

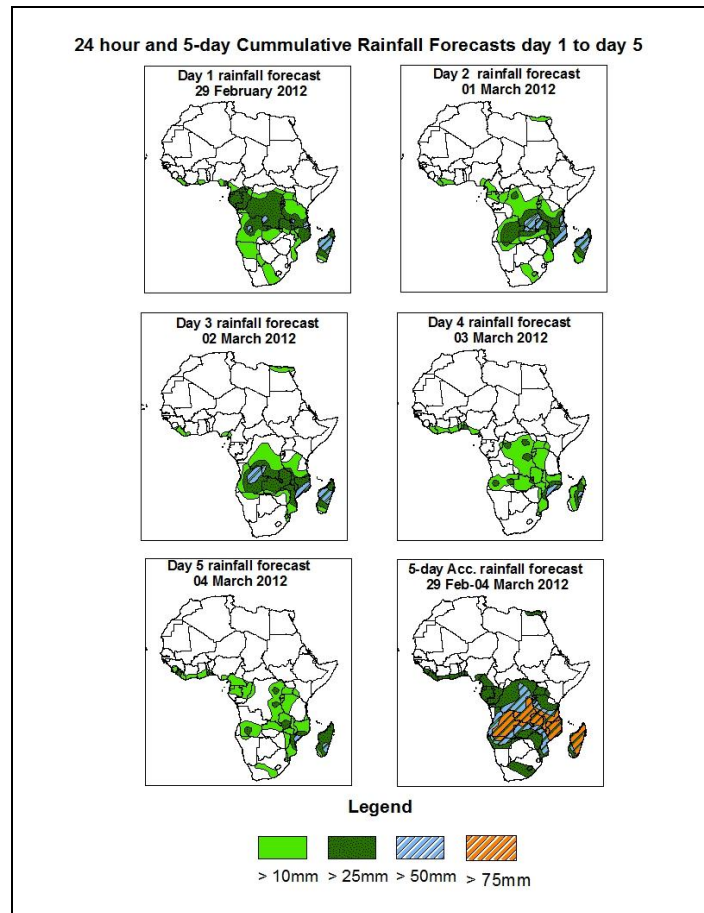


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 29 February – 06Z of 04 March 2012, (Issued at 18:00Z of 28 February 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 western Nigeria to western Uganda passing through Cameroun, Central Africa Republic and northern DRC, the low level convergence in the vicinity of northeastern DRC, central Uganda and central Tanzania associated with the meridional arm of the ITCZ, the zonal arm of the ITCZ over eastern Angola running across northern Zambia / southern DRC border up to northwestern Malawi, cyclonic circulations over Mozambique Channel and Localized winds convergences associated with a mid-latitude trough running along central Angola through Namibia to southeastern coast of South Africa are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over Angola, northern Namibia, Zambia, DRC, Mozambique, Malawi, Rwanda, Burundi, southern and central Tanzania and Madagascar Island.

## 1.2. Models Comparison and Discussion-Valid from 00Z of 28 February 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 1005mb at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing to 1004mb through 24 to 48 hours and thereafter tends to fill with its central MSLP value increasing to 1005mb towards the end of the forecast period, according to the **GFS** model. According to **ECMWF** model, this low with a central MSLP value of 1003mb will form in the vicinity of northern DRC, Central Africa Republic and Southern Sudan at the beginning of the forecast period. It tends to fill progressively with its central MSLP value increasing to 1008mb towards the end of the forecast period. According to the **UKMET** model, this low with mean sea level pressure value of 1003mb will be located in the vicinity of northern DRC, CAR and Southern Sudan at the beginning of the forecast. It tends to fill progressively with its central MSLP value increasing to 1006mb 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 1003mb at the beginning of the forecast period. It tends to deepen through 24 to 48 hours with its central MSLP value decreasing to 1002mb. It thereafter tends to fill with its central MSLP value increasing to 1005mb towards the end of the forecast period.

According to **GFS** model, a low will form in the vicinity of eastern Angola and western Zambia with a central MSLP value of 1008mb at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1010mb through 24 to 96 hours. It thereafter tends to deepen with its central MSLP value decreasing to 1008mb 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 Botswana at the beginning of the forecast period but will fill through 48 to 72 hours. A low will form in the vicinity of southern Namibia with a central MSLP value of 1009mb at the beginning of the forecast period but will fill up after through 48 to 72 hours, according to the **UKMET** model. According to **GFS** model, this low will form in the vicinity of the border between Namibia and South Africa with a central MSLP value of 1009mb 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.

According to **GFS** model, a low will be located in Mozambique Channel, off the west coast of Madagascar Island with a central MSLP value of 995mb at the beginning of the forecast period. It tends to deepen progressively and shift southwestwards at the same time to reach the coast of central Mozambique with a central MSLP value of 975mb towards the end of the forecast period. According to **ECMWF** model, the low will be located in Mozambique Channel, off the west coast of Madagascar Island with a central MSLP value of 998mb at the beginning of the forecast period. It tends to shift southwestwards to sit over the coast of central Mozambique and deepen at the same time with its central MSLP value decreasing to 992mb towards the end of the forecast period. This low will be located off the coast of western Madagascar with a central MSLP value of 993mb at the beginning of the forecast period, according to **UKMET** model. It will however shift southwestwards to sit over the coast of southern Mozambique while filling to a central MSLP value of 995mb towards the end of the forecast period.

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 deepen with its central MSLP value decreasing to 1006mb towards the end of the forecast period. It however tends to shift eastwards to sit over western Nigeria through 24 to 72 hours. This low will form over northern Togo and Benin with a central MSLP value of 1008mb at the beginning of the forecast period. It tends to fill with its central MSLP value increasing to 1009mb towards the end of the forecast period, according to **ECMWF** model. According to **UKMET** model, the low will form over the same area as in **ECMWF** model; with a central MSLP value of 1007mb at the beginning of the forecast period but will fill 72 hours later.

The St. Helena High pressure system over southeast Atlantic Ocean with a central MSLP value of 1020mb at the beginning of the forecast period tends to weaken with its central MSLP value decreasing to 1016mb through 24 to 48 hours. It thereafter tends to strengthen with its central MSLP value increasing to 1022mb towards the end of the forecast period, according to **GFS** model. According to **ECMWF** model, the high will be located over southeast Atlantic Ocean with a central MSLP value of 1020mb at the beginning of the forecast period. It tends to weaken with its central MSLP value decreasing to 1016mb through 24 to 96 hours. It thereafter tends to strengthen with its central MSLP value increasing to 1021mb towards the end of the forecast period. According to **UKMET** model, the high is expected to weaken, with its central MSLP value decreasing from 1021mb to 1016mb through 24 to 72 hours and strengthens thereafter with its central MSLP value increasing 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 1024mb at the beginning of the forecast period. It tends propagates southeastwards and strengthens progressively to a central MSLP value of 1028mb through 24 to 72hours and thereafter weakens to a central MSLP value of 1020mb towards the end of the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to be active from western Nigeria to western Uganda passing through Cameroun, Central Africa Republic and northern DRC throughout the forecast period. A low level convergence zone is expected to form in the vicinity of northeastern DRC, central Uganda and central Tanzania associated with the meridional arm of the ITCZ. It tends to remain stationary throughout the forecast period. Another convergence zone associated with the zonal arm of the ITCZ will be located over eastern Angola running across northern Zambia / southern DRC border up to northwestern Malawi throughout the forecast period. Localized winds convergences associated with a mid-latitude trough are also expected to dominate the flow from central Angola through Namibia to southeastern coast of South Africa throughout the forecast period. Cyclonic circulations are expected to dominate the flow over Mozambique Channel throughout the forecast period.

At 500hpa, zonal flow will dominate North Africa throughout the forecast period.

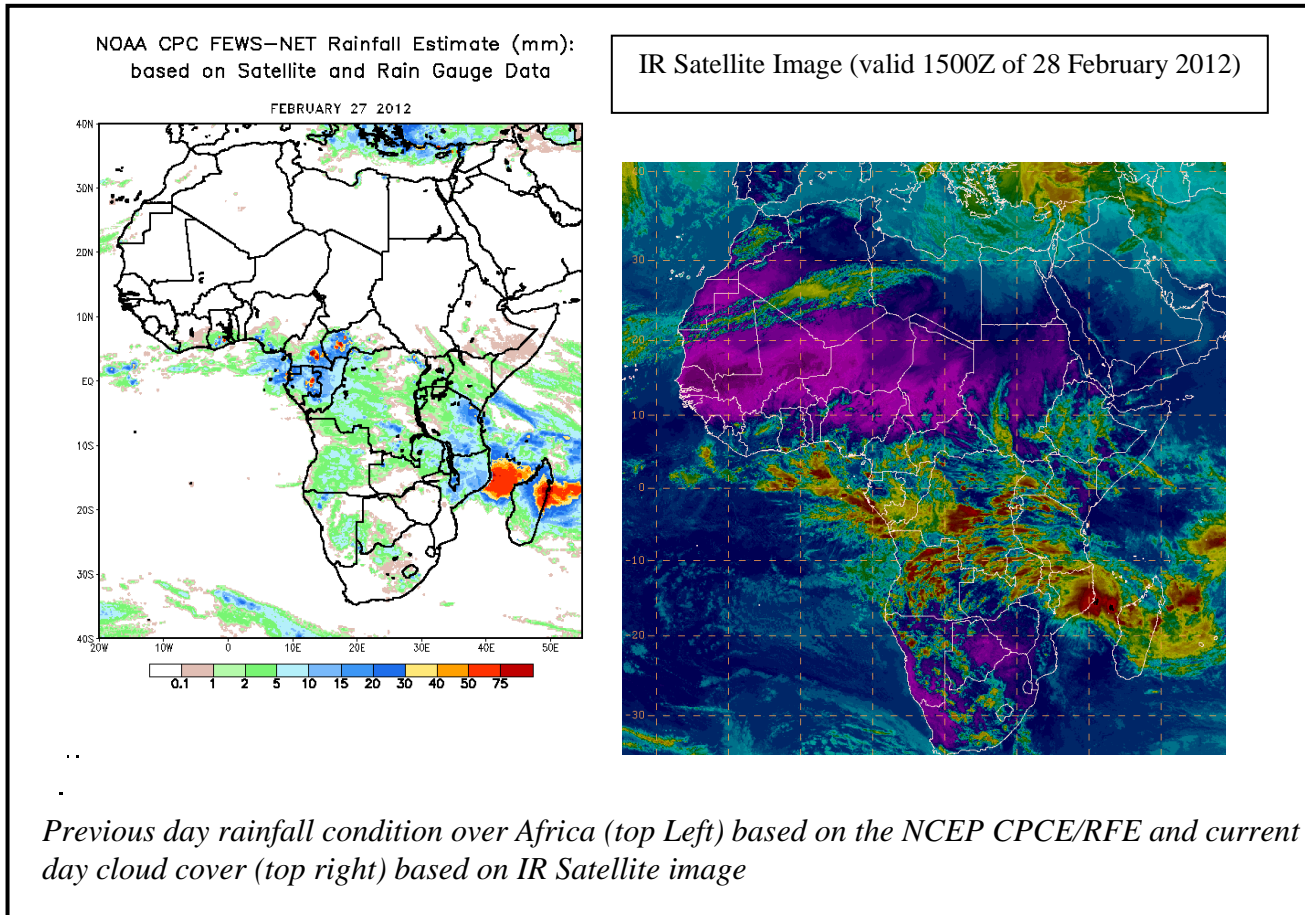
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow from northeastern Atlantic Ocean across northern Africa to Persian Gulf during the forecast period. The intensity of the jet is expected to exceed 130kts while moving to the east with its core values occasionally increasing to more than 150kts throughout the forecast period.

In the next five days, low level tropospheric wind convergences from western Nigeria to western Uganda passing through Cameroun, Central Africa Republic and northern DRC, the low level convergence in the vicinity of northeastern DRC, central Uganda and central Tanzania associated with the meridional arm of the ITCZ, the zonal arm of the ITCZ over eastern Angola running across northern Zambia / southern DRC border up to northwestern Malawi, cyclonic circulations over Mozambique Channel and Localized winds convergences associated with a mid-latitude trough running along central Angola through Namibia to southeastern coast of South Africa are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over Angola, northern Namibia, Zambia, DRC, Mozambique, Malawi, Rwanda, Burundi, southern and central Tanzania and Madagascar Island.

## 2.0. Previous and Current Day Weather Discussion over Africa (27 February – 28 February 2011)

**2.1. Weather assessment for the previous day (27 February 2012):** During the previous day, moderate to locally heavy rainfall was observed over eastern Madagascar, southern and northern Tanzania, northern Mozambique, western CAR, eastern Cameroun, Equatorial Guinea, Gabon and Congo.

**2.2. Weather assessment for the current day (28 February 2012):** Intense clouds are observed over Congo, southwestern Gabon, southern DRC, southwestern Uganda, northern Zambia, eastern Angola, Malawi, southern Tanzania, northeastern Mozambique and central Madagascar.



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