

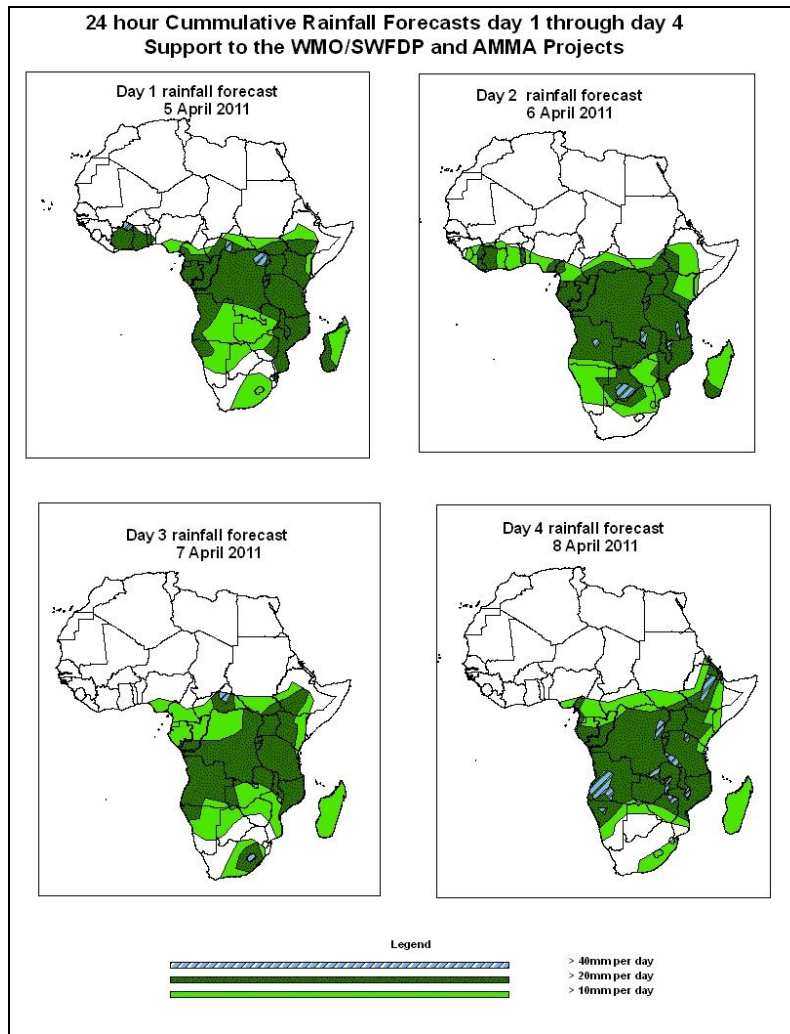


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 05 April – 06Z of 08 April 2011, (Issued at 13:30Z of 04 April 2011)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 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 four days, there is a possibility of widespread rainfall, with moderate to heavy rainfall expected over the Gulf of Guinea, southern Africa, the Congo Air Boundary (CAB) and the vicinity of the Greater Horn of Africa. Lower level convergence, a slight northward movement of the east-west convergence and the influx of moisture laden south westerly's and easterly's over the coast of the Gulf of Guinea and the eastern coast of Africa respectively will enhance this. South Africa will also witness moderate to heavy rainfall aided by the passage of a mid-latitude front. Hence, there is an increased chance for rainfall to exceed 20mm per day over Gulf of Guinea coast, Congo, DRC, CAR, Sudan, Ethiopia, Kenya, Uganda, Burundi, Rwanda, Angola, Namibia, Zambia, Malawi, Mozambique, Madagascar, South Africa, Zimbabwe and Botswana.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 5 April 2011**

The GFS, ECMWF and UKMET models show the persistence of an east-west oriented trough within the next four days, formed by a series of cut off lows over southern Sudan, parts of Central African region and the coast of the Gulf of Guinea. A central pressure value of 1004hpa is expected along its eastern end (mainly over Central African Republic / Sudan region), and a pressure value of 1007hpa along its western end. The lows associated with the meridional arm of the ITCZ are active over central to southern DRC, then extending to the vicinity of Lake Victoria by 72 hours with a central pressure value between 1008 to 1009hpa. The low pressure system over Angola region with a central pressure value of 1010hpa deepens to 1009hpa by 72 hours. While the low pressure system over the Mozambique Channel has a value of 1010hpa by 48 hours, but absent for the other days. The three models; ECMWF, GFS and UKMET show some level of similarity in their presentation of pressure patterns.

A single high pressure cell appears by 24 hours over the vicinity of the ST. Helena high pressure system with an east-west oriented ridge extending into the Mascarene region. This single pressure cell with a central pressure value of 1026hpa breaks into two distinct pressure cells by 48 hours, with a central value of 1024hpa. It re-appears as a single high pressure cell again by 96 hours with an east west oriented ridge and a central pressure value of 1028hpa.

At the 850hpa level, the GFS model shows the east-west oriented convergence line in the region between the coastal areas of the Gulf of Guinea and northeast DRC fills by 24 and 48 hours, and deepening by 48 and 72 hours period. The north-south oriented convergence line persists all through, active mostly over DRC and Uganda to northern Tanzania. The convergence line over Angola region persists, and fills by 96 hour period. The convergence line over the Mozambique Channel deepens from 24 to 48 hours, and fills up by 72 hour period.

Mostly northeasterly winds dominate across most of western and central African countries at the 700hpa level with strong lower tropospheric convergence dominating the flow over Angola, DRC and Tanzania.

A mid-latitude front traverses the coast of South Africa.

At 500HPa, zones of strong wind in excess of 70Kts, which are associated with the African Easterly Jet, are expected in the vicinity of Egypt, Morocco, Sudan and Algeria. Similar strong winds in excess of 50Kts are expected over the Indian Ocean, the south Atlantic and off the coast of South Africa.

A zone of strong wind (>130Kts) at 200hpa level associated with the Sub Tropical westerly Jet is expected in the vicinity of Libya, Egypt and the mid-east and expected to be wavy all through.

Similarly, strong winds (>110Kts) associated with the Sub-Tropical Westerly Jet in the Sub Tropical region of South Africa and the Indian Ocean is expected to be wavy all through, decreasing in strength (>90Kts) from 48 hour period.

In the next four days, there is a possibility of widespread rainfall, with moderate to heavy rainfall expected over the Gulf of Guinea, southern Africa, the Congo Air Boundary (CAB) and the vicinity of the Greater Horn of Africa. Lower level convergence, a slight northward movement of the east –west convergence and the influx of moisture laden south westerly's and easterly's over the coast of the Gulf of Guinea and the eastern coast of Africa respectively will enhance this. South Africa will also witness moderate to heavy rainfall aided by the passage of a mid- latitude front. Hence, there is an increased chance for rainfall to exceed 20mm per day over Gulf of Guinea coast, Congo, DRC, CAR, Sudan, Ethiopia, Kenya, Uganda, Burundi, Rwanda, Angola, Namibia, Zambia, Malawi, Mozambique, Madagascar, South Africa, Zimbabwe and Botswana.

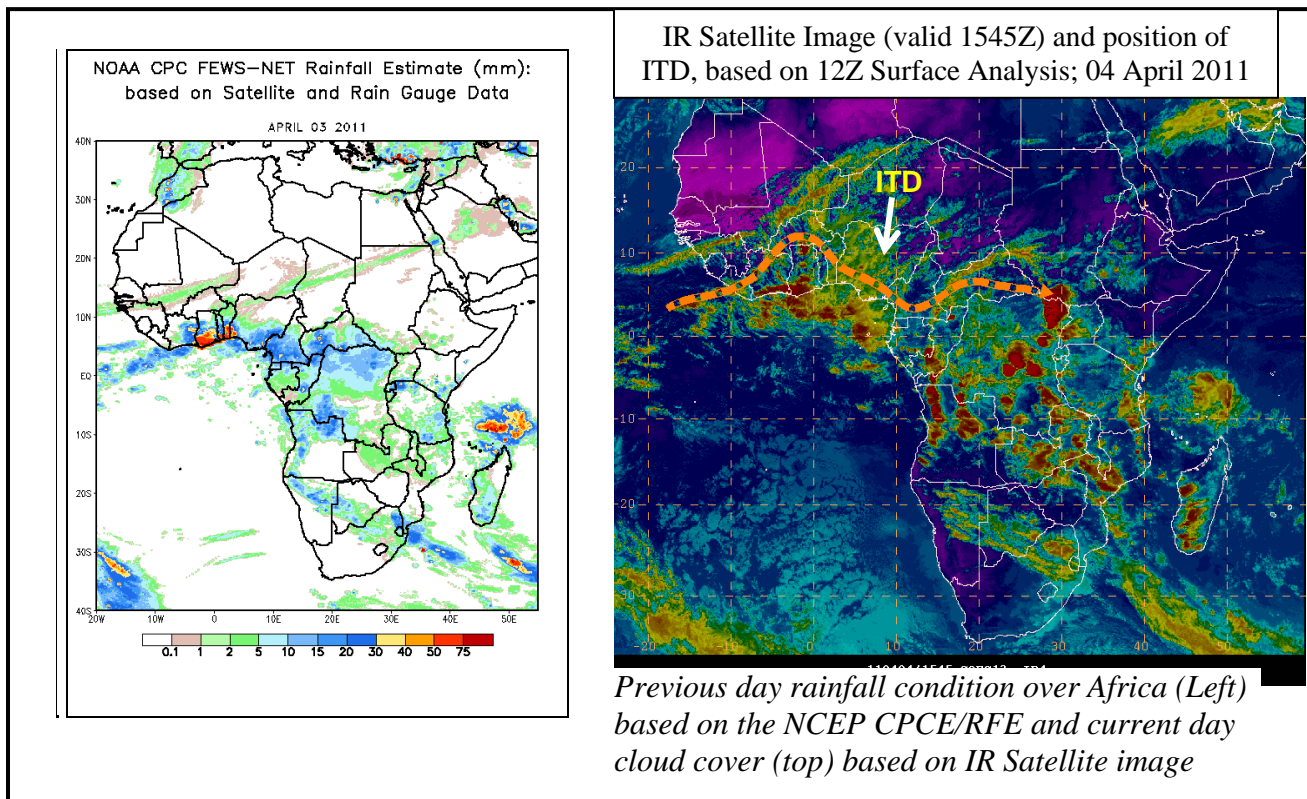
## 2.0. Previous and Current Day Weather Discussion over Africa (03 April – 04 April 2011)

### 2.1. Weather assessment for the previous day (03 April 2011):

During the previous day, a combination of moderate and heavy rainfall was observed over Gulf of Guinea coast, DRC, Congo, Angola, Namibia, Botswana, South Africa, Tanzania, Kenya, Somalia, CAR, Ethiopia, Madagascar and parts of Mozambique.

### 2.2. Weather assessment for the current day (04 April 2011):

Intense clouds are observed over Cote D'Ivoire, Ghana, Burkina Faso, Gabon, Congo, Sudan, DRC, Angola, Zambia, Zimbabwe, Mozambique, Tanzania, Uganda, Kenya and Madagascar.



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