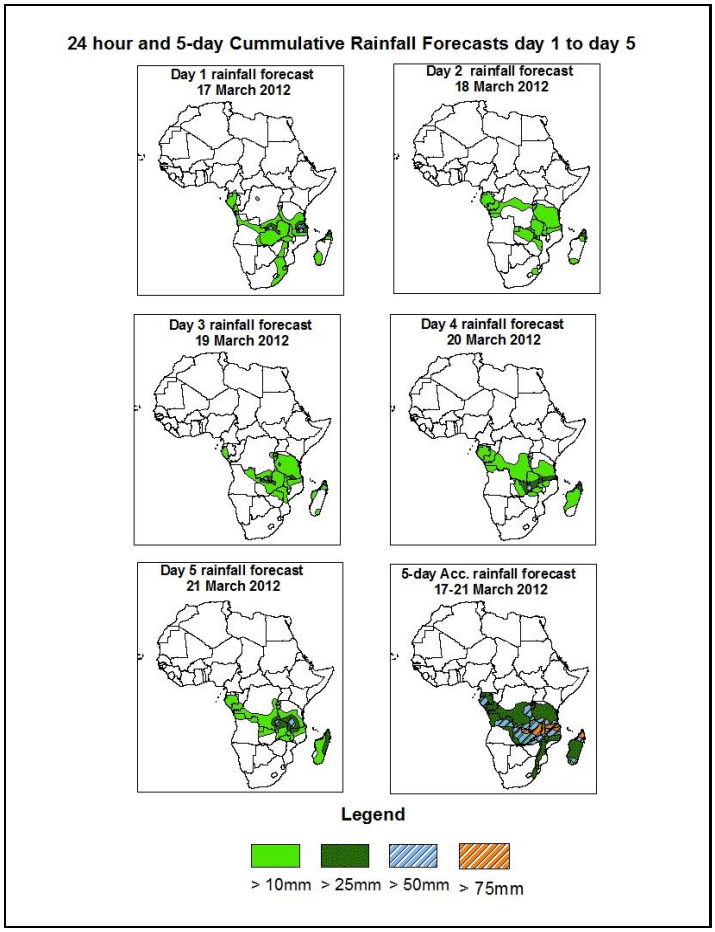
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 17 March – 06Z of 21 March 2012, (Issued at 18:00Z of 16 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 southern Cameroun and northern Congo, the low level weak convergence in the vicinity of eastern DRC, Rwanda, Burundi, western Tanzania and northwestern Malawi associated with the meridional arm of the ITCZ, the zonal arm of the ITCZ over eastern Angola running across southern DRC and northern Zambia up to northern Malawi and southern Tanzania, Localized winds convergences over southeastern South Africa and cyclonic circulations over Mozambique Channel off the coast of northwestern Madagascar are expected to enhance rainfall in their respective regions. Hence, there is a chance of heavy rainfall over Equatorial Guinea, Gabon, eastern and northern Angola, Zambia, northern Zimbabwe, southern and central DRC, northern Mozambique, Malawi, Tanzania and Madagascar Island.

1.2. Models Comparison and Discussion-Valid from 00Z of 16 March 2012

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

A low will form in the vicinity of northern DRC and CAR with a central MSLP of 1006mb 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. According to **ECMWF** model, the same low with a central MSLP value of 1005mb 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 1007mb through 24 to 48 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 mean sea level pressure value of 1005mb will be located in the vicinity of northern DRC and CAR at the beginning of the forecast. It tends to fill with its central MSLP value increasing to 1008mb through 48 to 96 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 deepen with its central MSLP value decreasing to 1004mb towards the end of the forecast period. According to **ECMWF** model, this 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 fill with its central MSLP value increasing to 1006mb 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 1003mb at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1004mb towards the end of the forecast period.

According to **GFS** model, a low will form in the vicinity of northern Zimbabwe and southern Zambia with a central MSLP value of 1010mb through 24 to 48 hours. It tends to progressively shift towards central Tanzania and deepening at the same time with its central MSLP value decreasing to 1009mb towards the end of the forecast period. According to **UKMET** model, this low with a central MSLP value of 1008mb will form in

the vicinity of southern Malawi and western Mozambique with a central MSLP value of 1008mb through 24 to 48 hours. It tends to shift towards central Zambia and fill through 72 to 96 hours.

According to **GFS** model, a low will form in the vicinity of central Ghana 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 1006mb towards the end of the forecast period. According to **ECMWF** model, this low with a central MSLP value of 1009mb will form in the vicinity of central Ghana 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. The same low will form over central Ghana 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 1007mb through 24 to 72 hours. It thereafter tends to fill with its central MSLP value increasing to 1008mb towards the end of the forecast period, according to **UKMET** model.

A low will form in the vicinity of southern 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 1006mb towards the end of the forecast period, according to the **GFS** model. **A**nother low will form in the vicinity of eastern Senegal with a central MSLP value of 1010mb 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 **ECMWF** model, this low with a central MSLP value of 1009mb will form in the vicinity of eastern Senegal through 48 to 72 hours. It tends to fill towards the end of the forecast period. The same low will form in the vicinity of central Senegal with a central MSLP value of 1007mb through 24 to 48 hours. It tends to deepen with its central MSLP value decreasing to 1006mb towards the end of the forecast period, according to **UKMET** model.

The St. Helena High pressure system over southeast Atlantic Ocean with a central MSLP value of 1025mb at the beginning of the forecast period tends to weaken with its central MSLP value decreasing to 1020mb towards the end of the forecast period, according to **GFS** model. **A**ccording to **ECMWF** model, the high will be located over southeast Atlantic Ocean with a central MSLP value of 1026mb at the beginning of the forecast period. It tends to weaken with its central MSLP value decreasing to 1020mb towards the end of the forecast period. According to **UKMET** model, the high is expected to weaken, with its central MSLP value decreasing from 1026mb to 1020mb towards the end of the forecast period.

The entire **three** models locate the Mascarene high pressure system over southwestern Indian Ocean with a central MSLP of 1028mb at the beginning of the forecast period. It tends propagate southeastwards and weaken progressively to a central MSLP value of 1012mb 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 and northern Congo throughout the forecast period. A low level weak convergence zone is expected to form in the vicinity of eastern DRC, Rwanda, Burundi, western Tanzania and northwestern Malawi associated with the meridional arm of the ITCZ. It tends to maintain its location throughout the forecast period. Another weak convergence zone associated with the zonal arm of the ITCZ will be located over eastern Angola running across southern DRC and Zambia up to northern Malawi and southern Tanzania throughout the forecast period. Localized winds convergences associated with a mid-latitude trough are expected to dominate the flow over southeastern South Africa through 24 to 72hours. Cyclonic circulations tend to dominate the flow over Mozambique Channel off the coast of northwestern Madagascar through 24 to 48hours.

At 500hpa, an eastward propagating mid latitude trough with the low geo-potential value of 5760gpm is expected to dominate the flow over southern Africa through 24 to 72 hours. **A**nother eastward propagating mid latitude trough with the low geo-potential value of 5720gpm is expected to dominate the flow over western Morocco from 72 hours to 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 throughout the forecast period.

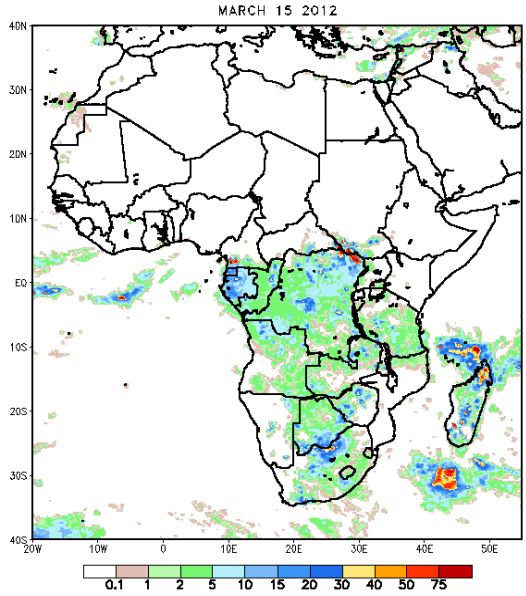
In the next five days, low level tropospheric wind convergences from the Gulf of Guinea to northeastern DRC passing through southern Cameroun and northern Congo, the low level weak convergence in the vicinity of eastern DRC, Rwanda, Burundi, western Tanzania and northwestern Malawi associated with the meridional arm of the ITCZ, the zonal arm of the ITCZ over eastern Angola running across southern DRC and northern Zambia up to northern Malawi and southern Tanzania, Localized winds convergences over southeastern South Africa and cyclonic circulations over Mozambique Channel off the coast of northwestern Madagascar are expected to enhance rainfall in their respective regions. Hence, there is a chance of heavy rainfall over Equatorial Guinea, Gabon, eastern and northern Angola, Zambia, northern Zimbabwe, southern and central DRC, northern Mozambique, Malawi, Tanzania and Madagascar Island.

2.0. Previous and Current Day Weather Discussion over Africa (15 March – 16 March 2012)

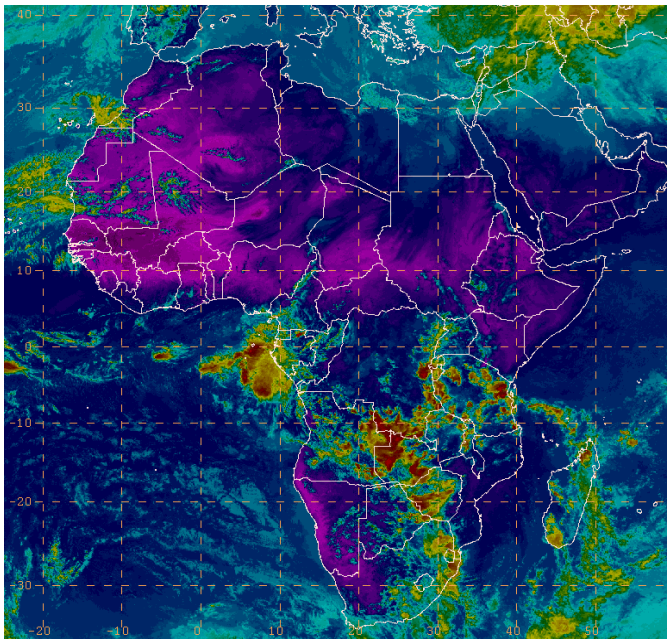
2.1. Weather assessment for the previous day (15 March 2012): During the previous day, moderate to locally heavy rainfall was observed over northern Madagascar, northern DRC, southwestern part of the Republic of Southern Sudan, northern South Africa, southern Zimbabwe, Gabon, Equatorial Guinea and southwestern Cameroun.

2.2. Weather assessment for the current day (16 March 2012): Intense clouds are observed over western Gabon, southern and eastern DRC, Rwanda, Burundi, western Uganda, western Zambia, Zimbabwe, northern Malawi, eastern Angola, Tanzania, Swaziland and eastern South Africa.

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



IR Satellite Image (valid 1500Z of 16 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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