

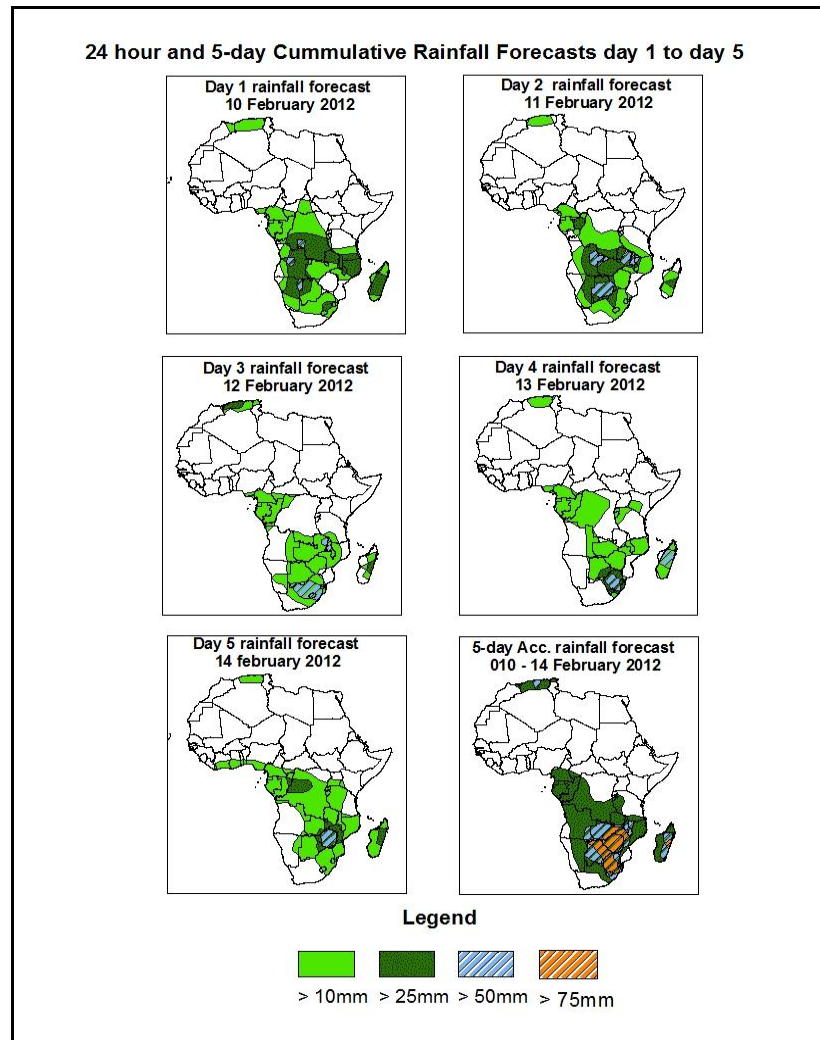


NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 10 February – 06Z of 14 February 2012, (Issued at 18:30Z of 09 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, seasonal wind convergence over Central Africa Republic, northwestern and eastern DRC, localized wind convergences and cyclonic circulations in the vicinity of Namibia, Botswana, Zambia, South Africa, Zimbabwe and Southern Mozambique and mid latitude trough over South Africa are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over eastern Angola, eastern Namibia, Zambia, Zimbabwe, eastern South Africa, central and western DRC, Mozambique and eastern Madagascar.

1.2. Models Comparison and Discussion-Valid from 00Z of 09 February 2012

The GFS, ECMWF and UKMET models indicate series of lows and their associated trough across central and the South African countries. The low sitting over northern DRC, Central Africa Republic, Congo and Gabon is expected to deepen progressively, with its mean sea level pressure value decreasing from 1005mb to 1002mb towards the end of forecast period according to the **GFS** model. According to **ECMWF** model this low will be sitting over northern DRC, Central Africa Republic and southern Sudan. It tends to deepen with its mean sea level pressure value decreasing from 1004mb to 1003mb towards the end of the forecast period. According to the **UKMET** model, the low will be sitting over southern DRC with mean sea level pressure value of 1006mb. It is expected to fill up through 24 to 48 hours. However a new low will form through 48 to 72 hours over northern DRC and Central Africa Republic with its mean sea level pressure of 1004mb but will fill up after 96 hours. Another low is expected to form in the vicinity of South Africa with mean pressure value of 1004mb. It tends to deepen with its MSLP reducing to 1002mb through 24 to 48 hours. It will then progressively shift eastwards and tends to fill up with its MSLP value increasing to 1007mb and by the end of the forecast period it will be sitting over Mozambique Channel, according **GFS** model. According to the **UKMET** model, the low pressure is expected to deepen, with its MSLP value decreasing from 1006mb to 1001mb while shifting to the east through 24 to 48 hours. It will then tend to fill up with its MSLP value increasing to 1007mb by the end of forecast period. Another low pressure is expected to form in the vicinity of Mozambique Channel with MSLP value of 1006mb but will fill up after 48 hours. Another one will form over southern Mozambique after 72 hours with its MSLP value of 1005 and will tend to shift eastwards throughout the forecast period according **GFS** model. On the other hand **UKMET** model forecasts, tends to locate the low in over Mozambique Channel with a MSLP value of 1007mb. This low is expected to fill up through 24 to 48 hours. **The fourth** low over South Sudan Republic tends to remain stationary and constant, with its MSLP value 1003mb throughout the forecast period according **GFS** model. According to **UKMET** model this low is expected to be stationary but will slightly deepen from central pressures of 1002mb to 1001mb towards the end of the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to weaken, with its MSLP value decreasing from 1028mb to 1024mb towards end forecast

period. It will however progressively shift southeastwards according to **GFS** model. This high pressure system tends to remain stationary but tend to weaken progressively with its MSLP value decreasing from 1028mb to 1020mb by the end of the forecast period, according to **ECMWF**. According to **UKMET** model, it is expected to weaken, with its MSLP value decreasing from 1028mb to 1024mb towards the end of the forecast period. The Mascarene high pressure system over southwest Indian Ocean is expected to remain weak, with its central pressure value of 1012mb while shifting southeast throughout the end of the forecast period according to **GFS** model. According to **ECMWF** model it is expected to remain weak, with its central pressure value of 1012mb but will progressively shift eastwards. Towards the end of the forecast period a new high will form south of Madagascar with MSLP of 1016mb. According to **UKMET** model the Mascarene high pressure system is expected to remain constant at central MSLP of 1012mb throughout the forecast period.

At the 850hpa level, a lower tropospheric seasonal wind convergence is expected to be active over Gulf of Guinea region extending eastwards to Central Africa republic and northern DRC during the forecast period. A low level convergence zone is expected to form over eastern DRC extending through Zambia, Botswana and western Zimbabwe to South Africa. Through 24 to 48 hours this zone will split to two, one convergence zone will remain sited over eastern DRC throughout the forecast period, while the second zone will progressively shift southeastwards and as a result low level cyclonic winds will dominate the flow over southern Zambia, Zimbabwe eastern South Africa and southern Mozambique throughout the forecast period. Localized winds convergences are also expected to dominate the flow over Namibia/Angola towards the end of the forecast period.

At 500hpa, zonal flow is expected to dominate over North Africa with wind speed occasionally reaching 90kts. A mid latitude trough is also expected to propagate southeastwards across the Southern African with the low geopotential value of 5760gpm through 24 to 96 hours.

At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow across northern Africa, during the forecast period. The intensity of the jet is expected to exceed 130kts in the region between Atlantic Ocean and the Persian

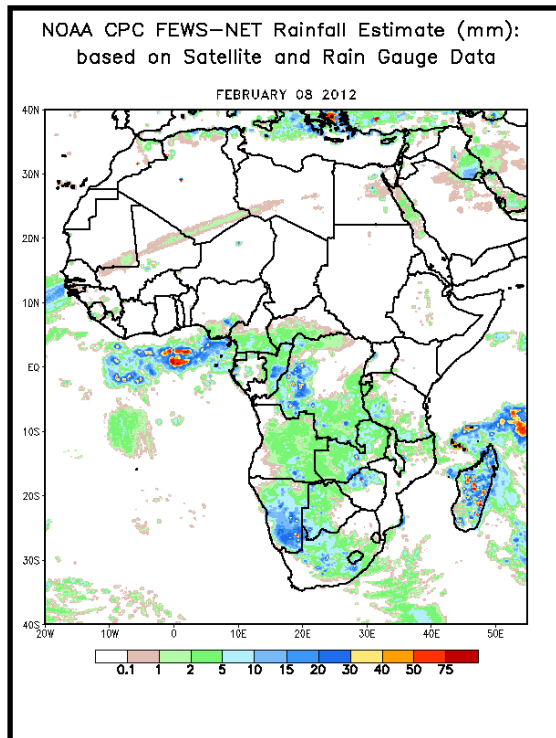
Gulf while moving to the east with its core values occasionally increasing to more than 150kts.

In the next five days, seasonal wind convergence over Central Africa Republic, northwestern and eastern DRC, localized wind convergences and cyclonic circulations in the vicinity of Namibia, Botswana, Zambia, South Africa, Zimbabwe and Southern Mozambique and mid latitude trough over South Africa are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over eastern Angola, eastern Namibia, Zambia, Zimbabwe, eastern South Africa, central and western DRC, Mozambique and eastern Madagascar.

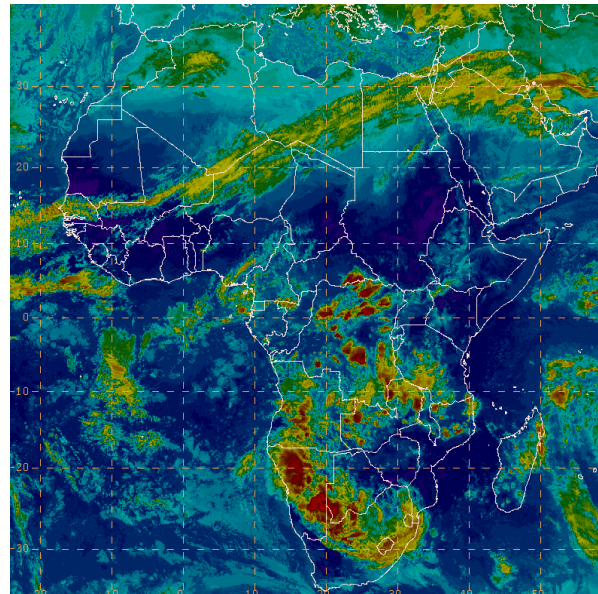
2.0. Previous and Current Day Weather Discussion over Africa (08 February – 09 February 2011)

2.1. Weather assessment for the previous day (08 February 2012): During the previous day, moderate to locally heavy rainfall was observed over southern Namibia, western DRC, Gulf of Guinea and western Mozambique.

2.2. Weather assessment for the current day (09 February 2012): Intense clouds are observed across southern Central Africa Republic, northeastern DRC, Namibia, Central Angola, western Botswana, northern Zambia and northern and eastern South Africa.



IR Satellite Image (valid 1800Z of 09 February 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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