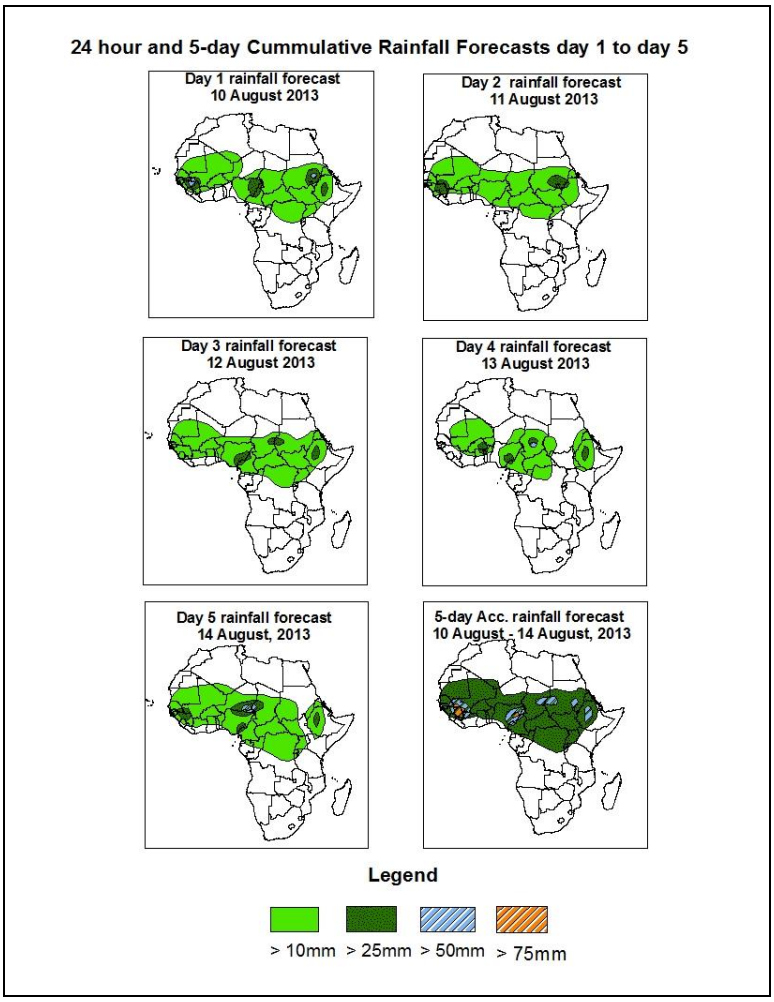
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 10 August – 06Z of 14 August, 2013. (Issued at 1700Z of 09 August 2013)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

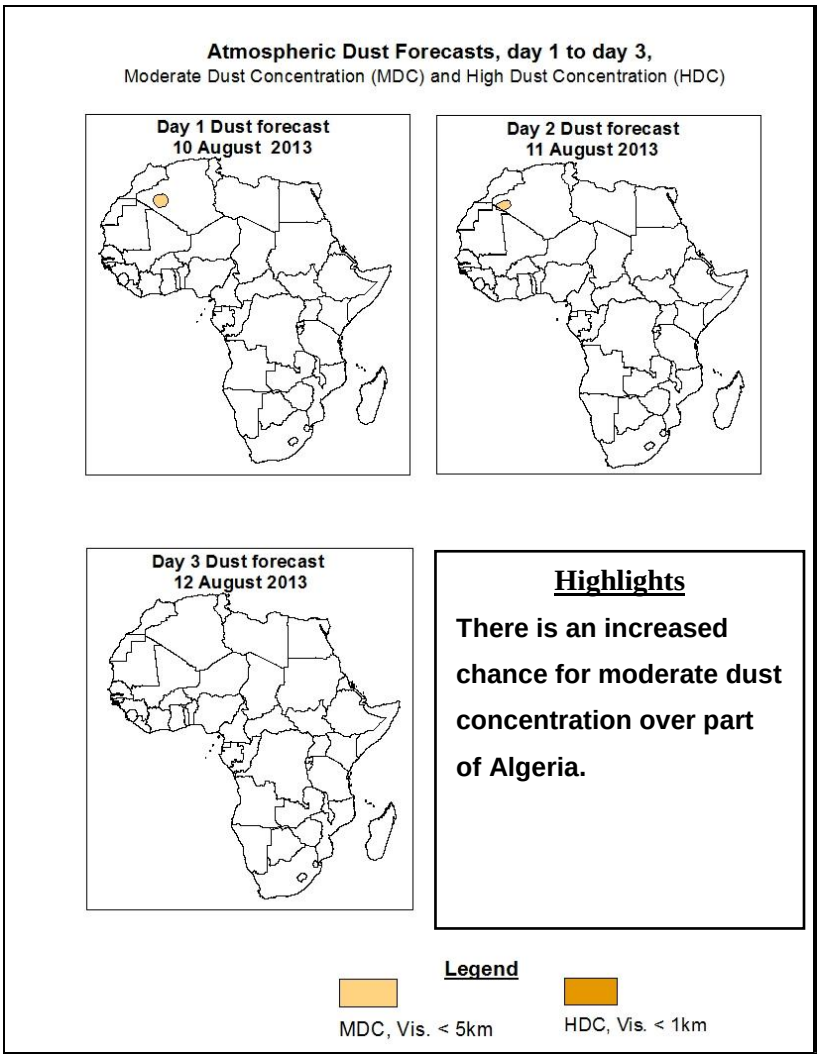
The forecasts are expressed in terms of 75% probability of precipitation (POP) exceeded, based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.



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 as conditions gradually improve. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to modulate rainfall over East Africa. Thus, there an increased chance for moderate to heavy rainfall over Guinea, Nigeria, Niger, Mali, Burkina Faso, Chad, Sierra Leone, Mauritania, Senegal, Algeria, northern Ghana, CIV, Cameroun, CAR, Gabon, Sudan, DRC, Uganda, Kenya, Eritrea and Ethiopia.

1.2. Atmospheric Dust Forecasts: Valid 10 - 12 August 2012



1.2. Model Discussion: Valid from 00Z of 09 August 2013

Model comparison (Valid from 00Z;09 August, 2013) shows all the three models are in general agreement in terms of depicting positions of the 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 weaken during the forecast period. Its central pressure value is expected to decrease from about 1031hpa to 1027hpa according to the GFS model, 1030hpa to 1026hpa according to the ECMWF model, 1031hpa to 1026hpa according to the UKMET model.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to slightly weaken during the forecast period. Its central pressure value is expected decrease from about 1026hpa to 1025hpa according to the GFS and ECMWF models, 1027hpa 1025hpa according to the UKMET model.

The Mascarene high pressure system over southwestern Indian Ocean is expected to weaken during the forecast period. Its central pressure value is expected to decrease from 1031hpa to 1020hpa according to the GFS model, 1031hpa 1021hpa according to the ECMWF model, 1031hpa 1026hpa according to UKMET model.

The heat lows over the central Sahel and neighboring areas are expected to deepen during the forecast period especially over Mali and Sudan. Its lowest values are expected to vary from 1002hpa to 1004hpa according to the GFS and UKMET models, 1006hpa to 1007hpa according to the ECMWF model. The seasonal lows across the red sea and its neighboring areas are expected to deepen during the forecast period. The pressure values are likely to vary from 999hpa to 1002hpa according to the GFS model, 1002hpa to 1004hpa according to the ECMWF, 1002hpa to 1003hpa 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 central parts of the 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 is wavy between latitude 0 to 10^{o}N and maintains northeasterly to easterly flow pattern between latitude10 to 20^{o}N. Few vortices and trough lines also occur over Sudan, Chad and Nigeria 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 Senegal, Mauritania, Niger, Mali and western Sudan.

At 150hPa level, tropical easterly jets are strong over East Africa during 24 to 48 hours period but are expected to be stronger over West Africa 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 48 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 as conditions gradually improve. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to modulate rainfall over East Africa. Thus, there is an increased chance for moderate to heavy rainfall over Guinea, Nigeria, Niger, Mali, Burkina Faso, Chad, Sierra Leone, Mauritania, Senegal, Algeria, northern Ghana, CIV, Cameroun, CAR, Gabon, Sudan, DRC, Uganda, Kenya, Eritrea and Ethiopia.

2.0. Previous and Current Day Weather Discussion over Africa

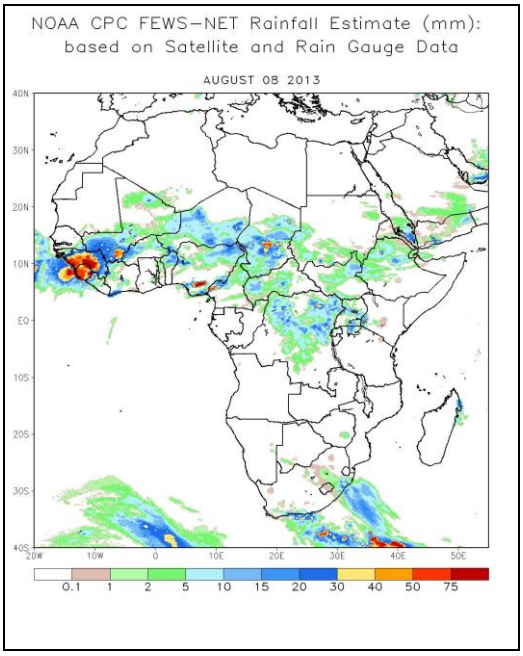
(08 August 2013 – 09 August 2013)

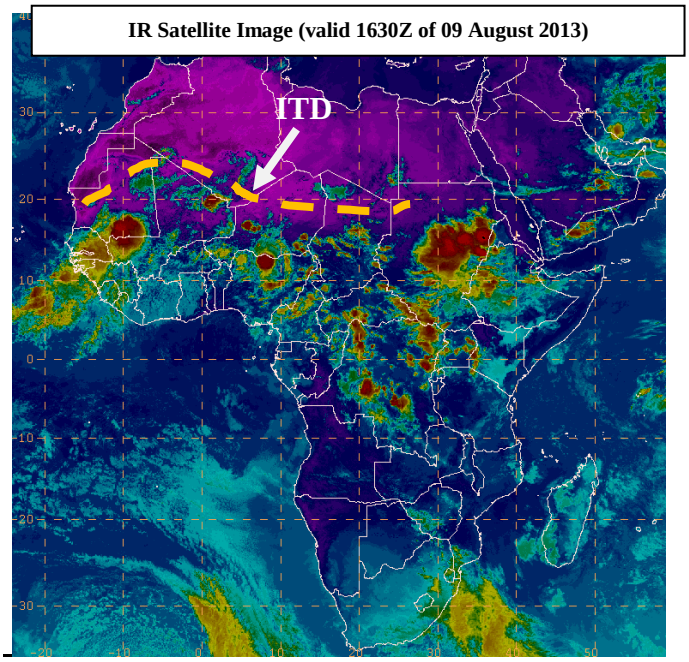
2.1. Weather assessment for the previous day (08 August 2013)

During the previous day, moderate to locally heavy rainfall was observed over Guinea Conakry, Sierra Leone, Mali, Cote d'Ivoire, Burkina Faso, Niger, Nigeria, Benin Republic, Chad, CAR, DRC, Uganda and Ethiopia.

2.2. Weather assessment for the current day (09 August 2013)

Intense clouds were observed over Ethiopia, Uganda, Kenya, Sudan, CAR, DRC, Cameroun, Nigeria, Chad, Niger Republic, Mali, Mauritania, Senegal, Gambia and Guinea. 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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