Government of Malawi

DEPARTMENT OF CLIMATE CHANGE AND METEOROLOGICAL SERVICES

FIRST ROUND 2011/12 AGRICULTURAL PRODUCTION ESTIMATES

AGROMETEOROLOGICAL UPDATE

Released 9th February 2012

SEASONAL HIGHLIGHTS

- The Department of Climate Change and Meteorological Services issued the 2011/12 Seasonal Forecast on 7th September 2011.
- At that time while some models continued to predict ENSO-neutral conditions, the majority of models were predicting the return of La Nina conditions up to March 2012
- Based on the models, during October to December 2011 northern half of Malawi is expected to experience above normal to normal total rainfall amounts while the southern half was expected to receive normal to below normal rainfall amounts. The greater part of Malawi was expected to experience normal to above normal rainfall amounts between January and March 2012.
- The start of the main rains has been poor and erratic in the southern half of Malawi and early with generally better distribution in the northern half.
- Heavy rains have resulted in flooding in Chikhwawa and Nsanje in January
- Cumulative rainfall performance by 31 January 2012 indicted that more rainfall has been received over this season over the northern half including some parts of Mangochi while the southern half has generally received less rainfall this season compared to same time last season
- Agrometeorological model estimates National Maize production for 2011/12 season at 3.3 million MT

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2011/12 GROWING SEASON PREPAREDNESS

The Department of Climate Change and Meteorological Services (DCC&MS) issued the 2011/12 Seasonal Forecast on 7th September 2011.The rainfall seasonal forecast is based on models that use scientifically established relationships between rainfall over Southern Africa and Sea Surface Temperatures (SSTs) over the oceans. While some models continued to predict El Nino/ Southern Oscillation (ENSO) neutral conditions which imply neither El Nino nor La Nina, the majority predicted increasingly negative SSTs (cooling) in the central tropical Pacific Ocean, implying the return of La Nina conditions, up to March 2012.

For Malawi, the consensus outlook indicates that during the period October to December 2011, the northern half of the country has 35% chance of rainfall total being above normal, 40% chance of being normal and 25% chance of being below normal while the Southern half has 25% chance of rainfall total being above normal, 40% chance of being normal and 35% chance of being below normal. During the period January to March 2012, the northern half of Malawi has 35% chance of rainfall total being above normal, 40% chance of being normal and 25% chance of being below normal while the Southern half has 40% chance of rainfall total being above normal, 35% chance of being normal and 25% chance of being below normal.

Based on the above analysis, the 2011/2012 forecast indicates that from October to December 2011, the northern half of the country will receive normal to above normal total rainfall amounts while the southern half will experience normal to below normal total rainfall amounts. The greater part of the country will experience normal to above normal total rainfall amounts during January to March 2012.

The seasonal forecast was presented to Ministry of Agriculture Irrigation and Water Development and other key stakeholders. Seasonal climate forecasts are issued for **planning and decision making.** For operational purposes users are encouraged to use short (up to 3 days) and medium range (5-10 days) forecasts that are issued by the department.

Seasonal climate forecast do not provide information on the start, cessation and seasonal distribution of the rains. It is therefore advised that all interested parties know the mean annual rainfall for their area, the main crops to be grown and their crop water requirement (CWR), for good planning a head of the start of the season. Crop growing period and water requirement vary from crop to crop as shown in the table below**.**

Growing period and crop water requirement estimates of some crops

Crop	Growing period (days)	CWR (mm)
Maize	90 – 140	500 -700
Sorghum	90 – 140	450 -650
Groundnuts	90 – 140	500 -700
Beans	60 – 120	300 -500
Sunflower	90 – 130	600 -1000

Even though a seasonal forecast is obtained after thorough analysis of most of the systems that affect the weather of the country or a region, it becomes more useful information if users of such information continue to update themselves with climate outlooks provided by the meteorological services over the season.

Agricultural advisers need to regularly monitor seasonal climate outlook information. For example, if there is a high probability of below-average rainfall occurring, say 80% or 4 in 5 years, the appropriate response is to make management decisions anticipating low rainfall.

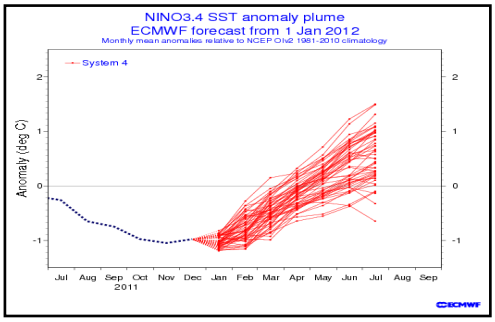
Subsequently the response to a changing situation should be in a number of steps; at each step the best decision is made on the basis of current information. Often the mistake people make is to make one decision based on the first seasonal climate outlook and then ignore keeping track of events. Weather patterns are notorious for changing at short notice.

PROGRESS OF 2011/12 RAINFALL SEASON

The start of effective rains in Malawi has been variable. The early part of the season has been characterized by poor and erratic onset of rains particularly over the Agricultural Development Divisions in the southern half of Malawi including Kasungu and Salima while the northern half had experienced an early onset with relatively better distribution and amounts. Poor and erratic rains persisted in central and southern Malawi throughout December 2011, with good rains being experienced early January 2012. The good rains allowed farmers to complete their planting before the 15th of January, which is considered the cut-off date for rainfall-season planting in Malawi. High rains in the south however also led to flooding in Chikhwawa and Nsanje districts. In northern Malawi, good rains were received in December and January, facilitating crop development. The dryness in the south and the central areas resulted in outbreaks of armyworms, delayed planting, and there were reports of wilting in some areas. By end of January, most of the maize was reported ranging from vegetative to flowering and maturity stages in good condition, with expectation of good production if rains persist through March and April, particularly in the north.

Cumulative rainfall performance from October 2008 to 20 January 2009 indicated that the greater partthe greater part of Malawi had received average rainfall amounts with few areas registering below and above average rainfall. The below average rainfall has been confined mostly to the northern half of the country due to late onset of the main rains**.**

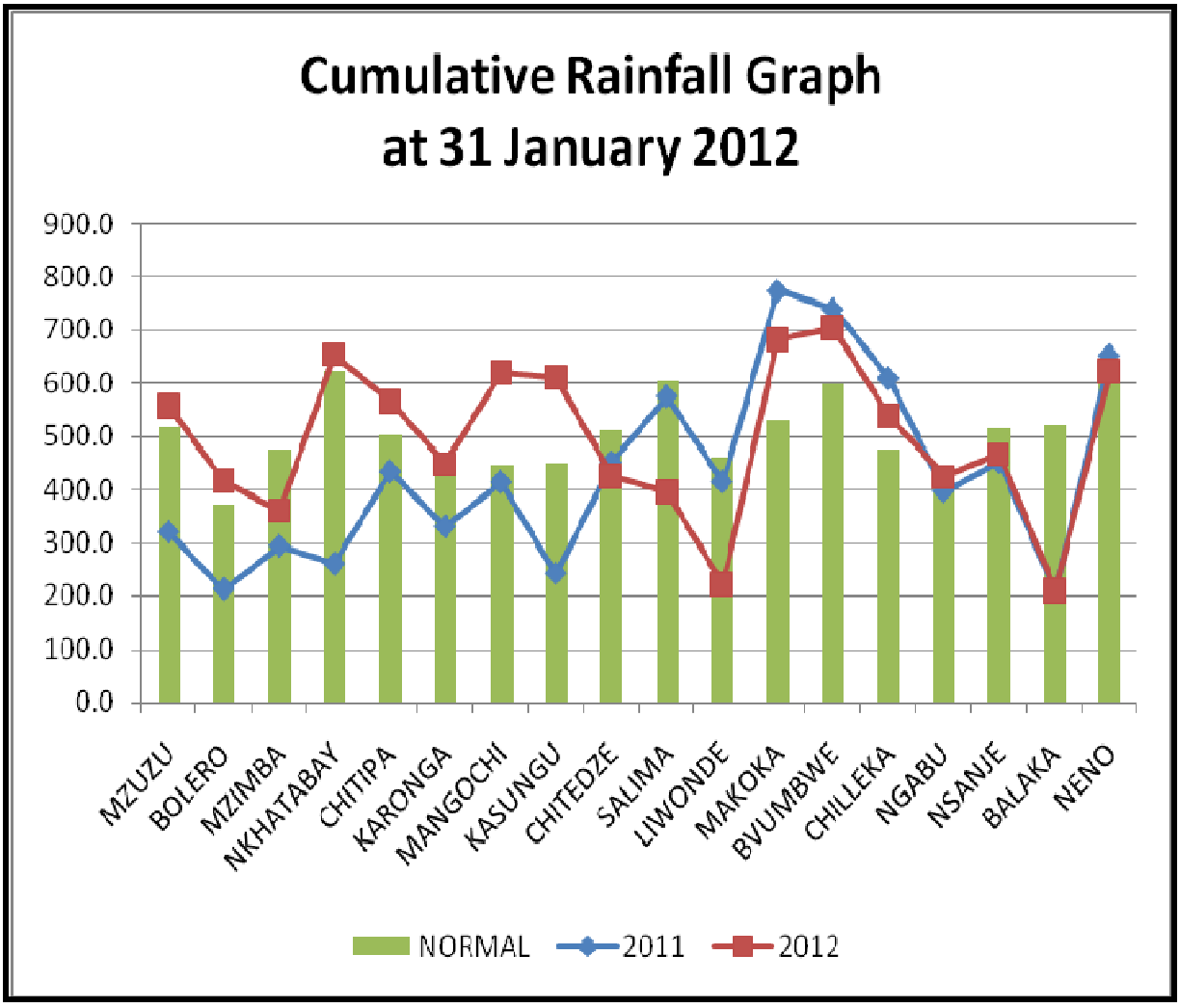
OUTLOOK FOR FERUARY TO APRIL 2012



Climate prediction models continue to suggest that La Nina conditions are likely to persist till the end

of the summer season. Malawi is expected to receive above average to average rainfall amounts during the period February to April 2012.

The graph below indicates that the northern half of Malawi including some parts of Mangochi have received more rains this season than same time last season while the southern half has had generally less rainfall this season compared to the same time last season.

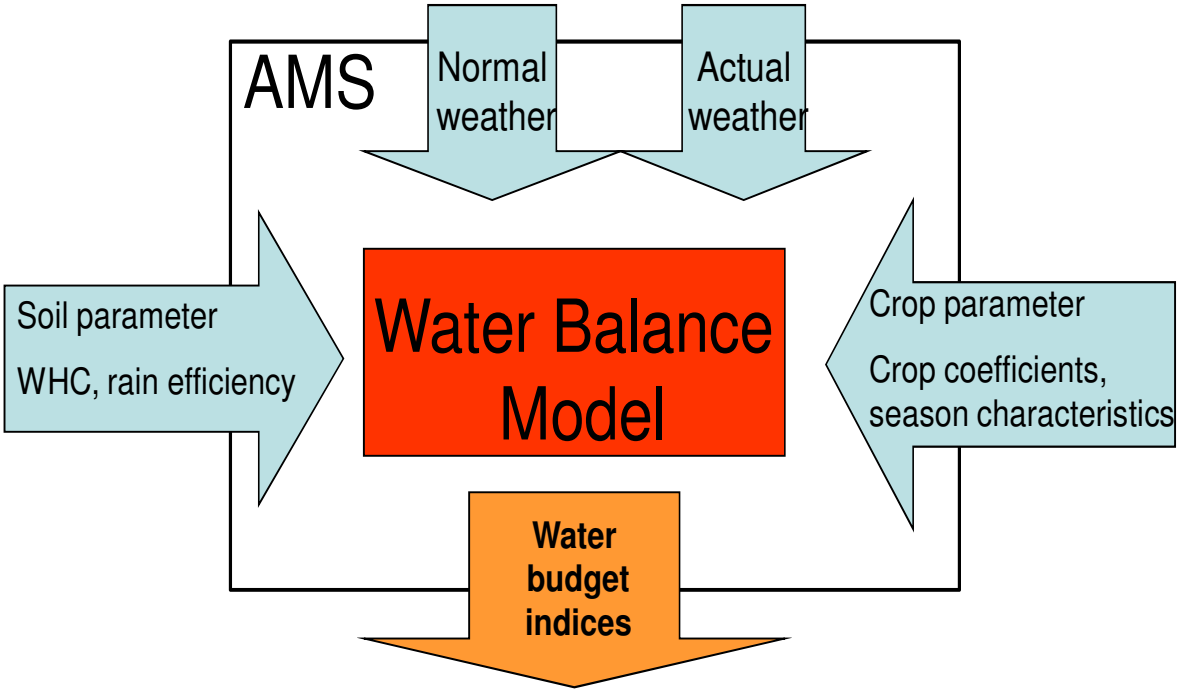


RESULTS FROM MAIZE CROP MONITORING AND YIELD ASSESSMENT MODEL

Model Main Objectives

- Monitoring Crop conditions with the aim of predicting yields (tons/ha) and production long before the harvesting actually takes place
- Support early warning systems for food security, management of Natural Resources, Disasters , weather and climate Risks

How does the Crop Yield forecast work?



Finally link Water Budget Indices with Crop Yields through regression models

Yield Prediction & Production

Yield Prediction

- Y = a + b (WRSI)

Where; a = intercept constant
b = coefficient of the relationship btn hist. yields and WRSI
WRSI = Water Requirement Satisfaction Index

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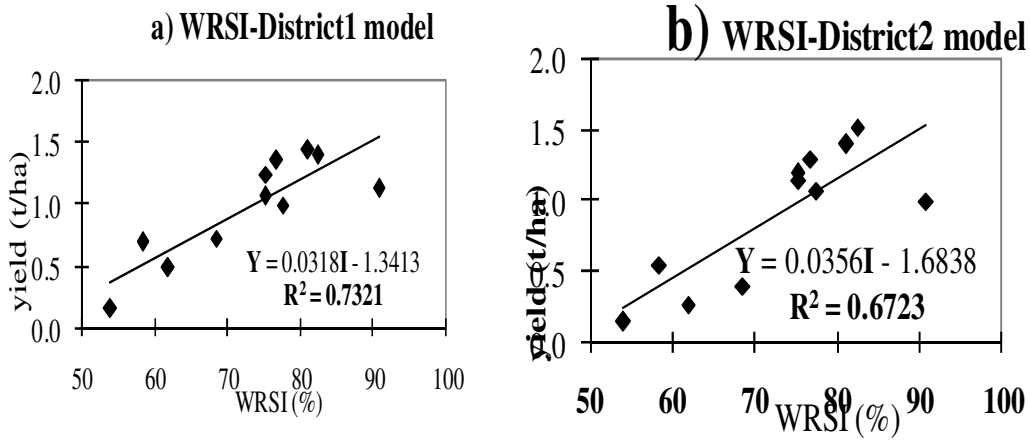
DISTRICT REGRESSION MODELS



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Production

Production Forecasting

- P = Y x A,

where; Y = predicted yield
A = Area planted to that specific crop (maize)

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TABLE 1: 2011/12 FIRST ROUND LOCAL & COMPOSITE MAIZE PRODUCTION ESTIMATES

CROP: Local & Composite Maize
YIELD: **kg/ha** WRSI**: %** AREA: **Hectares** PRODUCTION: **Tonnes**
AREA BASED ON 2011/12 FIRST ROUND APES

ADD	11/12 WRSI	11/12 YIELD	YIELD LOW	YIELD HIGH	11/12 AREA	11/12 PRODUCTION
SHIRE VALLEY	87	1326	918	1734	28020	37157
BLANTYRE	87	2065	1432	2698	131668	271859
MACHINGA	82	1642	1078	2207	181622	298296
SALIMA	89	2103	1546	2659	35416	74466
LILONGWE	88	1862	1475	2248	217566	405047
KASUNGU	91	2553	2016	3090	209644	535227
MZUZU	91	2812	2250	3374	89708	252224
KARONGA	92	2479	1868	3090	22841	56623
NATIONAL	**88**	**2107**	**1585**	**2628**	**916485**	**1,930,901**

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TABLE 2: 2011/12 FIRST ROUND HYBRID MAIZE PRODUCTION ESTIMATES

ADD	11/12 WRSI	11/12 YIELD	YIELD LOW	YIELD HIGH	11/12 AREA	11/12 PRODUCTION
SHIRE VALLEY	81	1234	722	1747	13832	17075
BLANTYRE	80	1878	1238	2518	119421	224310
MACHINGA	73	1210	686	1734	91859	111144
SALIMA	82	1919	712	3127	29015	55694
LILONGWE	82	2187	1747	2627	130338	285092
KASUNGU	86	2114	1412	2815	177599	375358
MZUZU	86	1826	892	2760	61786	112814
KARONGA	87	1892	657	3127	112443	212705
NATIONAL	**82**	**1894**	**1153**	**2634**	**736293**	**1,394,192**

Making a total Maize production of around 3.3 million MT

Major Assumptions made are:

- **Weather will be the major factor affecting crop yields**
- **Normal seasonal rainfall performance between in February and March**
- **Normal cessation of the main rainfall season**
- **No outbreaks of pests and diseases**