# Food Security Early Warning System

## Agromet Update

## 2016/2017 Agricultural Season

**Issue 05 Month: March-April** **Season: 2016-2017** **28-04-2017**

## Highlights

- **Good rains continued to the end of season in most areas, resulting in positive production expectations in several countries**
- **The high seasonal rainfall improved dam and groundwater levels, providing good water availability for irrigation over the coming seasons**
- **Preliminary reports suggest the regional impact of the Fall Armyworm was not severe. However, experts advise robust, coordinated control measures for coming seasons**

## *Regional Summary*

**Seasonal rainfall and temperature overview**

Central and southern parts of the region received well above-normal rainfall during the October-to-March 2016-17 rainfall season (Figure 1, blue oval #1). Many areas, including parts of Botswana, Mozambique, Namibia, South Africa and Zimbabwe received more than one and a half times their normal seasonal rainfall. Lesotho, Malawi, Swaziland and Zambia also received above-average rainfall over the course of the season. The bulk of the rains fell in January and February, although, some areas received heavy rains from as early as November (parts of Botswana, South Africa and Swaziland) and December (parts of Mozambique and Zimbabwe). In several areas, including parts of the above-mentioned countries, the onset of rains was delayed. After the good January and February rains, most areas had a sharp decline in rainfall in March. The preceding rains had however been high enough that most areas were not affected by the March dryness. In many places that experienced high rainfall, temperatures were also below average for much of the season, which reduced evapotranspiration.

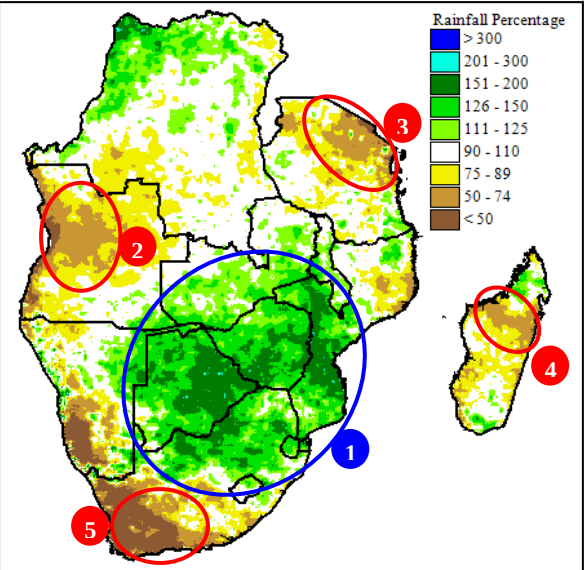


Figure 1. Rainfall for 1 Oct 2016 to 31 Mar 2017 expressed as percent of 15-year avg for the same period.

Other parts of the region received below average seasonal rainfall. These include central and western Angola, north-eastern Tanzania, much of Madagascar and western South Africa (Figure 1, red ovals #2, #3, #4, and #5 respectively). In some of these areas, the seasonal rainfall totals were less than 75% of average, which is significantly below average, on seasonal time scales.

The first 20 days of April saw an increase in rainfall in Botswana, Lesotho, Namibia, and South Africa, after a relatively dry March. Rainfall tapered off in late April, although some areas in Zimbabwe and central Mozambique received higher than usual rainfall amounts for this time of year.

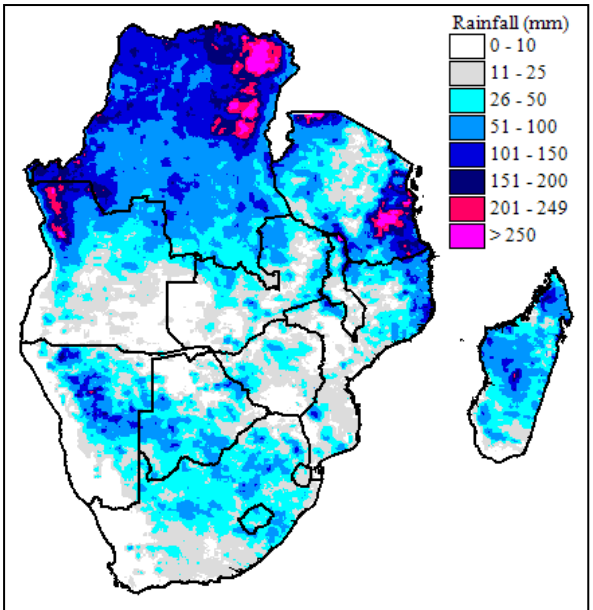


Figure 2. Rainfall for 1-20 April 2017

*Source: USGS/FEWSNET*



**This bulletin is prepared in collaboration with USAID/FEWS NET. For more details, contact SADC FANR Directorate, Gaborone, Botswana. Tel: +267-3951863; E-mail:** registry@sadc.int**; Web:** www.sadc.int/fanr

**Impacts of 2016/17 seasonal rainfall and temperature patterns on agriculture**

The high rainfall received in the central and southern parts of the region generally had a very positive impact on both crop and livestock farming. The consistent nature of the rains enabled crops in many areas to grow from planting to maturity with few dry spells, an uncommon situation in many areas. As a result, crops received much of the water required for optimal growth, and high expectations abound for good harvests. The Water Requirements Satisfaction Index (WRSI) shows that most areas received average to better-than-average rainfall distribution, conducive to cereal crop growth, this season (Figure 3, grey and green colours, respectively). WRSI is a model that estimates the extent to which crops have received the water they require throughout the season. Crop production estimates released by Malawi had 2016/17 cereal production estimates very close to average while Namibia forecast production at 20% above average. South Africa crop estimates indicated that the country is expecting one of its biggest maize harvests to date, at over 14.5 million MT. Below normal temperatures in the high rainfall areas resulted in extended growing periods for crops, raising the risk of frost damage later in the season, for colder parts of the region. The excessive rainfall in some areas also appears to have helped suppress the impact of the fall armyworm, a new pest which has invaded 11 SADC countries.

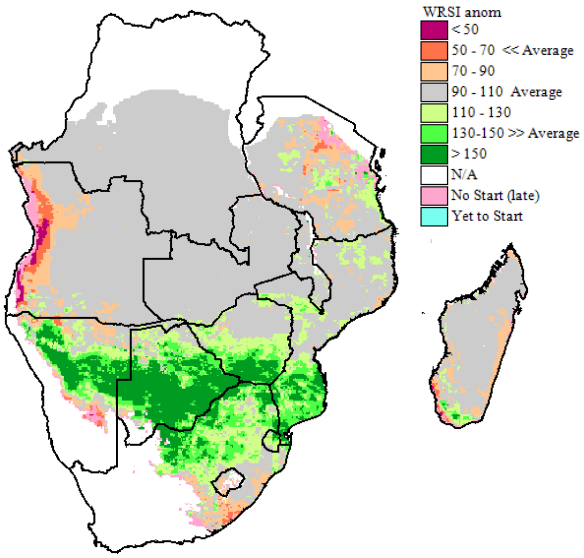


Figure 3. Crop-specific water satisfaction requirements index (WRSI) as percent of normal by 10 Apr 2017

*Source: USGS/FEWSNET*

Vegetation in general and pasture particularly also improved significantly due to the consistent rains throughout the season, and is now much better than average (green and blue colours, Figure 4). The improved pasture conditions and water availability provide relief for livestock, after the severe droughts of the last two seasons caused severe water and pasture shortages, and resulted in hundreds of thousands of livestock deaths.

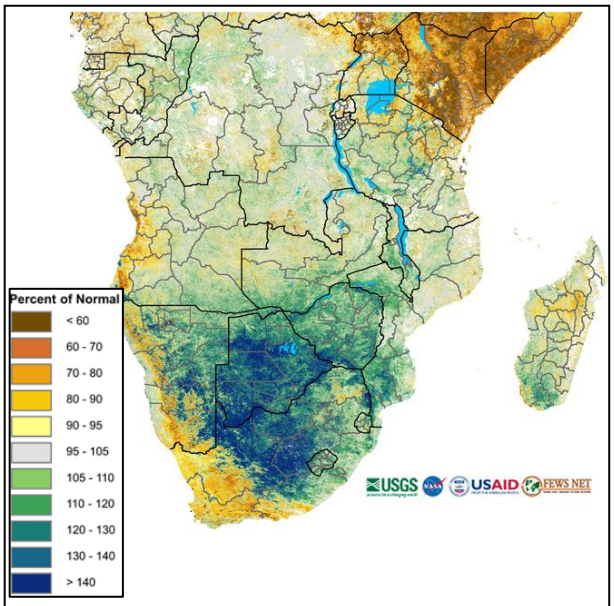


Figure 4. Vegetation Index (NDVI) compared to average conditions for 1-10 April 2017. *Source: USGS/FEWSNET*

In some areas, the persistent, high rains led to waterlogging of fields and leaching of nutrients from the soils. Flooding occurred due to high rains, which in some areas were caused or exacerbated by cyclones. Cyclone Dineo affected Botswana, Mozambique and Zimbabwe while Cyclone Enawo affected Madagascar. Angola, Malawi and Namibia were also affected by flooding. The flooding and wind damage in these areas caused fatalities, damage to homes and infrastructure, displacement of hundreds of thousands of people, and crop losses, among others.

The heavy rains also resulted in filling up of many rivers and dams in the region, as well as recharging of groundwater. The resultant high water levels improve irrigation capacity for the coming season, which if utilized, can improve crop production potential in areas that are prone to dry spells and drought.

The late rains received in the region in April in central and southern areas helped to ensure adequate moisture availability for late planted crops in these areas. However, these late rains could also induce cob rot in some early planted crops that were now in the drying process, thereby increasing yield losses.

Poor rainfall in the western and north-eastern parts of the region, as well as Madagascar, negatively affected crop production in these areas. In Angola and north-west Namibia, prolonged dry spells in January and



**This bulletin is prepared in collaboration with USAID/FEWS NET. For more details, contact SADC FANR Directorate, Gaborone, Botswana. Tel: +267-3951863; E-mail:** registry@sadc.int**; Web:** www.sadc.int/fanr

February caused crop moisture stress and wilting. Some crops potentially recovered with the improved rains in February and March areas in some areas, while others likely experienced crop wilting due to the length of the dry spell. Eastern, western, southern and central Madagascar experienced prolonged dry conditions for much of the season, which likely affected rice, maize and cassava crops grown in the different areas. The dryness was most severe in the eastern and central parts of the country. Many central areas received their lowest rainfall in at least 36 years for a significant part of the season. In Tanzania, well below average rains affected the short season (*Vuli*) season in the bimodal areas, the northern and north-eastern parts of the country. This resulted in crop failure and low production in many bimodal areas. The rainfall in the unimodal areas has been performing better, although it remains slightly below average in some areas. In south-western South Africa, the dry conditions are negatively impacting on winter wheat, which typically starts in mid-April. However this is primarily a winter rainfall area, with chances for improved soil moisture in coming months

**Status of the Fall Armyworm (FAW) outbreak in southern Africa**

The fall armyworm (FAW), which was first detected in Africa in January 2016, has been detected in all the mainland SADC countries except Lesotho. Recent reports indicate that the pest has been confirmed in Angola, Botswana, D.R.C., Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. While the most affected crop was maize, the pest also attacks many other crops including sorghum, millet, wheat, rice, groundnuts, potatoes, sweet potatoes, soyabeans, cowpea, cotton, tobacco and sugarcane. These are all important crops grown in the region. At a regional meeting of technical experts organized by FAO in late April 2017, several SADC Member States reported on the status of the FAW. Some countries reported infestation rates as high as 40%. While assessments are urgently needed to determine the severity of damage caused by the FAW, particularly the impact on crop production as well as the socio-economic impact, preliminary indications suggest that the impact this season may be low in some countries due to (1) rapid response by governments, farmers and other stakeholders to control the pest, (2) excessive rainfall which helped to suppress the FAW activity, and (3) the excellent climatic conditions that helped to promote high crop production potential. However, the impact has the potential to be higher in future outbreaks, depending on the climatic conditions, the responses by stakeholders, and other factors. Therefore, the technical experts highlighted the need for a coordinated approach to dealing with the pest going forward, and recommended the implementation of robust *Integrated Pest Management* strategies to control the FAW. Such an approach would reduce the chances of the pest developing resistance against pesticides, and also prevent high levels of pesticide load building up in the environment and in food systems. High pesticide loads would have a detrimental effect on the environment and on people. A detailed report on the meeting is available here: http://www.fao.org/africa/news/detail-news/en/c/883160/

**El Niño and potential impacts**

The 2017/18 seasonal rainfall forecast is expected to be released in August 2017 during the annual Southern African Regional Climate Outlook Forum (SARCOF) organized by the SADC Climate Services Centre (CSC). The SARCOF forecast is a comprehensive forecast incorporating the influence of various factors affecting climate in southern Africa, including the **E**l **N**iño **S**outhern **O**scillation (ENSO). ENSO is a phenomenon that affects climate around the world, and is always in one of three states: (1) El Niño conditions, (2) neutral state or (3) La Niña conditions. The 2016/17 La Niña event, which contributed to above normal rains in much of the region, has now ended, and the ENSO state has transitioned to neutral. Southern Africa was affected by severe El Niño-related droughts during the 2014/15 and 2015/16 seasons. The majority of forecasting models from international climate centres are predicting El Niño conditions to become most likely from around July 2017, and to persist for the remainder of the year. These are very early forecasts however, and changes may occur over the coming months. There is therefore a need to continue monitoring the ENSO evolution.

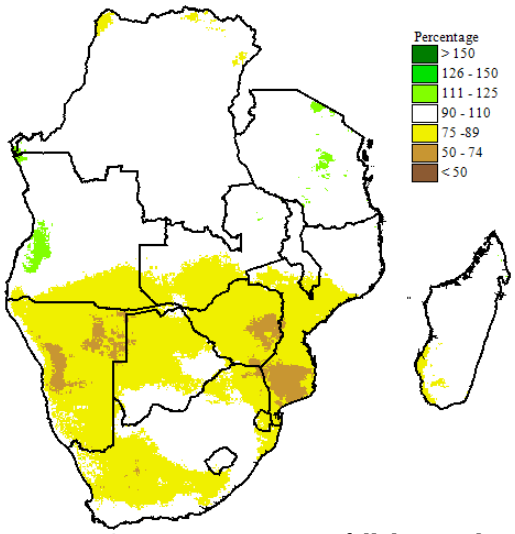

Figure 5. Average Dec-Mar rainfall during El Niño years between 1981 and 2013, expressed as a percent of long term average.
Analysis based on CHIRPS.

El Niño is typically associated with below average rains in Southern Africa (Figure 5), though the severity and location and



**This bulletin is prepared in collaboration with USAID/FEWS NET. For more details, contact SADC FANR Directorate, Gaborone, Botswana. Tel: +267-3951863; E-mail:** registry@sadc.int**; Web:** www.sadc.int/fanr

timing of deficit differs from one El Nino to the next. The specific expected impacts of a current or ongoing El Niño are dependent on other global and local climate drivers, and this is typically expressed through seasonal forecasts produced by the SADC CSC and national meteorological departments. These detailed regional and national forecasts analyze and incorporate data from the various climate drivers, to provide a more comprehensive evaluation of the precise impacts the specific El Niño event may have in the region. Before these precise forecasts become available later in the year though, and given that there is a preliminarily elevated threat of drought conditions as a result of the forecast El Niño conditions, appropriate preparedness activities are needed in order to mitigate the increased risk. Some immediate resilience based actions can already start to be taken to respond to this threat, including:

- Improvement of access to and use of irrigation facilities, especially now that many reservoirs are full and some groundwater recharge has occurred, following a well above-average rainfall season – such irrigation facilities will be useful in coming seasons in the case of drought, and reduce the likelihood of 2015/16 production levels recurring
- Promotion of and investment in the usage of conservation agriculture particularly the conservation of soil moisture. Techniques such as improvement of soil structure, enhancing soil organic matter, crop rotation, and vertical and minimum tillage, are already being used in many farming systems around the world, including parts of southern Africa, with improvement in yields and drought tolerance resulting.
- Urgent improvement of storage facilities in order to maximize on the good harvests expected this year, and to minimize post-harvest losses.

The suggested resilience actions above, among others, will aid in the multi-sectoral effort to improve the food security situation of the region, not only in the event that an El Niño related drought does occur, but also in the long term, with medium to long term improvement in yields, and long term reduction in fertilizer costs, as available soil nutrients increase with improved soil health.



**This bulletin is prepared in collaboration with USAID/FEWS NET. For more details, contact SADC FANR Directorate, Gaborone, Botswana. Tel: +267-3951863; E-mail:** registry@sadc.int**; Web:** www.sadc.int/fanr