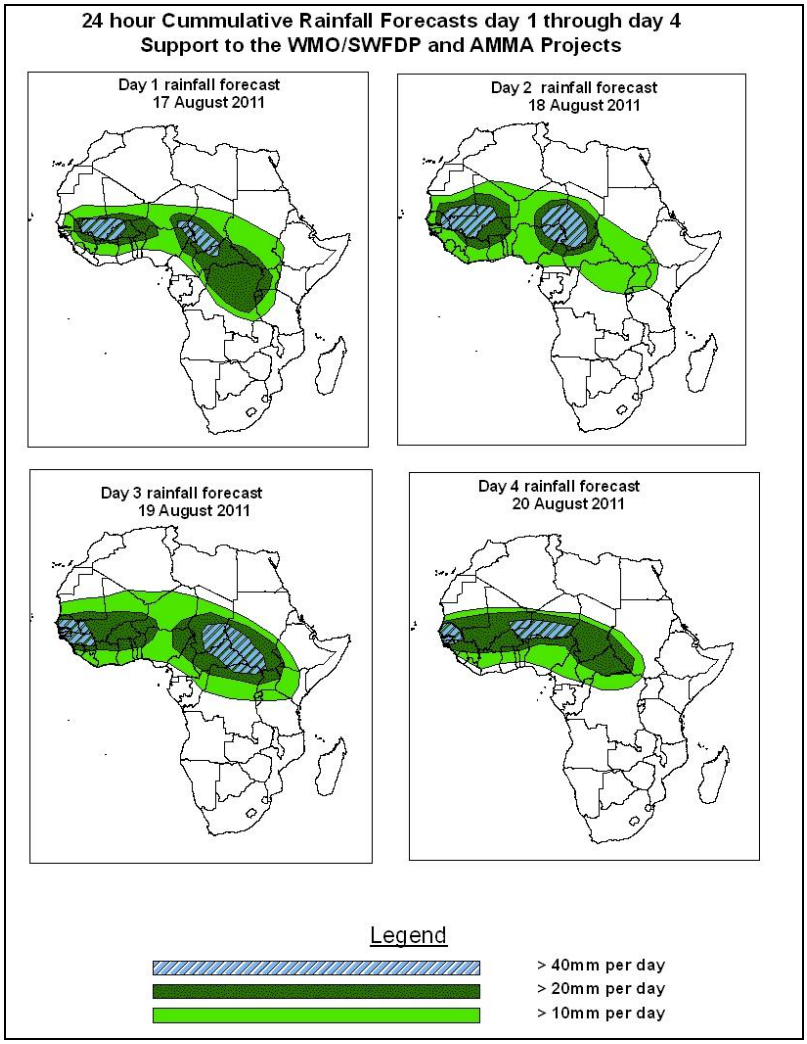
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 17 August – 06Z of 20 August 2011, (Issued at 10:15Z of 16 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, low tropospheric convergences and cyclonic circulation across the Sahel and the neighboring areas of central African regions are expected to increase rainfall in these regions. In general, there is an increased chance for moderate and heavy rainfall over Senegal, Guinea, Mali, Burkina Faso, Niger, Chad and southern Mauritania, parts of Cote d'Ivoire, Sudan, CAR and DRC.

1.2. Models Comparison and Discussion-Valid from 00Z of 16 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 North Mali) tends to deepen, with its central pressure value decreasing from 1006mb to 1004mb according to the ECMWF model and from 1005mb to 1002mb according to the UKMET model through 24 to 72 hours. It tends to fill up to pressure value of 1006mb and 1003mb according to ECMWF and UKMET models, respectively by 96 hours. The mean sea level pressure value of this heat is expected to decrease from 1005mb to 1003mb according to the GFS model during the forecast period. The heat low over central Africa region tends to fill up, with its mean sea level pressure value exceeding 1008mb through 48 to 96 hours. According to GFS model, this same heat low tends to fill up from 1005mb to 1008mb through 24 to 72 hours and it tends to deepen to central value pressure of 1007mb by 96 hours. On the other hand, the heat low over eastern Arabian Peninsula is expected to fill up from 996mb to 997mb, according to the ECMWF model and from 995mb to 996mb, according to the GFS model during the forecast period. This low tends to deepen from 995mb to 994mb according to GFS model through 24 to 72 hours and it is expected to fill up, with its central pressure value increasing to 996mb by 96 hours. The East African ridge across southeast and East Africa is expected to strengthen during the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to intensify from 1024mb to 1027mb during the forecast period. It tends to weaken from 1027mb to 1026mb trough 48 to 72 hours. This same High pressure system is expected to intensify by 96 hours. The Mascarene high pressure system over southwest Indian Ocean is expected to weaken from MSLP value of 1036mb to 1020mb during the forecast period.

At the 850hpa level, a cyclonic circulation near the border between northern Mali and Mauritania is expected to shift towards the West Africa coast during the forecast period. Another cyclonic circulation is expected to dominate the flow across southern Mali, Guinea and Cote d'Ivoire, while a third cyclonic circulation is expected to prevail across Niger, Chad and northern Cameroon by extending over Sudan towards end of the forecast period. Localized wind convergences are expected to dominate the flow across Angola and CAR through 48 to 72 hours, while shifting eastwards to Kenya and Uganda

border by 96 hours. 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, east-west oriented convergence is expected to prevail across Niger and southern Mali through 24 to 48 hours. This convergence is expected to become across Mali, Burkina Faso, Senegal and Guinea, while shifting westwards during the rest of the forecast period. Another cyclonic circulation is expected to dominate the flow over Chad, western Sudan and CAR, while extending across Cameroon, Niger and Nigeria through 24 to 48 hours. Another cyclonic circulation is expected to prevail across Nigeria and Niger through 72 to 96 hours. A new wind convergence is expected to develop across southern Sudan and CAR border towards 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. Strong localized easterly winds, associated with the African Easterly Jet (AEJ) are expected to prevail over northern Chad, while shifting westwards across Niger and Mali borders during the forecast period.

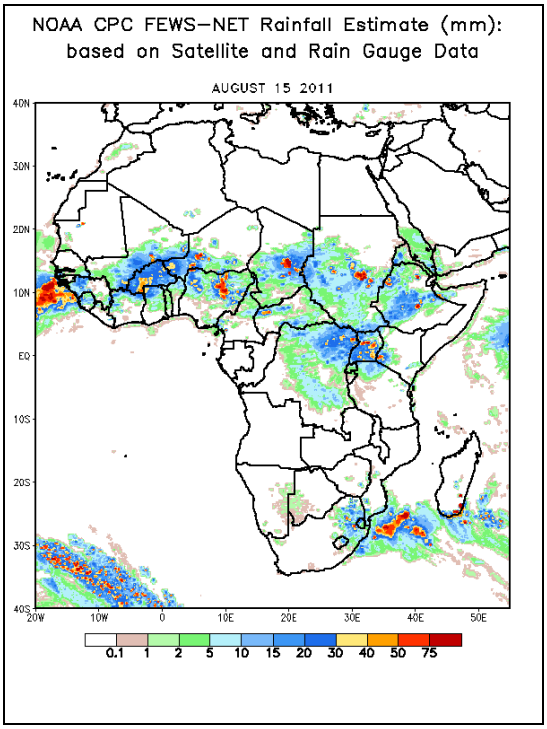
At 150mb, strong winds associated with Tropical Easterly Jet (TEJ) are expected to remain weak during the forecast period.

In the next four days, low tropospheric convergences and cyclonic circulation across the Sahel and the neighboring areas of central African regions are expected to increase rainfall in these regions. In general, there is an increased chance for moderate and heavy rainfall over Senegal, Guinea, Mali, Burkina Faso, Niger, Chad and southern Mauritania, parts of Cote d’Ivoire, Sudan, CAR and DRC.

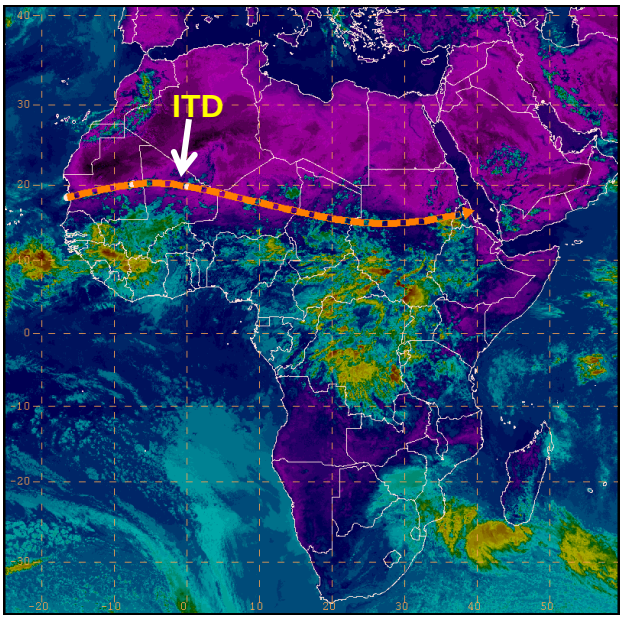
2.0. Previous and Current Day Weather Discussion over Africa (15 – 16 August 2011)

2.1. Weather assessment for the previous day (15 August 2011): During the previous day, moderate to heavy rainfall was observed over Guinea, Mali, southern Niger, Burkina Faso, northern Nigeria, southern Chad, southern Sudan Ethiopia, parts of CAR, Eritrea, northeastern DRC and Uganda.

2.2. Weather assessment for the current day (16 August 2011): Intense clouds are observed over Senegal and Mali border, Guinea, DRC, Nigeria, southern Sudan.



IR Satellite Image (valid 100Z) and position of ITD, based on 1200Z Surface Analysis; 16 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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