



REGIONAL FOOD SECURITY PROGRAMME

GROWING SEASON STATUS

Rainfall, Vegetation and Crop Monitoring



2006/2007 Issue 5

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Highlights

- Good rainfall performance in the northern half of the SADC region, but poor rains in the southern parts by the end of March 2007.
- The prolonged dry spells develop into drought affecting Botswana, Lesotho, Namibia, Swaziland, southern Mozambique and southern Zimbabwe.
- Food security prospects at both (some) national and regional level uncertain as drought sets in. FAO/WFP Crop and Food Supply Assessments to take place in some of the drought affected countries
- Persistent heavy rains resulted in widespread floods in Zambia, Madagascar and central Mozambique.

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January to March 2007 rainfall totals as percentage of average

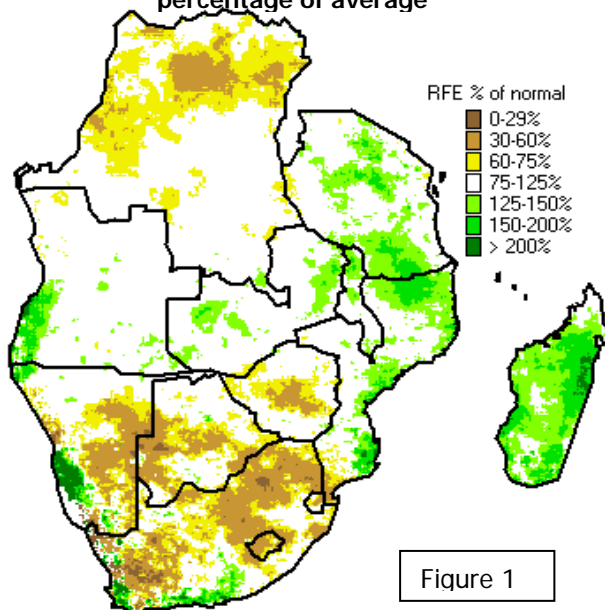


Figure 1

Rainfall Performance

Cumulative rainfall analysis (Figure 1) shows that the southern half of the region has had a poor second half of the rainfall season. January to March rainfall totals have been below average for Botswana, Lesotho, eastern Namibia, Swaziland, South Africa and southern Zimbabwe. On the other hand, the northern parts of the region, including Malawi, northern Mozambique, Tanzania, Zambia, and parts of northern Zimbabwe, have had good accumulations of rainfall, conducive to good crop development and good pasture. However, in some of these areas excess rainfall has been detrimental to crop growth, and has caused widespread flooding in some of the main river basins of the region, particularly the Zambezi river basin. The heavy rains in parts of the Zambezi basin, including the Caprivi area near the Angola/Zambia/Namibia border, as well as the lower Zambezi near Mozambique/Malawi border, might aggravate the situation in these areas and those downstream.

Below average rainfall totals were recorded in many parts of the region in the month of March. Less than 60 percent of total monthly rains were observed in a good number of the major maize growing regions, including the Maize Triangle of South Africa. The first two dekads of the month were generally dry for the southern half of the region, perhaps signaling the gradual close of the rainfall season. In the same period, widespread rains were received in the northern parts of the region, covering Angola, Tanzania, Democratic Republic of Congo and northern parts of Zambia. Heavy rains were received in northern Madagascar due to the passage of tropical cyclone Indlala. Tanzania also received some heavy rains. The third dekad saw some widespread moderate rains covering the southern half of the region, including Zimbabwe, Botswana, central South Africa and southern Mozambique. These rains brought some relief to these areas and helped to replenish water supplies. There was reduced rainfall activity in northern Tanzania in the same period (Figure 4 page 3).

SADC Member States:

Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe.

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Vegetation condition

NOAA Normalized Difference Vegetation Index (NDVI) images (Figure 5 page 4) for March 2007 suggest moderate to good vegetation condition in most parts of the region except the south-west, including parts of southern Botswana. A significant improvement in vegetation status was notable over the areas in northern half of Botswana, Zimbabwe and the bimodal rainfall areas in Tanzania during the first dekad. Isolated areas in northern Botswana, southern Zimbabwe and Mozambique northern DRC and Madagascar showed improvement in vegetation condition and this was attributed to the effects of cyclone Favio, which brought substantial amounts of rainfall over Madagascar, Mauritius, southern Mozambique and eastern Zimbabwe in late February. Although the images also suggest well below average vegetation conditions in western parts of Lesotho, most of Swaziland, some parts of northern Mozambique and Botswana during the last dekad of March, this was due to persistent cloud cover which makes it difficult to judge the true extent of vegetation development in these areas.

Regional Dry Spells, Floods and Cyclones

The prolonged dry spells that persisted in the southern half of the region developed into drought affecting Botswana, Lesotho, Namibia, Swaziland, southern Mozambique and southern Zimbabwe. Food security prospects in these countries and hence at regional level becomes uncertain. The FAO/WFP Crop and Food Supply Assessments (CFSAMs) will be undertaken in some of the drought affected countries from April to May 2007. By the end of March, crops in affected areas had succumbed to severe water stress and wilting.

In contrast, heavy and excessive rains received in the northern half of the region between January and March resulted in widespread flooding and destruction of crops in Angola, the Democratic Republic of Congo, Madagascar, Malawi, Mozambique, Namibia and Zambia. The floods resulted in loss of lives, displacement of people, damaged infrastructure, loss of crops and livestock, as well as leaching of soil nutrients.

There were a series of tropical cyclones which influenced rainfall performance in the SADC region in March. *Gamede* was formed towards the end of February and persisted up to the beginning of March, while *Indlala* was formed at the middle of the March and *Jaya* was formed towards the end of the month. The 2006-2007 cyclone season has been a bad season for Madagascar, with at least 6 cyclones or tropical storms directly impacting the country. Of these, by far the worst was Cyclone Indlala, which made landfall on 15 March, and caused much havoc and destruction in the northern Madagascar. Figure 2 shows the rainfall estimate for 16 March 2007. In just that single day, northern Madagascar received over 200mm of rainfall (purple colours - Figure 2), clearly indicating how heavy were the rains associated with Cyclone Indlala. The cyclone was very severe, and reports indicate that over 80 people were killed by the cyclone. IRIN reports indicated that about 80% of the country's vanilla crop was destroyed by the cyclone. Vanilla is a major export crop for Madagascar, and a source of livelihood for many farmers.

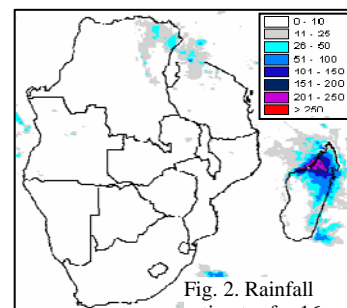


Fig. 2. Rainfall

Regional Crop Water Satisfaction Index (WRSI) at the end of March 2007

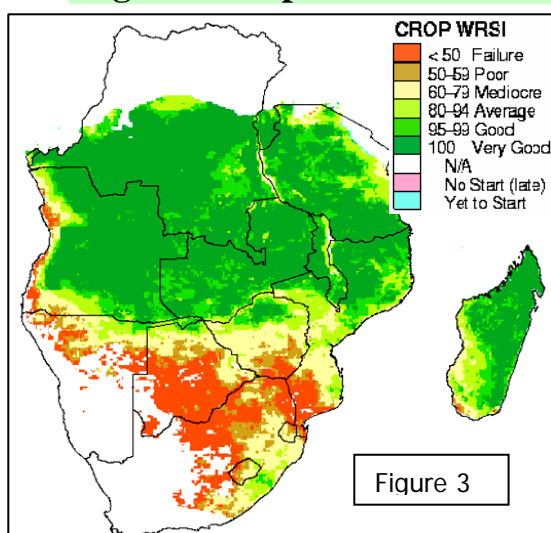


Figure 3

The Water Requirement Satisfaction Index (WRSI) imagery which provides a measure of the extent to which the crop water requirements have been satisfied, indicates that the region was divided into two distinct north and south zones. WRSI as at 31 March 2007 suggests that crops (green colour) in the north zone of the region and in Madagascar experienced minimal water deficits during the season, and the crops had sufficient moisture to support crop development, and as a result, high yields are expected in most of these areas. It also indicates that crops in the south zone covering Botswana, Lesotho, Southern Mozambique, central and northern South Africa, Swaziland, and southern Zimbabwe were severely water stressed and are likely to receive poor yields because of the extensive water deficits that were experienced in these areas during the season as is shown by the red, brown and cream colors in Figure 3. Many of these areas are likely to have experienced widespread crop failure.

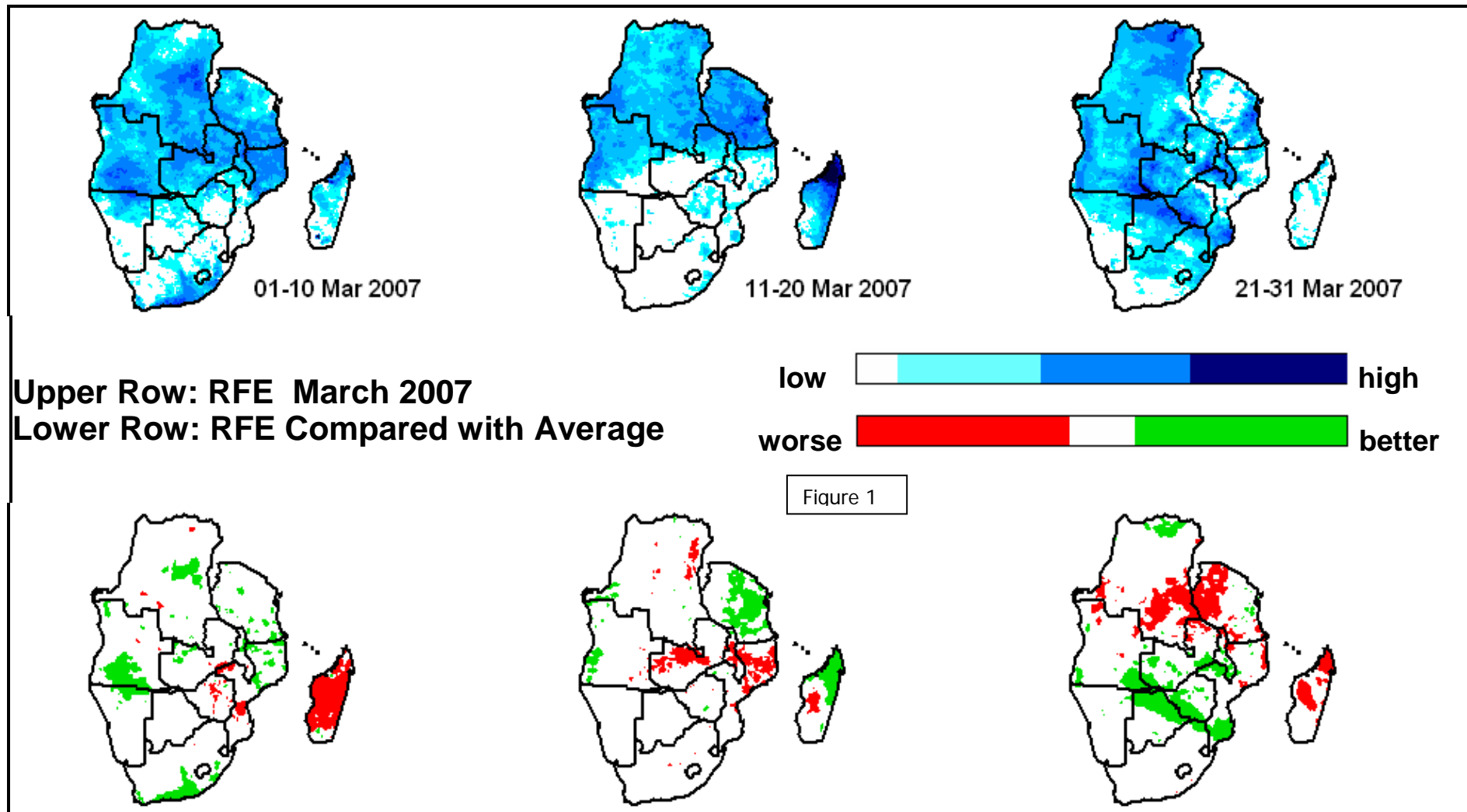
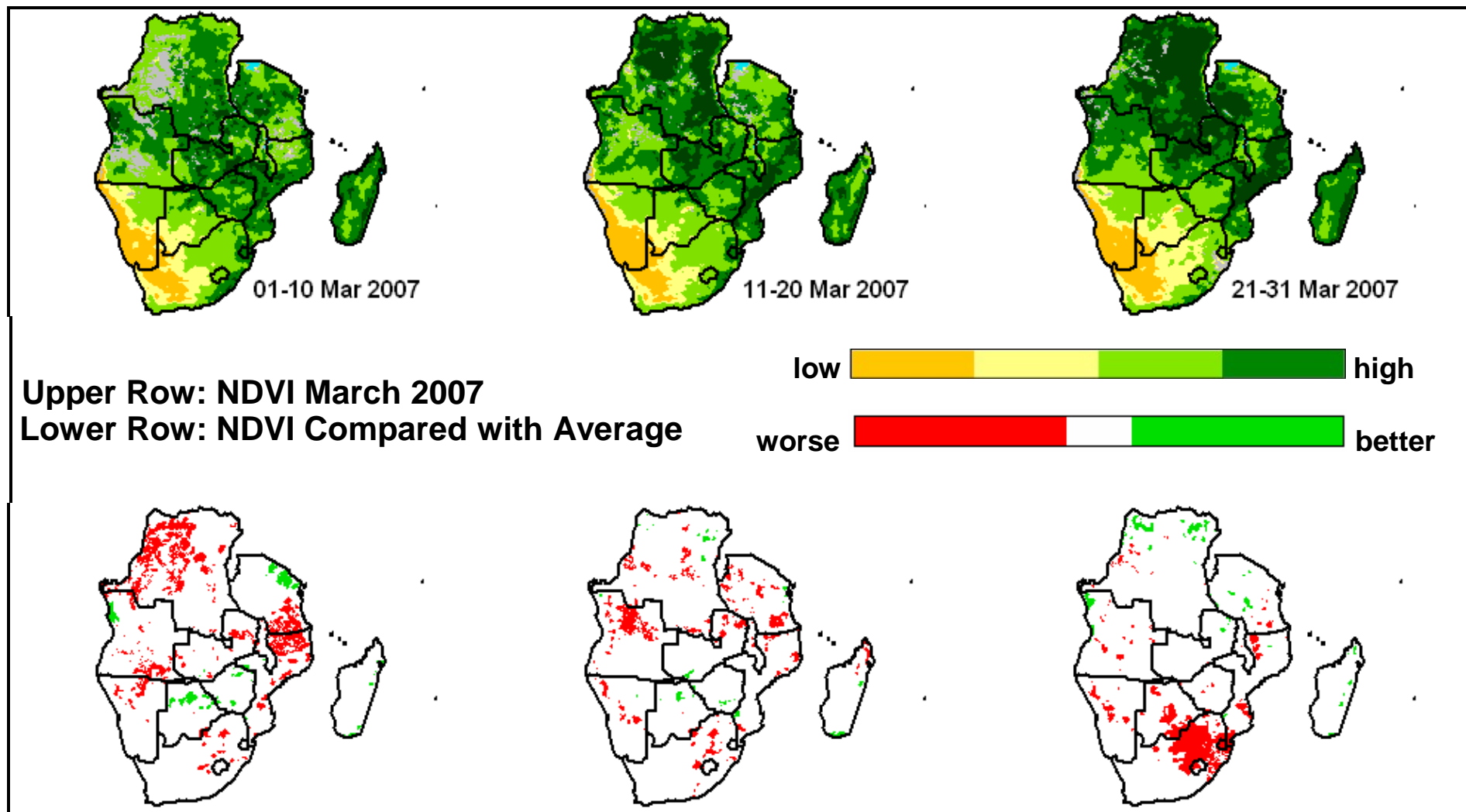


Figure 4.

Rainfall Estimates (RFE) images, March 2007 and difference from average
From left to right are Dekads 1 (1-10 Mar), 2 (11-20 Mar) and 3 (21-31 Mar)
Differences from average, lower row, are based on a 10-year average of 1995-2005



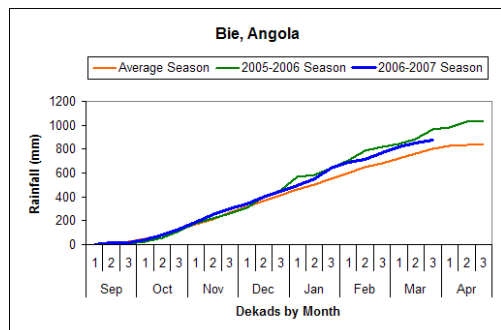
Upper Row: NDVI March 2007
Lower Row: NDVI Compared with Average

low [yellow to dark green] high
worse [red to green] better

Figure 5. Normalized Difference Vegetation Index (NDVI) images, March 2007 and difference from average
From left to right are Dekads 1 (1-10 Mar), 2 (11-20 Mar) and 3 (21-31 Mar)
Differences from average, lower row, are based on a long term average of 1982-2006

Time Series and Country Updates

A number of rainfall graphs are presented with updates for SADC countries for which satellite and/or field information (provided by collaborating NEWUs) is available. The graphs are based on rainfall estimates (RFE) data and show a comparison with an 11-year (1995-2006) average for selected sub-regions of SADC, which can be administrative boundaries, watersheds, or agricultural areas.



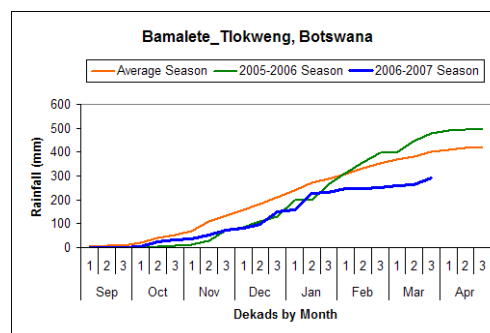
Angola

Satellite imagery suggests that the entire country received light to heavy rainfall in most parts during the month of March. Angola has generally received sufficient amounts of rainfall since the beginning of the season, benefiting the crops. Analysis of cumulative rainfall received suggests above normal rains for March in most parts of the country. The crops are expected to be at maturity stage. A good harvest is expected although excessive moisture and insect infestation have been reported. Floods were reported in the Zambezi basin. Cumulative rainfall graphs suggest that the Bie

province received above-normal rains for the entire month of March.

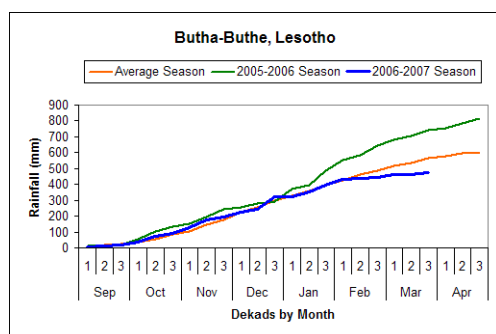
Botswana

Rainfall in Botswana deteriorated further during the month of March. It was dry during the first and second dekads of March, but significant rains were received in the eastern and northern parts during the third dekad. The rains positively impacted on pastures, but were too late to resuscitate any crops. Crops in almost all cropped parts of the country continued experiencing water stress. Livestock and pastures were still in fair to good condition. Cumulative rainfall graph for Botswana's Tlokweng district indicates well below normal rainfall performance for the month of March.



Democratic Republic of Congo (DRC)

Satellite imagery suggested that during the first dekad of March, the northern and western DRC received light to moderate rains while more rainfall was received elsewhere. There was a reduction over the entire country during the second dekad. The heaviest rains for the month were received in the third dekad over the eastern Bas-Uele (over 200 mm) and extreme western Haut-Uele (over 150mm) districts.



Lesotho

Dry conditions experienced from the beginning of January continued into March as little to no rainfall was received over most parts of the country. The western part, which generally has the greater concentration of cropping activity, and some parts of southern Lesotho, were badly affected by the poor rainfall performance. Crops were in poor condition and some had reached permanent wilting point especially in parts of southern Lesotho. In other areas, wilting and yellowing of crops due to water stress was observed. Low crop yields were being expected. Ground information indicates that only Semonkong and Thaba-Tseka

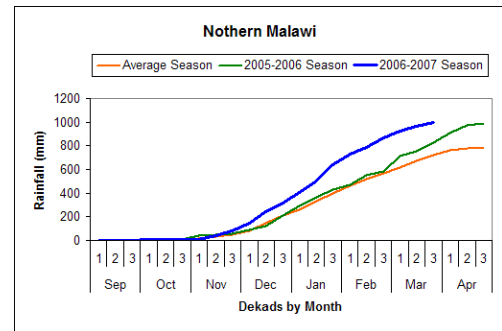
registered above normal cumulative rainfall. Vegetation, crops and pasture conditions continued to deteriorate especially over large parts of the lowlands and the Senqu River valley. Cumulative rainfall suggested a deteriorating season for Butha Buthe district.

Madagascar

During the first dekad of March, northern Madagascar received light to moderate rains and some isolated parts in the extreme south received above 200 mm, while showers were received elsewhere. The second dekad was the wettest with rains associated with Cyclone Indlala exceeding 200mm in a single day (16 March 2007) in northern Madagascar. The south-eastern areas received light to moderate rains during the same dekad. The third dekad was drier with a few stations receiving below normal rainfall.

Malawi

During March, there was a reduction in rainfall activities over most parts of southern and central Malawi during the first and second dekads as light to moderate rains were received. Favourable rains were received in the northern parts of Malawi including Karonga South, where reports had indicated that some parts had experienced a dry spell of three weeks in February. The northern half was drier in the third dekad while the southern half received some rains. Harvesting of matured crops was in progress particularly over the south and some parts of central Malawi. There are high prospects of a good harvest and the first round crop production estimates from Ministry of Agriculture and Food Security suggest a national maize production forecast of approximately three million metric tones.

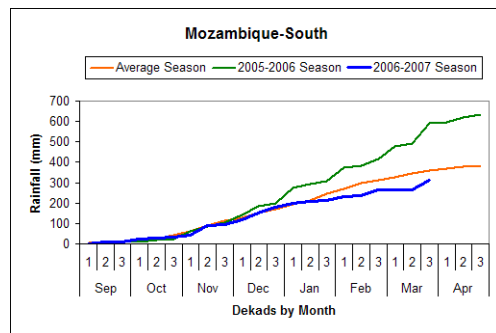


Mauritius

Rainfall performance over the island of Mauritius decreased in the month of March. Overall Mauritius received below normal rainfall with the west, north, east, south and central Mauritius getting 82%, 60%, 66%, 74% and 92% of the normal respectively. In some rain-fed areas in the west and north, the sugar crop water requirement was not met. Cumulative sugar crop growth lagged behind normal in all sectors. Island-wide cumulative elongation was lower than that of the 2006 crop by 10.4 and the normal by 20.2 cm. In general March weather was not conducive for crop to recover from the setback of tropical cyclone Gamede. Weed control was in progress.

Mozambique

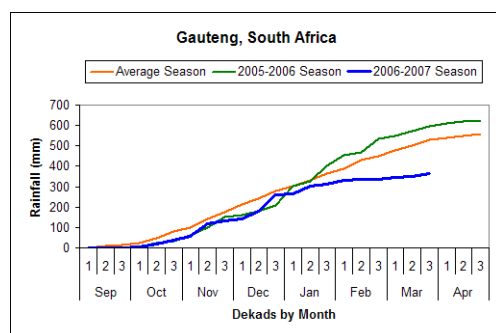
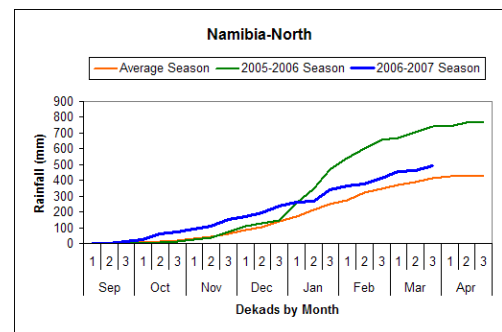
The northern half of Mozambique experienced substantial amounts of rainfall. The central parts of the country received light rains while southern parts continued to be dry during the first dekad. Isolated and very erratic rainfall was experienced over almost the entire country during the second dekad with the exception of the extreme northern parts where moderate to heavy rains were recorded. In the last dekad of March, high rainfall in the southern parts of the country brought some relief to the drought stricken areas of Maputo, Gaza and Inhambane provinces. However the rains were too late to resuscitate crops that had been negatively



affected by drought conditions but were beneficial to livestock and crops. Crops in the major maize growing areas in the north ranged from vegetative to flowering and were in good condition. A good harvest was being anticipated. Cumulative rainfall analysis (RFE curve) for Mozambique south continued to indicate well below normal rainfall performance.

Namibia

Almost the entire country experienced erratic rainfall with the exception of the extreme northern Namibia. In most areas, the dry conditions experienced since the beginning of the rainy season (from October) prevailed up to the end of March. Moderate to heavy rainfall was received over the Caprivi and Kavango (the main agricultural areas) and Ohangwena, during the first and last dekads of March. Excessive rains in the Zambezi basin continued to compound the effects of floods in the Caprivi region, destroying crops and displacing people. The overall food supply situation in the eastern Caprivi region, however, is generally good. Elsewhere pastures and livestock conditions ranged very widely from poor to good. Cumulative seasonal rainfall (curve) for northern Namibia indicates an above normal rainfall performance.



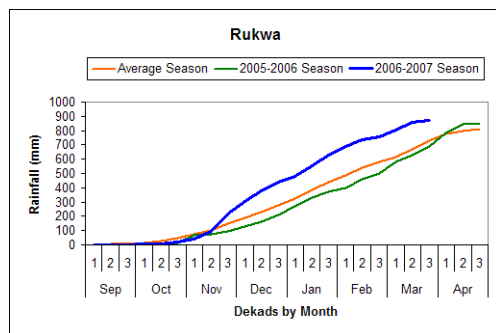
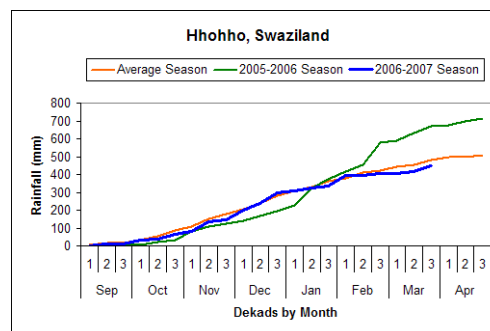
South Africa

Erratic rains persisted over most of South Africa throughout the first dekad of March with only the eastern Cape province receiving light to moderate rains. The second dekad was dry, with parts of Eastern Transvaal, Gauteng and Kwazulu-Natal receiving light showers. Rainfall received was slightly more in the third dekad. The dryness which has prevailed over South Africa since January has negatively affected the crop situation, particularly in the normally highly

productive Maize Triangle. The South African Crop Estimates Committee revised the crop production estimate downwards by 11% to 6.91 million metric tonnes, with an expected average yield of 2.71 MT/ha. The revision reflects the negative impact that the dry spell continues to have on maize production. Analysis of cumulative rainfall total received since September suggests that many parts of the country, including the highly productive maize triangle area, have received below normal. Cumulative rainfall graph for Gauteng indicates a well below normal rainfall totals for the season by the end of February.

Swaziland

The entire country received very little to no rains during the first and second dekads of March. High temperatures prevailed and these compounded the effects of the dry conditions experienced since January. During the third dekad, light to moderate rainfall was received. Much of the maize crop ranged from maturity to drying stages, mainly in the Highveld. In the Lowveld and some parts of the Middleveld and Lubombo, the crop had already wilted due to water stress. Poor crop conditions were prevalent in most parts of the country. In general, crop condition in the Highveld and Middleveld was good irrespective of the dry spells, and ranged from maturity to drying stages. Poor crop yields are generally expected in most areas. The cumulative rainfall curve for Hhohho for the month of March indicated below normal rains.



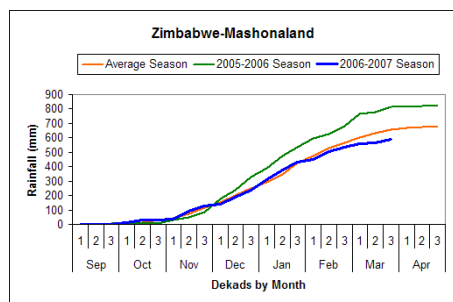
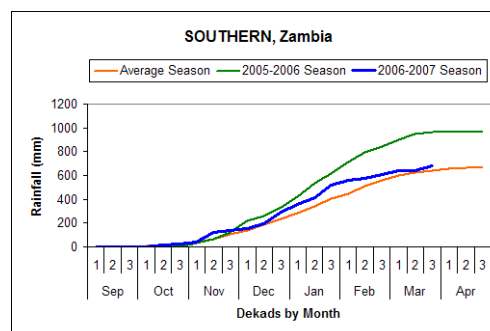
Tanzania

In the bimodal areas, the long rains (*Masika*) started during the first dekad of March but its spatial distribution was generally poor over most areas of the Lake Victoria basin, northeastern highlands and northern coast. Heavy rainfall was experienced during the second and third dekads leading to high soil moisture levels. Although these impeded land preparations over a few areas of bimodal rainfall regime, farmers continued with land preparations, planting, and weeding. Substantial amounts of rains were received over much of the unimodal areas where some of the recording stations such as

Ifakara recorded 440 mm during the period under review. The excessive rains saturated soil in some areas and hence impeded crop growth and development. In southern Tanzania, maize crops ranged between vegetative and ripeness stages, with crops in Morogoro and Ifakara lowlands still at early vegetative stages. Elsewhere paddy and cassava crops were at various growth stages ranging from vegetative to harvesting, and in good state. Pasture conditions and water availability for livestock were very good across the country. The cumulative rainfall graph for Rukwa indicates a well above-average rainfall season.

Zambia

The northern parts of the country continued receiving significant amounts of rainfall that were conducive to crop development at different stages. Stations in the region that normally receive rainfall between 800mm and 1000mm (Mwinilunga, Misamfu, Ndola and Mbala) have so far received 30% above their normal. Additional excessive rains in the Western and North western Provinces low plains and along the banks of the Zambezi River, especially in the third dekad of March, continued to impact on crops. In general, crops in the northern half of the country were doing well and ranged from maturing to drying. In the southern half, most stations especially in regions where normal rainfall is between 600-800mm, received below normal rainfall during the month. Crops in these areas were reaching maturity. Cumulative rainfall (RFE curve) for Southern Zambia indicates that near normal rains were received in March.

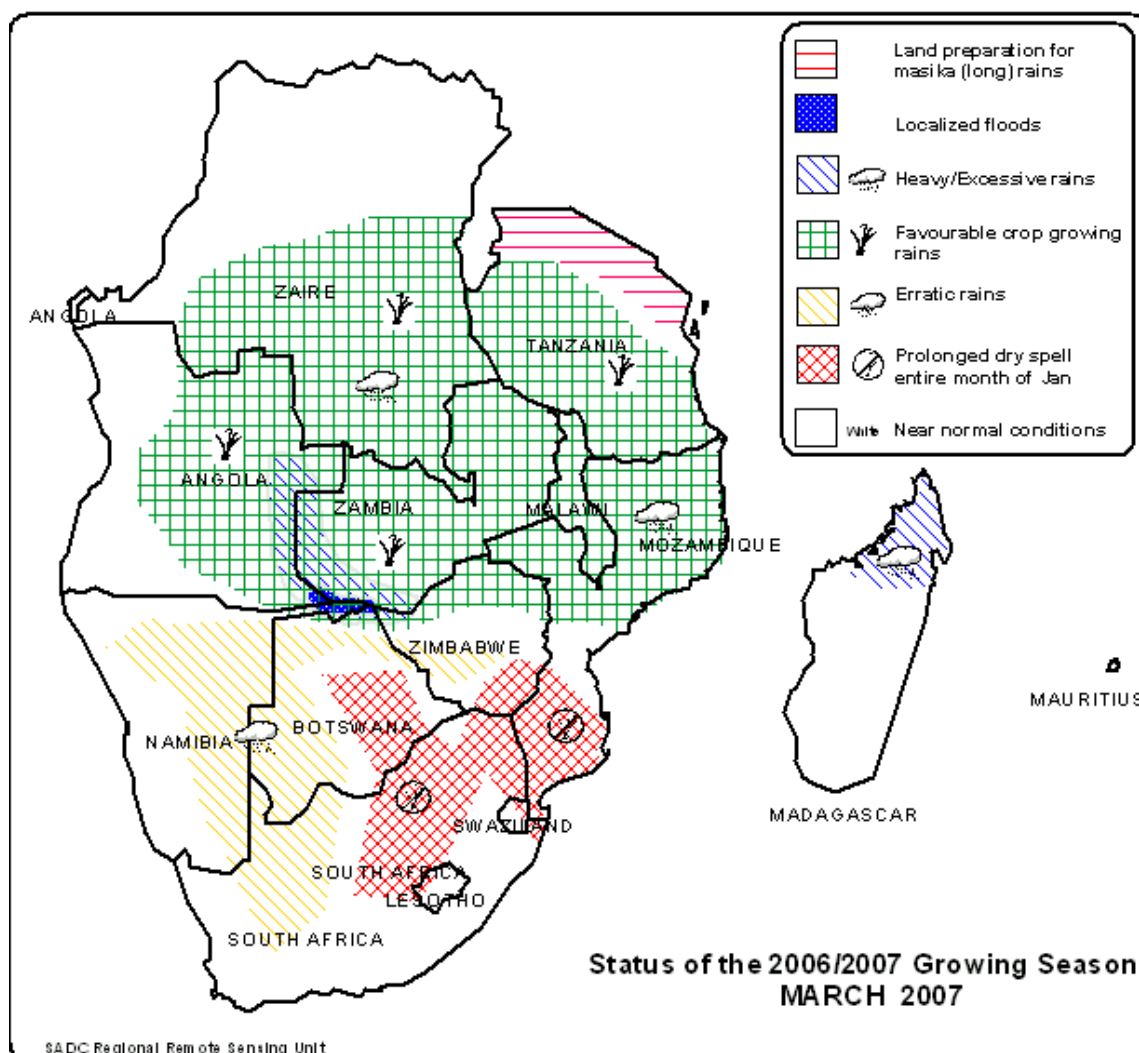


Zimbabwe

The prolonged dry spells affecting parts of Manicaland, Midlands, Masvingo and Matebeleland South provinces prevailed from January to mid-March 2007. These areas continued to experience erratic rains up to the second dekad of March. More significant rains were received during the third dekad of March, and although these revived pastures, they might have come too late to be beneficial to crops. For the northern half of the country, rainfall performance was below normal for March but crops in these major maize producing areas (Mashonaland

Provinces) ranged from maturing to drying stages and were in fair condition. Livestock and pastures were in good condition over the northern half of the country. Cumulative rainfall analysis (RFE curve) for the Mashonaland suggests below normal rains for March 2007.

SITUATION MAP



ACKNOWLEDGMENTS

The Regional Remote Sensing Unit (RRSU) is pleased to present the fifth issue of the Growing Season Status Report for the 2006/2007 rainy season, covering the month of March 2007. The RRSU acknowledges financial support from Member States (through FANR) and from the EC through an EC-funded FAO project. FAO and USGS/FEWSNET provide technical support and data inputs.

The analysis presented in this bulletin is based on METEOSAT derived Cold Cloud Duration images, which are received through the Botswana Meteorological Department, Rainfall Estimates (RFE) and NOAA-NDVI from the FEWSNET Project. Ground data and interpretation are provided by collaborating national meteorological services and early warning units of the SADC Member States.

The RRSU also provides regular updates on the progress of the 2006/2007 rainy season through 10-day Agromet Updates, which are distributed by the SADC Regional Early Warning System, and posted on the SADC web-site (www.sadc.int) and the Southern Africa Flood and Drought Network site (www.sadc-hazards.net), which is maintained in collaboration with FEWS NET.

The focus of this bulletin is primarily at the regional level. However, any information available has been included in this report. For more detailed sub-national analysis, readers should consult the national meteorological agencies and food security early warning units.