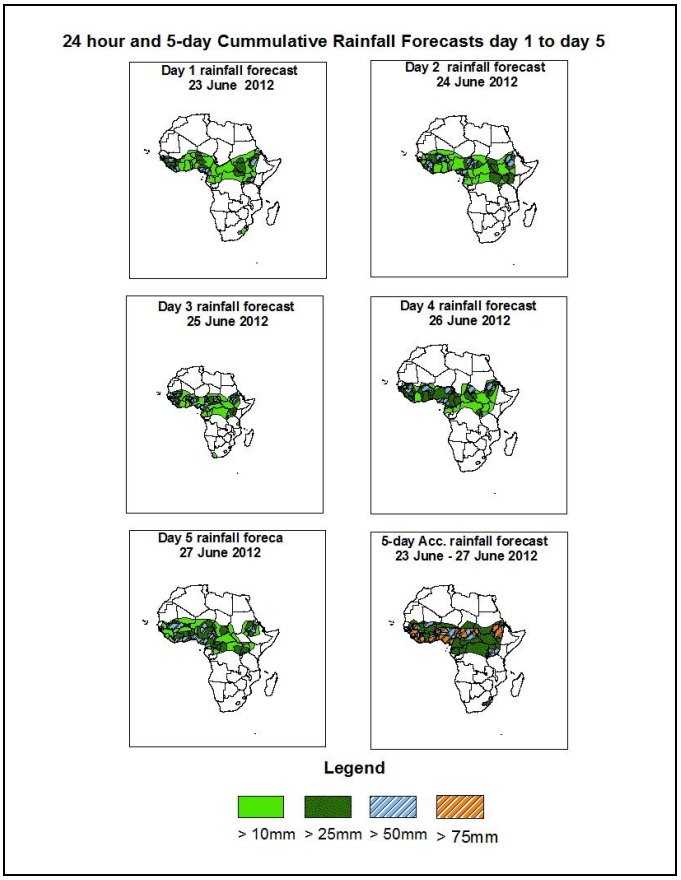
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 23 June – 06Z of 26 June 2012, (Issued at 13:00Z of 22nd June 2012)

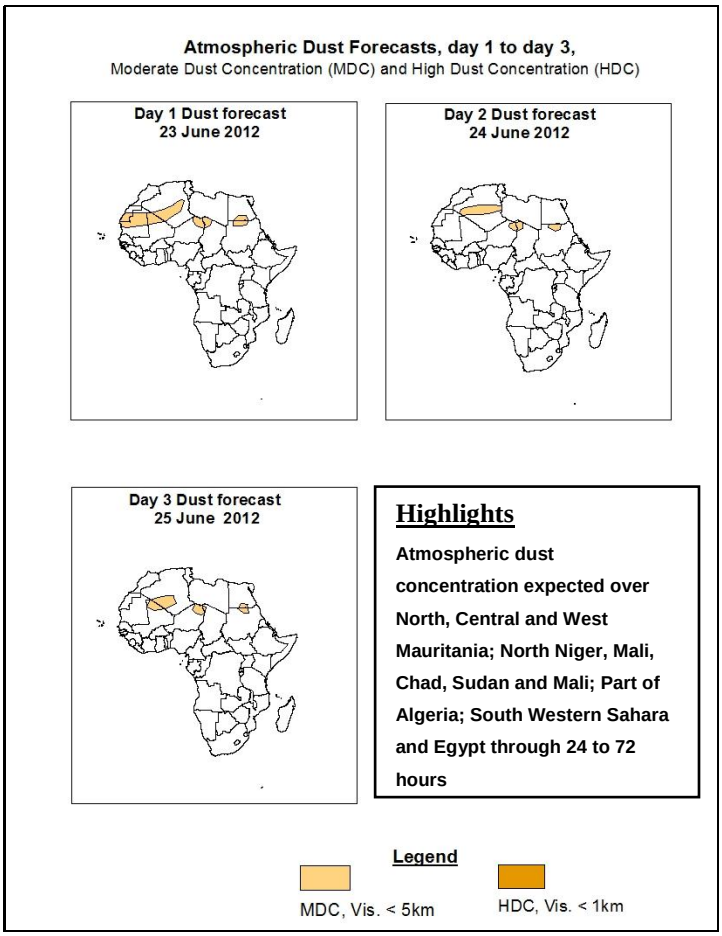
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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, ITD is expected to fluctuate between 15°E and 21°N with moderate to strong monsoon inflow within 24 to 120 hours; Also the active TEJ and the pronounced AEW propagation, will enhance rainfall activities over small portion of Sahel Region; Part of Guinea Gulf Countries and Central Africa; Western Ethiopia. However the significant wind Anticyclonic flow over Algeria and its extended ridge over part of Sahel Region are expected to reduce Mesoscale Convective Systems activities over Sahel.



1.3. Model Discussion: Valid from 00Z of June, 22nd 2012.

According to the GFS, ECMWF and UKMET models the heat lows are expected to fill up over Mauritania, Algeria and Mali through 24 to 72 hours then deepens within 96 to 120 hours; while they are expected to slightly fill up and deepen through 24 to 120 hours over Niger and Chad.

According to GFS model, a thermal low over West, Central and North Mauritania (1005hpa) in 24 hours is expected to increase from 1007hpa to 1008hpa through 48 to 72 hours and tends to decrease to 1005hpa in 96 hours and 1006hpa in 120 hours. The second low over North Mali and South Algeria (1005hpa) in 24 hours is expected to increase to 1009hpa in 48 hours and tends to decrease from 1006hpa to 1005hpa within 72 to 96 hours, then slightly increases to 1006hpa in 120 hours. The third low over North Chad and Niger (1006hpa) in 24 hours is expected to slightly decrease to 1005hpa through 48 to 72 hours and tends to slightly increase to 1006hpa within 96 to 120 hours; while the low over North Sudan (1005hpa) through 24 to 72 hours is

expected to slightly decrease to 1004hpa in 96 hours, then increases to 1006hpa in 120 hours.

The ECMWF model shows a thermal low over West, Central and North Mauritania (1007hpa) in 24 hours is expected to increase to 1010hpa within 48 to 72 hours and tends to decrease to 1008hpa through 96 to 120 hours. The second low over South Algeria and North Mali (1007hpa) in 24 hours is also expected to increase to 1010hpa in 48 hours and tends to decrease to 1007hpa within 72 to 96 hours, then slightly increases to 1008hpa in 120 hours. The third low over North Niger and Chad (1007hpa) through 24 to 48 hours is expected to decrease to 1005hpa in 72 hours, then increases to 1008hpa within 96 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to increase to 1008hpa in 48 hours and tends to decrease to 1006hpa in 72 hours, then increases to 1008hpa through 96 to 120 hours.

The UKMET model shows a thermal low over West, Central and North Mauritania (1005hpa) in 24 hours is expected to increase to 1007hpa within 48 to 72 hours and tends to decrease to 1005hpa in 96 hours, then slightly increases to 1006hpa in 120 hours. The second low over South Algeria and North Mali (1005hpa) in 24 hours is also expected to increase to 1007hpa in 48 hours and tends to decrease from 1006hpa to 1005hpa within 72 to 96 hours, then slightly increases to 1006hpa in 120 hours. The third low over North Niger and Chad (1007hpa) in 24 hours is expected to slightly decrease to 1006hpa through 48 to 72 hours, then increases to 1007hpa in 96 hours and tends to slightly decrease to 1006hpa in 120 hours; while the low over North Sudan (1004hpa) in 24 hours is expected to increase to 1006hpa in 48 hours and tends to decrease to 1004hpa in 72 hours, then increases from 1007 to 1006hpa through 96 to 120 hours

According to the UKMET model, the St. Helena High pressure system over South Atlantic Ocean with a core value of 1029hpa in 24 hours locate at latitude 30^{o}S is expected to gradually decrease its core value from 1027hpa to 1025hpa by shifting northwards (from 30^{o}S to 25^{o}S) through 48 to 72 hours and tends to increase to 1028hpa by shifting by shifting from latitude 30^{o}S to 35^{o}S and vice versa within 96 to120 hours. According to the ECMWF model, the central pressure value of 1028hpa in 24 hours and locate at latitude 30^{o}S is expected to gradually decrease its core value from 1026hpa to 1025hpa by maintaining almost the same position through 48 to 72 hours

and tends to gradually increase from 1028hpa to 1029hpa by shifting from latitude 30^{o}S to 35^{o}S and vice versa within 96 to 120hours. Lastly, according to the GFS model, the central pressure value of 1027hpa through 24 to 48 hours and locates at latitude 30^{o}S is expected to decrease its core value to 1025hpa in 72 hours by maintaining almost the same position and tends to gradually increase from 1028hpa to 1030hpa by shifting from latitude 30^{o}S to 35^{o}S and vice versa within 96 to 120hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1027hpa through 24 to 48 hours locates between longitude 15^{o}W and 20^{o}W is expected to gradually decrease its core value from 1025hpa to 1022hpa by shifting westwards(from 15^{o}W to 40^{o}W) within 72 to 120hours. According to the ECMWF model, the central pressure value of 1027hpa through 24 to 48 hours locates between longitude 15^{o}W and 20^{o}W is expected to decrease its core value to 1024hpa within 72 to 96 hours by shifting eastwards (from 20^{o}W to 15^{o}W) and tends to increase to 1027hpa by shifting from westwards (from 30^{o}W to 45^{o}W) in 120hours. Lastly, according to the UKMET model, the central pressure value of 1028hpa through 24 to 48 hours locates at longitude 20^{o}W is expected to decrease its core value from 1025hpa to 1024hpa within 72 to 96 hours by shifting westwards (from 20^{o}W to 45^{o}W) and tends to increase to 1026hpa by maintaining almost the same position at longitude 45^{o}W in 120hours.

At 925hpa level, zone of moderate dry Northerly and Northeasterly winds (20 to 50kts) are expected to prevail over North, Central and West Mauritania; North Niger, Mali, Chad, Sudan and Mali; Part of Algeria; South Western Sahara and Egypt through 24 to 120 hours.

At the 850hpa level, a lower tropospheric wind convergence associated with significant West African Monsoon inflow and depth between latitude 14^{o}N 20^{o}N is expected to prevail over parts of Sudan, Cameroon, Chad, Central African Republic and Western Africa through 24 hours to 120 hours. The convergence associated with the meridional arm of the ITCZ is located over part of South Sudan Republic; North Democratic Republic of Congo and West Uganda within 24 hours to 120 hours.

At 700hpa level significant wind anticyclonic flow is expected over Algeria which will extend a ridge over part of Sahel Region; however an African Easterly Waves propagating westwards will be affecting part of Guinea Gulf Countries, Chad, Sudan, Central African Republic and South Sahel Region through 24 to 120 hours.

At 500hpa level, a wave is expected to affect most part of Guinea Gulf Countries and Central African Republic; South Chad, South and West Sudan, part of Sahel Region through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 30 to 60 Knots will affect Southern Chad and Sudan; Part of Guinea Gulf Countries and Central African Republic through 24 to 120 Hours. Easterly winds flow will also affect part of Sahel Region.

In the next five days, ITD is expected to fluctuate between 15^{o}E and 21^{o}N with moderate to strong monsoon inflow within 24 to 120 hours; Also the active TEJ and the pronounced AEW propagation, will enhance rainfall activities over small portion of Sahel Region; Part of Guinea Gulf Countries and Central Africa; Western Ethiopia. However the significant wind Anticyclonic flow over Algeria and its extended ridge over part of Sahel Region are expected to reduce Mesoscale Convective Systems activities over Sahel.

Atmospheric dust concentration expected over North, Central and West Mauritania; North Niger, Mali, Chad, Sudan and Mali; Part of Algeria; South Western Sahara and Egypt through 24 to 72 hours.

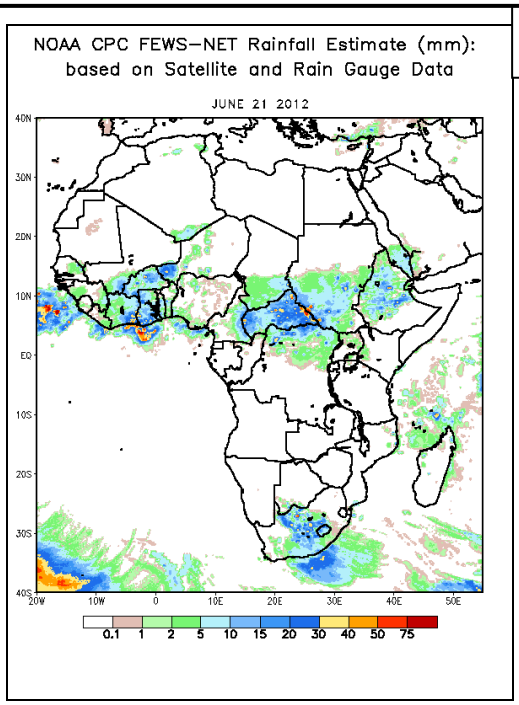
2.0. Previous and Current Day Weather Discussion over Africa (June, 21st 2012– June, 22nd 2012)

2.1. Weather assessment for the previous day (June, 21st 2012)

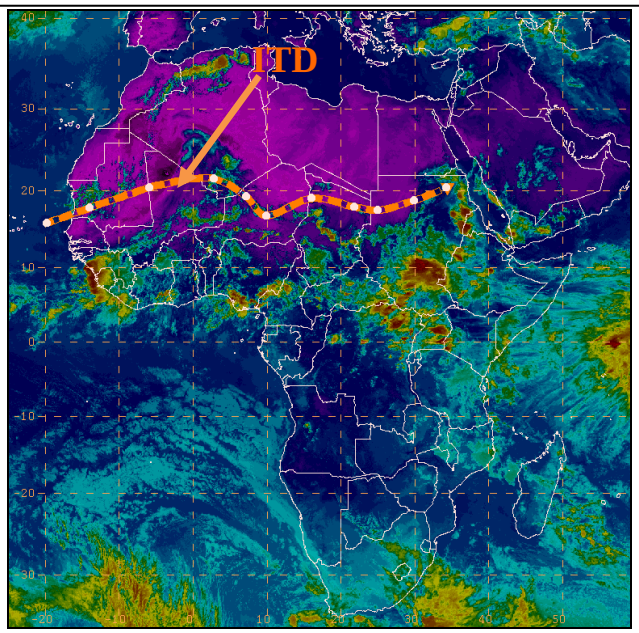
During the previous day, moderate to heavy rainfall was observed over Southwest Mali; part of Ghana, South and East Cote d`Ivoire; East, Central and West Burkina Faso; West Niger; Southeast Nigeria; East Cameroon; Southeast Chad; part of South Sudan Republic and Central African Republic; South Sudan; North Democratic Republic of Congo; Central and West Ethiopia; part South Africa.

2.2. Weather assessment for the current day (June, 22nd 2012)

Convective activities observed across West and Coastal Guinea Conakry; part of Sierra Leone; Southeast Cote d`Ivoire; South and East Nigeria; Southwest Cameroon; Chad and Sudan; North Democratic Republic of Congo; Central and South Central African Republic; part of South Sudan Republic and Uganda; South and East Ethiopia; West Ethiopia and Eritrea.



ITD Position and IR Satellite Image (valid 1200Z of June, 22nd 2012)



Previous day rainfall condition over Africa (top Left) based on the NCEP CPCE/RFE and current day ITD Position and cloud cover (top right) based on IR Satellite image and Synoptic Plotting

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