

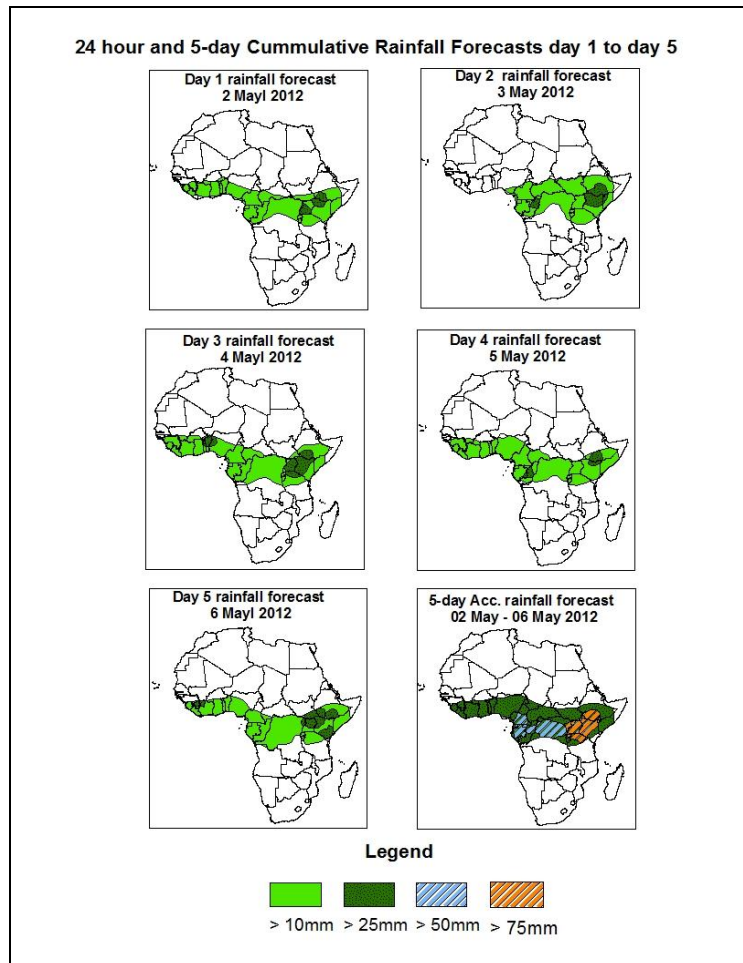


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 2 May – 06Z of 6 May 2012, (Issued at 16:30Z of 1 May 2012)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 75% probability of precipitation (POP) exceeded, based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.

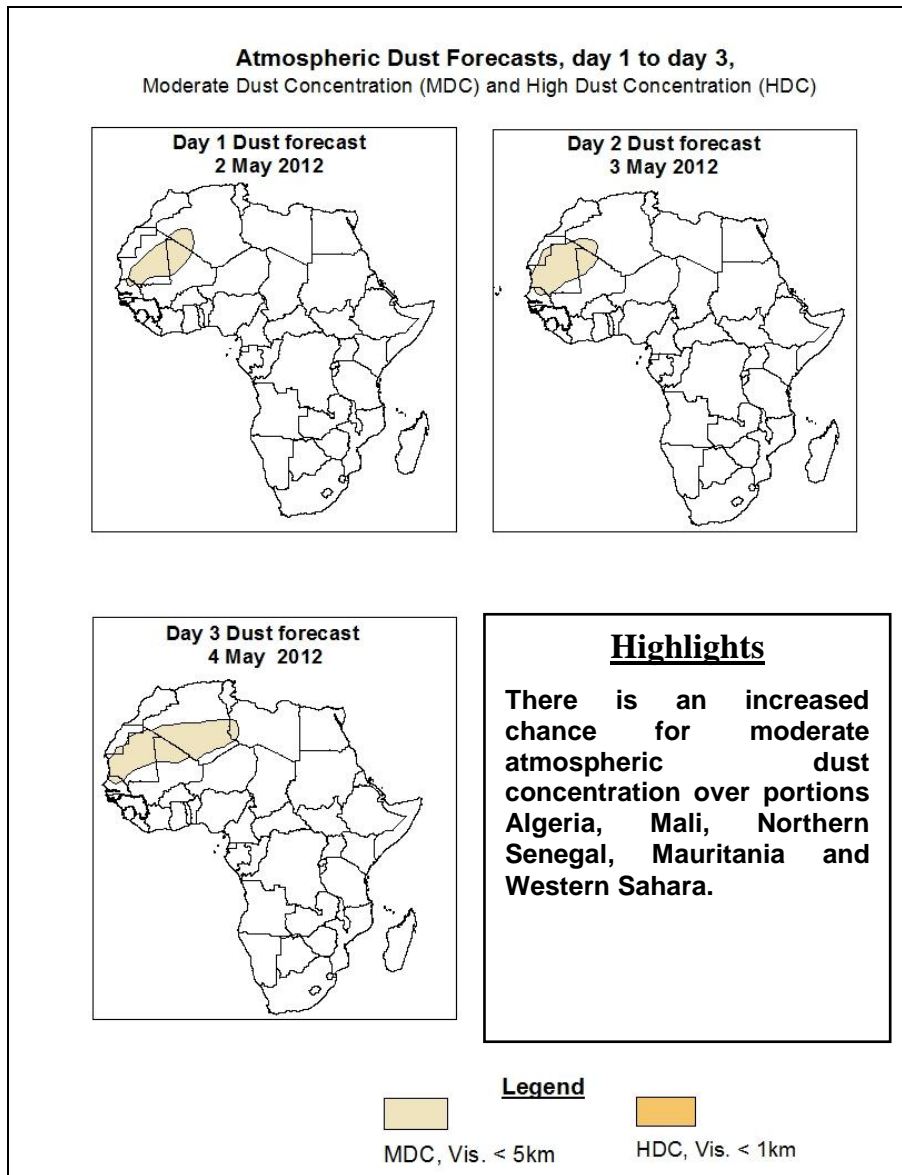


### Summary

In the next five days, seasonal wind convergences in the Gulf of Guinea convergence over central Africa and western equatorial Africa regions, convergences associated with Congo Air Mass, seasonal wind convergences in southern Ethiopia, Southern Sudan and Somalia, and cyclonic circulation off the coast of East Africa are expected to enhance rainfall across their respective regions. In general, there is an increased chance for heavy rainfall over portions of southern Ethiopia, eastern DRC, Uganda, Kenya portions of Tanzania, Rwanda and Burundi.

## 1.2. Atmospheric Dust Forecasts: Valid 2 - 4 May 2012

The NCEP/GFS, the UK Met Office, the ECMWF and the NCEP/WRF outputs are used to identify areas with high probability of dust concentration.



### **1.3. Model Discussion: Valid from 00Z of 1 May 2012**

According to the GFS, ECMWF and UKMET models an east-west oriented trough and its associated heat lows are expected to prevail in the region between southern Mali and Sudan.

A low near Burkina Faso, Niger and Mali is expected to shift toward the border between Burkina Faso and Mali across Niger, with its central pressure value decreasing from 1005hpa in 24 hours to 1002hpa in 72 hours. The central pressure value tends to increase from 1002hpa to 1004hpa through 96 hours to 120 hours. The central pressure value of a low over Chad and Cameroon tends to decrease from 1004hpa to 1003hpa through 24 hours to 48 hours. The central pressure value tends to increase to 1004hpa in 72 hours and the central pressure value tends to be constant at 1003hpa through 96 hours to 120 hours. The low across Ethiopia, Sudan and South Sudan Republic is also expected to deepen; with its central pressure value tends to be constant at 1003hpa through 24 to 48 hours. And the central pressure value tends to be constant at 1004hpa through 72 hours to 120 hours.

According to UKMET and ECMWF models, the UKMET model of the St. Helena High pressure system over southeast Atlantic Ocean is expected to deepen, with its central pressure value increasing from 1020hpa to 1021hpa through 24 hours to 48 hours. Lastly, according to the ECMWF model, the central pressure value tends to increase from 1020hpa to 1021hpa through 24 hours to 48 hours.

According to ECMWF and GFS models, ECMWF model of the Mascarene high pressure system over southwestern Indian Ocean is expected to shift eastwards (from about 64°E to 75°E, while giving way to the interactions between mid-latitude and tropical systems during 24 hours to 48 hours. Its central pressure value is expected to increase from about 1020hpa to about 1027hpa through 24 hours to 48 hours. Lastly, according to the GFS model, the central pressure value of this high tends to increase from 1020hpa to 1026hpa, by shifting from about 63° E to 73° E through 24 hours to 48 hours.

At 925hpa level, zone of moderate and dry northerly and easterly winds (25 to 35kts) are expected to prevail over parts of Sudan, Niger, Chad, Mali, Northern Nigeria, Cameroon, Algeria, Senegal and Mauritania through 24 to 72 hours.

At the 850hpa level, a lower tropospheric wind convergence associated with the West African Monsoon is expected to prevail over parts of Mali, Nigeria and Niger tend to shift toward Guinea through 24 hours to 120 hours. Then, the convergence is expected to extend towards Chad, Northeastern Nigeria, Cameroon, Central African Republic and Sudan by the end of forecasting period. Seasonal lower level convergences are expected to remain active over Southern Sudan, Somalia and Ethiopia throughout the forecast period. The convergence associated with the meridional arm of the ITCZ is expected remain active across North Tanzania, Kenya and over Uganda during 24 hours to 48 hours. During 72 hours, the convergence tends to become a cyclonic circulation over Coast of Kenya, Somalia and Tanzania. And 96 hours to 120 hours, it is expected to prevail over Uganda and Kenya.

At 500hpa level, a mid-latitude trough across Northern Africa and the neighboring areas is expected to weaken with its axis over Western Sahara, Algeria, Libya, Morocco and Northern Mauritania through 24 to 96 hours. A mid-latitude frontal trough is also expected propagate across South Africa Republic during 24 to 48 hours.

At 200mb, the Sub-Tropical Westerly Jet across northeastern Atlantic Ocean, North Africa and Eastern Egypt is expected to have a wavy pattern, with cores over Northwest and Northeast Africa. The core speed over Western Sahara, Algeria, Mauritania, Mali, Libya, Tunisia and Morocco is expected to exceed 110kts during 24 to 48 hours, and it tends to shift northwards through 72 to 120 hours. The winds speed across the core over Egypt, Sudan and the Red Sea is expected to exceed 90kts 24 to 72 hours, and then it tends to weaken to wind speed values of below 70knts towards end of the forecast period.

In the next five days, seasonal wind convergences in the Gulf of Guinea convergence over central Africa and western equatorial Africa regions, convergences associated with Congo Air Mass, seasonal wind convergences in southern Ethiopia, Southern Sudan and Somalia, and cyclonic circulation off the coast of East Africa are expected to

enhance rainfall across their respective regions. In general, there is an increased chance for heavy rainfall over portions of southern Ethiopia, eastern DRC, Uganda, Kenya portions of Tanzania, Rwanda and Burundi.

There is an increased chance for moderate atmospheric dust concentration over portions Algeria, Mali, Northern Senegal, Mauritania and Western Sahara.

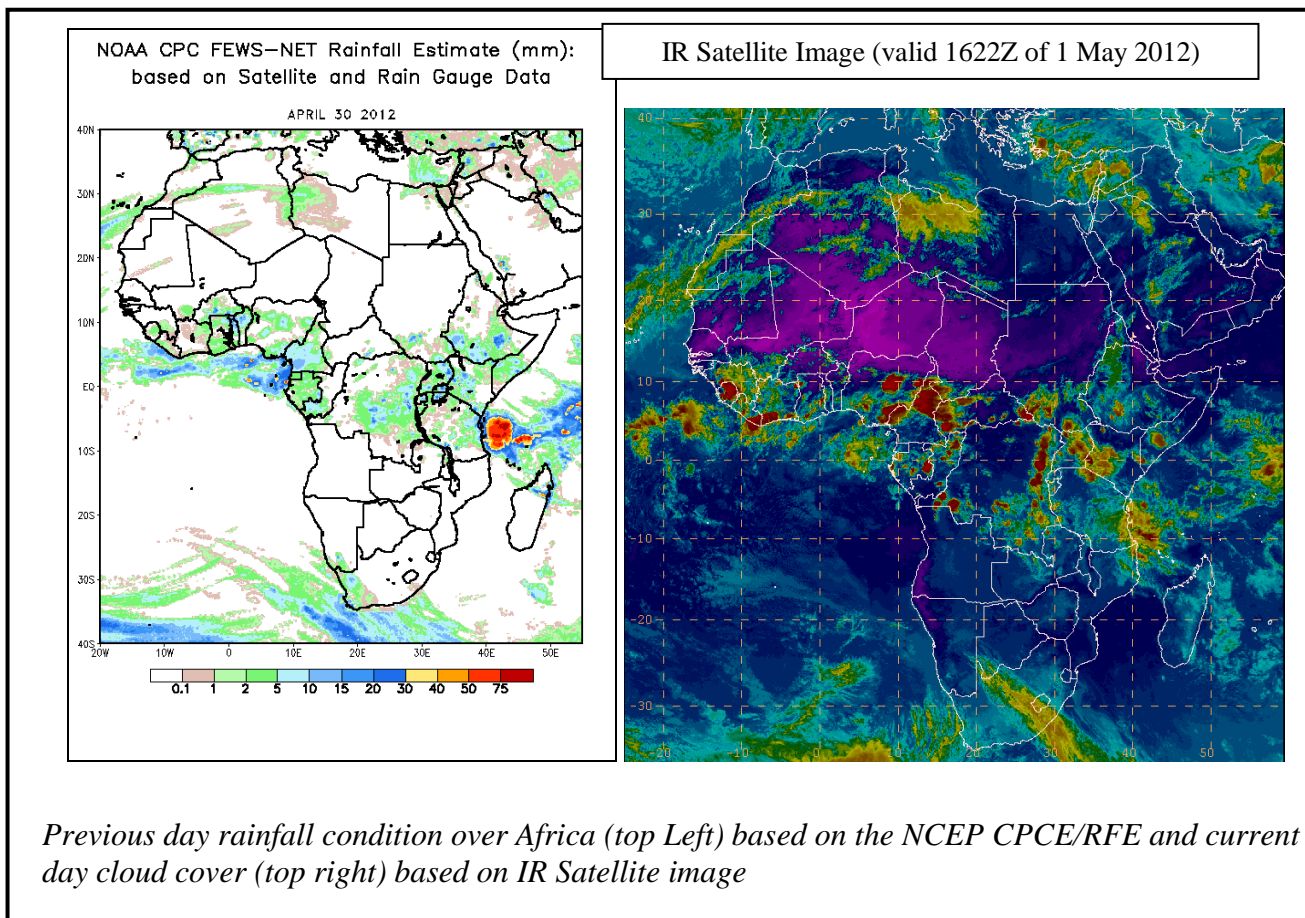
## 2.0. Previous and Current Day Weather Discussion over Africa (30 April – 1 May 2012)

### 2.1. Weather assessment for the previous day (30 April 2012)

During the previous day, moderate to locally heavy rainfall was observed across portions of Cameroon, Southern Sudan, DRC, Southern Ethiopia, Uganda, Coast Tanzania, Gabon, Western Kenya and Benin, .

### 2.2. Weather assessment for the current day (1 May 2012)

Intense clouds are observed across Nigeria, Cameroon, Gabon, DRC, Tanzania, Ethiopia, Kenya, Somalia, Uganda, Congo, Southern Sudan, Liberia, Ivory Coast, Guinea, and Sierra Leone.



*Previous day rainfall condition over Africa (top Left) based on the NCEP CPCE/RFE and current day cloud cover (top right) based on IR Satellite image*