Sudan Seasonal Monitor

Sudan Meteorological Authority
Federal Ministry of Agriculture and Forestry

Issue 5 August 2010

Summary

- **Advanced position of ITCZ during July to most north of Sudan emerged wide spread and significant amounts of rainfall over the country .***see page 1,Fig (1.1)*
- **Above average rainfall amounts covered large parts of central and southern Sudan during mid and late July.** *See Page2, Fig (2.1, 2.2, 2.3 and 2.4).*
- **The country experienced high amounts of rainfall during July, although, some areas of Northern parts of Gedarif, western parts of Sennar, Blue Nile, northern parts of Upper Nile, parts of White Nile, North Kordufan, North Darfur, northern parts of South Darfur, eastern parts of Jonglei and East Equatoria have below average rainfall amount.** *See page 2, Fig (2.1, 2.2, 2.3 and 2.4).*
- **Vegetation levels are enhanced in the most central Sudan to normal and near normal levels as a result of above average rainfall in July.** *See page 4, Fig (3.1, 3.2).*
- **The development of vegetation level during July and the favourable conditions of crop development may help in narrowing the food gap by the end of the season.** *See page 4, Fig (3.1, 3.2).*
- **Vegetation situation is worsening in the regions of Upper Nile, Jonglei and East Equatoria, this affect the pastoral activities in this areas.** *See page 4, Fig (3.1, 3.2).*
- **Although the different sources of Forecasts are consistent for above average rainfall in July – September period, they are differ in determining the locations.** *See Pages 5-6, Fig (5.1, 5.2 and 5.3).*

Seasonal Progress

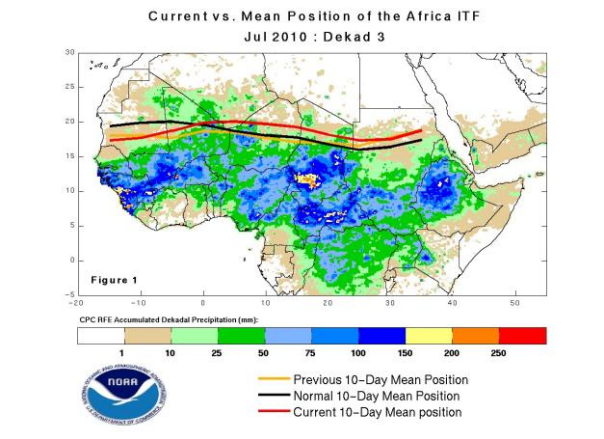


Fig (1.1) – Position of the ITCZ over Africa in Dekad3 July-2010(red) compared to its average position (black) and to its position during same period in 2009. (Source: Climate Prediction Centre (CPC)).

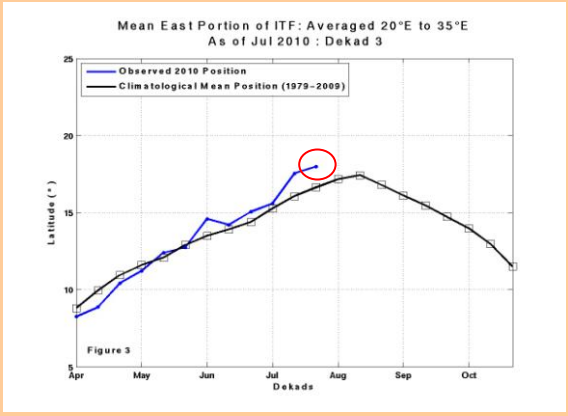


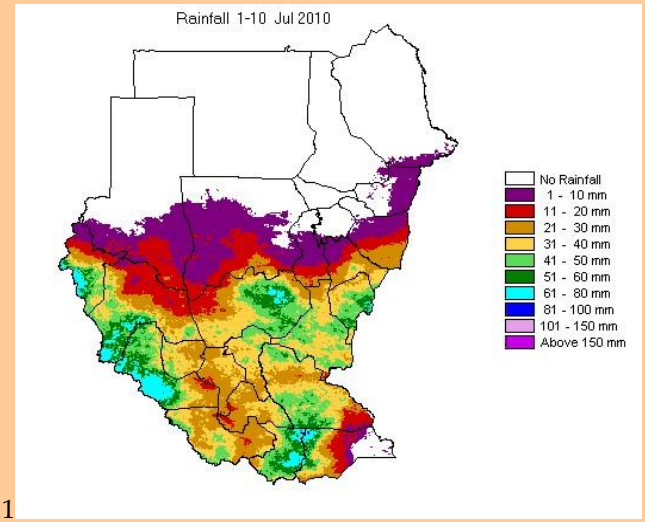
Fig (1.2) – Average position of the ITCZ over Sudan along the current season compared to a 20-years average (1988-2010). (Source: CPC),Note: the position in mid June (circled)

Rainfall in Sudan mostly results from a northwards movement of humid air masses from March to August and their southwards retreat from September to November. At their northernmost reach, these humid air masses meet with drier and warmer air to form the Inter tropical Converging Zone (ITCZ). Since the rains

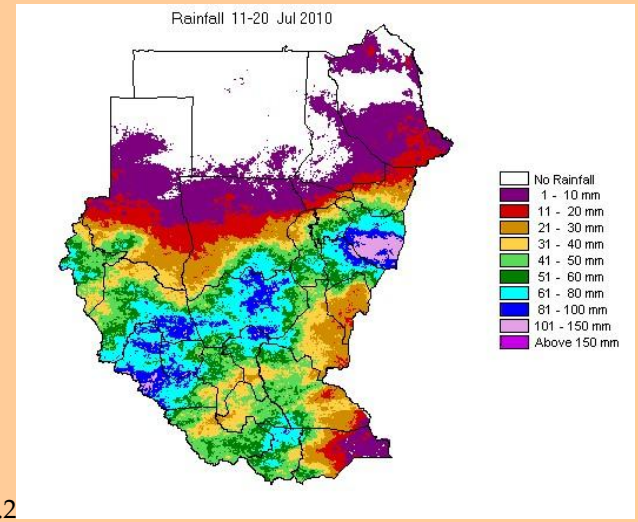
follow south of the ITCZ, tracking the ITCZ through the season provides a quick evaluation of the seasonal progress of the rainy season and of its quality.

Fig 1.2 shows a map with the latest ITCZ position. From early July, the ITCZ exceeds its normal position and remained ahead of its Climatological average position throughout the month.

July Rainfall in Sudan



2.1



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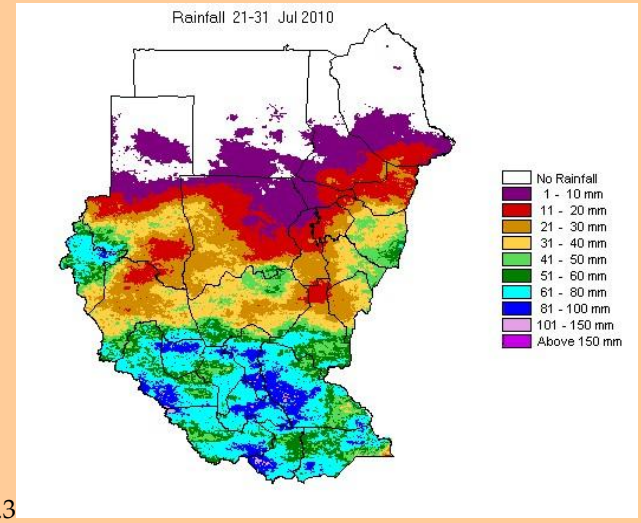

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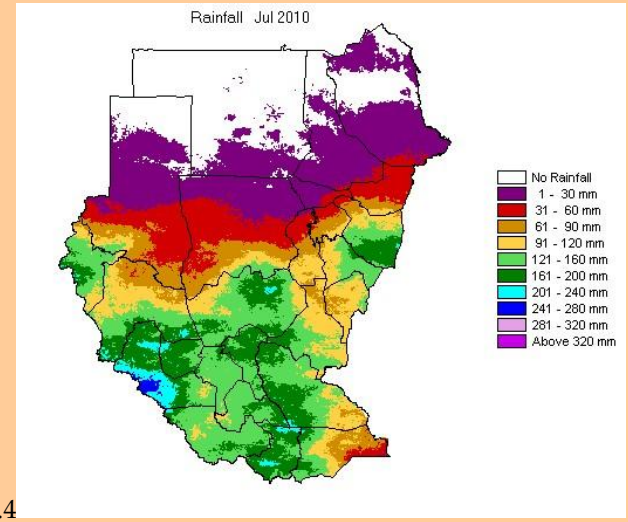

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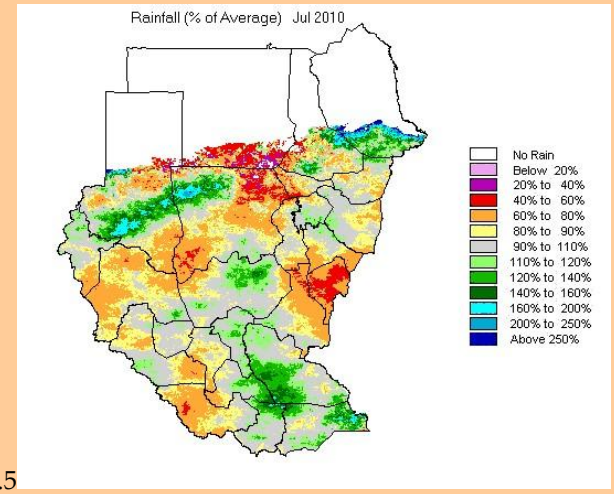


2.5

Fig 2.1: Rainfall in early July (2.2), Rainfall in mid-July (2.3), Rainfall in late July (2.4), Total Rainfall amounts in July (2.5) and Rainfall amount of July as a percentage of the average.

Early July associated with good amounts of rainfall in the regions of Blue Nile state, parts of Upper

Nile, South Kordufan, West and South Darfur, Bahr Elghazal and Bahr Eljabal, with higher amounts in Abu Naama and Rashad, elsewhere the rainfall amounts were below average especially in East region of the country. Deficit in rainfall was obvious in Eastern part of east Equatoria state and some parts of Jonglei, this may have a negative impacts on the pastoral and water resources in this areas. See Page 2, Fig (2.1).

In Mid-July good rainfall was well distributed over the country, which was covered a wide belt extended from the East to the West of Sudan, this enhanced the planting condition and the early stages of crop development. In contrast, Blue Nile, Upper Nile, East Equatoria and the eastern parts of Jonglei showed deficit in rainfall amount during this period, which may cause some difficulties in maintaining the agricultural and pastoral situation for crop developing and grazing. See Page 2, Fig (2.2).

Late July showed above average rainfall amounts in most parts of Sudan with wide expansion of the rainfall belt northwards, above average rainfall amounts were registered in most areas of southern Sudan. On Contrary, Blue Nile state shows below average rainfall amount in last dekad of July and this may worsen the situation of the crop growth. Gedarif state enjoyed valuable amounts of rainfall, especially in the eastern and south-western parts of the state, which enhanced the agricultural situations. See Page 2, Fig (2.3).

In terms of total rainfall amount, July associated with above average rainfall in most central and southern parts of Sudan. In contrast, areas of Northern Gedarif, western parts of Sennar, Blue Nile, northern part of Upper Nile, White Nile, North Kordufan, North Darfur, northern parts of South Darfur, eastern parts of Jonglei and East Equatoria experienced below average rainfall amount in July, which may affect the crop development and pastoral conditions in this areas. See Page 2, Fig (2.4).

Vegetation Status

Vegetation condition and its development are assessed by means of the NDVI (Normalized Difference Vegetation Index) – this is a satellite derived parameter which responds (almost) uniquely to vegetation and is available on a global scale every ten days.

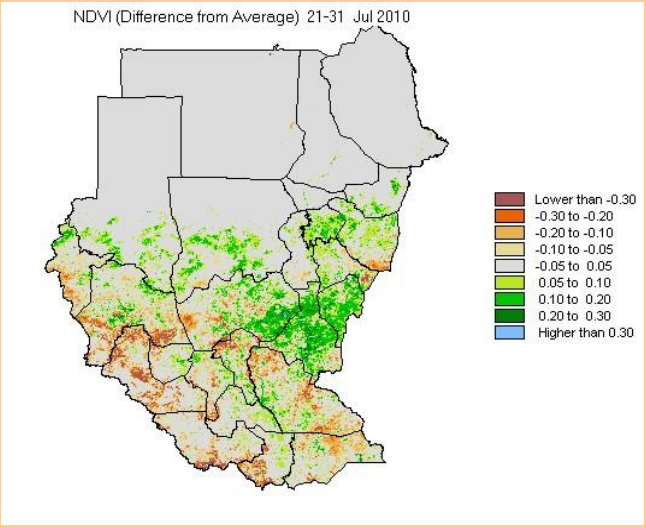
First dekad of July showed below average vegetation development in areas of Gedarif, Blue Nile, Upper Nile, North Parts of South Kordufan, South Darfur and Jonglei, as consequencies of the moderate rainfall in late June. See Page 4, Fig (3.1).

Significant development in vegetation level was obvious in mid July as consequences of early July good rainfall, the crop and pastoral situation was maintained and the adequate situation are clear all over central and southern Sudan. See Page 4, Fig (3.2).

Vegetation situation showed a good development in late July as an impact of very good early and mid-July rainfall in most parts of the country. Significant development is a reality across central Sudan. Please note that areas with below average vegetation development in South Sudan shown in Fig 3.1 were due to cloud cover which leads to satellite images contamination. Agriculture situation is developing as results of the good July rainfall in Sudan.

Vegetation situation was well developed across the country during mid and late July; this may help in narrowing the food gap by the end of the season.

Vegetation situation is worsening in the region of Upper Nile, Jonglei and East Equatoria, this may affect the pastoralist's activities in this areas. South Darfur, South Kordufan and Gedarif states showed significant improvement in the vegetation levels as a result of late July good rainfall. Although the rainfall amount varies within this region but it is clear that the situation was highly improved.



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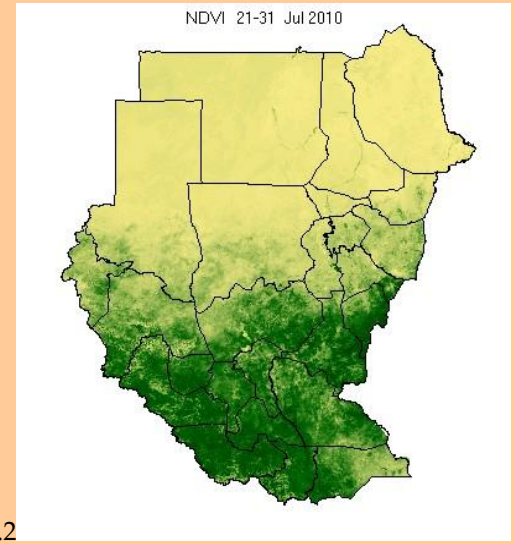


3.2

Fig (3.1, 3.2): NDVI difference from average in late July 2010. Yellows and reds represent below average vegetation development, greens and blues represent above average vegetation development. Note above average development in West Equatoria, Central Equatoria and eastern Jonglei. See text for further details.

Seasonal Perspectives

El Niño (and La Niña) events are disruptions of the ocean-atmosphere system in the Intertropical Pacific which can cause large scale changes in wind circulation and sea surface temperature, and lead to a variety of impacts on rainfall and temperature distribution across the globe.

During the March- July season there is an approximately 40% probability of maintaining neutral conditions, and that is predicted to be the most likely situation through the end of 2010 and into early 2011. The likelihood of returning to La Niña conditions is now very low while the chances of El Niño conditions are about normal.

Note that El Niño – La Niña effects on the climate of Sudan are not known in detail but are judged to be weaker than in other areas such as Southern Africa and Kenya-Tanzania.

Rainfall Outlook

There are a variety of methodologies and models that use tropical east Pacific sea surface temperature (SST) patterns as input to predict/forecast long term (1 to 6 month) changes to rainfall and temperature regimes over wide areas of the globe.

SMA uses seasonal forecast information produced by itself (based on IGAD Climate prediction and Application Centre) and information publicly available on the Web from three main sources: IRI, International Research Institute (USA), CPC, Climate Prediction Centre (NASA, USA), ECMWF, European Centre for Weather Forecasts (Europe).

July - August – September 2010 Rainfall Forecasts

SMA updated its seasonal rainfall forecast published earlier in March-April to cover the period from July to September 2010, (Fig 4). In this period the rainfall is expected to be on average with a tendency to above average in eastern part with probability of 45%-30%, above average to on average in western part with probability of 45%-35% and on average to below average in Southern Sudan with chance of 45%-30%,this will provide a good information for agricultural practices on field management.

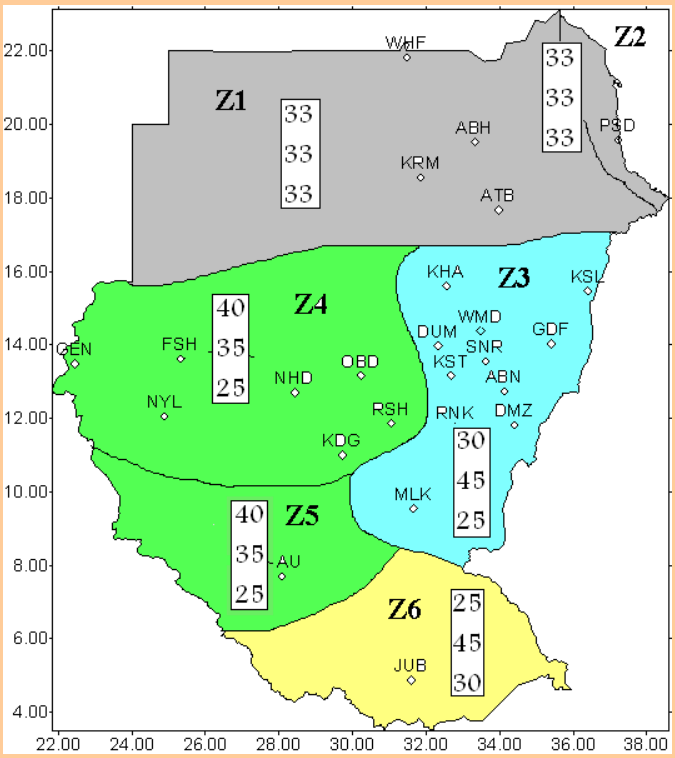


Fig 4– SMA forecasts of July-September rainfall. 2010). Boxes indicate likelihood of above (top), on (middle) and below (bottom) average conditions. Zones represent homogeneous climatic rainfall

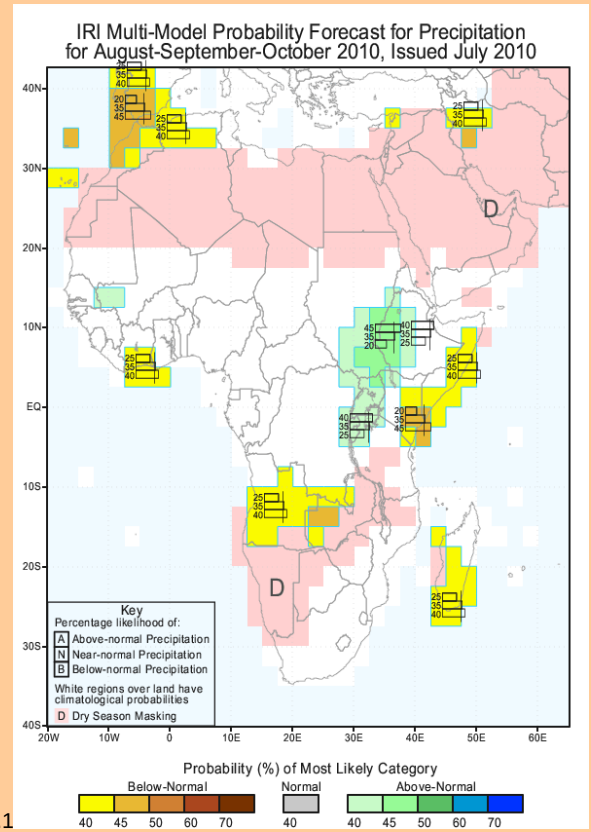
Seasonal forecast done by the other sources (IRI, CPC, and ECMWF) for the 3 month period of July - September are inconsistent.

RI predicted Climatological conditions that expected to prevail in the northern part of the country and northern Darfur, elsewhere, above average to on near average rainfall are expected with the chance of 45%-30%.

CPC predicted a Climatological condition across the most north part of the country, below average rainfall is expected in Darfur and Kordufan regions and in the south-western parts of Sudan. Above average rainfall is expected in the south-eastern parts of Sudan.

ECMWF predicted Climatological conditions in the north region, elsewhere above average rainfall is expected with probability of 70-80%, with probability of 80%-90% in the most southern part.

ECMWF and IRI are in consistence with prediction of above average rainfall in the most part of central and southern Sudan, in contrary CPC forecasted above average rainfall in the south-eastern part of the country.



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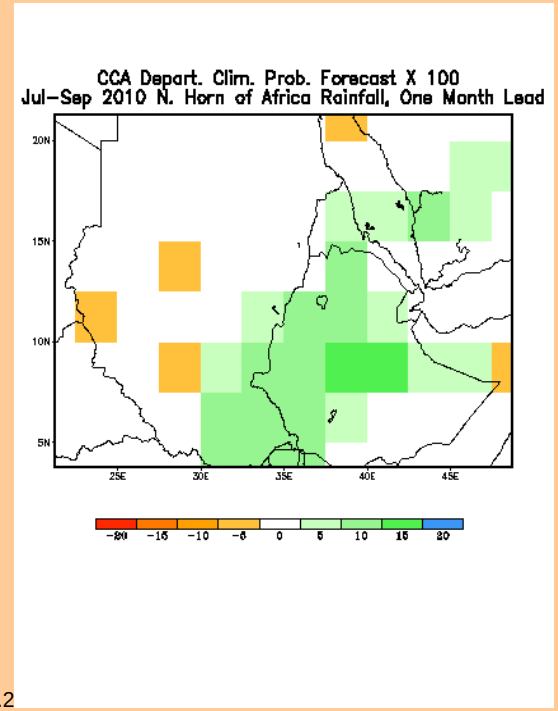

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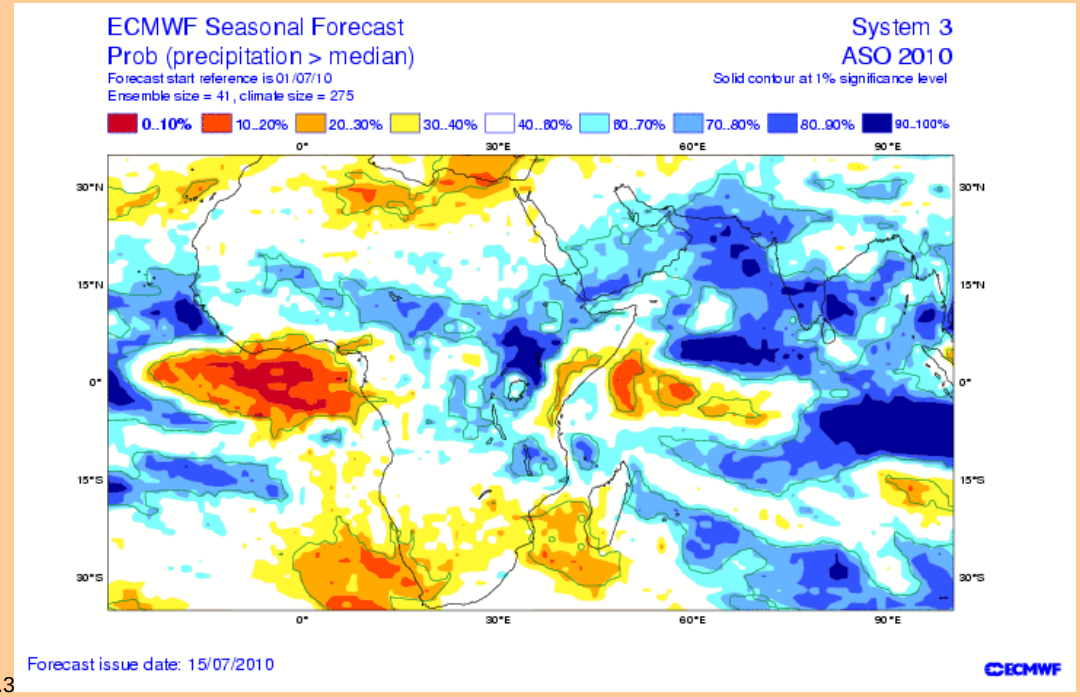

5.3

Fig 5.1 – Probabilistic forecast for August-October (Aso) 2010 rainfall for Africa. Boxes indicate likelihood of above (top), on (middle) and below (bottom) average conditions. Green to blue indicate areas of increasingly more likely above average conditions (source: IRI).

Fig 5.2 – Forecast for July-August--Septembery2010 rainfall for Africa. Colours indicate departure from climatology (usual scenario), oranges and yellows for below average conditions, blues and green for above average (source CPC).

Fig 5.3 – Forecast for August-September-October (ASO) 2010 rainfall for Africa. Probability of exceeding median rainfall (usual scenario). Yellow to red for less rainfall than usual, greens and blues for more rainfall than usual. (source : ECMWF)