

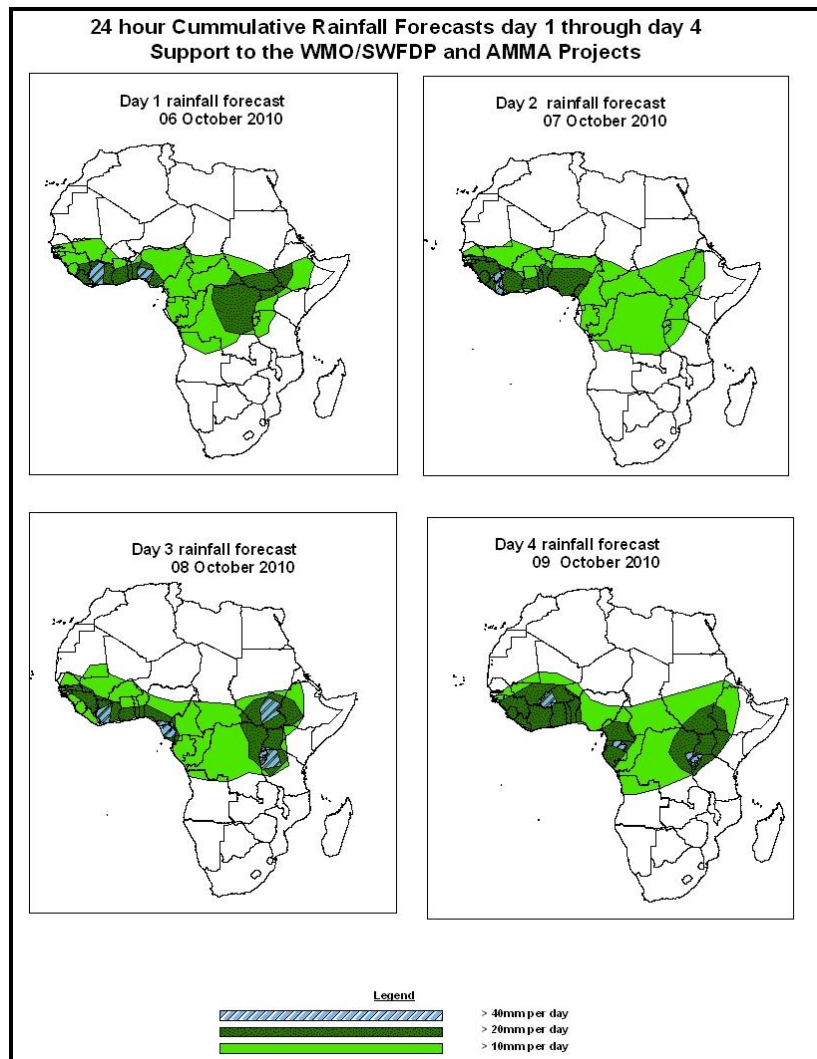


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 06OCTOBER – 06Z of 09 OCTOBER 2010, (Issued at 14:00Z of 05 OCTOBER 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, there is an increased chance for rainfall to exceed 20mm per day over parts Gulf of Guinea with chances of locally heavy rainfall over southeast coast of Nigeria, Liberia, and part of Cote D'Ivoire due to localized convergences and westward propagating meso-scale convection systems associated with moisture from the Atlantic Ocean. Also rainfall is expected to exceed 20mm per day over the northern and eastern parts of the CAB region. Moderate to heavy rainfall is also expected over the Lake Victoria part of the CAB region and parts of southern Sudan.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 05 OCTOBER 2010**

A trough situated in the border between south Mauritania and west Niger is expected to weaken as it moves over central Mauritania in the next 48hour, thereafter becoming a cut off low with central pressure of 1011hPa from 72 to 96hours. Another low pressure system over central Chad is expected to be extended over eastern Mali and western part of Niger. Its central pressure value is expected to change from 1006 to 1007hPa according to the GFS model while progressively filling up according to ECMWF model while UKMET shows generally a persistent central pressure of 1006hPa through the entire forecast period. A low pressure system situated over central Sudan is expected to remain quasi stationary while filling up towards the end of the forecast period. Its central pressure value is expected to change from 1005 to 1007hPa through 24 to 96hours on the GFS model, 1006 to 1008hPa according to ECMWF while UKMET model keep the central pressure at 1006hPa. The seasonal low pressure system (Meridional component of the ITCZ) located over DRC is expected to extend a trough over western part of Tanzania, Rwanda and Burundi areas including a greater part of the Lake Victoria Region. This scenario is according to GFS model and is supported by ECMWF and UKMET models. Also according to GFS and UKMET this system is likely to retreat northwards between 48 and 72 hours.

A deep cyclonic flow over the Southeast Atlantic Ocean associated with a frontal system is quickly moved eastwards ahead of the intensifying St, Helena High pressure system from 24 to 72hours. The St Helena High pressure system is expected to intensify from central pressure value of 1022 to 1024hPa during that period. On the other hand, all the three models are projecting for a stronger East African Ridge emanating from the intense Mascarene high pressure system with central pressure of about 1032hPa through 24 to 72hours, maintaining the Ridge up to northern parts of Ethiopia.

At 850hpa, a strong convergence over southwest coast of West Africa is expected to be active in the next 24 hours before it starts to weaken gradually and move over the Atlantic Ocean. A well-defined convergence line over Cameroon is expected to move over Nigeria and Togo in the next 48hrs. Another convergence line oriented northeast over northeast DRC to northern Namibia is expected to be inclined towards the Lake Victoria region through Rwanda and Burundi and become more organized over eastern DRC and western Tanzania from 48 to 96hours. A cyclonic circulation over central Sudan is expected to shift to Chad through 72 to 96hours.

At 700hPa, a cyclonic circulation over Nigeria is expected to move to Benin and Togo slightly weakening before it moves fast to Sierra Leone through Ghana. The Near equatorial trough (NET) over the East African coast is expected to remain weak over the northeast Tanzania and Southern coast of Kenya, though it should occasionally move westwards over the region creating weak localized wind convergence.

At 500hPa, the African Easterly Jet is expected to remain weak with its associated wind speeds remaining below 25Kts in many areas of western and central African regions.

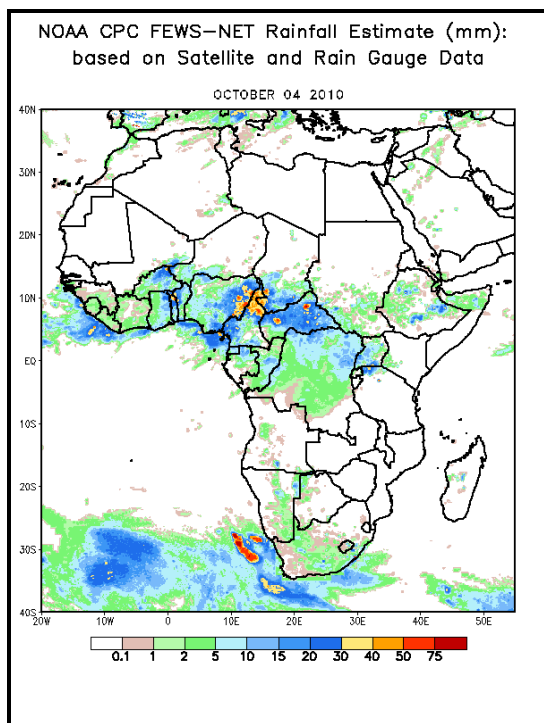
At 200hPa, zone of strong wind (>50Kts) is expected over Southern Algeria extending from Mauritania to Egypt. The strength of the Sub Tropical Jet is expected to be 70Kts from 24 to 48hours and attaining a wave like pattern through 72 to 96 hours at strength of 70 to 90Kts. Meanwhile, the TEJ related strong winds are expected to remain weak (30Kts) across much of the tropical African region during the forecast period.

In the coming four days, there is an increased chance for rainfall to exceed 20mm per day over parts Gulf of Guinea with chances of locally heavy rainfall over southeast coast of Nigeria, Liberia, and part of Cote D'Ivoire due to localized convergences and westward propagating meso-scale convection systems associated with moisture from the Atlantic Ocean. Also rainfall is expected to exceed 20mm per day over the northern and eastern parts of the CAB region. Moderate to heavy rainfall is also expected over the Lake Victoria part of the CAB region and parts of southern Sudan.

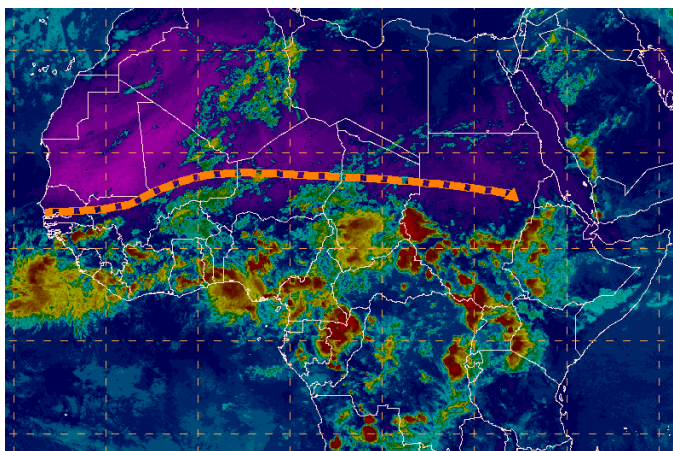
## 2.0. Previous and Current Day Weather Discussion over Africa (04 October – 05 October 2010)

**2.1. Weather assessment for the previous day (04 October 2010):** During the previous day, moderate to heavy rainfall was observed over parts Burkina Faso, Togo, Benin, eastern Nigeria, and CAR, parts of northern DRC, Uganda and southern Ethiopia.

**2.2. Weather assessment for the current day (05 October 2010):** Intense clouds are observed over much of the Gulf of Guinea countries, parts of central African region and DRC.



IR Satellite Image, Valid 1630Z, October 05, 2010 and position of ITD (based on 1200Z Surface Analysis)



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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