



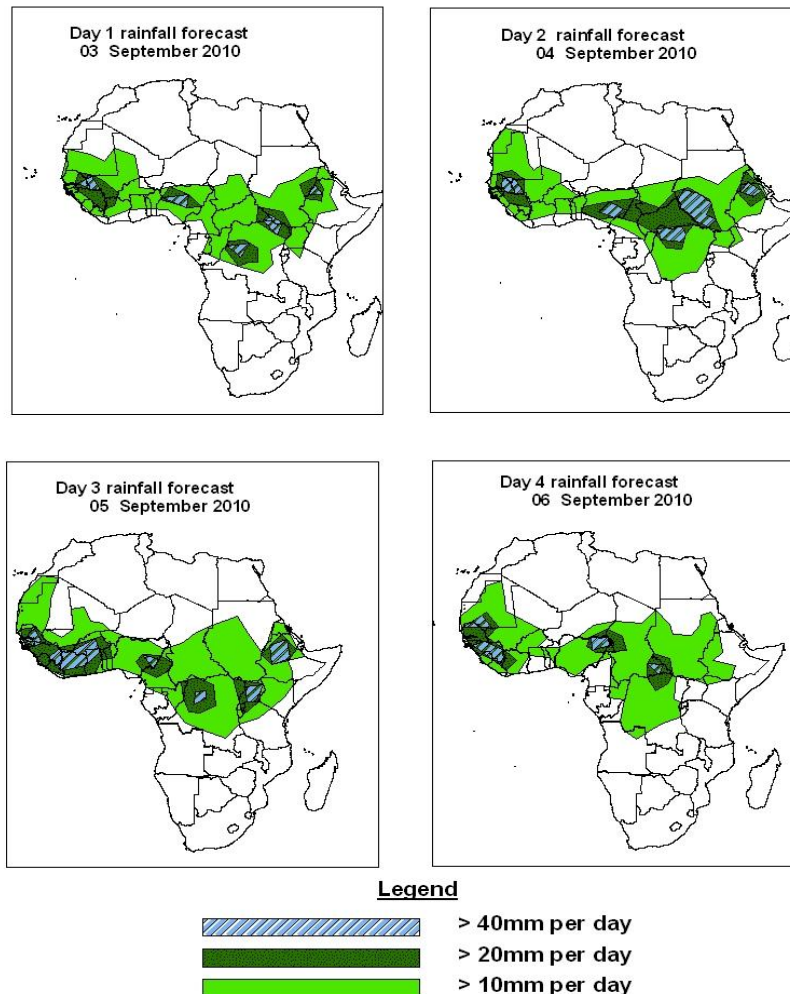
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 03 SEPTEMBER – 06Z of 06 SEPTEMBER 2010, (Issued at 14:00EST of 02 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.

24 hour Cummulative Rainfall Forecasts day 1 through day 4  
Support to the WMO/SWFDP and AMMA Projects



### Summary

In the coming four days, the abundant moisture from the West African Monsoon flow, the westward propagating meso-scale convection systems and the active ITCZ across the Sahel countries are expected to maintain the moderate to heavy rainfall in many places of western and central Africa. Parts of the Horn of African countries are also expected to continue receiving moderate to heavy rainfall due to the active seasonal convergence in the vicinity of the CAB region and the abundant moisture available from the southern portions of the Indian and Atlantic Oceans. Thus, there is an increased chance for rainfall to exceed 20mm per day in Guinea Conakry, Mali, Cote-d'Ivoire, Burkina Faso, Ghana, Togo, Benin, Niger, Nigeria, and parts of Cameroon, Central African Republic, DRC, southern Sudan and Ethiopia.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 02 September 2010**

A low pressure system situated over western Niger is expected to move westward while deepening according to the GFS and UKMET models. Its central pressure value is expected to change from 1010 to 1005hPa according to the GFS model, 1008 to 1009hPa according to the ECMWF model and 1006 to 1005hPa according to the UKMET model through to 48 to 72hours. A second low pressure system located over eastern Niger is expected to weaken slightly, with its central pressure value changing between 1008 to 1009hPa through 48 to 72hours according to the UKMET model. Another low pressure system located over central Chad is expected to move towards western Niger while deepening. Its central pressure value is expected to change from 1007 to 1006hPa according to the GFS model, 1006 to 1005hPa according to the UKMET model. A low pressure system situated over northern Sudan is expected to move westward while filling up. Its central pressure value is expected to change from 1006 to 1007hPa through 48 to 96hours according to the GFS model. The seasonal low pressure system located over southern DRC is expected to change from central pressure value of 1010 to 1008hPa according to the GFS model, 1010 to 1011hPa according to the ECMWF model and 1009 to 1007hPa according to the UKMET models. All the three models indicate a stretch of east-west oriented trough between Low pressure systems located over northeastern Atlantic Ocean and Mali through 24 to 48hours. A low pressure system situated over southern Algeria is expected to move toward western Libya while slightly deepening. Its central pressure value is expected to change between 1009 to 1008hPa through 48 to 72hours on the GFS model. A high pressure and its associated ridge are expected to dominate the flow over parts of the Gulf of Guinea countries through 24 to 72 hours. In general the Inter-Tropical Front (ITF) is expected to remain between 18oN and 22oN latitudes across West African countries west of the Prime Meridian while it is expected to stay between 17oN and 20oN latitudes east of the Prime Meridian.

The Azores high-pressure system is expected to weaken slightly from central pressure value of 1020hPa in 24 hours to a value of 1019hPa in 48hours, while its ridge is expected to remain across the northern African countries. The St. Helena high, situated over southern Atlantic Ocean is expected to intensify from central pressure values of 1025 to 1029hPa through 24 to 48hours. The Mascarene high pressure system is also expected to intensify through 24 to 48hours. Its central pressure value is expected to change from 1028 to 1031hPa through 24 to 48 hours.

At 850hpa, a cyclonic circulation situated over southern Sudan is expected to move towards western Nigeria through 24 to 48hours. Another cyclonic circulation over central Niger is expected to move towards northern Burkina Faso through 24 to 72hours. The lower level convergence associated with the Congo Air Boundary (CAB) is expected to remain active across southern DRC, Uganda, southern Sudan and southwest Ethiopia through 24 to 72 hours. Localized zones of lower level wind convergence are expected over Namibia, Angola, Congo and Rwanda through 24 to 96 hours.

At 700Hpa, a trough associated with the easterly wave is expected to propagate westwards across longitudinal positions of Senegal/eastern Mauritania and CAR/southern Sudan through 24 to 72hours, Cameroun/CAR/Sudan through 48 to 72hours and parts of Ghana/Nigeria/Chad through 72 to 96hours.

At 500hpa, winds associated with the African Easterly Jet are expected to exceed 30Kts in the vicinity of southern Chad/ Nigeria.

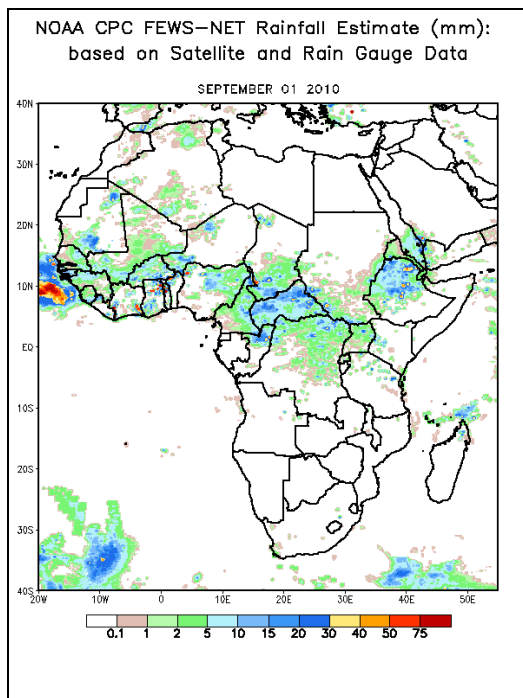
At 200hPa, zone of strong wind (>50Kts) is expected to dominate the flow in the vicinity of Algeria, northern Libya and the adjoining areas of Mediterranean region. While strong upper tropical easterly Jet (wind >35Kts) is expected to dominate the flow across Ethiopia/Sudan through 24 to 48hours and Nigeria/Ghana trough 72 to 96hours.

In the coming four days, the abundant moisture from the West African Monsoon flow, the westward propagating meso-scale convection systems and the active ITCZ across the Sahel countries are expected to maintain the moderate to heavy rainfall in many places of western and central Africa. Parts of the Horn of African countries are also expected to continue receiving moderate to heavy rainfall due to the active seasonal convergence in the vicinity of the CAB region and the abundant moisture available from the southern portions of the Indian and Atlantic Oceans. Thus, there is an increased chance for rainfall to exceed 20mm per day in Guinea Conakry, Mali, Cote-d'Ivoire, Burkina Faso, Ghana, Togo, Benin, Niger, Nigeria, and parts of Cameroon, Central African Republic, DRC, southern Sudan and Ethiopia.

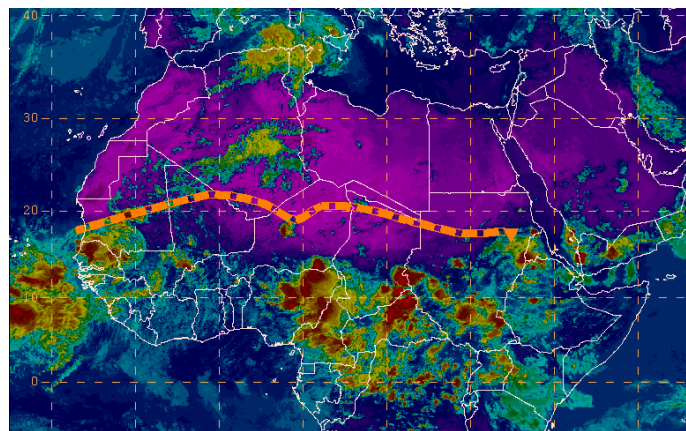
## **2.0. Previous and Current Day Weather Discussion over Africa (31 August 2010 – 01 September 2010)**

**2.1. Weather assessment for the previous day (01 September 2010):** During the previous day, moderate to heavy rainfall was observed over parts of Mauritania, Mali, Burkina Faso, Ghana, western Niger, Central African Republic, Ethiopia and northern DRC.

**2.2. Weather assessment for the current day (02 September 2010):** Convective clouds are observed over much of western Africa, central Africa and the Horn of Africa countries, with the intense clouds observed over Mauritania, Mali, Niger, Nigeria, Chad, DRC, Central Africa Republic, Cameroon, Sudan and Ethiopia.



IR Satellite Image, Valid 1500Z, September 2, 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*

**Author(s):** Diakaria Drame (Centre Meteorologique Principal de Bamako-Mali) / CPC-African Desk

-----  
**Disclaimer:** *This bulletin is for training purposes only and should be used as guidance. NOAA does not make forecasts for areas outside of the United States.*