West and East Africa

The 2014 Rainfall Season

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Highlights

SAHEL

- The Sahel region has undergone significant and widespread rainfall deficits, leading to significantly below average vegetation levels.
- Worst affected areas are Senegal, southern Mauritania, eastern Niger, NE Nigeria and central Chad
- There was some recovery from late July, in particular in Niger and Chad. However, Senegal and Mauritania remained affected by persistent rainfall deficits.
- Hopes of an extended rainfall season have now faded. Early September rains were also poor in the affected regions (e.g. Senegal) and unremarkable in areas under recovery (Niger).
- Serious impacts on agricultural production in Senegal and Mauritania are now inevitable. Recovery window in Niger and surrounding countries is quickly narrowing.

EASTERN REGION (SUDAN, ETHIOPIA)

- After promising early rains, drier than average conditions have affected central and eastern Ethiopia for the remainder of the season.
- Sudan has had a varied season with dryness episodes but also heavy and intense rainfall events leading to floods in West Darfur, Kordofan and Khartoum regions. Cereal producing regions in eastern Sudan show clear signs of poor crop performance.
- South Sudan has had a good season so far with early onset of the growing season and no major rainfall deficits. Recent heavy rains have led to localized flooding in along riverine areas in Unity and Jonglei States.

Current Situation and Near Term Perspectives

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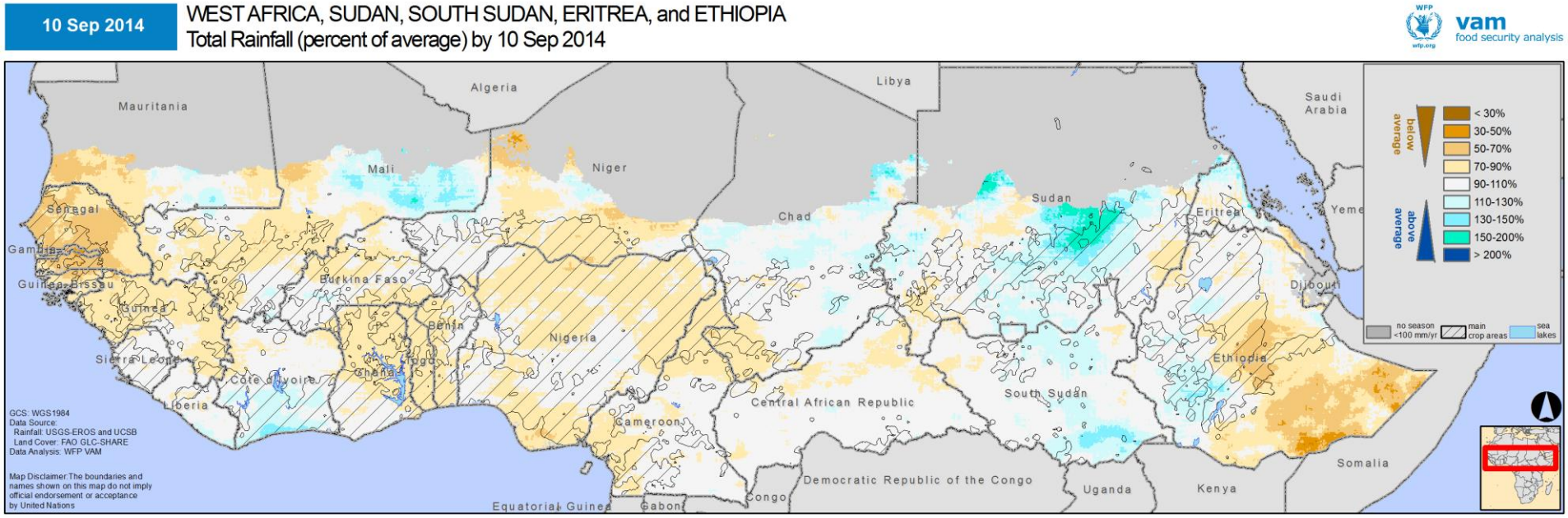

Total rainfall from February to August 2014 as a percentage of the 20 year average.
Brown shades indicate below average rainfall, blue shades indicate above average seasonal rainfall

Overall Rainfall Performance

Better rains in August improved seasonal rainfall deficits that had impacted the region until mid July, particularly in Senegal, Mauritania and Niger. However, seasonal rainfall deficits are still dominant across the region which has led to delays in the start of the agricultural season and widespread poor crop development.

Areas of concern include Senegal, Mauritania, western Mali and northern Nigeria. Niger is under a tentative recovery pending continuation of good rainfall. After a solid start, marked rainfall deficits has affected central Ethiopia. On the other hand, favourable rainfall conditions exist in South Sudan, NE Mali, Chad and SW Ethiopia.

In spite of improvements observed in August, it is essential that reliable and above average rainfalls continue throughout September to prevent significant negative impacts on crop and pasture production. However, in the first ten days of September, marked dryness again affected Senegal, along with less intense deficits in Niger and northern Nigeria.

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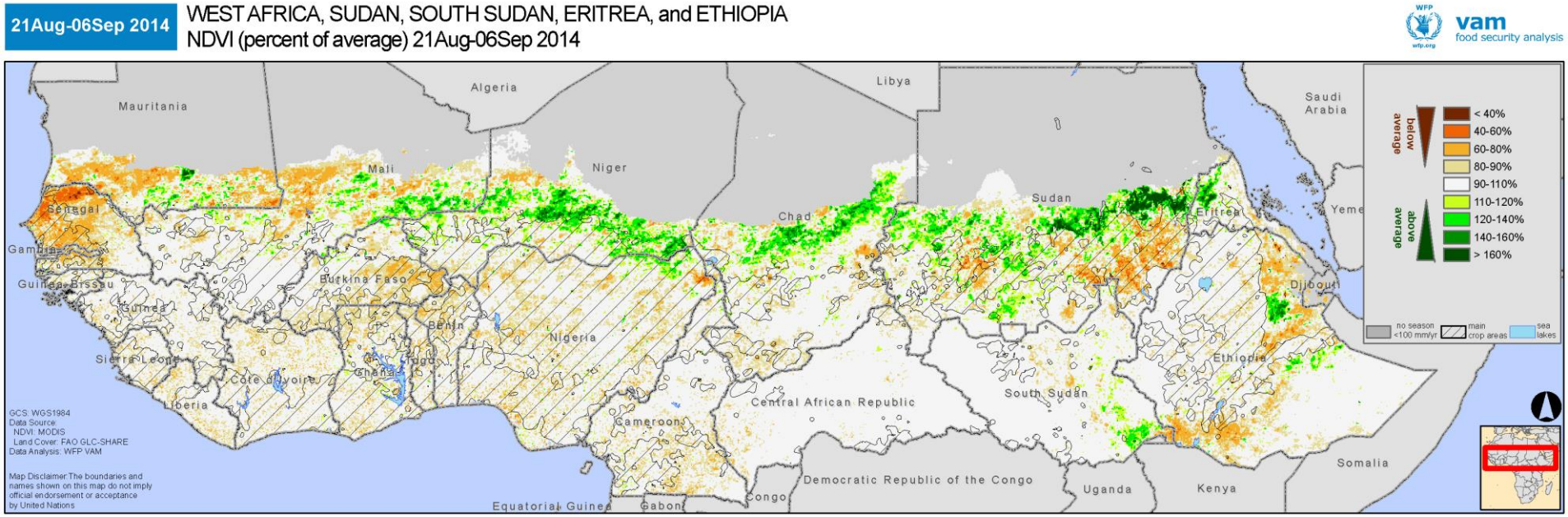

Vegetation index by late August early September 2014 as a percentage of the 12 year average. Hashed pattern indicates main agricultural areas. Yellow-orange shades indicate below average vegetation, green shades indicate above average vegetation

Overall Vegetation Status

The below average vegetation that widely persisted until early August is now improving due to better rainfall, particularly in eastern Mali, Niger, pastoral areas in Chad and parts of western Sudan. However, Senegal, Mauritania and parts of western Mali all show seriously below average vegetation with significant impact on crops and pasture. The conditions in central and NE Ethiopia are also of concern. The main cereal production areas of eastern Sudan are affected, although here late rains could quickly revert the situation.

The areas currently under recovery still require continued above average rainfall at least until end of September. However, the unremarkable early September rainfall and information from seasonal forecasts makes this scenario increasingly unlikely.

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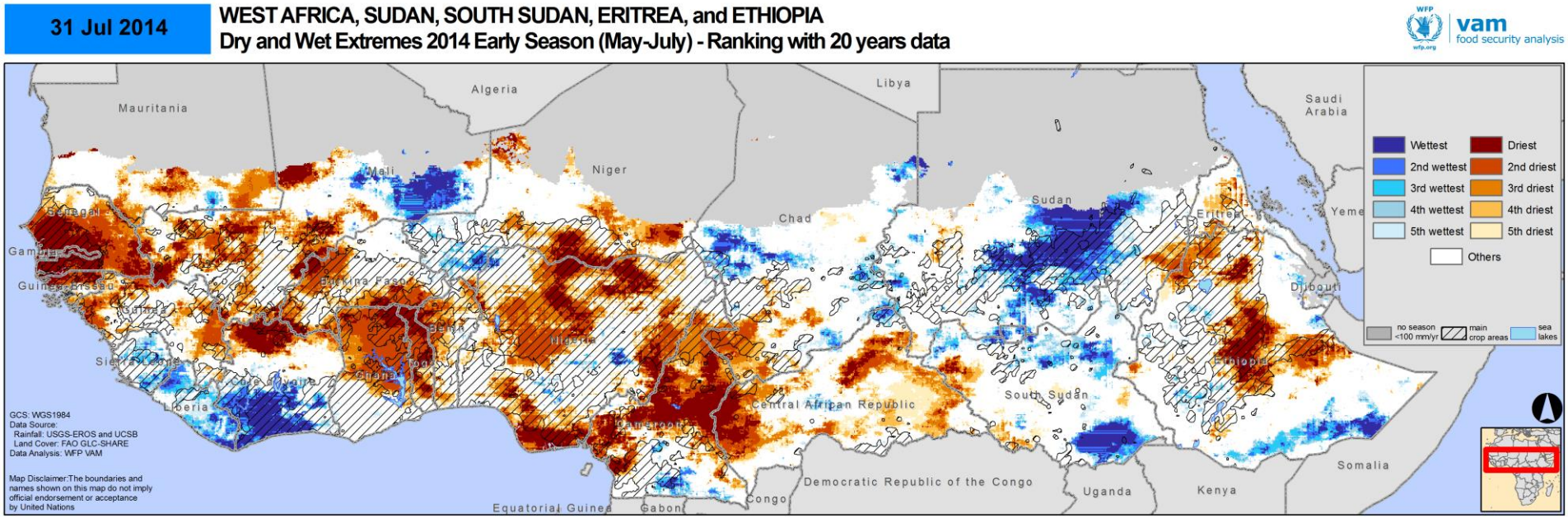

May to July 2014 rainfall expressed as the rank within the last 20 years. Only the top and bottom 25% (quartiles) are shown: Orange shades represent areas in the driest 25% (driest in 20 years to 5th driest), blue shades represent areas in the wettest 25% (wettest in 20 years to 5th wettest).
Hashed pattern indicates main agricultural areas.

A season of extremes: May to July 2014

Generally May through July is the core planting and early crop development period for the Sahel. Given its importance and to put the 2014 season in perspective, an exercise was undertaken to rank the May to July 2014 rainfall within the past 20 seasons (1994-2013).

The resulting map reveals a pattern of dry and wet extremes across the region in 2014. Areas which underwent early season drought are clearly highlighted: Most of Senegal where 2014 has been the driest since 1994, northern Ghana - Burkina Faso, eastern Niger and northern Nigeria, as well as central and parts of northern Ethiopia. High rainfall extremes are clearly visible in southern Cote d'Ivoire and northern Sudan where flooding events affected populations during this period.

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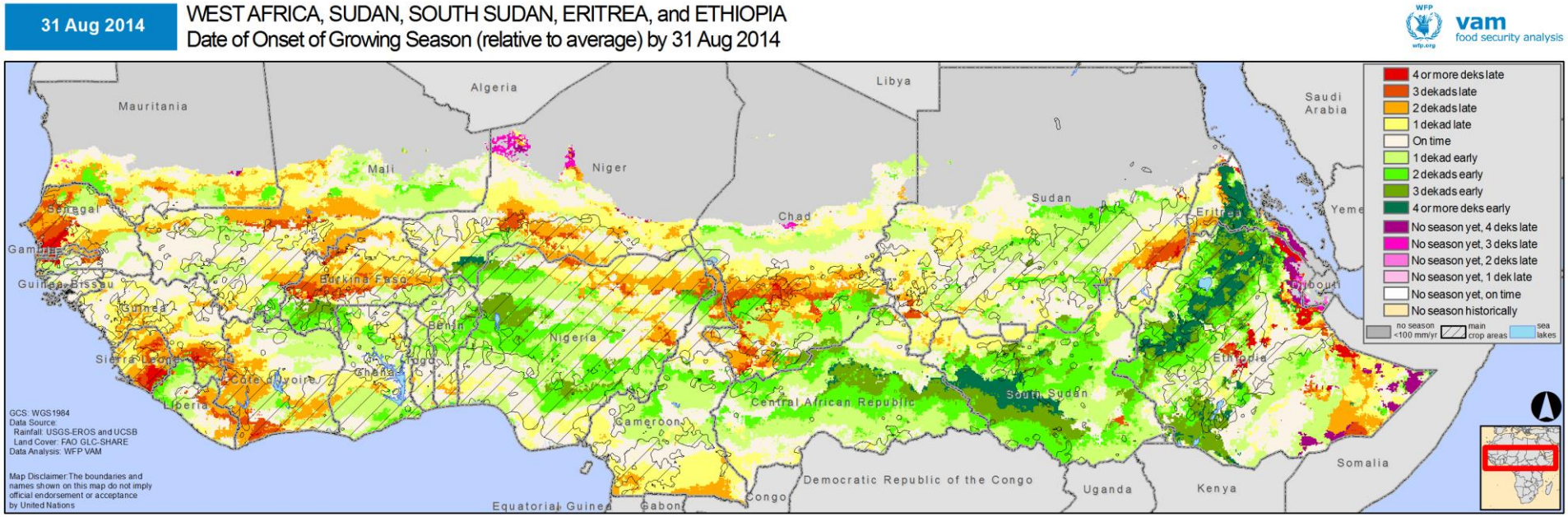

Difference between the 2014 growing season start date and the 20yr average start date. Red to yellow / greens show delay/advance of start date where a growing season has already started. Pink shades show areas where a growing season has not yet started and is delayed.

Growing Season Timings

The late onset of the growing season has been the dominant feature of 2014 (yellows to reds in the map above). This has affected Senegal where by end of July, growing season conditions had not even been detected, parts of Mali and Niger. Other areas with noticeable delays include Burkina Faso, Chad and NE Nigeria. In Sudan, although delays are noticeable in the cereal producing regions, deep clay soils can make optimum use of late rainfall.

South Sudan, CAR and Ethiopia, enjoyed early start of the agricultural season due to good rains in March and April. However, in some of these areas (Ethiopia, Nigeria), the initial suitable moisture conditions were followed by marked dryness which led to the need for replanting.

A growing season starts when favourable moisture conditions for early crop growth are in place (two consecutive 10 day periods with over 20mm rainfall)

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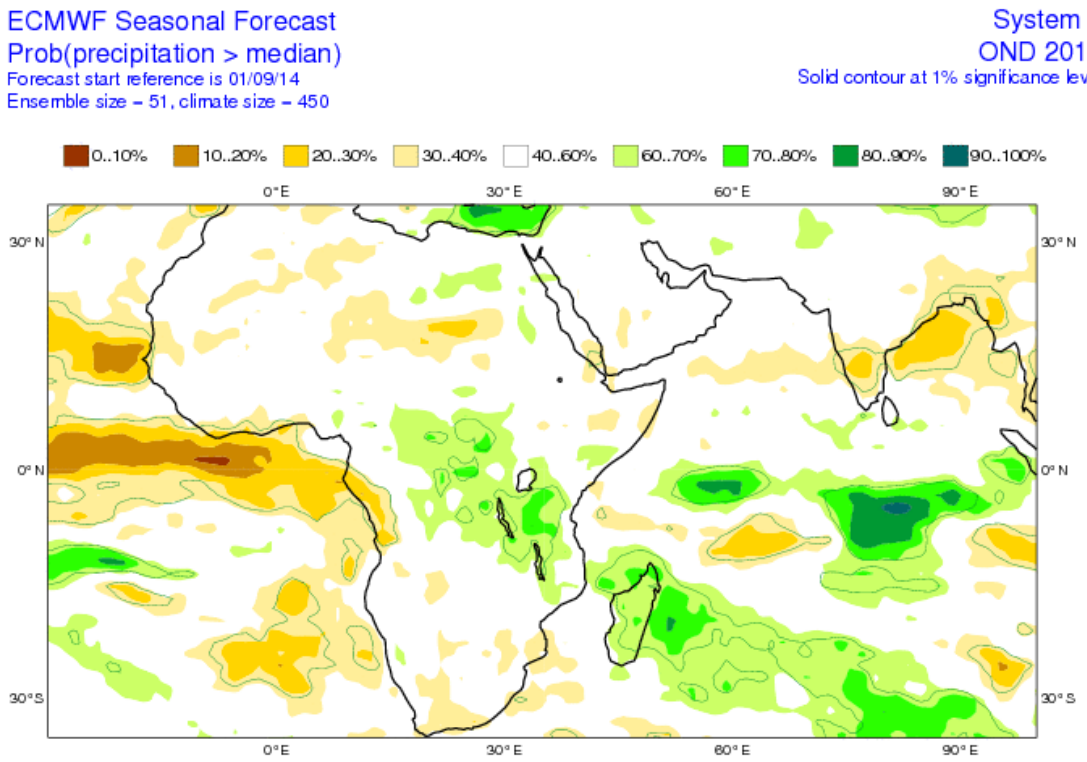

Forecast for the October-November-December (OND) 2014 rainfall: Probability of OND rainfall exceeding the usual amount.

Green/blue – higher likelihood of wetter than usual conditions
Yellow/browns – higher likelihood of drier than usual conditions.
Source: ECMWF.

Forecasts for the remainder of the season

Latest seasonal forecasts predict broadly normal late stage of the agricultural season. Previous forecasts had indicated the possibility of a wetter than average end to the season (mainly September to mid October) – this prediction is now revised downwards with negative consequences for agricultural production.

The implication is that an extended rainfall season is very unlikely, leaving only a window of 3-4 weeks of rainfall left across the most affected regions and hence little time for a good recovery from delayed starts and mid season deficits. More southern areas (South Sudan, southern Ethiopia, CAR) are expected to see rainfall up to early November sustaining long maturing crops.

How the Season Evolved

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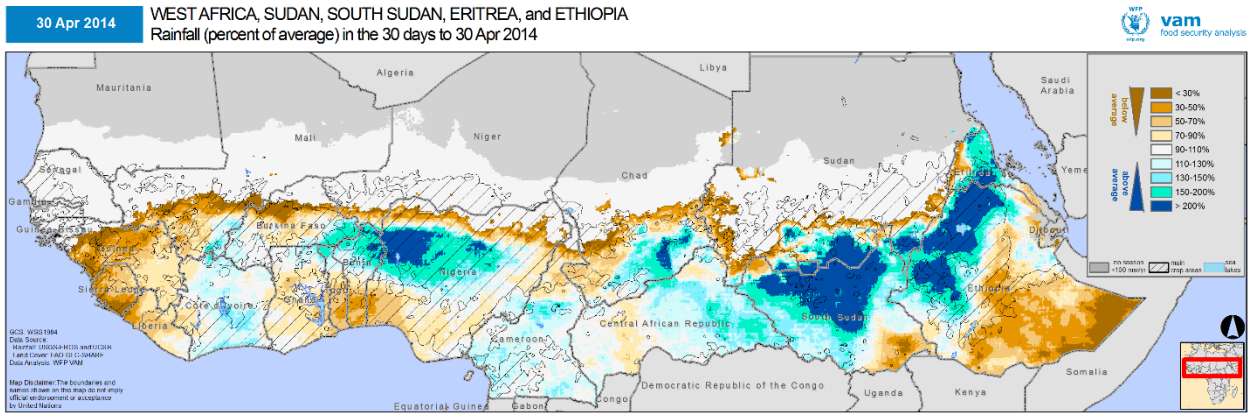
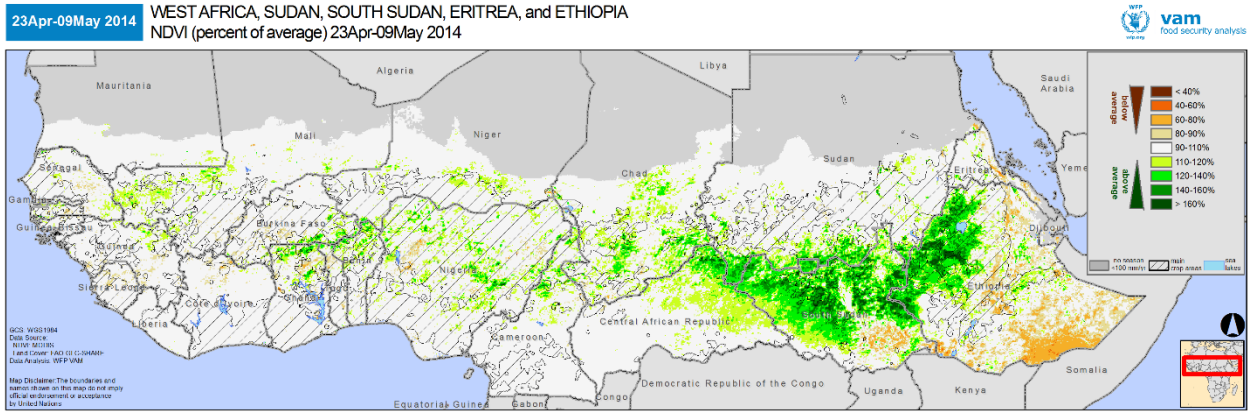


Total April 2014 rainfall as a percentage of the 20 year average.

Note extensive above average rainfall in eastern regions (Sudan, NW Ethiopia, CAR) and deficits in western areas

Hashed pattern indicates main agricultural areas. Brown shades indicate below average rainfall, blue shades indicate above average seasonal rainfall



Vegetation index in early May 2014 as a percentage of the 12 year average

Note extensive above average vegetation in eastern regions (Sudan, NW Ethiopia, CAR) in response to early strong rainfall

Hashed pattern indicates main agricultural areas. Orange shades for below average, green shades for above average vegetation conditions

Start of the Season (March-April)

The early stages of the season (March to April) were very favourable across Sudan, South Sudan, CAR and Cameroon as well as NW Nigeria, with strong early rains across these regions.

This led to a very strong start to the season with vegetation at much higher levels than average, creating suitable conditions for early planting.

In contrast, in the western half of the region, early deficits were noticeable from Liberia to the Guineas and southernmost Mali.

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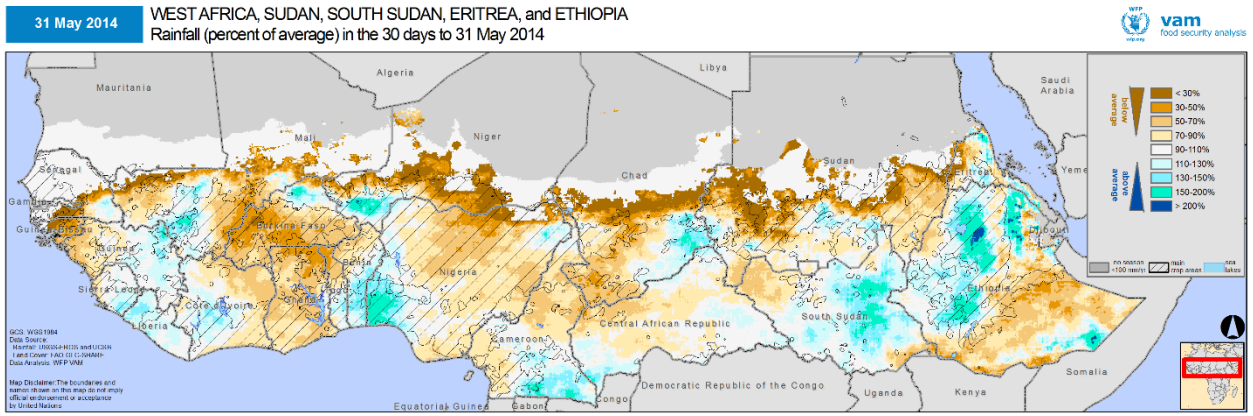
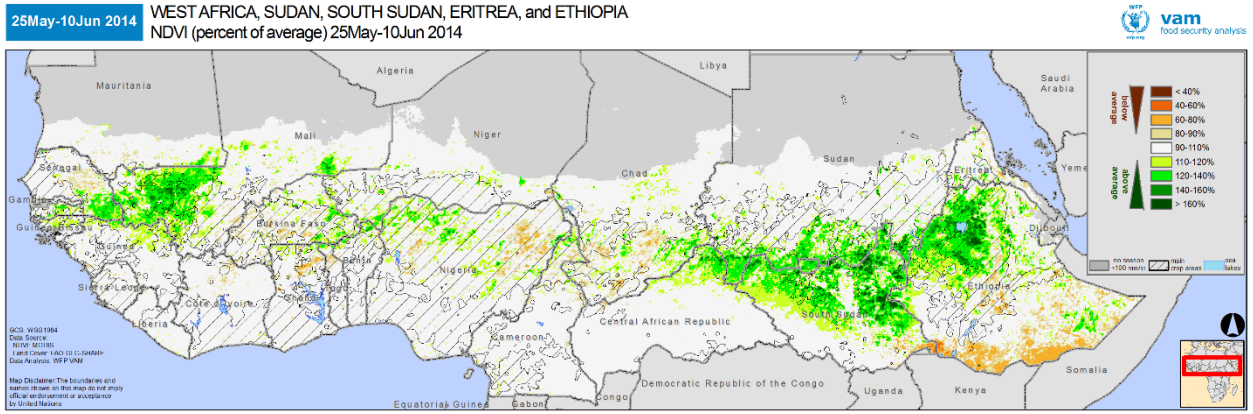


Total May 2014 rainfall as a percentage of the 20 year average.

Note widespread deficits except for wetter than average conditions in South Sudan and parts of Ethiopia.

Hashed pattern indicates main agricultural areas. Brown shades indicate below average rainfall, blue shades indicate above average seasonal rainfall



Vegetation index in early June 2014 as a percentage of the 12 year average

Note extensive above average rainfall in eastern regions (Sudan, NW Ethiopia, CAR) and deficits in western areas

Hashed pattern indicates main agricultural areas. Orange shades for below average, green shades for above average vegetation conditions

Early Season (May)

In May, planting takes place in earnest across the more southern areas of the region (South Sudan, CAR, Nigeria, etc).

South Sudan and parts of central and western Ethiopia enjoyed a continuation of the early good rains and resulting above average vegetation. On the ground, this translated into effective early planting and expansion of cultivated areas.

Elsewhere, apart from localized rainfall surpluses (e.g. western Mali) the general panorama was one of rainfall deficits leading to delays in usual planting activities. Impacts on vegetation were not yet felt at this stage, given the early stages of development

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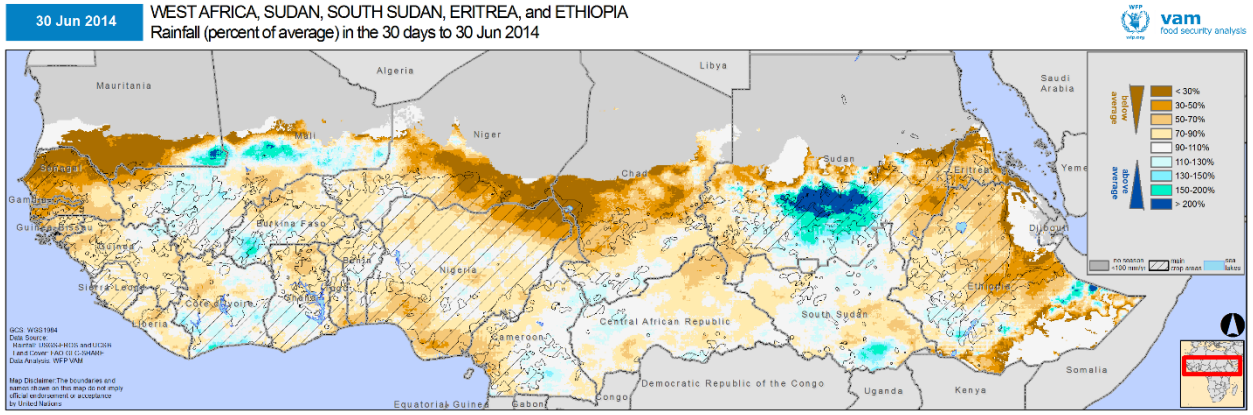

Total June2014 rainfall as a percentage of the 20 year average.

Note widespread deficits except for localised wetter events in central Sudan and parts of Mali.

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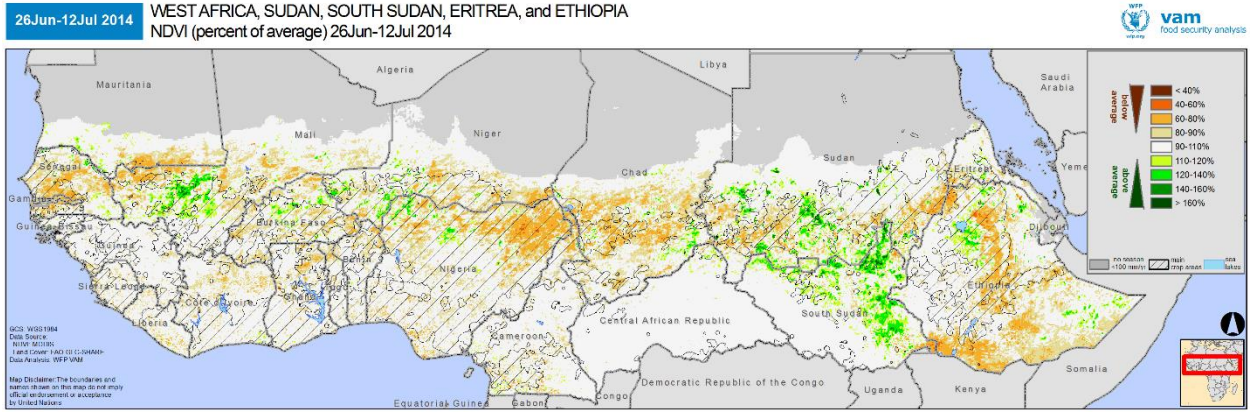

Vegetation index in early July 2014 as a percentage of the 12 year average

Note extensive above average rainfall in eastern regions (Sudan, NW Ethiopia, CAR) and deficits in western areas

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Early Season (June)

In June, the rainfall season becomes established across the region; later in the month, planting can take place in more northern areas.

June brought little change to the conditions that had prevailed in May. Drier than average conditions actually extended across Niger, Chad and Nigeria, also affecting CAR. In Senegal and Mauritania, deficits deepened further. Ethiopia experienced fairly dry conditions across most of the country.

In South Sudan while conditions remained good, some dryness affected the state of Jonglei, where conflict may enhance moderate weather impacts. Very dry conditions also affected the cereal producing regions in Eastern Sudan, though the region is resilient to late starts.

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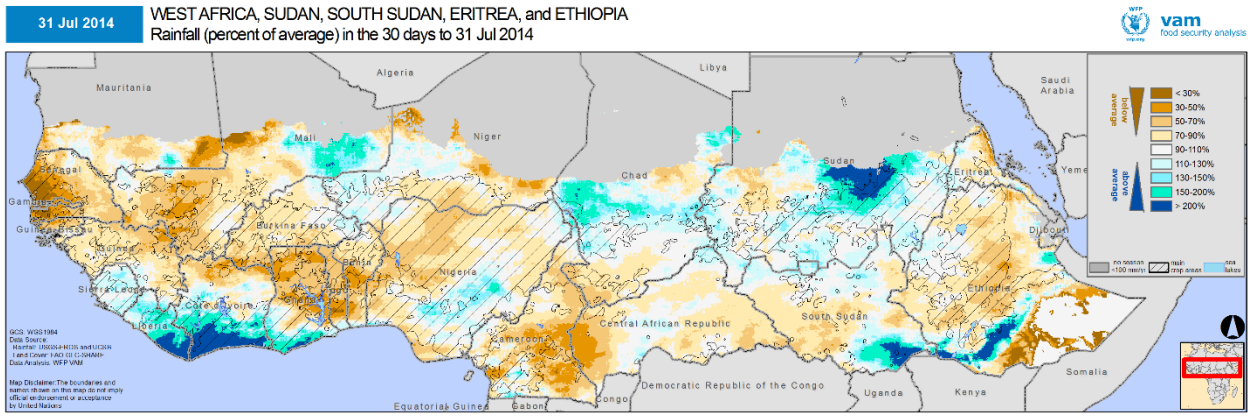

Total July 2014 rainfall as a percentage of the 20 year average.

Note widespread deficits though with improvements in Sudan, eastern Chad, eastern Mali.

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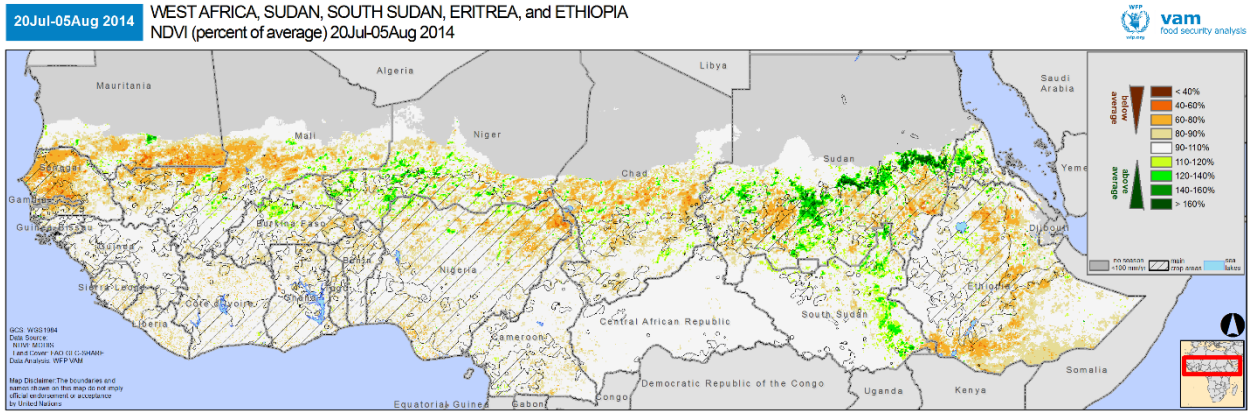

Vegetation index in early August 2014 as a percentage of the 12 year average

Note extensive above average rainfall in eastern regions (Sudan, NW Ethiopia, CAR) and deficits in western areas

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Mid Season (July)

July saw the continuation of drier than average conditions across most of the region though better rains later in the month brought some improvement in eastern Mali, western Niger and western Chad. Very dry conditions continued in Senegal, western Mali, northern Nigeria as well as north-eastern Ethiopia and extended into Cameroon - western CAR and northern Ghana. Moderate dryness affected South Sudan during July.

Northern Sudan registered heavy rains leading to localised flooding events. Wetter than average conditions also affected coastal areas of Ivory Coast and Liberia.

Impacts on crop and pasture development are evident in the satellite vegetation data which shows extensive below average development across the whole of the Sahelian belt.

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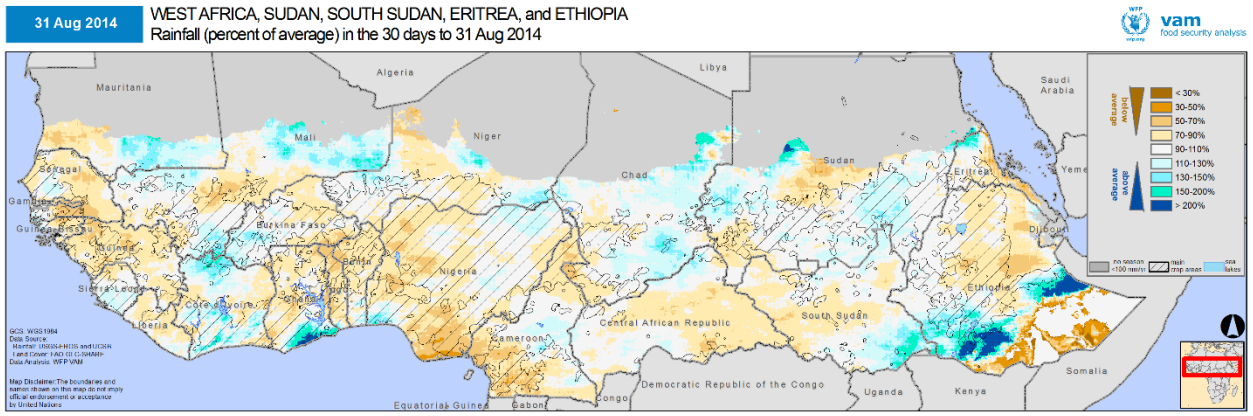

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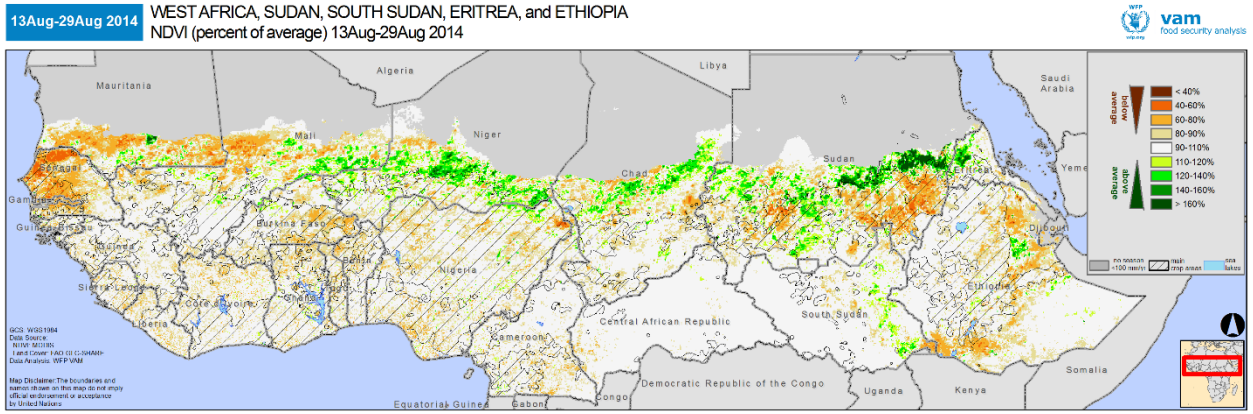

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Peak Season (August)

August finally provided some respite from the drier than average conditions that had so far predominated. Above average rainfall was more widespread and rainfall deficits while frequent, were mostly moderate – seasonal rainfall amounts recovered to closer to average levels.

Vegetation conditions improved noticeably in eastern Mali, central and eastern Niger and along marginal pastoral areas in Chad. In Sudan, though marginal northern areas display exceptional greenness, crop development in the key eastern crop producing regions is still way beyond normal for this time of the year. Senegal, southern Mauritania and parts of western Mali remain seriously affected as well as pastoral areas in NE Ethiopia.

Further rainfall improvements are required throughout September to avoid serious consequences even in areas now under recovery.

Data Sources:

Rainfall: CHIRPS, Climate Hazards Group, UCSB

Vegetation: MODIS NDVI, EOSDIS-NASA

Land Cover: FAO GLC-Share

Processing:

VAM software components, ArcGIS

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