

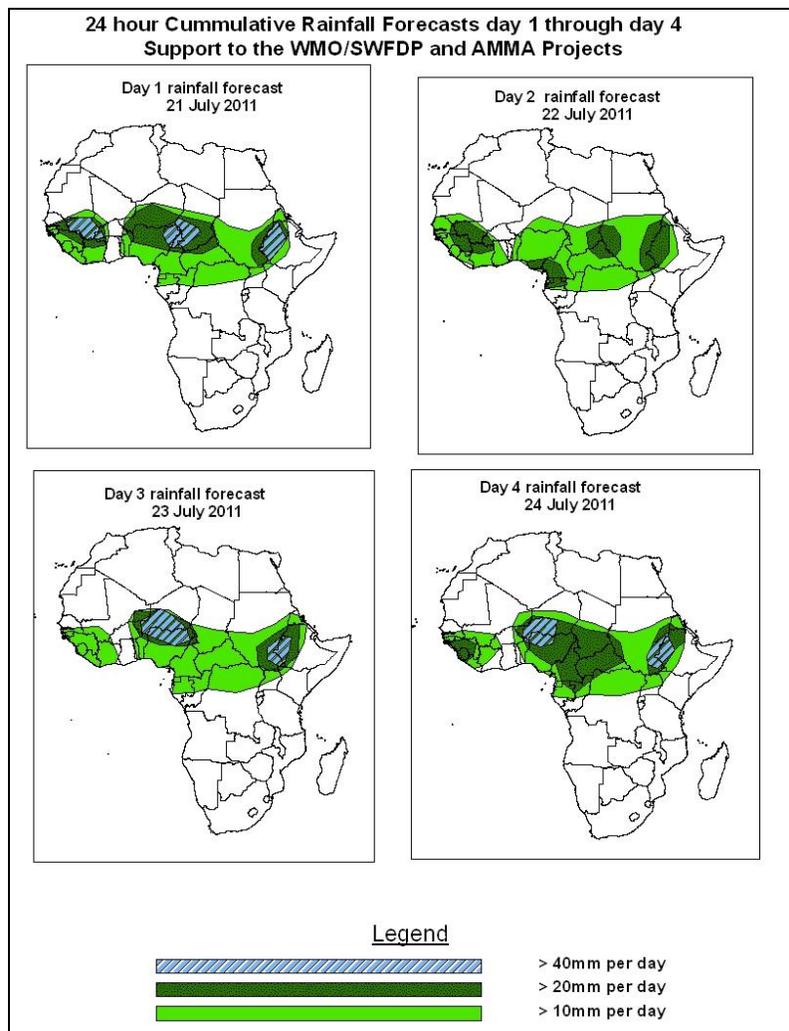


NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 21 July– 06Z of 24 July 2011, (Issued at 10:00Z of 20 July 2011)

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 next four days, strong lower tropospheric convergences over West and central African region are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over southern Mali, northern Nigeria, southern Niger and southern Chad. The seasonal monsoon flow is also expected to maintain moderate to heavy rains over parts of Ethiopia, eastern Sudan and Eritrea.

1.2. Models Comparison and Discussion-Valid from 00Z of 20 July 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 Mali) is expected to fill up gradually during the forecast period, with its central pressure value changing from 1004 to 1008 according to the GFS and ECMWF models and from 1002mb in 24 hours to 1004 in 96 hours according to the UKMET model. Similarly, the heat low over central African region also expected to fill up through 24 to 96 hours, with its central pressure value changing from 1005 to 1008mb according to GFS, from 1004 to 1008mb according to ECMWF, while the UKMET model maintains 1004mb during the forecast period. The heat low over Sudan is expected to maintain its central pressure value during the forecast period according to the three models. The East African ridge across southeast and East Africa is expected to strengthen gradually through 24 to 72 hours and it tends to weaken through 72 to 96 hours.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to intensify gradually through 24 to 96 hours, with its central pressure value increasing from 1024hpa in 28 hours to 1032 hpa in 96 hours, according to the GFS model. The Mascarene high pressure system over southwest Indian Ocean is also expected to intensify from central pressure value of 1020 in 24 hours to 1028 in 96 hours.

At the 850hpa level, the seasonal moist southeasterly flow from the Indian Ocean across East Africa, turning into southwesterly flow as it passes northern DRC and CAR, and Sudan, is expected to converge over parts of Sudan and western Ethiopia through 24 hours. With eastward shift of the Mascarene anticyclone, the flow from southwest Indian Ocean is expected to become more of southwesterly through 24 to 48 hours across eastern and southeastern African countries. During the second half of the forecast period, this cross-equatorial flow tends to become more of southerly. Moreover, southwesterly flow from across Gulf of Guinea is expected to dominate the flow over central African countries and parts of the GHA region throughout the forecast period. Strong lower tropospheric convergence is expected in the vicinity of southern Mali and Chad through 24 hours. Westerly flow across Sahel and Sudan, with troughs in the vicinity of Mali and Sudan is expected to dominate the flow through 48 hours. The troughs over Mali and Sudan tend to become cyclonic vortices through 72 hours. A

strong east-west oriented convergence dominates the flow between Sudan and northwest Mali through 96 hours.

At 700mb level, two easterly waves, one across the western end of West Africa, a weak wave in the easterlies is expected to propagate between eastern Nigeria and eastern Burkina Faso during the forecast period, while an anticyclonic circulation dominates the flow in the vicinity of Senegal.

At 500hpa, easterly winds with moderate intensity (10 to 25knots) are expected to dominate the flow over western Sudan, central African and the Gulf of Guinea and southern Sahel region, with the stronger winds associated with the African easterly Jet are expected over Mali.

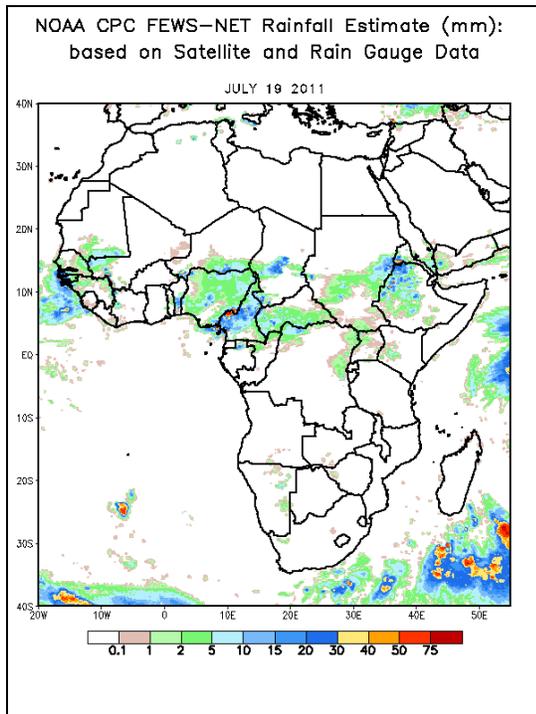
A zone of strong wind (>110Kts) at 200hpa level associated with the Sub Tropical westerly Jet in the southern hemisphere is expected to propagate between southeast Atlantic South Africa during the forecast period.

In the next four days, strong lower tropospheric convergences over West and central African region are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over southern Mali, northern Nigeria, southern Niger and southern Chad. The seasonal monsoon flow is also expected to maintain moderate to heavy rains over parts of Ethiopia, eastern Sudan and Eritrea.

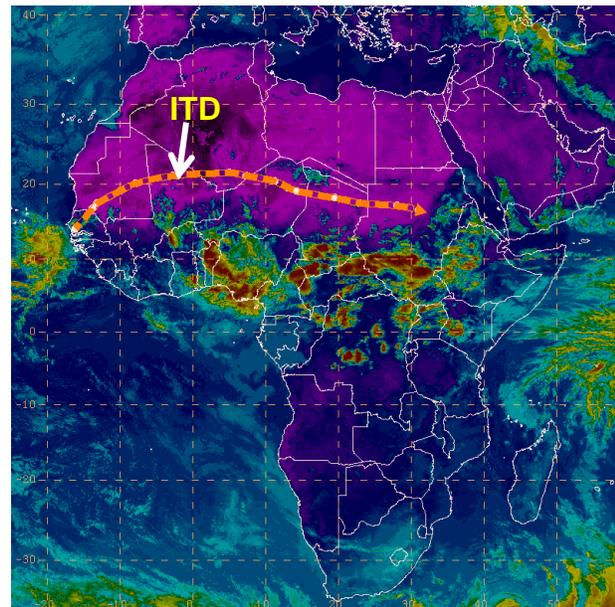
2.0. Previous and Current Day Weather Discussion over Africa (19 July - 20 July 2011)

2.1. Weather assessment for the previous day (19 July 2011): During the previous day, locally moderate to heavy rainfall was observed over Cameroon, Nigeria, Chad, Ethiopia and Eritrea.

2.2. Weather assessment for the current day (20 July 2011): A stretch of intense cloud is observed in the region between Nigeria and Ethiopia, across central African countries and Sudan.



IR Satellite Image (valid 1545Z) and position of ITD,
based on 1200Z Surface Analysis; 19July 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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