

Southern Africa

The 2014-2015 Rainfall Season



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- The early stages of the 2014-2015 growing season in Southern Africa were characterized by significant rainfall deficits in an area extending across eastern **Zambia**, northern **Zimbabwe**, northeastern **Mozambique** and **Malawi**. The crop growing regions of eastern **South Africa** and **Madagascar** were also affected. The rainfall deficits led to vegetation levels being significantly depressed across these regions.
- **Tanzania** has been the exception where good early rainfall led to a timely start of the season, though recent dryness in the north poses some concern. Early and relatively high rainfall across southern **Angola**, north eastern **Namibia** and western **Botswana** led to record levels of vegetation activity in mostly grassland and savannah areas.
- Overall the situation translates into marked delays in the start of the growing season – while in eastern **South Africa** the growing season is now under way though with delays of 20-30 days, in **Zambia-Zimbabwe-Malawi** and northern **Mozambique**, moisture conditions still have not translated into a growing season start which is now delayed by 30 days or more. The situation is not yet serious/critical, provided good abundant rainfall arrives in the second half of December.
- However, the most recent seasonal forecasts from international centres indicate below average rainfall for the core period of January to March across **Mozambique, Zambia, Zimbabwe** and **eastern South Africa**. Regional and National Meteorological Services forecasts are more optimistic but still pointing out areas of likely rainfall deficits. South Africa Weather Service indicates significant likelihood of below average rainfall for the country and the region. Possibilities remain of negative impacts on crop production.

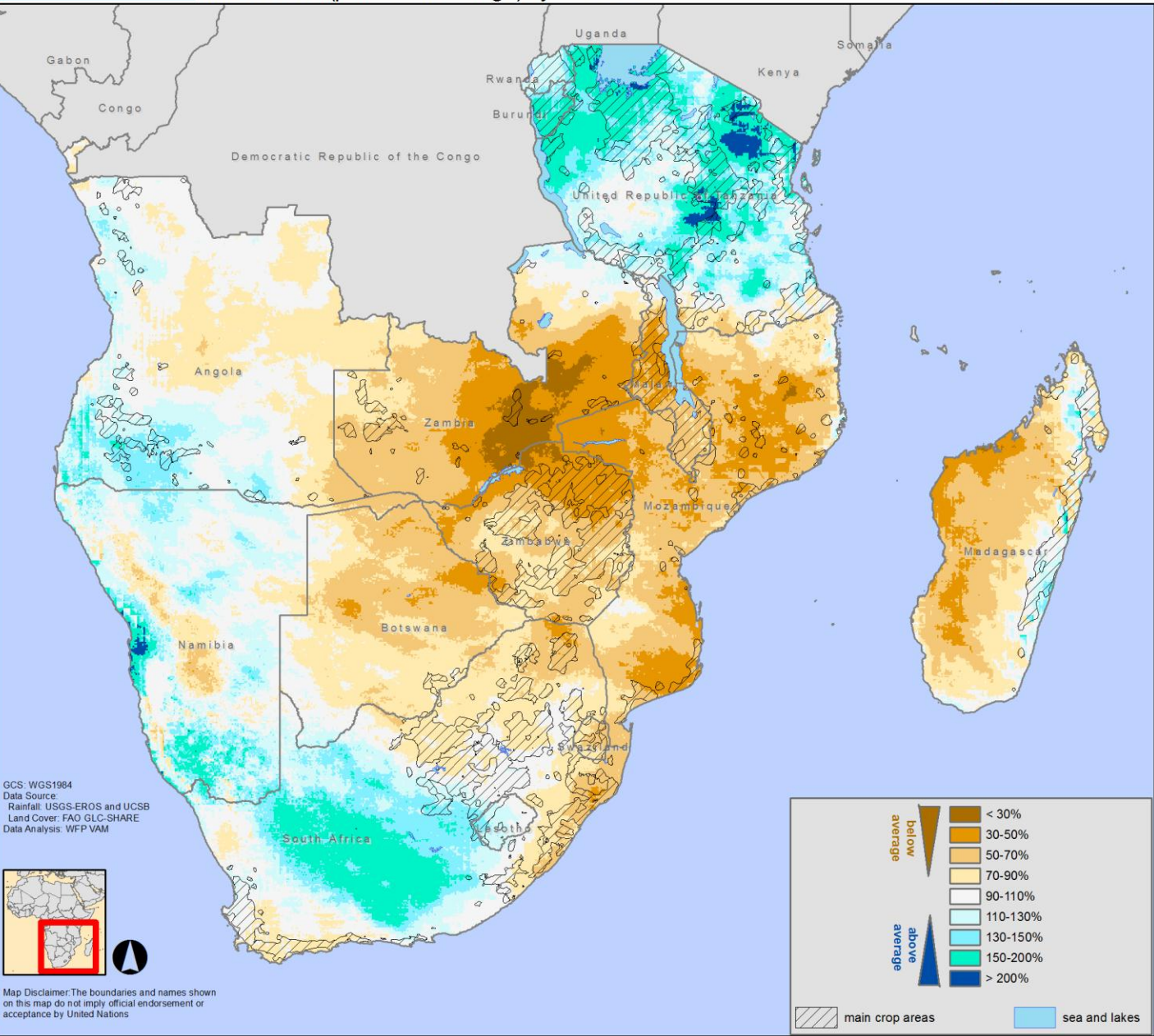
Current Situation and Near Term Perspectives



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10 Dec 2014

SOUTHERN AFRICA
Total Rainfall (percent of average) by 10 Dec 2014



Overall Rainfall Performance

The first two months of the 2014-2015 growing season in Southern Africa have been characterized by widespread rainfall deficits. These are more intense in an area extending across SE Zambia, NE Zimbabwe, NW Mozambique and Malawi.

Less pronounced rainfall deficits also extend across other areas of these countries, eastern Botswana and eastern South Africa as well as Madagascar.

In contrast, Tanzania is enjoying a good start of the season in bimodal areas (Vuli) with generally above average rainfall across most of the country. In central and western South Africa good rainfall since early November led to favourable growing season conditions. Southern Angola and Namibia have also enjoyed good, early (if not unseasonal) rainfall.

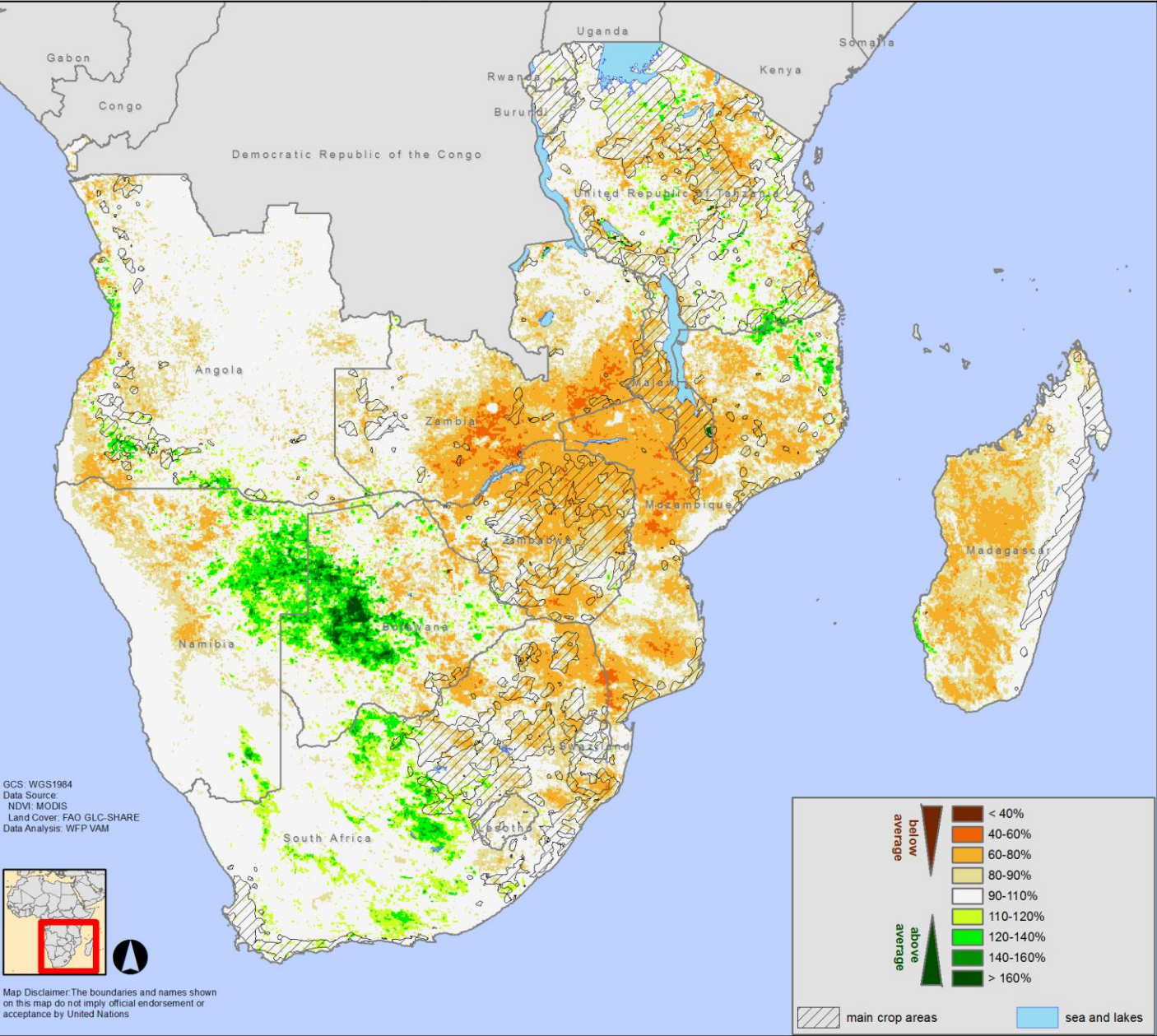
Since the growing season extends until March-April, these early season deficits are still not a cause for serious worry since few impacts on crop production are expected if significant rains are in place by mid to late December.

However, long range forecasts for the January-March period are pessimistic, pointing to continued rainfall deficits over the already affected areas.

Total rainfall from 1 August to 10 December 2014 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

SOUTHERN AFRICA SEASONAL ANALYSIS – 2014/2015

25Nov-11Dec 2014 SOUTHERN AFRICA
NDVI (percent of average) 25Nov-11Dec 2014



Overall Vegetation Status

Current vegetation patterns reflect the predominant rainfall situation – below average vegetation levels are widespread across the region matching with the pattern of rainfall deficits. Rainfall deficits result in the absence of enough soil moisture to trigger seasonal vegetation development and therefore in lower than average vegetation levels.

Most noticeable vegetation deficits are concentrated along southeast Zambia, northern half of Zimbabwe and most of Mozambique, areas most affected by the early season rainfall deficits. NE South Africa and Madagascar are also affected.

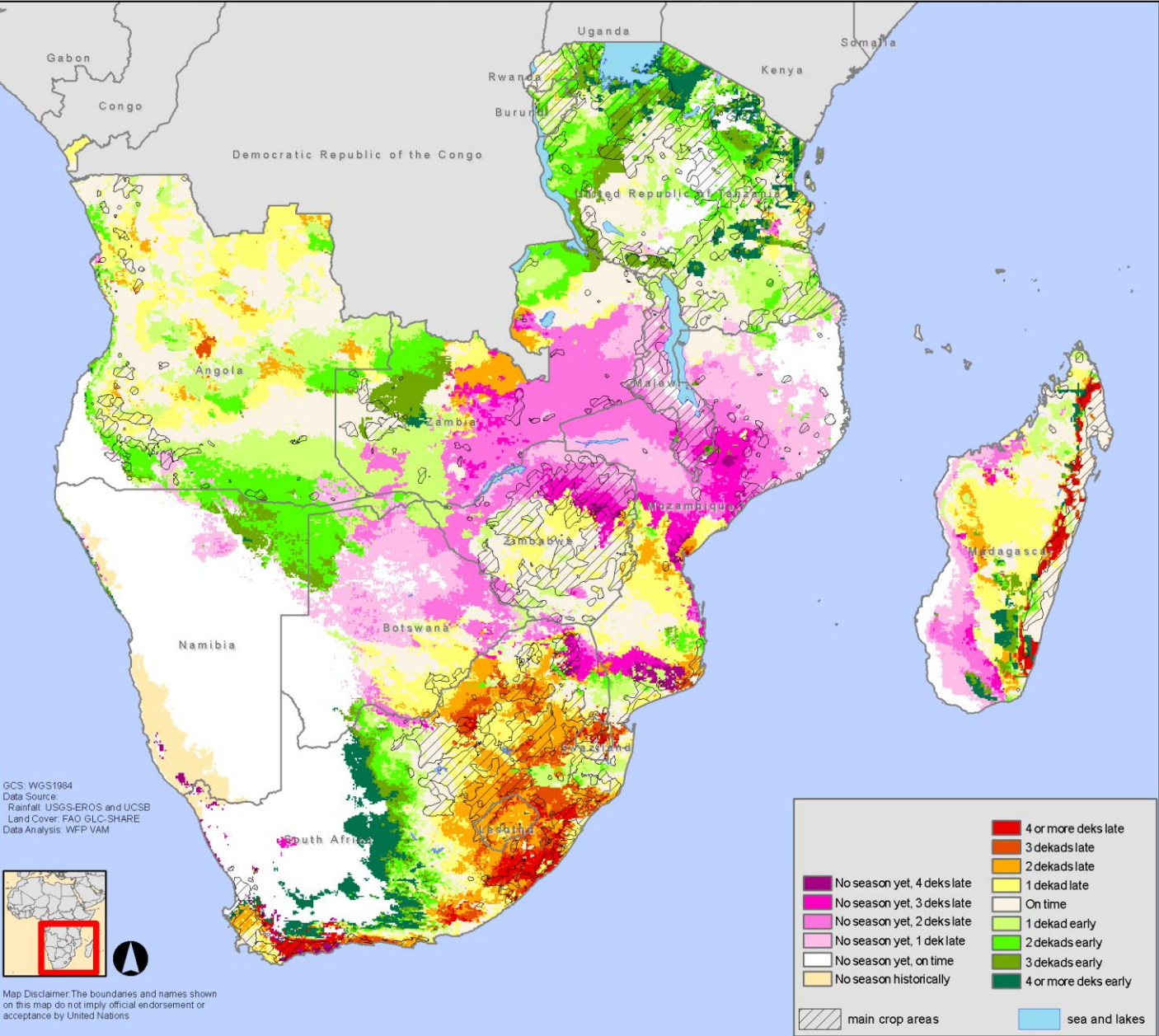
In contrast, good November rainfall in central and western South Africa has also led to above average vegetation levels.

NW Namibia and western Botswana markedly above average vegetation results from the typical strong and long lasting response of semi arid ecosystems to consistent early rainfall (even if amounts are low). This will translate into enhanced pasture resources throughout these areas.

*Vegetation index in early December 2014 as a percentage of the 12 year average.
Hashed pattern indicates main agricultural areas.
Orange shades indicate below average vegetation, green shades indicate above average vegetation*

30 Nov 2014

SOUTHERN AFRICA
Date of Onset of Growing Season (relative to average) by 30 Nov 2014



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.

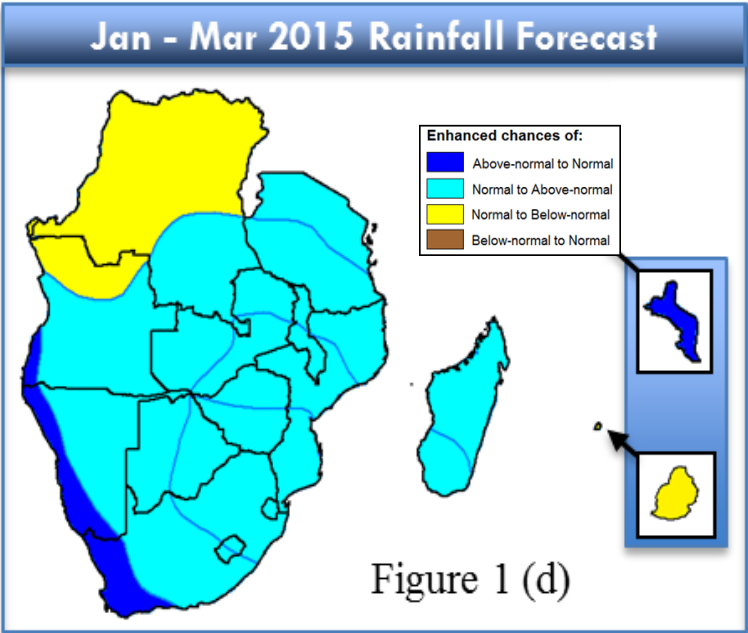
In eastern Zambia, northern Mozambique and northern Zimbabwe, rainfall deficits are such that no growing season has yet been detected with a majority of the area facing delays of 30 or more days. Minor delays can be seen in Angola.

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. Hashed pattern indicates main agricultural areas.

Forecasts for the core growing season – January to March 2015

Seasonal forecasts for the core growing season period of January to March 2015 are produced by a number of national, regional and international centers. January to March corresponds to the core growing season including the critical development stages of the maize staple crop. The forecasts are for the total rainfall in the 3 months and provide no indications regarding rainfall distribution within the period. Varied methods and approaches are used, with the result that outputs are not always consistent. A summary of different outputs are presented here.



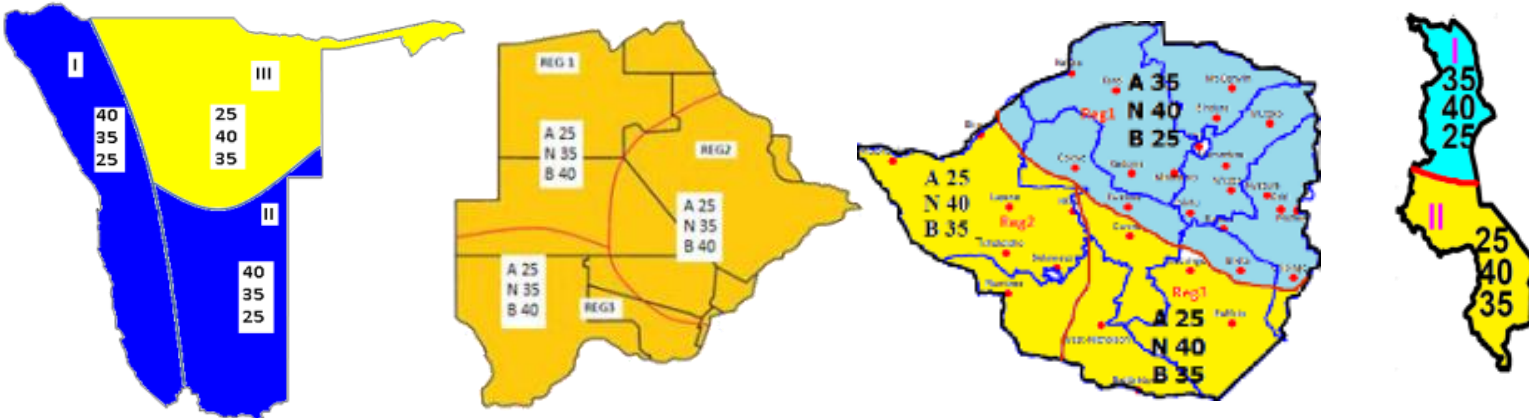
Southern Africa Regional Climate Outlook Forum (SARCOF)

The recently released forecast from SARCOF indicates a single tendency for the region – near normal to above normal, except for northern Angola and DRC. No specific probabilities are provided, so no assessment of the strength of the tendency is possible.

Forecasts from National Meteorological Services

Following from the SARCOF outputs, countries in the region may issue their own forecasts, usually accounting for local conditions and incorporating additional information. For the same JFM period Namibia, Botswana, Zimbabwe and Malawi issued their own forecasts. These have more geographical detail, and depart from the regional level output.

- Malawi: South – Below normal to normal (75% chance combined), North – above normal to normal (75%)
- Zimbabwe: Northern – normal to above normal (75%), Southern - below normal to normal (75%)
- Botswana: below normal to normal (75%)
- Namibia: northeast – below normal to normal (75%), elsewhere, normal to above normal (75%)



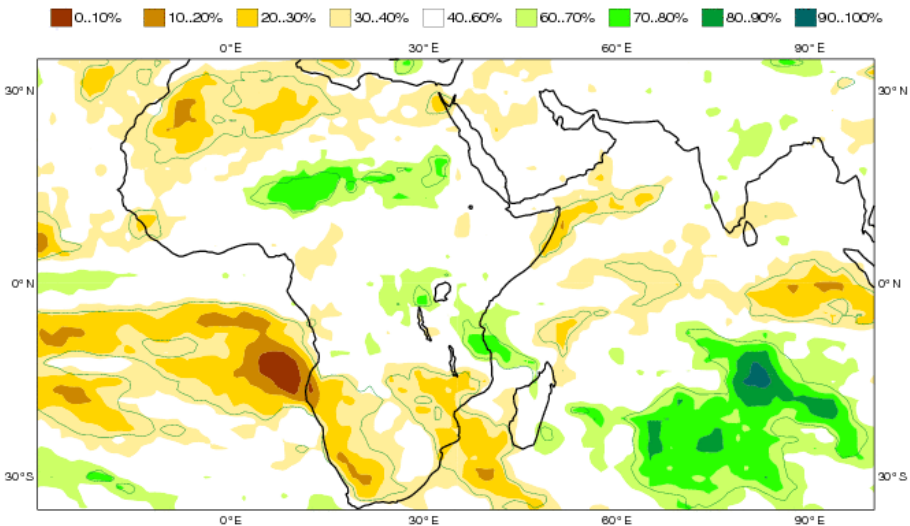
Forecast for the January-March (JFM) 2015 rainfall: Numbers in boxes correspond to probability of JFM being above average (top box, A), near average (middle box, N) or below average (bottom box, B). Colours show areas where indicated rainfall tendencies apply. Source: Nat Met Services.

Forecasts from international centres

Latest forecasts (mid December) from ECMWF for the January to March rainfall in the Southern Africa region are pessimistic. They provide expectations of below average rainfall for this period, particularly for Mozambique, eastern Zimbabwe and southern Zambia, as well as Namibia and SW South Africa. Wetter than average conditions are expected for Tanzania. Note that current conditions already match the broad features of the forecast.

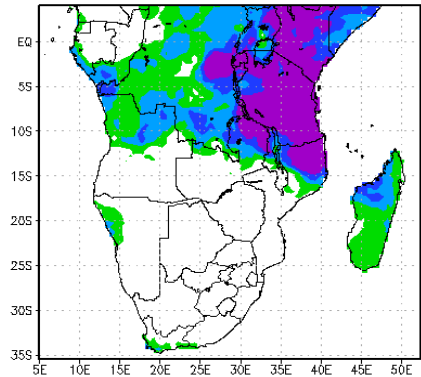
Forecasts issued by the South Africa Weather Service also indicate strong probabilities of below normal rainfall for virtually the whole region.

Identical results are obtained by the UK Meteorological Office and ACMAD

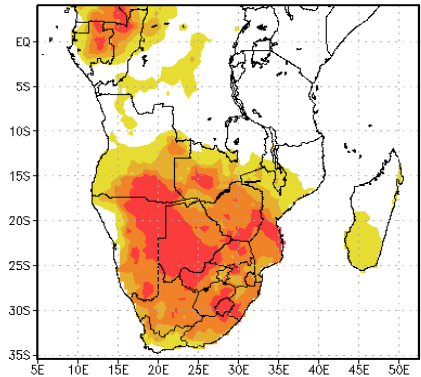


Forecast for the January-March (JFM) 2014-2015 rainfall: Probability of JFM rainfall exceeding the usual amount (long term median). Green shades – wetter than usual conditions more likely, yellow/browns – drier than usual conditions more likely. Source: ECMWF.

DECEMBER–JANUARY–FEBRUARY 2015
Above–Normal Rainfall



DECEMBER–JANUARY–FEBRUARY 2015
Below–Normal Rainfall



Summary

All objective models are consistent and into a single direction, that of below average rainfall for the core growing season in Southern Africa. Earlier predictions for the first half of the growing season (October-December) also pointed in the same direction and have so far been fairly accurate.

With regards to the regional SARCOF forecasts, there is no quantitative information on likelihood of each tendency, allowing a more refined assessment.

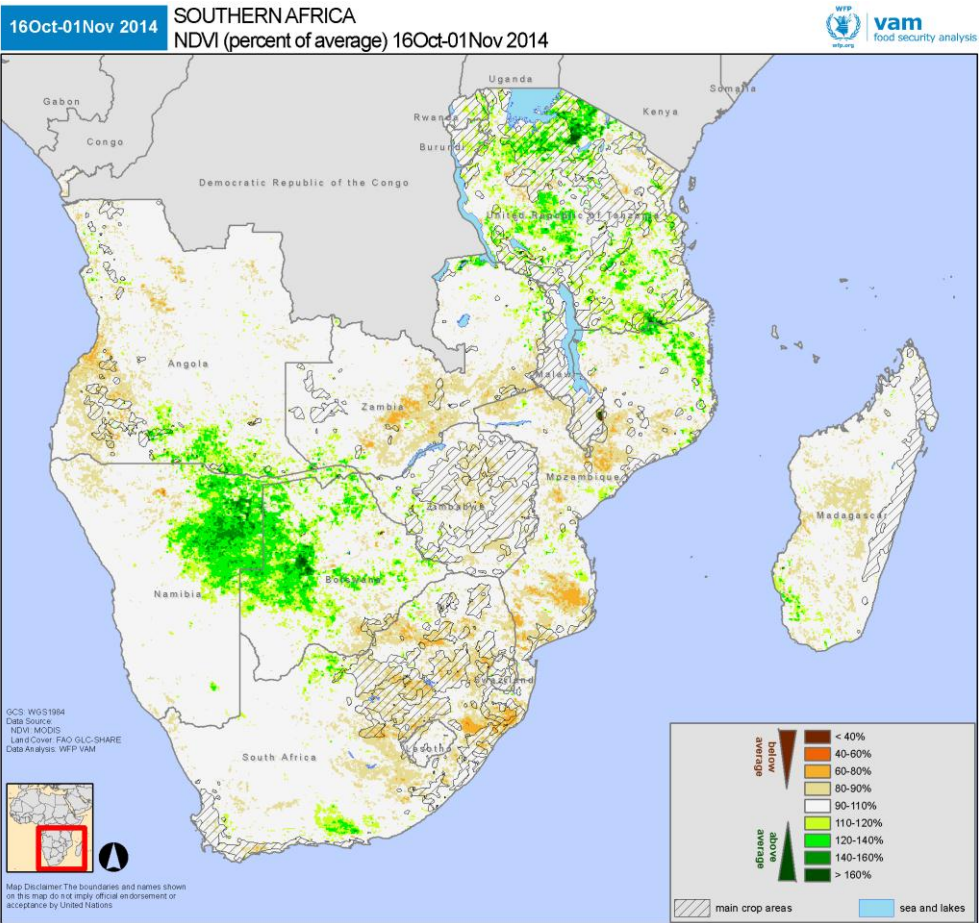
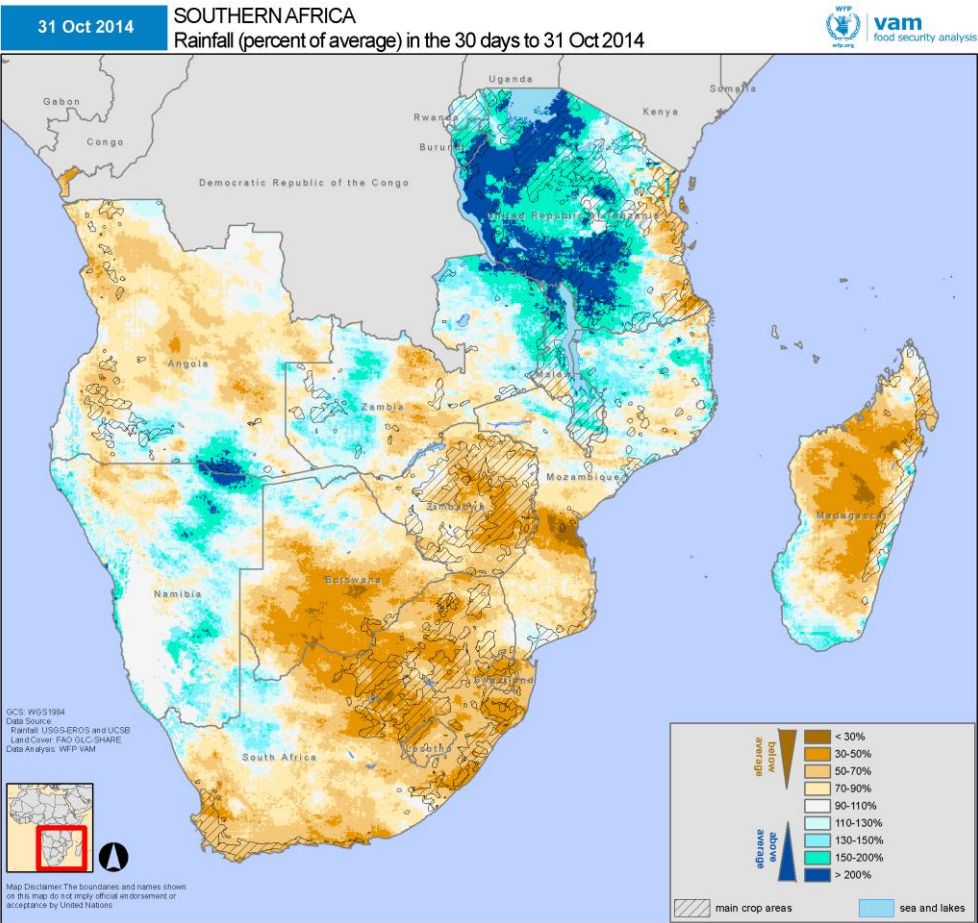
The country specific forecasts are of better quality and more aligned with the outputs of the objective models from international centres and may be taken as a fair assessment of likely seasonal outcome. However, results from international centres must be kept in mind in any assessment made by users.

How the Season Is Evolving



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SOUTHERN AFRICA SEASONAL ANALYSIS – 2014/2015



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

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

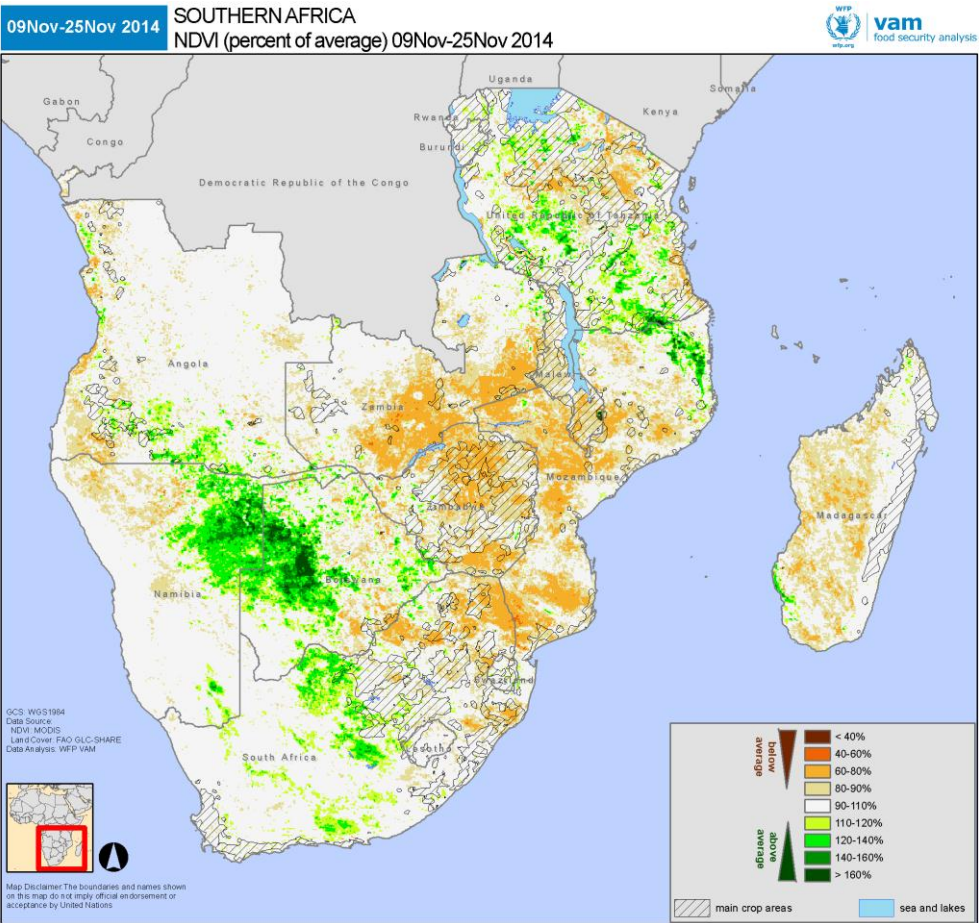
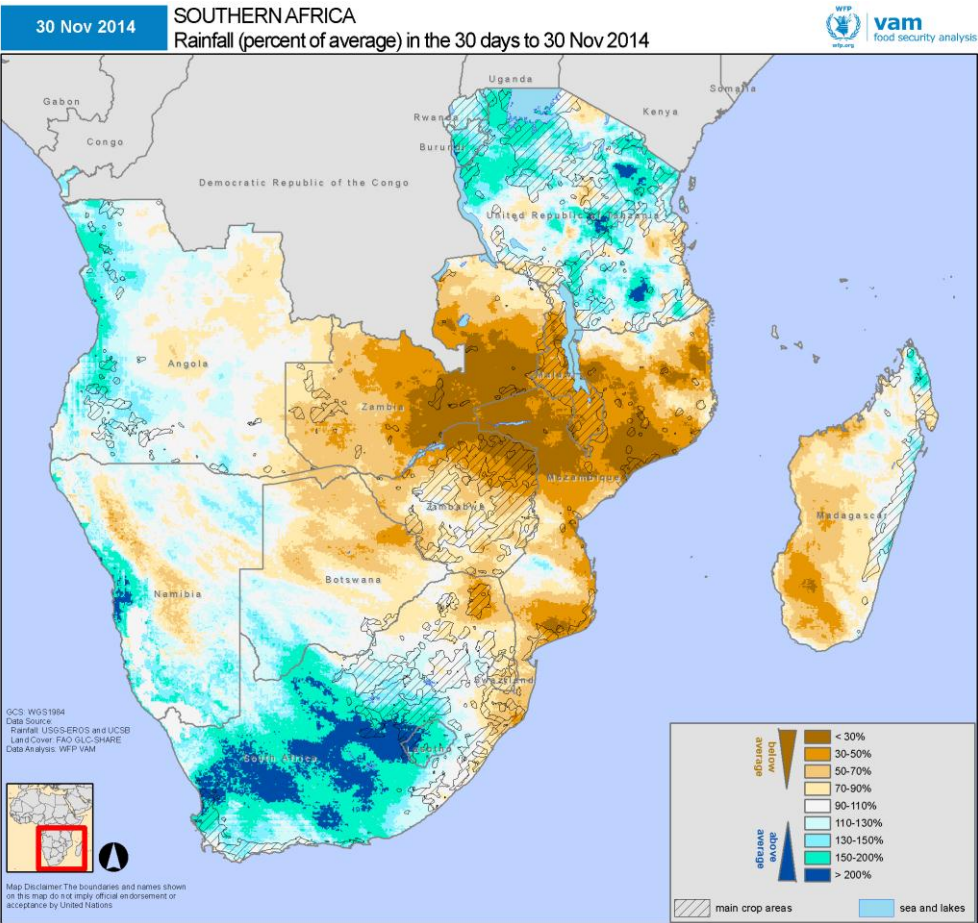
Hashed pattern indicates main agricultural areas.

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.

SOUTHERN AFRICA SEASONAL ANALYSIS – 2014/2015



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

Early May 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.

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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