

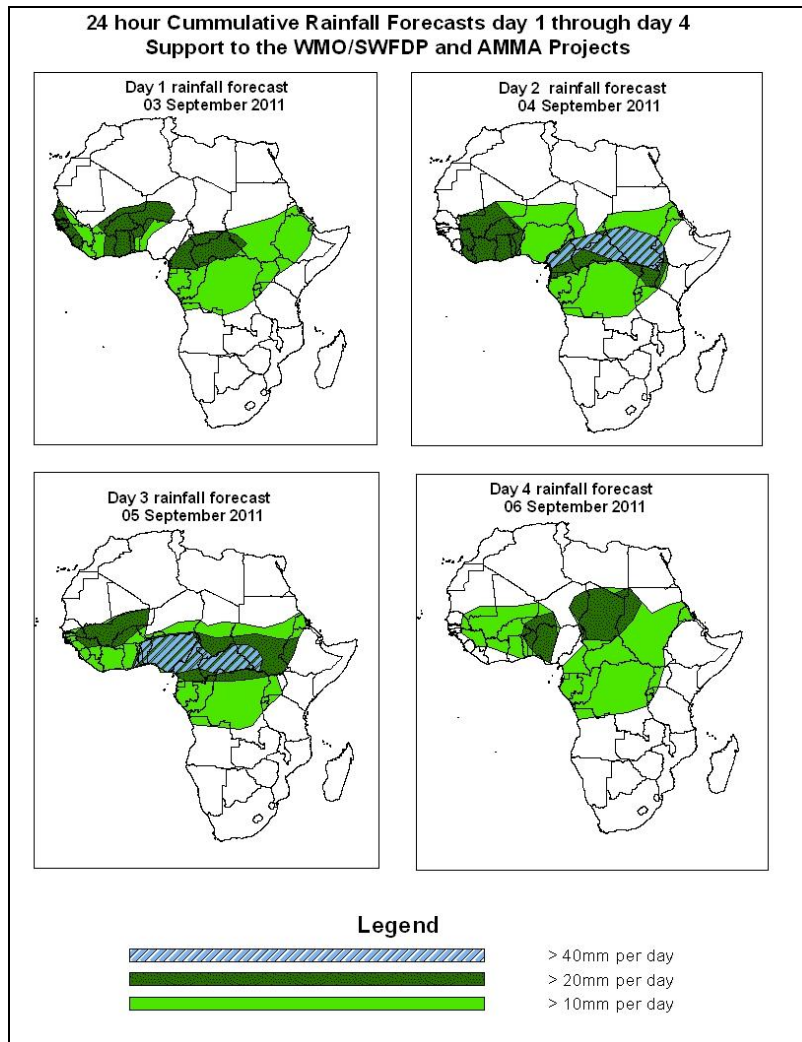


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 03 September – 06Z of 06 September 2011, (Issued at 10:15Z of 02 September 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, localized wind convergences and cyclonic circulations are expected to enhance rainfall in portions of western central African countries. Moderate to heavy rainfall is also expected near Lake Victoria region due to active Congo Air Boundary (CAB). In general, there is an increased chance for rainfall to exceed to 20 mm per day over part of Nigeria, Cameroon, southern Sudan Republic and CAR.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 02 September 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. A heat low located over the border between Niger and Chad is expected to deepen through 24 hours to 48 with its central pressure value decreasing from 1007mb to 1006mb, while shifting northwestward to northern Mali and then it tends to fill up through 72 hours to 96 hours with its central pressure value increasing from 1006mb to 1008mb according to the ECMWF model. Another low is expected to form over the border between Chad and Niger, and tends to fill up through 72 hours to 96 hours with its central pressure value increasing from 1008mb to 1009mb according to the ECMWF model. The GFS model localizes the heat low over northeastern Mali, Niger and western Chad, while shifting westward to the border between Mali and Niger. It then tends to deepen with its central pressure value decreasing from 1006mb to 1005mb through 24 hours to 48 hours. Through 48 hours to 96 hours, this low tends to fill up with its central pressure value increasing from 1005mb to 1008mb according to the GFS model. Through 48 hours to 96 hours, the low over border between Niger and Chad tends to fill up with its central pressure value increasing from 1007m to 1009mb according to the GFS model. According to the UKMET model the low expected over Algeria, eastern Mali, Niger and Chad tends to deepen through 24 hours to 72 hours with its central pressure value decreasing from 1006mb to 1005mb and then to fill up through 72 hours to 96 hours with its central pressure value increasing from 1005mb to 1007mb, while shifting westward to northern Mali. Through 24 hours to 72 hours, a low pressure located over Arabian Peninsula is expected to fill up with central pressure value increasing from 998mb to 999mb according to the ECMWF model, from 1000mb to 1001mb according to the GFS model and then tends to deepen with its central pressure value decreasing from 999mb to 998mb according to the ECMWF model, from 1001mb to 1000mb through 72 hours to 96 hours according to the GFS model through 72 hours to 96 hours. During the forecast period according to the UKMET model, this low is expected to fill up with its central pressure value increasing from 997mb to 999mb.

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 1029mb to 1016mb according to the ECMWF and GFS models. This same High pressure system over southeast Atlantic Ocean tends to intensify with its central pressure value increasing from 1016mb to 1023mb according to the UKMET model. During the forecast period the Mascarene high pressure system over southwest Indian Ocean is expected to intensify with its central pressure value increasing from 1020mb to 1021mb according to the ECMWF, from 1023mb to 1026mb according to the GFS model and from 1016mb to 1023mb according to the UKMET model. The East African ridge is expected to strengthen along with the intensifying of the Mascarene high pressure system.

At the 850hpa level, a deep cyclonic circulation located over northern Mali, Burkina Faso, Niger and northwestern Nigeria is expected to shift westward to the border between Mali and southwestern Mauritania through 24 hours to 72 hours. Through 72 hours to 96 hours a deep cyclonic circulation is expected over Mali, Burkina Faso, Niger, Nigeria and Benin. By the 72 hours, a deep cyclonic circulation is expected across the borders of Chad, CAR and Sudan. Through 24 hours to 72 hours, wind convergences are expected to form across Sudan and Eritrea. A seasonal wind convergence is expected to prevail in the vicinity of Lake Victoria during the forecast period.

At 700mb level, an easterly wave is expected to propagate across Cameroon, southern Chad and western CAR, Nigeria/Cameroon border through 24 hours to 48 hours. A cyclonic circulation is expected to form across eastern CAR, southern Sudan and western Ethiopia, while shifting southwestward to the region bordering Nigeria, Benin and Togo through 48 hours to 96 hours. East-west oriented convergences are expected between eastern CAR and Ethiopia by 24 hours. Another convergence is expected across Cameroon, CAR and Sudan by the end of forecast period. A north-south oriented convergence is expected across western Kenya by the end of the forecast period.

At 500hpa, easterly winds with moderate intensity (10 to 25knots) are expected to dominate the flow over Mali and eastern Senegal during the forecast period. These

zone of Strong easterly winds are expected to weaken gradually during the forecast period.

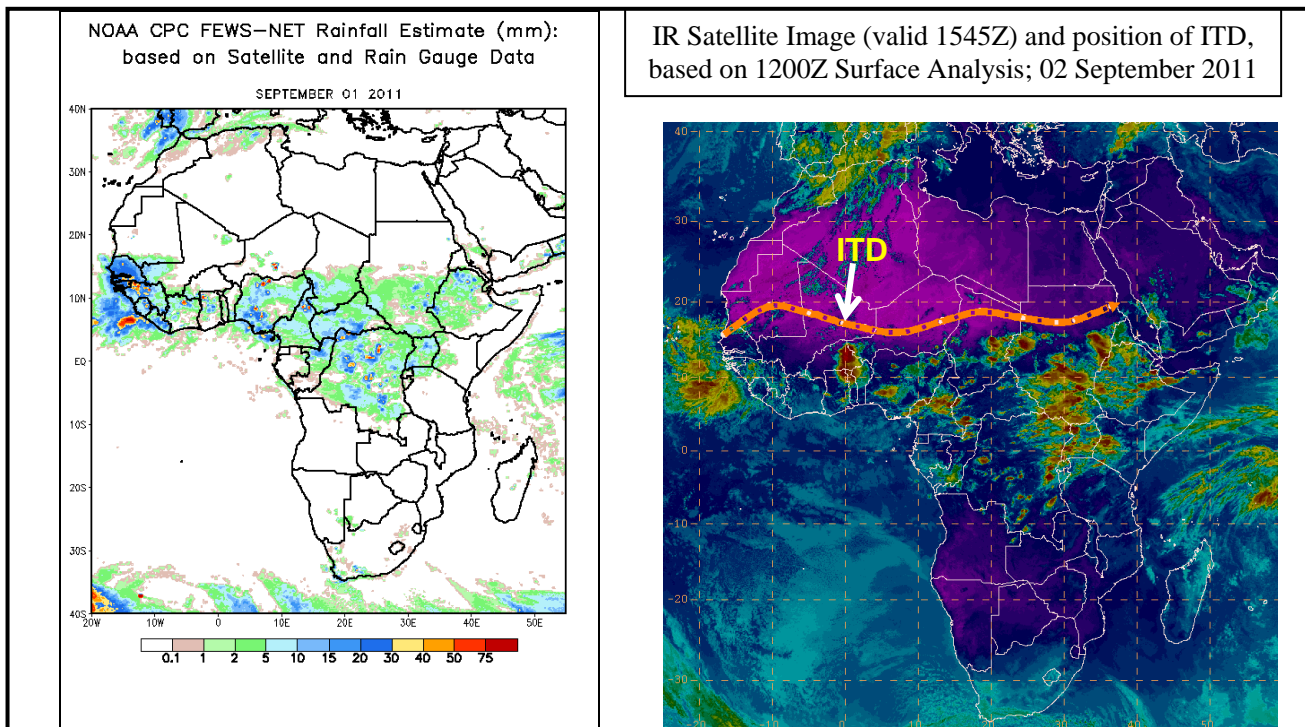
At 150hpa Strong winds, the TEJ is expected to remain weak during the forecast period.

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## 2.0. Previous and Current Day Weather Discussion over Africa (01 – 02 September 2011)

**2.1. Weather assessment for the previous day (01 September 2011):** During the previous day, moderate to heavy rainfall was observed over Senegal, Gambia, Guinea Bissau, parts of Liberia, northern Cote D'Ivoire and northern Ghana, part of Nigeria, northern Cameroon, CAR, Congo, DRC and northern Ethiopia.

**2.2. Weather assessment for the current day (02 September 2011):** Intense clouds are observed over eastern Burkina Faso, Burkina Faso, Ghana and Togo, part of southern Nigeria, central Cameroon, southwestern CAR, eastern DRC, eastern Chad, southern Sudan Republic and parts of Ethiopia, Uganda and Kenya.



*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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