Food Security Early Warning System

Agromet Update

2012/2013 Agricultural Season

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Climate Forecast for the 2012/2013 Agricultural Season

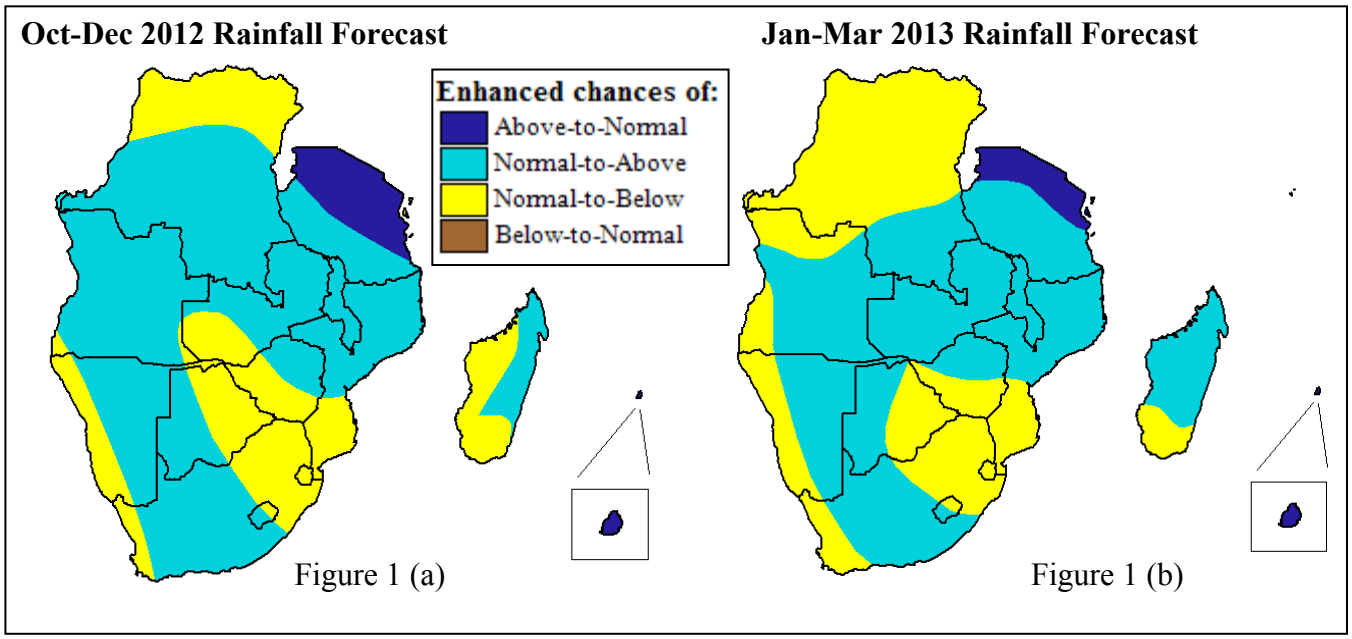

Figure 1 (a) Figure 1 (b)

Source: Forecast graphics derived from forecast issued by SARCOF.

The Sixteenth Southern Africa Climate Outlook Forum (SARCOF-16) was convened from 23 to 24 August 2012 in Harare, Zimbabwe, by the SADC Climate Services Centre (CSC) to formulate consensus guidance for the 2012/2013 rainfall season over the SADC region. A rainfall outlook covering the period October 2012 to March 2013 was prepared by climate scientists from the National Meteorological and/or Hydrological Services (NMHSs) of the SADC region, the CSC, and well as international cooperating partners.

SARCOF Forecast for October to December (OND) 2012

Two seasonal forecasts were issued at the SARCOF, covering the periods October to December 2012 (figure 1a), and January to March 2013 (figure 1b). For most areas, the forecast is generally consistent for the two forecast periods. Much of the SADC region is tipped as likely to experience normal to above-normal rainfall for both forecast periods (light blue colours, Figure 1), with the exception of (1) north-eastern Tanzania, which is forecast for above-normal to normal rainfall; (2) western parts of Angola, Namibia and South Africa, which are forecast for normal to below normal rainfall; (3) northern and central D.R.C, which is forecast for normal to below normal rainfall; (4) south-eastern parts of the region, which are forecast for normal to below normal rainfall – these areas include Swaziland, southern Mozambique, southern and western Zimbabwe, eastern Botswana,

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western Zambia, northern/central South Africa and north-eastern Lesotho; and (5) south-western Madagascar. The impacts of these most likely outcomes need to be considered in the context of normal rainfall amounts, rain bearing systems, soil moisture levels; and current food security status in the different areas where the forecast is being applied.

There is strong consistency in the forecast as shown by Figure 2, with many areas being tipped for either greater chances of normal to above normal rainfall throughout the forecast period (light blue colours, Figure 2), or normal to below rainfall throughout (yellow colours, Figure 2). Much of central DRC and northern Angola is tipped for increased chances of normal to above normal rainfall during OND, and normal to below-normal rainfall in JFM. Western Zambia, northern Botswana, and western Madagascar are have greater chances on normal to below normal rainfall in OND, and normal to above-normal rainfall in JFM

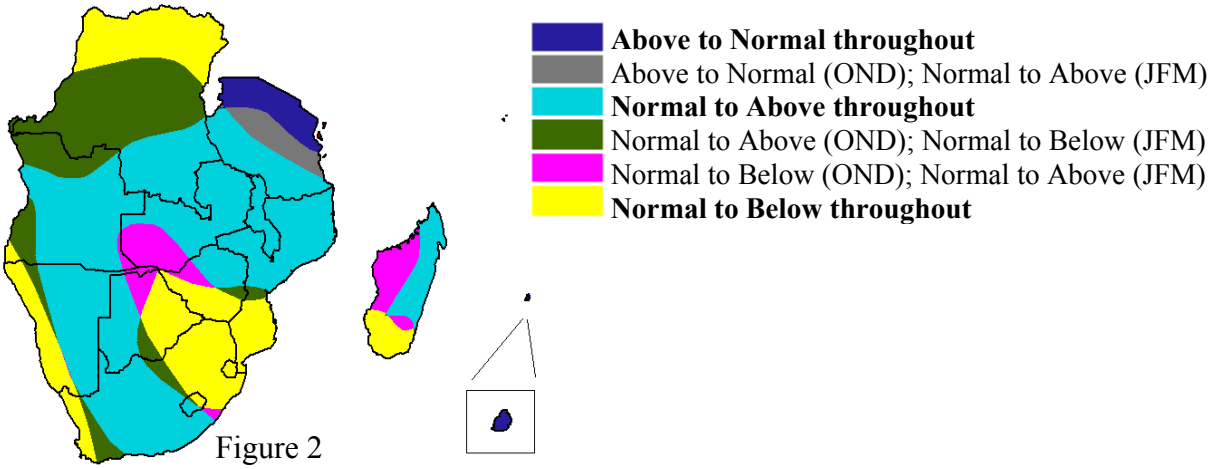

Figure 2

It is noted that many of the areas that were affected by a dry spell last season are currently forecast to have increased chances of normal to below-normal rains during the 2012/2013 season. Figure 3 shows the combined OND-JFM forecast, but overlaid with some of the areas affected by dryness during the 2011/2012 season, shown in brown. These delineations are approximations based on analysis of rainfall estimates, crop water balance models, energy balance models, and reports from the countries. Many of the areas that were affected by dryness in South Africa, southern Mozambique, southern Zimbabwe, eastern Botswana, Swaziland, and Lesotho, are again vulnerable to normal to below normal rainfall this season. These areas face an enhanced risk for repeat episodes of poor crop performance and reduced pasture, which could impact on livelihoods which have a higher dependence on crop agriculture and agro-pastoral activities.

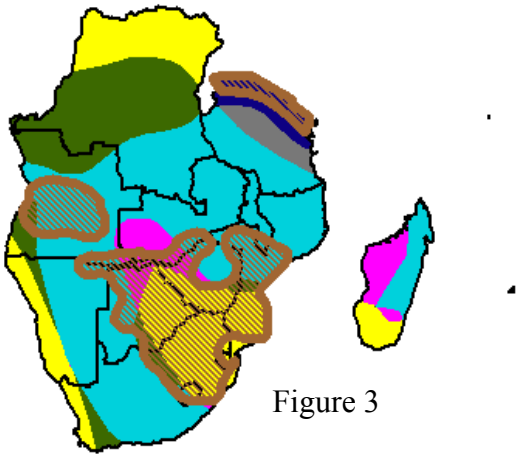

Figure 3

In general, most areas in the SADC region experience an onset of rains between October and December, and it is likely that the OND forecast can be associated with the start of the rainfall season. This augers well for areas in blue in Figure 1a, and a less positive implication for areas in yellow, where a likelihood of below average rainfall may be associated with a possibly slow or erratic start to

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the rainfall season. However, it should be noted that the forecast does not address the timing of the rains, but only rainfall totals, summed over the three-month period from October to December.

Users should note that SARCOF forecast is a consensus forecast designed for a regional audience. Users requiring higher accuracy, national-level forecasts should contact their respective national meteorological agencies for downscaled national seasonal forecasts, as well as updates to those forecasts, which can increase accuracy as the lead time to the forecast decreases.

Users are advised when applying the forecast, to take into account the relative lead times associated with the OND and JFM forecasts. Due to various factors, forecast models generally exhibit less skill for longer lead times, though this is not always the case. DMC will issue an update on the JFM forecast towards the end of December.

Interpretation of Forecast Maps (Figure 1)

Figure 1 is a simplification of the SARCOF forecast. The figure represents chances of 3 different rainfall scenarios occurring , namely above normal, normal or below normal rainfall. The rainfall scenarios considered are focusing on 3-month rainfall totals (total rainfall for October to December; and January to March, respectively for figures 1a and 1b).

: The dark blue areas ("Above-to-normal") are areas where the highest likelihood is for above-normal rainfall, though there are significant chances of normal rainfall occurring. Below normal rainfall is less likely in these areas, though there are still chances that it can occur.

: The light blue areas ("Normal-to-above") are areas where the highest likelihood is for normal rainfall, though there are significant chances of above normal rainfall. Below normal rainfall is less likely in these areas, though there are still chances that it can occur.

: The yellow areas ("Normal-to-below") are areas where the highest likelihood is for normal rainfall, though there are significant chances of below normal rainfall occurring. Above normal rainfall is less likely in these areas, though there are still chances that it can occur.

: The brown areas ("Below-to-normal") are areas where the highest likelihood is for below-normal rainfall, though there are significant chances of normal rainfall occurring. Above normal rainfall is less likely in these areas, though there are still chances that it can occur.

Convergence of evidence

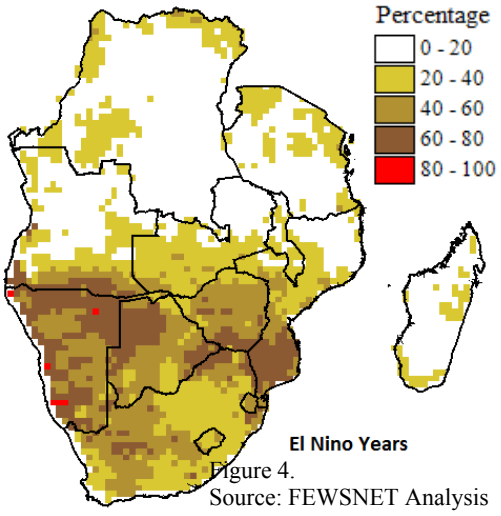

Figure 4.
Source: FEWSNET Analysis

The SARCOF forecast is a consensus forecast which is produced by considering forecast model outputs from several national and regional climate models, as well as the current state of the global climate systems. One such system is the El Niño Southern Oscillation or ENSO for short, which varies between an El Niño phase, a neutral phase and a La Niña phase. A consensus ENSO forecasts by some of the major forecasting centres are predicting a 75% chance for the development of an El Niño by September-November 2012. Historically, El Niño has been associated with below normal rains in many parts of the southern half of the SADC region. Figure 4 shows the percentage number of times out of the 13 El Nino seasons between 1971 and 2010 which received below 75% of average rainfall. So for example, areas in dark brown received less than 75% of average rainfall in 60 to 80% of the 13 El Nino seasons between 1971 and 2010. *Historically*, below normal rainfall is more likely in such areas during El Niño years.

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However, it should be noted that there are many factors besides El Niño which influence rainfall in southern Africa, and this analysis is not a replacement for a continuous monitoring and forecasts.

Interpretation of Forecast in the Context of Current Conditions

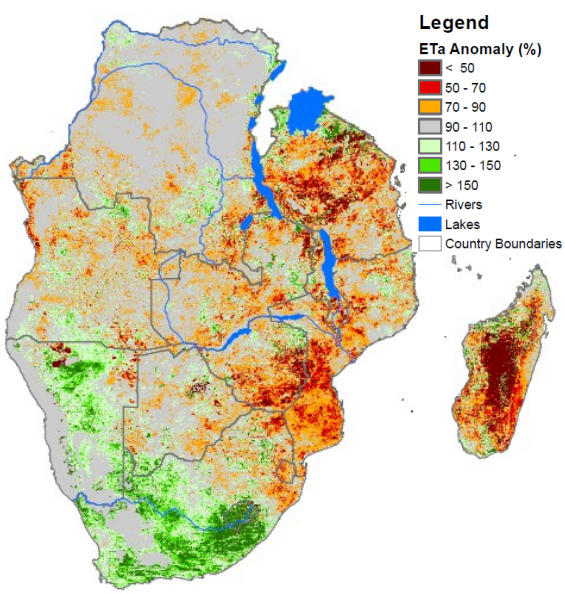

Figure 5. Estimated Actual Evapotranspiration for 1-31 August 2012 Source: USGS/FEWSNET

Figure 5 is the Actual Evapotranspiration (ETa) Estimate for August 2012, expressed as a percentage of the normal conditions. The ETa gives an indication of the water evaporating from the soil and transpiring from the vegetation. The ETa anomaly for a given period expresses the surplus or deficit ET compared to the same period historically. During the non-vegetative stage (for crop or rangeland areas), ETa anomalies are an expression of surplus or deficit in soil moisture. Interpreted in this context, the ETa image suggests that apart from a few areas in the south-western parts of the region (shown in green), most parts of the region have had lower than usual evapotranspiration (orange/red/brown colours, Figure 5), and may thus have had below average soil moisture conditions. This therefore suggests that in such areas, there is limited soil moisture reserve in the event of low rains. This is particularly more applicable in areas where retained soil moisture is relied on in crop agriculture, as well as in pasture areas.

Parts of South Africa, have high water table soils which, using appropriate management techniques, can avail the soil moisture water from the previous season for current season cropping. However, after a poor rainfall season such as experienced last season, soil moisture reserves are depleted, and another poor rainfall season, such as is possible under the current forecast, can have negative impact on the crop agriculture.

Tanzania has experienced repetitive poor rainfall seasons in the northern bimodal areas, and the below average ETa in this area and other parts of Tanzania provide further corroborating evidence for the poor soil moisture conditions in these areas. The forecast for above-normal to normal rainfall in north-eastern Tanzania throughout the season bodes well for the country, with increased chances for better crop production and improved pasture in the coming season

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