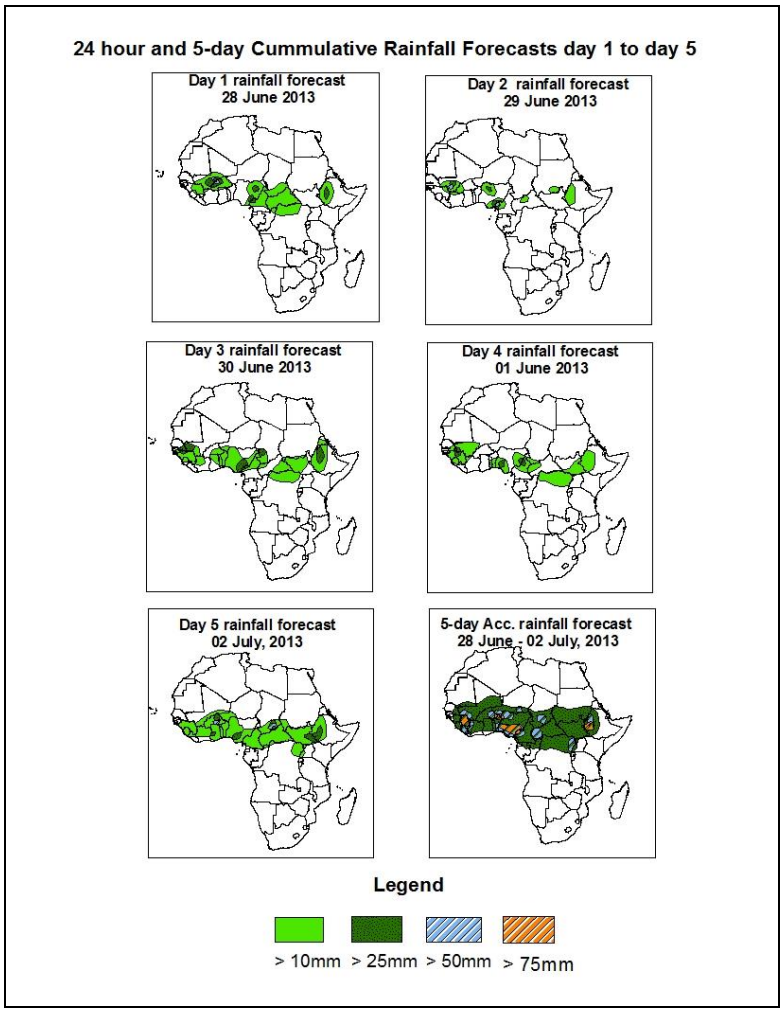
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 28 June – 06Z of 02 July, 2013. (Issued at 1630Z of 27 June 2013)

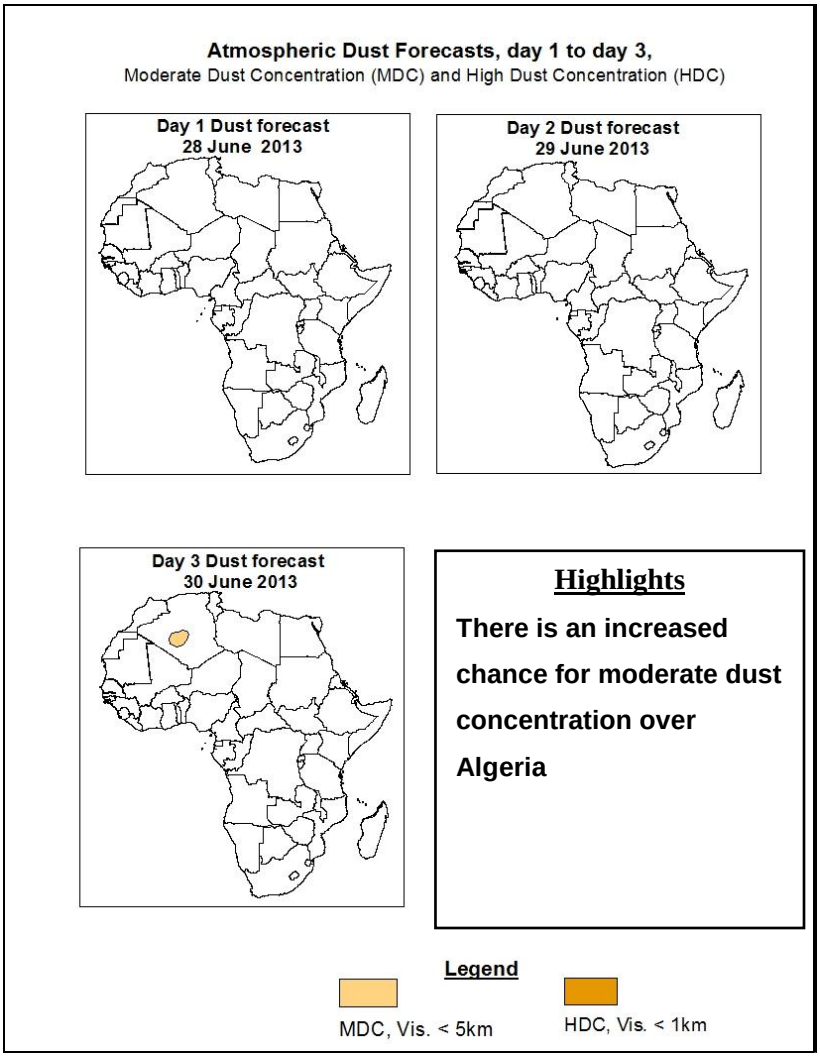
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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, the zone of moisture convergence over West Africa, Central Africa regions and the seasonal wind convergence in Congo Air Boundary (CAB) region is generally expected to modulate weather in these regions. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to shift rainfall activities slightly northwards over East and West Africa and enhance precipitation in these regions. There is an increased chance for moderate to heavy rainfall over western Senegal, Mauritania, Guinea Conakry, Sierra Leone, Liberia, Mali, Burkina Faso, Cote d'Ivoire, Benin Republic, Nigeria, Cameroun, Chad, CAR, southern Sudan, northern DRC and western Ethiopia.



1.2. Model Discussion: Valid from 00Z of 27 June 2013

Model comparison (Valid from 00Z;27 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.

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 1037hPa to 1032hPa through 24 to 120 hours according to the GFS model, 1037hpa to 1031hPa according to the ECMWF model, 1038hPa 1032hPa according to the UKMET model.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to be qausi-stationary through 24 to 72 hours and increase thereafter. Its central pressure value is expected to be maintained at an average of 1027hPa through 24 to 72 hours and increase thereafter according to the three models.

The Mascarene high pressure system over southwestern Indian Ocean is also expected to weaken slightly through 24 to 72 hours and increase thereafter. Its central value is expected to decrease from 1031hPa to 1022hPa through 24 to 72 hours according to the GFS model, 1031hPa to 1027hPa according to the ECMWF model, 1031hPa to 1019hPa according to the UKMETF model and an increase 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 1004 and 1006hPa during the forecast period according to the GFS model, 1006hPa to 1008hPa according to the ECMWF model and 1005hPa to 1006hpa according to the UKMET model. The seasonal lows across Sudan and the neighboring areas are expected to deepen slightly with values varying from 1004hPa to 1008hPa according to the three 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 17^{o}N, while meridional wind convergence will dominate flow across Sudan, eastern DRC and Ethiopia. Periodically, anticyclone over countries along the coast of the Gulf of Guinea is expected to reduce coastal rainfall activities during the forecast period. The slight increase in number of vortices at this level coupled with 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 weakening of the broad subtropical anticyclones located at about latitude 30^{o}N in the northern hemisphere is expected to favour northeasterly to easterly flow over West and central Africa during the period. The periodic appearance of anticyclones along the coast of Nigeria also supports reduction of coastal rainfall activities through 24 to 48 hours.

At 500hpa level, wind speed associated with mid-tropospheric easterly jet are generally weak and show common speeds of 30kts only around isolated places in Mali, Mauritania, Ghana, Senegal and Nigeria during the forecast period.
The zone of maximum wind is expected to gradually shift westwards during the forecast period.

At 150hPa level, tropical easterly jets are building up gradually and show wind speeds of 50kts over Sudan, Cameroun, Nigeria, Ghana and Liberia during the forecast period while Ethiopia and Sudan show wind speeds exceeding 70kts by 120 hours.

In the next five days, the zone of moisture convergence over West Africa, Central Africa regions and the seasonal wind convergence in Congo Air Boundary (CAB) region is generally expected to modulate weather in these regions. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to shift rainfall activities slightly northwards over East and West Africa and enhance precipitation in these regions. There is an increased chance for moderate to heavy rainfall over western Senegal, Mauritania, Guinea Conakry, Sierra Leone, Liberia, Mali, Burkina Faso, Cote d'Ivoire, Benin Republic, Nigeria, Cameroun, Chad, CAR, southern Sudan, northern DRC and western Ethiopia.

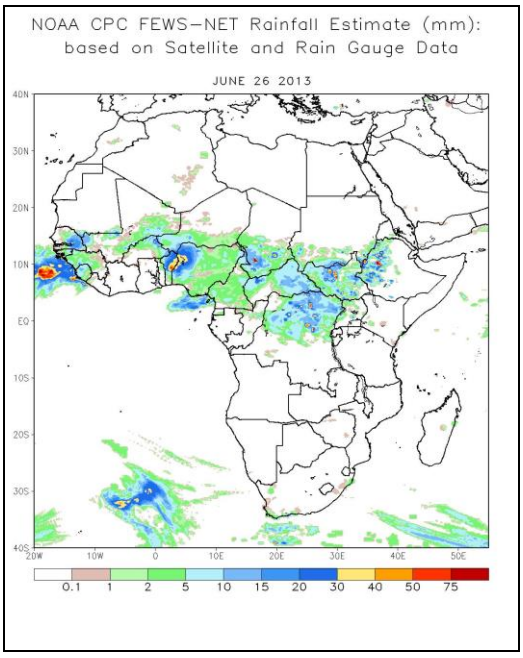
2.0. Previous and Current Day Weather Discussion over Africa
(26 June 2013 – 27 June 2013)

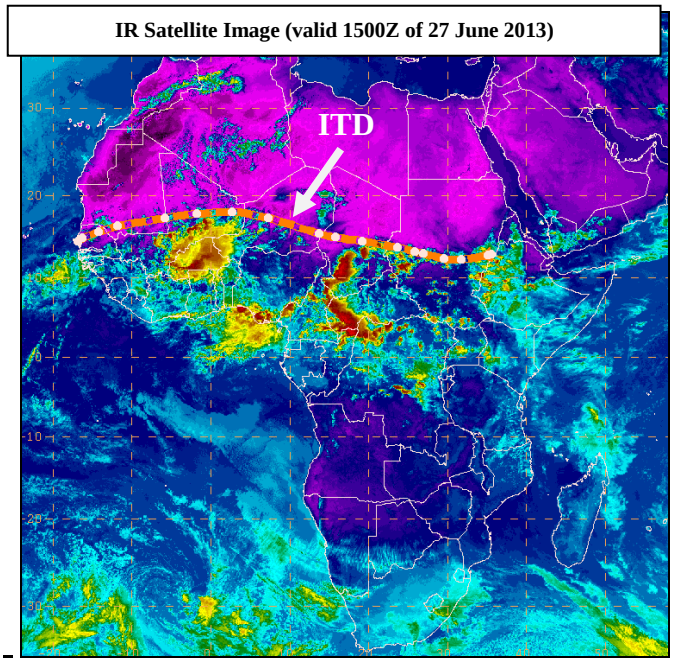
2.1. Weather assessment for the previous day (26 June 2013)

During the previous day, moderate to locally heavy rainfall was observed over western Ethiopia, Southern Sudan, CAR, northern DRC, Nigeria, Togo, Chad, Burkina Faso, Mali, Senegal and Guinea Bissau.

2.2. Weather assessment for the current day (27 June, 2013)

Intense clouds were observed over Ethiopia, western Sudan, CAR, northern DRC, Cameroun, Nigeria, southern Chad, Burkina Faso and Mali. 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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