

East Africa: The 2015 Season (Sudan/Ethiopia)



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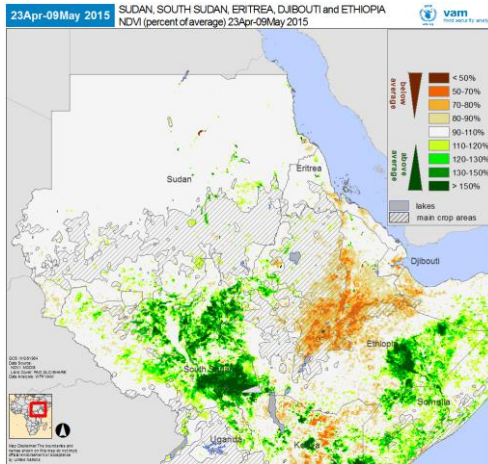
HIGHLIGHTS

- The current growing season (May-October 2015) in East Africa (Sudan and Ethiopia region) which is ending now has developed under a **strengthening El Nino** event.
- In Ethiopia, the **Belg season** (February to May) was affected by a **severe drought** resulting in poor crop and pasture production. This situation put further stress on households at the start of the following main season (Meher).
- Since **June**, **drier than average** conditions spread across **Sudan** and into north and central **Ethiopia**, hitting pastoral areas and cropland already affected in the previous Belg season. **Dryness** also extended into **SE South Sudan** and **Karamoja**, where negative impacts on crop production are likely.
- Despite **better rainfall** since late **August** in **Sudan and Ethiopia**, a decent **recovery** is now **unlikely**. Serious **food security impacts** can be expected in many bimodal areas of **Ethiopia**, given two consecutive poor seasons in 2015.
- **Drier than average** conditions during **late stages** of the season in **South Sudan**, may impact long cycle sorghums and second crop harvests.

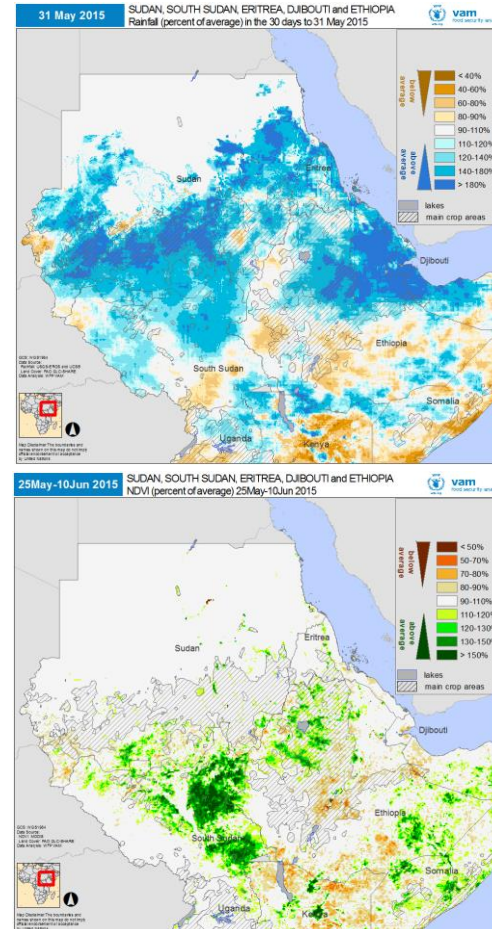
The Season at a Glance...

1. March-April, contrasting fortunes...

While a severe drought hit the *Belg* season in Ethiopia, early and heavy rains in March and April led to record vegetation in eastern South Sudan and SE Ethiopia.



NDVI of early May 2015 as a percentage of the 12 year average, clearly showing the impacts of the severe rainfall deficits in March and April 2015. Warm shades for below average conditions, Cool shades for above average levels.



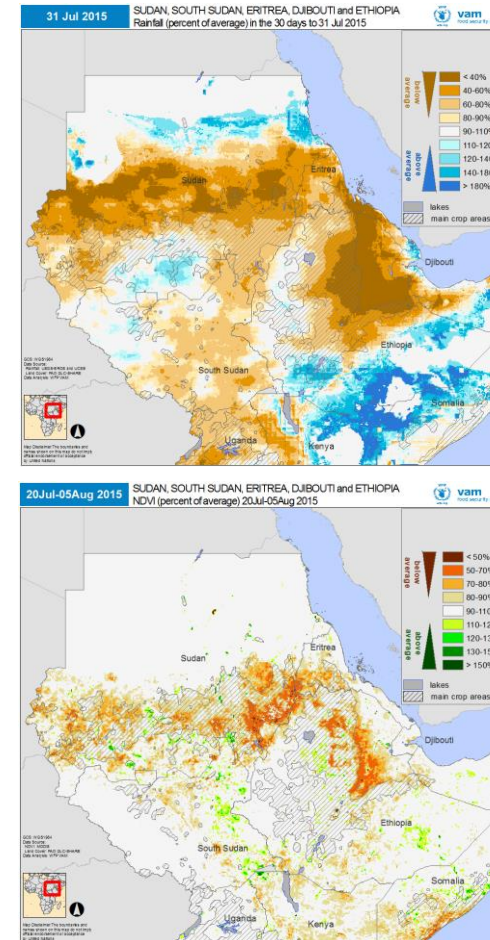
May 2015 rainfall as a percentage of the average and NDVI by early June 2015 as a percentage of the average. Warm shades for below average conditions, cool shades for above average levels.

2. Wetter than average May and June...

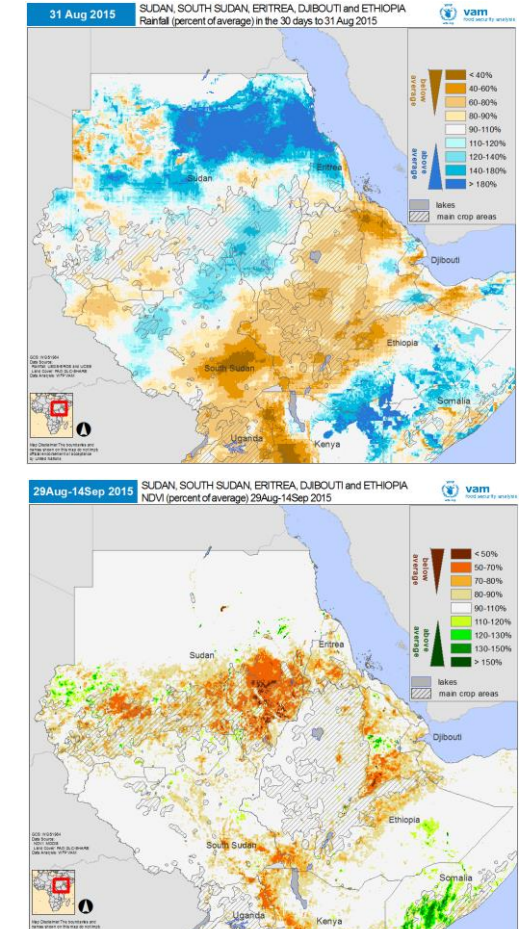
Above average rainfall in May was too late to salvage the *Belg* crops but it provided minor relief to pastoralists. In South Sudan, southeast and northern Ethiopia, it kept vegetation cover at exceptionally high levels.

3. Dry conditions settle in July...

From late June, severe rainfall deficits affected the region. This led to delays in the start of the season and poor growing conditions in Sudan and Ethiopia. In South Sudan, vegetation cover decreased to average levels.



July 2015 rainfall as a percentage of the average and NDVI in early August 2015 as a percentage of the average. Warm shades for below average conditions, cool shades for above average levels.

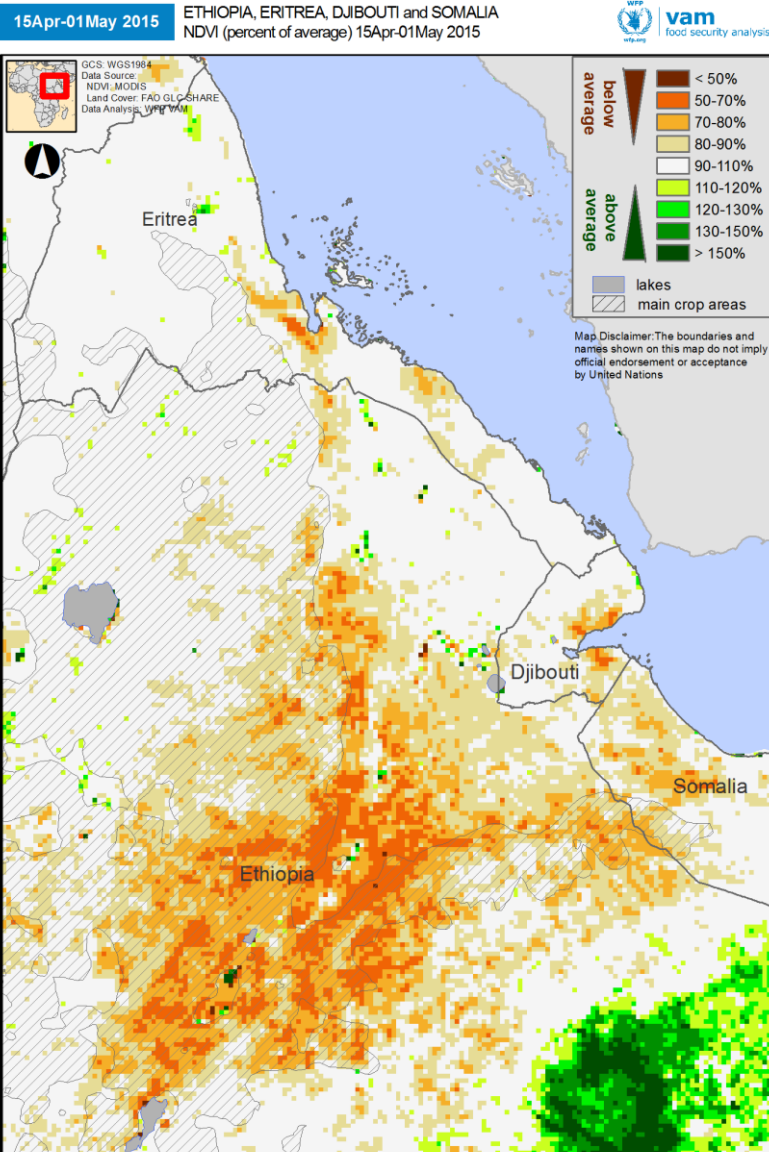


August 2015 rainfall as a percentage of the average and early September NDVI as a percentage of the average. Warm shades for below average conditions, cool shades for above average levels.

4. Only minor improvements in August

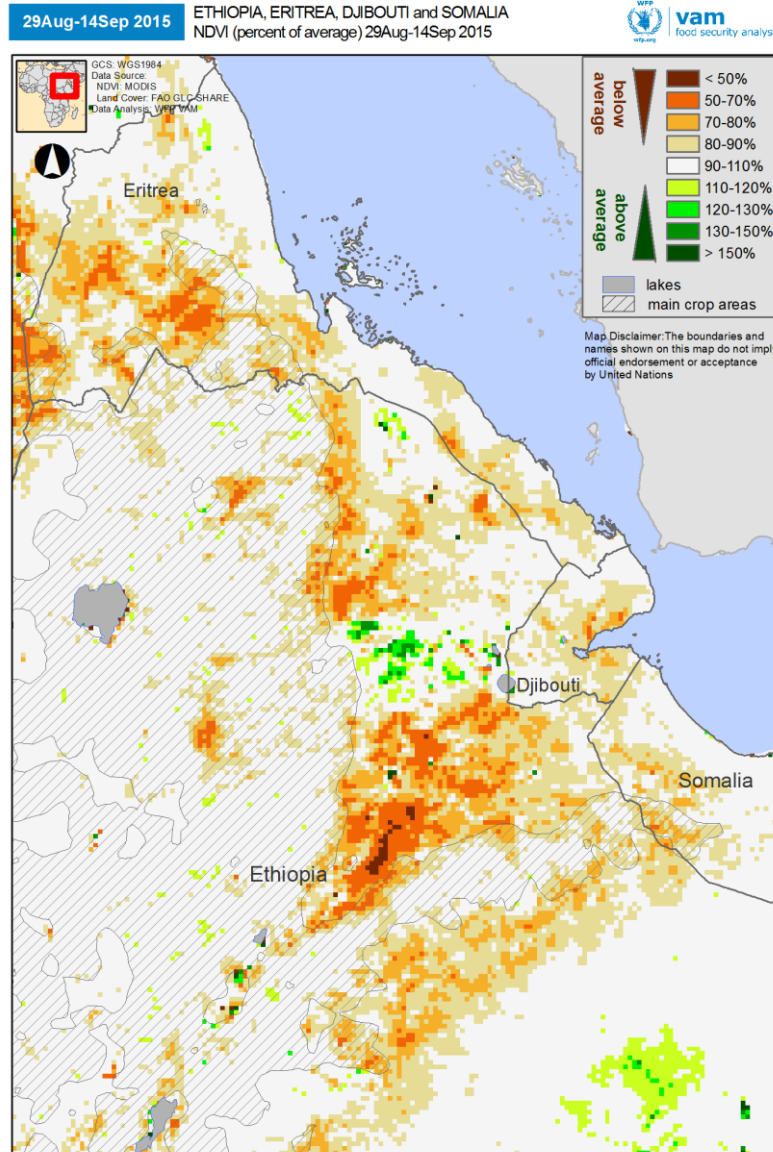
Rainfall improved from mid August in Sudan, but Ethiopia remained drier than average – similar conditions affected South Sudan and Karamoja. Vegetation cover deficits are now widespread across the region.

Areas of Concern: Ethiopia, Eritrea, Djibouti, Somaliland



Late April 2015

NDVI in late April 2015 (left) and early September 2015 (right) as a percentage of the 12 year average. Orange shades for below average conditions, green shades for above average levels. Data clearly shows the extent to which vegetation growth in both growing seasons has been affected by severe rainfall shortages.



Early September 2015

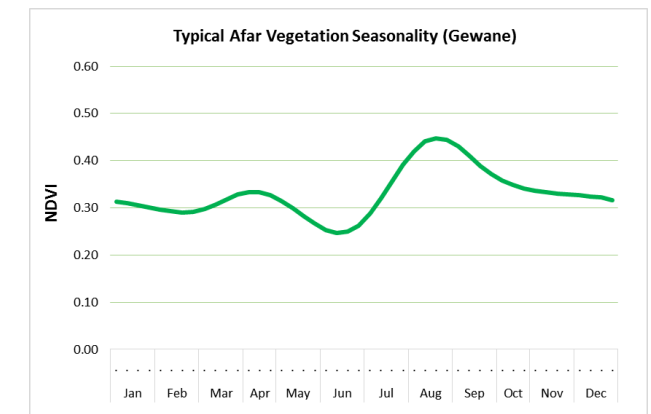
A Double Hit in Ethiopia's Afar Region and Beyond

Parts of Ethiopia with a dual (bimodal) season have faced serious problems for both seasons. Most severe impacts are noted in the Afar region, where a severe drought affected both the first and the second seasons, hitting pastoralists particularly hard.

Farmers had a very poor first (Belg) season as drought conditions extended into parts of Oromia, Amhara and SNPPR. The second or main season (where only one season takes place) is also performing poorly.

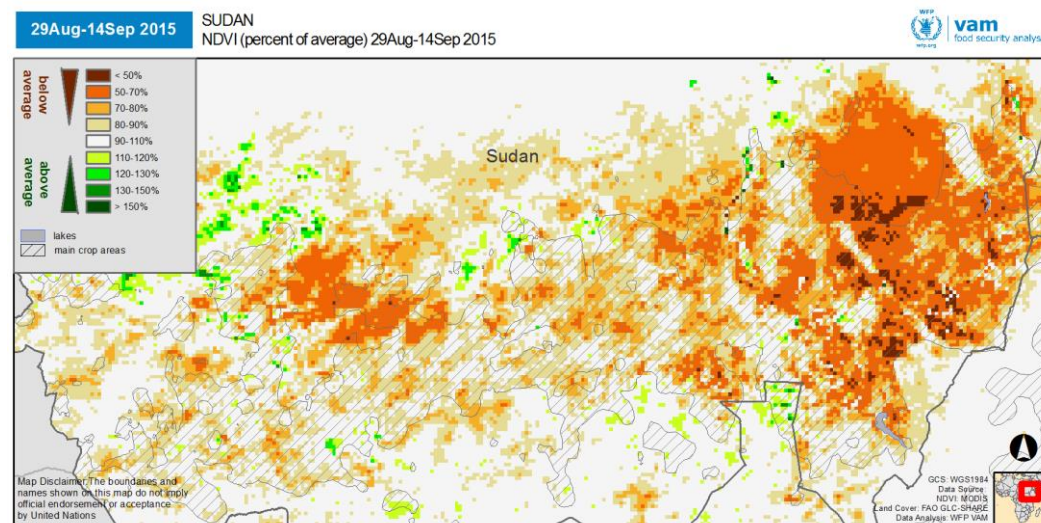
Other places affected include Eritrea, Djibouti and border areas of Somaliland. Here the second or the main season was more heavily affected.

These areas could still benefit from more widespread rain during October-December. Alternatively, and like the rest of the region, any improvements in water and pasture conditions could only be expected around March 2016.



The typical dual season in the Afar region. A first, less productive season peaking in April is followed by a second more productive one that peaks by end of August.

Areas of Concern: Sudan



NDVI in early September 2015 as a percentage of the 12 year average. Orange shades for below average conditions, green shades for above average levels.

Strong evidence of very poor ground conditions across the agricultural plains of Sudan.

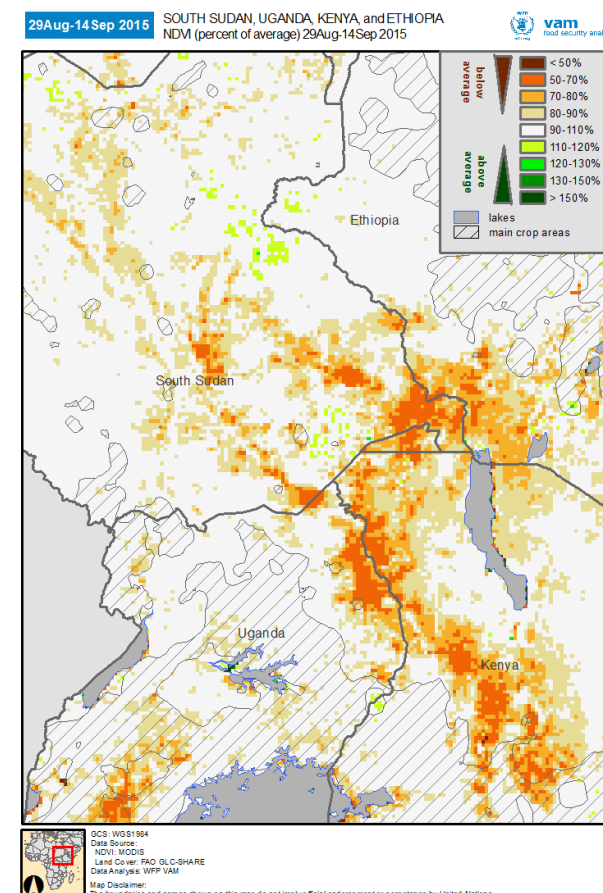
Poor prospects for Sudan's Agricultural and Pastoral Regions

Late arrival of the rains coupled with drier than average conditions across most of central and eastern Sudan resulted in very poor crop and pasture development as well as reduced area planted.

This specifically affected the poor subsistence farmers and pastoralists in the Kordofans, White Nile state and Kassala. The large mechanized sorghum farming domains of Gedaref, Sennar and Blue Nile were also impacted.

At national level, last year's bumper crop (almost double the previous 5 year average) will help smooth the impact of current season production shortfalls. However, pastoralists and poor vulnerable farmers in marginal areas will remain susceptible.

South Sudan / Karamoja



NDVI in early September 2015 as a percentage of the 12 year average. Orange shades for below average conditions, green shades for above average levels.

South Sudan, Karamoja and Turkana – dryness persists

Persistently drier than average conditions since July have affected crop and pasture development in SE South Sudan, Karamoja (Uganda) and Turkana (Kenya).

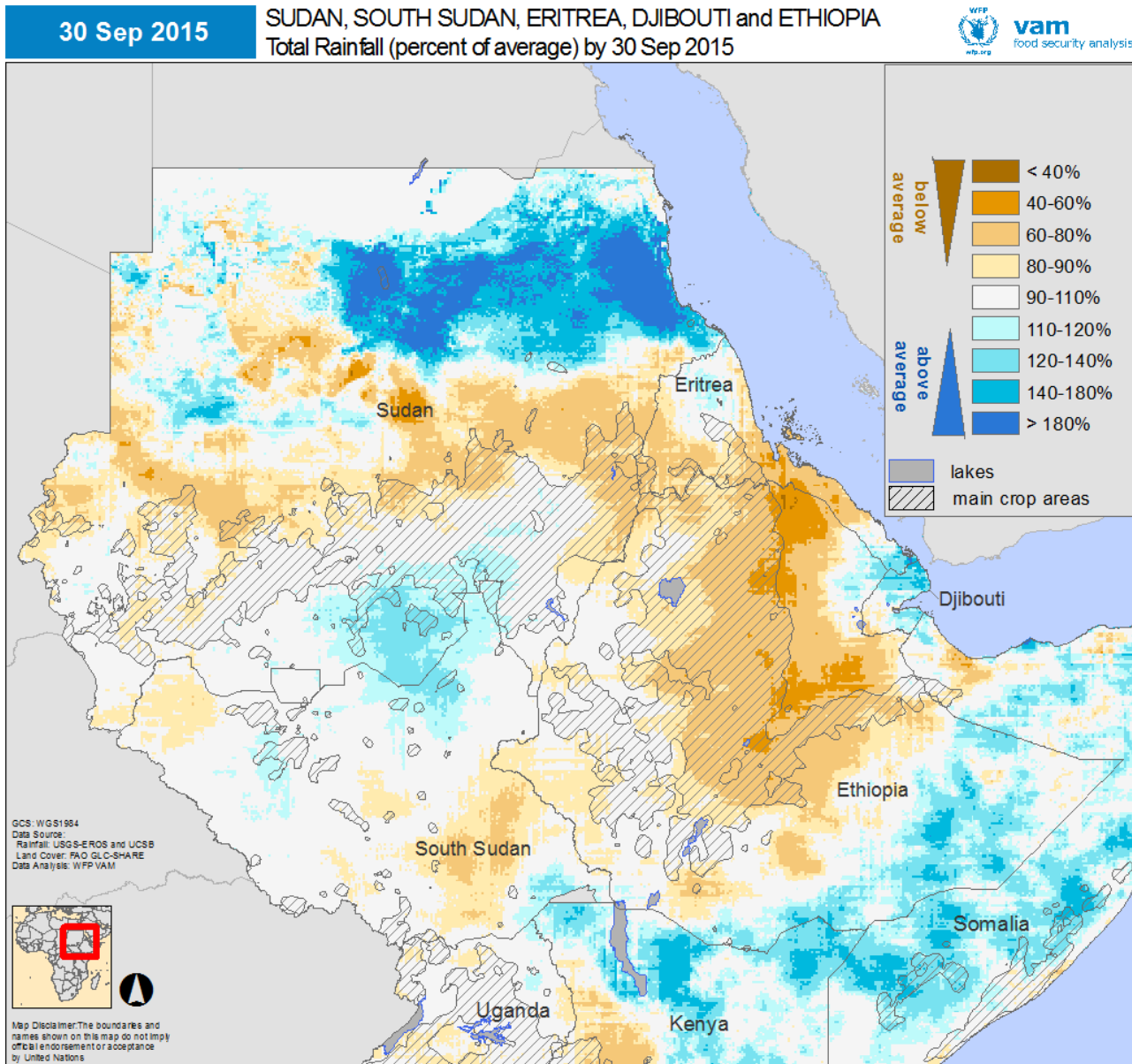
Pastoralist areas should recover given the early start and wetter than average conditions forecasted for the Oct-Dec rainy season.

Current Status and Near Future Perspectives



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Seasonal Performance



Widespread Poor Rainfall and Drought Across Vulnerable Areas

Despite good rainfall in the earliest stages of the growing season (May-June), drier than average conditions have been the dominant feature of the growing season across wide areas of Ethiopia, Eritrea, Sudan and to a lesser degree South Sudan.

Seasonal rainfall across Sudan was significantly below average and poorly distributed. Despite improvement in rains since mid September the impact seems too little, too late. While some benefits to large scale sorghum plantation in deep clay soils are expected, they do not compensate for the reduction in area planted and poor crop development during the mid season.

Identical patterns are seen across Eritrea and into northern and central Ethiopia, where some areas received only half of the seasonal rainfall. In central Ethiopia, severe dryness from February to April had already damaged the first cropping season (*Belg*). The second cropping season (*Meher*) is also affected by significant rainfall deficits.

In SE South Sudan pronounced dryness was experienced during July and August. Significant improvement in rainfall are now needed until the end of the season (November) to overcome any potential local crop losses.

Although seasonal rainfall in Karamoja (NE Uganda) was average, marked rainfall deficits since July may sharply impact crop production.

Seasonal cumulative rainfall until mid September 2015, as a percentage of the 20-year average.

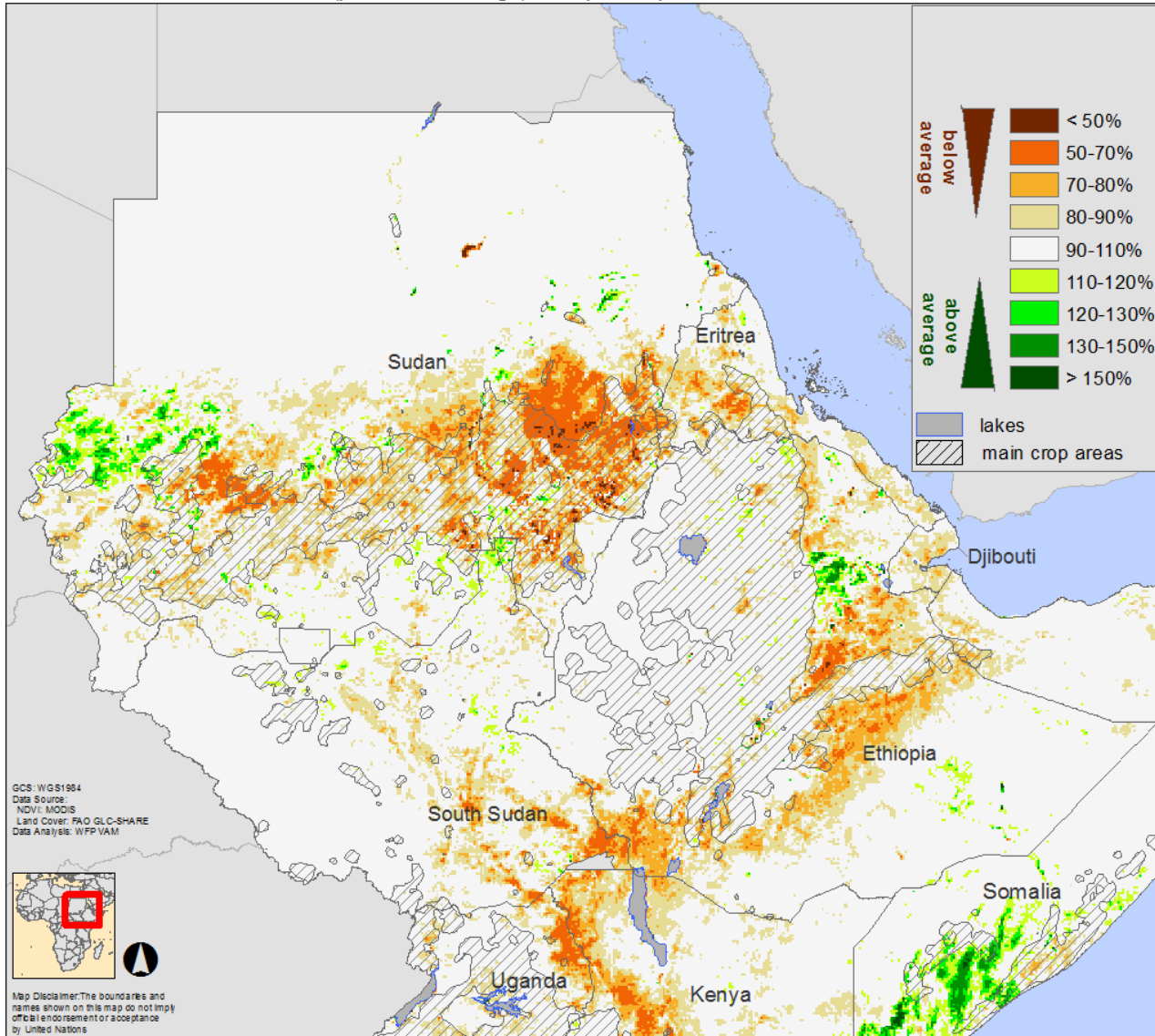
Hashed pattern indicates main agricultural areas.

Brown shades indicate below-average rainfall; blue shades indicate above-average seasonal rainfall.

Seasonal Performance

06Sep-22Sep 2015

SUDAN, SOUTH SUDAN, ERITREA, DJIBOUTI and ETHIOPIA
NDVI (percent of average) 06Sep-22Sep 2015



Significant Impacts on Crops and Pasture Expected

Widespread below average vegetation across the region is evidence of significant losses in crop and pasture production.

Across Sudan the growing season is coming to an end, leaving little time for a meaningful recovery in crop and pasture conditions. This will affect mostly subsistence farmers and pastoralists in North Kordofan, White Nile and Kassala. Large scale sorghum farming areas in the east will also be affected regardless of some modest improvements due to good late rains.

Crop and pasture conditions in northern and central Ethiopia as well as Eritrea are poor. Bimodal areas will therefore endure two consecutive bad seasons in 2015 as the previous *Belg* season was also drought affected. Areas with a single main season should also expect significant crop and pasture production losses as it is essentially almost too late for any recovery.

Recent dryness in South Sudan is reflected in lower than average vegetation, particularly Eastern Equatoria. The neighbouring Karamoja and Turkana regions are also affected. In South Sudan, since the growing season lasts until later in the year, there is still some time for recovery if rains improve significantly.

NDVI by first half of September 2015 as a percentage of the 12-year average.

Hashed pattern indicates main agricultural areas.

Brown shades indicate below-average vegetation; green shades indicate above-average seasonal vegetation.

Outlook for the Remainder of the Season

Expectations for the Late Season

Seasonal rainfall forecasts that cover the September to December period provide indications for the late stages of the season in South Sudan and southern areas of Ethiopia.

For South Sudan, with the exception of the southeast, drier than average conditions are expected – effects will be moderate since the bulk of the crop development is done, but late maturing crops may be affected.

For central Ethiopia, wetter than average tendencies may help crops whose development is delayed.

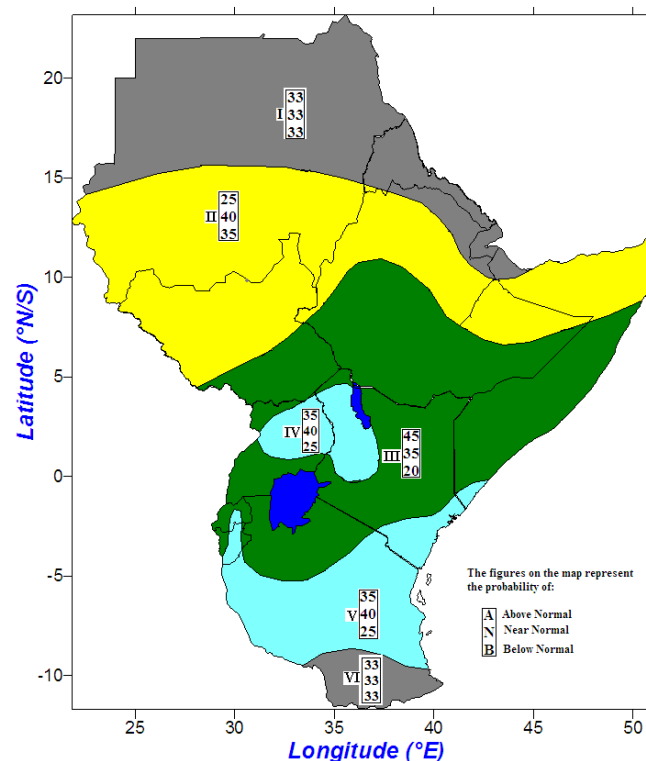
Areas such as Djibouti or Eritrea may benefit from a wider reach of the Short Rains season that is about to start in the Horn of Africa region (see below).

Expectations for the Short Rains season

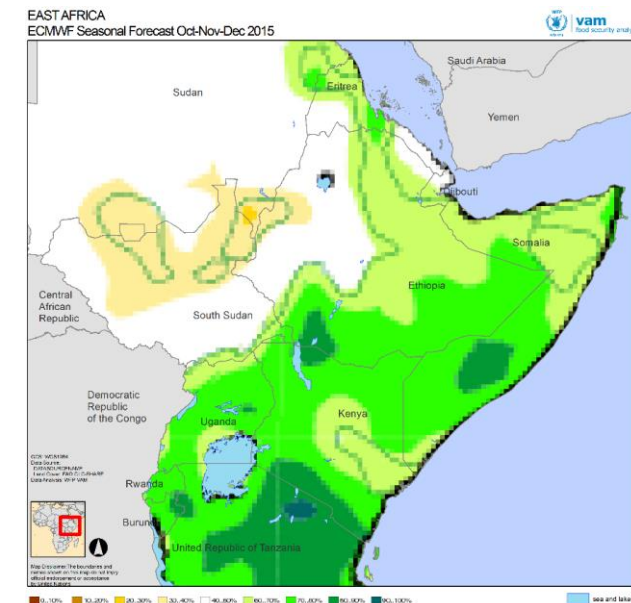
Somalia, south-east Ethiopia (Somali region), Kenya and Uganda are entering the Short Rains season which lasts from October to December-January.

As typical of El Nino years, wetter than average conditions are expected across the region and may extend into areas not normally associated with this particular rainfall regime.

This season will be covered by its own specific reports



Climate Outlook Forum Rainfall Forecast for September-December 2015.
Yellow zones – drier than average tendency. Green and Blue – wetter than average tendency.

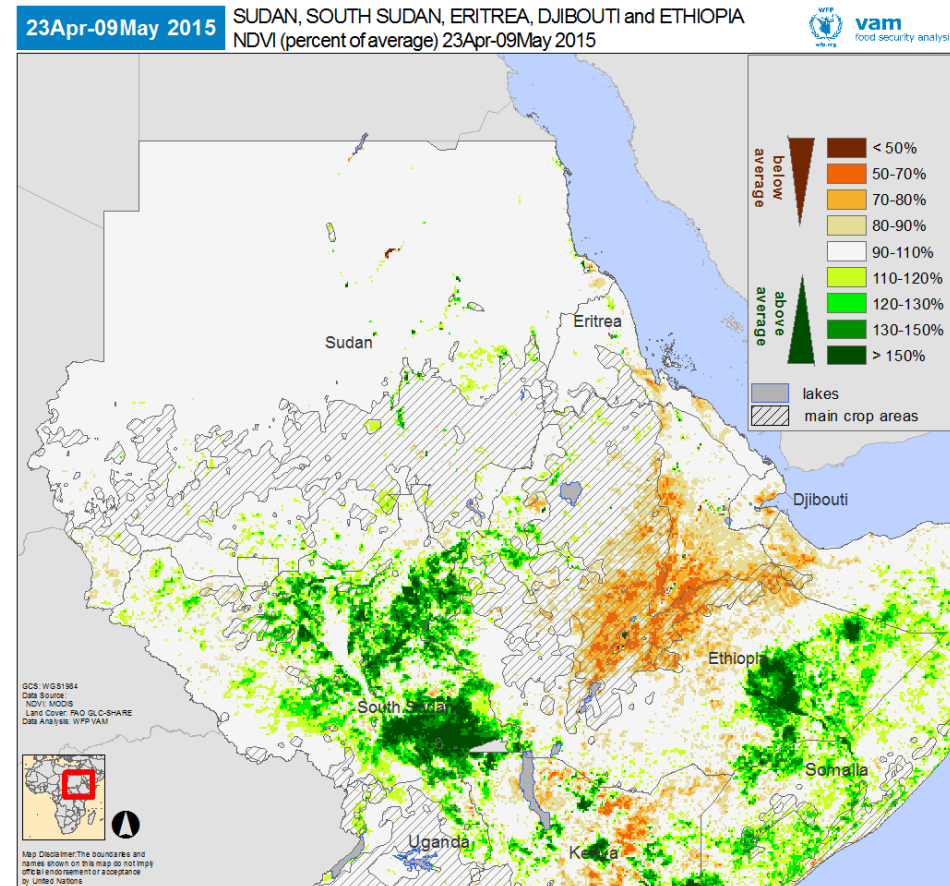
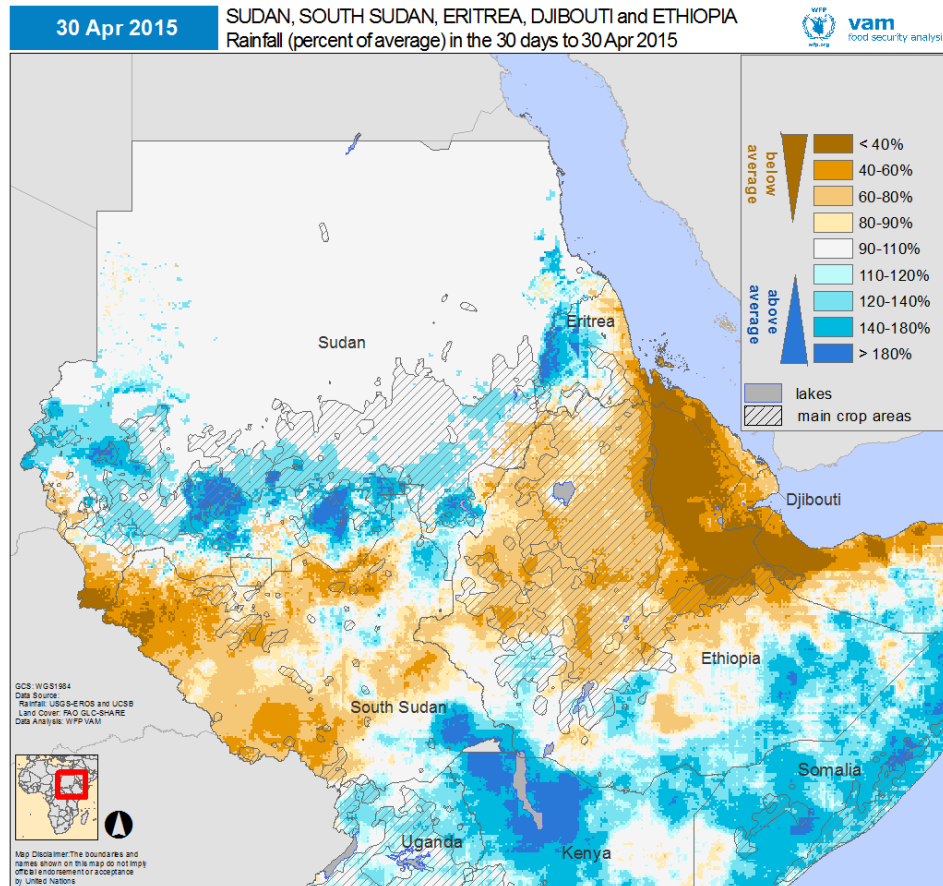


ECMWF forecast for October-December 2015 rainfall.
Green shades = wetter than average conditions more likely.
Brown shades = drier than average conditions more likely

The Season: Month by Month



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April 2015 rainfall as a percentage of the 20-year average (left).

Brown shades for drier than average, blue shades for wetter than average conditions.

Early May 2015 vegetation index as a percentage of the 12-year average (right).

Orange shades for below-average, green shades for above-average vegetation.

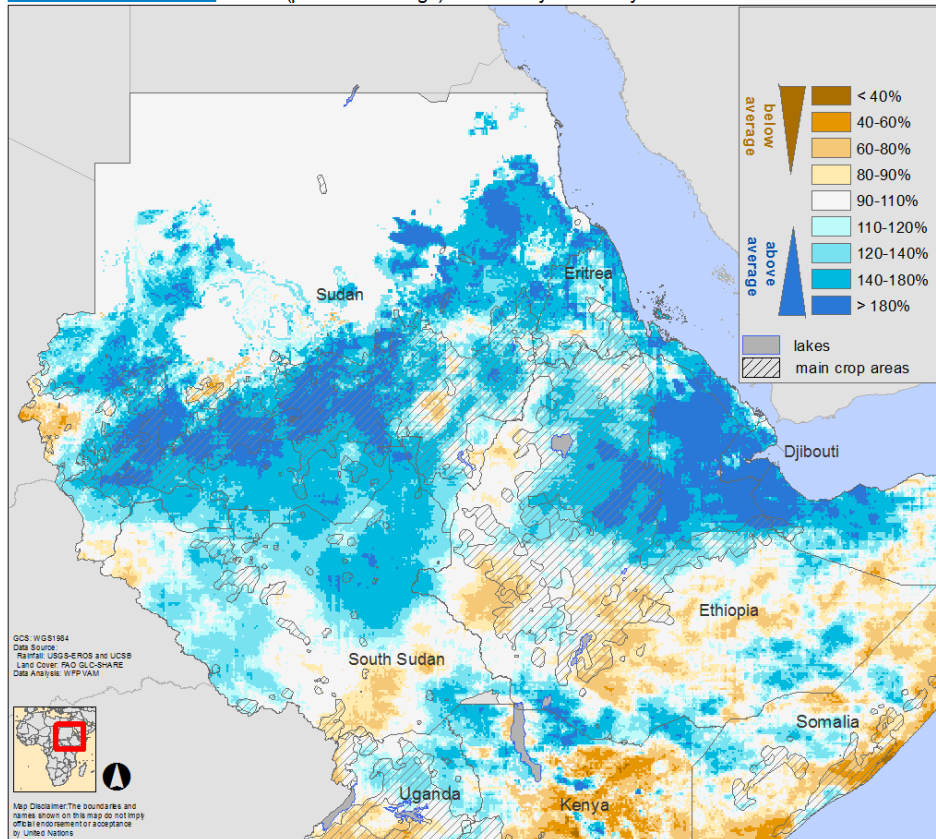
Hashed pattern indicates main agricultural areas.

April is the main month of the *Belg* growing season in Ethiopia (March to May). Very severe rainfall deficits can be seen extending from the Afar region into central and western areas of the country. This resulted in much below average vegetation, clearly indicating a high likelihood of major crop losses and reduction of pasture resources for pastoralists.

In contrast, early heavy rainfall led to wetter than average conditions in SE Ethiopia and South Sudan – this resulted in record breaking levels of vegetation particularly in areas where pastoralist livelihoods are dominant.

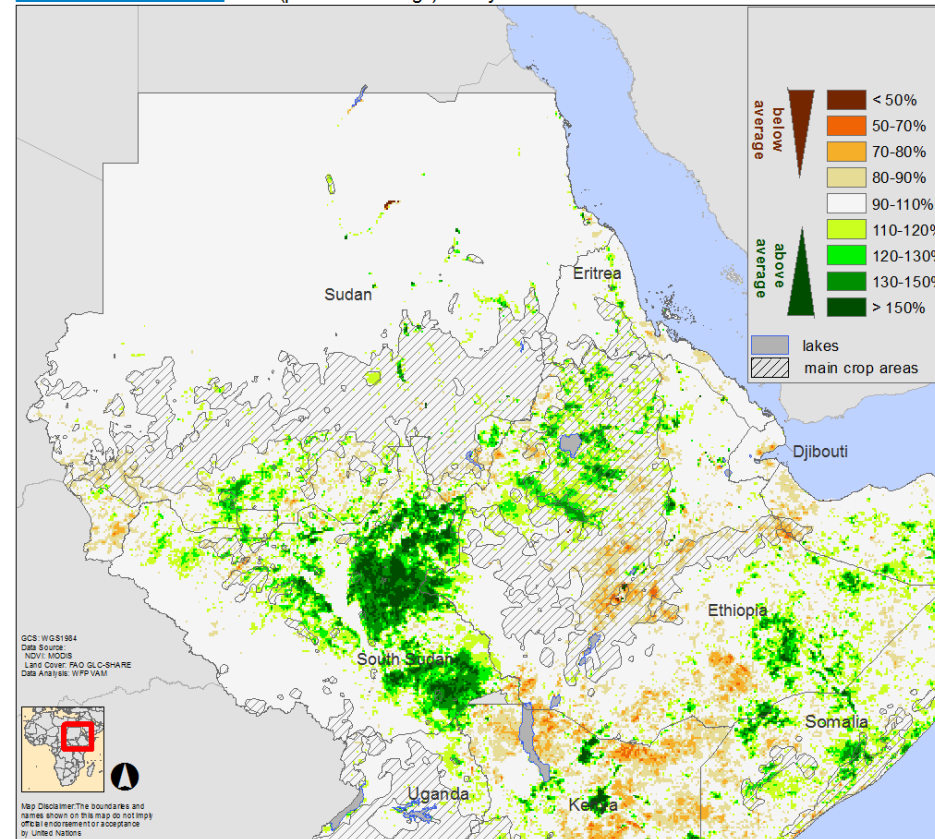
31 May 2015

SUDAN, SOUTH SUDAN, ERITREA, DJIBOUTI and ETHIOPIA
Rainfall (percent of average) in the 30 days to 31 May 2015



25May-10Jun 2015

SUDAN, SOUTH SUDAN, ERITREA, DJIBOUTI and ETHIOPIA
NDVI (percent of average) 25May-10Jun 2015



May 2015 rainfall as a percentage of the 20-year average (left).

Brown shades for drier than average, blue shades for wetter than average conditions.

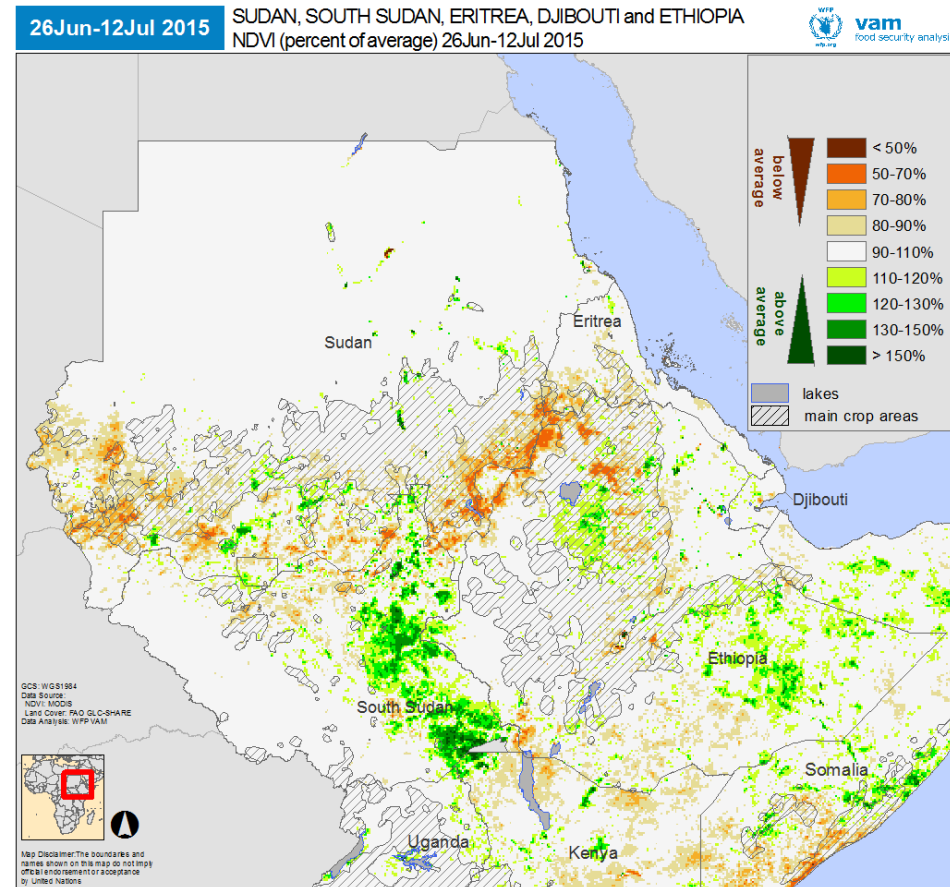
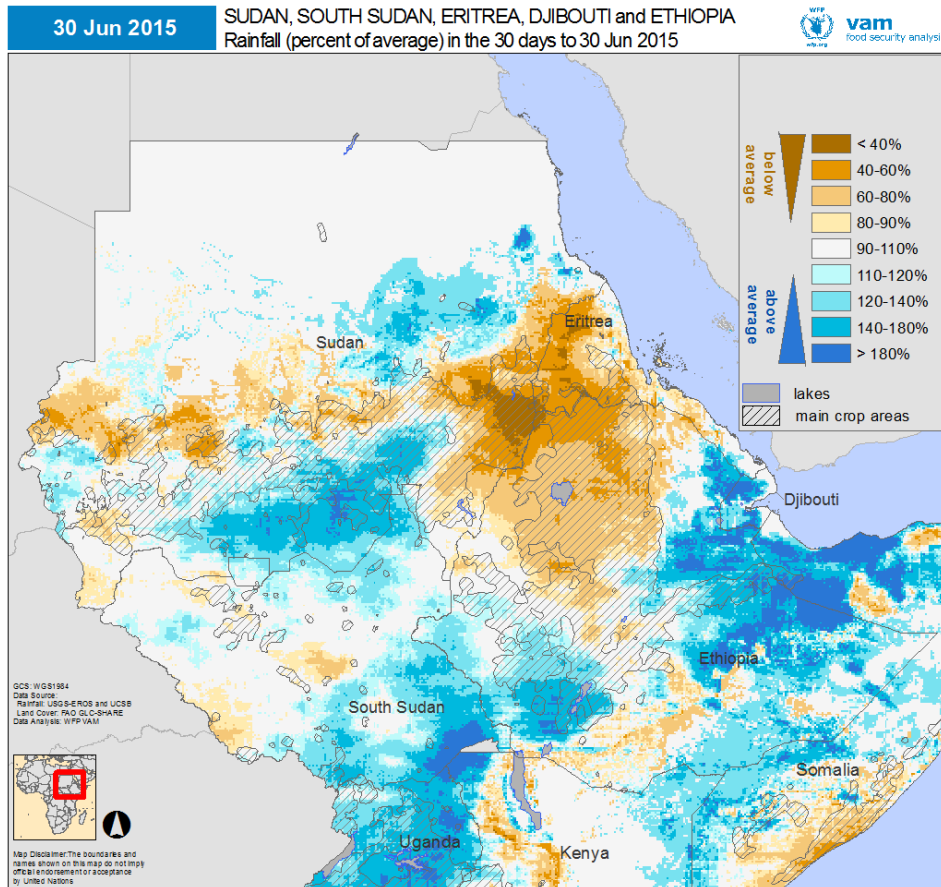
Early June 2015 vegetation index as a percentage of the 12-year average (right).

Orange shades for below-average, green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

May was characterized by above average rainfall across most of the region. Although good rains came too late to salvage the Belg crop season in Ethiopia, they did contribute to improved pasture conditions.

Favourable rains maintained exceptional vegetation levels in eastern and northern South Sudan, and extended better than average vegetation into southern areas of Sudan (Kordofan) and NW Ethiopia (Tigray). In South Sudan this allowed early planting and may have led to increases in area planted.



June 2015 rainfall as a percentage of the 20-year average (left).

Brown shades for drier than average, blue shades for wetter than average conditions.

Early July 2015 vegetation index as a percentage of the 12-year average (right).

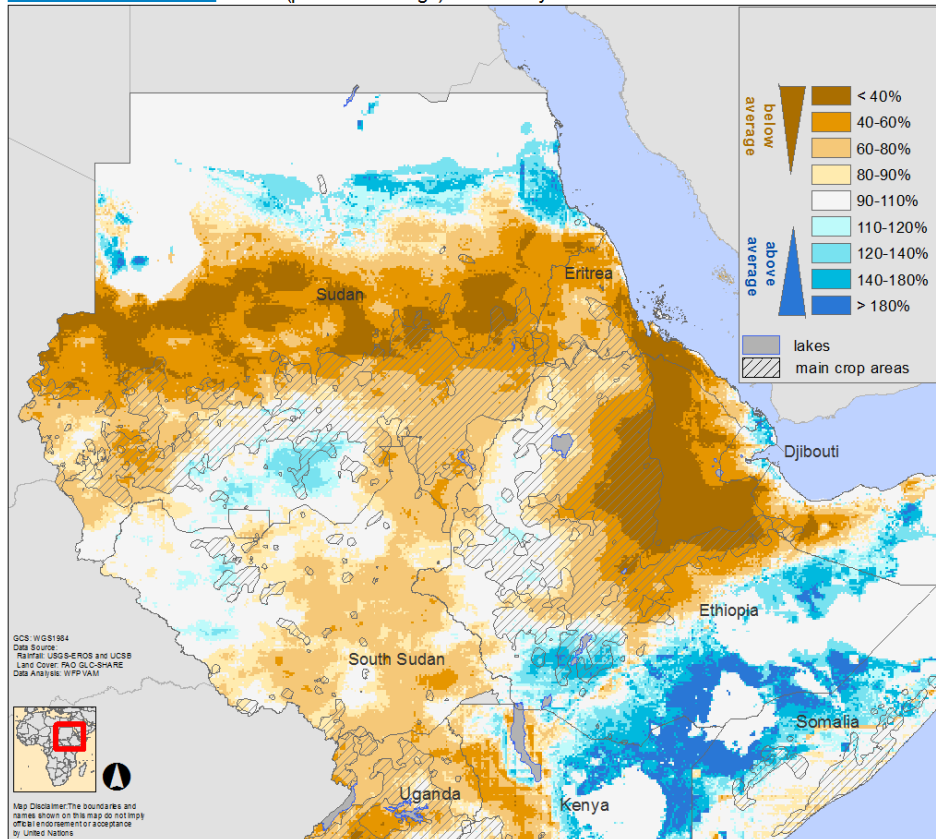
Orange shades for below-average, green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

From mid June onwards, drier than average weather affected eastern Sudan, NW Eritrea, northern Ethiopia and the Darfur region of western Sudan. This was reflected in a change of vegetation patterns, with below average vegetation cover spreading across Sudan from Darfur to Gedaref in the east and further into northern Ethiopia; in South Sudan vegetation decreased to closer to average levels.

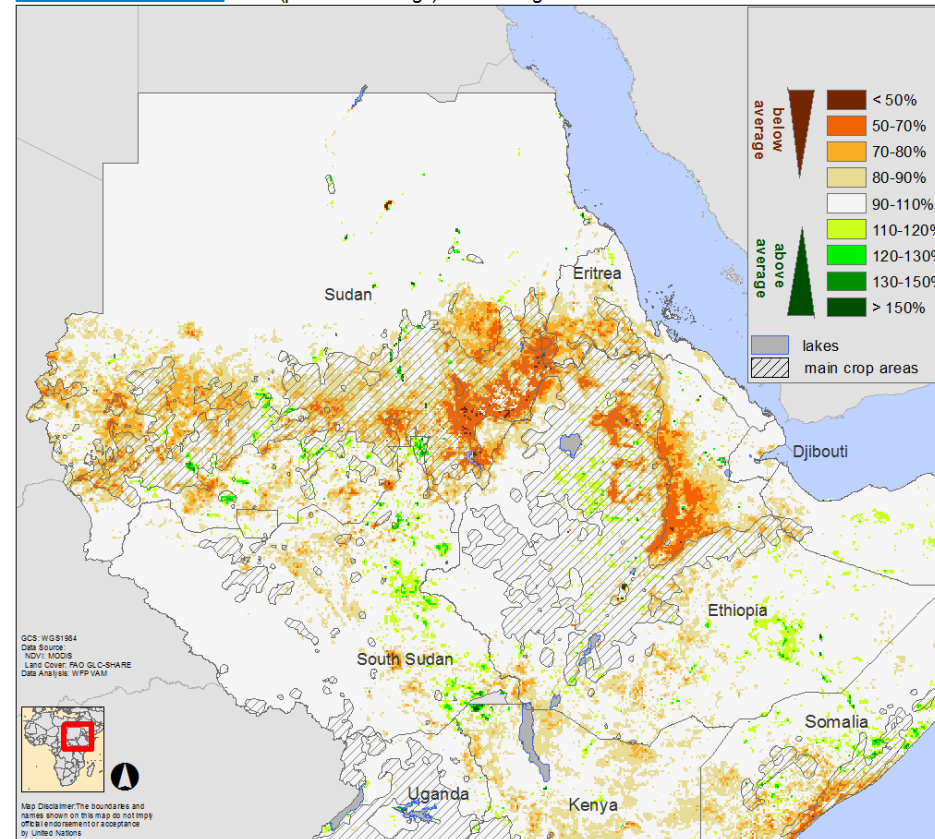
31 Jul 2015

SUDAN, SOUTH SUDAN, ERITREA, DJIBOUTI and ETHIOPIA
Rainfall (percent of average) in the 30 days to 31 Jul 2015



20Jul-05Aug 2015

SUDAN, SOUTH SUDAN, ERITREA, DJIBOUTI and ETHIOPIA
NDVI (percent of average) 20Jul-05Aug 2015



July 2015 rainfall as a percentage of the 20-year average (left).

Brown shades for drier than average, blue shades for wetter than average conditions.

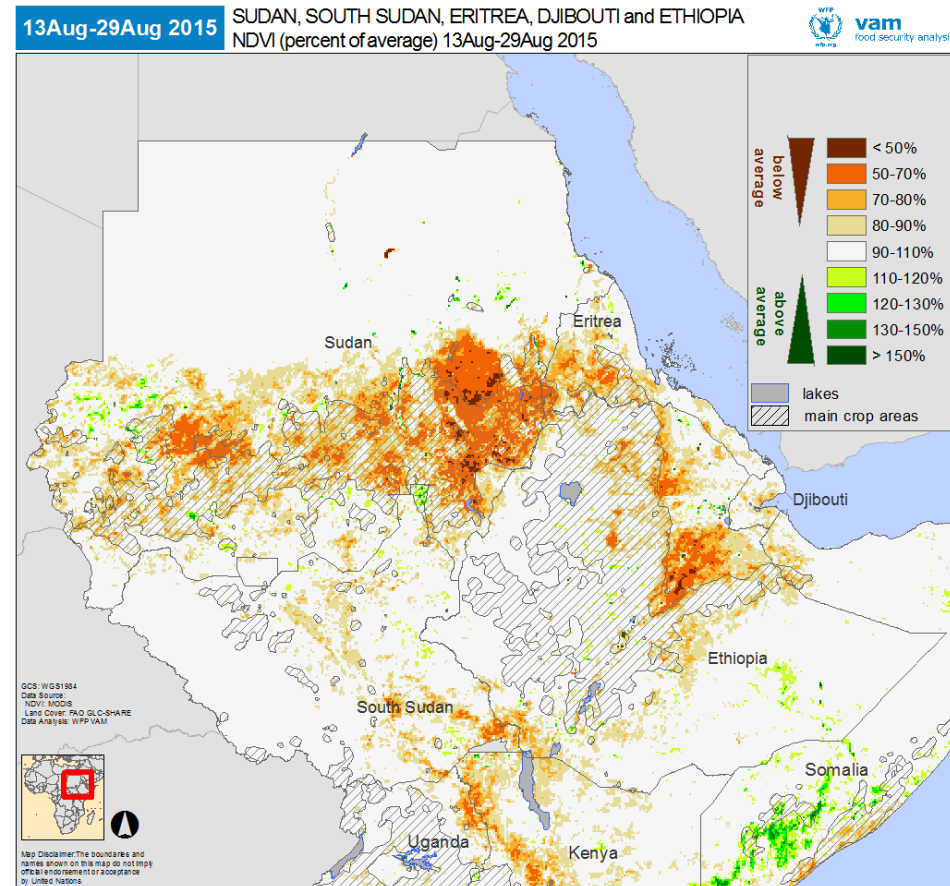
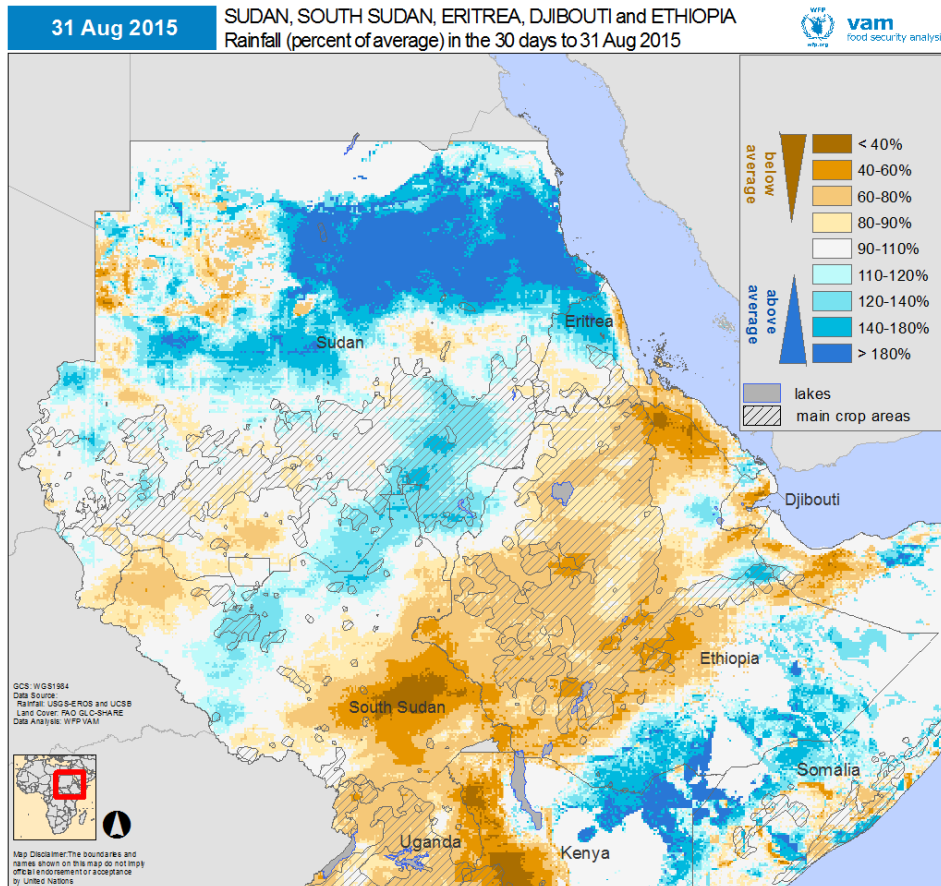
Early August 2015 vegetation index as a percentage of the 12-year average (right).

Orange shades for below-average, green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

Drier than average weather developed and intensified in Sudan from Darfur to the grain producing regions of the east. Extreme rainfall deficits spread across central and northeast Ethiopia, as well as Eritrea. As a result, vegetative development was severely delayed, resulting in lower than average vegetation cover across wide areas of the region. This translates into delays in planting and early crop development in areas which typically have short growing seasons.

Drier than average conditions also spread into central and eastern South Sudan and into Karamoja (NE Uganda) leading to a decrease of vegetation to below average levels. Although the growing season is fairly long (allowing room for recovery in conditions), most farmers are very vulnerable, poor smallholders.



August 2015 rainfall as a percentage of the 20-year average (left).

Brown shades for drier than average, blue shades for wetter than average conditions.

Late August 2015 vegetation index as a percentage of the 12-year average (right).

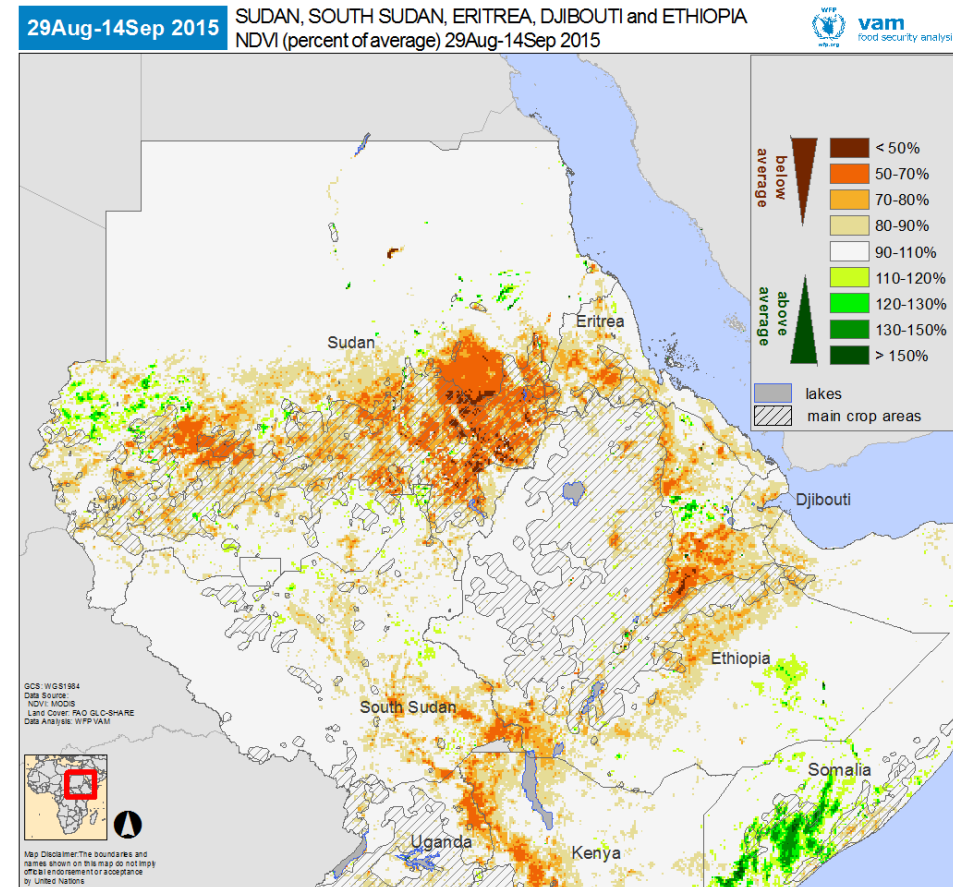
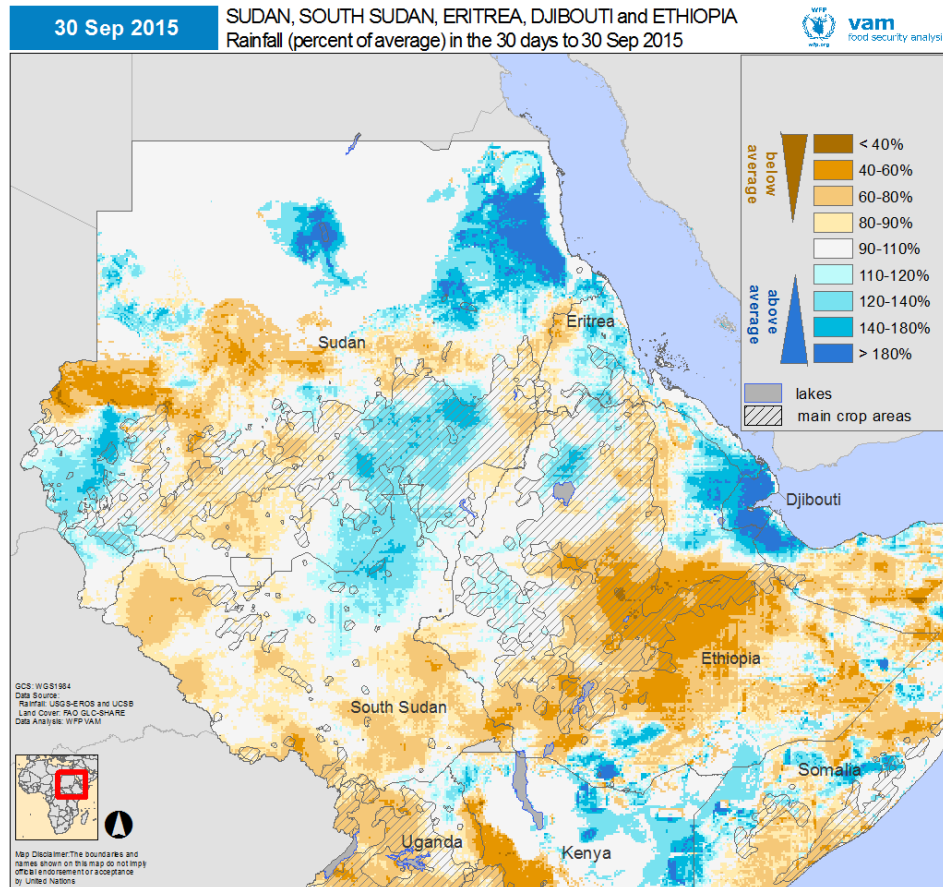
Orange shades for below-average, green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

Drier than average conditions were still dominant across the region, except for arid desert areas of northern most Sudan. The rainfall was average in Kordofan and most of eastern Sudan. Ethiopia continued to endure drier than average conditions. This resulted in widespread and large vegetation deficits.

In eastern Ethiopia and Eritrea there is now little chance of any recovery in pasture and crop status. Modest improvements in crop production may occur in eastern Sudan but they are unlikely to be significant at this stage.

In SE South Sudan and Karamoja, continued drier than average conditions are now reflected in more widespread below average vegetation cover.



September 2015 rainfall as a percentage of the 20-year average (left).

Brown shades for drier than average, blue shades for wetter than average conditions.

Mid September 2015 vegetation index as a percentage of the 12-year average (right).

Orange shades for below-average, green shades for above-average vegetation.

Hashed pattern indicates main agricultural areas.

Drier than average conditions remained in central and southwest Ethiopia, eastern South Sudan and parts of Uganda, increasing the severity of impacts on crops and pasture resources. Normal or moderately above normal rainfall in eastern Sudan and northern Ethiopia will bring little improvement to crop production prospects. No changes are expected in the Kordofan regions.

There is one month remaining in the rainfall season but only in South Sudan and southwest areas of Ethiopia will it be in significant amounts – no further changes are now expected, except in areas which may benefit from a spill over of the Short Rains season that will shortly start in Kenya and Somalia.

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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