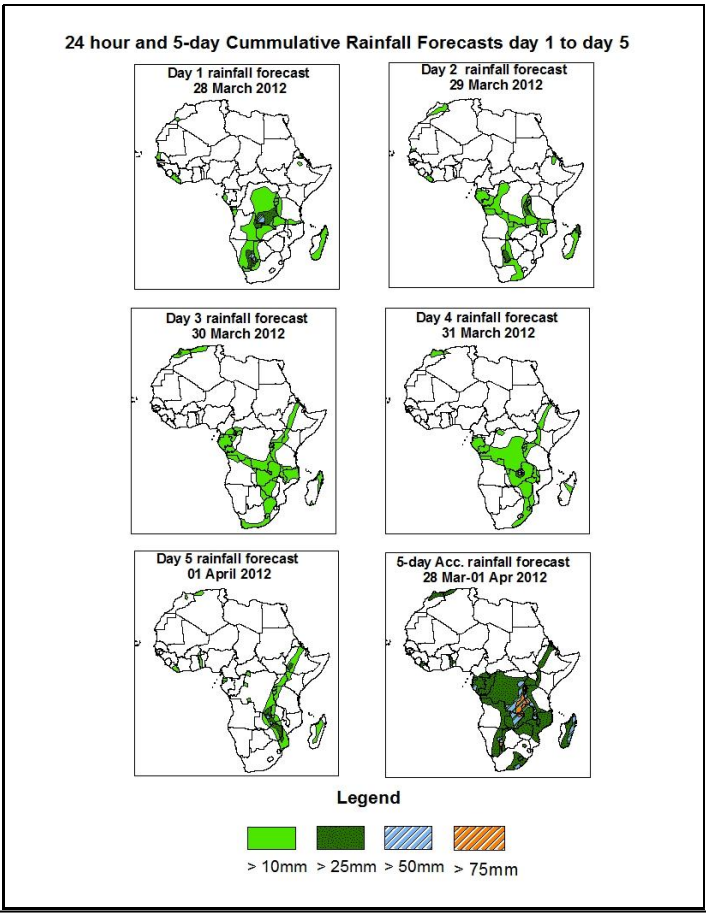
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 28 March – 06Z of 01 April 2012, (Issued at 16:30Z of 27 March 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.

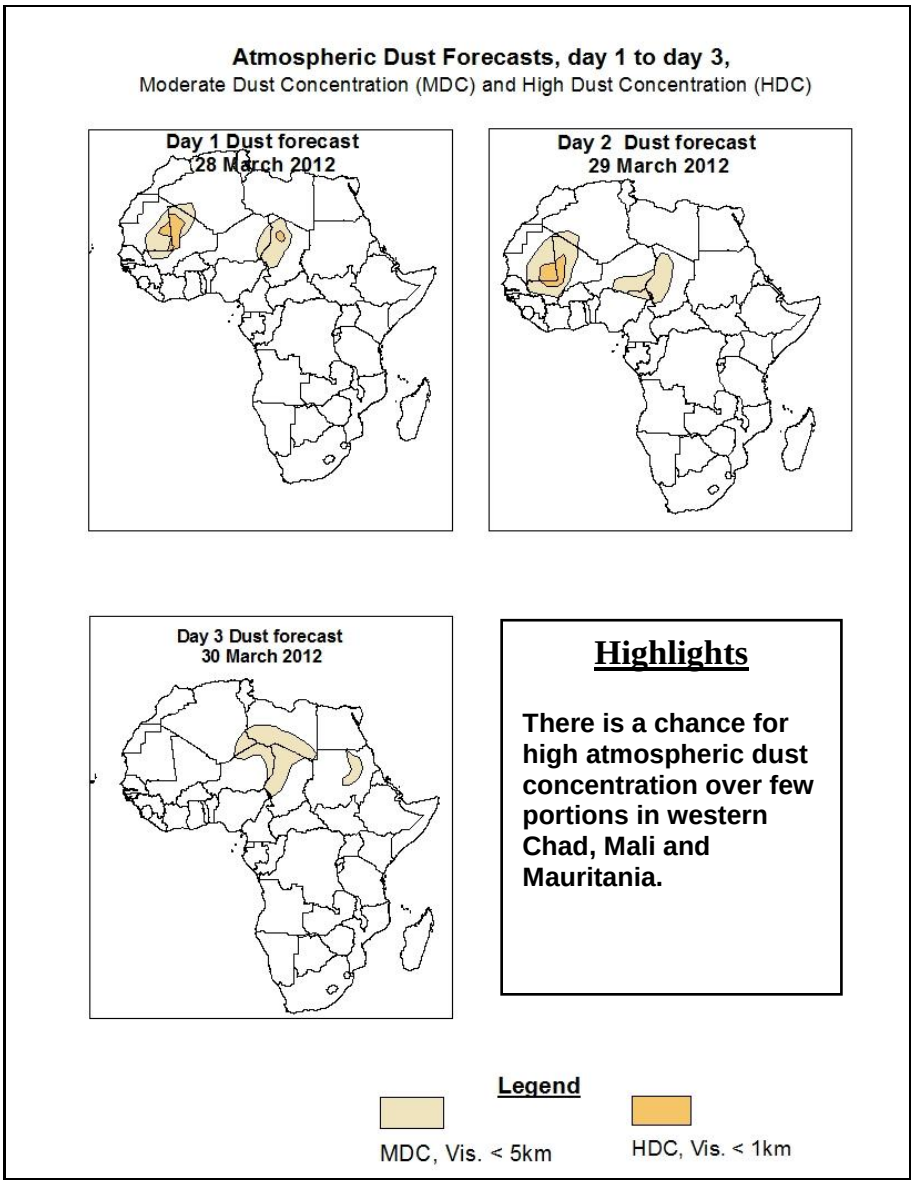


Summary

In the next five days, low level tropospheric wind convergences from the Gulf of Guinea to northeastern DRC passing through CAR, Cameroun and northern DRC, the low level weak convergence in the vicinity of eastern DRC, western Uganda, Rwanda, Burundi and western Tanzania associated with the meridional arm of the ITCZ, convergences over western Ethiopia and the mid-latitude trough over South Africa are expected to enhance rainfall in their respective regions. Hence, there is a chance of moderate to heavy rainfall over central Ethiopia, Equatorial Guinea, Gabon, eastern Angola, eastern Namibia, southwestern Botswana, Zambia, Congo, DRC, Rwanda, Burundi, Mozambique, Malawi, western Tanzania, eastern South Africa and Madagascar Island.

1.2. Atmospheric Dust Forecasts

The NCEP/GFS, the UK Met Office, the ECMWF and the NCEP/WRF outputs are used to identify areas with high probability of dust concentration.



1.3. Models Comparison and Discussion-Valid from 00Z of 27 March 2012

The GFS, ECMWF and UKMET models indicate series of lows and their associated troughs across northern, central and the South African countries.

A low will form in the vicinity of northern DRC and CAR with a central MSLP of 1005mb at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1006mb through 24 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1004mb towards the end of the forecast period, according to the **GFS** model. According to **ECMWF** model, the same low with a central MSLP value of 1006mb will form in the vicinity of northern DRC and Central Africa Republic at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1010mb through 24 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1006mb towards the end of the forecast period. **A**ccording to the **UKMET** model, this low with a central MSLP value of 1005mb will form over the same area at the beginning of the forecast. It tends to fill with its central MSLP value increasing to 1006mb through 24 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1004mb towards the end of the forecast period.

According to **GFS** model, a low will form in the vicinity of the Republic of Southern Sudan with a central MSLP value of 1005mb at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1006mb through 48 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1004mb towards the end of the forecast period. According to **ECMWF** model, the same low with a central MSLP value of 1006mb will form in the vicinity of southern Sudan at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1007mb through 48 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1005mb towards the end of the forecast period. **A**ccording to the **UKMET** model, the low will form over the same area with a central MSLP value of 1004mb at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1006mb through 24 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1004mb towards the end of the forecast period.

A low will form in the vicinity of central Botswana with a central MSLP of 1009mb at the beginning of the forecast period. It tends to progressively shift northwestwards to eastern Angola and deepen with its central MSLP value decreasing to 1008mb towards the end of the forecast period, according to the **GFS** model. According to **UKMET** model, the low with a central MSLP value of 1010mb will form in the vicinity of northern Botswana at the beginning of the forecast period. It tends to progressively shift eastwards to northern South Africa and southern Zimbabwe where it will merge with an incoming sub-tropical trough through 72 to 96 hours.

According to **GFS** model, a low will form in the vicinity of northern Ghana with a central MSLP value of 1007mb at the beginning of the forecast period. It tends to progressively shift northwards to northern Burkina Faso and deepen with its central MSLP value decreasing to 1005mb towards the end of the forecast period. According to **ECMWF** model, the same low with a central MSLP value of 1007mb will form in the vicinity of northern Togo and northern Ghana at the beginning of the forecast period. It tends to shift northeastwards to northeastern Burkina Faso and deepen with its central MSLP value decreasing to 1006mb towards the end of the forecast period. The same low will form over northern Ghana, according to **UKMET** model, with a central MSLP value of 1007mb at the beginning of the forecast period. It tends to shift northwards to northern Burkina Faso and fill with its central MSLP value increasing to 1008mb towards the end of the forecast period.

A low will form in the vicinity of central Nigeria with a central MSLP value of 1008mb at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1005mb towards the end of the forecast period, according to the **GFS** model. The same low will form over southeastern Nigeria with a central MSLP value of 1006mb at the beginning of the forecast period. It tends to fill 24 hours later, according to **UKMET** model.

The St. Helena High pressure system over southeast Atlantic Ocean with a central MSLP value of 1022mb at the beginning of the forecast period tends to strengthen with its central MSLP value increasing to 1029mb through 24 to 72 hours. It thereafter tends to weaken with its central MSLP value decreasing to 1025mb towards the end of the forecast period, according to **GFS** model.

According to **ECMWF** model, the St. Helena High pressure system with a central MSLP value of 1022mb at the beginning of the forecast period tends to strengthen with its central MSLP value increasing to 1028mb towards the end of the forecast period. The **UKMET** model locates St. Helena High pressure system over the same area with a central MSLP value of 1023mb at the beginning of the forecast period. It tends to strengthen with its central MSLP value increasing to 1029mb through 24 to 96 hours. It thereafter tends to weaken with its central MSLP value decreasing to 1024mb towards the end of the forecast period.

The **entire** models locate the Mascarene high pressure system over southwestern Indian Ocean with a central MSLP of 1024mb at the beginning of the forecast period. It tends propagate eastwards and strengthen progressively to a central MSLP value of 1028mb through 24 to 96 hours. It thereafter tends to weaken with its central MSLP value decreasing to 1024mb towards the end of the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to be active from the Gulf of Guinea to northeastern DRC passing through southern Cameroun, CAR and northern DRC throughout the forecast period. A low level weak convergence zone is expected to form in the vicinity of eastern DRC, western Uganda, Rwanda, Burundi and western Tanzania associated with the meridional arm of the ITCZ. It tends to maintain its position throughout the forecast period. Another convergence zone, also associated with the meridional arm of the ITCZ will be located over western Ethiopia running from north to south throughout the forecast period. Localized winds convergences associated with a mid-latitude trough are expected to dominate the flow over western Botswana and central South Africa at the beginning of the forecast period. These convergences tend to progressively shift eastwards to eastern coast of SA towards the end of the forecast period.

At 500hpa, a northeastward propagating mid latitude trough with the low geo-potential value of 5640gpm is expected to dominate the flow over northeastern Egypt through 24 to 72 hours after the beginning of the forecast period. **A**nother northeast-southwest oriented, eastwards propagating mid latitude trough with the low geo-potential value of 5760gpm is expected to dominate the flow over western Morocco throughout the forecast period.

A mid-latitude trough with a geo-potential value of 5800gpm is expected to dominate the flow over western South Africa at the beginning of the forecast period. It tends to propagate eastwards reaching eastern South Africa with a geo-potential value of 5720gpm towards the end of the forecast period.

At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow from northern Atlantic Ocean across North Africa to Persian Gulf during the forecast period. The intensity of the jet is expected to exceed 80kts while moving to the east with its core values occasionally increasing to more than 160kts especially at the beginning of the forecast period.

In the next five days, low level tropospheric wind convergences from the Gulf of Guinea to northeastern DRC passing through CAR, Cameroun and northern DRC, the low level weak convergence in the vicinity of eastern DRC, western Uganda, Rwanda, Burundi and western Tanzania associated with the meridional arm of the ITCZ, convergences over western Ethiopia and the mid-latitude trough over South Africa are expected to enhance rainfall in their respective regions. Hence, there is a chance of moderate to heavy rainfall over central Ethiopia, Equatorial Guinea, Gabon, eastern Angola, eastern Namibia, southwestern Botswana, Zambia, Congo, DRC, Rwanda, Burundi, Mozambique, Malawi, western Tanzania, eastern South Africa and Madagascar Island.

2.0. Previous and Current Day Weather Discussion over Africa (26 March – 27 March 2012)

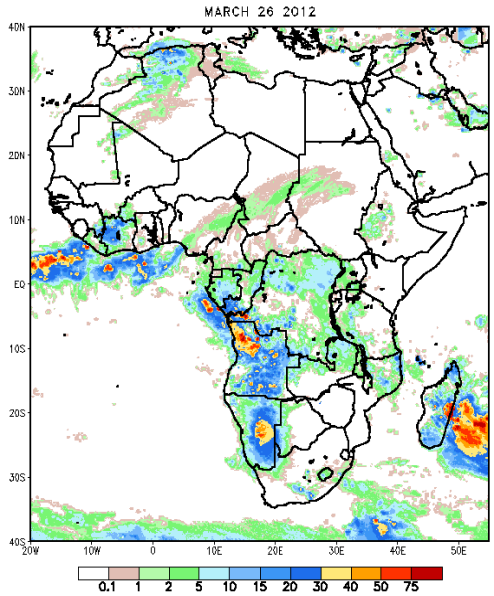
2.1. Weather assessment for the previous day (26 March 2012)

During the previous day, moderate to locally heavy rainfall was observed over eastern Madagascar, southern Congo, eastern Namibia, western DRC, Angola, western Cote D'Ivoire and northern Algeria.

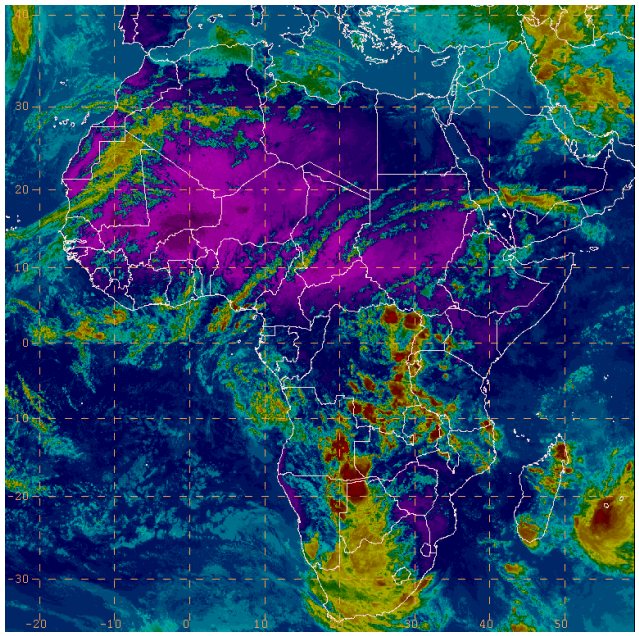
2.2. Weather assessment for the current day (27 March 2012)

Intense clouds are observed over eastern DRC, south Angola, eastern Namibia, Botswana, South Africa, western Tanzania, Burundi, Rwanda, western Uganda and northern & southern Madagascar.

NOAA CPC FEWS–NET Rainfall Estimate (mm): based on Satellite and Rain Gauge Data



IR Satellite Image (valid 1500Z of 27 March 2012)



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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