Southern Africa

The 2014-2015 Rainfall Season

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HIGHLIGHTS

- In the **early stages** (October-November) of the 2014-2015 growing season in Southern Africa significant rainfall deficits and delayed starts to the season were noted in the border areas of **Mozambique**, **Malawi**, **Zambia** and **Zimbabwe**. The crop growing regions of eastern **South Africa** and **Madagascar** were also affected. In contrast, Tanzania, Namibia, Angola and Botswana enjoyed a good start of the season.
- From **mid December to mid January**, continuous **heavy rainfall** led to flooding along the Shire river in **Malawi** and the lower Zambezi in **Mozambique**, affecting up to 800,000 people.
- Meanwhile, **drier than average** conditions continued to affect parts of **eastern South Africa** and extended into **Botswana**, most of **Namibia** and southern **Angola**, reversing previous favourable early season conditions. **Southern Mozambique** and **southern Zimbabwe** were also affected.
- A combination of the delayed onset of the season and a poor mid season rainfall pattern at critical stages of maize development, led to **unfavourable** expectations for **regional maize production**.
- **South Africa**'s first maize production forecast estimates the 2015 harvest to be the worst in 8 years, with a drop of 21% relative to the average of the last 5 years and 32% down on last year's bumper crop. Wider regional impacts still need to be defined, but the production perspectives are not favourable for Namibia, Botswana, southern Mozambique and Zimbabwe.
- Seasonal forecasts consensually expect average rainfall for the later stage of the growing season (March to May); hence a longer, wetter than usual season that might benefit areas with delayed season onsets, is unlikely.

Current Situation and Near Term Perspectives

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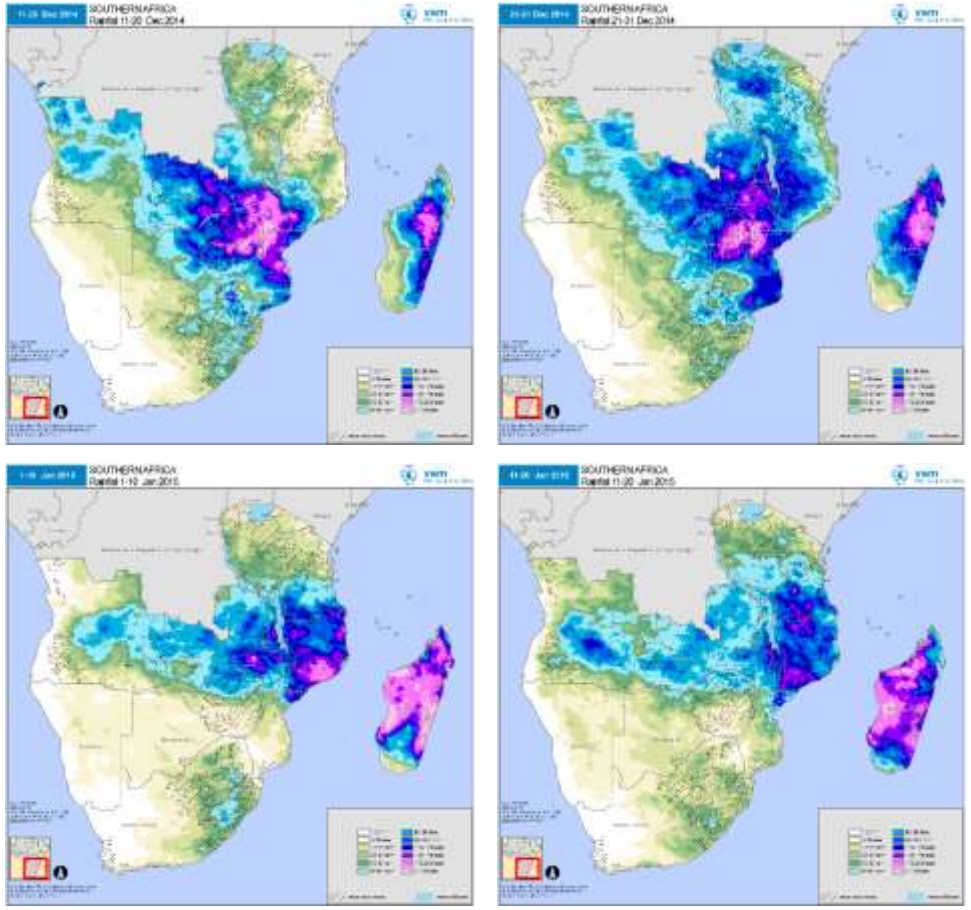
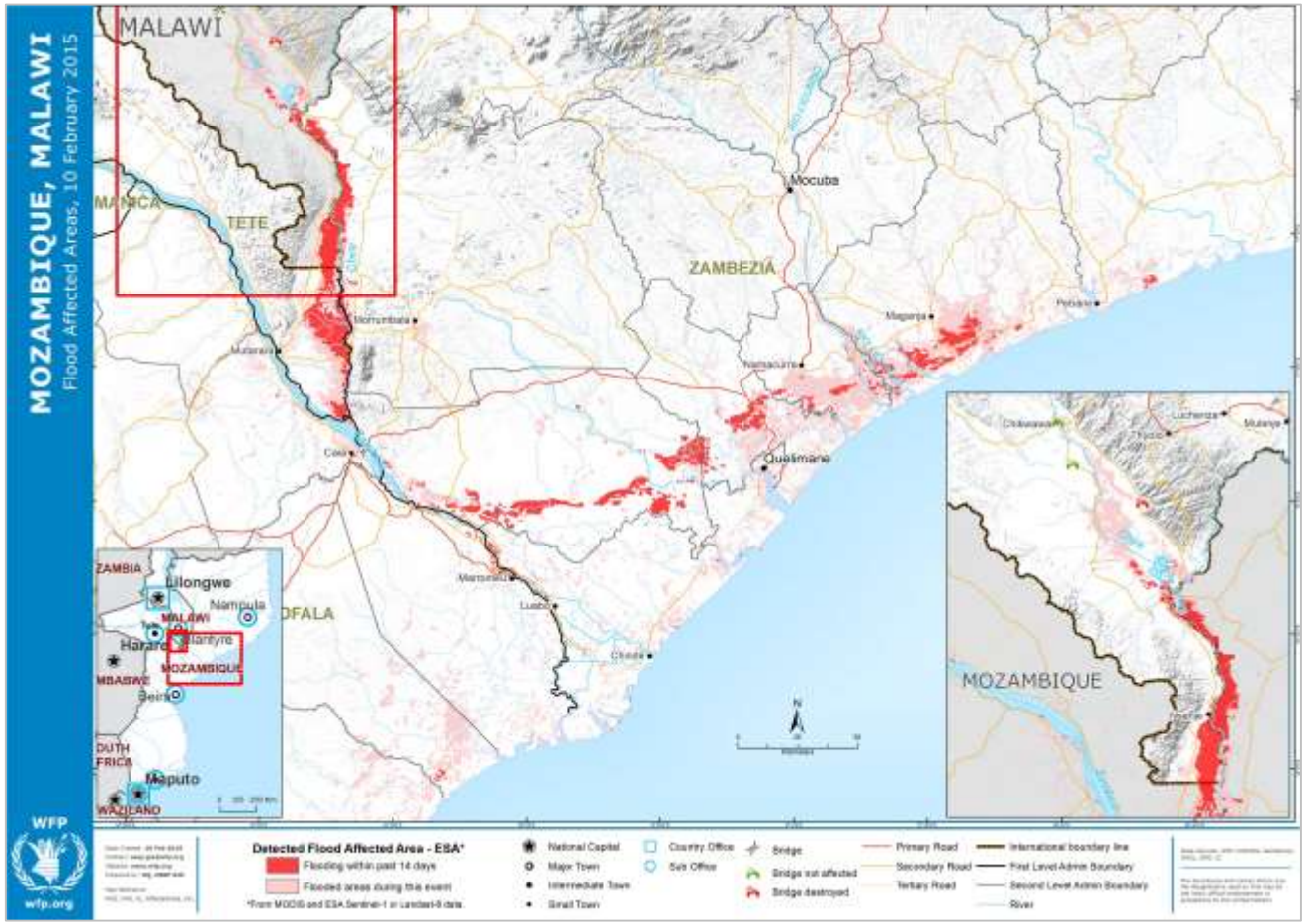
Flooding in Malawi and Mozambique

From mid December to mid January, very heavy persistent rainfall in Malawi and Mozambique's Zambezia region, led to flooding along the Shire and Zambezi rivers. The persistent heavy rainfall led to saturation of soils, which were unable to buffer the very intense rainfall events that occurred in early January. This led to flooding along the Shire and lower Zambezi rivers, as well as in Zimbabwe and Madagascar.

OCHA figures indicate flooding affected close to 800,000 people (640,000 in Malawi, 160,000 in Mozambique) of which 280,000 displaced (230,000 in Malawi, 50,000 in Mozambique). Losses in cropland have also been significant (a reported 65,000ha in Mozambique).



10 day rainfall amounts from second dekad December 2014 to second dekad January 2015 in Southern Africa. Persistent, heavy and intense rainfall can be seen over Malawi, northern Mozambique and Madagascar throughout the period

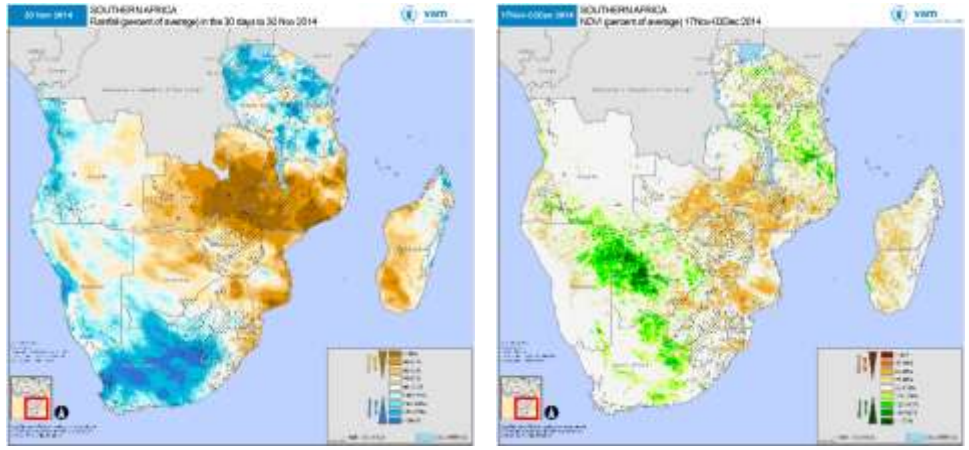


Satellite derived flood extent map along the Chire and Zambezi rivers. Source WFP (OMEP-GIS)

SOUTHERN AFRICA SEASONAL ANALYSIS – 2014/2015

The Season at a Glance

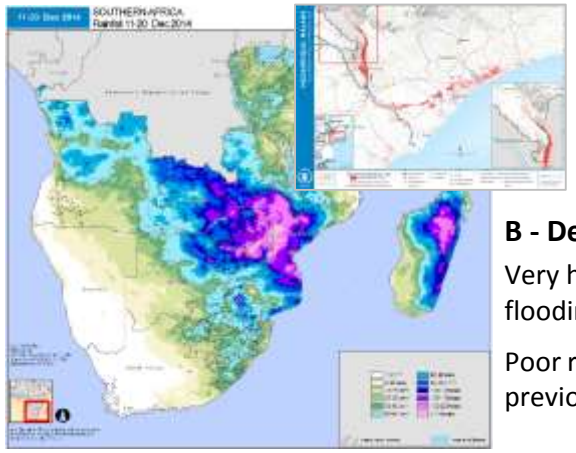
Three stages in the 2014-2015 season that highlight the large shifts in rainfall and vegetation conditions that took place through the season and across the region...



A - October to early December

Large rainfall deficits from eastern South Africa to Malawi, with severe delays in the start of the growing season in the Zimbabwe-Zambia-Malawi-Mozambique borders.

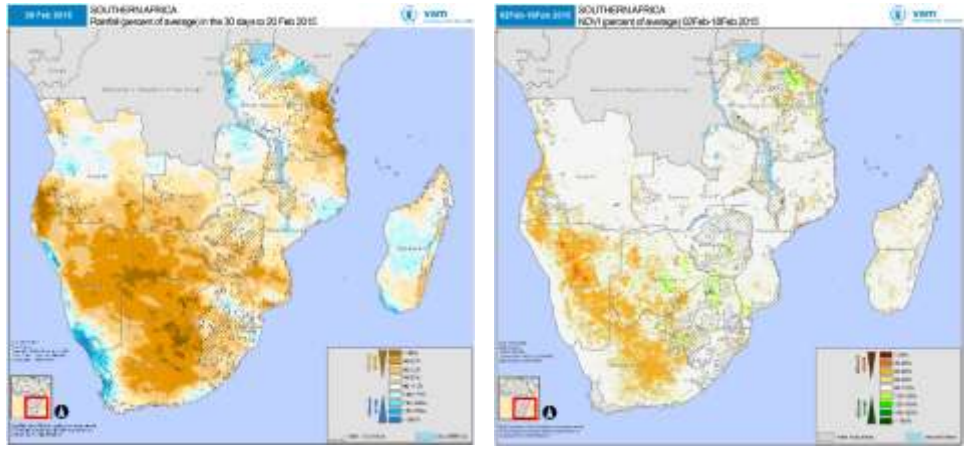
Unseasonal early rains in western areas of the region from Angola to western South Africa leading to above average early vegetation growth.



B - December to mid January

Very heavy and persistent rainfall leading to flooding in Malawi and Mozambique.

Poor rainfall conditions develop in western regions previously enjoying a good start to the season



C - January onwards

From mid January to late February, large rainfall deficits develop across the western areas of region from southern Angola to South Africa. Concerns about maize production emerge, with late February-mid March rainfall now assuming critical importance.

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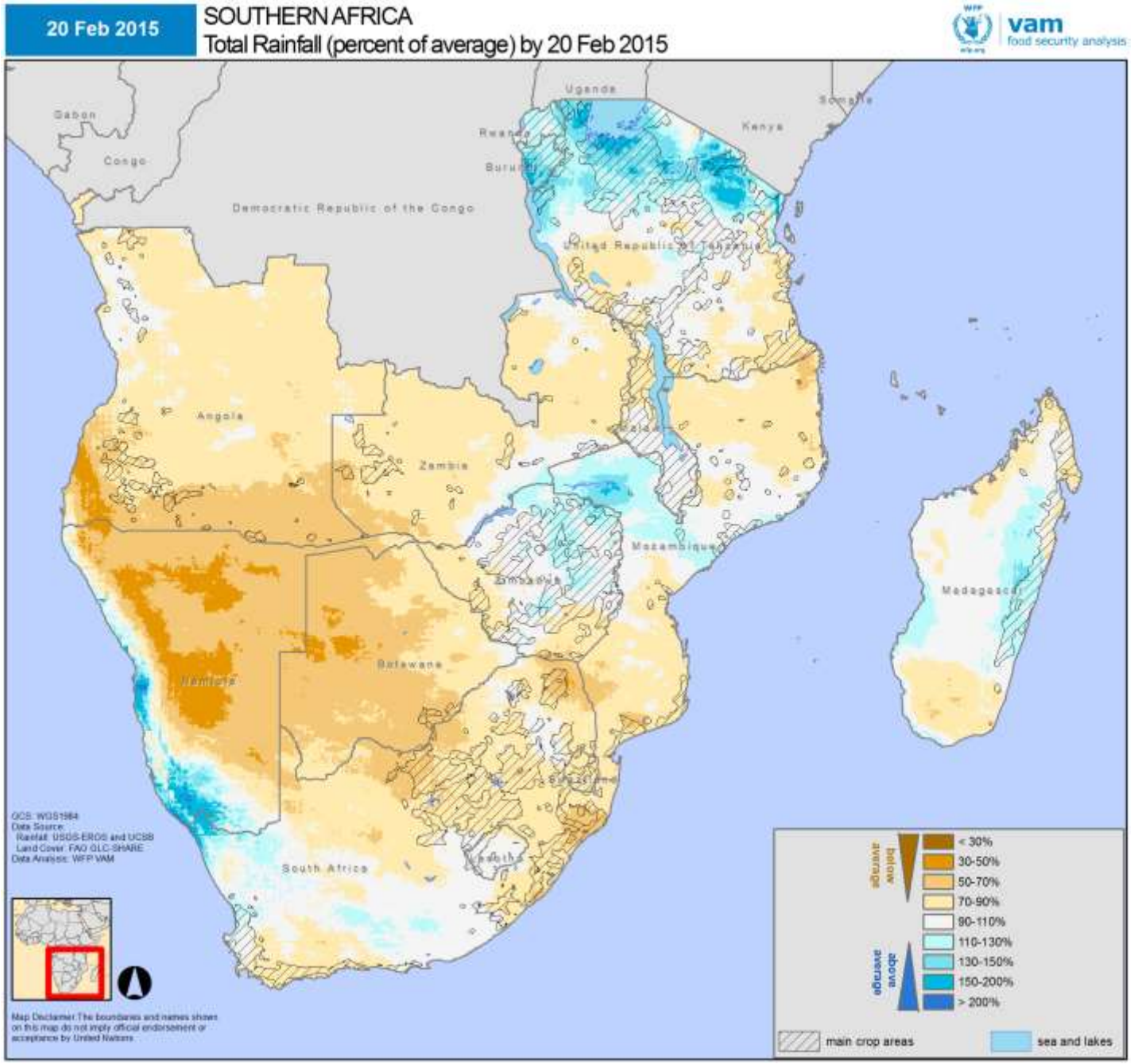

Overall Rainfall Performance

Although the heavy flood inducing December-January rains, affecting Mozambique, Malawi, Madagascar and Zimbabwe, have dominated the attention, on a seasonal basis the current season is characterized by a generalized moderate rainfall deficit, which is reaching significant proportions in Namibia, Botswana, South Africa and southern Angola.

However, this aggregate picture hides remarkable shifts in rainfall distribution during the season:

In the early stages of the growing season widespread and intense rainfall deficits, spread across NE Zimbabwe, NW Mozambique, SE Zambia and Malawi; Botswana, South Africa and Madagascar were also affected to a lesser degree. Delays in the start of the growing season were widespread reaching 30-40 days in some areas . In contrast, parts of Tanzania, southern Angola and Namibia enjoyed a favourable early season.

From mid December onwards, very heavy rainfall affected southern Malawi, northern Mozambique and Madagascar, while the early season deficits were maintained in eastern South Africa and spread across Namibia and Botswana.

In January, intense rainfall events affected southern Malawi and the Zambezia region of Mozambique, leading to widespread flooding.

In contrast, in other areas such as grain producing regions of South Africa, Botswana, Namibia and southern Mozambique, pronounced rainfall deficits have been the dominant feature. South Africa's maize production is now expected to be poor (see **next**).

Total rainfall from 1 August 2014 to 10 February 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

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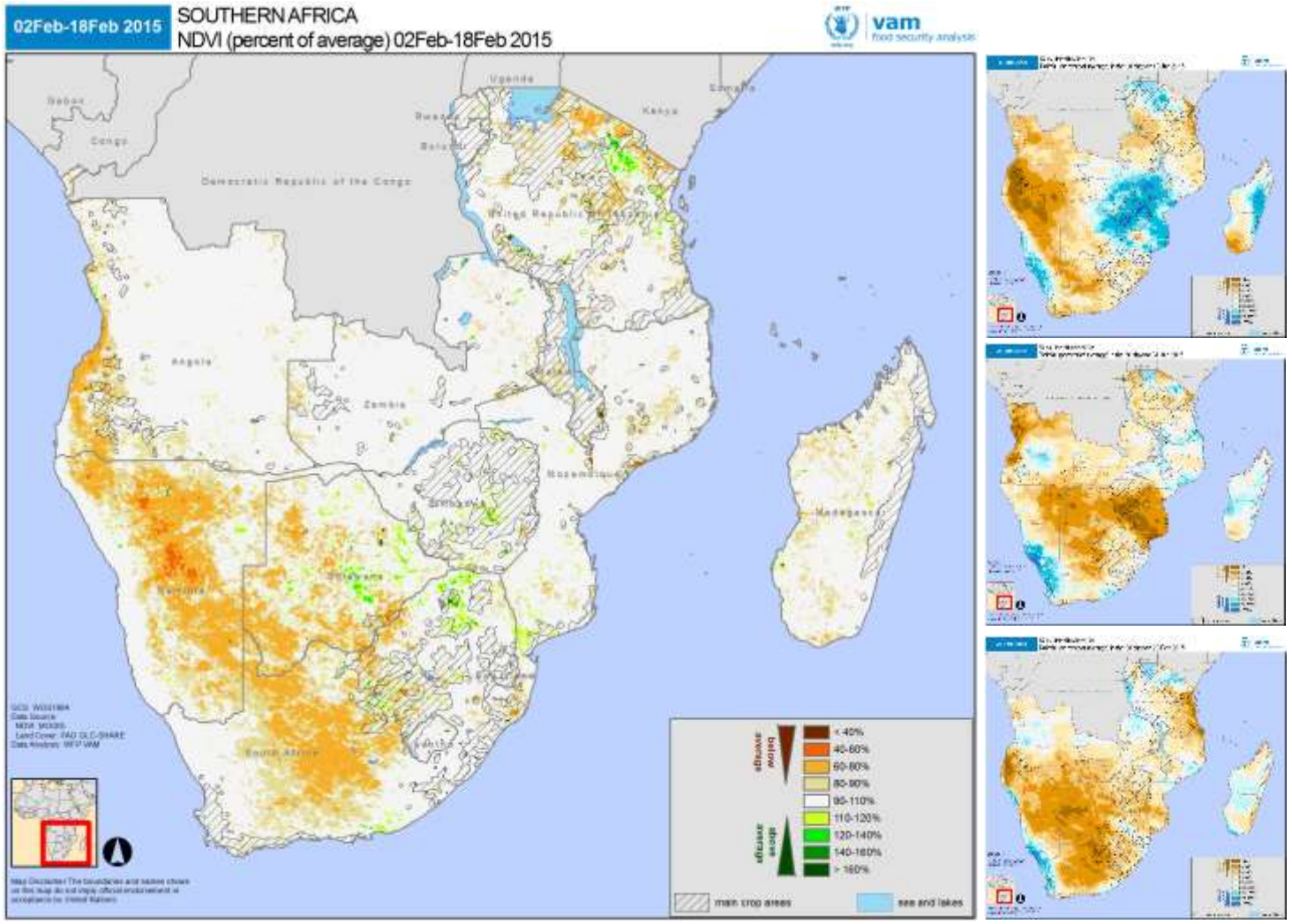

Vegetation index in the first half of February 2015 as a percentage of the 12 year average.
Orange shades indicate below average vegetation, green shades indicate above average vegetation.

Also shown (small insets on the right) 30 day rainfall anomalies by Jan 10, Jan 31 and Feb 20.
Hashed pattern indicates main agricultural areas.

Overall Vegetation Status

Current vegetation patterns reflect the predominant rainfall patterns of the past couple of months and show a marked change from the situation in late December.

The marked vegetation deficits that affected the Mozambique – Zimbabwe - Zambia region in the early season, have reverted to normal due to the above average rainfall of December-January.

In contrast, widespread vegetation deficits extend now from SW Angola across most of Namibia, Botswana and into South Africa. This results directly from pronounced rainfall deficits in these areas during December and January (see small insets of rainfall anomalies next to main map). Areas of northern Tanzania also show below average vegetation as a result of poor January rainfall.

A combination of a delayed start of the season and these drier than average conditions partly overlapping with the most sensitive period of maize development (flowering and grain filling) are having an impact on crop production.

South Africa's first maize production forecast estimates the 2015 harvest to be the worst in 8 years, with a drop of 21% relative to the average of the last 5 years and 32% down on last year's bumper crop.

Wider regional impacts still need to be defined, but the production perspectives are not favourable for Namibia, Botswana, southern Mozambique and Zimbabwe.

Good rainfall during March could only bring at most some minor improvements in the situation.

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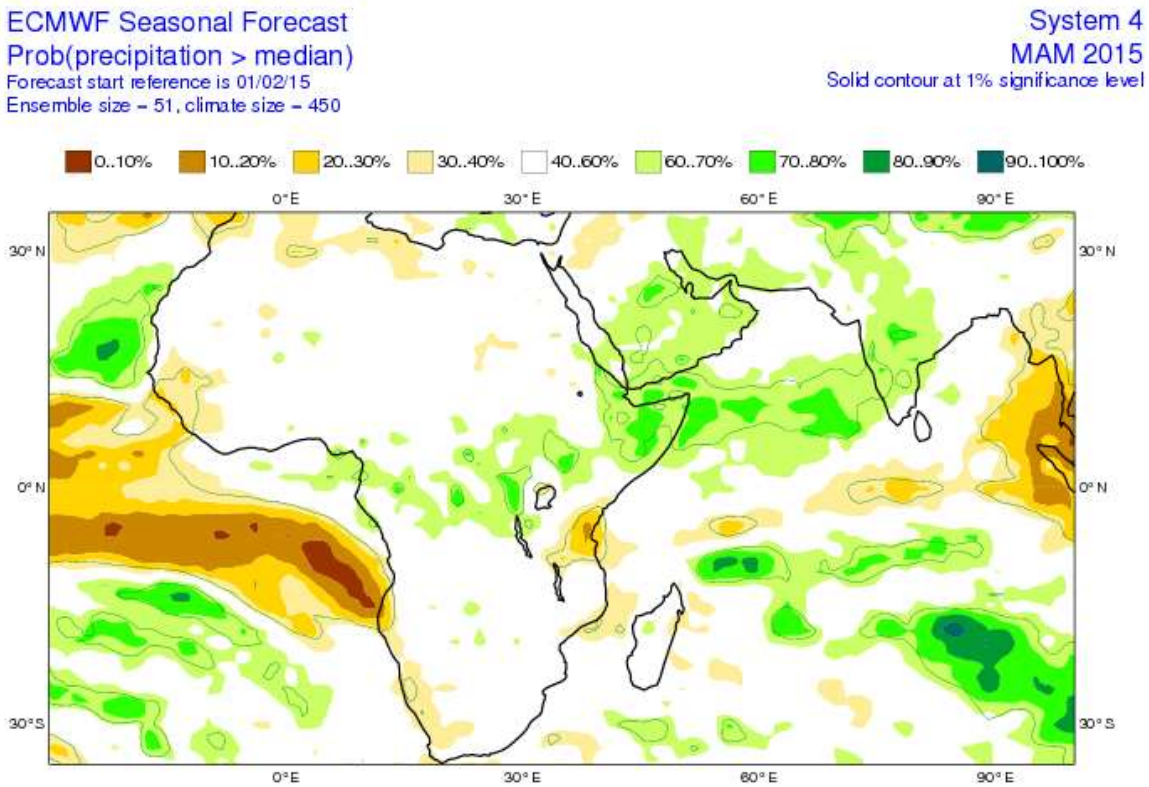
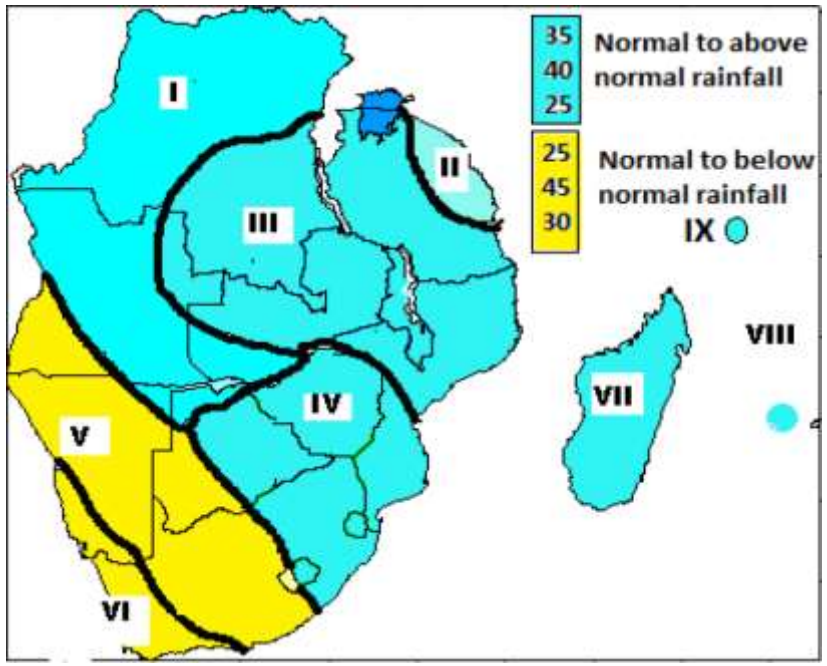
Long range rainfall forecasts

Latest forecasts for the remaining of the season issued by SARCOF (Southern Africa Climate Outlook Forum) and ECMWF and others (UKMO, South Africa Weather Bureau) consensually point to normal conditions throughout the region, with some tendency for drier than average conditions in the southwestern areas of Southern Africa.

The convergence provides enhanced confidence in the forecasts. However, as per usual, the forecasts provide no information on the rainfall distribution within the prediction period. A longer and possibly wetter than usual late rainfall season able to offset impacts of the early season delays and mid season dry spells is unlikely and in some areas such as South Africa the damage is now mostly irreversible





Left: Forecast for the March-May (MAM) 2014-2015 rainfall:
Probability of MAM rainfall exceeding the usual amount (long term median).
Green shades – wetter than usual conditions more likely, yellow/browns – drier than usual conditions more likely. Source: ECMWF.

Right: SARCOF forecast for Feb to April rainfall. Numbers in boxes refer to probabilities of above, on and below average rainfall.

How the Season Is Evolving

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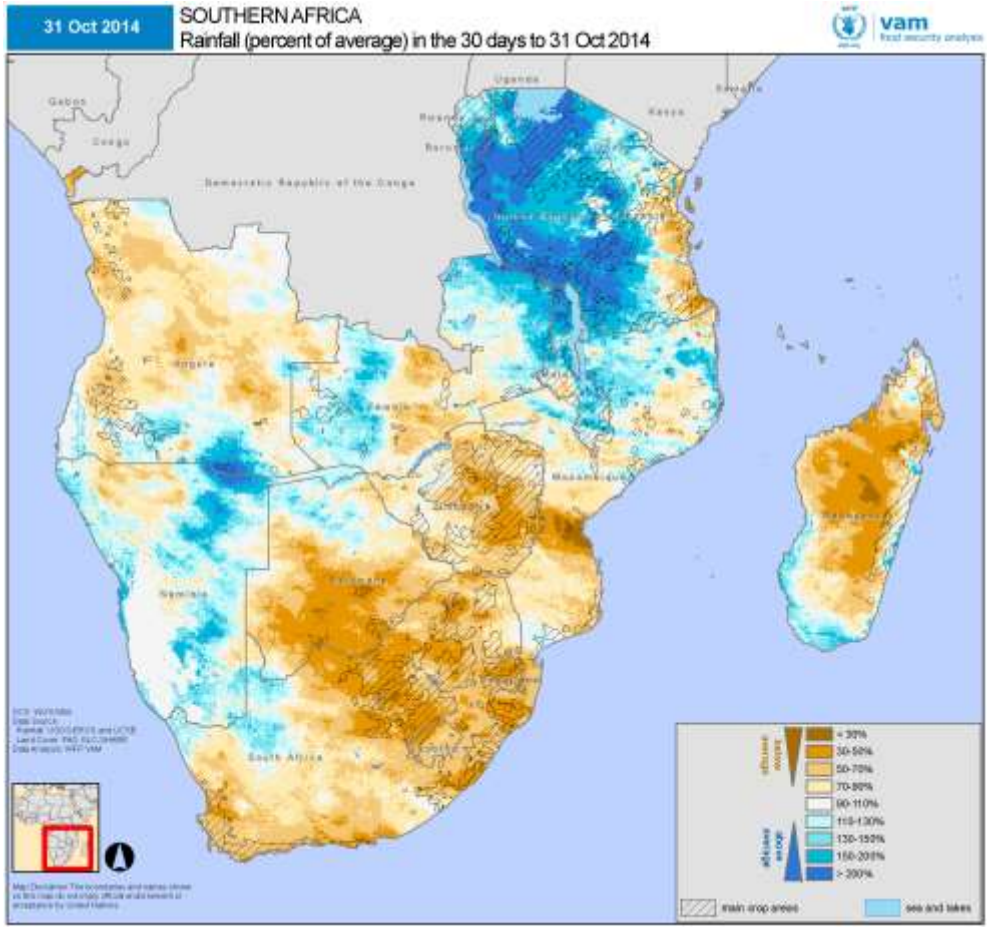

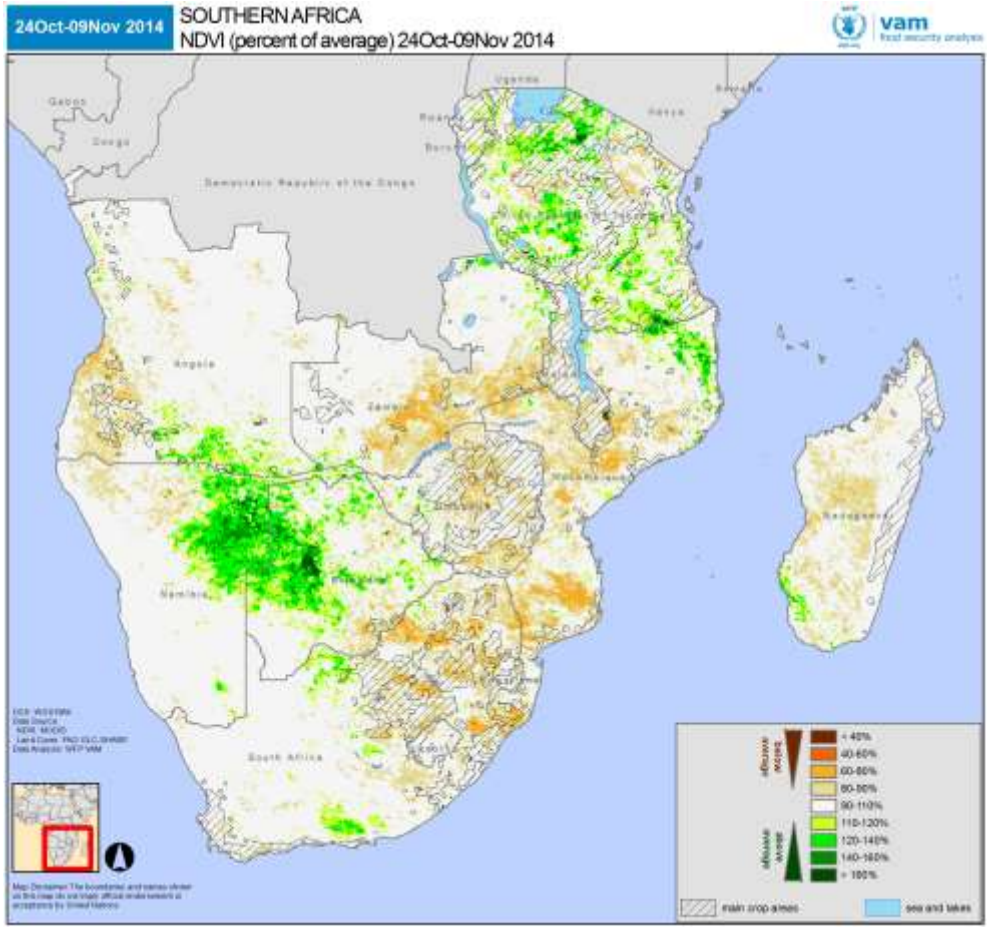

October 2014 rainfall as a percent of a 20 year average (left). Brown shades for below average rainfall, blue shades for above average seasonal rainfall

October 2014 vegetation index as a percent of a 12 year average (right). Orange shades for below average, green shades for above average vegetation.

Hashed pattern indicates main agricultural areas.

October 2014

During October, rainfall across the most of the region was below average, setting the tone for the first stage of the 2014-2015 season. Tanzania on the other hand enjoyed above average rainfall during this month as did southern Angola and NE Namibia.

The lower than average rainfall led to the appearance of vegetation deficits which started to spread across the rainfall deficit areas. Contrasting conditions are evident in Tanzania. Rainfall in the semi-arid regions of southern Angola, Namibia and Botswana led to a (typical) strong response from savannah grasslands resulting in noticeably above average vegetation levels.

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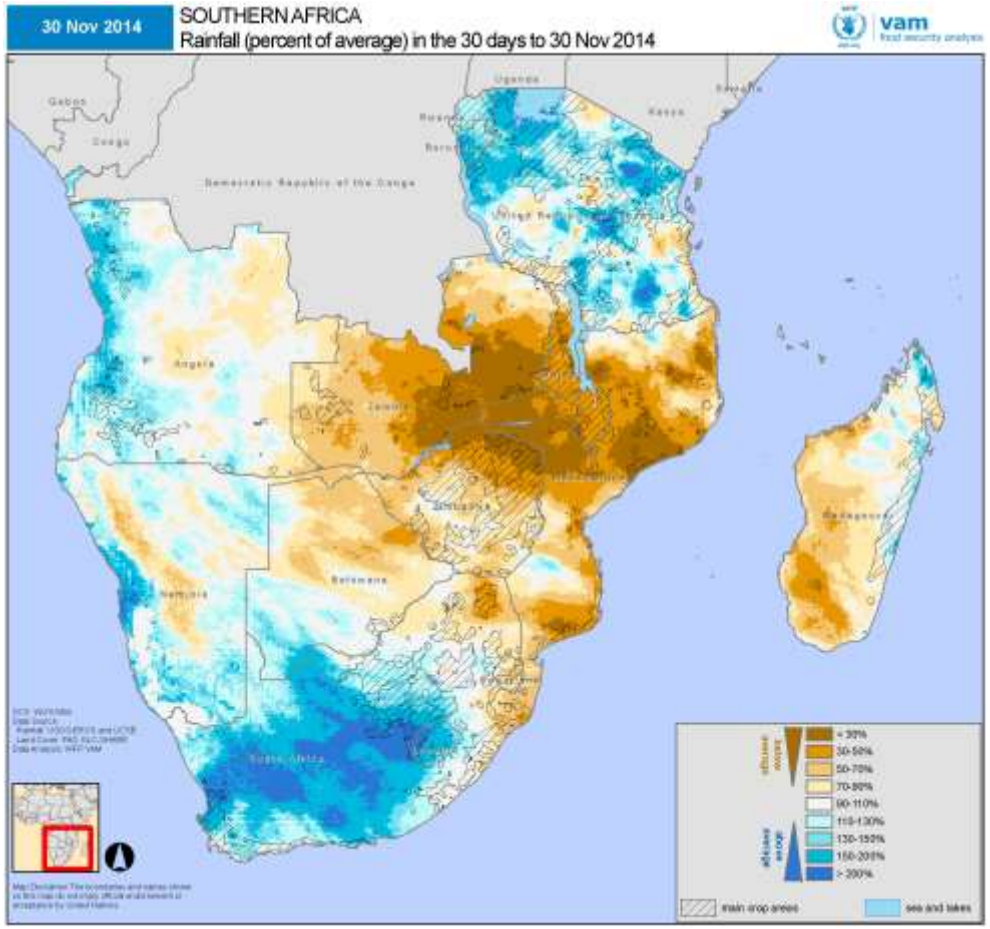

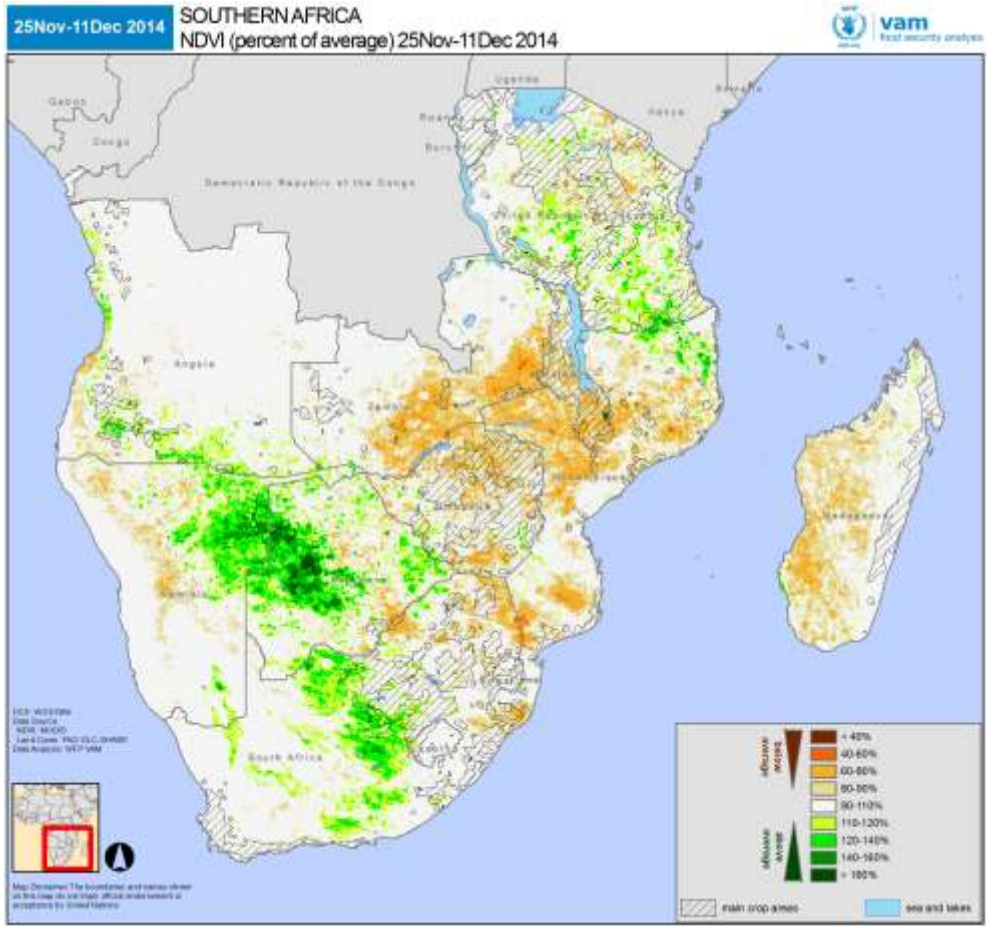

November 2014 rainfall as a percent of a 20 year average (left). Brown shades for below average rainfall, blue shades for above average seasonal rainfall

Late November 2014 vegetation index as a percent of a 12 year average (right). Orange shades for below average, green shades for above average vegetation.

Hashed pattern indicates main agricultural areas.

November 2014

During this month there were very pronounced rainfall deficits across Zambia and northern Mozambique, with many areas receiving less than 30% of the long term mean rainfall. In contrast there was significant rainfall across western and central South Africa, allowing the growing season to start. However, major grain producing regions of the country remained under deficit conditions.

As a result, below average vegetation levels spread out and intensified further signalling increasing problems for the normal start of the growing season. Western and central South Africa show good response to recent rainfall while above average vegetation in Namibia-Botswana will continue for a while.

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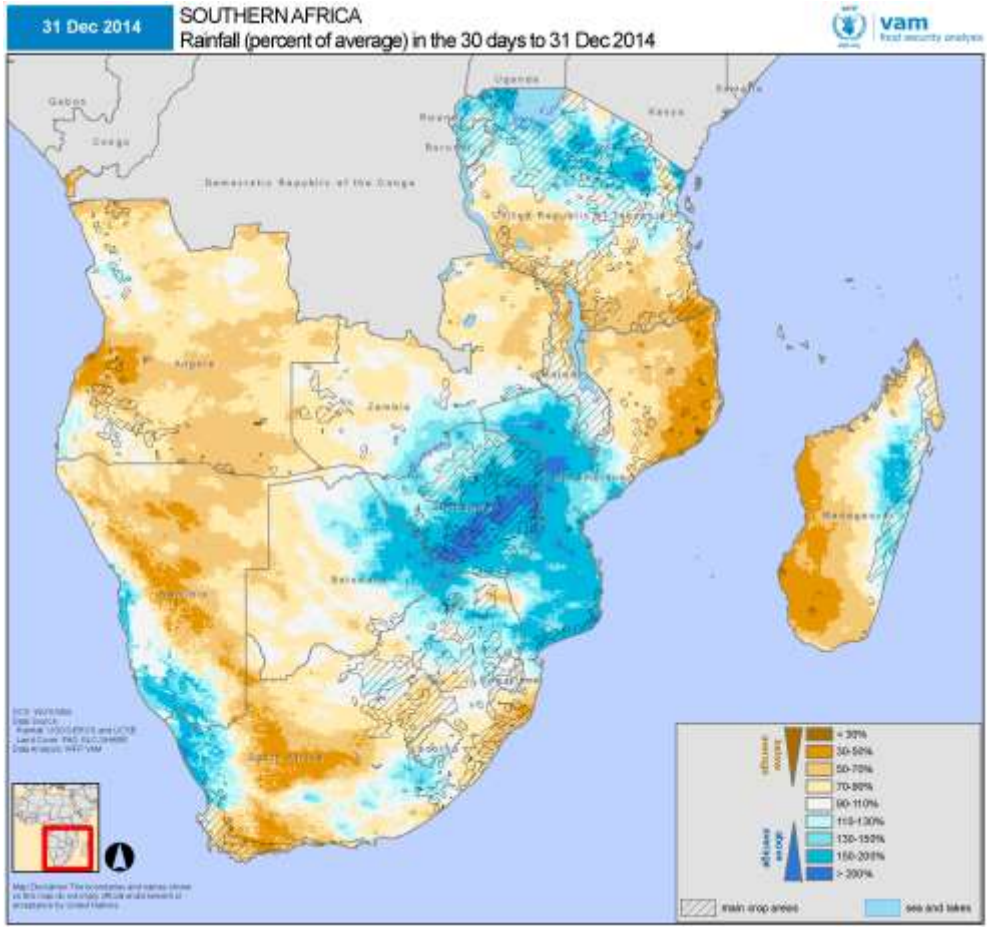

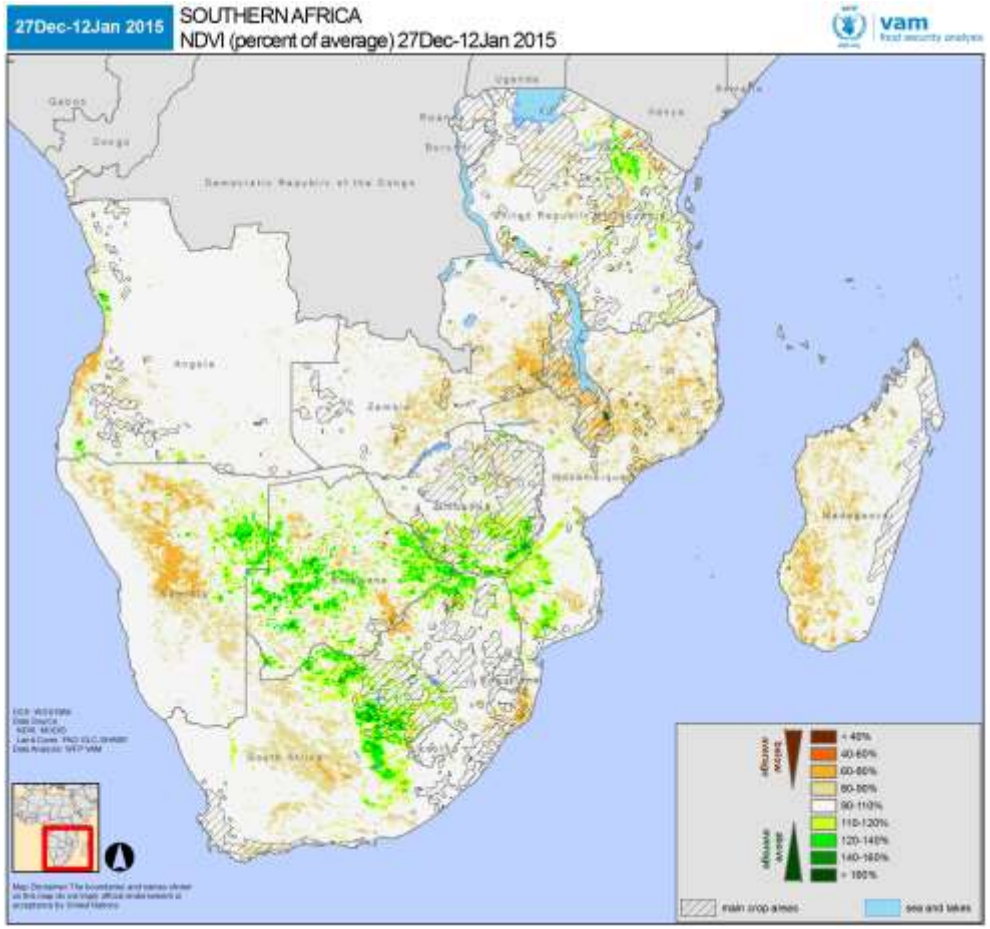

December 2014 rainfall as a percent of a 20 year average (left). Brown shades for below average rainfall, blue shades for above average seasonal rainfall

Late December 2014 vegetation index as a percent of a 12 year average (right). Orange shades for below average, green shades for above average vegetation.

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December 2014

December has been characterised by intense rainfall mainly across southern-central Mozambique, Zimbabwe and eastern Botswana allowing recovering the previous deficits. Northern Tanzania continues receiving good rainfall. Poor rainfall are still detected across northern Mozambique and Zambia.

Some improvements in vegetation conditions are detected in areas receiving intense rainfall during December, signalling good response to recent rainfall. Below average vegetation levels remains evident in Zambia, Malawi and northern Mozambique . Above average vegetation in Namibia-Botswana continue.

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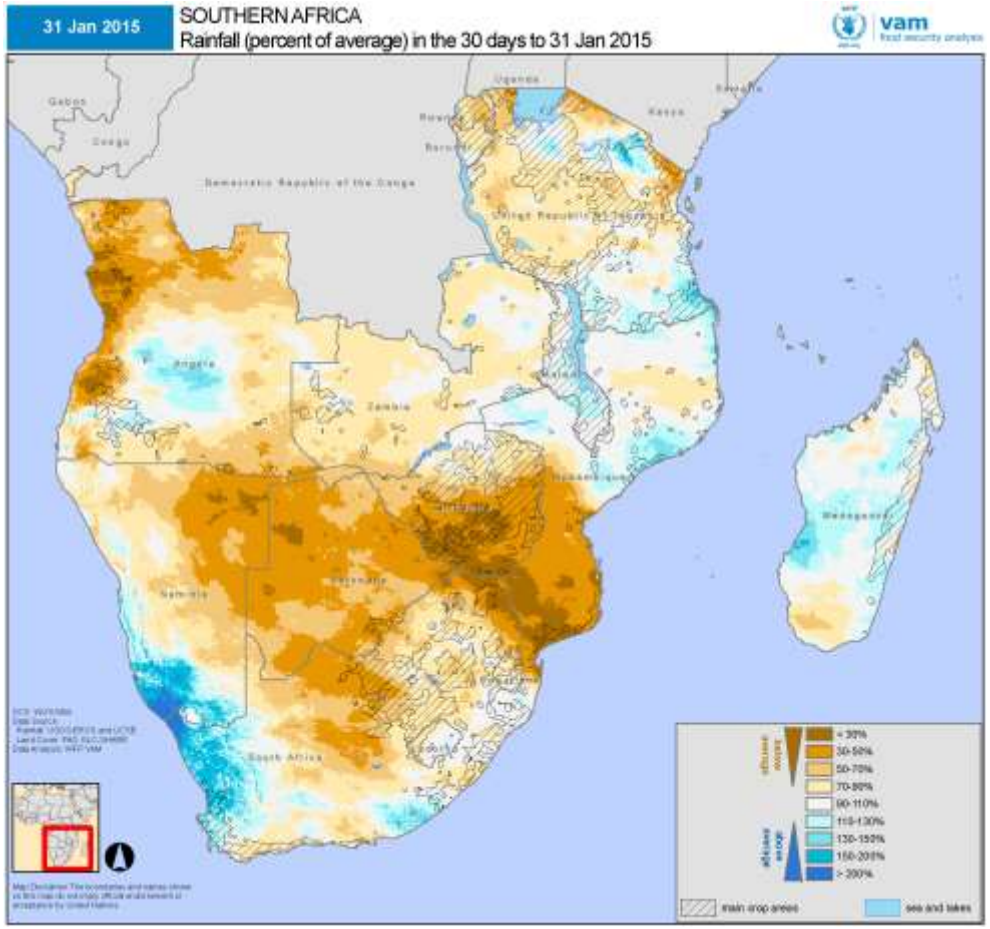

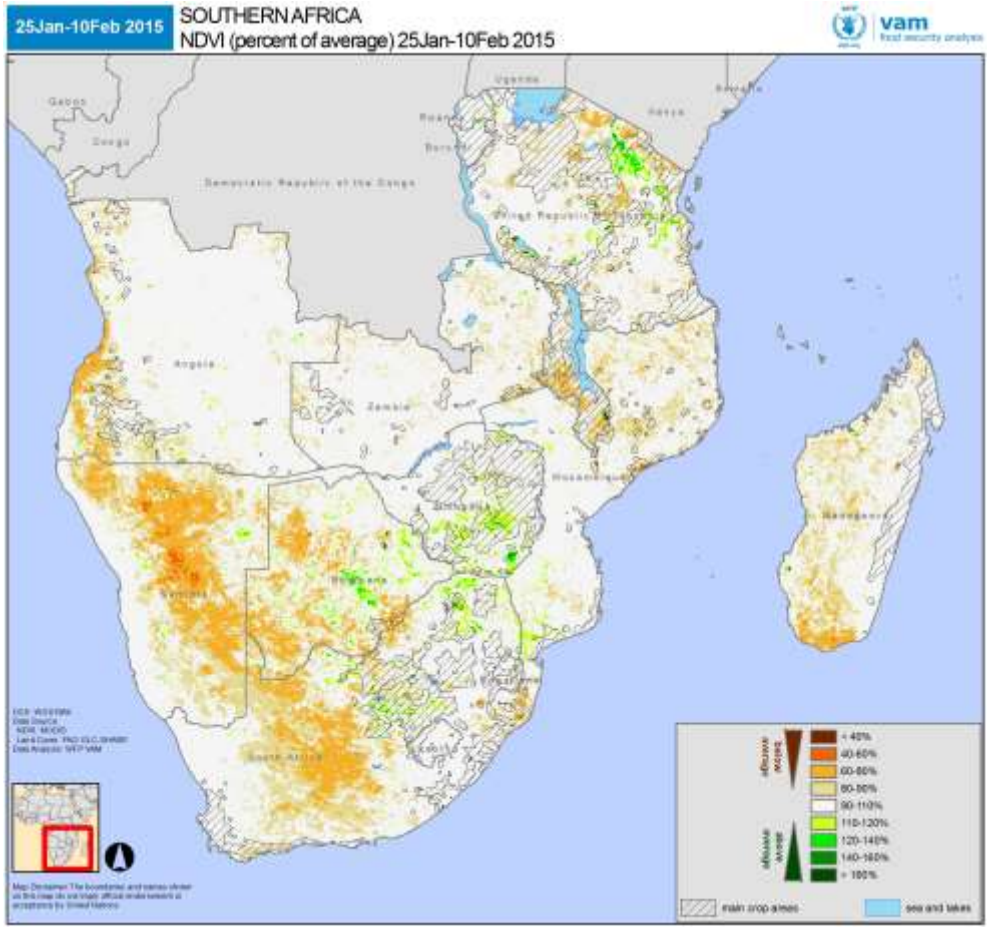

January 2015 rainfall as a percent of a 20 year average (left). Brown shades for below average rainfall, blue shades for above average seasonal rainfall

Late January 2015 vegetation index as a percent of a 12 year average (right). Orange shades for below average, green shades for above average vegetation.

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January 2015

During this month there were pronounced rainfall deficits across large areas of the region, particularly in southern Mozambique, Botswana and Zimbabwe. Some very limited spot with good rainfall are detected in northern Mozambique and southern Tanzania.

As consequence vegetation conditions are finally improving in northern Mozambique and also Zambia. Good conditions are also detected in Zimbabwe and neighbour border countries areas. In contrast vegetation is deteriorating in Namibia-Botswana and central areas of South Africa.

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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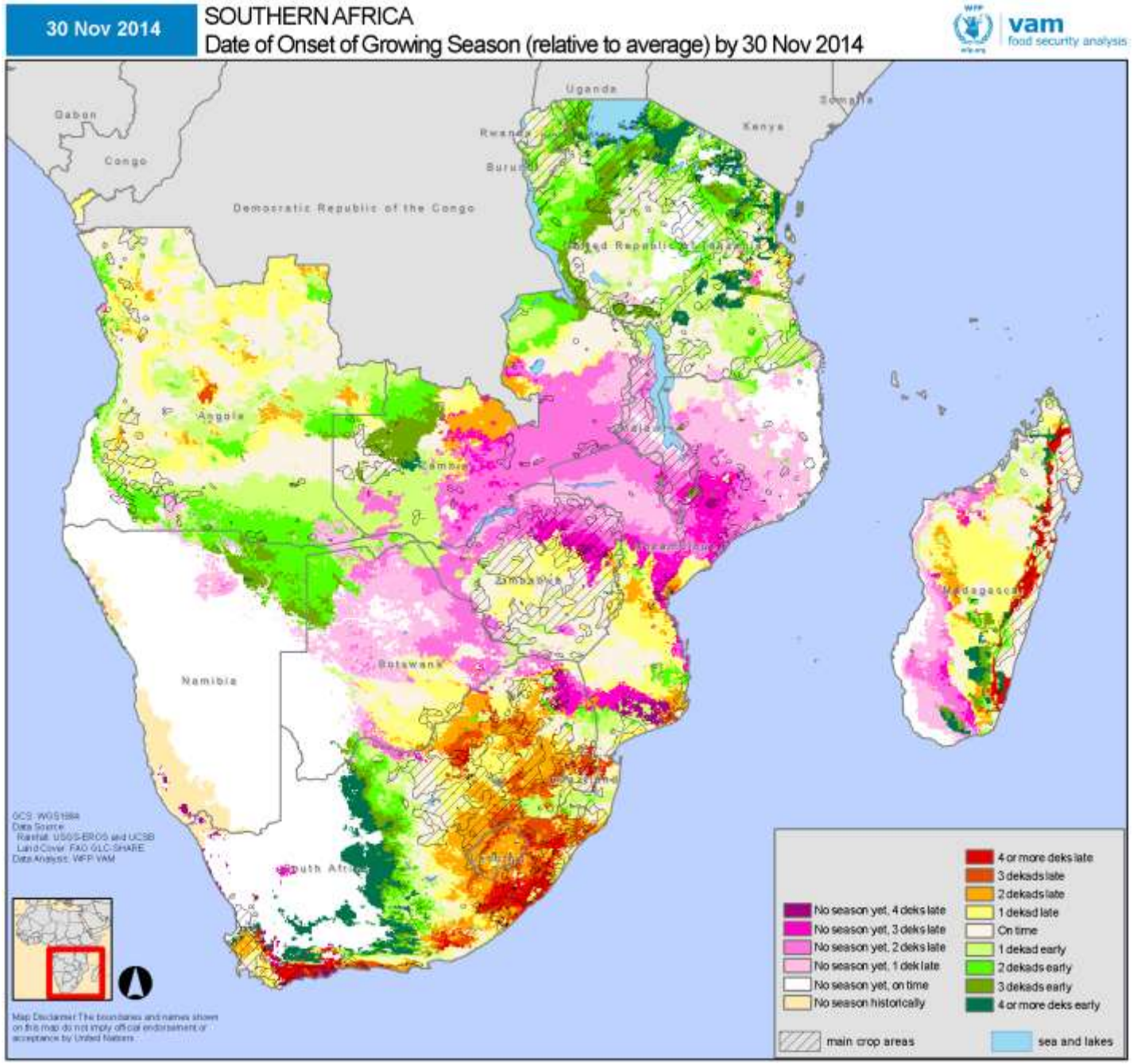

Timing of Growing Season Start

The onset of the agricultural season depends on sufficient and regular enough rainfall. The time when these conditions are met can be mapped and compared with the historical average dates.

By the end of November 2014, delayed starts of the growing season were much in evidence across the region:

In the eastern half of South Africa over most of its cereal growing regions, the growing season is now under way, but with delays of 20 to 40 days, particularly in Kwazulu-Natal.

In eastern Zambia, northern Mozambique and northern Zimbabwe, rainfall deficits are such that no growing season has yet been detected with a majority of the area facing delays of 30 or more days. Minor delays can be seen in Angola.

On the other hand, Tanzania has generally enjoyed an earlier than average start of the season. The growing season is also ahead in parts of central South Africa as well as in southern Angola and NE Namibia.

Date of start of the 2014-15 growing season compared to a 20 year average. Green shades represent earlier than average start dates, yellow to reds later than usual start dates. Pinks also represent delays in the start of the season but where the season has not yet started.
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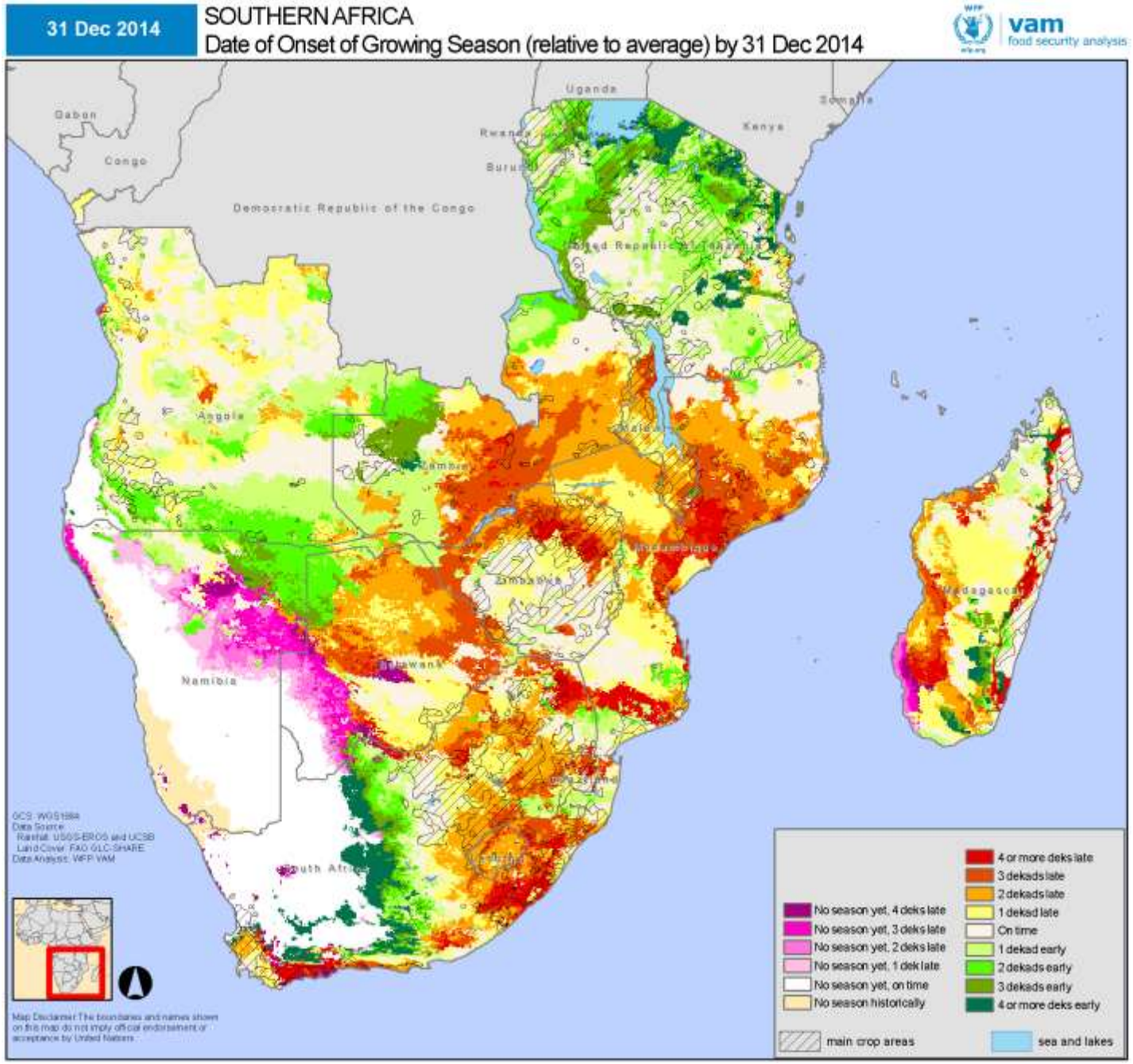

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