

West Africa Seasonal Monitor

2021 Season



vam
food security analysis

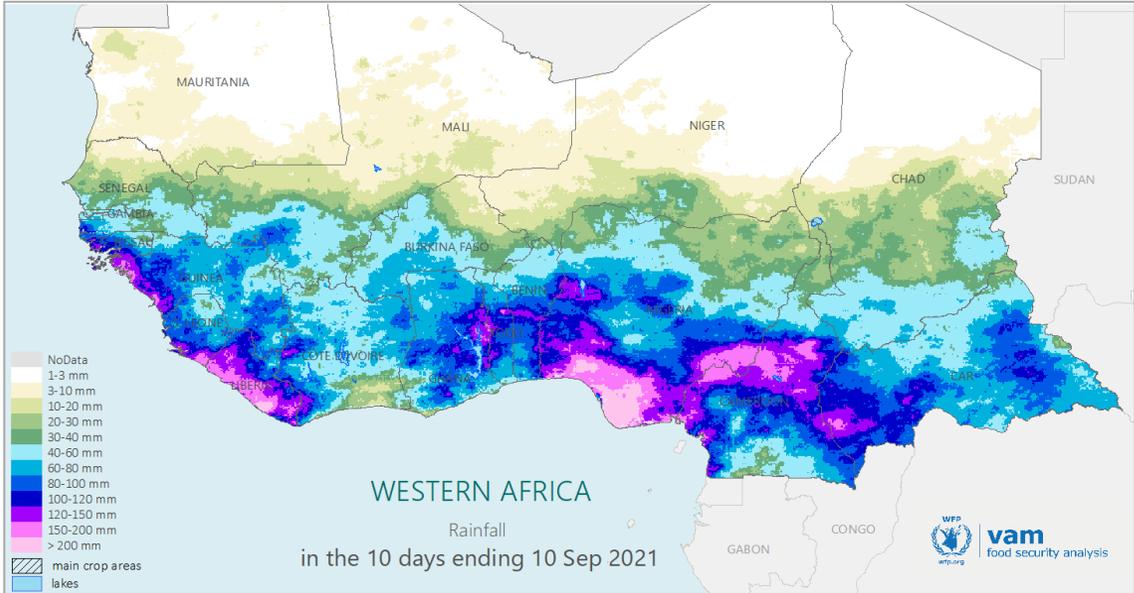
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Highlights

- **As the core period of the rainy season comes to an end during the month of September**, West Africa remains characterised by below average rainfall. Rainfall deficits persist over most of the Sahel, in northern Senegal, most of Mauritania, central Mali, eastern Burkina Faso, western and northern Niger and southern Chad. Only coastal areas in the Gulf of Guinea and the Mano River countries benefited from more favourable conditions. *From mid July to late August, the rainy season has been characterised by above normal rainfall, which offset early season dryness in most of West Africa, particularly in the Sahel. However, in September, unfavourable rainfall conditions were recorded, with a poor distribution of rainfall and below-average rains in most of the region – above all the Sahelian belt. In these areas, the erratic rainfall distribution during the critical period of the season could negatively impact crops and pasture conditions while heavy rainfall of above 200 mm in August and September resulted in flooding, that have affected large areas in Senegal, western central Nigeria, southwestern Mali, the western half of Guinea, southern Chad, and western Sierra Leone raising flooding concerns.*
- Overall, the 2021 rainy season (**between 1 May and 30 September**), has been characterised by mostly average to above average conditions in West Africa. Rainfall deficits mainly affected northern Mauritania, central and northern Mali and northern Niger.. It is important to note however that these normal to above normal cumulative rainfall amounts hide the poor temporal distribution of the rains over the season, particularly over Sahelian countries, where most of the rains were received between July and August (see previous issues of this bulletin). *Beginning from mid-July to late August, the rainfall situation over the region has improved resulting in a significant decline in cumulative rainfall deficits. During September rainfall decreased resulting in a poor distribution of rainfall, which has led to below average condition. These developments, cumulated to the erratic rainfall distribution over the course of the season, is expected to result in a negative impact on crops and pasture development – particularly in areas where early season dryness has persisted for a very long time, such as in northern Senegal, southern Mauritania, central and northern Mali, northern Nigeria, and northern Niger and Lac Chad. In central Mali and southwestern Niger, rainfall deficits in July were compounded by a severe deficit in September, which is likely to impact crops at critical flowering and maturation stages and exacerbate poor conditions resulting from ongoing conflict. There is concern in localized parts of southern Chad impacted by ongoing flooding.*
- As a result of the mostly average to above average rainfall in the region since mid- July, markedly above average vegetation cover extends over much of the Sahel. Meanwhile a low vegetation recovery can be observed in some pockets in the western parts of the region (southern Mauritania, northern Senegal, central Mali), in northern Nigeria and around Lake Chad, due to early rainfall deficits and erratic seasonal rains. In these areas affected by poor vegetation conditions, the pastoral lean season might start earlier than usual this season
- **According to short-term forecasts covering the period until 10 October 2021**, Rainfall will be below average in most of the region from Senegal to northern Nigeria extending into Chad. This indicates an earlier than normal end of the 2021 rainy season. Only northern Senegal, Mauritania, central and western Mali and pockets of south-western Mali will likely experience above average rains, with little expected impact on crop conditions..

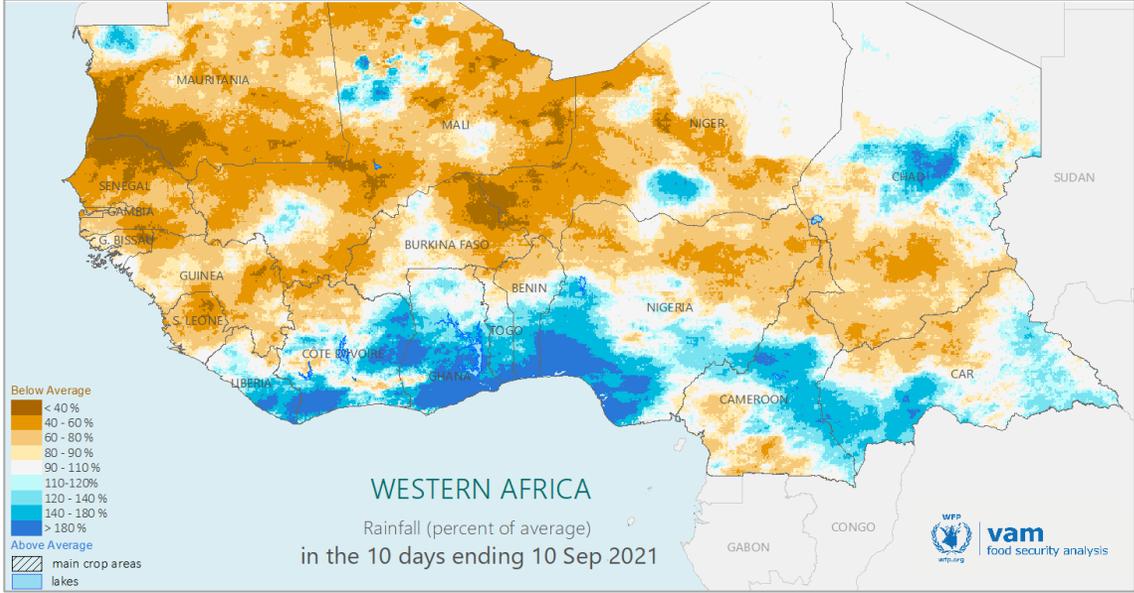
Rainfall: latest developments (1-10 September 2021)



Cumulative rainfall (1-10 September 2021): The map to the left shows the total rainfall received over the last dekad, based on CHIRPS satellite rainfall estimates.

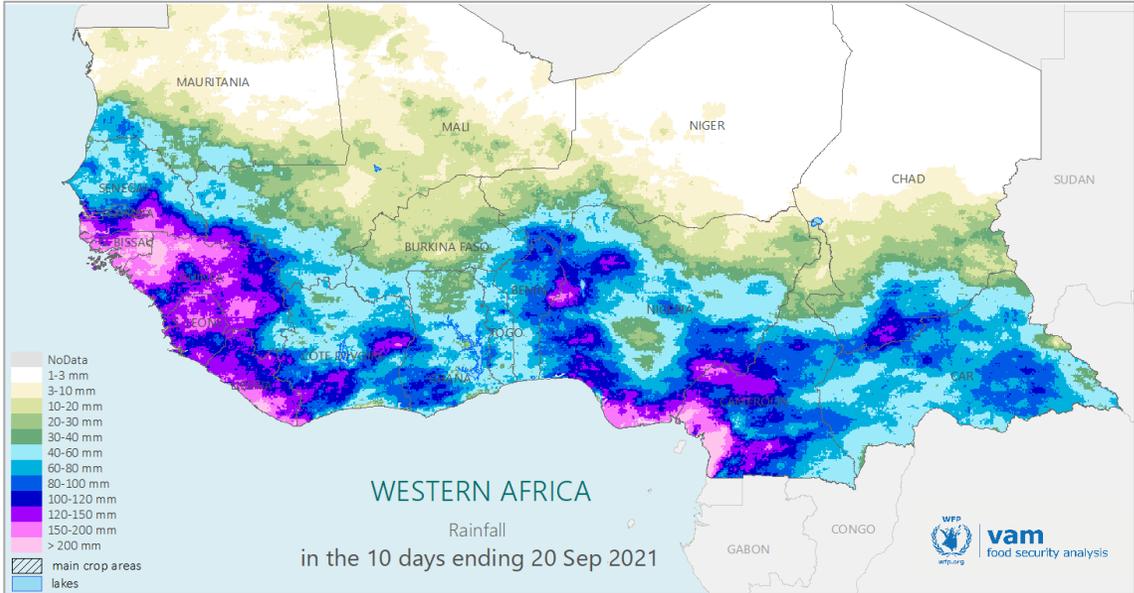
- **Cumulative rainfall:** During the first dekad of September (1-10 September), seasonal rainfall amounts decreased in the northern parts of the region. The Sahel region only received light rains. The heaviest amounts were recorded over southern coastal areas, including Guinea Bissau, Guinea, Sierra Leone, Liberia, central and western Ghana, as well as northern Benin, northern Togo, coastal areas of Nigeria, southern Cameroon and western CAR. In the rest of the region, light to moderate rains were received.

- **Rainfall anomaly:** Rainfall remained below average over most the West Africa region. Only Liberia, southern and western Cote d'Ivoire, Ghana, and coastal areas of Nigeria, as well as central and south-western Cameroon and western and eastern CAR recorded above average rainfall. Rainfall deficits have affected the western part of the Sahel region and are most pronounced in western Niger, eastern Burkina Faso, central Mali, southern Mauritania and the southern and western parts of Senegal.

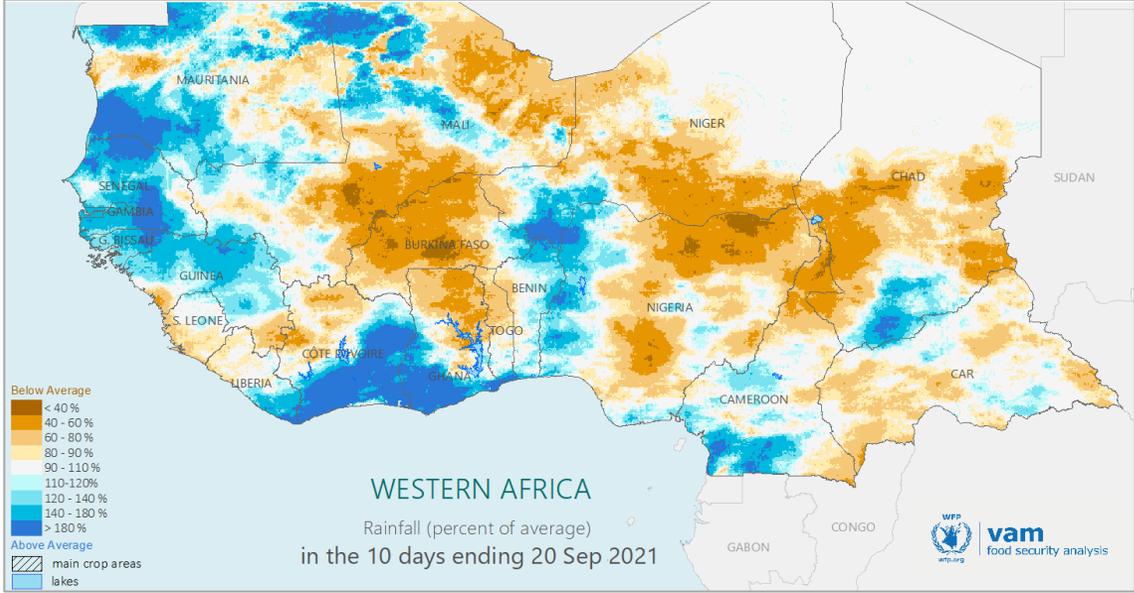


Rainfall anomaly (1-10 September 2021): The map to the left shows the rainfall anomaly over the last dekad in percentage of long-term average, based on CHIRPS satellite rainfall estimates.

Rainfall: latest developments (11-20 September 2021)



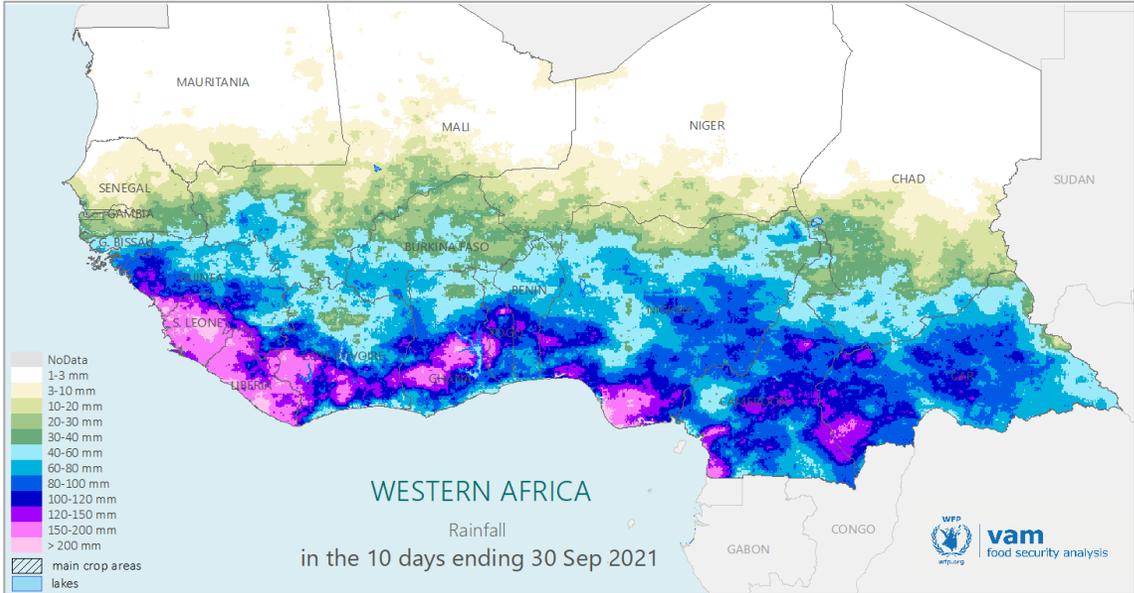
Cumulative rainfall (11-20 Sep 2021): The map to the left shows the total rainfall received over the last dekad, based on CHIRPS satellite rainfall estimates.



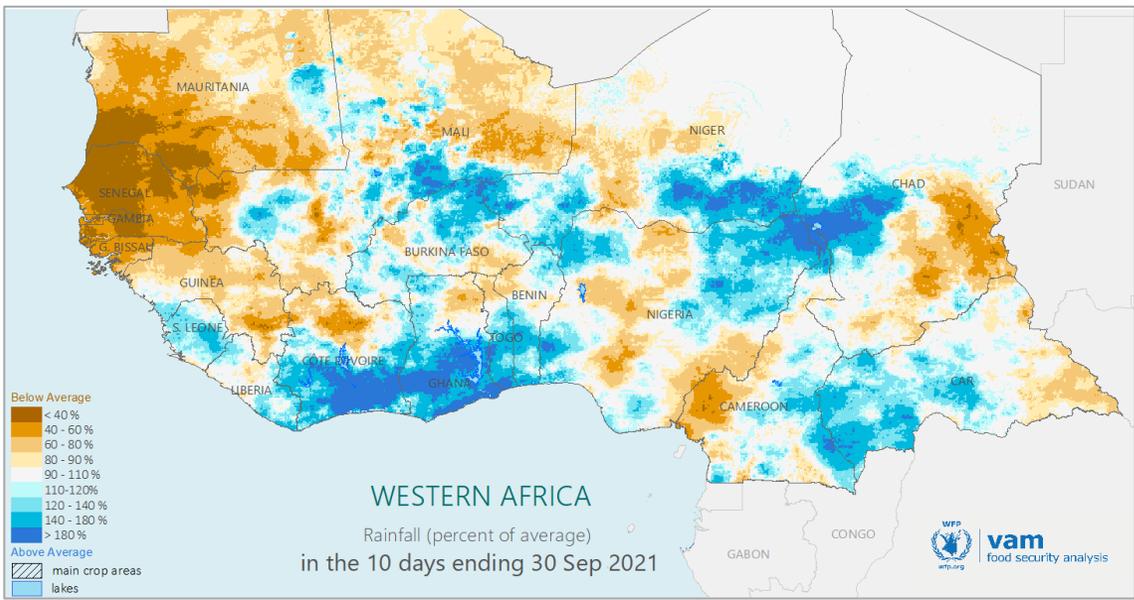
Rainfall anomaly (11-20 Sep 2021): The map to the left shows the rainfall anomaly over the last dekad in percentage of long-term average, based on CHIRPS satellite rainfall estimates.

- Cumulative rainfall:** During the second dekad of the month (11-20 September), rainfall amounts decreased in northern part of the region and seasonal rainfall moved further south of the region. The Sahel region continued to receive very little to moderate rains, with the highest amounts recorded in the westernmost areas (western Mali, northern Senegal and southern Mauritania). However, rainfall amounts remain important over southern coastal areas of the region, in southern Senegal, Guinea Bissau, Guinea, Sierra Leone, Liberia, southern Cote d'Ivoire, Benin, western and southern Nigeria as well as southern Cameroon.
- Rainfall anomaly:** During this dekad the region was characterised by variable conditions. Rainfall deficits mainly affected the Sahel (central and northern Mali, eastern Niger and neighbouring areas of northern Nigeria and western Chad) as well as central belt of Nigeria, northern Ghana, northern Togo, western Cote d'Ivoire, some pockets over Sierra Leone and Liberia. Meanwhile, in the westernmost parts of the region including Senegal and southern Mauritania, Guinea Bissau, Guinea, as well as western Niger, southern Cote d'Ivoire, southern Ghana, and western Nigeria, conditions were well above normal.

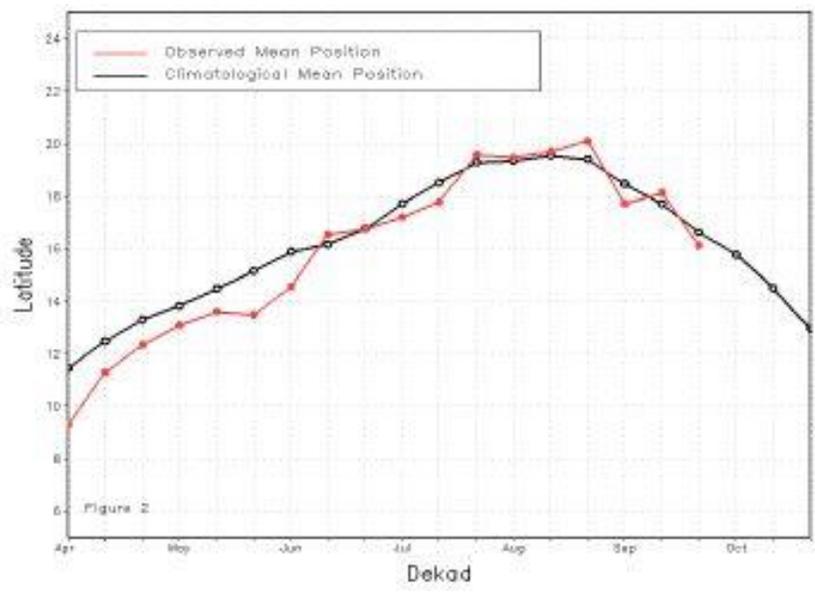
Rainfall: latest developments (21-30 September 2021)



Cumulative rainfall (21-31 September 2021): The map to the left shows the total rainfall received over the last dekad, based on CHIRPS satellite rainfall estimates.



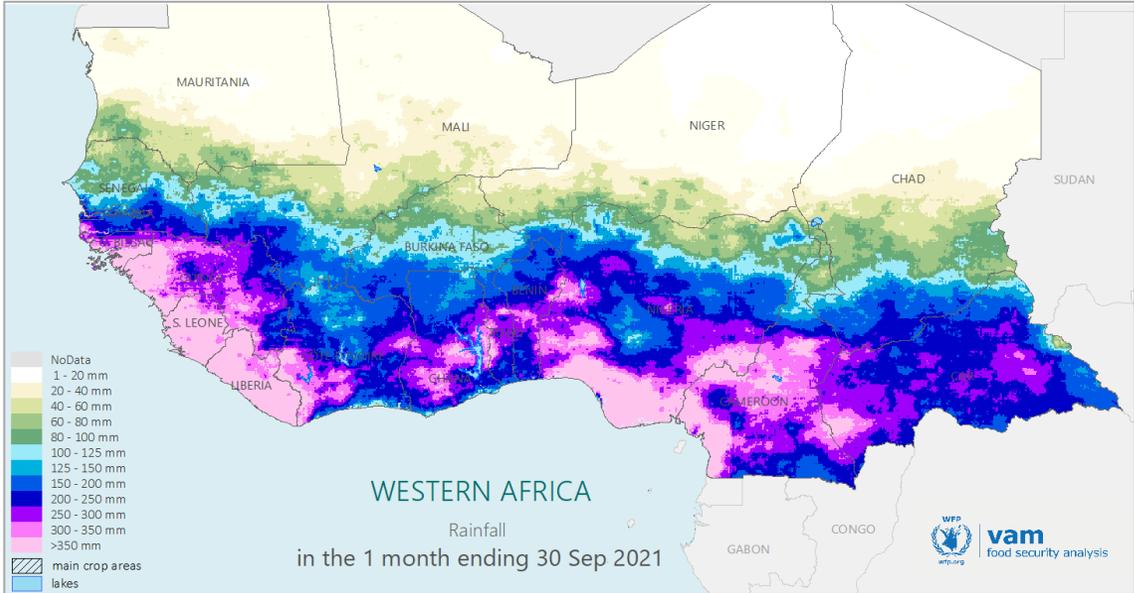
Rainfall anomaly (21-31 September 2021): The map to the left shows the rainfall anomaly over the last dekad in percentage of long-term average, based on CHIRPS satellite rainfall estimates.



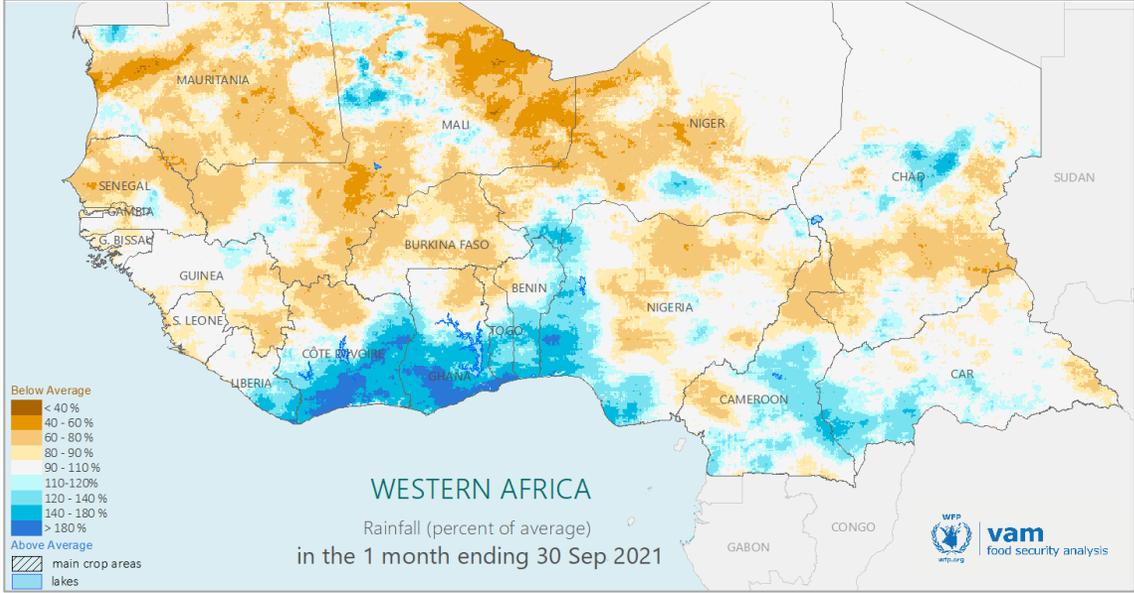
Current ITCZ position (red) vs long term average position (black) as of 30 September 2021: ITCZ: the Inter-Tropical Convergence Zone (ITCZ) is the border between dry areas and areas where the rainfall season is ongoing. It moves northwards as the monsoon advances, backtracking southwards as the monsoon wanes. Delays (advances) in this movement lead to drier (wetter) conditions on the ground.

- **Cumulative rainfall:** During the last dekad of September, the seasonal rainfall was concentrated over the southern parts of the West Africa region. The most important rains were recorded over southern coastal areas as well as over most of Cameroon and CAR. Meanwhile, the Sahel region continued to receive very little seasonal rains marking the beginning of the end of 2021 rainy season.
- **Rainfall anomaly:** In late September, rainfall deficits mainly affected the westernmost parts of the region (Senegal, Mauritania, Guinea Bissau and Guinea). Deficits were also recorded over northern Mali, northern Cote d'Ivoire, central Niger, central Nigeria, the border areas between Nigeria and Cameroon, southern Chad and pockets of eastern CAR. During this period, the Gulf of Guinea, the Lake Chad basin, the Liptako Gourma and western CAR benefited from more favourable conditions with well above average rainfall.
- **ITCZ:** The ITCZ in the western parts of the region has started to retreat southwards and is now located around the 16.7N, south of the long-term average. This explains the decrease in rainfall with ongoing below average rainfall in the western parts of the region (over Senegal, Mauritania, Guinea and Guinea Bissau). Over the eastern part of the region the ITCZ has shifted south compared to previous dekad and is now located north of its average position which may explain the favourable rainfall conditions over CAR and around of Lac Chad region.

Rainfall: the last month (1-30 September 2021)



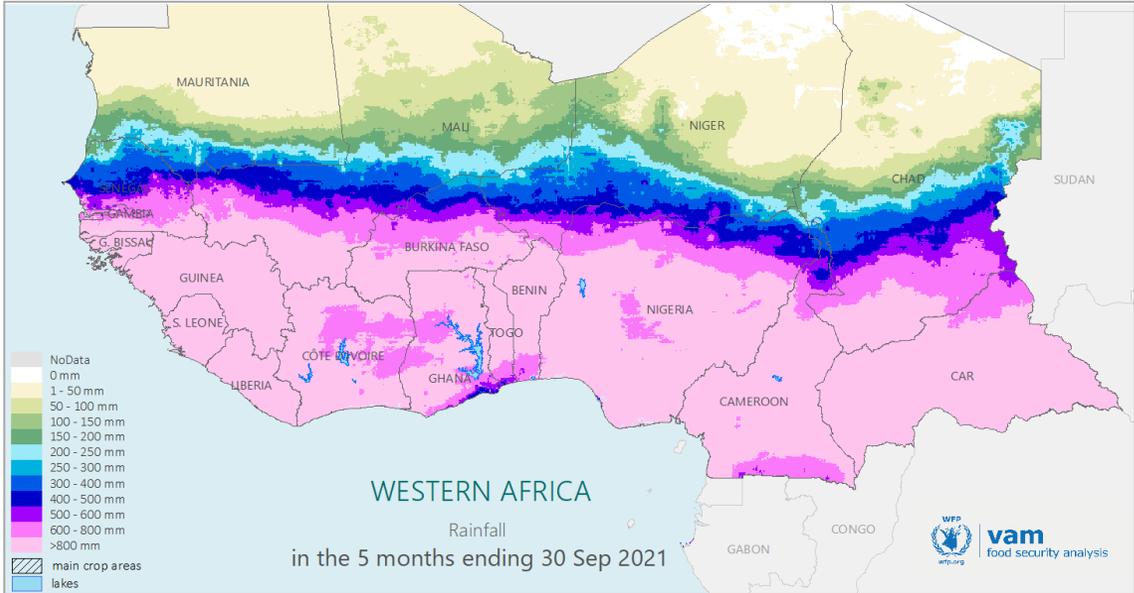
Cumulative rainfall (1-31 September 2021) : The map to the left shows the total rainfall received over the last decade, based on CHIRPS satellite rainfall estimates.



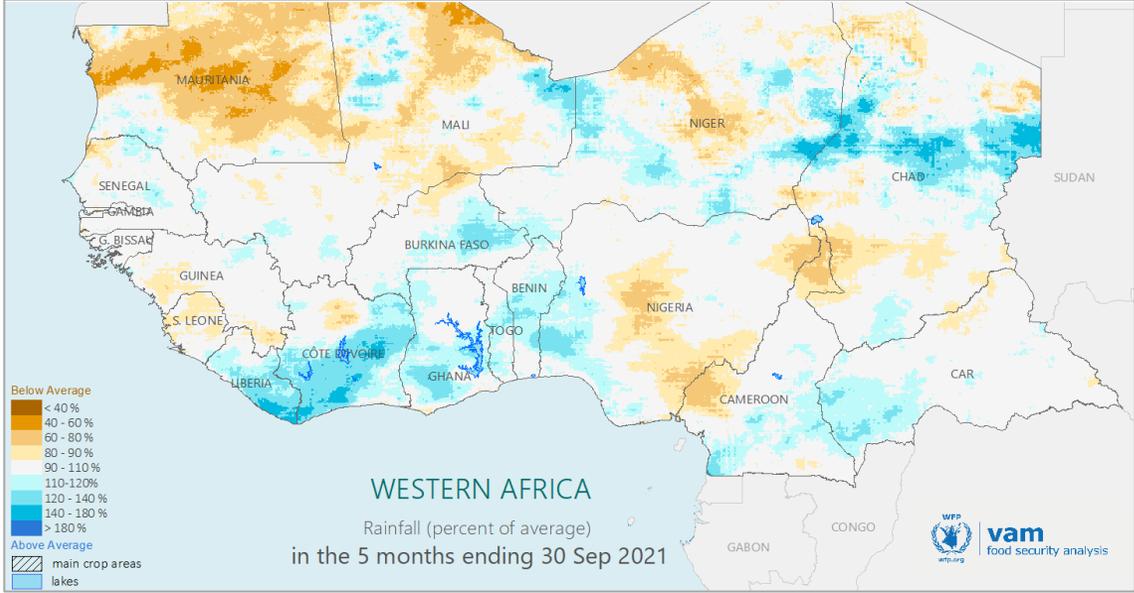
Rainfall anomaly (1-31 September 2021) : The map to the left shows the rainfall anomaly over the last decade in percentage of long-term average, based on CHIRPS satellite rainfall estimates.

- Cumulative rainfall:** Over the course of the month of September, seasonal rainfall was concentrated over the southern parts of the region. In the Sahel very little rainfall (up to 40 mm) was recorded. This marks the beginning of the end of the 2021 rainy season. Significant rainfall during this period (up to 200 mm) was received over southern coastal areas, in southern Senegal, Guinea, Guinea Bissau, Liberia, Sierra Leone, Cote d'Ivoire, Ghana, Benin, Togo, Nigeria, Cameroon, CAR and southern Chad.
- Rainfall anomaly:** As the core period of the rainy season comes to an end during the month of September, West Africa remains characterised by below average rainfall. Rainfall deficits persist over most of the Sahel, in northern Senegal, most of Mauritania, central Mali, eastern Burkina Faso, western and northern Niger and southern Chad. Only coastal areas in the Gulf of Guinea and the Mano River countries benefited from more favourable conditions, with above average rainfall over southern Cote d'Ivoire, southern Ghana, southern Togo, southern Togo, western Nigeria as well as southern Cameroon and western CAR.
- Summary:** From mid July to late August, the rainy season has been characterised by above normal rainfall, which offset early season dryness in most of West Africa, particularly in the Sahel. However, in September, unfavourable rainfall conditions were recorded, with a poor distribution of rainfall and below-average rains in most of the region – above all the Sahelian belt. In these areas, the erratic rainfall distribution during the critical period of the season could negatively impact crops and pasture conditions while heavy rainfall of above 200 mm in August and September resulted in flooding, that have affected large areas in Senegal, western central Nigeria, southwestern Mali, the western half of Guinea, southern Chad, and western Sierra Leone raising flooding concerns.

Rainfall: the season so far (1 May – 30 September 2021)



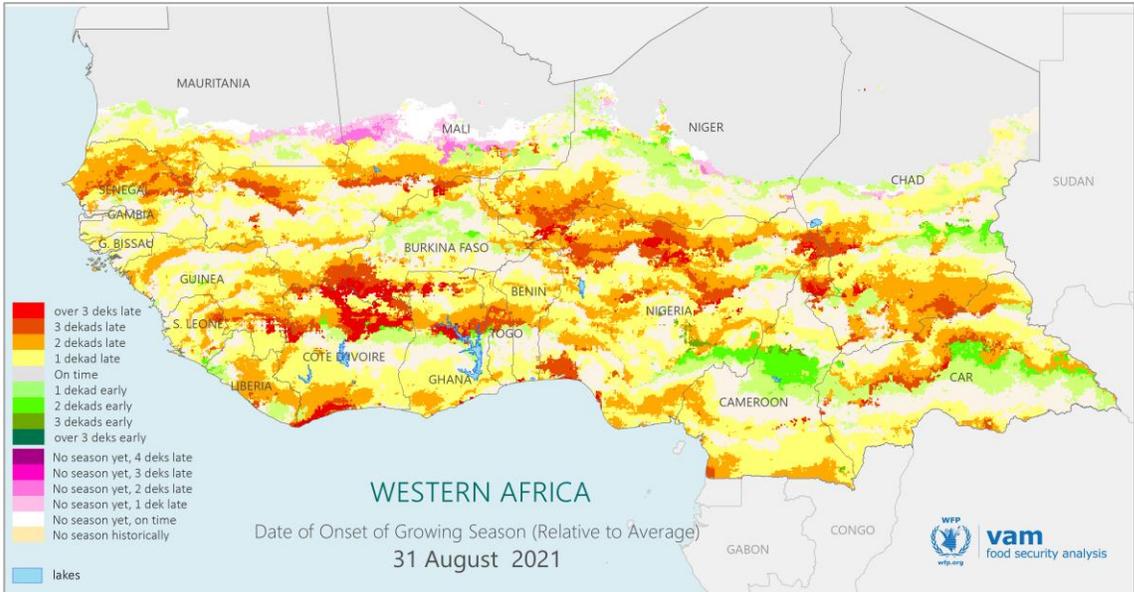
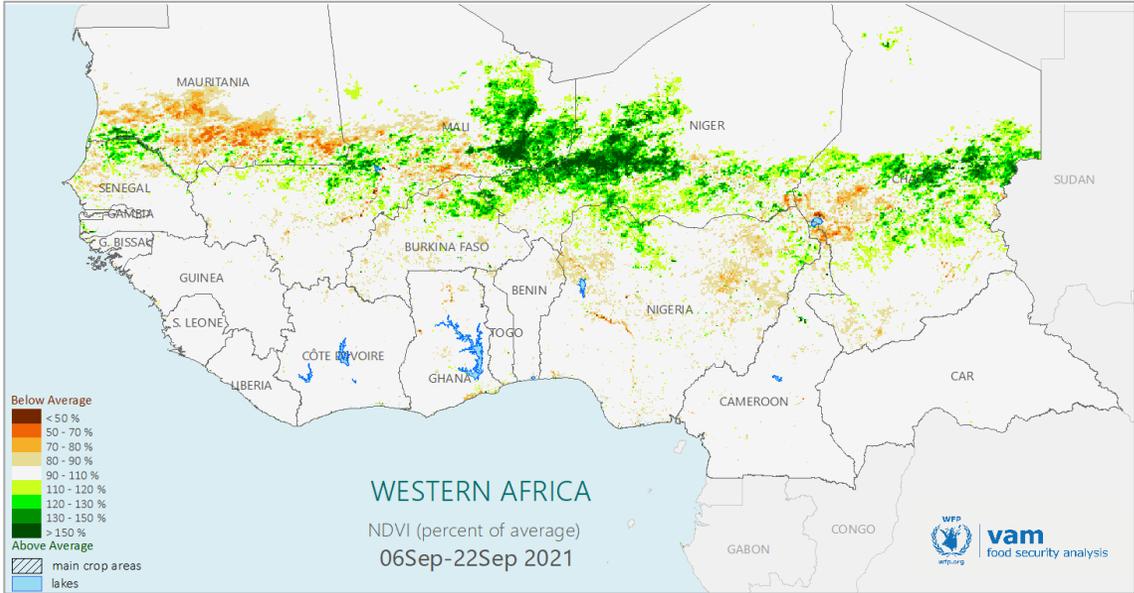
Cumulative rainfall (1 May – 31 September 2021) : The map to the left shows the total rainfall received over the last two months, based on CHIRPS satellite rainfall estimates.



Rainfall anomaly (1 May – 31 September 2021) : The map to the left shows the rainfall anomaly over the last two months in percentage of long-term average, based on CHIRPS satellite rainfall estimates.

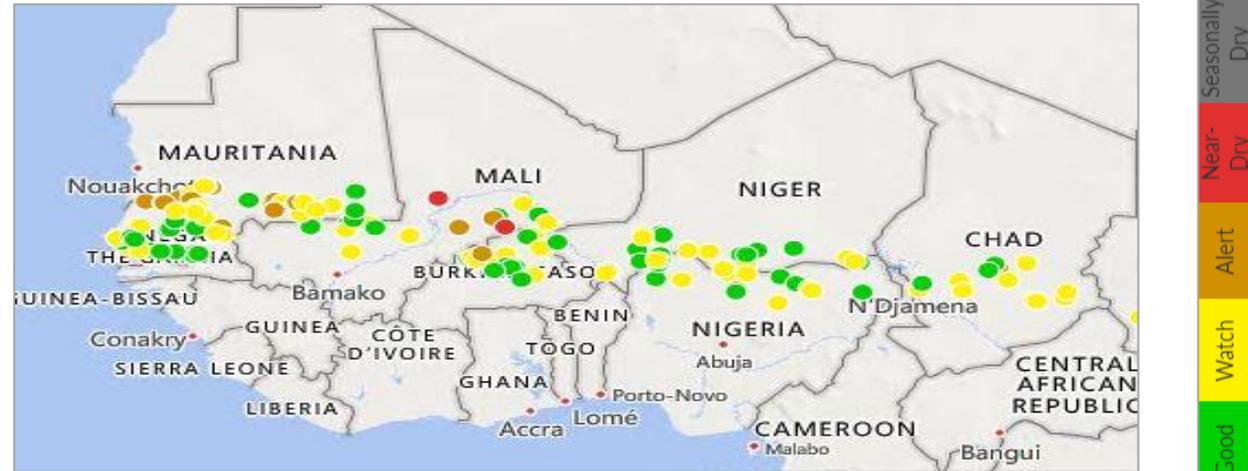
- Cumulative rainfall:** By late September, the 2021 rainy season is coming to an end. Over the past five (5) months (1 May – 30 September), heavy rains (above 500 mm) have been recorded over most of region reaching the southern parts of the Sahel including the southern parts of Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, CAR, southern Chad, most of Burkina Faso, western Niger, and western Mali. Meanwhile, moderate seasonal rainfall (up to 150 mm) was received in the northern parts of the Sahelian Belt. Southern Mauritania experienced very little rains.
- Rainfall anomaly:** Overall, the 2021 rainy season has been characterised by mostly average to above average conditions in West Africa. Rainfall deficits mainly affected northern Mauritania, central and northern Mali and northern Niger. Furthermore, in pockets in central Nigeria, extending into south-eastern Nigeria and neighbouring regions of southwestern Cameroon, as well as in the southern Lake Chad Basin, south-western Guinea and north-eastern Sierra Leone below average rainfall were recorded. It is important to note however that these normal to above normal cumulative rainfall amounts hide the poor temporal distribution of the rains over the season, particularly over Sahelian countries, where most of the rains were received between July and August (see previous issues of this bulletin).
- Summary:** As of late September, when the *core period of the rainy season comes to an end*, west Africa has been characterised by most mostly average to above average conditions . Beginning from mid-July to late August, the rainfall situation over the region has improved resulting in a significant decline in cumulative rainfall deficits. During September rainfall decreased resulting in a poor distribution of rainfall, which has led to below average condition. These developments, cumulated to the erratic rainfall distribution over the course of the season, is expected to result in a negative impact on crops and pasture development – particularly in areas where early season dryness has persisted for a very long time, such as in northern Senegal, southern Mauritania, central and northern Mali, northern Nigeria, and northern Niger and Lac Chad. In central Mali and southwestern Niger, rainfall deficits in July were compounded by a severe deficit in September, which is likely to impact crops at critical flowering and maturation stages and exacerbate poor conditions resulting from ongoing conflict. There is concern in localized parts of southern Chad impacted by ongoing flooding. Drier-than-average conditions forecast across central and northern areas, from Senegal to northern Nigeria extending to Chad (slide 9), indicate an early end to the main rainy season.

Vegetation: current conditions (as of 31 August 2021)



NDVI (September 06 - September 22 2021): the map on the left shows the vegetation anomaly as a percentage of the average, based on the MODIS NDVI

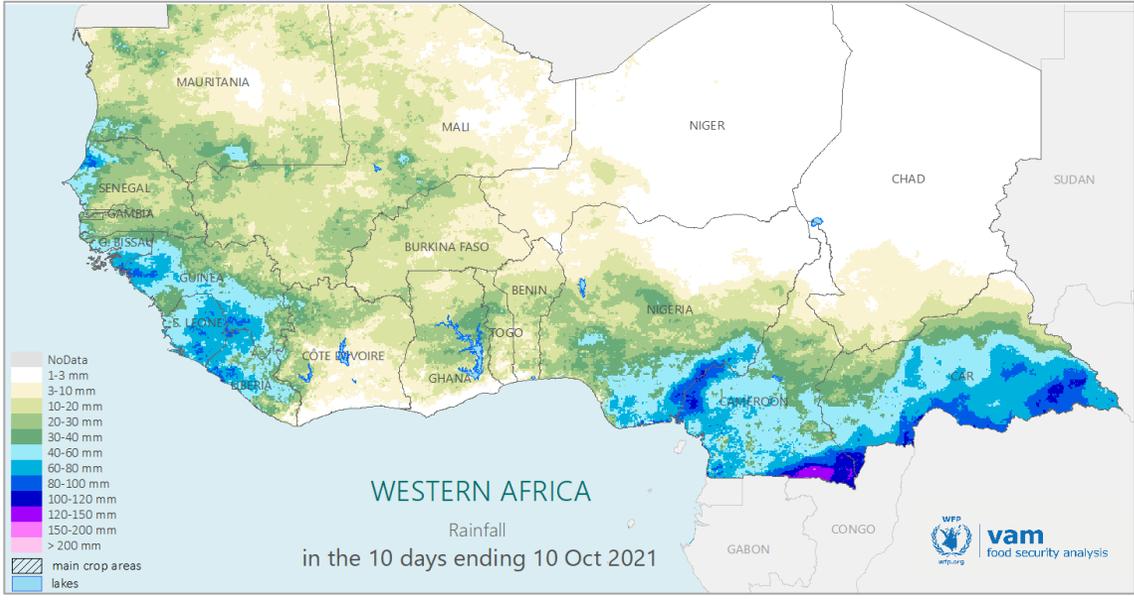
2021 Onset of growing season anomaly (as of August 31, 2021): The map on the left shows the start of the growing season anomaly, using the vegetation phenological cycle to show the possible start of sowing activities.



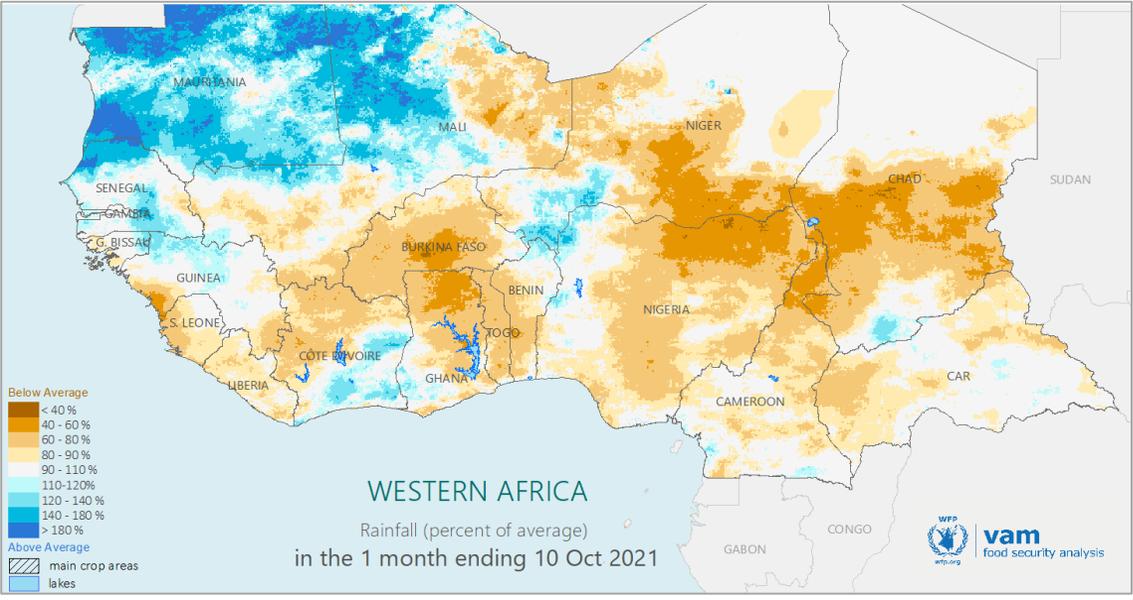
Water point status (as of 30 September 2021): Good: Higher than long term level (LTL), Watch: Between 50 to 100% of LTL, Alert: Between 3% and 50% of LTL, Near-Dry: Below 3% of LTL (<https://earlywarning.usgs.gov/fews/waterpoint/index.php>)

- Start of season:** The growing season onset map suggests that most of West Africa was characterised by a growing season that started slightly later than normal (10-30 days). An earlier than normal start of the season was only recorded in Burkina Faso, central Senegal, southern Mauritania, eastern Chad and northern Niger. Until the end of August, delays of up to 4 weeks and over were recorded as a result of poor rains in the earlier months of the season, particularly in south-eastern and central Mali. The pink areas on the start of season map highlight areas where the conditions for the potential start of planting activities have not been met as of yet.
- Vegetation:** As a result of the mostly average to above average rainfall in the region since mid-July, markedly above average vegetation cover extends over much of the Sahel across Mali, north-eastern Burkina Faso, Niger, Chad, northern Nigeria and northern Senegal. Meanwhile a low vegetation recovery can be observed in some pockets in the western parts of the region (southern Mauritania, northern Senegal, central Mali), in northern Nigeria and around Lake Chad, due to early rainfall deficits and erratic seasonal rains. In these areas affected by poor vegetation conditions, the pastoral lean season might start earlier than usual this season.
- Water resources:** The availability of water resources in the region was generally favourable until August. The below normal rainfall distribution experienced during September has negatively impacted the availability of water resources, leading '**watch conditions**' across the Sahel. Given the ongoing and forecasted conditions, this could negatively impact pastoral activities in the Sahel.

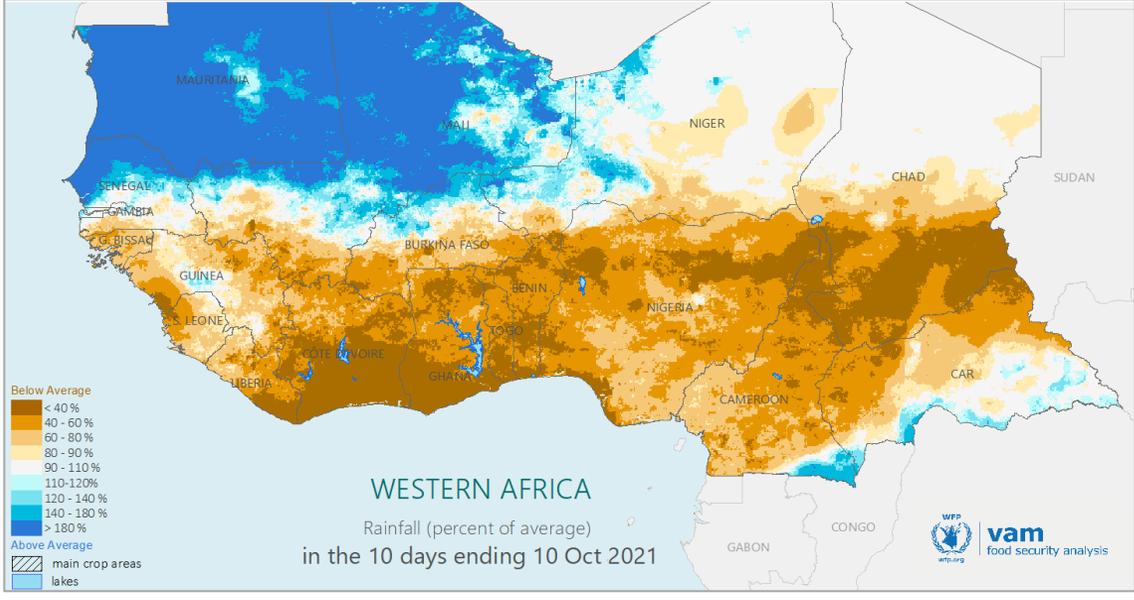
Rainfall: short-term forecasts (1-10 October 2021)



Rainfall forecast (1 - 10 October 2021): The map to the left shows the short-range CHIRPS-GEFS forecasts for the period 21-30 June 2021, expressed in cumulative rainfall total.

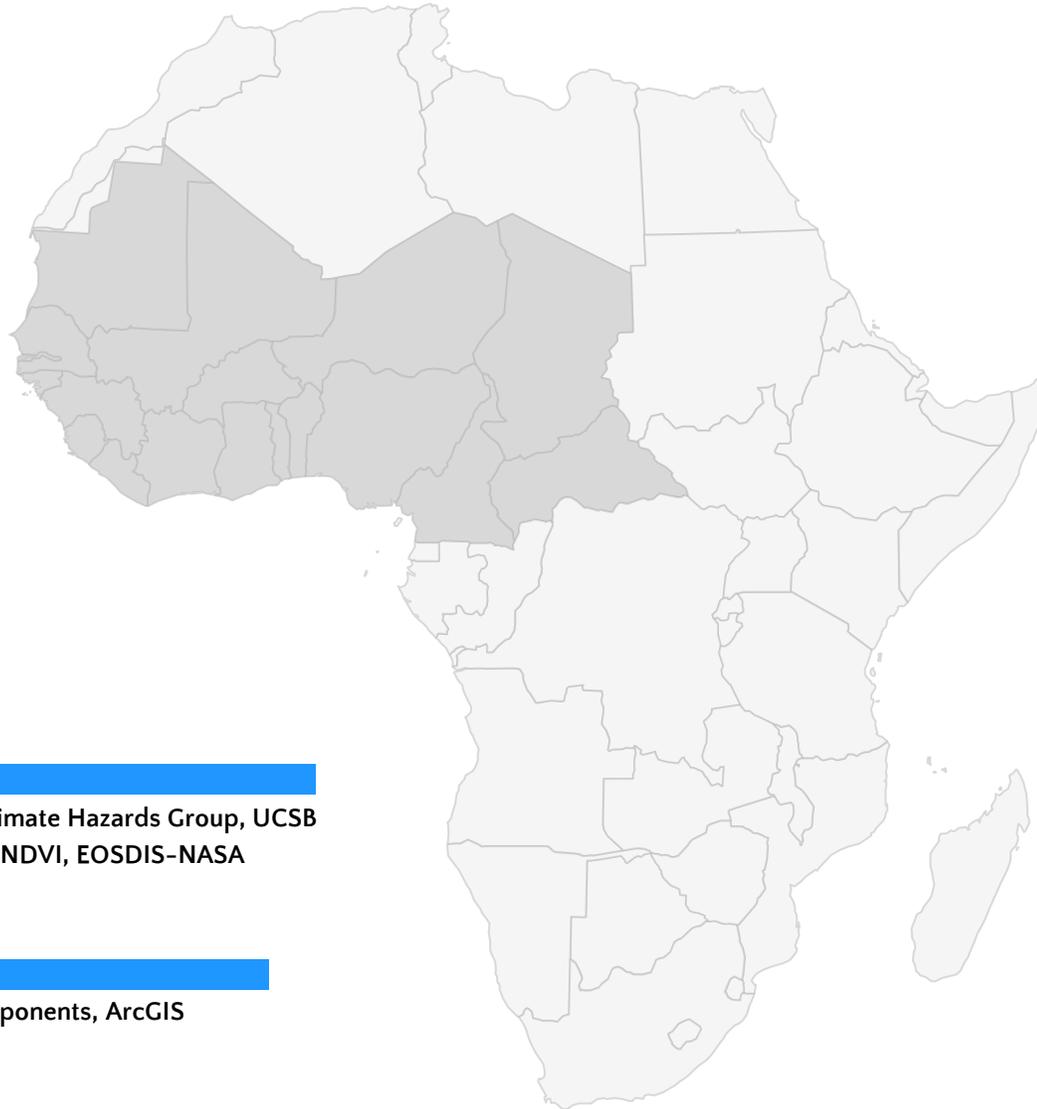


Rainfall forecast (1 Sept.-20 October 2021): The map to the left shows the short-range CHIRPS-GEFS forecasts for the period 1-30 June 2021, expressed in percentage of long-term average.



Rainfall forecast (1 - 10 October 2021): The map to the left shows the short-range CHIRPS-GEFS forecasts for the period 21-30 June 2021, expressed in percentage of long-term average.

- **Cumulative rainfall forecast:** Over the forecast period (1-10 October 2021) very light seasonal rainfall will be expected throughout West Africa. Only in pockets of southern CAR, southern Cameroon, Sierra Leone, Guinea Bissau and western Senegal (Dakar and Thiès regions) rainfall amount will be moderate to locally heavy.
- **Rainfall anomaly forecast (1-10 October):** Rainfall will be below average in most of the region from Senegal to northern Nigeria extending into Chad. This indicates an earlier than normal end of the 2021 rainy season.
- **The one-month forecast ending on 10 October** suggests that below average rainfall will be recorded in most of the region in early October. Only northern Senegal, Mauritania, central and western Mali and pockets of south-western Mali will likely experience above average rains, with little expected impact on crop conditions.



DATA SOURCES:

Rainfall: CHIRPS, Climate Hazards Group, UCSB
Vegetation: MODIS NDVI, EOSDIS-NASA

PROCESSING:

VAM software components, ArcGIS

FOR FURTHER INFORMATION:

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