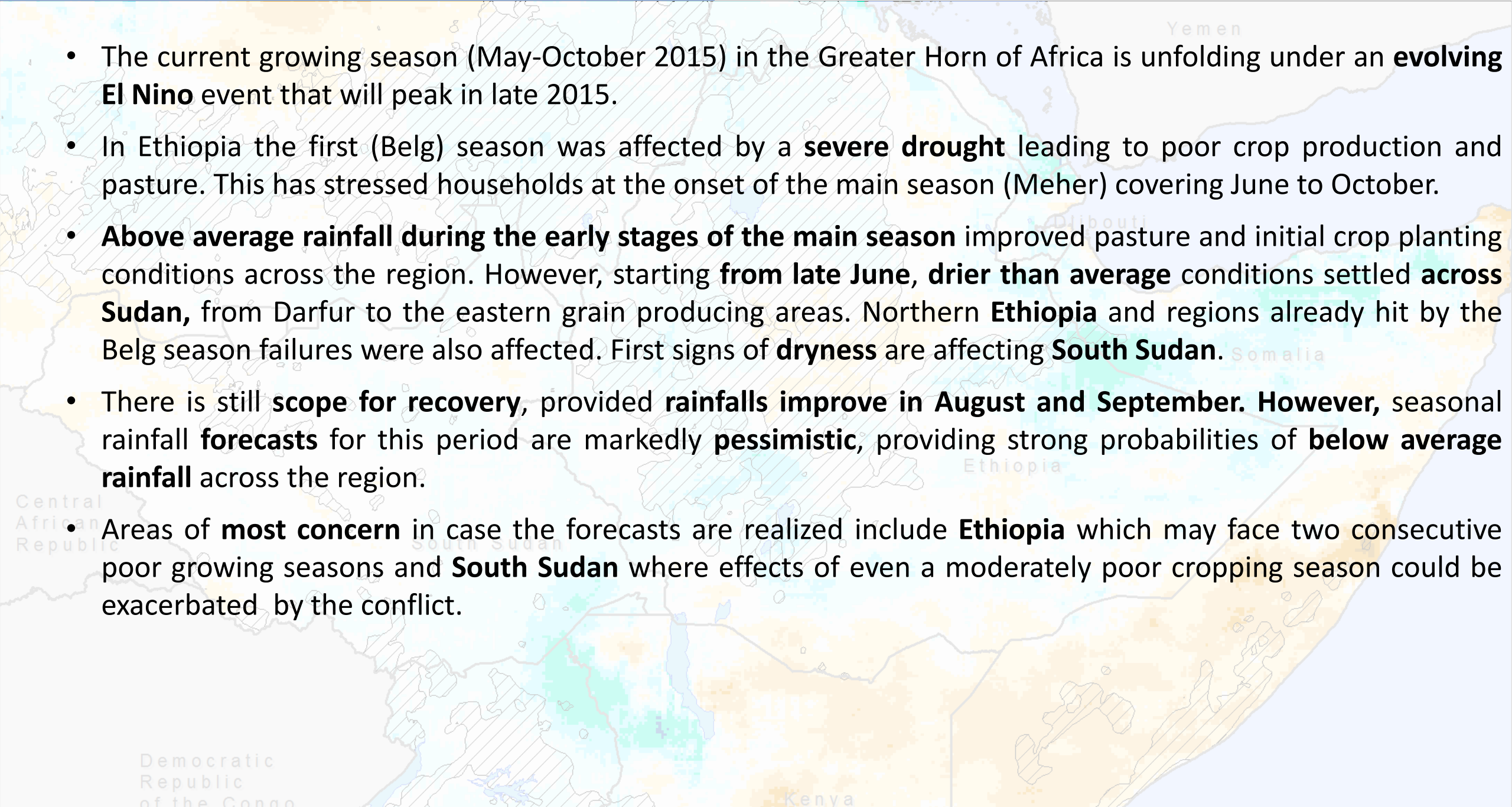


East Africa: The 2015 Season (Sudan/Ethiopia)



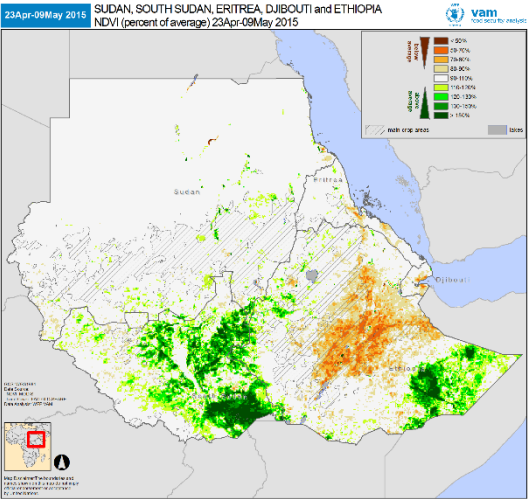
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- The current growing season (May-October 2015) in the Greater Horn of Africa is unfolding under an **evolving El Nino** event that will peak in late 2015.
- In Ethiopia the first (Belg) season was affected by a **severe drought** leading to poor crop production and pasture. This has stressed households at the onset of the main season (Meher) covering June to October.
- **Above average rainfall during the early stages of the main season** improved pasture and initial crop planting conditions across the region. However, starting **from late June, drier than average** conditions settled **across Sudan**, from Darfur to the eastern grain producing areas. Northern **Ethiopia** and regions already hit by the Belg season failures were also affected. First signs of **dryness** are affecting **South Sudan**.
- There is still **scope for recovery**, provided **rainfalls improve in August and September. However**, seasonal rainfall **forecasts** for this period are markedly **pessimistic**, providing strong probabilities of **below average rainfall** across the region.
- Areas of **most concern** in case the forecasts are realized include **Ethiopia** which may face two consecutive poor growing seasons and **South Sudan** where effects of even a moderately poor cropping season could be exacerbated by the conflict.

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 levels in eastern South Sudan and SE Ethiopia.



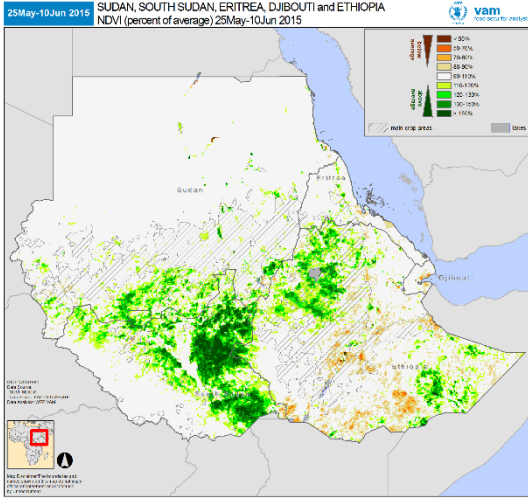
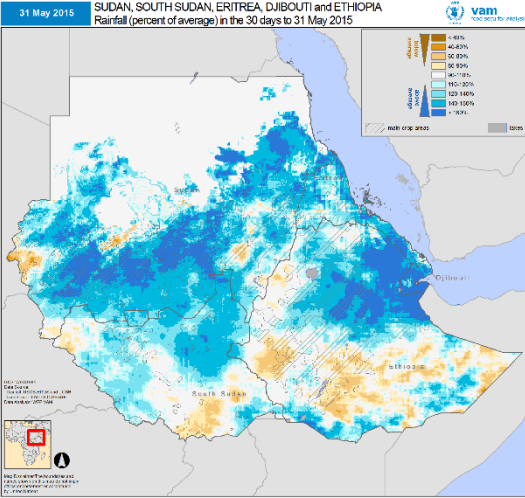
NDVI of early May 2015 as a percentage of the 12 year average, clearly showing the impacts of the severe rainfall deficits in March and April 2015. Warm shades for below average conditions, Cool shades for above average levels.

3. Dry conditions settle in July

From late June the region endured severe rainfall deficits, already reflected in lower than average vegetation cover.

This raises serious concerns in case this tendency continues and conforms with the latest seasonal forecasts

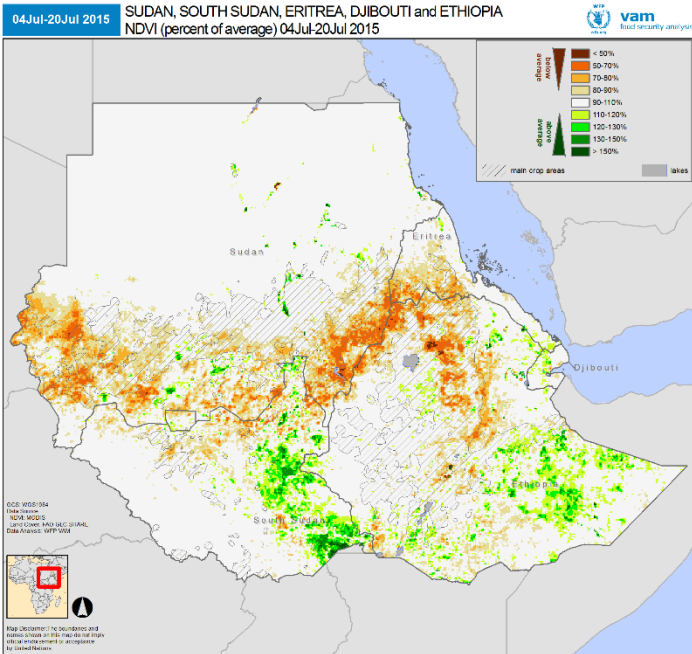
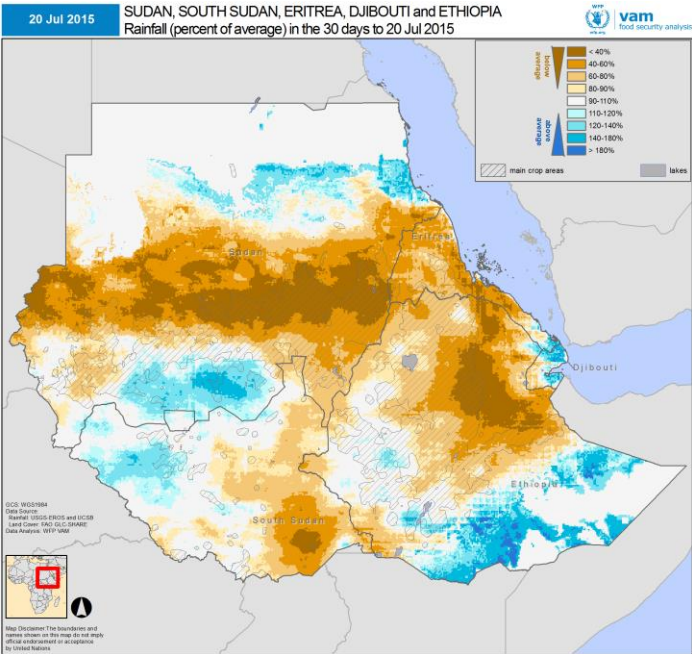
30 day rainfall by 20 July 2015 as a percentage of the average (left) and NDVI by mid July 2015 as a percentage of the average. Warm shades for below average conditions, cool shades for above average levels.



2. Wetter than average May and June...

Above average rainfall in May was too late to salvage the Belg crops but it provided significant relief to pastoralists. These rains were also instrumental in keeping vegetation cover at exceptional levels in South Sudan and southeast and northern Ethiopia.

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



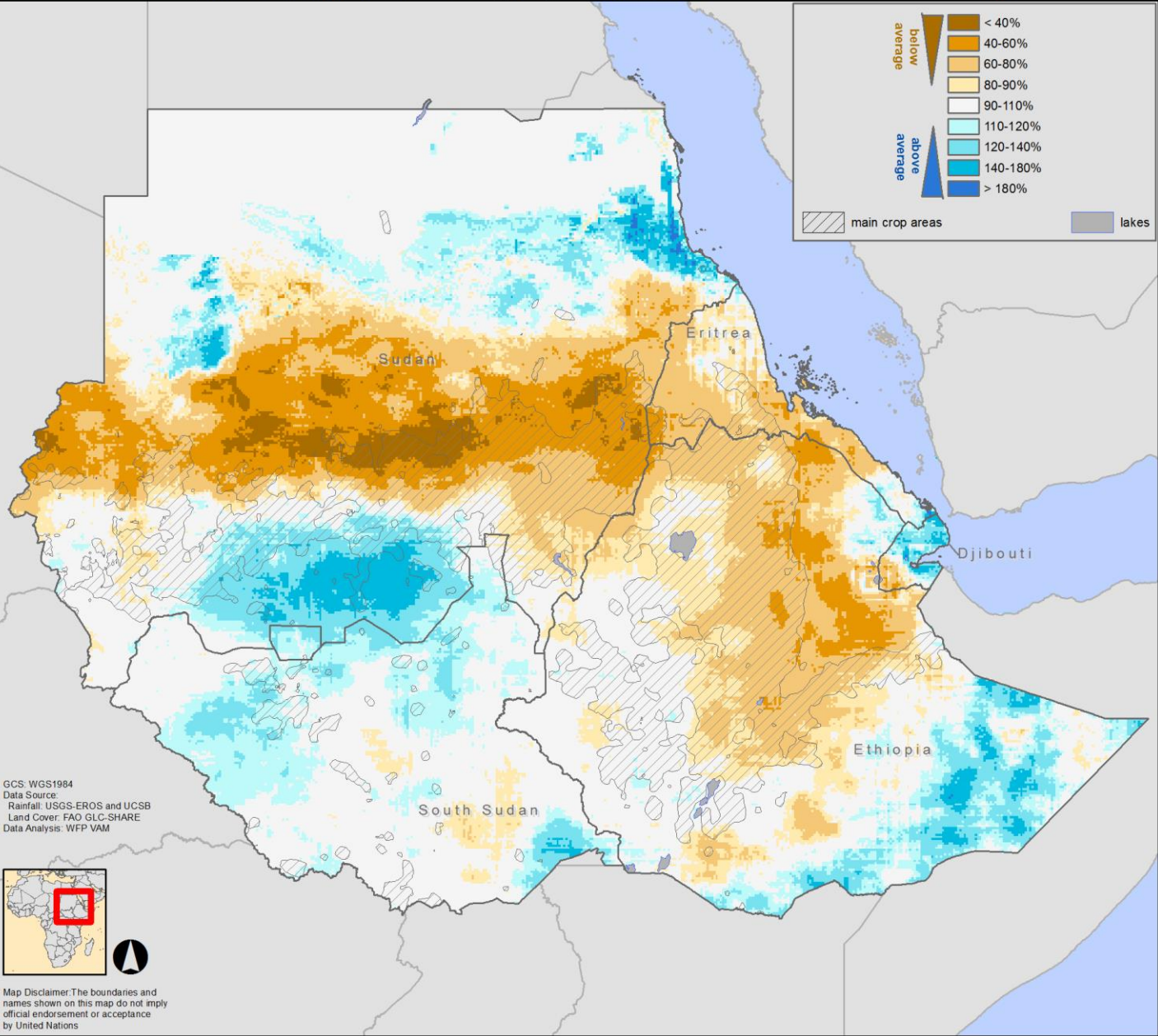
Current Status and near Future Perspectives



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20 Jul 2015

SUDAN, SOUTH SUDAN, ERITREA, DJIBOUTI and ETHIOPIA
Total Rainfall (percent of average) by 20 Jul 2015



Seasonal rainfall performance

Despite good early stages of the growing season, drier than average conditions have affected the more marginal areas in the Greater Horn—specifically Ethiopia and Sudan.

The current total seasonal rainfall across the Sahelian belt of Sudan is about half of the average for this time. This situation extends to the major grain producing areas of the east and across Eritrea into northern and central Ethiopia.

In central Ethiopia, this builds upon the severe dryness experienced from February to April, which severely impacted the first cropping season (Belg). Thus far, the rains of the second cropping season (Meher) have not been sufficient to overcome the deficits.

The situation in these areas can change rapidly and substantially, since the bulk of the seasonal rainfall occurs during July to September. However, seasonal forecasts for this forthcoming period are pessimistic, raising the possibility of low crop production.

In Ethiopia, bimodal areas would then face two consecutive poor seasons in the same year. In Sudan, such a situation could impact the poorest subsistence farmers and pastoralists. Although major grain producing areas of the east are very resilient to early deficits, they will need decent rainfall in August and September.

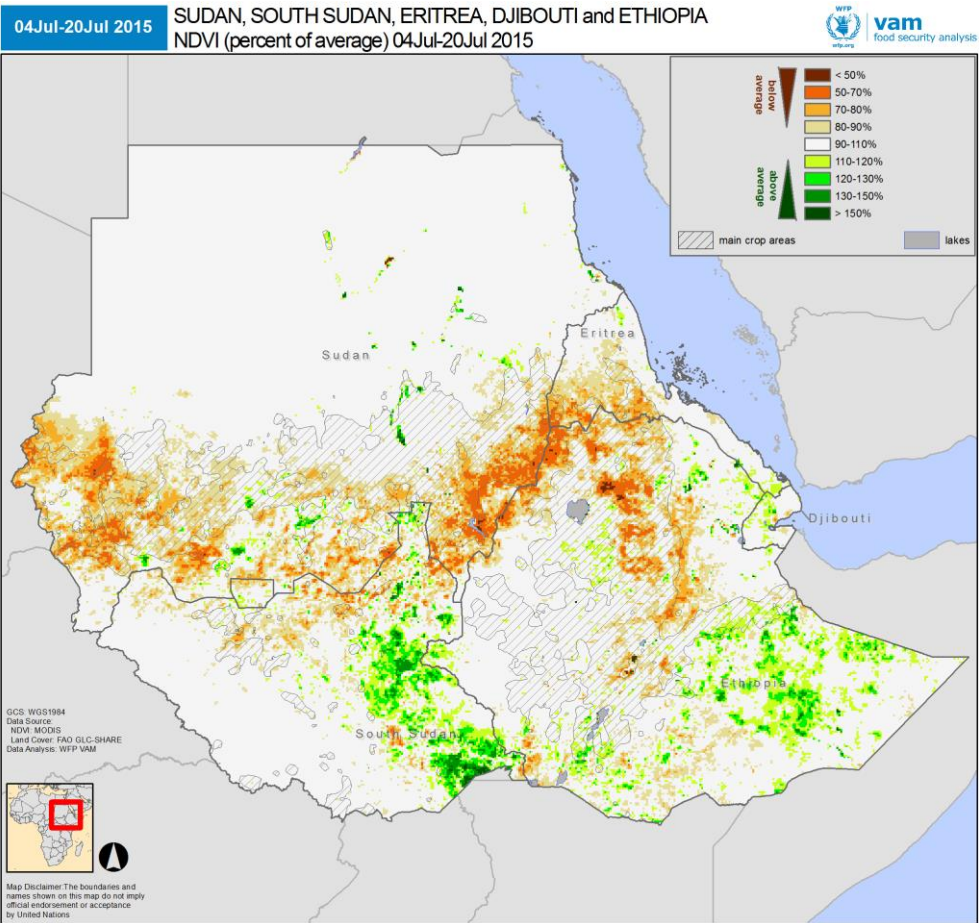
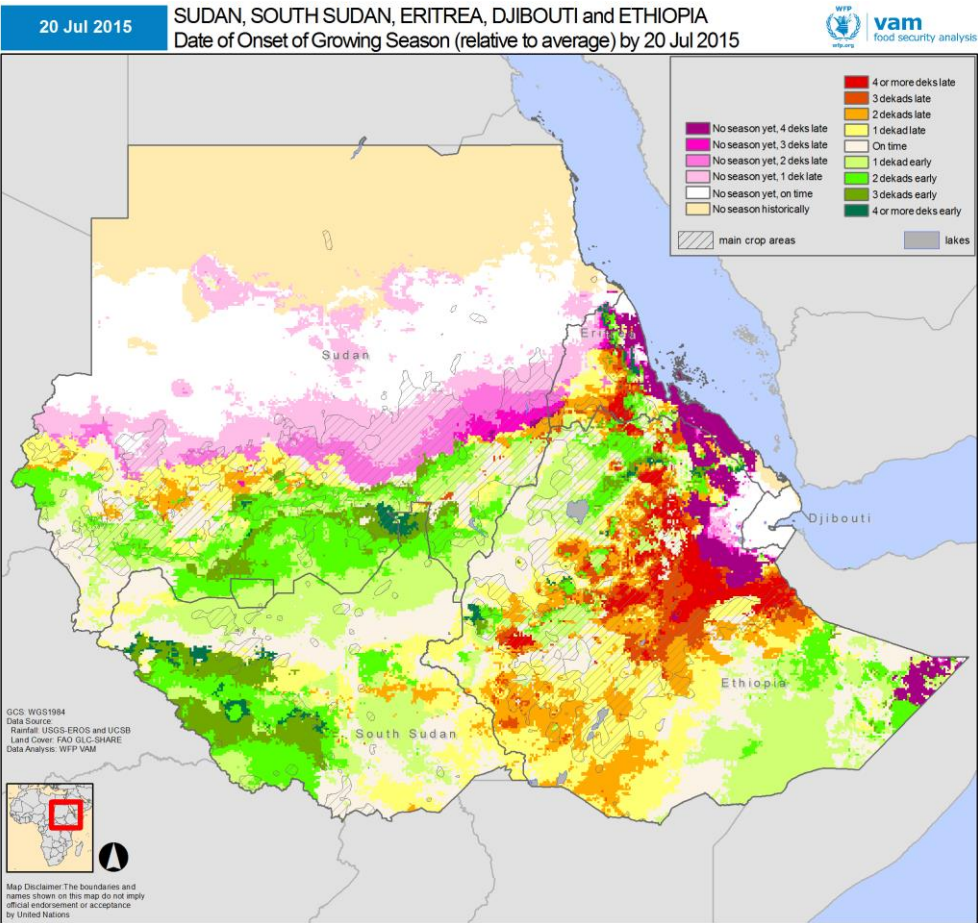
In contrast, in southern areas of Sudan, western Ethiopia and South Sudan, the rains started earlier than usual and seasonal rainfall is at near or above average levels. However, even here the most recent data indicates increasingly drier conditions.

Seasonal cumulative rainfall until mid July 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.

EAST AFRICA SEASONAL ANALYSIS - 2015



Left: Date of onset of the growing season compared to average. Pinks and yellows to reds for delayed growing seasons, green shades for earlier than average growing seasons.

Right: early July 2015 Vegetation Index as a percentage of the 12-year average. Hashed pattern indicates main agricultural areas. Orange shades for below-average vegetation; green shades for above-average vegetation

Onset of Season and Vegetation Status

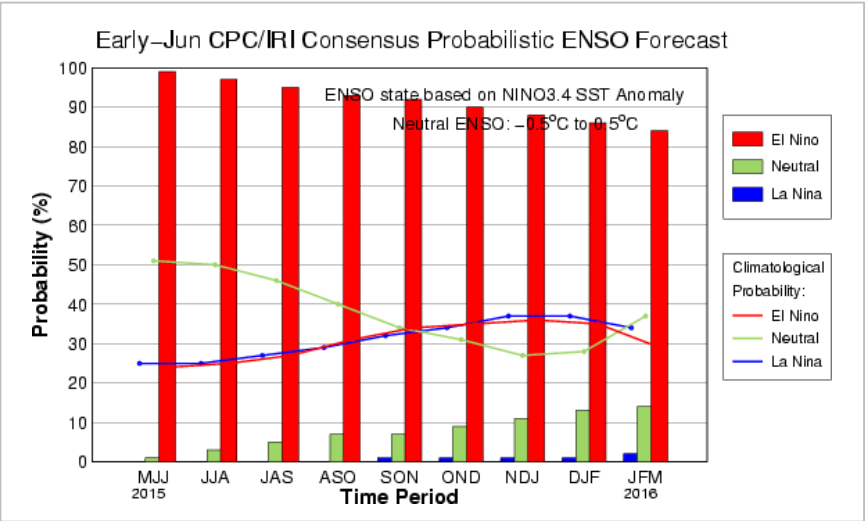
The start of the growing season was delayed by up to 30 days in the marginal areas of Sudan. Similar patterns are observed across central Ethiopia. In the west of Sudan and along the border with Ethiopia where the season had started on time, drier than average conditions may have led to significant replanting. South Sudan experienced a similar situation whereby recent drier weather conditions have impacted areas along its border with Sudan.

Due to the drier weather below average vegetation patterns are observed in Sudan and Ethiopia, extending from Darfur in the west, across the Kordofans and along the eastern borders into Tigray, Ethiopia. In contrast, eastern South Sudan (Jonglei) vegetation levels are still higher than average due to heavy rains earlier in the season.

The El Nino Event of 2015-2016

An El Nino event is officially active since March 2015. After remaining at relatively weak levels until May 2015, it is now intensifying and should peak in the last quarter of 2015. Historically, El Nino events have a significant impact in East Africa. In these regions (Sudan, South Sudan and Ethiopia) specifically, it is associated with growing season rainfall deficits and poor vegetation development.

The actual overall performance of the season is mostly determined by the rains received during July through September. This period has started on a drier than average note.



Probability of an El Nino event (red bars) vs neutral conditions (green) and La Nina (blue). El Nino probabilities remain above 90% throughout the Sahelian growing season.

Current forecasts for July-September

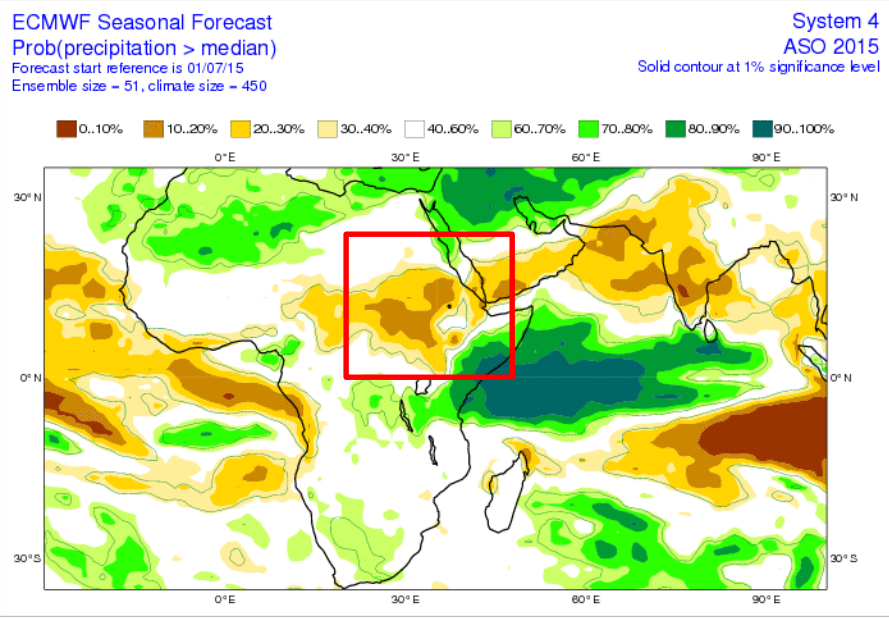
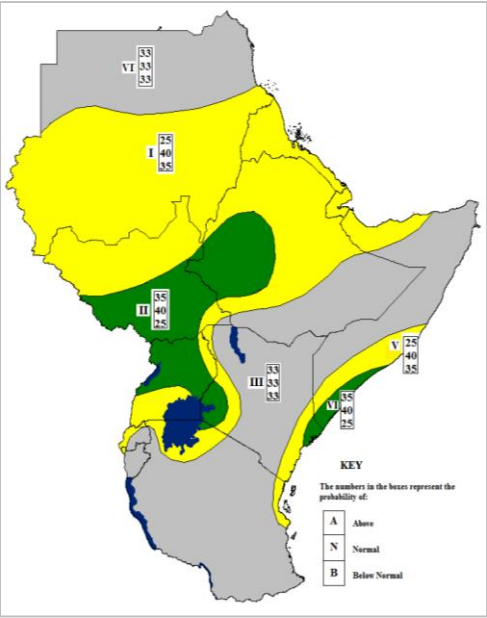
ECMWF (European Centre for Medium Weather Forecasts) and UK MetOffice are predicting markedly drier than average conditions for Sudan, Ethiopia and South Sudan.

The IGAD’s Climate Outlook Forum published a more optimistic forecast for the southern half of South Sudan, Uganda and central-western Ethiopia. Otherwise it is in agreement for the rest of the region.

Ethiopia is a concern given the possibility of a poor Meher (main) season after a bad Belg season earlier in 2015.

South Sudan may quickly escalate into a major concern depending on the rainfall pattern in the next couple of months– even a moderately drier than average season could create a major food security crisis given the current conflict.

Sudan could face a poor season across both its smallholder subsistence farming systems and its large scale mechanized agricultural sector.



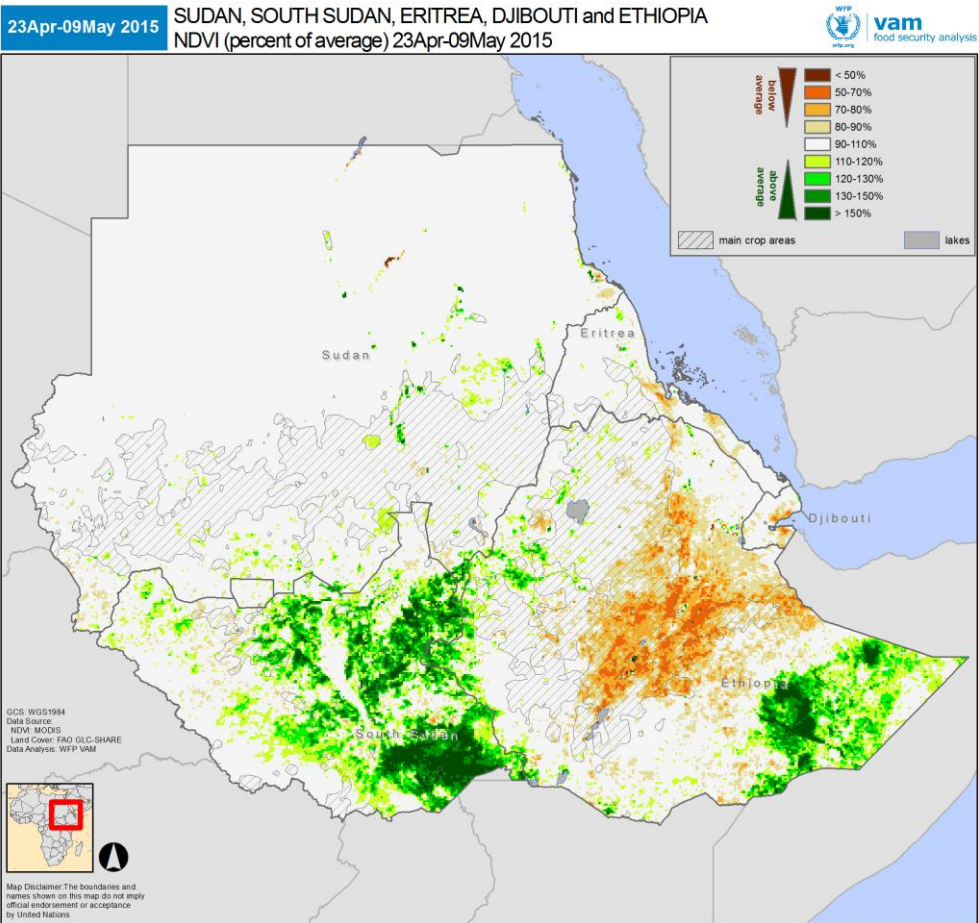
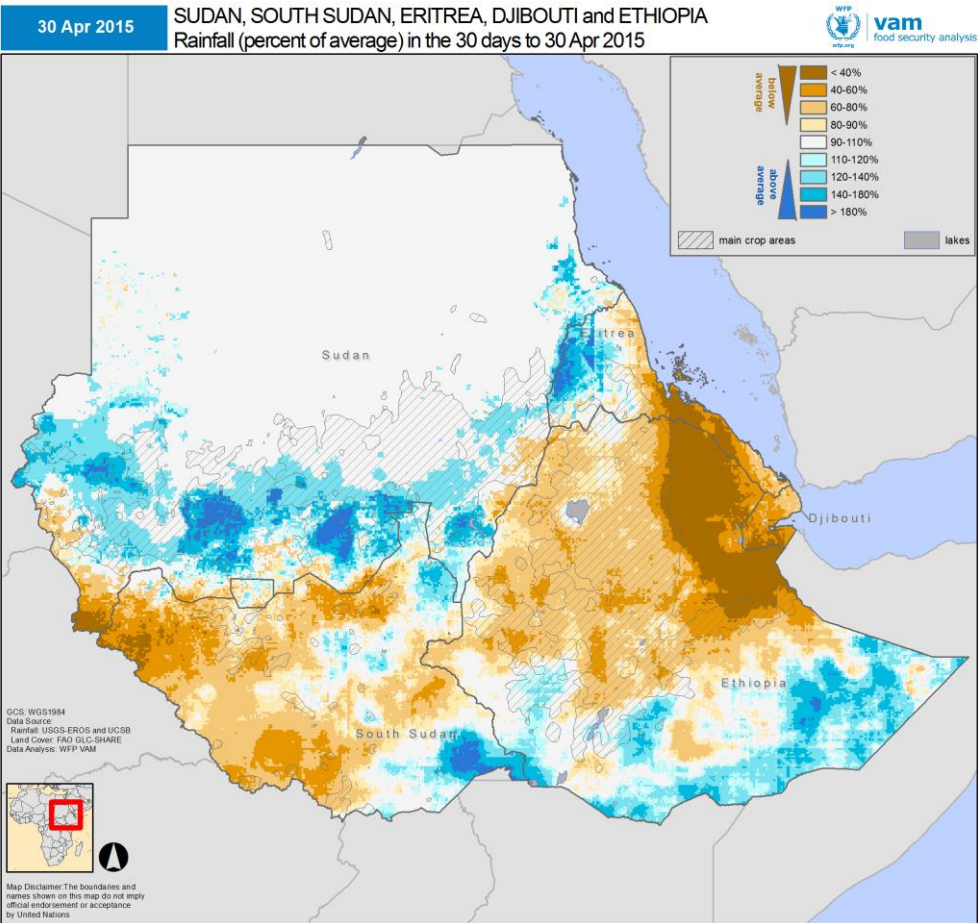
IGAD seasonal forecasts for July to Sept rainfall (left), yellow for lower than average, green for above average rainfall. ECMWF forecast for August-October rainfall (right), orange to browns, drier than average, green shades wetter than average.

The season month by month



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EAST AFRICA SEASONAL ANALYSIS - 2015



April 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

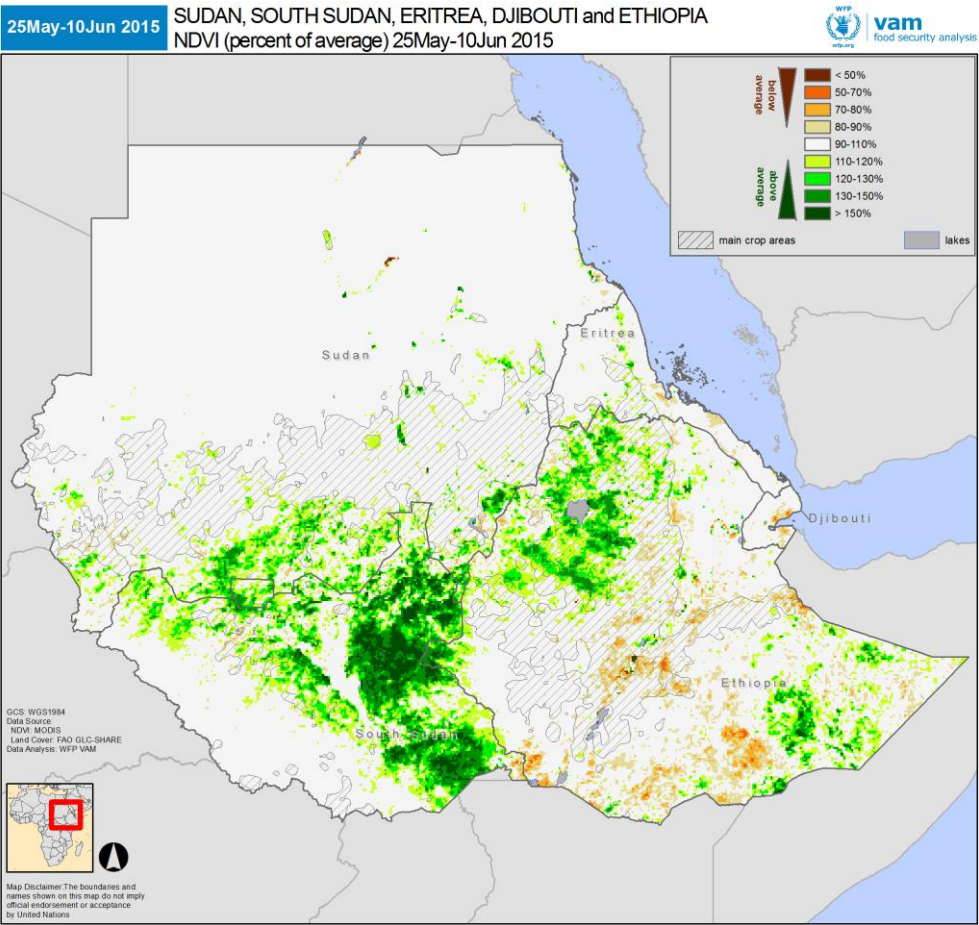
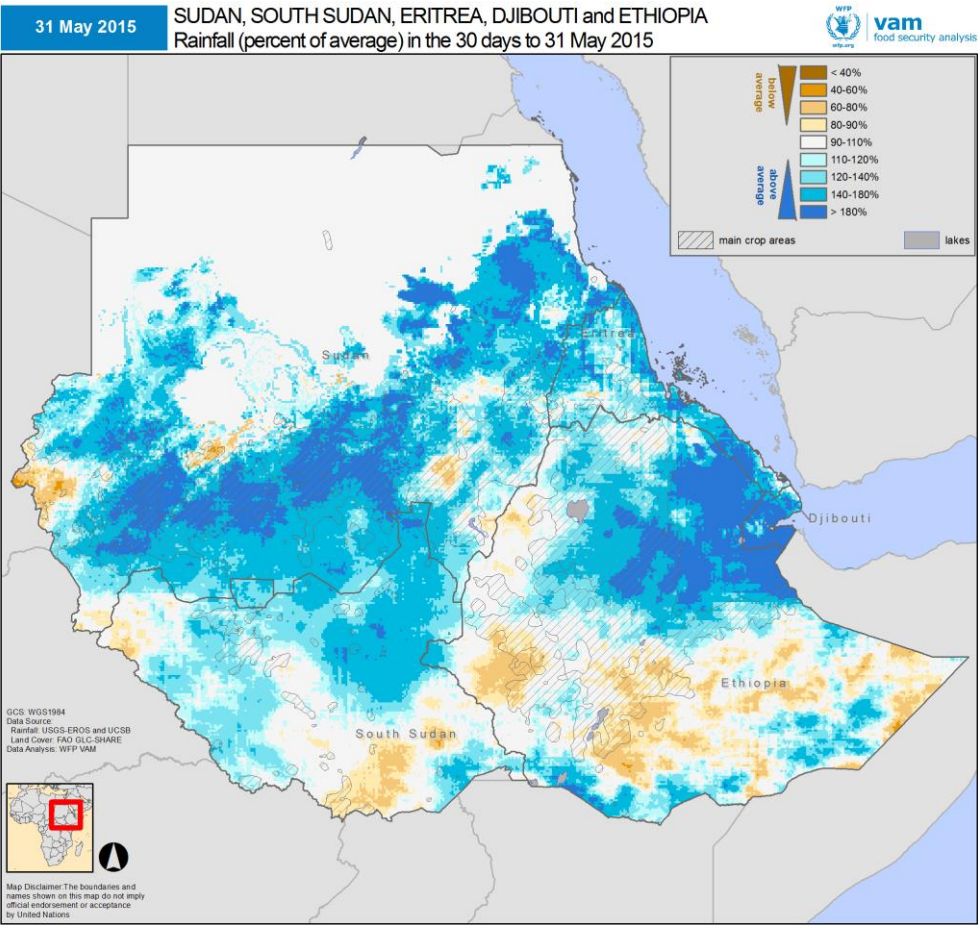
Early May 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation. Hashed pattern indicates main agricultural areas.

April 2015

This 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, which have led to major crop losses. In SE Ethiopia and eastern South Sudan, wetter than average conditions have prevailed since early March.

While the unseasonally early rainfall in Eastern Equatoria (South Sudan) and Ogaden region (SE Ethiopia) led to record breaking vegetation, there are clear indication of much reduced vegetation due to drought in central and NE Ethiopia.

EAST AFRICA SEASONAL ANALYSIS - 2015



May 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

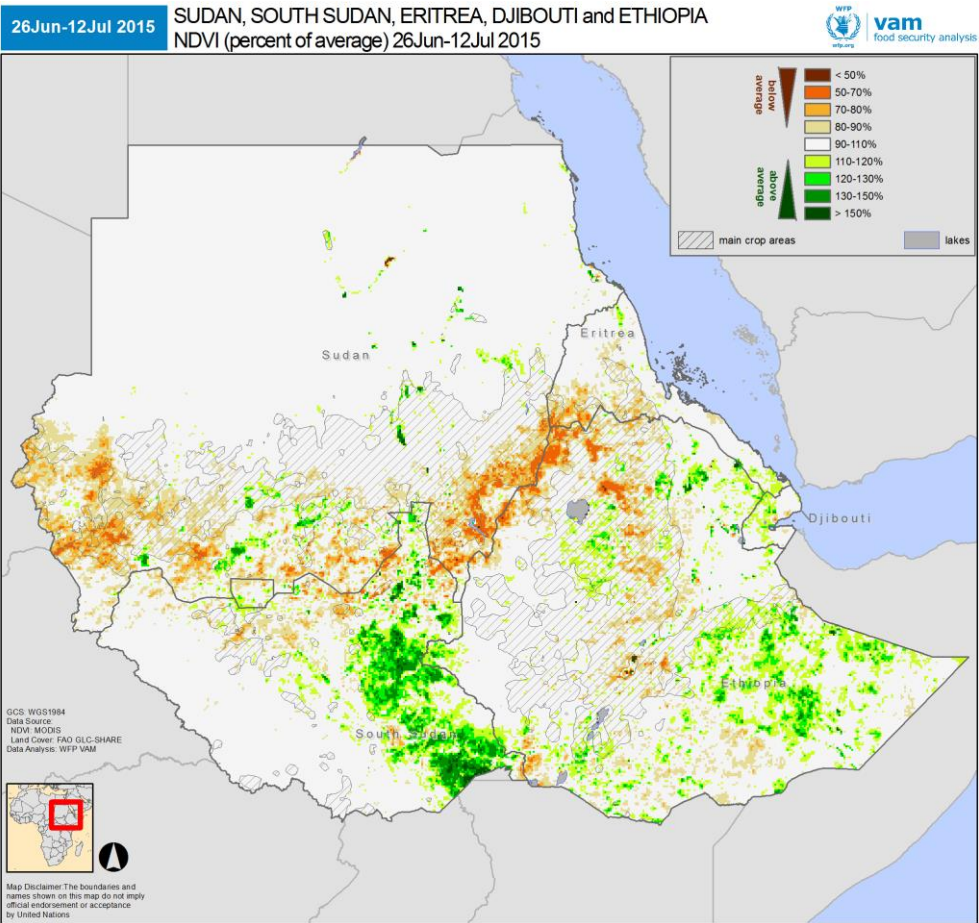
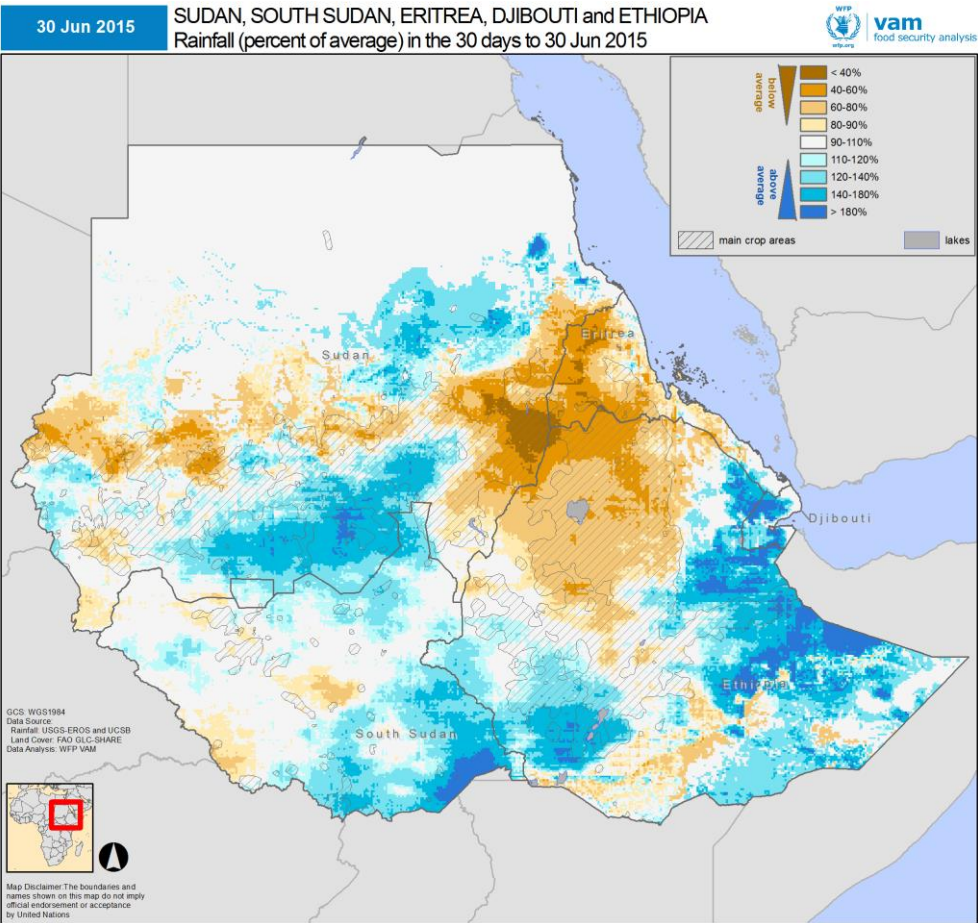
Late May 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation. Hashed pattern indicates main agricultural areas.

May 2015

This month 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 helped to maintain exceptional vegetation levels in eastern and northern South Sudan, and extended good vegetation into southern areas of Sudan (Kordofan) and NW Ethiopia (Tigray).

EAST AFRICA SEASONAL ANALYSIS - 2015



June 2015 rainfall as a percentage of the 20-year average (left). Brown shades for below-average rainfall; blue shades for above-average seasonal rainfall.

Early July 2015 vegetation index as a percentage of the 12-year average (right). Orange shades for below-average vegetation; green shades for above-average vegetation. Hashed pattern indicates main agricultural areas.

June 2015

Mid June onwards brought drier than average weather to eastern Sudan, NW Eritrea, northern Ethiopia and the Darfur region of western Sudan. This was reflected in changing vegetation patterns, with below average conditions spreading from Darfur, across the Sudan to South Sudan border and into eastern Sudan and northern Ethiopia.

Elsewhere, in South Sudan good rainfall continued in south eastern regions maintaining good vegetation levels.

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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