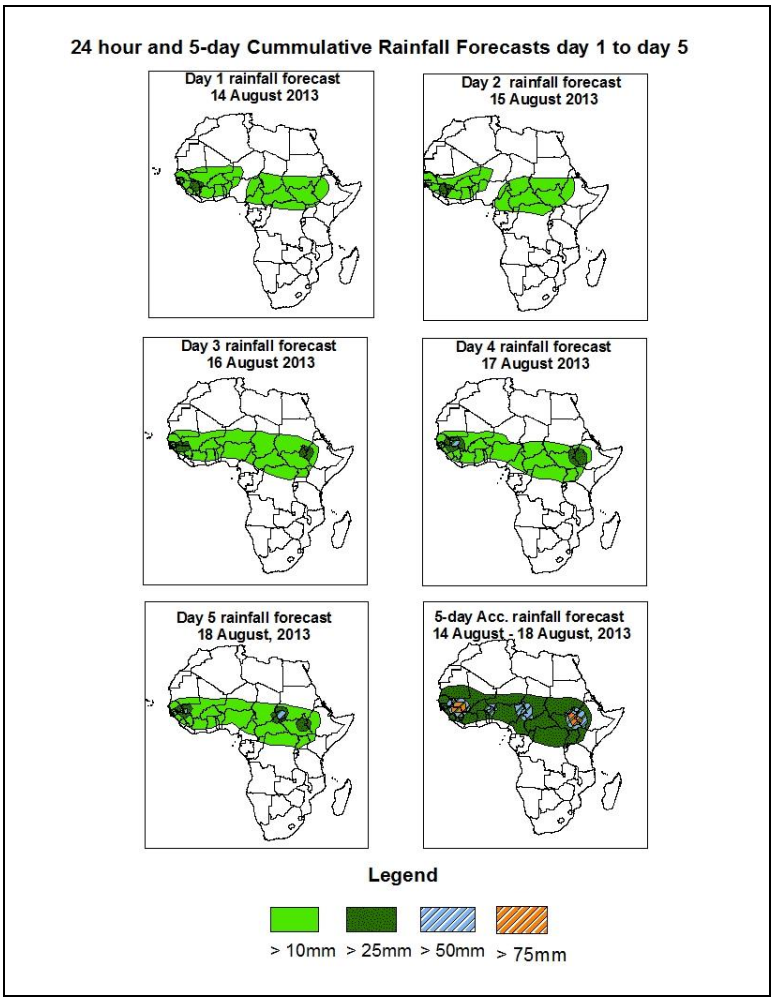
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 14 August – 06Z of 18 August, 2013. (Issued at 1730Z of 13 August 2013)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

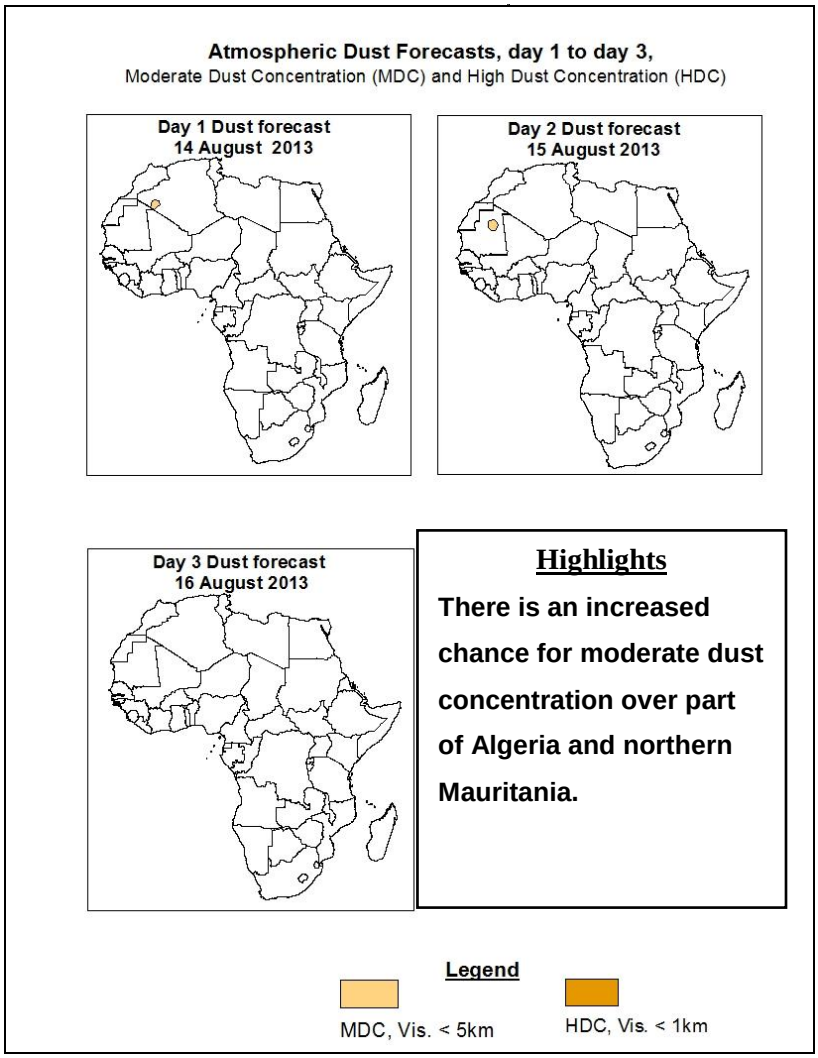
The forecasts are expressed in terms of 75% probability of precipitation (POP) exceeded, based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.



Summary

In the next five days, zonal and monsoon wind convergence is expected to be stronger and increase frequency of rainfall activities over West Africa than East Africa. Suppressed rainfall is expected to continue along the Gulf of Guinea coast. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to increase rainfall over East Africa. Thus, there is an increased chance for moderate to heavy rainfall over Guinea, Niger, Mali, Burkina Faso, Senegal, Mali and Mauritania, north of Guinea Gulf Countries, Sudan, Eritrea and Ethiopia.

1.2. Atmospheric Dust Forecasts: Valid 14 - 16 August 2012



1.2. Model Discussion: Valid from 00Z of 13 August 2013

Model comparison (Valid from 00Z;13 August, 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.

The Azores High Pressure System over Northeast Atlantic Ocean is expected to slightly weaken during the forecast period. Its central pressure value is expected to decrease from about 1026hpa to 1024hpa according to the GFS model and ECMWF models and from about 1027hpa to 1024hpa according to the UKMET model.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to weaken slightly during the forecast period. Its central pressure value is expected decrease from about 1027hpa to 1024hpa according to GFS, 1027hpa to 1026hpa according to the ECMWF model and from 1028hpa to 1026hpa according UKMET model.

The Mascarene high pressure system over southwestern Indian Ocean is expected to weaken significantly during the forecast period. Its central pressure value is expected to decrease from 1028hpa to 1022hpa according to the GFS model, 1028hpa 1020hpa according to the ECMWF model, 1029hpa 1020hpa according to UKMET model.

The heat lows over the central Sahel and neighboring areas are expected to fill up from 72 to 120 hours especially over Mali and Mauritania. Its lowest values are expected to vary from 1003hpa to 1005hpa according to the GFS, 1005hpa to 1008hpa according to the ECMWF model, 1001hpa to 1004hpa according to UKMET model. The seasonal lows across the red sea and its neighboring areas are expected to maintain its positions during the forecast period. The pressure values are likely to be 1000hpa according to the GFS model, 1002hpa according to the ECMWF and according to UKMET model.

At the 850hPa level, monsoon wind flow continues to dominate flow across West Africa. Zonal monsoon wind convergence is also expected to push further northwards and dominate the flow across Sahel South of latitude 22^{o}N, while meridional wind convergence will dominate flow across East Africa. Suppressed rainfall along Guinea Gulf coast is expected to persist as wind and surface pressure conditions gradually improve over the area during the forecast period. The slight increase in number of vortices at this level and wind convergence over the region is expected to increase rainfall over the region with higher rainfall amounts likely over Western Sahel.

At 700hpa level, wind flow maintains northeasterly to easterly flow pattern between. Few vortices and trough lines also occur from East to west and likely to facilitate westward propagation of systems across the region during the period.
At 500hpa level, winds associated with mid-tropospheric easterly jet are generally weak with common speeds of 30kts over Sahel.

At 150hPa level, tropical easterly jets are strong over East Africa during 24 to 72 hours period but are expected to be stronger over eastern Sahel than East Africa during 72 to 120 hours. Speeds of 30 to 65kts are common over West and East Africa during the forecast period. However, speeds exceeding 70kts are observed over Ethiopia, eastern Sudan and Somalia during 24 to 72 hours period.

In the next five days, zonal and monsoon wind convergence is expected to be stronger and increase frequency of rainfall activities over West Africa than East Africa. Suppressed rainfall is expected to continue along the Gulf of Guinea coast. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to increase rainfall over East Africa. Thus, there is an increased chance for moderate to heavy rainfall over Guinea, Niger, Mali, Burkina Faso, Senegal, Mali and Mauritania, north of Guinea Gulf Countries, Sudan, Eritrea and Ethiopia.

2.0. Previous and Current Day Weather Discussion over Africa

(12 August 2013 – 13 August 2013)

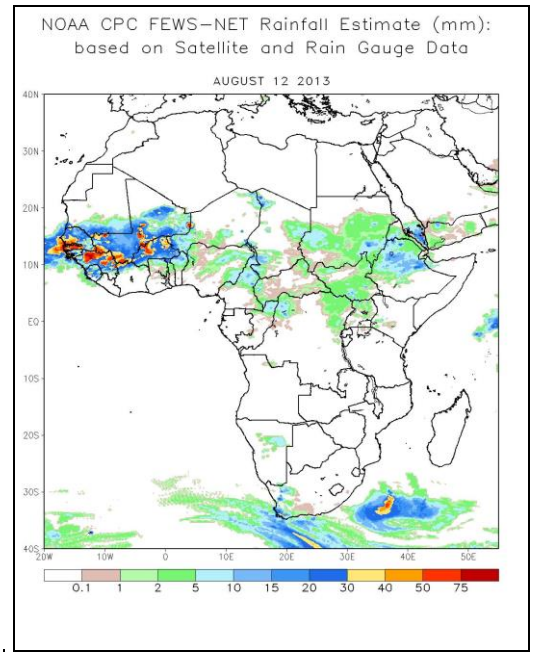
2.1. Weather assessment for the previous day (12 August 2013)

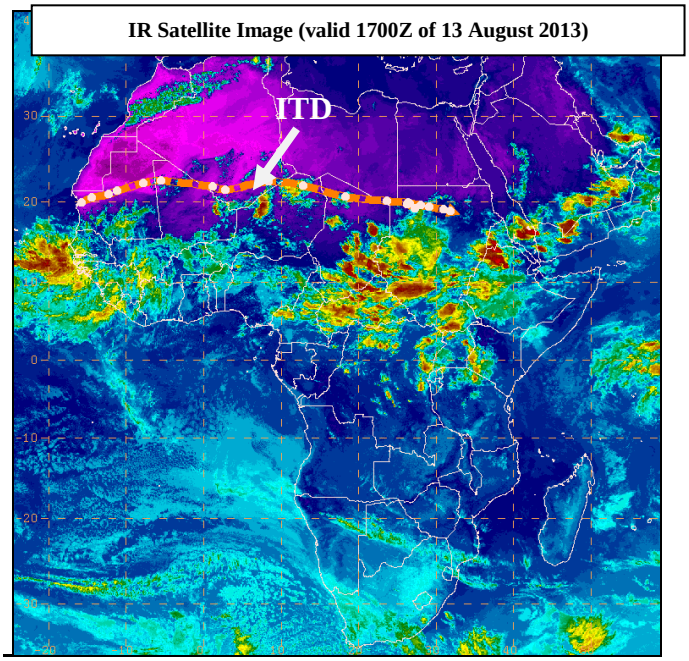
During the previous day, moderate to locally heavy rainfall was observed over southwest Niger, Mali, Burkina Faso, Benin, northern Cote d'Ivoire, Conakry Guinea, Gambia, Sierra Leone and Ethiopia.

2.2. Weather assessment for the current day (13 August 2013)

Intense clouds were observed over North Ethiopia , Sudan, Cameroun, Nigeria, Chad, Mali, Mauritania, Senegal, and Eritrea.

The ITD is located at an average position of latitude 22^{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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