

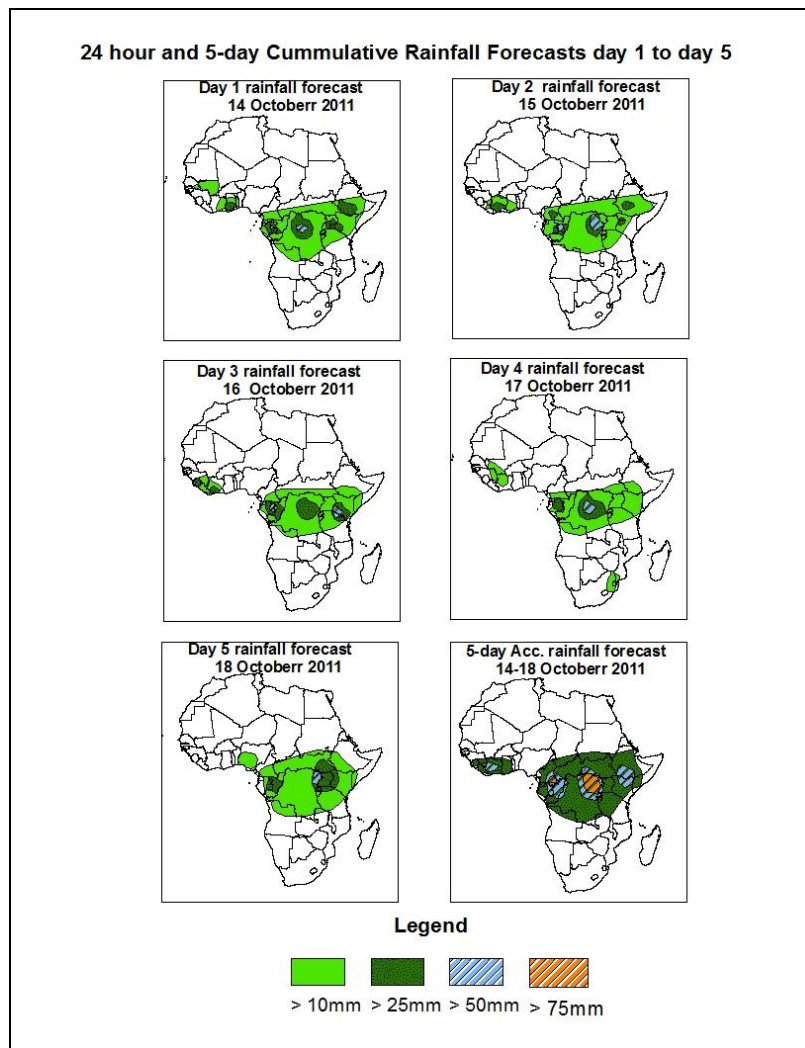


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 14 October – 06Z of 18 October 2011, (Issued at 16:00Z of 13 October 2011)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of high 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, the seasonal wind convergences over central African region and localized convergences over costal Gulf of Guinea and GHA region are expected to enhance rainfall in their respective areas. Hence, there is an increased chance for heavy rainfall over Gulf of Guinea coast, Cameroon, Congo Brazzaville, CAR, Gabon, DRC, South Sudan Republic, Ethiopia, Kenya, parts of Somalia and western Tanzania.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 14 October 2011**

According to the GFS, ECMWF and UKMET models, the monsoon trough with its associated heat lows across the Sahel region is expected to maintain its east-west orientation during the forecast period. The models also indicate series of heat lows and their associated trough across central African countries, extending partly to the South African countries. The heat low along its western end (near Mali and Mauritania) is expected to deepen, with MSLP values changing from 1007mb to 1006mb, according to the GFS model through 24 to 48 hours and tends to fill up during rest of the forecast period. This low is expected to fill up with MSLP values increasing from 1009mb to 1010mb, according to the ECMWF model through 24 to 72 hours. In contrast, this same low is expected to deepen, with MSLP value changing from 1008mb to 1007mb according to the UKMET model through 24 to 48 hours and it is expected to fill up to MSLP value of 1009mb by 72 hours. The heat low over central Africa region is expected to deepen, with its central value pressure decreasing from 1006mb to 1004mb, according to the GFS model during the forecast period. This same low tends to fill up from 1008mb to 1007mb, according to the ECMWF model through 24 to 72 hours and it tends to deepen from MSLP value of 1008mb to 1007mb towards end of the forecast period. According to the UKMET model, this low tends to deepen to MSLP value of 1005mb by 96 hours. A localized high pressure over Ethiopia tends to maintain a MSLP value of 1016mb through 24 to 72 hours according to GFS model and then tends to weaken during the rest of the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to weaken, with its MSLP value decreasing from 1022mb to 1019mb during the forecast period according to GFS model. According to ECMWF model, it tends to weaken, with its MSLP value decreasing from 1022mb to 1020mb during the forecast period. This same high pressure system tends to weaken from MSLP values of 1023mb to 1020mb towards end of the forecast period, according to UKMET model. The Mascarene high pressure system over southwest Indian Ocean is expected to intensify, with its MSLP value increasing from 1024mb to 1028mb according to both ECMWF and UKMET models through 24 to 96 hours and tends to weaken towards end of forecast period. According to GFS model, the same high pressure system tends to weaken, with its MSLP value decreasing from 1024mb to 1020mb during the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to dominate the flow over Sudan, parts of Chad and Nigeria during the forecast period. The seasonal wind convergence across central African countries is expected to remain active during the forecast period extending in the region between DRC and Gabon. Localized wind convergences are also expected to dominate the flow over portions of Angola, Ethiopia and southern Africa during the forecast period.

At 500hpa, eastward propagating trough in the westerly is expected to dominate the flow over Mediterranean Sea and coastal North Africa during the forecast period, with the low geopotential value of 5820gpm extending to the latitudes of Tunisia, Algeria, Libya and Egypt. A mid latitude frontal system is expected to propagate eastwards across the South African tip during the forecast period.

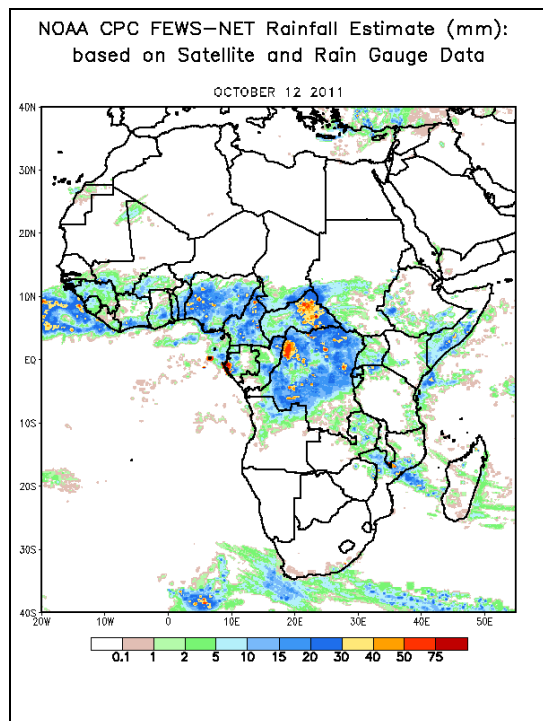
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, while intensifying gradually during the forecast period. The intensity of the jet is expected to exceed 110kts near Libya during 72 hours. The southern Hemisphere sub-tropical westerly jet is also expected to intensify across South Africa the second half of the forecast period.

In the next five days, the seasonal wind convergences over central African region and localized convergences over costal Gulf of Guinea and GHA region are expected to enhance rainfall in their respective areas. Hence, there is an increased chance for heavy rainfall over Gulf of Guinea coast, Cameroon, Congo Brazzaville, CAR, Gabon, DRC, South Sudan Republic, Ethiopia, Kenya, parts of Somalia and western Tanzania.

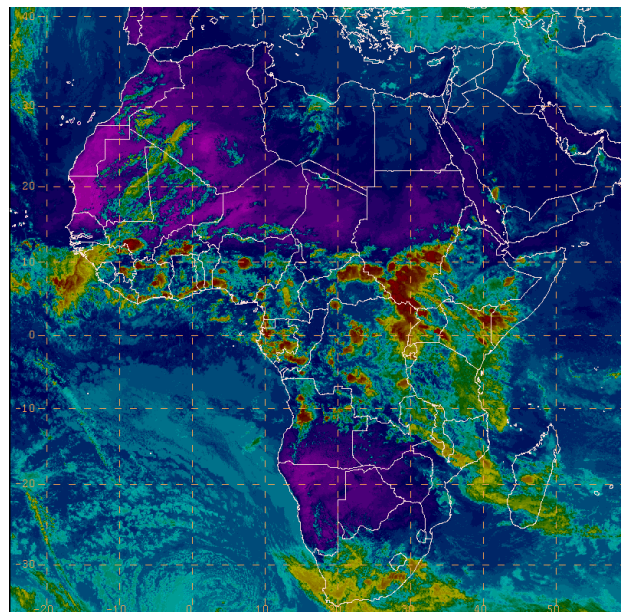
## 2.0. Previous and Current Day Weather Discussion over Africa (12 October - 13 October 2011)

**2.1. Weather assessment for the previous day (12 October 2011):** During the previous day, moderate to locally heavy rainfall was observed over southern Benin, portions of Nigeria, parts of Cameroon, parts of CAR, western Gabon, northern Congo Brazzaville and much of DRC.

**2.2. Weather assessment for the current day (13 October 2011):** Intense clouds are observed over portions of the Gulf of Guinea, South Sudan, eastern Kenya, southern Somalia and portion of DRC.



IR Satellite Image (valid 1545Z of 13 October 2011)



*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*

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