

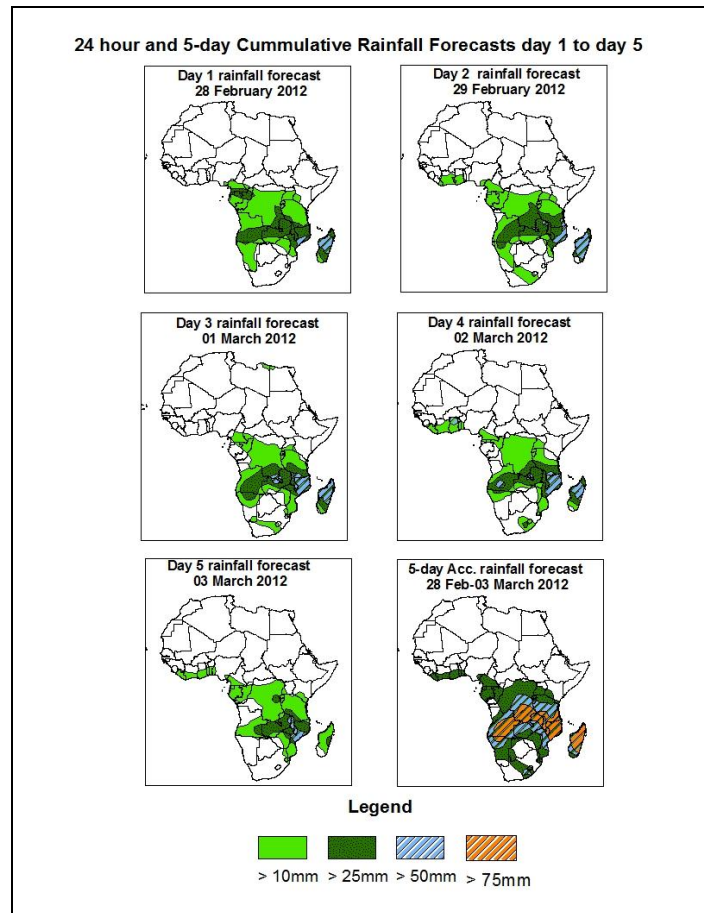


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 28 February – 06Z of 03 March 2012, (Issued at 16:30Z of 27 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 central Nigeria to western Uganda passing through Cameroun, Central Africa Republic and northern DRC, the low level convergence in the vicinity of eastern DRC, western Uganda, Rwanda, Burundi and Western Tanzania associated with the meridional arm of the ITCZ, the zonal arm of the ITCZ over central Angola running across northern Zambia / southern DRC border up to western Malawi, cyclonic circulations over Mozambique Channel and Localized winds convergences associated with a mid-latitude trough running along central Angola up to southern Namibia are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over Angola, northern Namibia, Zambia, southern DRC, Mozambique, Malawi, Rwanda, Burundi, southern and central Tanzania and Madagascar Island.

## 1.2. Models Comparison and Discussion-Valid from 00Z of 27 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 1006mb 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 1006mb towards the end of the forecast period. It will however extend southwards up to central DRC through 48 to 72 hours, according to the **GFS** model. According to **ECMWF** model, this low with a central MSLP value of 1004mb will form in the vicinity of northern DRC, Central Africa Republic and Southern Sudan at the beginning of the forecast period. It tends to deepen with its central MSLP value decreasing 1003mb through 24 to 72 hours. It will thereafter tend to fill with its central MSLP value increasing to 1006mb towards the end of the forecast period. According 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 deepen through 24 to 72 hours with its central MSLP value decreasing to 1004mb and thereafter fill up 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 1004mb at the beginning of the forecast period. It tends to deepen through 24 to 72 hours with its central MSLP value decreasing to 1002mb and thereafter fill up with its central MSLP value increasing to 1004mb towards the end of the forecast period. According to the **UKMET** model, this low with a central MSLP value of 1004mb at the beginning of the forecast period tends to deepen through 24 to 48 hours with its central MSLP value decreasing to 1002mb and thereafter fill up 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 eastern Angola and western Zambia 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 1005mb through 24 to 96 hours and thereafter tends to fill with its central MSLP value increasing to 1009mb

towards the end of the forecast period. This low will form in the vicinity of eastern Angola and western Zambia with a central MSLP value of 1009mb at the beginning of the forecast period and fill up after through 24 to 48 hours, according to the **UKMET** model.

According **GFS** model, a low be located in the vicinity of west coast of Madagascar Island with a central MSLP value of 998mb at the beginning of the forecast period. It tends to shift westwards to reach the coast of central Mozambique and deepen to a central MSLP value of 994mb through 24 to 72 hours. It will thereafter tend to fill with its central MSLP value increasing to 995mb and shift southeastwards to sit over Mozambique Channel towards the end of the forecast period. According to **ECMWF** model, the low be located over western Madagascar with a central MSLP value of 1001mb. It tends to shift westwards to sit over Mozambique Channel and deepen at the same time with its central MSLP value decreasing to 994mb towards the end of the forecast period. This low will form off the coast of western Madagascar with a central MSLP value of 1000mb at the beginning of the forecast period, according to **UKMET** model. It will however shift westwards to sit over the coast of central Mozambique through 24 to 72 hours and deepen to a central MSLP value of 994mb through 24 to 48 hours. It will thereafter tend to shift southeastwards over the Channel and deepen further to a central pressure of 992mb towards the end of the forecast period.

According **GFS** model, a low will form in the vicinity of central Benin and Togo 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. This low will form over northern Ghana with a central MSLP value of 1008mb at the beginning of the forecast period. It will remain stationary throughout the forecast period, according to **ECMWF** model. According to **UKMET** model, the low will form over western Nigeria with a central MSLP value of 1007mb at the beginning of the forecast period. It tends to deepen to a central MSLP value of 1006mb through 24 to 72 hours and thereafter fill to a central MSLP value of 1007mb towards the end of the forecast period.

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 towards the end of the forecast period, according to both **GFS** and **ECMWF** models. According to **UKMET** model, the high is expected to weaken, with its central MSLP value decreasing from 1019mb to 1016mb through 24 to 96 hours and strengthens thereafter with its central MSLP value increasing to 1019mb 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 1020mb at the beginning of the forecast period. It tends propagates eastwards and strengthens progressively to a central MSLP value of 1028mb through 24 to 96 hours and thereafter weakens to a central MSLP value of 1024mb towards the end of the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to be active from central 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 eastern DRC, western Uganda, Rwanda, Burundi and Western 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 central Angola running across northern Zambia / southern DRC border up to western Malawi throughout the forecast period. Localized winds convergences associated with a mid-latitude trough are also expected to dominate the flow from central Angola up to southern Namibia throughout the forecast period. Cyclonic circulations are expected to dominate the flow over Mozambique Channel throughout the forecast period.

At 500hpa, an eastward propagating mid latitude trough is expected to dominate the flow over eastern Libya with the low geo-potential value of 5520gpm at the beginning of forecast period. The north-south oriented trough is expected to propagate northeastwards to reach northeastern Egypt with a geo-potential value of 5520gpm through 24 to 48 hours. Thereafter zonal flow will dominate North Africa up to the end of the forecast period.

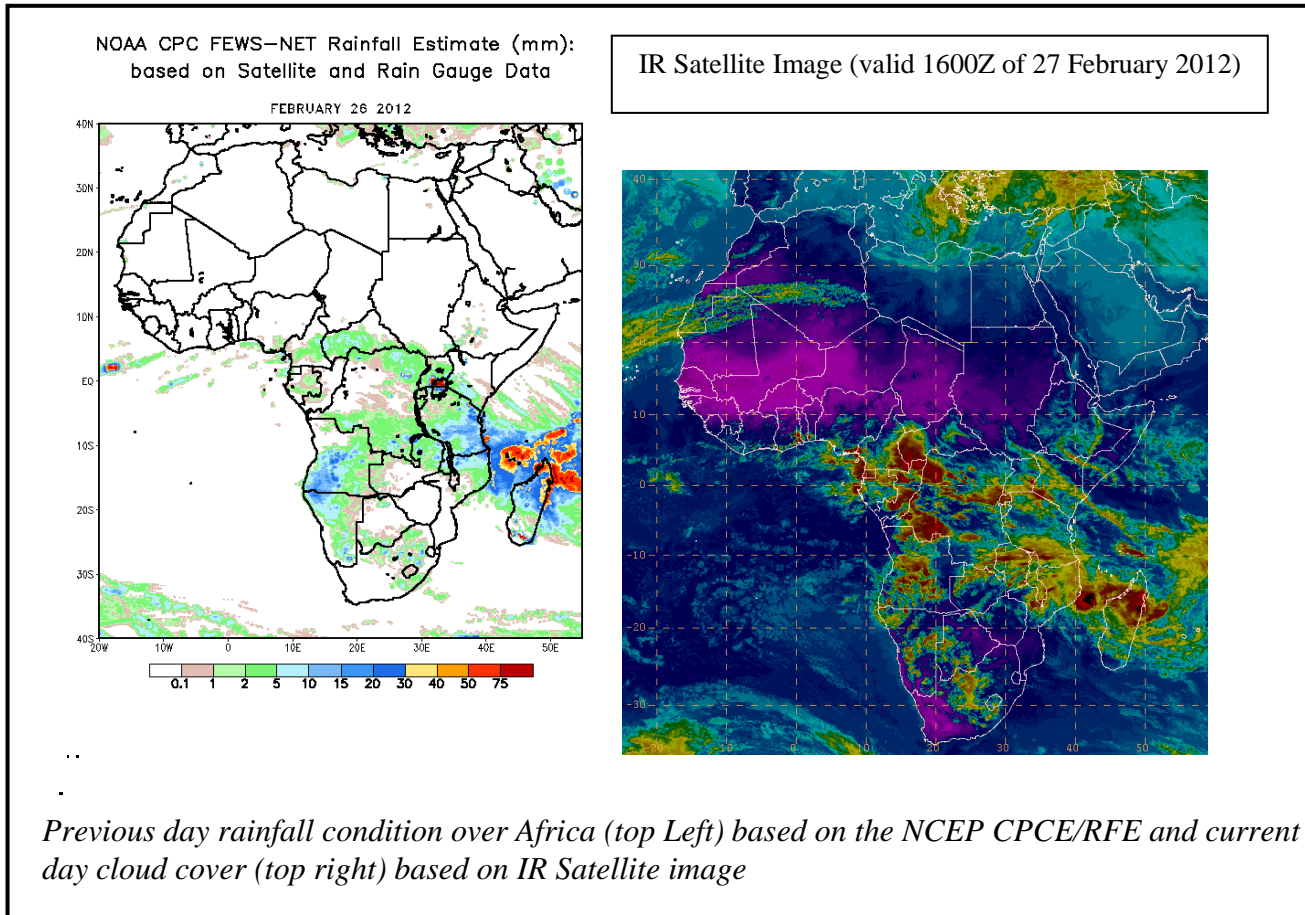
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow from northeastern Atlantic Ocean across northern Africa to Persian Gulf during the forecast period. The intensity of the jet is expected to exceed 130kts while moving to the east with its core values occasionally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

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

## 2.0. Previous and Current Day Weather Discussion over Africa (28 February – 03 March 2011)

**2.1. Weather assessment for the previous day (26 February 2012):** During the previous day, moderate to locally heavy rainfall was observed over north and northeastern Madagascar, southern Uganda, eastern Tanzania and central and southwestern Angola.

**2.2. Weather assessment for the current day (27 February 2012):** Intense clouds are observed over western CAR, eastern Cameroun, Congo, Equatorial Guinea, DRC, southern Uganda, northern Zambia, Angola, Malawi, southern Tanzania, northern Mozambique and central Madagascar.



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