

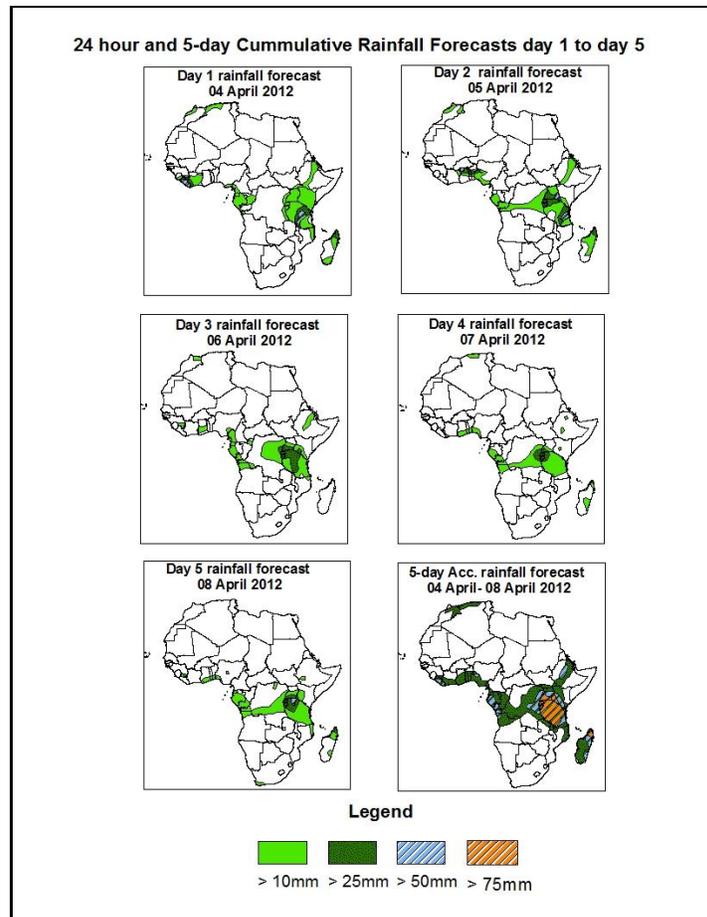


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 04 April – 06Z of 08 April 2012, (Issued at 15:30Z of 03 April 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.

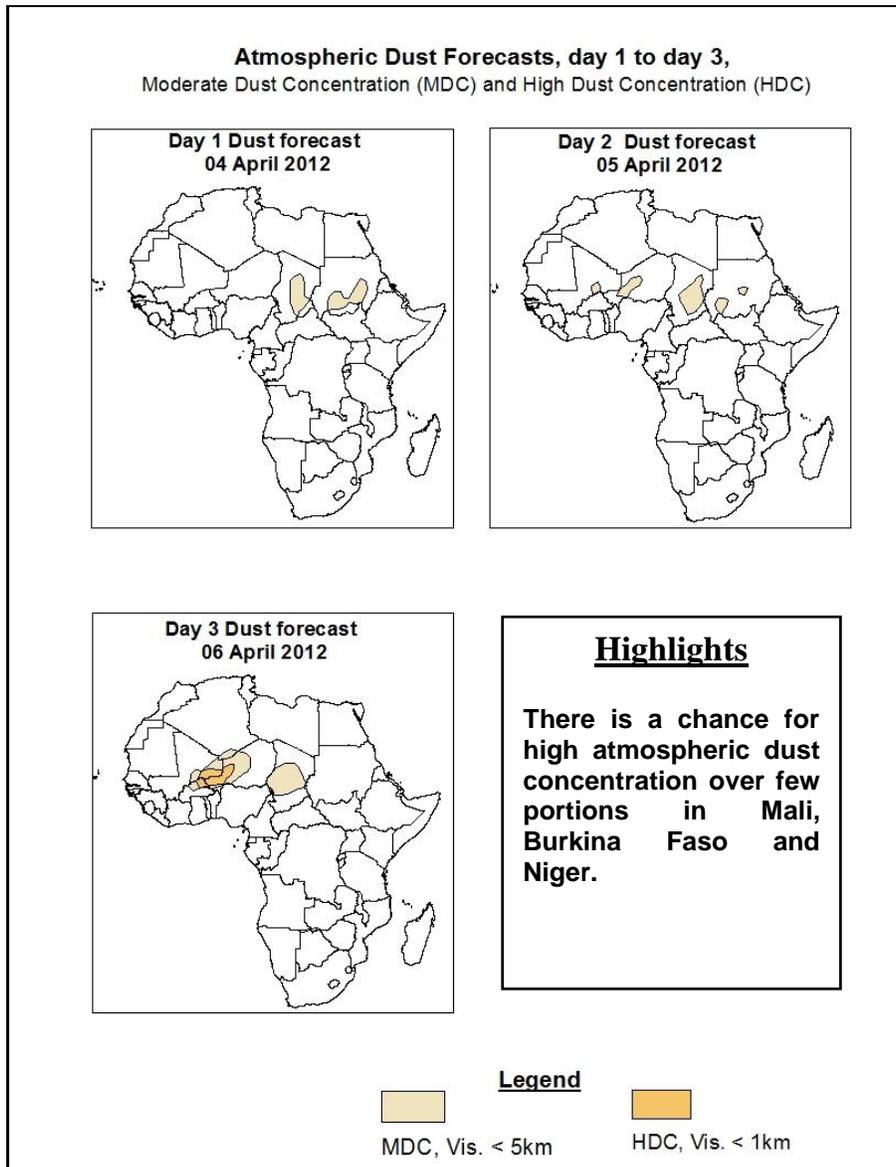


### Summary

In the next five days, low level tropospheric wind convergences from northern Cote D'Ivoire to northeastern DRC passing through northern Ghana, Togo, Benin, central Nigeria, Cameroun, CAR and northern DRC, the low level weak convergence from northern Ethiopia to southern Tanzania traversing central Ethiopia, central Kenya and central Tanzania associated with the meridional arm of the ITCZ, a low level weak convergence zone associated with the zonal arm of ITCZ in the vicinity of central Tanzania and central DRC and the mid-latitude trough over Eritrea and northern Ethiopia are expected to enhance rainfall in their respective regions. Hence, there is a chance of moderate to heavy rainfall over central Ethiopia, western and central Kenya, Uganda, Rwanda, Burundi, Tanzania, eastern and central DRC, southern Congo, Gabon, Equatorial Guinea 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 03 April 2012**

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

A low will form in the vicinity of northern DRC, CAR and southern Chad with a central MSLP of 1005mb at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1002mb 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 1005mb will form in the vicinity of northern DRC, CAR and southern Chad at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1003mb towards the end of the forecast period. According 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 deepen with its central MSLP value decreasing to 1002mb towards the end of the forecast period.

A low will form in the vicinity of western DRC and northwestern Angola with a central MSLP of 1011mb at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1007mb towards the end of the forecast period, according to the **GFS** model.

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 deepen with its central MSLP value decreasing to 1001mb towards the end of the forecast period. According to **ECMWF** model, the same low with a central MSLP value of 1005mb will form in the vicinity of southern Sudan at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1004mb towards the end of the forecast period. According to the **UKMET** model, the low will form over the same area with a central MSLP value of 1005mb at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1002mb towards the end of the forecast period.

**A** low will form in the vicinity of southeastern Ethiopia, northeastern Kenya and western Somalia with a central MSLP of 1010mb at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1006mb towards the end of the forecast period, according to **GFS** model.

According to **GFS** model, a low will form in the vicinity of northern Benin and northwestern Nigeria 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 1008mb through 24 to 72 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1003mb towards the end of the forecast period. **A** low will form over southern Mali, according to **UKMET** model, with a central MSLP value of 1008mb at the beginning of the forecast period. It tends to maintain its location and central MSLP value throughout the forecast period. According to **ECMWF** model, the same low with a central MSLP value of 1010mb will form at the same location at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1008mb towards the end of the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean with a central MSLP value of 1028mb at the beginning of the forecast period tends to weaken with its central MSLP value decreasing to 1020mb through 24 to 48 hours. It thereafter tends to strengthen with its central MSLP value increasing to 1028mb towards the end of the forecast period, according to **the three** models.

The **entire** models locate the Mascarene high pressure system over southwestern Indian Ocean with a central MSLP of 1020mb at the beginning of the forecast period. It tends to strengthen progressively with its central MSLP value increasing to 1028mb towards the end of the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to be active from northern Cote D'Ivoire to northeastern DRC passing through northern Ghana, Togo, Benin, central Nigeria, Cameroun, CAR and northern DRC throughout the forecast period. A low level weak convergence zone is expected to form from northern Ethiopia to southern Tanzania traversing central Ethiopia, central Kenya and central Tanzania associated with the meridional arm of the ITCZ at the beginning of the

forecast period. It tends to weaken towards the end of the forecast period. A low level weak convergence zone associated with the zonal arm of ITCZ is expected to form in the vicinity of central Tanzania and central DRC throughout the forecast period.

At 500hpa, a northeast-southwest oriented, quasi-stationary mid latitude trough with the low geo-potential value of 5560gpm is expected to dominate the flow over northern Morocco throughout the forecast period. Another northeast-southwest oriented, eastwards propagating mid-latitude trough with a geo-potential value of 5840gpm is expected to dominate the flow over central Eritrea and northern Ethiopia throughout the forecast period. A north- south oriented, eastwards propagating, mid-latitude trough with a geo-potential value of 5760gpm is expected to dominate the flow over western South Africa through 48 to 72 hours, reaching central South Africa with a geo-potential value of 5600gpm 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 100kts 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 northern Cote D'Ivoire to northeastern DRC passing through northern Ghana, Togo, Benin, central Nigeria, Cameroun, CAR and northern DRC, the low level weak convergence from northern Ethiopia to southern Tanzania traversing central Ethiopia, central Kenya and central Tanzania associated with the meridional arm of the ITCZ, a low level weak convergence zone associated with the zonal arm of ITCZ in the vicinity of central Tanzania and central DRC and the mid-latitude trough over Eritrea and northern Ethiopia are expected to enhance rainfall in their respective regions. Hence, there is a chance of moderate to heavy rainfall over central Ethiopia, western and central Kenya, Uganda, Rwanda, Burundi, Tanzania, eastern and central DRC, southern Congo, Gabon, Equatorial Guinea and Madagascar Island.

## 2.0. Previous and Current Day Weather Discussion over Africa

(02 April – 03 April 2012)

### 2.1. Weather assessment for the previous day (02 April 2012)

During the previous day, moderate to locally heavy rainfall was observed over Northern and southern Madagascar, northern Mozambique, southeastern Zambia, Malawi, southern and central Tanzania, southeastern Nigeria and central and western Cameroun.

### 2.2. Weather assessment for the current day (03 April 2012)

Intense clouds are observed over southwestern Ghana, southern Benin, southeastern Nigeria, Cameroun, southern and eastern DRC, Uganda, Kenya, Rwanda, Burundi, Tanzania, northern Angola, eastern Mozambique, eastern and western Madagascar and central Ethiopia.

