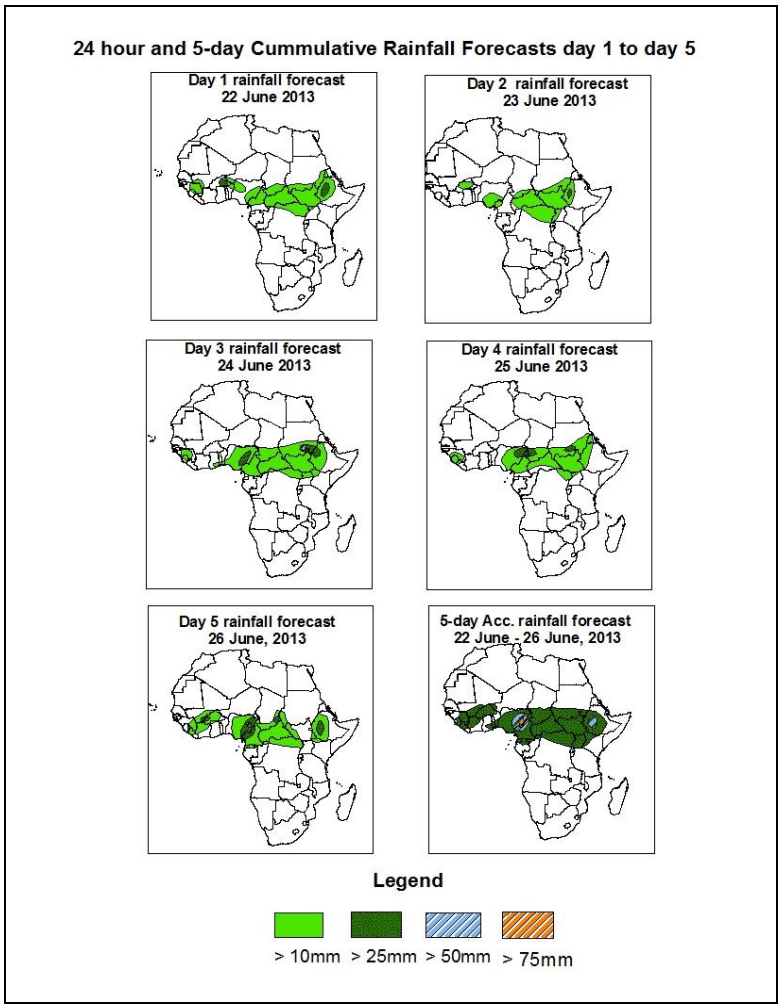
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 22 June – 06Z of 26 June, 2013. (Issued at 1700Z of 21 June 2013)

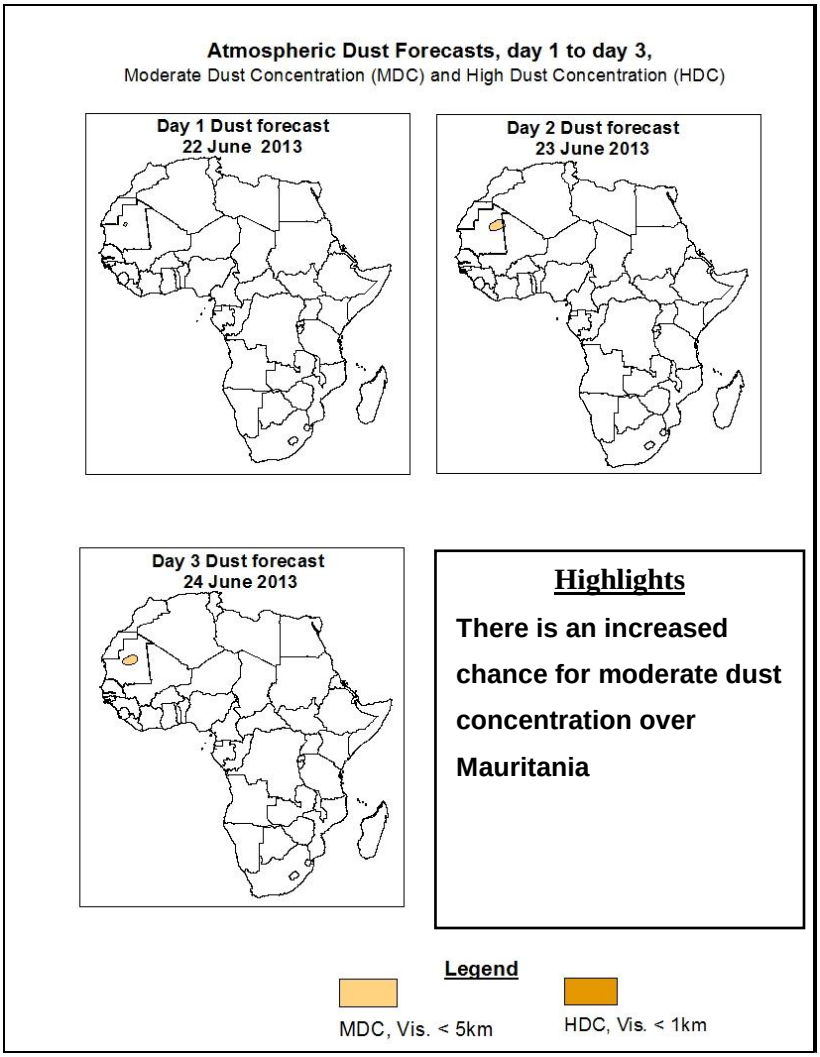
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 75% 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 five days, a persistent weakness of the African and tropical easterly jets, slightly improved monsoon flow across West Africa, Central Africa regions and moderate seasonal wind convergence in Congo Air Boundary (CAB) region is generally expected to modulate weather in these regions. However, strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to shift rainfall activities slightly northwards over East Africa and enhance precipitation in some regions. There is an increased chance for moderate to heavy rainfall over Guinea Conakry, Sierra Leone, Liberia, Mali, Burkina Faso, Cote d'Ivoire, Nigeria, Cameroun, northern Gabon, CAR, Sudan, northern DRC and western Ethiopia .



1.2. Model Discussion: Valid from 00Z of 20 June 2013

Model comparison (Valid from 00Z;20 June, 2013) shows all the three models are in general agreement in terms of depicting positions of the northern and southern hemisphere sub-tropical highs, while they showed slight differences in depicting their intensity.

Central pressure value associated with the Azores High Pressure System over Northeast Atlantic Ocean is expected to weaken slightly during the forecast period. Its central pressure value is expected to decrease from 1035hpa to 1031hpa through 24 to 96 hours and increase thereafter according to the GFS and UKMET models, 1034hpa to 1031hpa according to the ECMWF model.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to slightly decrease through 24 to 72 hours and increase thereafter. Its central pressure values are expected to decrease from 1023hpa to 1022hpa through 24 to 72 hours and increase thereafter according to the GFS, ECMWF and UKMET models.

The Mascarene high pressure system over southwestern Indian Ocean is also expected to increase slightly through 24 to 48 hours and then decrease through 72 to 120 hours. Its central value is expected to increase from 1025hpa to 1028hpa through 24 to 48 hours according to the GFS model, 1025hpa to 1027hpa according to the ECMWF model, 1024hpa to 1028hpa according to the UKMET model and a decrease thereafter.

The heat lows over the central Sahel and neighboring areas are expected to deepen slightly through the forecast period. The lowest central pressure value is expected to vary between 1003 and 1006hpa during the forecast period according to the GFS model, 1004hpa to 1006hpa according to the ECMWF model and 1002hpa to 1005hpa according to the UKMET model. The seasonal lows across Sudan and the neighboring areas are expected to deepen slightly with values varying from 1005hpa to 1009hpa according to the GFS model, and maintain average value 1008hpa according to ECMWF and UKMET models.

At the 850hpa level, zonal monsoon wind convergence is expected to dominate the flow across western and central parts of the Sahel South of latitude 16^{o}N, while meridional wind convergence will dominate flow across Sudan, eastern DRC and Ethiopia. A broad anticyclone over the coast of Nigeria during 24 to 48 hours period is expected to reduce coastal rainfall activities over the area until 72 hours when conditions are expected to improve. The predominant Moist southwesterly to westerly flow over West Africa and its associated convergence over western Ethiopia is expected to maintain moderate to heavy rainfall over the region.

At 700hpa level, a slight weakening of the broad subtropical anticyclones located at about Latitude 20^{o}N and 10^{o}S is expected to maintain weak jets with northeasterly to easterly flow over West and central Africa during the period.

At 500hpa level, wind speed associated with mid-tropospheric easterly jets are still generally very weak and show common speeds of 30kts only around Mali, Senegal and Mauritania during the forecast period.

The zone of maximum wind is expected to gradually shift westwards during the forecast period.

In the next five days, a persistent weakness of the African and tropical easterly jets, slightly improved monsoon flow across West Africa, Central Africa regions and moderate seasonal wind convergence in Congo Air Boundary (CAB) region is generally expected to modulate weather in these regions. However, strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to shift rainfall activities slightly northwards over East Africa and enhance precipitation in some regions. There is an increased chance for moderate to heavy rainfall over Guinea Conakry, Sierra Leone, Liberia, Mali, Burkina Faso, Cote d'Ivoire, Nigeria, Cameroun, northern Gabon, CAR, Sudan, northern DRC and western Ethiopia.

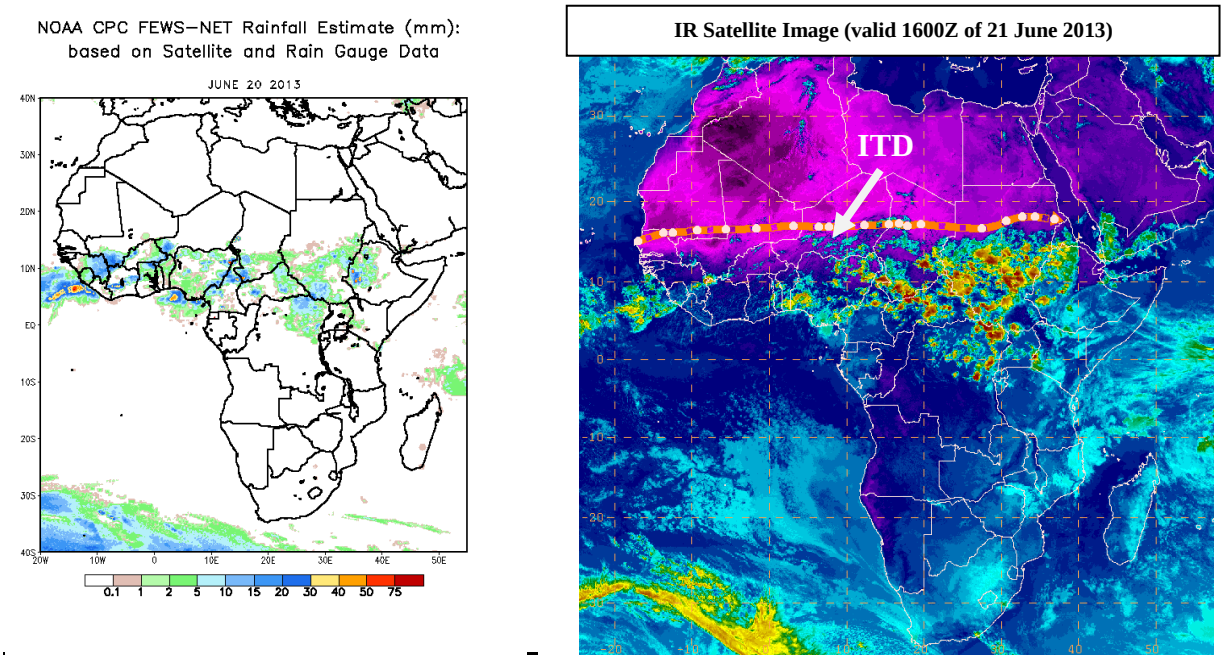
2.0. Previous and Current Day Weather Discussion over Africa (20 June 2013 – 21 June 2013)

2.1. Weather assessment for the previous day (20 June 2013)

During the previous day, moderate to locally heavy rainfall was observed over western Ethiopia, southern Sudan, Southern Chad, CAR, northeastern DRC, Nigeria, Burkina Faso, Mali, Guinea Conakry and Sierra Leone.

2.2. Weather assessment for the current day (21 June, 2013)

Intense clouds were observed over Ethiopia, Sudan, CAR, northeastern DRC, Northern Cameroun, Nigeria, southern Chad, Togo, Ghana and Guinea Conakry. The ITD is located at an average position of latitude 17^{o}N over Africa.



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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