FOOD SECURITY EARLY WARNING SYSTEM

Agromet Update

2007/2008 Agricultural Season

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The eleventh Southern Africa Regional Climate Outlook Forum (SARCOF-11) was held in Maseru, Lesotho, from 13–14 September, 2007. The objective of the forum was to come up with a consensus outlook for the 2007/2008 rainfall season over the SADC region. The outlook covers the major rainfall/crop growing season (October 2007–March 2008).

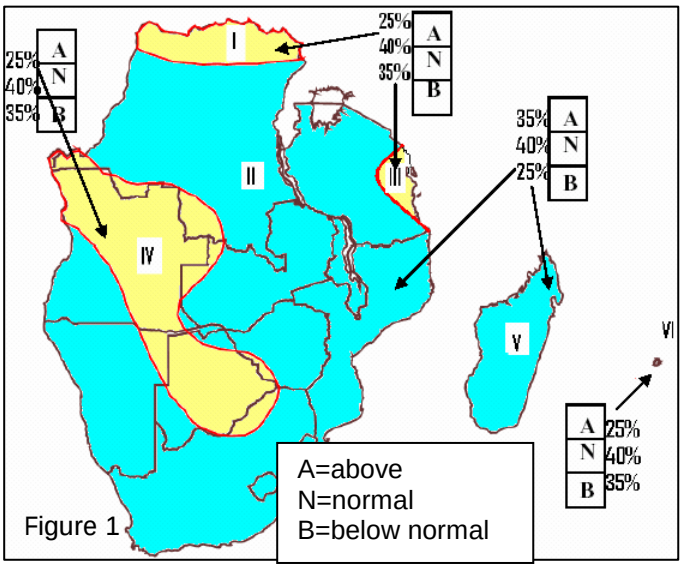

Figure 1

For the first half of the season, October to December, 2007 **(Figure 1),** the region is divided into two categories, i.e. 'normal to below normal' and 'normal to above normal' rainfall categories**. Zones I, III, IV** and **VI** which comprise Northern DRC, eastern coast of Tanzania, south-western DRC, much of Angola, north-eastern Namibia, bulk of Botswana and north-western parts of Zambia and Mauritius, fall into the first category where there are increased chances of **normal to below-normal** rainfall (yellow areas, Figure 1). The second category comprises **Zones II and V** which include Malawi, Mozambique, Swaziland, Lesotho; and greater parts of DRC, Tanzania, Zambia, Zimbabwe, South Africa and Namibia, south western Botswana, south western Angola and Madagascar and these are forecast to have **increased chances of normal to above-normal** rainfall (blue areas, Figure 1)

In the second half of the season from January to March 2008 **(Figure 2)**, **Zones I** a**nd III** consisting of the bulk of DRC, northern Angola and northern Tanzania., southern Namibia, southwestern tip of Botswana and western South Africa are forecast to have increased chances of normal to below-normal rainfall (Yellow areas, Figure 2). **Zone II** which comprises Southern half of Angola, southern DRC, southern Tanzania, northern half of Malawi, most of Zambia, northern half of Namibia, much of Botswana, south and western Zimbabwe, southern Mozambique, Swaziland, Lesotho and most of South Africa were predicted to have increased chances of normal to above-normal rainfall (light blue areas, Figure 2)**.**

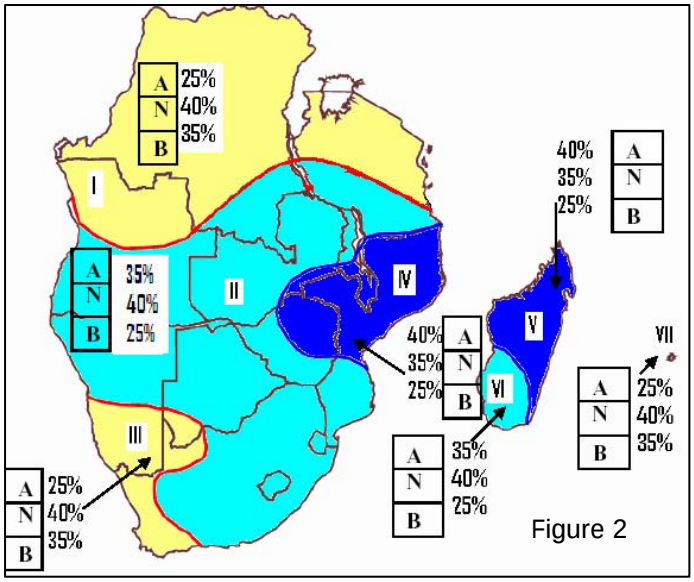

Figure 2

Zone IV and V are likely to have increased chances of above-normal rainfall and these zones cover central, northern and eastern Madagascar, central and northern Mozambique, southern half of Malawi, extreme southeast of Zambia and north-eastern part of Zimbabwe.

The forecasters advise that this Outlook is relevant only to seasonal time-scales and relatively large areas and may not fully account for all factors that influence regional and national climate variability, such as local and month-to-month variations (intra-seasonal). Users are strongly advised to contact the respective National Meteorological Services for interpretation of this Outlook, additional guidance and updates.

Long-term analysis of rainfall suggests that on average, the rains in Southern Africa have traditionally started between October and December over most areas (Figure 3). This has implications on the relative importance of the OND and JFM periods to the overall crop growing season. In general, in areas where the season starts very late in the year (e.g. late November or December), the OND period is less critical than the JFM period. In areas where the season starts very early (e.g. September/October) and the crop is close to maturity by end of December, the OND period is more critical than the JFM period. Generally speaking, the JFM period is of special importance in many areas because that is the time when many cereal crops are at the critical flowering and ripening stages which require greater amounts of water.

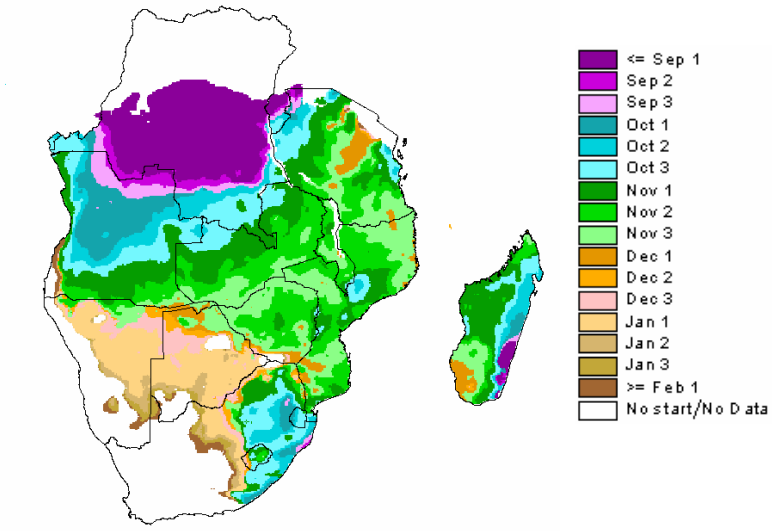

Figure 3. Long-term average start of rains in southern Africa. Source: USGS

Forecast Interpretation and Analysis

The SARCOF forecast is a probabilistic forecast that provides information on the chances that total rainfall over a 3-month period will be (a) above normal, (b) approximately normal, or (c) below normal. Using statistical analysis, this forecast can be interpreted to provide indications of the likely rainfall amounts that can be expected under various scenarios.

For the SARCOF 2007 forecast, a forecast interpretation was done using historical rainfall datasets and statistical distribution analysis to determine the typical rainfall amounts that could be expected between January and March under 2 scenarios: (1) a more likely scenario, and (b) a poor rainfall scenario. This analysis focused on the January to March period because in many areas, the greater part of the rainfall season occurs in the January to March period.

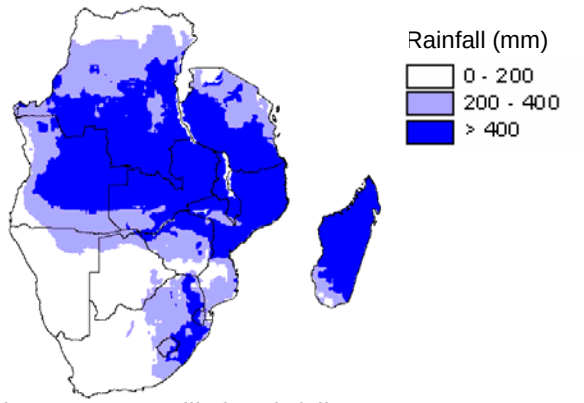

Figure 4a. More likely rainfall scenario for Jan-Mar 2008

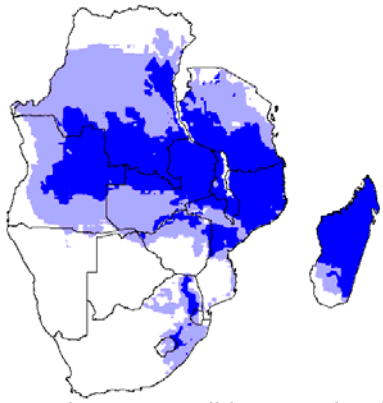

Figure 4b. One possible scenario of poor rainfall for Jan-Mar 2008

Figure 4 does not give forecast rainfall amounts, but instead, it provides a set of possible scenarios to help better understand the forecast. The forecast gives a set of probabilities which basically give

guidance on chances of low rainfall, average rainfall, and above average rainfall. Figure 4 then provides information on the rainfall amounts that can be expected under an average rainfall scenario, as well as the rainfall amounts that can be expected in a poor rainfall scenario, thus providing contextual information for the forecast in terms of potential rainfall amounts and scenarios for different areas. The rainfall scenarios represented are conditioned on the forecast, and not on climatology. From a statistical approach, it is worth noting that the "poor rainfall" scenario (Figure 4b) is less likely than the "More likely" rainfall scenario (Figure 4a).

Thus, for example, in the areas in white in figure 4a, it would not be advisable to grow crops requiring high amounts of water such as maize, as there is less chance of getting enough water in these areas, even under average conditions. Where appropriate, a greater proportion of drought tolerant crops need to be planted in these areas. In contrast, areas in dark blue in figure 4b would have better chance of success for high-water-demand crops, because even in a poor rainfall scenario (figure 4b), these areas would probably have enough rainfall for good crop development.

The shortcoming of this analysis, and of the forecast in general, is that it does not take into account the rainfall distribution over time, and the occurrence of extended dry spells. Therefore, even if there is enough total rainfall equivalent to total crop water demand, any extended dry spells that occur during the rainfall season can severely damage the crop and possibly lead to crop failure. There will be a need to closely monitor dry spells throughout the growing season.

Applying the Forecast in Agricultural Planning Activities

Considering the fact that the region's crop production relies primarily on rain-fed agriculture, the current season forecast has implications on the season's crop production. In general, planning is required for contingencies in the event of a number of possible different scenarios being realized, including floods, drought, production deficits and bumper harvests. The forecast can help to provide guidance on which events are more likely, and hence where greater contingency planning efforts should be concentrated. The seasonal forecast can therefore be taken as a guideline for governments, farmer organisations and other stakeholders to plan their farming strategies and identify better crops, as well as plan for various contingencies. Although the information captured by the forecast is of statistical nature, it provides a broader picture for regional food security planning. Already plans can be put in place to mitigate the impacts of possible catastrophic flooding events as well as potential droughts. As a preliminary measure to maintaining a food secure region this forecast presents a strong benchmark at the very beginning of the season. In general, in areas where the forecast calls for decreased chances of above-normal rainfall, stakeholders should put more emphasis on drought contingency planning, and ways of minimizing losses (e.g. emphasis on drought tolerant crops) without neglecting the potential for flooding especially in the more flood-prone areas. In contrast, in areas where the forecast calls for increased chances of above-normal rainfall, stakeholders should put more emphasis on ways of maximizing their crop production, but also emphasize flood contingency planning, especially in the more flood-prone areas, but without neglecting the potential for drought.

Recovering from Last Year's Poor Rains and Poor Production in the South

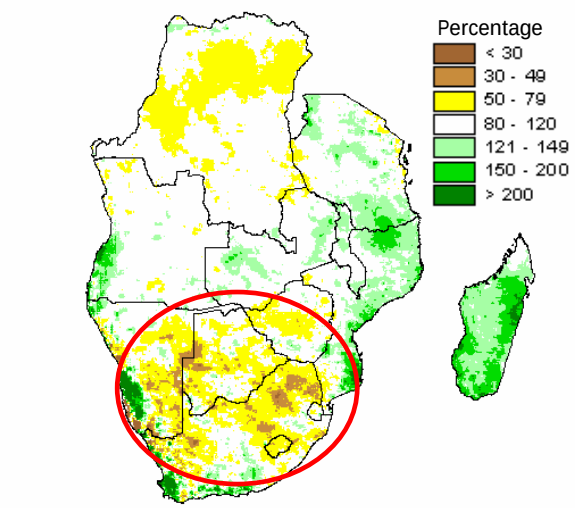

Figure 5: Jan – Apr 2007 rainfall as percent of average

A number of areas, especially in the southern half of the region (including Botswana, Lesotho, South Africa, and Zimbabwe) suffered from poor rainfall in the 2006/2007 season (figure 5, yellow and brown colours), and in many areas, this led to poor crop production and grazing conditions. Figure 5 shows the rainfall received between January and April 2007 expressed as a percentage of average. The yellow and brown colors indicate areas that received below-normal rainfall during that period, and are highlighted by the red circle in Figure 5.

With the slightly positive forecast suggesting enhanced chances of above normal rains for a number of the previously affected areas mentioned above, the coming season has promise of potentially providing sufficient rainfall to replenish grazing in many areas, as well as to allow for good harvests that

can lead to recovery from the poor harvests obtained last year in the areas indicated. Already, heavy rains have fallen across parts of Lesotho, South Africa Swaziland, and Eastern Botswana, and this will bring some relief especially for grazing. However, most parts of Botswana, which experienced poor rains last year, are forecast to have decreased chances of above normal rainfall in the period October – December 2007. If low rainfall does materialize, this will not be good for recovery from last year's poor rains, especially in the grazing conditions. Better chances of high rainfall are forecast in January-March 2008 for Botswana.

Current Rainfall Conditions

The rainfall season generally starts in earnest in November and December across most parts of the SADC region, while in the northern parts, especially Angola and DRC, the rains usually start as early as September and October. This year however, moderate to heavy rains fell in parts of parts of Botswana, Lesotho, southern Mozambique, South Africa, Swaziland and southern Zimbabwe in late September and early October (Figure 6). These rains were due to early-season cold fronts that moved through the southern parts of the region in the last few days of September into early October. Although cold fronts and associated cloud bands are common in the affected areas during this time of year, the cold fronts resulting in the recent rains were abnormally intense, thus resulting in the heavy rains observed in some areas. Some flooding was reported in South Africa. Overall, the net effects of these rains are likely to be beneficial, especially considering that many of the areas that received these rains had received poor rainfall last season (Figure 5), resulting in poor grazing conditions in some areas such as parts of Botswana, Lesotho, South Africa and Swaziland. These rains will likely vastly improve grazing conditions, as well as water availability in areas where water availability was now low due to last year's poor rains.

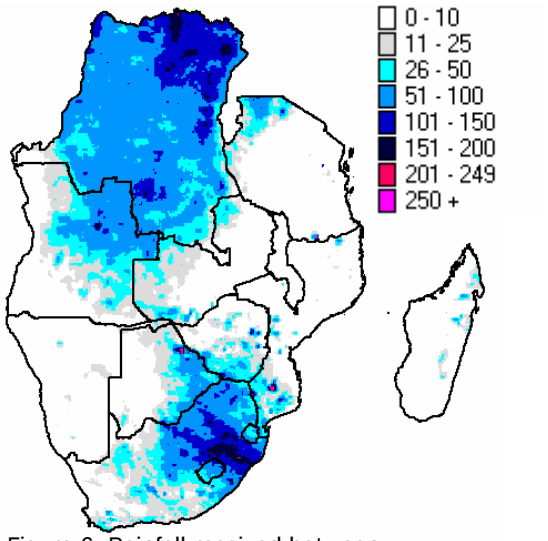

Figure 6. Rainfall received between 21 September and 10 October 2007.

Although most of crop agriculture in southern Africa is rain-driven, these rains, in some areas, do not constitute a good opportunity for planting, as they fell well before the time for the rainfall season in most areas, and there are chances that these rains can be followed by a dry spell that would negatively impact any planted crops. For other areas though, these rains may represent an opportunity to practice staggered planting. Farmers are advised to plan their agricultural activities in consultation with their meteorological departments and agricultural extension officers. Most farmers at this time would normally be in the land preparation phase of their agricultural calendar.

Satellite-derived rainfall estimates (Figure 6) also suggest that moderate to heavy rains also fell in the northern parts of the region between 21 September and 10 October, primarily in Angola and DRC. These are seasonal rains that are expected during this time as the rainfall season generally starts in September and October in some of these areas.