

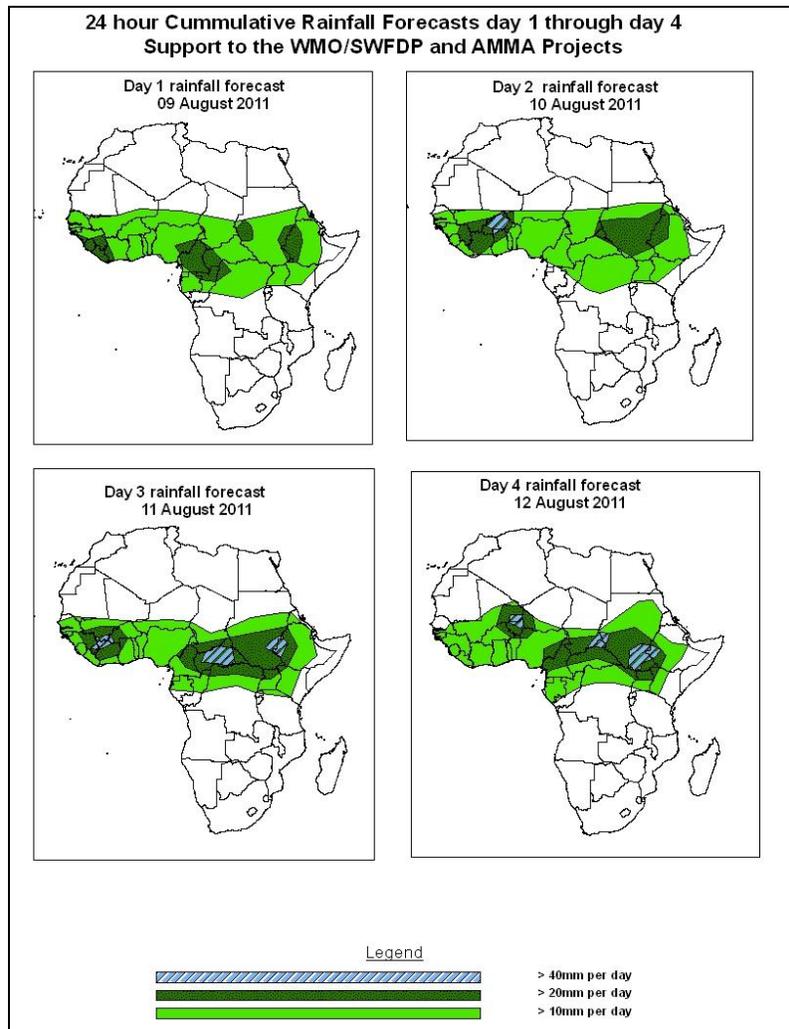


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 09 August – 06Z of 12 August 2011, (Issued at 10:15Z of 08 August 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 four days, strong low tropospheric convergence across central African region and the neighboring areas of East Africa is expected to increase rainfall. On the other hand, westward propagating waves and their associated convective activities are expected to continue enhancing rainfall over western Africa. In general, there is an increased chance for moderate to heavy rainfall over Guinea, Mali, Sierra Leone, Liberia, portions of Burkina Faso, Cote D'Ivoire, Nigeria, Cameroon, western Niger and southern Chad, northern DRC, much of South Sudan and Ethiopia.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 05 August 2011**

According to the NCEP/WRF, 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 heat low along its western end (near the border between Mali and Algeria) tends to deepen, with its central pressure value decreasing from 1008mb to 1004mb through 24 to 96 hours, according to the ECMWF model, from 1007mb to 1004mb according to the GFS model and from 1007mb to 1003mb according to the UKMET model. All the three models tend to deepen the heat low over central African region. The mean sea level pressure value is expected to decrease from 1008mb to 1004mb during the forecast period according to the ECMWF model and 1008 to 1006mb during the forecast period according to the GFS model, while the UKMET model tends to maintain mean sea level pressure of 1003mb through 72 to 96 hours. On the other hand, the heat low over eastern Arabian Peninsula is expected to show little or no change according the ECMWF model, while its mean sea level pressure tends to increase from 994 to 996mb according to the GFS model and from 992 to 994mb according to the UKMET model through to 24 to 72 hours. The East African ridge across southeast and East Africa is expected to remain weak during the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to weaken, with its central pressure value decreasing from 1024 hours to 1022mb through 24 to 48 hours, while moving across the southern tip of South Africa. A new high pressure system is expected to build up in southeast Atlantic Ocean with central pressure value of 1024mb in 72hours and it tends to intensify to pressure value of 1032mb by 96hours. The Mascarene high pressure system over southwest Indian Ocean is also expected to maintain central pressure value of 1024mb through 24 to 72 hours, while shifting southeastwards.

At the 850hpa level, a cyclonic circulation over coastal Senegal and Guinea is expected to move westwards and leave the coast of West Africa by 48hours. Another cyclonic circulation is expected to dominate the flow over Mali, Mauritania and Cote d'Ivoire through 48 to 72 hours and it tends to weaken by 96 hours. A lower tropospheric convergence near the border between eastern Chad and western Sudan is expected to strengthen gradually, while extending towards Nigeria during the forecast period. Another convergence that extends between Burkina Faso and Niger is expected to

dominate the flow in the region during 72 to 96 hours. The seasonal meridional convergence in the Congo Air Boundary (CAB) region is expected to become gradually active towards end of the forecast period. The monsoon flow from the Atlantic Ocean and the moist equatorial flow from the Indian Ocean are expected to continue providing abundant moisture to the lower tropospheric convergences in western and central African region and the northern parts of the GHA region.

At 700mb level, a cyclonic circulation is expected to propagate between Nigeria and the southwest coast of West Africa through 24 to 96 hours, while a convergence with cyclonic turning is expected to prevail in the region extending between eastern Chad and western Ethiopia across CAR, Sudan, South Sudan and northern DRC.

At 500hpa, easterly winds with moderate intensity (10 to 25knots) are expected to dominate the flow over the Gulf of Guinea, southern Sahel region and Sudan. A Zone of strong easterlies associated with the African Easterly Jet (AEJ) is expected to prevail near Senegal, Burkina Faso and Nigeria during the forecast period.

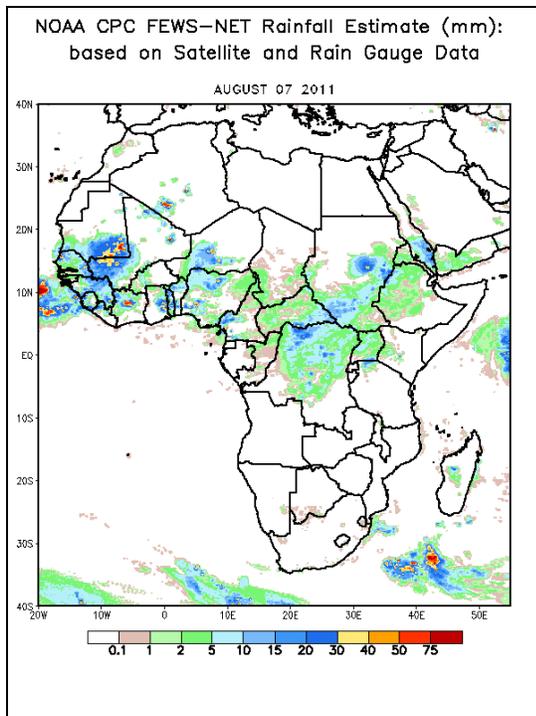
At 150mb, a zone of easterly flow that exceeds 70kts, associated with Tropical Easterly Jet (TEJ) is expected to dominate the flow over northern Somalia, Ethiopia and Sudan through 24 to 48 hours and it tends to weaken through 72 to 96 hours.

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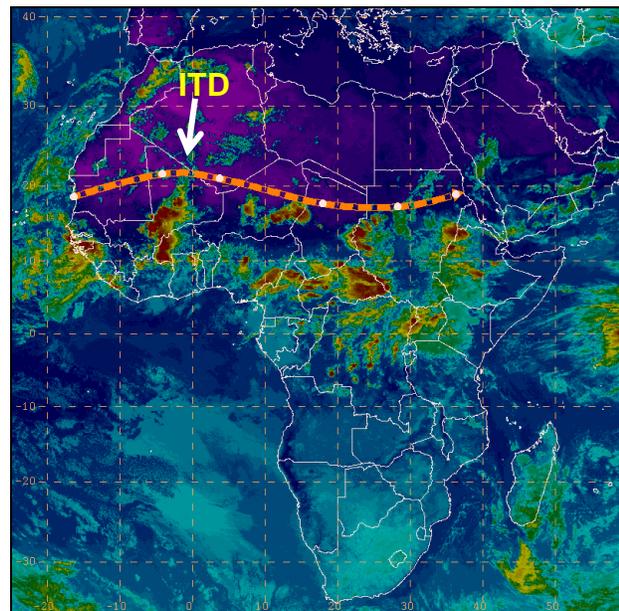
## 2.0. Previous and Current Day Weather Discussion over Africa (07 – 08 August 2011)

**2.1. Weather assessment for the previous day (07 August 2011):** During the previous day, moderate to heavy rainfall was observed over southern Mauritania, western Mali and local areas of Cote d'Ivoire, Niger, Sudan and northern DRC.

**2.2. Weather assessment for the current day (08 August 2011):** Intense clouds are observed over Guinea, Mali, Burkina Faso, Niger, Nigeria, Chad, Sudan, CAR, western Ethiopia and northern DRC.



IR Satellite Image (valid 1800Z) and position of ITD,  
based on 1200Z Surface Analysis; 08 August 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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