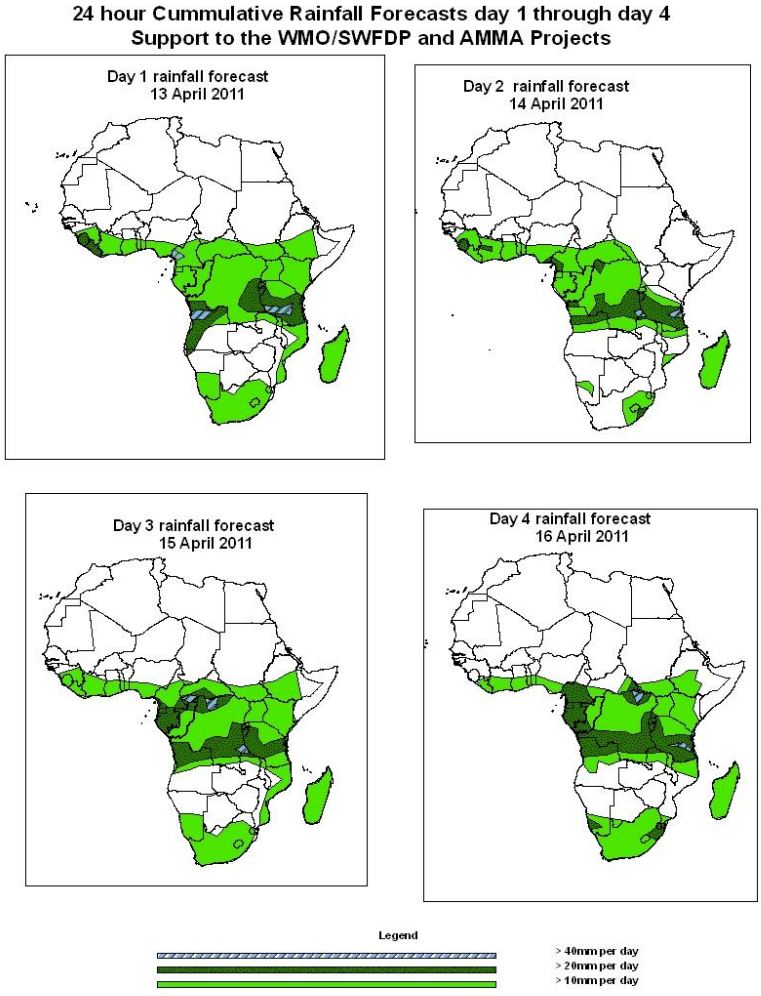
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## *1.0. Rainfall Forecast: Valid, 06Z of 13 April – 06Z of 16 April 2011, (Issued at 12:00Z of 12 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, northern parts of the southern Africa and portions of central African countries are expected to receive moderate to heavy rainfall. The light to moderate rainfall is also expected to continue elsewhere in the seasonal ran-getting areas. In general, there is an increased chance for rainfall to exceed 20mm per day over Sierra Leone, Liberia, parts of Cote d'Ivoire and Nigeria, southern Cameroon, Gabon, CAR, portions of DRC, Rwanda, Burundi, Malawi and southern Tanzania.

### 1.2. Models Comparison and Discussion-Valid from 00Z of 11 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 1003hpa is expected along its eastern end (mainly over Central African Republic / Sudan region), and a pressure value of 1005hpa along its western end. The lows associated with the meridional arm of the ITCZ are active over central DRC and northeastern Tanzania by 24 hours. The low pressure system over Angola region maintains a central pressure value of 1008hpa. The three models; ECMWF, GFS and UKMET show some level of similarity in their presentation of pressure patterns.

The St. Helena High pressure system over southeast Atlantic maintains a central pressure value of 1024hpa in 24hours and intensifies into 1028hpa in 48 and 72 hours, and then weakens back to 1024hpa by 96 hours. The Mascarene high pressure system over southwest Indian Ocean maintains a central pressure value of 1028hpa in 24 and 48 hours and weakens to 1024hpa in 72 hours and to 1020hpa by 96 hours.

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 CAR, which is expected to deepen through 24 to 96 hours.

The north-south oriented convergence line is expected to remain active mostly over southern Sudan, DRC, Congo, western Tanzania, Rwanda and Burundi. The discontinuity over northern Angola is expected to weaken gradually through 48 to 96 hours. The convergences line over the Mozambique Channel deepens from 24 to 48 hours, and weakens through 72 and 96 hours.

At the level of 700hPa, northeasterly to easterly winds are expected to dominate the flow over much of equatorial regions of Africa, with localized convergences expected over northern Angola, southern Sudan, DRC, Tanzania. A mid-latitude westerly trough is expected to move between southeast Atlantic Ocean and southwest Atlantic Ocean across South Africa through 24 to 96 hours.

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At 500HPa, a mid-latitude westerly trough is expected to dominate the flow over northern Africa countries, while propagating towards the Middle East region through 24

to 96 hours. Similarly, a mid-latitude westerly trough is expected to propagate from its current position in Mozambique Channel to western Indian Ocean through 24 to 72 hours.

A zone of strong wind (>110Kts) at 200hpa level associated with the Sub Tropical westerly Jet is expected across northeast Atlantic Ocean, Algeria, Libya, Egypt and the Middle East region, more or less maintaining its intensity through 24 to 96 hours.

Similarly, strong winds (>70Kts) associated with the Sub-Tropical Westerly Jet in the Sub Tropical region of southern Africa and the adjoining areas of southern Atlantic and the Indian Ocean is expected to intensify to (>90Kts) in 96 hours.

In the next four days, northern parts of the southern Africa and portions of central African countries are expected to receive moderate to heavy rainfall. The light to moderate rainfall is also expected to continue elsewhere in the seasonal ran-getting areas. In general, there is an increased chance for rainfall to exceed 20mm per day over Sierra Leone, Liberia, parts of Cote d'Ivoire and Nigeria, southern Cameroon, Gabon, CAR, portions of DRC, Rwanda, Burundi, Malawi and southern Tanzania.

## *2.0. Previous and Current Day Weather Discussion over Africa (11 April – 12 April 2011)*

### 2.1. Weather assessment for the previous day (11 April 2011):

During the previous day, a combination of moderate and heavy rainfall was observed over southern Cameroon, CAR, Gabon, Congo, western DRC, western Angola and portions of South Africa.

**2.2. Weather assessment for the current day (12 April 2011):** Intense clouds are observed over parts of Gulf of Guinea coast, CAR, DRC, Uganda, Tanzania, Ethiopia, Madagascar, Angola, Cameroon, Congo, Gabon, Burundi and Rwanda.

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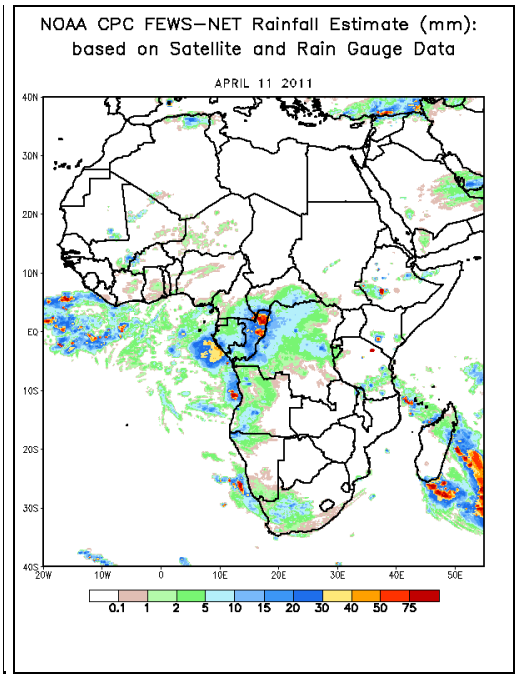
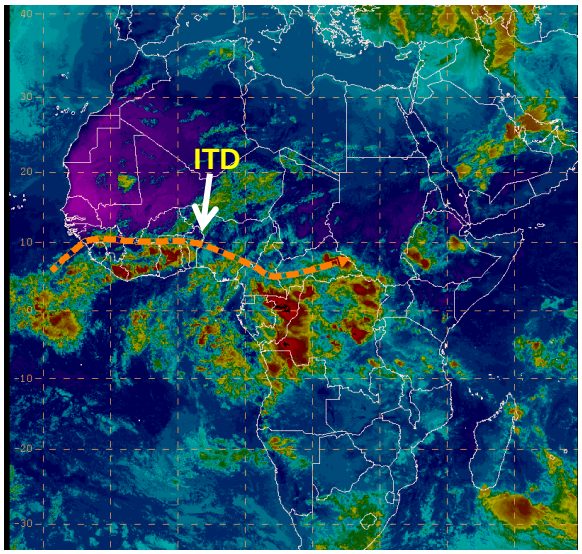



IR Satellite Image (valid 1800Z) and position of ITD, based on 1200Z Surface Analysis; 12 April 2011




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

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