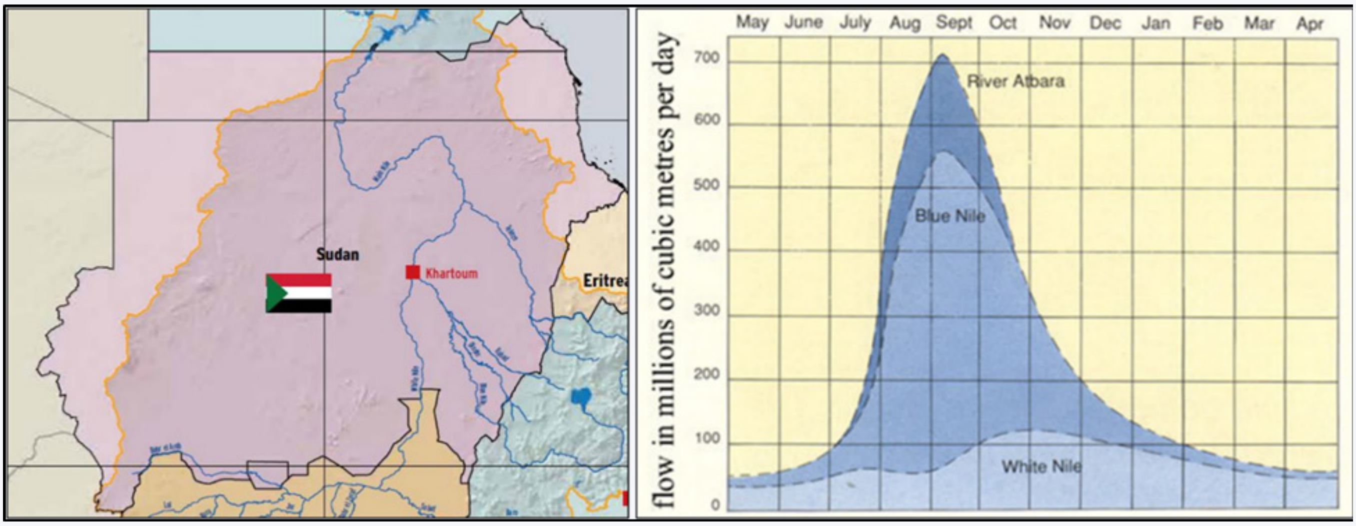


Figure 44: Nile Basin in Sudan and Nile Hydrograph

5.8.1 Performance of JJAS 2026 Season and Impacts

Rainfall recorded during June–August 2026 was substantially lower than that observed over the corresponding period in the last year and also remained below the historical average. This marked a concerning trend during the critical June–September (JJAS) rainy season, for which seasonal forecasts had indicated an increased likelihood of depressed rainfall across much of Sudan. The observed conditions were broadly consistent with these projections, with large parts of the Nile Basin catchment experiencing below-normal rainfall during the JJAS 2026 season and forecast probabilities of below-average precipitation. Of particular concern was the anticipated rainfall deficit over the Ethiopian Highlands, a key source region for the Blue Nile, which contributes the dominant share of Nile flows within Sudan during the flood season and can account for over 80% of peak flood flows.

The reduced rainfall and associated decline in Blue Nile inflows had significant hydrological and socioeconomic implications for Sudan. The Ministry of Agriculture and Irrigation reported a temporary decline in water levels across several locations, associated with reduced Blue Nile inflows. In Khartoum, exceptionally low river levels affected the operation of intake pumps at major drinking-water treatment plants, resulting in temporary shutdowns and posing a significant risk to the domestic water

The Khartoum station on the Blue Nile and the Halfaya station on the Main Nile recorded exceptionally low water levels during July and August 2026, ranging approximately 1–4 m below their normal levels (Figure 45).

Similarly, the Dinder and Rahad rivers, whose flows respond predominantly to rainfall during the June–September (JJAS) season, exhibited only modest increases in water levels and discharge. This subdued hydrological response was consistent with the below-normal to near-normal rainfall conditions experienced across their headwater catchments in the Ethiopian Highlands during JJAS 2026.

The combined effects of below-normal rainfall, above-normal temperatures, and reduced tributary inflows placed considerable pressure on regional water resources. These conditions constrained water availability for irrigation and domestic supply, reduced the potential for hydropower generation, adversely affected agricultural systems dependent on seasonal flooding, and heightened risks to food security. Overall, the JJAS 2026 season highlighted the Nile Basin's vulnerability to climate variability and demonstrated the complex interaction between natural precipitation variability, catchment hydrological response, and upstream reservoir and dam operations.

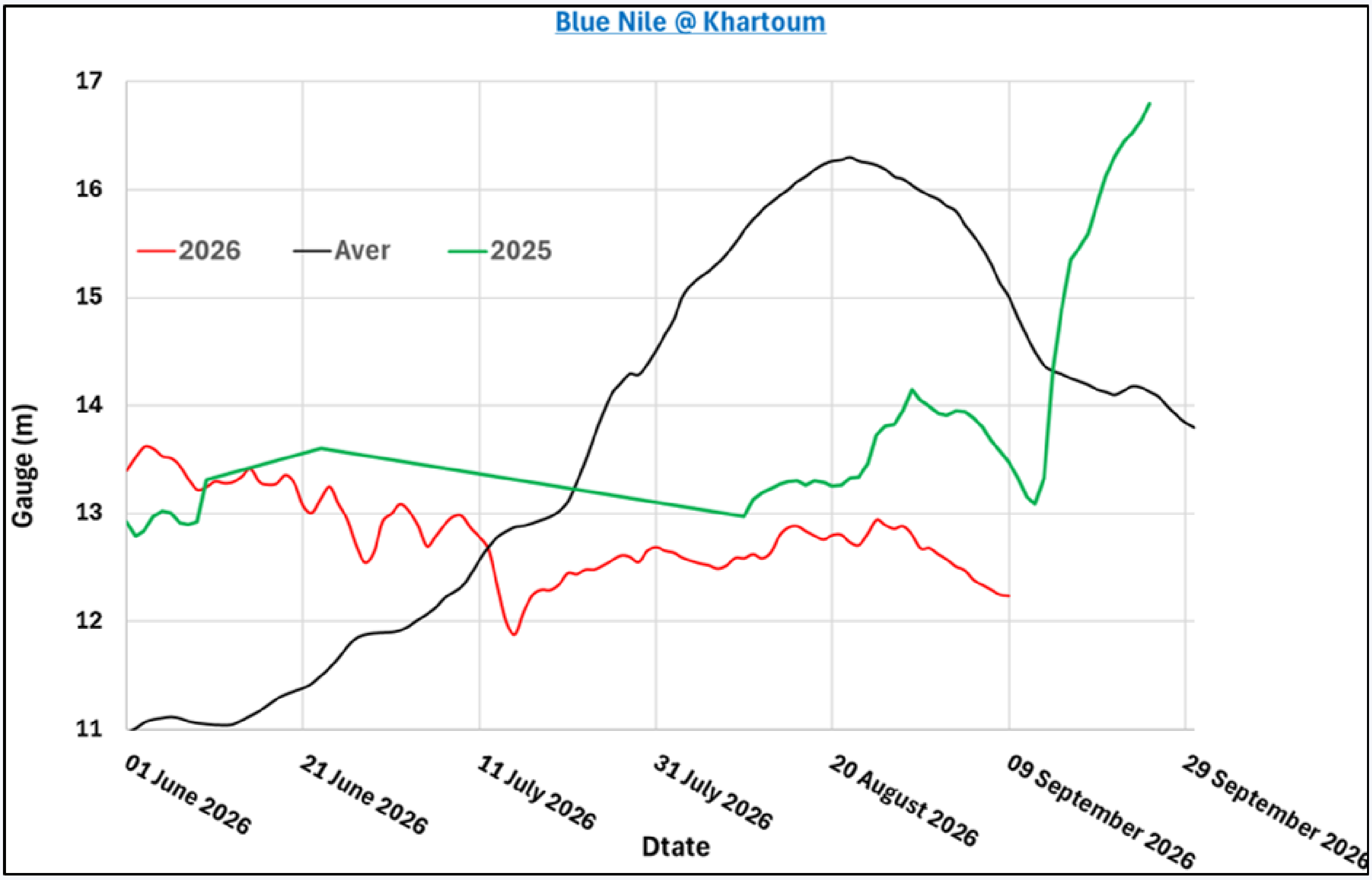


Figure 45: Observed River water level trend on Blue Nile River at Khartoum station during the JJAS 2026 period

5.8.2 Climate and Hydrological Outlook for OND 2026 and Implications

The October–December (OND) 2026 season needs to be interpreted differently for Sudan than for much of equatorial East Africa. ICPAC's GHACOF-74 outlook indicates generally wetter-than-normal conditions across substantial parts of the Greater Horn, associated with the strengthening El Niño, but the strongest rainfall signal is concentrated farther south and east, particularly southern Ethiopia, Somalia, Kenya and the Lake Victoria region.

For Sudan, OND largely coincides with the withdrawal of the main rainy season, so rainfall contribution to the Blue Nile, Atbara, Dinder and Rahad catchments normally decreases rapidly. The Sudan Meteorological Authority's September–December 2026 outlook indicates that rainfall will generally decline after September across most of the country (Figure 46). An important exception is the Red Sea coastal zone, where above-normal rainfall is indicated particularly during November–December, increasing the potential for localized flash flooding

The hydrological situation during OND 2026 is expected to be dominated by the recession of flows generated during JJAS, rather than by rainfall occurring within Sudan during OND. This is especially relevant because the preceding JJAS 2026 season was characterized by substantial rainfall deficits across important portions of Sudan and the upstream Eastern Nile catchments. ICPAC had forecast below-normal JJAS rainfall over much of Sudan and Ethiopia, with particularly strong dry probabilities over parts of Ethiopia and southern Sudan.

Consequently, Blue Nile and Main Nile flows are expected to continue their seasonal recession from October onward, while the highly seasonal Dinder and Rahad rivers should decline substantially toward low-flow conditions. The Atbara system should similarly transition toward its low-season regime. Actual downstream flows, however, will not depend on rainfall alone: reservoir storage and

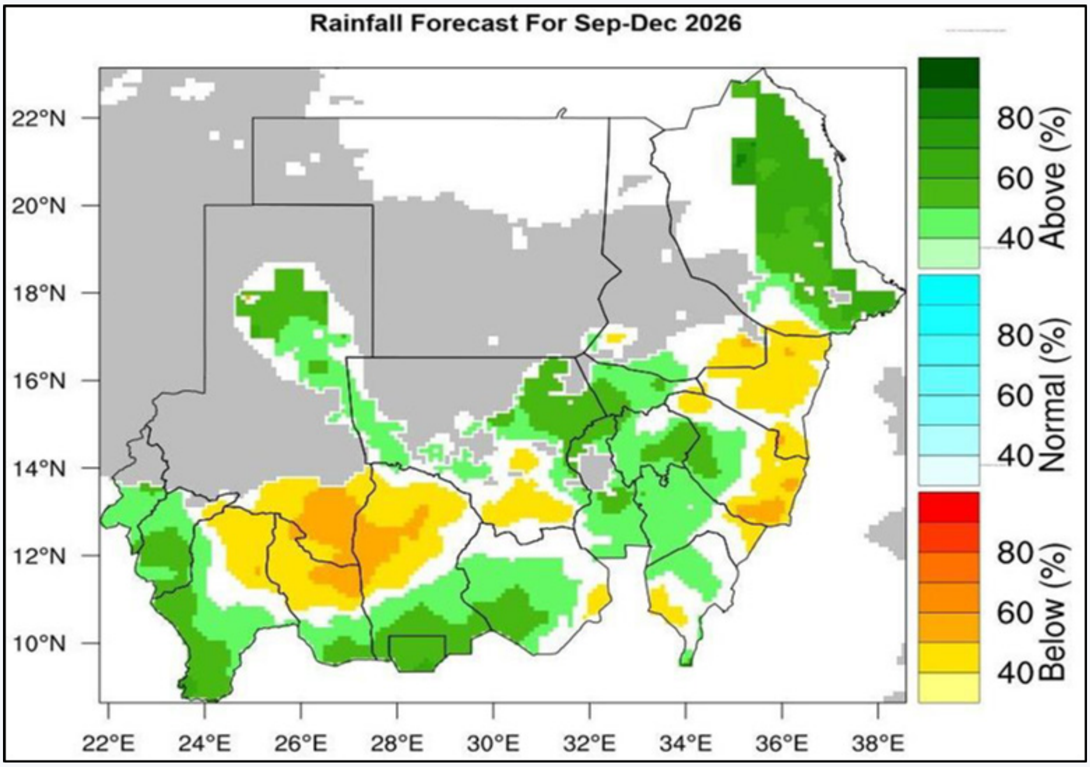


Figure 46: Sudan's rainfall forecast for OND 2026 Season

operational releases from upstream dams can substantially modify the natural hydrograph, so observed river levels and discharge should remain the principal basis for operational decisions.

The White Nile may provide a relatively more persistent contribution because its hydrology reflects storage and rainfall over the Nile Equatorial Lakes and South Sudan systems. The regional OND outlook indicates wetter conditions in parts of this broader upstream region, meaning that White Nile contributions should be monitored closely even while Sudan's locally generated runoff decreases.

Main implications

- Reduced river flows in the Blue Nile, Atbara, Dinder and Rahad as the flood season ends.
- Lower riverine flood risk, but localized flash floods may remain possible in Red Sea State.
- Greater reliance on reservoir storage and releases for irrigation, domestic water supply and hydropower.
- Potential water shortages if the low-flow conditions following JJAS 2026 persist.
- Increased irrigation demand during preparation for the winter agricultural season.

5.8.3 Recommendations and Advisories

i. Optimize reservoir operations to conserve available water and meet dry-season irrigation, domestic supply, and hydropower needs.

ii. Strengthen hydrological monitoring of the Blue Nile, White Nile, Atbara, Dinder, Rahad, and Main Nile.

iii. Prioritize efficient water allocation during the winter irrigation season, particularly if below-normal flows persist.

iv. Maintain flash-flood preparedness in vulnerable areas in Red Sea State

v. Regularly update forecasts using observed rainfall, river flows, upstream conditions, and regional outlooks.

vi. Focus water-resource planning on drought-year storage management rather than flood response, given Sudan's limited direct OND rainfall signal.

5.9 Tanzania

Tanzania lies in the upstream part of the Nile Basin, covering approximately 945,100 km², of which about 12% falls within the Nile River Basin. This area represents around 2.7% of the entire Nile Basin drainage area. The Lake Victoria Basin within Tanzania supports a population of about 15 million people and is divided into five catchments: Kagera, Mara, Simiyu, Magogo-Moame, and Isanga (Figure 47). The main rivers in these catchments include the Kagera, Simiyu, Mbarageti, Grumeti, Duma, Mara, Ngono, Magogo-Moame, Isanga, and Mori.

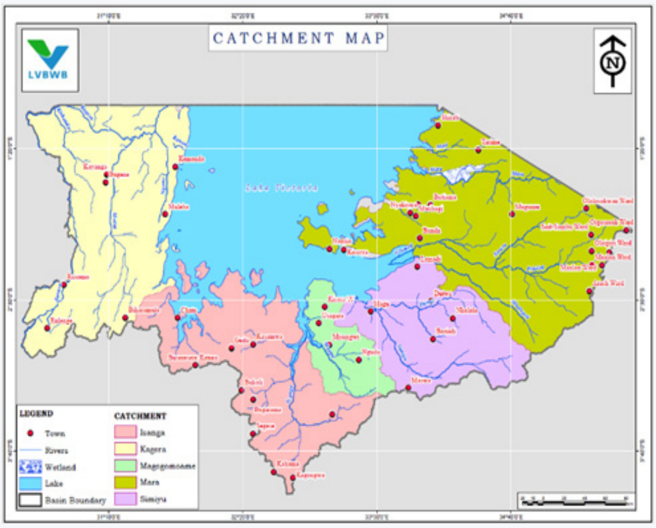


Figure 47: Lake Victoria Basin drainage area in Tanzania

5.9.1 Performance of JJAS 2026 Season

Tanzania's Lake Victoria basin catchments (Kagera, Mara, Simiyu, Magogo-Moame, Isanga) received normal-to-above-normal rainfall (60–500 mm) during MAM 2026, with river inflows — particularly in the Mara catchment — extremely high compared to MAM 2025, though Lake Victoria's water level remained broadly similar to the prior year. JJAS 2026, a dry-season period for Tanzania, saw the forecast below-normal, warmer-than-average conditions verify, with Kagera River flows at Kyaka Ferry projected to remain below the 1997 analogue trajectory (300–210 m3/s) and Rusumo Hydropower Station inflows projected to decline from 289 m3/s to around 188 m3/s by late September — well short of the ~320 m3/s needed for the station's optimal 80 MW output shared across Rwanda, Burundi, and Tanzania. However, it was observed that Kagera River flows remained above 200m3/s sustained by the stable flow from Lake Rweru in Rwanda while Ruvuvu River flows remained declining and variable during the JJAS 2026 season (Figure 48). Similarly, most rivers in the Lake Victoria Basin registered more declining trends during the JJAS 2026 season compared to 2025 similar period (Figure 49).

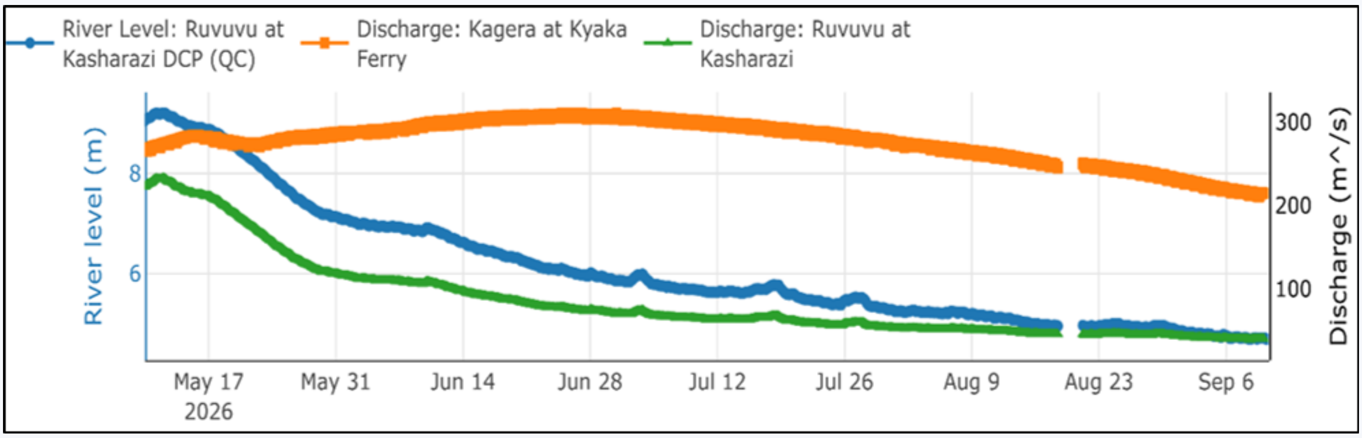


Figure 48: Observed trend of river flows and water level on Ruvuvu River at Kasharazi and Kagera River at Kyaka Ferry for the JJAS 2026

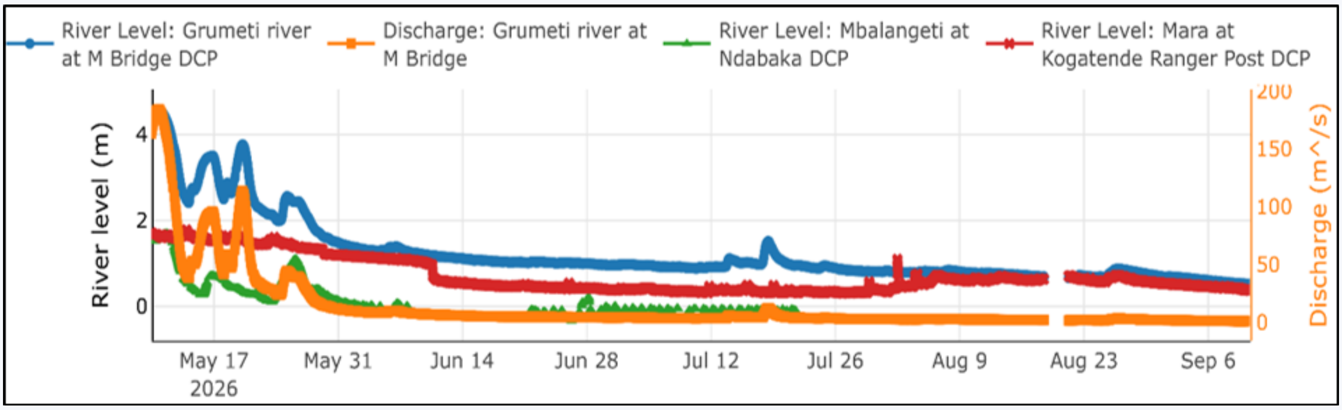


Figure 49: Observed Mara River and Gurumeti River flows and water level during the JJAS 2026 season

5.9.2 Climate and Hydrological Outlook for OND 2026

Lake Victoria basin in the Tanzania side including the Kagera, Mara, Simiyu, Magogo-Moame, and Isanga catchments is expected to experience enhanced rainfall during the October–December (OND) 2026 season. According to the Tanzania Meteorological Authority (TMA), the Lake Victoria Basin is forecast to receive average to above-average rainfall, with rainfall expected to commence from the fourth week of September to the first week of October 2026 and an increase particularly anticipated in November (Figure 50). This outlook is consistent with the broader ICPAC forecast, which places western Tanzania, including the Kagera catchment and the other catchments, within a high-confidence zone of more than 400 mm of OND rainfall. The anticipated increase in rainfall is likely to support a substantial recovery in flows within the Kagera, Mara, Simiyu, Magogo-Moame and Isanga catchments and improve inflows to the Rusumo Hydropower Station as the Ruvuvu and Akagera tributary systems respond. However, the increased rainfall may also elevate flood risk in low-lying areas of all the mentioned catchments (Figure 51 and Figure 52). Given the preceding JJAS rainfall deficit, a time lag may occur between the onset of renewed rainfall and the full recovery of river flows, storage levels, and hydropower generation. It is forecasted that Ruvuvu river inflow to Rusumo is most expected to be between 150 to 210m3/s while Kagera River outflow into Lake Victoria is expected to vary between 300-650 m3/s from October to December 2026.

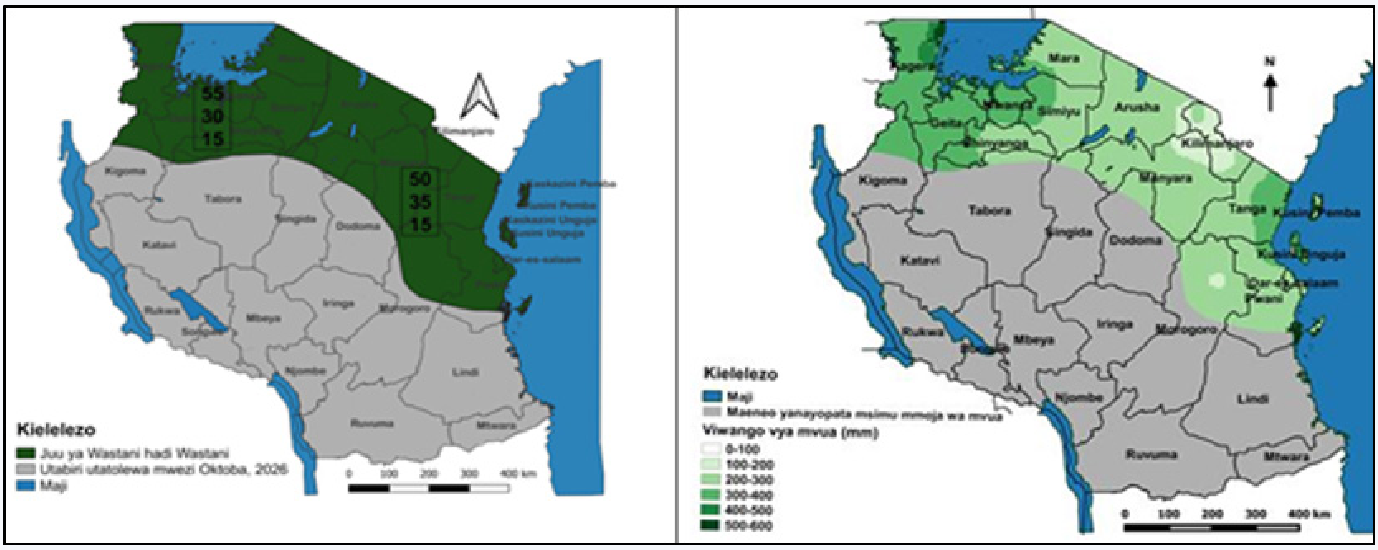


Figure 50: Comparison between OND 2026 Season and LTA of (1991-2020)

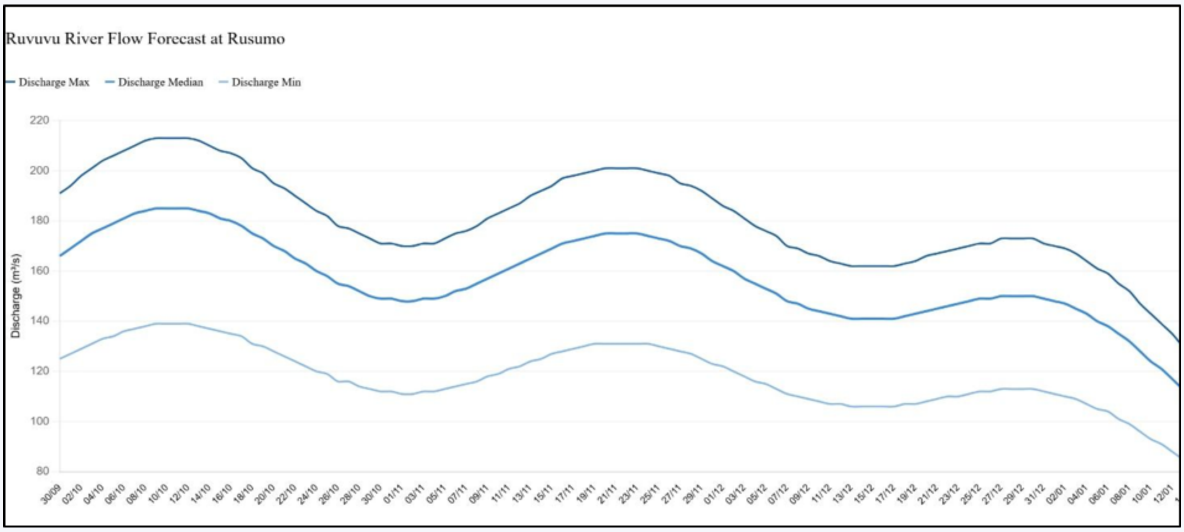


Figure 51: Probabilistic Ruvuvu River forecast for to Rusumo during the OND 2026 Season

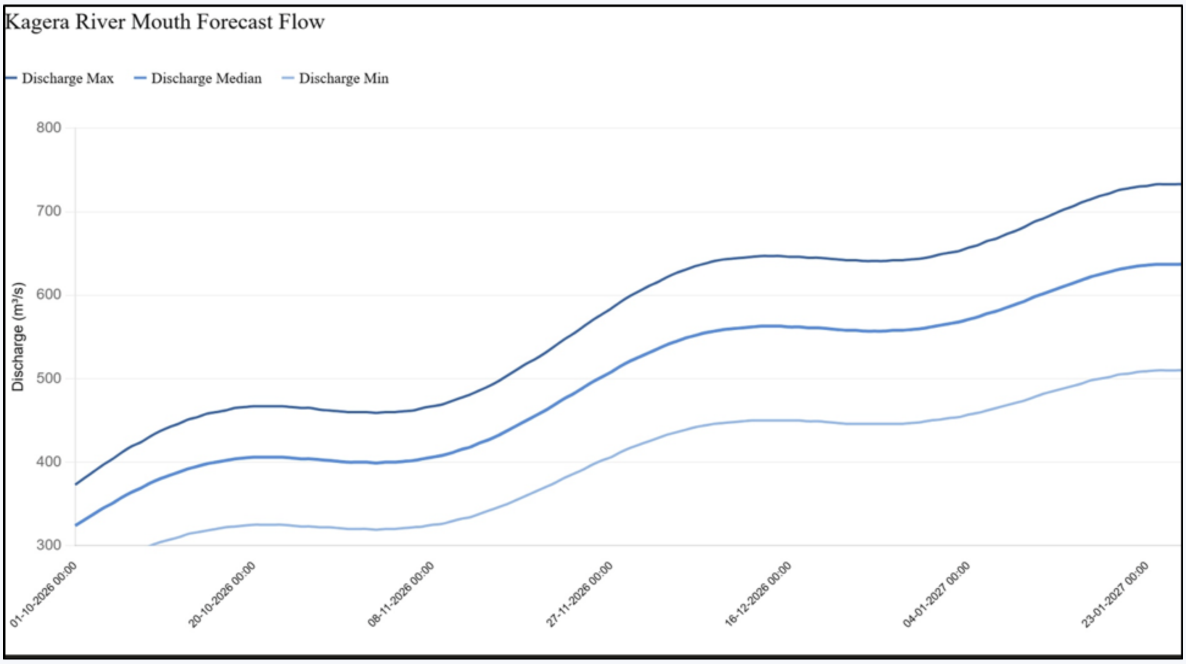


Figure 52: Forecast outflow of Kagera River for OND 2026 season

5.9.3 Recommendations and advisory

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for stakeholders in Lake Victoria Basin, Tanzania.

i. Rehabilitate flood-damaged infrastructure — roads, bridges, drainage systems — in the Kagera floodplain and Lake Victoria basin ahead of the OND rains, building on lessons from the MAM 2026 season.

ii. Monitor Lake Victoria shoreline conditions and water levels in dams, rivers, and reservoirs to update and manage the transition from JJAS drought to renewed flood risk.

iii. Coordinate with Rwandan and Burundian counterparts on data and information sharing and Rusumo Hydropower Station inflow management as Kagera/Ruvubu flows recover.

iv. Communicate water-related information to communities to support efficient water use during the recovery phase while flood risk is still building.

v. Continue monitoring water levels in dams, rivers, and reservoirs across basins not primarily driven by OND rainfall, to sustain supply into 2027.

5.10 Uganda

Uganda, a landlocked country in Eastern Africa, lies almost entirely within the Nile Basin, with 98% of its 235,880 km² territory contributing about 7.4% of the basin's drainage area. Its hydrology is dominated by a network of rivers, lakes, wetlands, and aquifers, with Lake Victoria as the principal source of the White Nile River (Figure 53). The Victoria Nile links Uganda's major lakes Victoria, Kyoga, and Albert, forming a natural regulation system that buffers seasonal variability and sustains flows downstream. The country's equatorial climate with bimodal rainfall supports relatively stable runoff, while tributaries, wetlands, and groundwater maintain base flows and ecological balance. Uganda's water system underpins hydropower, irrigation, and navigation, making it central to Nile Basin water security and cooperation.

Figure 53: Drainage network and water zones in Uganda

5.10.1 Performance of JJAS 2026 Season and Impacts

Uganda's MAM 2026 rainfall was near-normal to normal, with early onset around Lake Victoria and parts of the eastern region but late onset in the north-west and north-east. This raised Lake Victoria levels by 0.40 m (though still 0.38 m below the 2024 maximum), Lake Kyoga by 0.27 m, and Lake Albert by 0.25 m. The JJAS 2026 then brought the forecast below-normal rainfall (55% probability) and warmer-than-average temperatures across most of the country, with major lake levels was expected to remain comparatively steady through the dry season irrespective of the forecast, given their large buffering capacity. As per the forecast of JJAS, the drop in lake water levels of the major Lakes in relation to the highest ever recorded were observed as Victoria by 1.11m, Kyoga by 0.84m and Albert by 1.72m (Figure 54).

5.10.2 Climate and Hydrological Outlook for OND 2026 and Implications

Uganda is expected to see wetter-than-normal OND 2026 conditions, particularly in the south-west and north-east, with near- to above-normal conditions across the central region and Lake Victoria basin — consistent with the broader Nile Equatorial Lakes wet signal. This is expected to support recovery in Lake Victoria, Kyoga, and Albert levels from the JJAS lows, with a corresponding rise in Victoria Nile discharge feeding into South Sudan and Sudan. As the natural regulator for the equatorial lakes system, Uganda's lake-level management, this OND will materially shape the pace and scale of White Nile recovery downstream. The country's forecast for the SOND 2026 season (Figure 55).

Based on the 2026 simulation and forecast for OND, Lake Victoria is anticipated to experience a significant water level rise of approximately 1.2 meters (from ~1135.4m to ~1136.6m) between October 2026 and February 2027 and above the 2025 observed water levels, driven primarily by substantial rainfall forecasted during the October-November-December (OND) season and extending into early 2027 (Figure 18). The rapid rise of Lake Victoria is projected to trigger a rise in Lake Kyoga water levels rising by at least 2 meters between October 2027 and February 2027 enhanced releases and rainfall over the lake and the lake catchment.

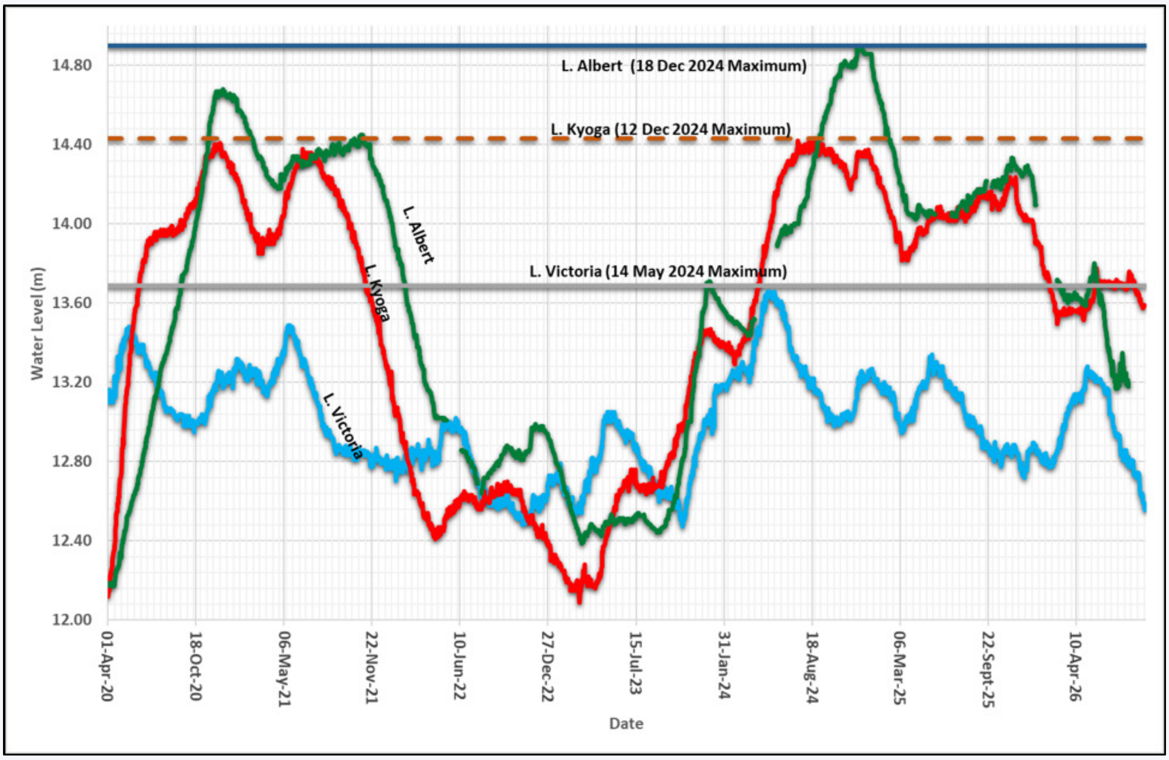


Figure 54: Comparison of the current water levels to the maximums ever recorded for lakes Victoria, Kyoga and Albert including JJAS 2026

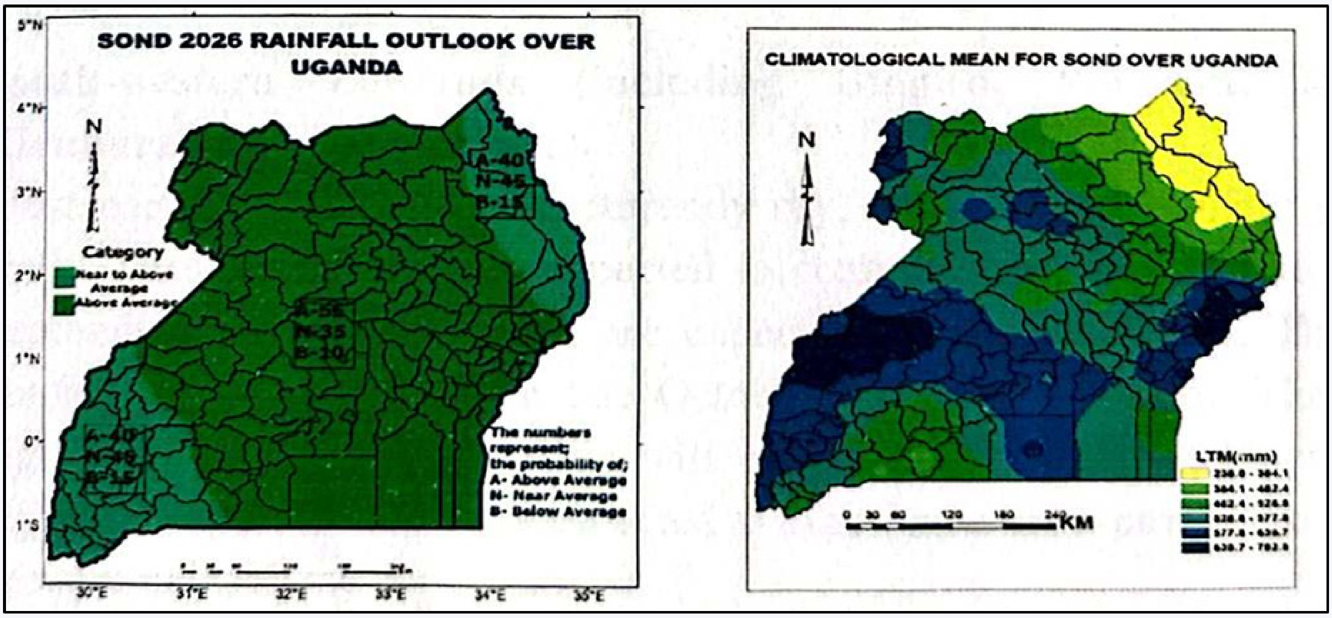


Figure 55: SOND Season and Rainfall Climatology rainfall outlook

The projected rapid rise of Lake Victoria water levels and enhanced releases is likely to trigger a significant increase in Lake Kyoga water levels, with forecasts indicating approximately 2.2 meters between October 2026 and February 2027 and remaining above the observation of 2025. This substantial elevation is driven by a combination of enhanced releases from upstream water bodies and increased rainfall over both the lake surface and its broader catchment area. As illustrated in the forecast, Lake Kyoga's water level is expected to climb from approximately 1036 meters in mid-2026 to around 1038.2 meters by early 2027, concurrent with a notable increase in discharge rates at Masindi Port on Kyoga Nile River (Outflow for Lake Kyoga) and increased discharge at Mbulamuti on Victoria Nile River (Outflow of Lake Victoria and release from the cascaded hydropower stations) hence inflow to Lake Kyoga (Figure 56). This cascading effect demonstrates the hydrological interconnection between the two major water bodies, where Lake Victoria's expansion directly amplifies inflow into Lake Kyoga and Lake Albert, fundamentally altering water availability and discharge patterns across the region with the impact felt by downstream countries; South Sudan, Sudan and Egypt. The synchronized rise in both water level and discharge suggests intensified hydrological stress that could have significant implications for water resource management, infrastructure resilience, and flood risk mitigation strategies in the lake basin and downstream areas along the Nile River system.

The lake level rise and enhanced releases carries important hydrological implications not only for Uganda but for the region: positive implications include enhanced water availability for domestic supply, irrigation, and agricultural productivity across the Lake Victoria Basin, as well as increased hydropower generation potential at regional dams that depend on adequate water levels. However, the rapid and pronounced rise also presents potential flood risks in low-lying riparian areas and communities surrounding the lake, necessitating flood preparedness and early warning systems. Additionally, the elevated water levels are projected to sustain through February 2027, which will influence downstream water flow patterns in the Nile River system and affect water management decisions across Kenya, Uganda, and Tanzania. The forecast underscores the critical importance of integrated water resource management and coordinated regional response strategies to harness the benefits of increased water availability while mitigating flood-related hazards and ensuring equitable water allocation among competing demands.

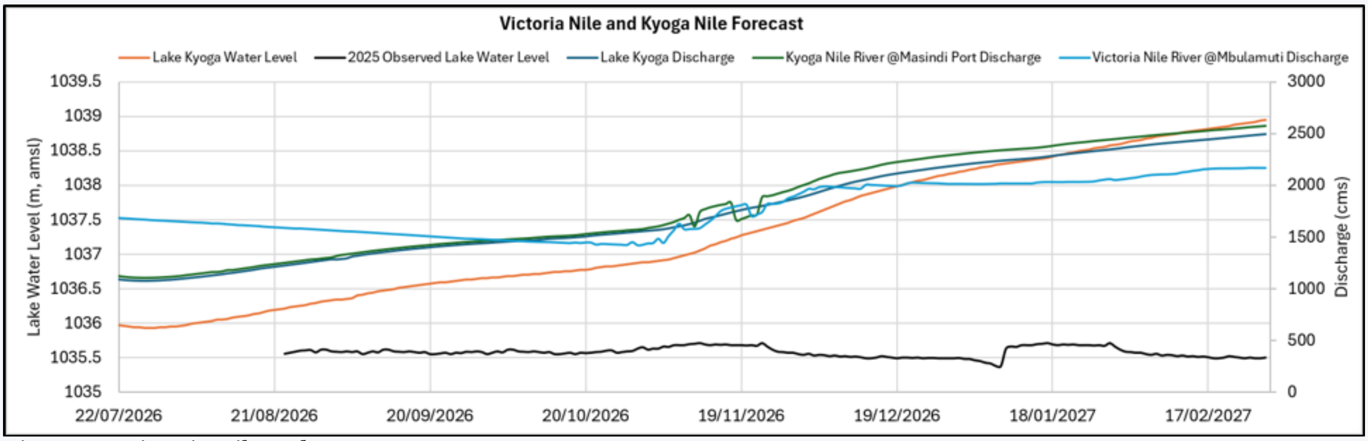


Figure 56: Victoria Nile and Kyoga Forecast

5.10.3 Recommendation and Advisory

Based on the current climatic and hydrological observations and forecast, the following recommendations and advisory are issued for stakeholders in Uganda.

i. Continue close monitoring of Lake Victoria, Kyoga, and Albert water levels to manage the balance between storage recovery and flood-control releases.

ii. Update downstream countries (South Sudan, Sudan, Egypt) promptly on prevailing and forecast lake conditions as the recovery proceeds.

iii. Rehabilitate and safeguard hydromet monitoring and data management infrastructure for reliable data capture and management ahead of the OND 2026 rains to ensure continued reliable monitoring.

iv. Create community awareness in the north-east and south-west — where the strongest wet signal is expected — on flood-aware land preparation and drainage.

v. Maintain optimum water allocation and safe-release protocols at Victoria Nile outflow points as inflows increase.

6. BASIN WIDE RECOMMENDATION AND ADVISORY

6.1 Increased Likelihood of Above-Normal Rainfall Conditions

i. Activate flood early-warning systems (NB-FFEWS, EN-FFEWS) ahead of and during the OND onset, particularly for the Lake Victoria shoreline, Kagera floodplain, and Baro-Akobo-Sobat, Nzoia, Nyando and Guch-Migori lowlands.

ii. Clear drainage infrastructure, dykes, and culverts before the rains intensify, especially in areas still recovering from JJAS 2026 dry-season neglect.

iii. Issue low-flow-to-flood transition advisories to water utilities and irrigation schemes that had activated drought protocols during JJAS 2026.

iv. Increase surveillance for water-borne disease and post-flood water-quality risk in flood-prone settlements, drawing on lessons from the MAM 2026 flooding.

v. Pre-position flood response and evacuation resources in historically flood-affected priority hotspots: Nyanza/Rift Valley Kenya, Bujumbura/Gatumba Burundi, north-west Rwanda, the Kagera floodplain shared by Tanzania and Uganda, the Juba–Bor–Malakal corridor in South Sudan, and Nord-Kivu, DR Congo.

vi. Communicate the risk of short intraseasonal dry spells (up to 10 days) within the wetter overall season to rainfed farmers and pastoralists in southern Ethiopia, north-eastern Uganda and South Sudan.

vii. Optimise reservoir operations basin-wide to capture the OND recovery for storage while maintaining flood-control buffers, given the sharp swing from the JJAS drought.

viii. Invest in flood-resilient infrastructure — elevated roads, flood-proof granaries, protected water intake structures, reinforced dykes — in repeatedly inundated areas identified during both the MAM and JJAS 2026 seasons.

ix. Strengthen transboundary hydro-meteorological data sharing so that upstream (Nile Equatorial Lakes) flood signals are communicated promptly to downstream Member States.

x. Enhance both technical and institutional capacity for flood forecasting, management, and post-event recovery across Member States.

xi. Mainstream climate-smart agriculture practices to capitalise on the above-normal season through improved water harvesting and soil-moisture conservation ahead of the next dry season.

6.2 Increased likelihood below normal rainfall Conditions

6.2.1 Key Recommendations and Advisories

i. Maintain drought contingency planning in Sudan, northern South Sudan, and central/northern Ethiopia, where OND contributes little to annual totals and JJAS deficits are unlikely to be materially offset.

ii. Continue reservoir storage conservation measures Blue Nile system dams (GERD, Roseires, Sennar, Merowe) pending the next JJAS filling season.

iii. Sustain water-trucking and alternative water-supply logistics in water-stressed urban and peri-urban centres in areas outside the OND wet signal.Continue Early Warning–Early Action (EWEA) protocols for pastoral and agropastoral communities in drought-affected zones.

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6.3 Cross Cutting Recommendations

i. Use national-level seasonal forecasts (from NMHSs) for local response planning, as sub-national variability can differ materially from the regional ICPAC signal — Kenya's national outlook, for example, will further downscale the regional picture.

ii. Update flood-prone-area maps to reflect any changes observed during the 2026 MAM and JJAS seasons.

iii. Maintain continuous monitoring of river and lake levels through the Nile Basin Regional Hydrological Monitoring System, the Nile DEWS, and NB-FFEWS/EN-FFEWS platforms to track the rate of recovery from the JJAS 2026 drought and to catch any transition to flood risk early.

iv. Standardise water-level gauging systems across the basin by harmonising zero-gauge references to a common datum.

v. Ensure early-warning information reaches communities through multiple trusted channels — local radio, community meetings, extension and health workers, religious leaders, schools, disaster management committees, and mobile-phone alerts — recognizing that a forecast has little protective value if it remains confined to technical reports and government offices.

vi. Update NB-FFEWS and EN-FFEWS to reflect newly identified flash-flood-prone areas by country, based on the 2026 MAM and JJAS event record

7. ACKNOWLEDGMENT

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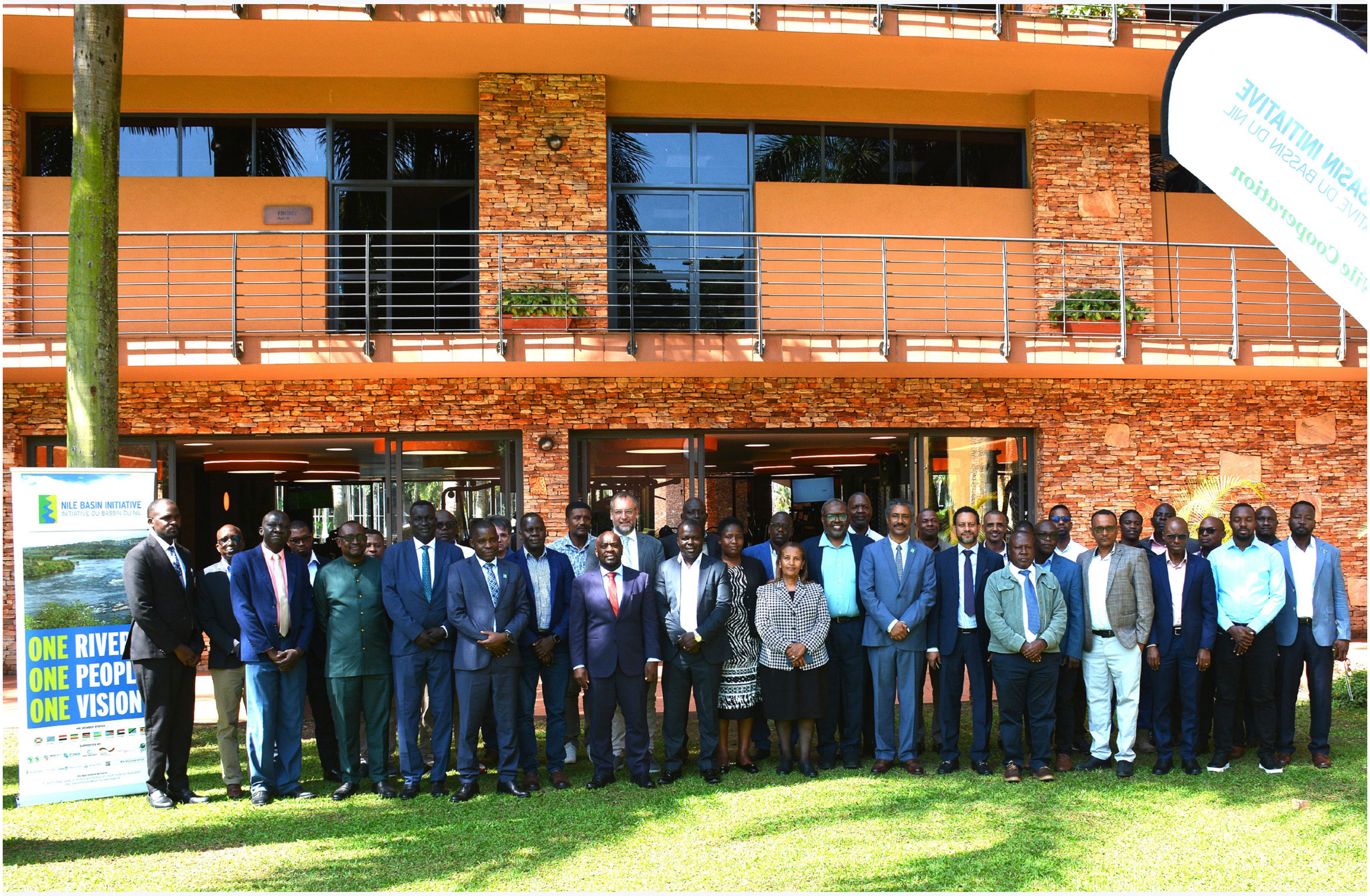

The 4th Technical Session of the Nile Basin Regional Expert Working Group on Hydrology held on 1st - 5th June 2026 Kamapala, Uganda.

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