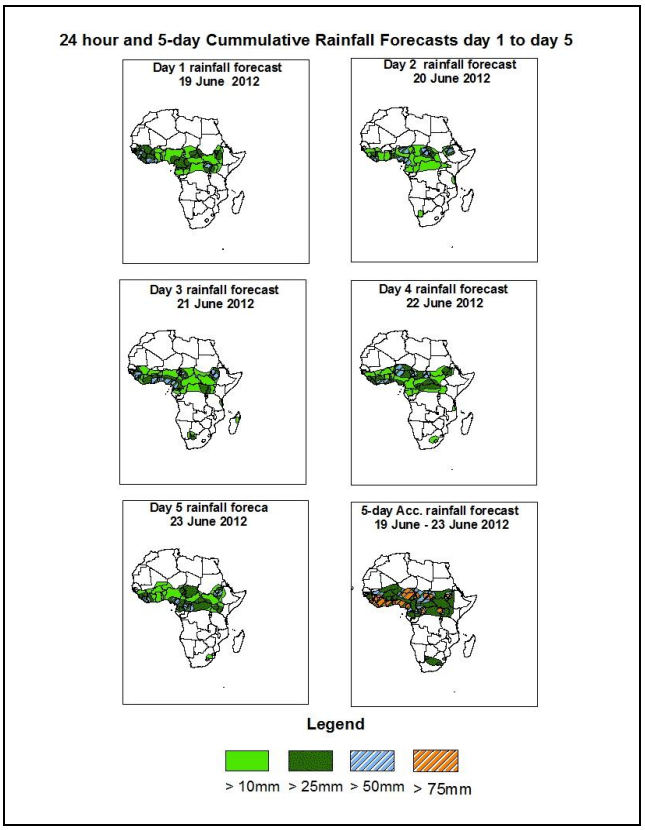
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 19 June – 06Z of 23 June 2012, (Issued at 13:00Z of 18 June 2012)

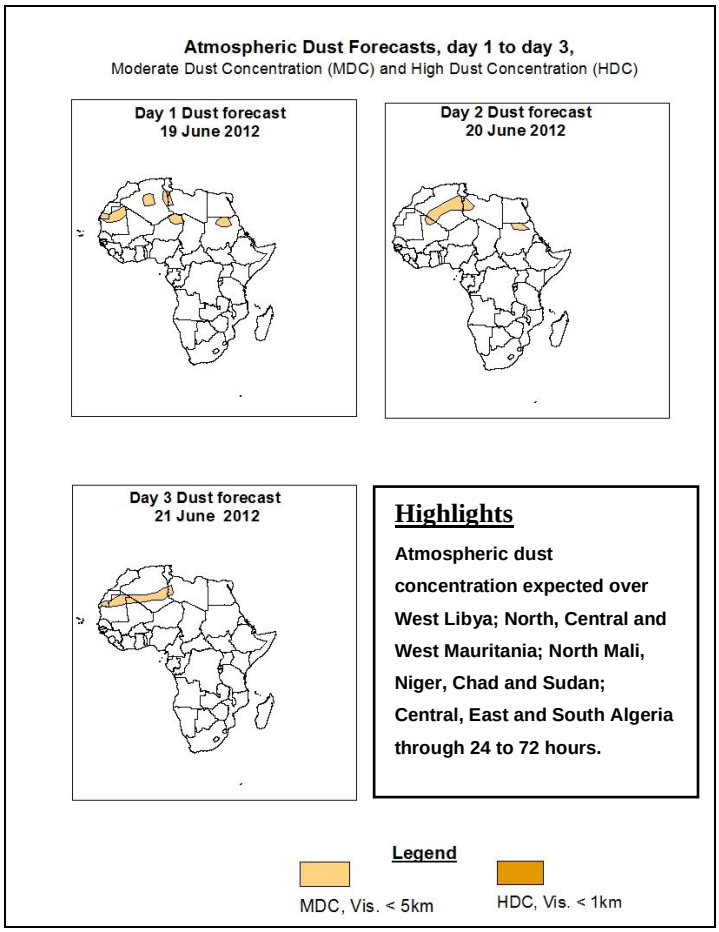
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 maintain its northwards position up to 22^{o}N with significant monsoon inflow and depth within 24 to 120 hours; Also the active TEJ and AEJ associated with AEW propagation, will enhance rainfall activities over Western Ethiopia; Southern Part of Guinea Gulf Countries; East, South and West Sahel region and part of Central Africa.



1.3. Model Discussion: Valid from 00Z of June, 18th 2012.

According to the GFS, ECMWF and UKMET models the heat lows are expected to fill up in 48 hours and tends to deepen through 72 to 120 hours over Mauritania, Algeria, Mali, Niger and Chad; then deepen in 48hours over Sudan, thereafter maintain almost its core value within 72 to 120 hours.

According to GFS model, a thermal low over West, Central and North Mauritania (1007hpa) in 24 hours is expected to increase to 1009hpa in 48 hours and tends to gradually decrease from 1008hpa to 1005hpa through 72 to 120 hours. The second low over North Mali, West and South Algeria (1006hpa) in 24 hours is expected to increase to 1008hpa in 48 hours and slightly decrease from 1004hpa to 1003hpa within 72 to 96 hours; then tends to increase to 1005hpa in 120 hours. Third low over North Chad and Niger (1006hpa) through 24 to 48 hours is expected to slightly increase from 1004hpa to 1005hpa through 72 to 120 hours; while the low over North Sudan(1004hpa) in 24 hours is expected to increase from 1002hpa to 1004hpa within 48 to 120 hours.

The ECMWF model shows a thermal low over West, Central and North Mauritania (1008hpa) in 24 hours is expected to decrease from 1010hpa to 1008hpa through 48 120 hours. The second low over South Algeria and North Mali (1008hpa) in 24 hours is expected to increase to 1010hpa in 48 hours and tends to slightly increase from 1004hpa to 1005hpa within 72 to 120 hours. The third low over North Niger and Chad (1008hpa) through 24 to 48 hours is expected to increase from 1004hpa to 1008hpa through 72 to 120 hours; while the low over North Sudan (1006hpa) within 24 to 48 hours is expected to slightly increase from 1004hpa to 1005hpa through 72 to 120 hours.

The UKMET model shows a thermal low over West, Central and North Mauritania (1008hpa) in 24 hours is expected to increase from 1009hpa to 1010hpa through 48 to 96 hours hours and tends to decrease to 1008hpa in 120 hours. The second low over South Algeria and North Mali (1006hpa) within 24 to 48 hours is expected to decrease to 1002hpa in 72 hours and tends to increase its core value from 1003hpa to 1004hpa through 96 to 120 hours. The third low over North Niger and Chad (1007hpa) in 24 hours is expected to decrease from 1006hpa to 1004hpa within 48 to 96 hours and tends to increase to 1007hpa in 120 hours; while North Sudan (1004hpa) through 24 to 48 hours is expected to decrease to 1001hpa in 72 hours and tends to increase from 1003hpa to 1006hpa within 96 to 120 hours.

According to the UKMET model, the St. Helena High pressure system over South Atlantic Ocean with a core value of 1034hpa in 24 hours is expected to increase its core value to 1038hpa in 48 hours and tends to decrease from 1036hpa to 1030 within 72 to 120 hours. According to the ECMWF model, the central pressure value of 1034hpa in 24 hours is expected to increase to 1037hpa in 48 hours and decrease from 1034hpa to 1029hpa through 72 to 120 hours. According to the GFS model, the central pressure value of 1034hpa through 24 to 48 hours is expected to increase its core value to 1037hpa in 72 hours and tends to decrease from 1030hpa to 1028 within 96 to 120 hours.

According to the GFS model, the Mascarene high pressure system over South Indian Ocean with its central pressure value of 1035hpa in 24 hours locate at longitude 70^{o}E is expected to decrease its core value to 1033hpa in 48 hours by shifting eastwards (from 70^{o}E to 80^{o}E) and tends to decrease from 1034hpa to 1031hpa through 72 to 120 hours by shifting Eastwards (from 95^{o}E to 100^{o}E). According to the ECMWF model, the central

pressure value of 1035hpa in 24 hours and locate at longitude 70^{o}E is expected to decrease its core value to 1032hpa within 48 to 72 hours by shifting eastwards (from 70^{o}E to 85^{o}E) and slightly to increase to 1033hpa in 96 hours by shifting Eastwards (from 85^{o}E to 90^{o}E); then decreases to 1030hpa in 120 hours by shifting eastwards (from 90^{o}E to 100^{o}E). Lastly, according to the UKMET model of the Mascarene high pressure system over South Indian Ocean with its central pressure value of 1035hpa in 24 hours and locates at longitude 70^{o}E is expected to increase from 1033hpa to 1036hpa through 48 to 96hours by shifting Eastwards (from 80^{o}E to 100^{o}E) and tends to decrease its core value to 1032hpa 120 hours by maintain almost its position around longitude 100^{o}E.

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 and Chad; East, Central and South Algeria; West Libya; South Western Sahara through 24 to 120 hours.

At the 850hpa level, a lower tropospheric wind convergence associated with significant West African Monsoon inflow and depth is expected to prevail over parts of Cameroon, Chad, Central African Republic and Western Africa and fluctuate between latitude 15^{o}N 21^{o}N through 24 hours to 120 hours. The convergence associated with the meridional arm of the ITCZ is located over Western part of South Sudan Republic; East and South Central African Republic, West Uganda and North Democratic Republic of Congo 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) with a core of 30 to 40 knots over West Mali; Part of Guinea Conakry, Gambia and Guinea Bissau; East and South Senegal; , through 48 to 120 hours is expected to maintain almost its strength. An African Easterly Waves propagating westwards will be affecting most part of Guinea Gulf Countries; South and West Sahel; West and South Central African Republic through 24 to 120 hours.

At 500hpa level, a wave is expected to affect part of Guinea Conakry, Burkina Faso, Benin, Togo, Cote d`Ivoire, Ghana, Liberia, Sierra Leone and Nigeria; South and West Central African Republic and North Democratic Republic of Congo within 48 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.

In the next five days, ITD is expected to maintain its northwards position up to 22^{o}N with significant monsoon inflow and depth within 24 to 120 hours; Also the active TEJ and AEJ associated with AEW propagation, will enhance rainfall activities over Western Ethiopia; Southern Part of Guinea Gulf Countries; East, South and West Sahel region and part of Central Africa.

Atmospheric dust concentration expected over West Libya; North, Central and West Mauritania; North Mali, Niger, Chad and Sudan; Central, East and South Algeria through 24 to 72 hours.

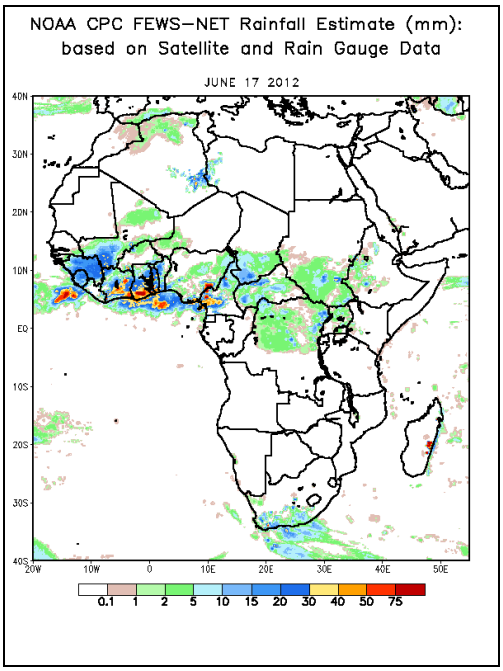
2.0. Previous and Current Day Weather Discussion over Africa (June, 17th 2012– June, 18th 2012)

2.1. Weather assessment for the previous day (June, 17th 2012)

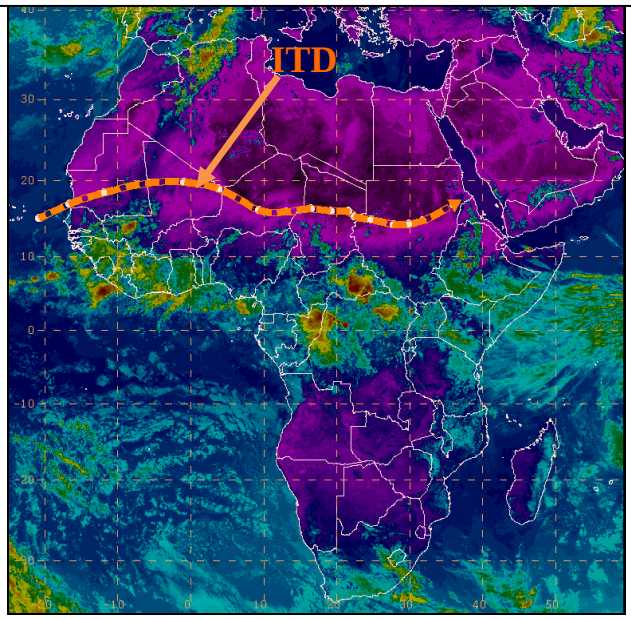
During the previous day, moderate to heavy rainfall was observed over West Mali; Part of Guinea Conakry and Sierra Leone; East, Central and South Cote d`Ivoire; South and East Nigeria; South Chad; West and South Cameroon; Part of Ghana and Togo; West and South Benin; part of Central African Republic; Northwest South Sudan Republic; West Ethiopia; East Madagascar and Northeast Democratic Republic of Congo.

2.2. Weather assessment for the current day (June, 18th 2012)

Convective activities observed across West Mali; East Guinea Conakry; Coastal Liberia; South and West Cote d`Ivoire; Southeast Cameroon, North Congo; South Central African Republic and Northeast Democratic Republic of Congo.



ITD Position and IR Satellite Image (valid 1200Z of June, 18th 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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