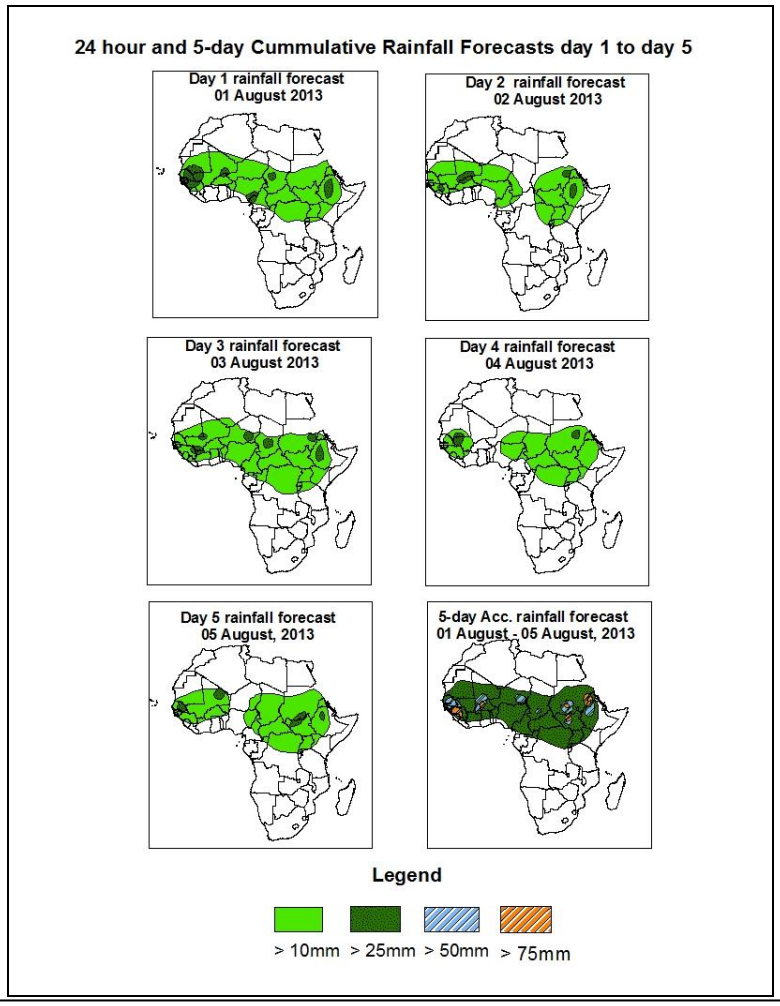
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 01 August – 06Z of 05 August, 2013. (Issued at 1730Z of 31 July, 2013)

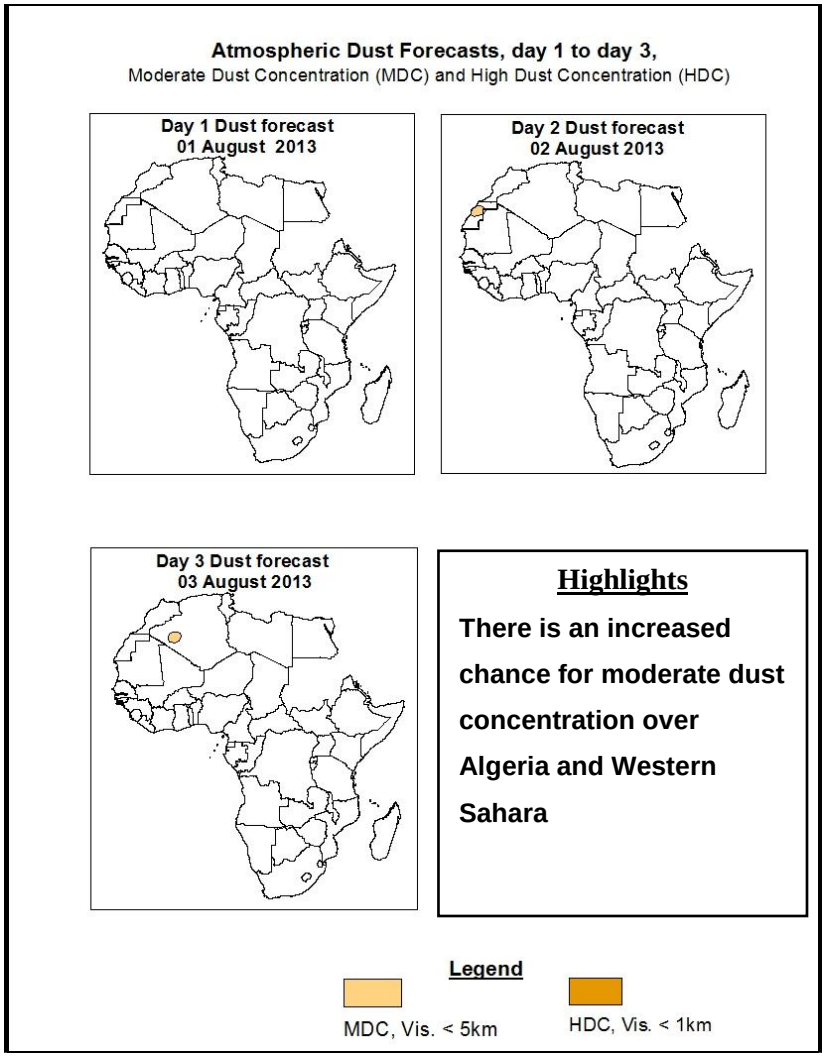
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 seasonal and monsoon wind convergence is expected to push further northwards and shift rainfall activities further to the North over the region. Coastal rainfall along the Gulf of Guinea is also expected to decrease as the 1016hPa isobar of the St. Helena high pressure system maintains an average position of Latitude 9^{o}N over West Africa during the period. 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 Senegal, Guinea, Sierra Leone, Mali, Mauritania, Burkina Faso, Niger, northern Ghana, CIV, Cameroun, southern Chad, CAR, Gabon, Sudan, northern DRC, Uganda, Kenya, Eritrea and Ethiopia.



1.2. Model Discussion: Valid from 00Z of 31 July 2013

Model comparison (Valid from 00Z;31 July, 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 slightly through 24 to 72 hours. Its central pressure value is expected to decrease from 1028hPa to 1027hPa according to the ECMWF and UKMET models, maintain average pressure value of 1026hPa according to GFS model during the period.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to intensify during the forecast period. Its central pressure value is expected to increase from 1023hPa to 1032hPa according to the GFS model, 1024hPa to 1032hPa according to the ECMW, 1024hPa to 1028hPa according to UKMET models.

The Mascarene high pressure system over southwestern Indian Ocean is expected to slightly intensify through 24 to 48 hours and weaken thereafter. Its central value is expected to increase from 1033hPa to 1034hPa through 24 to 48 hours according to the GFS, ECMWF and UKMET models and decrease thereafter.

The heat lows over the central Sahel and neighboring areas are expected to fill up slightly during 24 to 48 hours and deepen thereafter. The lowest central pressure value is expected to vary between 1003hPa to 1005hPa according to the GFS model, 1006hPa to 1007hPa according to ECMWF model and 1002hPa to 1004hpa according to the UKMET model. The seasonal lows across the Red sea and its neighboring areas are also expected to fill up during the forecast period. Values are likely to vary from 1002hPa to 1005hPa according to the GFS model, 1004hPa to 1006hPa according to ECMWF and UKMET models.

At the 850hPa level, monsoon wind flow is expected to dominate flow across West Africa and penetrate further inland and northwards. Zonal monsoon wind convergence is also expected to dominate the flow across central parts of the Sahel South of latitude 20^{o}N, while meridional wind convergence will dominate flow across Sudan, eastern DRC and Ethiopia. Rainfall along the coast of Liberia, Togo, Ghana, Cote d'Ivoire and southwest Nigeria, is therefore expected to decrease as winds diverge from these areas and converge over the inland areas during the forecast period. The slight increase in number of vortices at this level and wind convergence over Africa is expected to maintain moderate to heavy rainfall over the region and the highest rainfall likely over Senegal, Guinea, Sierra Leone, Mali, Nigeria, Sudan and Ethiopia.

At 700hPa level, a wavy flow pattern of winds and trough lines are observed during the 24 to 96 hour period while the subtropical anticyclone in the northern and southern hemispheres are expected to maintain northeasterly to easterly flow over West and central Africa during the period.

At 500hpa level, wind speed associated with mid-tropospheric easterly jet are generally weak and hardly show speeds less than 30kts over the region

At 150hPa level, tropical easterly jets are slightly weaker over East and West Africa. Speeds of 30 to 50kts are common over West Africa while speeds of 60 to 70kts are common over most parts of East Africa during the period. Speeds exceeding 70kts are however observed over Ethiopia, Kenya, Sudan, Uganda and Somalia during the forecast period.

In the next five days, the zone of seasonal and monsoon wind convergence is expected to push further northwards and shift rainfall activities further to the North over the region. Coastal rainfall along the Gulf of Guinea is also expected to decrease as the 1016hPa isobar of the St. Helena high pressure system maintains an average position of Latitude 9oN over West Africa during the period. 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 Senegal, Guinea, Sierra Leone, Mali, Mauritania, Burkina Faso, Niger, northern Ghana, CIV, Cameroun, southern Chad, CAR, Gabon, Sudan, northern DRC, Uganda, Kenya, Eritrea and Ethiopia.

2.0. Previous and Current Day Weather Discussion over Africa
(30 July 2013 – 31 July 2013)

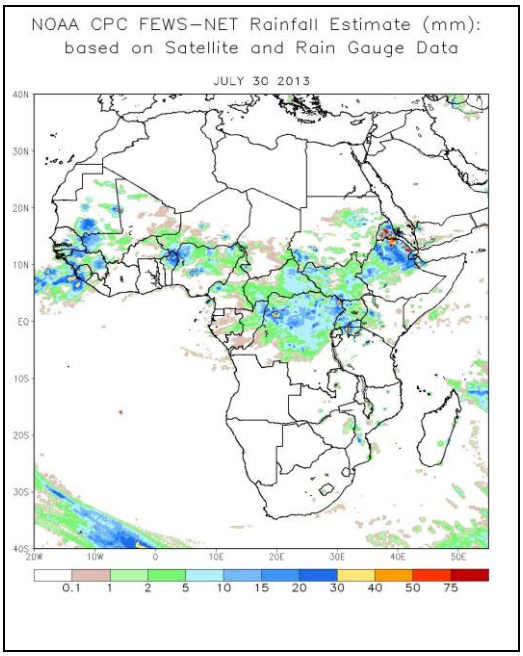
2.1. Weather assessment for the previous day (30 July 2013)

During the previous day, moderate to locally heavy rainfall was observed over Eritrea, Ethiopia, South Sudan, Uganda, Kenya, northern DRC, CAR, Congo Brazzaville, Cameroun, Nigeria, Benin republic, Guinea, Sierra Leone, Mali, Senegal and Mauritania.

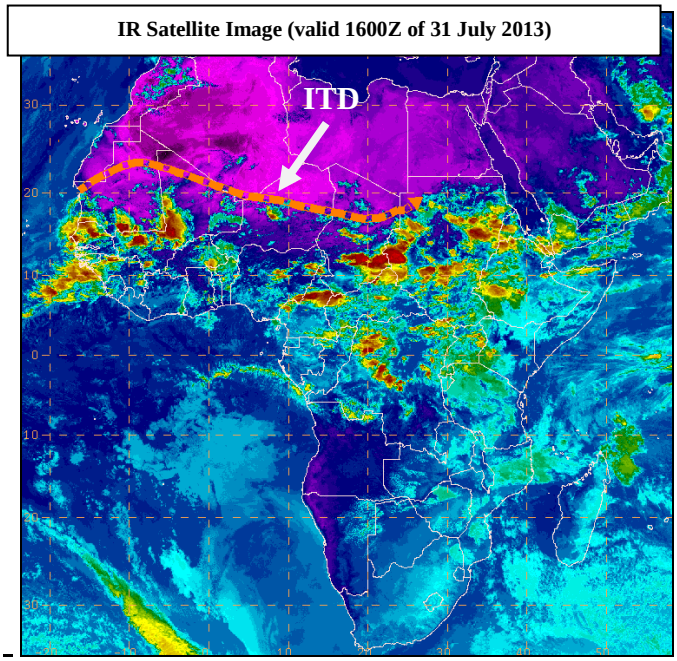
2.2. Weather assessment for the current day (31 July, 2013)

Intense clouds were observed over Ethiopia, Eritrea, Uganda, Kenya, Sudan, CAR, DRC, Nigeria, Cameroun, southern Chad, Niger republic, Burkina Faso, Mali, Senegal, Mauritania and Guinea.

The ITD is located at an average position of latitude 20^{o}N over Africa.



IR Satellite Image (valid 1600Z of 31 July 2013)



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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