



# FOOD SECURITY EARLY WARNING SYSTEM

## Agromet Update



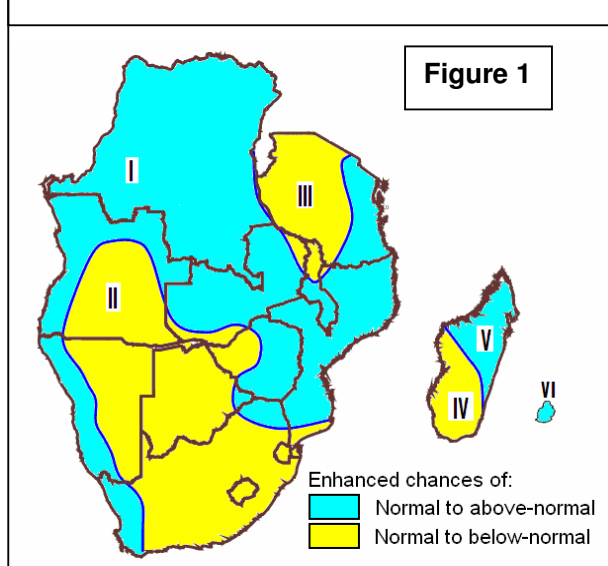
2008/2009 Agricultural Season

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### Climate Forecast for the 2008/2009 Agricultural Season

The twelfth Southern Africa Regional Climate Outlook Forum (008SARCOF-12) was held in Johannesburg, South Africa, 26-28 August 2008. The objective of the forum was to come up with a consensus outlook for the 2008/2009 rainfall season over the SADC region. The outlook covers the major rainfall/crop growing season (October 2008 to March 2009) over most of southern Africa. Owing to the differences in the rainfall-bearing systems, the rainy season has been divided into two three-month seasons, namely the October-November-December (OND) and the January-February-March (JFM) periods.

#### Rainfall Forecast : October-December 2008

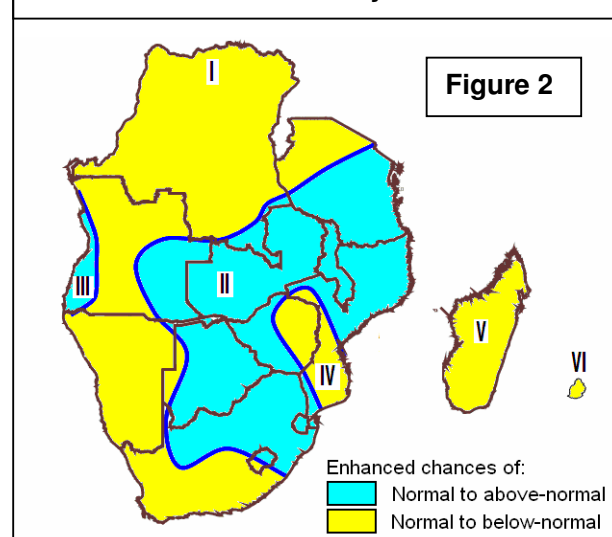


The forecast for the first half of the season, OND, 2008 (**Figure 1**), is divided into two categories, i.e. 'normal to below normal' and 'normal to above normal' rainfall categories. Enhanced **chances of normal to above-normal rainfall** were predicted for **Zones I, V and VI**. These consist of western coastal South Africa, Namibia, coastal and northern Angola, the Democratic Republic of Congo, greater part of Zambia, bulk of Zimbabwe, eastern tip of Botswana, north-eastern tip of South Africa, major part of Mozambique, central and southern part of Malawi, the eastern parts of Tanzania, northern half of Madagascar and Mauritius. For **Zones II, III and IV** comprising the southern part of Angola, bulk of Namibia, Botswana, extreme south-western Zambia, western Zimbabwe, greater part of South Africa, Lesotho, Swaziland southern tip of Mozambique, the

bulk of Tanzania, northern Malawi, north-eastern and south-western parts of Zambia and southern half of Madagascar, there are **increased chances of normal to below-normal rainfall**.

The January-March 2009 (**Figure 2**) period rainfall forecast is also divided into two categories namely 'normal to below normal' and 'normal to above normal' rainfall categories. **Zones I, IV, V and VI** are forecast to have **increased chances of normal to below-normal rainfall**. The Zones cover northern Tanzania, the bulk of DRC, northern and central Angola, Namibia, western tip of Botswana, southern half of South Africa and Lesotho, Madagascar, Mauritius, eastern Zimbabwe and central and southern Mozambique.

#### Rainfall Forecast : January – March 2009

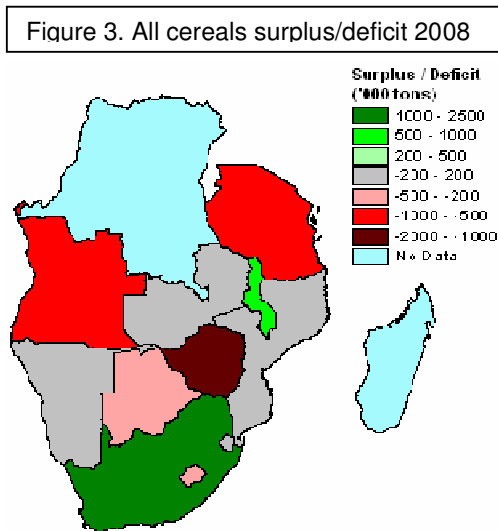


**Zones II and III** comprising the bulk of Botswana, coastal Angola, southern Tanzania, extreme southern DRC, south-eastern Angola, northern half of South Africa, northern Lesotho, Swaziland, western half of Zimbabwe, Zambia, Malawi and greater part of Mozambique are predicted to have **increased chances of normal to above-normal** rainfall during the January-February-March 2009 period.

### CONTEXTUAL AGRICULTURAL ANALYSIS OF THE FORECAST

An analysis is done below giving some details on how the forecast may affect agriculture. This is a very broad and generic analysis, and **users are strongly advised to contact the National Meteorological and Hydrological Services for interpretation of this Outlook, additional guidance and updates.**

A normal-to below normal rainfall scenario is forecast throughout the October – March period as the most-likely scenario for most parts of central and southern Angola, most of Namibia, and southern half of South Africa and Lesotho, north-western half of Tanzania, and south western half of Madagascar. Of the areas mentioned above, mainly central Angola, central/eastern Madagascar, and western Tanzania are high rainfall areas, and even slightly “below normal” conditions may still allow for a good crop to be harvested, particularly in traditionally higher production areas such as parts of central Angola, unless an extended dry spell affects the area. For the other areas mentioned above, however, most of them are low rainfall areas, and if significantly below normal rainfall is realized, this may negatively impact crops and pasture. It should be noted that northern Tanzania already suffered from poor first season crop last season, and poor rains in the same area this year may exacerbate the



situation. Southern Angola also suffered poor harvests last year, and the forecast for enhanced chances of normal to below-normal rains in this area will also not be encouraging for recovery if below normal rainfall is realized. Swaziland also had a poor harvest last season, it's growing period is approximately evenly split between the OND and JFM period, with the OND period being forecast for a higher likelihood of normal to below-normal, while the JFM period is forecast for a higher likelihood of normal to above-normal rainfall.

Because the rainfall season starts so late in most of Botswana, northern half of Namibia, northern and southern parts of Mozambique, northern Malawi, northern Tanzania, and southern parts of Zimbabwe, the OND forecast has limited impact on implications for agricultural outcome, save for extensive delays in the start of the season or early start of season followed by long dry spells. Looking at the JFM forecast for these areas, enhanced chances of normal to above normal rainfall are forecast in Botswana, Malawi, northern Mozambique and much of Tanzania, suggesting good implications for agricultural activities there. Most of Namibia, except for the Caprivi Strip, is forecast for enhanced chances of normal to below-normal rainfall. Namibia production last season was 4% below average, though that harvest was better than the previous season.

Zambia, southern Malawi, parts of central Mozambique, western Angola, and parts of central Zimbabwe are some of the areas where the season is split between the two forecasts periods, normally starting around November continuing into February/March, and sometimes, April in some areas. This season, the forecast for these areas mentioned above calls for enhanced chances of normal-to-above normal rainfall throughout the October-March period. Most parts of Zimbabwe have an inverted forecast: In some areas, the forecast for the first half of the season is calling for enhanced chances of normal to below-normal, while the second half of the season calls for enhanced chances of normal to above-normal; in other areas, the reverse is true (i.e, first half has

enhanced chances of normal to above-normal rains, while second half has enhanced chances of normal to below-normal rains). Zimbabwe had a low harvest last season, and a good harvest will be important to aid in the recovery of the country.

Most parts of the Zambezi River Basin are calling for a forecast of normal to above normal rainfall throughout the October-March growing period. If there is sustained heavy rainfall in the river basin similar to what happened last year, floods may occur along some flood-prone areas in the basin, and there is therefore a need to incorporate this possibility into the contingency planning as one possible scenario.

## **FURTHER BACKGROUND AND CONTEXTUAL MATERIAL**

### **Model uncertainty and updating:**

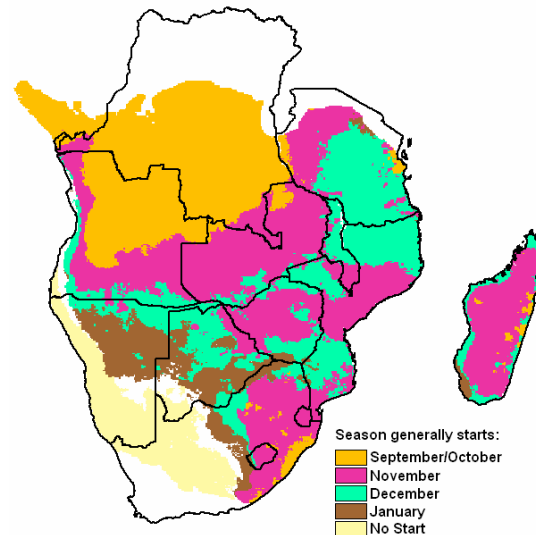
A measure of the reliability of the forecast for this season is not yet available to the user community. However, a forecast validation is normally done at the end of the season, and this is likely to be done again this year.

The forecast will be updated every month (so e.g. in October, a forecast for the November-January period will be issued etc). Generally, as the season progresses, it is expected that the accuracy of the updated forecasts will increase, as the predictors tend to be better correlated with rainfall in a closer lead time.

### **Applicability of the forecast periods**

The start and duration of the rainfall season varies in the different parts of the SADC region, and this has implications on the inference that can be derived from the OND and JFM forecast for different areas. In Figure 3, the orange areas are areas where the season would normally start in September/October, so the OND forecast would be relevant in this area. The purple areas are those areas where the season generally starts around November. For many of these areas, the main, critical part of the rainfall season is between November – February, thereby splitting the season between the two forecast periods. The areas in green are those where the season normally starts around December, and in these areas, the growing window can stretch between around December and March or April, so in these areas, the JFM forecast is quite pertinent. Because of the start and duration of the growing periods, forecasts for different periods (e.g. November-January forecast, or December-February forecast) will be very useful. These will be availed by DMC as the season progresses.

Figure 4. Average Start of Season



### **Multiple scenarios:**

For the entire SADC region, the forecast predicts that the most likely category of rainfall is for normal rainfall, with some areas having a slight bias towards enhanced likelihood of above normal, while other areas have a slight bias for enhanced likelihood of below normal. Due to the nature of this probabilistic forecast, users who are using this forecast for planning purposes need to consider a range of possibilities and scenarios, while placing greater emphasis on the most likely scenarios. For example, given an area with enhanced chances of normal to below normal rainfall for the period covering October-December, planners need to consider that the most likely scenario is that total rainfall during that period will be around normal; the planners will have to further consider that there are also significant chances that the total rainfall could be below normal; and finally, the planners will also need to keep in mind that there is still a possibility, albeit less likely, that rainfall could also be above normal during that forecast period (October-December). As such, the set of

contingency plans for the season should take this whole scenario set into account, with weighting on the contingencies being influenced by the probabilities. As an example, a farmer in the area described above could concentrate on planting the majority of his/her cropping area to a crop that does well under normal rainfall conditions for his/her area, and also plant a significant portion to crops that do well under below normal rainfall conditions, while also putting in a smaller portion of the crop towards the higher-yielding varieties that may only produce well under above-normal conditions.

It is important to note that below normal does NOT necessarily mean drought, and above normal does NOT necessarily mean flood. The terms “above normal” or “below normal” are in explicit reference to the normal rainfall of each and every given area. So in DRC where the rainfall is normally high for most parts of the country during that period, a scenario of below normal rains will **probably** yield more rainfall than the scenario of above-normal rains for most parts of Botswana for instance, where low rains normally fall over most parts of the country.

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