

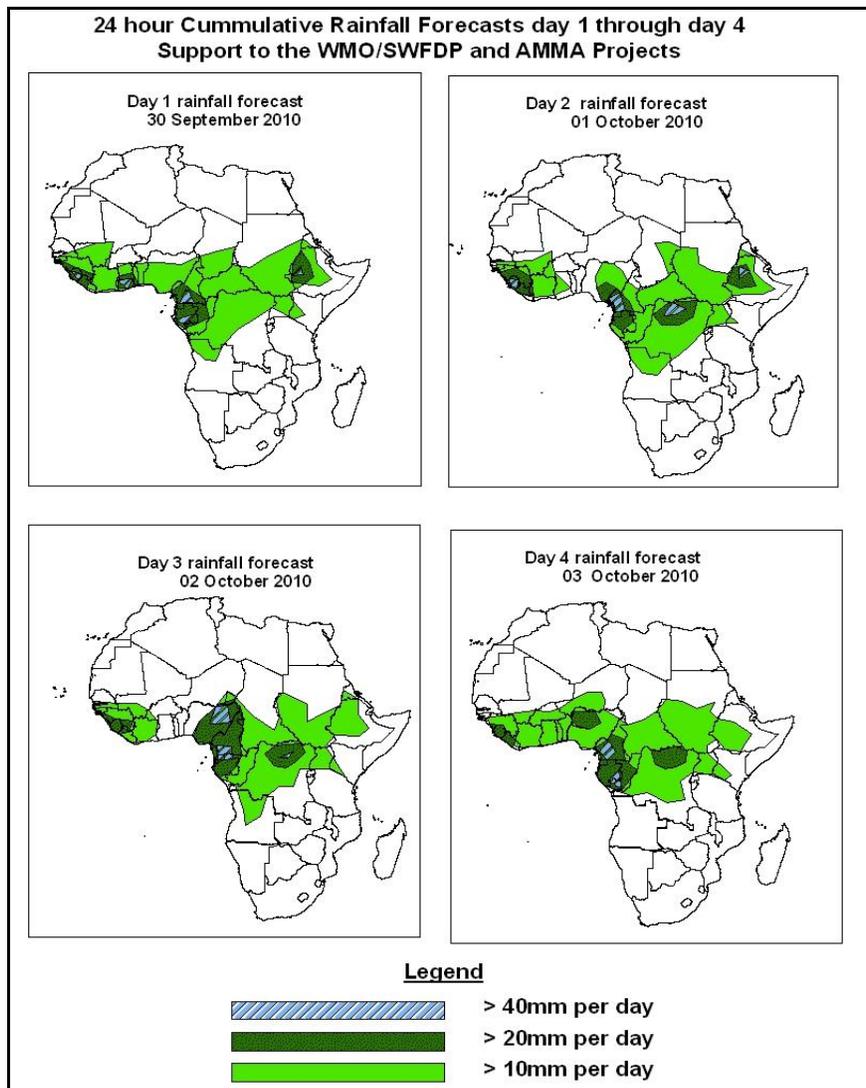


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 30 SEPTEMBER – 06Z of 03 OCTOBER 2010, (Issued at 14:00Z of 29 SEPTEMBER 2010)

### 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 coming four days, the convergence in the vicinity of CAB area is expected to regain its strength and result in increased rainfall in the region. On the other hand, the localized cyclonic circulations and the westward propagating troughs in the easterly flow are expected to maintain the moderate to heavy rainfall in portions of the Gulf of Guinea countries. Hence, there is an increased chance for rainfall to exceed 20mm per day over Guinea, Sera Leone, Liberia, Cote-d'Ivoire, Nigeria and Cameroon, Gabon, CAR, Congo, northern DRC and southwest Ethiopia.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 29 September 2010**

A low pressure system situated over western Niger is expected to shift towards eastern Mali while deepening. Its central pressure value is expected to change from 1007 to 1004hPa through 24 to 72hours according to the GFS model and maintain its pressure value of 1005hPa trough 48 to 72hours on the UKMET model. Another low pressure system situated over central Chad is expected to move slightly to the west while deepening. Its central pressure value is expected to change from 1004 to 1003hPa on the GFS model, 1006 to 1005hPa on the ECMWF model through 24 to 72hours. The system tends to fill up from mean sea level pressure of 1004 to 1005hPa on the UKMET model. Another low pressure system located over central Sudan is expected to move towards central Chad while filling up. Its central pressure is expected to change from 1005 to 1006hPa through 24 to 96hours according to the GFS model, 1003 to 1004hPa on the UKMET model, while the GFS model tends to deepen it slightly from central pressure value of 1005 to 1004hPa trough 48 to 96hours. Another low pressure system located over southern Sudan is expected to maintain its position, while deepening. Its central pressure value is expected to change from 1008 to 1007hPa through 48 to 96hours on the GFS model. The seasonal low pressure system located over southern DRC is expected to change its central pressure value from 1008 to 1007hPa through 24 to 96 hours according to the GFS model, 1009 to 1008hPa according to the ECMWF model and 1007 to 1006hPa through 24 to 96hours according to the UKMET model. The two localized high pressure systems are expected to maintain their positions and central pressure values in the vicinity of Cote-d'Ivoire (1013hPa) and Central African Republic (1012hPa) trough 24 to 48hours according to the ECMWF model. In general, the Inter-Tropical Front (ITF) is expected to remain between 16°N to 19°N latitudes across West African countries (west of the Prime Meridian) through 24 to 48hours, while it is expected to stay between 14°N and 17°N latitudes east of the Prime Meridian.

The Azores high-pressure system situated over northern Atlantic Ocean is expected to maintain its pressure value of 1029hPa trough 24 to 48hours while extending its ridge across northern African countries and to relax to pressure value of 1025hPa trough 72 to 96hours. The St. Helena high, situated over southern Atlantic Ocean is expected to relax from central pressure values of 1031 to 1027hPa through 24 to 72 hours and regain its intensity 24 hours later. On the other hand, the Mascarene high pressure system is expected to relax from central pressure values of 1036 to 1032hPa through 24 to 48 hours.

At 850hpa, the cyclonic circulation in the vicinity of Niger is expected to shift slightly to the west through 48 to 96hours. Another cyclonic circulation located over central Chad is expected to move toward eastern Niger through 24 to 96hours. A cyclonic circulation situated over central Sudan is expected to move towards western Sudan through 48 to 96hours. A cyclonic circulation located over central Cameroon is expected to move towards central Cote-d'Ivoire through 24 to 96 hours. The convergence associated with the CAB is expected to re-strengthen slightly across the CAB region.

At 700Hpa, the African Easterly wave is expected to remain weak across the West African countries. However, weak trough in the easterlies is expected to dominate the flow across the coastal areas of the Gulf of Guinea countries.

At 500hpa, the African Easterly Jet is expected to remain weak with its associated wind speeds remaining below 30Kts in many areas of western and central African regions.

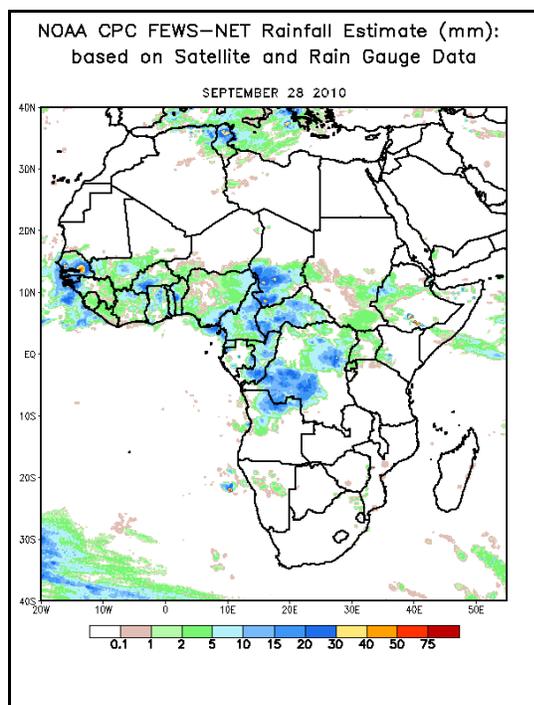
At 200hPa, zone of strong wind (>50Kts) is expected to dominate the flow in the vicinity of northern Algeria, Tunisia and eastern Mediterranean Sea. Meanwhile, high wind speed values, associated with the TEJ, are expected to dominate the flow in the vicinity of eastern Ethiopia and the neighboring areas of Somalia.

In the coming four days, the convergence in the vicinity of CAB area is expected to regain its strength and result in increased rainfall in the region. On the other hand, the localized cyclonic circulations and the westward propagating troughs in the easterly flow are expected to maintain the moderate to heavy rainfall in portions of the Gulf of Guinea countries. Hence, there is an increased chance for rainfall to exceed 20mm per day over Guinea, Sierra Leone, Liberia, Cote-d'Ivoire, Nigeria and Cameroon, Gabon, CAR, Congo, northern DRC and southwest Ethiopia.

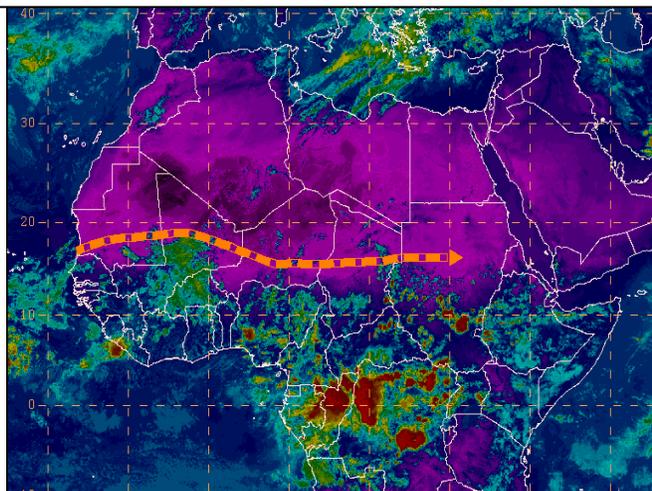
## 2.0. Previous and Current Day Weather Discussion over Africa (28 - 29 September 2010)

**2.1. Weather assessment for the previous day (28 September 2010):** During the previous day, moderate to heavy rainfall was observed over parts of Senegal, Burkina Faso, southern Chad, CAR, southern Congo and DRC.

**2.2. Weather assessment for the current day (29 September 2010):** Moderate to Intense clouds are observed over much of the Gulf of Guinea countries, parts of Nigeria, Cameroun, CAR and parts of Gabon, Congo, DRC, Uganda southern Sudan and Ethiopia.



IR Satellite Image, Valid 1352Z, September 29, 2010  
and position of ITD (based on 1200Z observation)



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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