

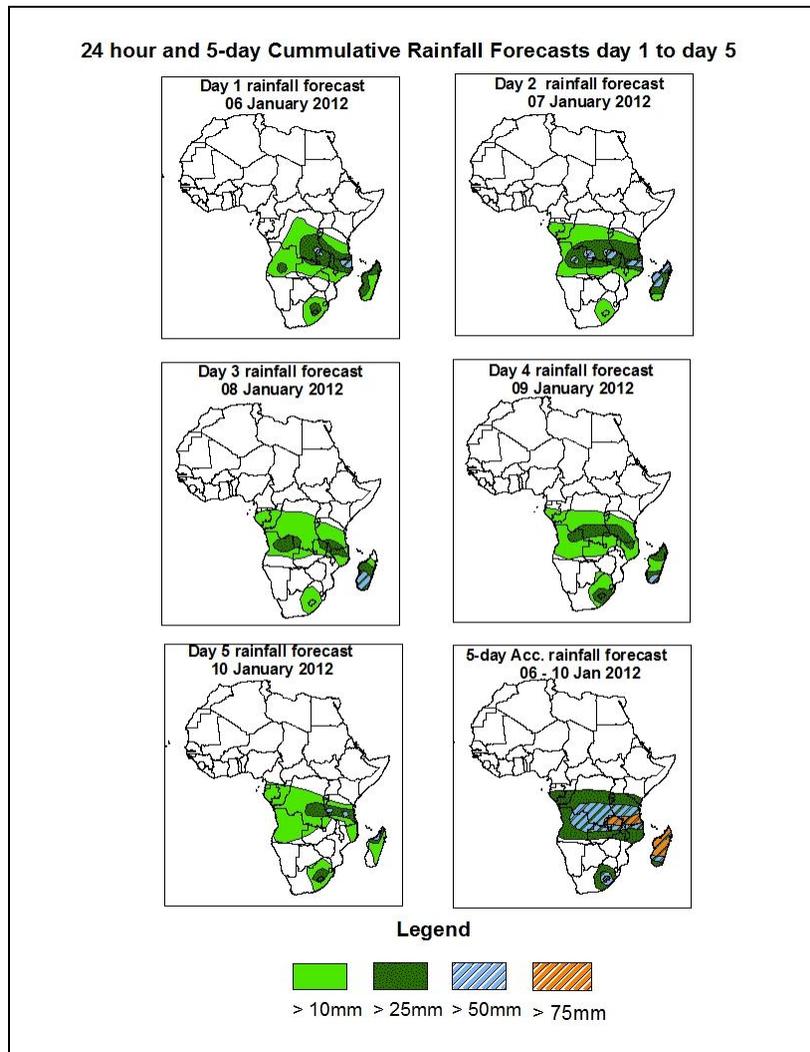


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 06 January – 06Z of 10 January 2012, (Issued at 16:30Z of 05 January 2012)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of high 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 in the CAB region, localized convergences and the interaction between eastward propagating mid-latitude and tropical systems across southern and southeastern Africa are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over southern DRC, eastern Angola, parts of Zambia, Malawi, Tanzania, eastern South Africa, Northern of Mozambique and Madagascar.

## 1.2. Models Comparison and Discussion-Valid from 00Z of 05 January 2012

The GFS, ECMWF and UKMET models indicate series of lows and their associated troughs across central and the South African countries. The low over DRC is expected to deepen, with its mean sea level pressure value decreasing from 1010mb to 1006mb while shifting slightly to the east towards end of the forecast period according to the **GFS** model. According to both **ECMWF** and **UKMET** models it is expected to deepen, with its MSLP value decreasing from 1009mb to 1008mb towards end of the forecast period. Another low in the vicinity of southern Botswana is expected to deepen, with its MSLP value decreasing from 1009mb to 1008mb through 24 to 96 hours and then it tends to fill up back to 1007mb while shifting slightly to the south to reach South Africa towards end of the forecast period according **GFS** model. According to **ECMWF** model, this low is expected to deepen, with its mean sea level pressure value decreasing from 10010mb to 1006mb while shifting slightly to the south towards end of the forecast period. According to the **UKMET** model, this low pressure is expected to deepen, with its mean sea level pressure value decreasing from 1009mb to 1008mb through 24 to 48 hours and then it tends to deepen back to 1009mb while shifting slightly to the west by 72 hours and then it tends to deepen, with its MSLP value decreasing from 1009mb to 1006mb towards end of the forecast period. Another low pressure across Mozambique Channel is expected to deepen, with its MSLP value decreasing from 1004mb to 999mb through 24 to 96 hours while shifting to the east and then it tends to fill up back to 1002mb towards end of the forecast period according **GFS** model. According to **ECMWF** model this low is expected to deepen, with its MSLP value decreasing from 1008mb to 1005mb while moving slightly to the east towards end of the forecast period. According to the **UKMET** this low pressure is expected to deepen, with its MSLP value decreasing from 1006mb to 1002mb while shifting slightly to the east towards end of the forecast period. The fourth low over southern Sudan is expected to deepen, with its MSLP value decreasing from 1008mb to 1007mb towards end of the forecast period, according to **GFS** model. According the ECMFW model, this low is expected to maintain its MSLP value of 1009mb through 24 to 48 hours. According to **UKMET** model this low is expected to deepen, with its MSLP value decreasing from 1007mb to 1006mb from 24 to 72 hours and then it tends to fill up back to 1007mb towards end of the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to fill up, with its MSLP value increasing from 1024mb to 1025mb through 24 to 48 hours and then it tends to deepen back to 1020mb towards end of the forecast period according to **GFS** model. According to **ECMWF** model this high pressure system tends to deepen, with its MSLP value decreasing from 1023mb to 1020mb through 24 to 96 hours and then it tends to fill up, with its MSLP value increasing from 1020mb to 1024mb through towards end of the forecast period. This high pressure is expected to fill up, with its MSLP value increasing from 1024mb to 1025mb through 24 to 48 hours and then it tends to deepen back to 1024mb towards end of the forecast period according to **UKMET** model. The Mascarene high pressure system over southwest Indian Ocean is expected to deepen, with its MSLP value decreasing from 1020mb to 1012mb through 24 to 96 hours and then it tends to fill up to 1016mb according to **GFS** model, According to both **ECMWF** and **UKMET** models, this high is expected to deepen, with its MSLP value decreasing from 1020mb to 1016mb towards end of the forecast period.

At the 850hpa level, a lower tropospheric seasonal wind convergence is expected to remain active over the CAB region aligning itself with a convergence across southern Africa. The convergence tends to intensify while shifting slightly to the west and reach Zambia, and Tanzania towards end of the forecast period. Localized wind convergences are also expected to dominate the flow over Angola and Namibia then it tends to intensify and shifting slightly to the south towards end of the forecast period. Another lower tropospheric cyclone and its associated trough are expected to intensify and dominate the flow over Madagascar towards and of forecast period.

At 500hpa, eastward propagating trough in the mid-latitude westerly flow is expected to prevail over North Atlantic Ocean and northeastern Africa during the forecast period; with the low geopotential value of 5760gpm extending to the latitudes of northern Chad. This trough is expected to move eastwards to reach northern Chad with the low geopotential value of 5820gpm by 72 hours and then it tends to reach south Libya with

the low geopotential value of 5820gpm towards end of the forecast period. A mid latitude frontal system is also expected to propagate eastwards across the Southern African countries with the low geopotential value of 5880gpm towards end of the forecast period.

At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 110kts in the region between Atlantic Ocean and Persian Gulf through 24 to 48 hours. The jet core is expected to propagate to the east towards end of the forecast period with its maximum wind speed exceeding 130kts.

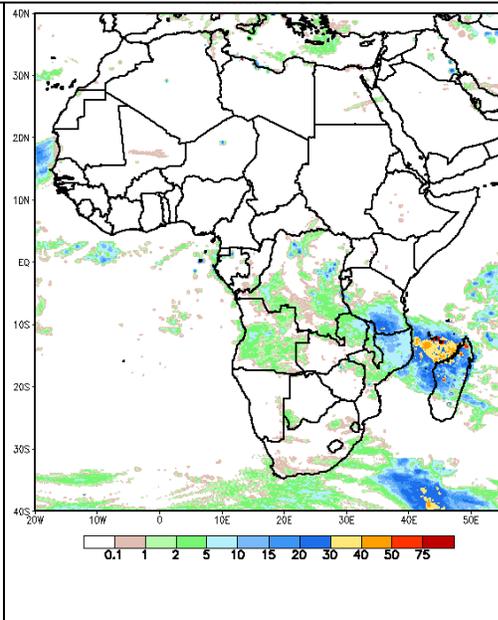
In the next five days, seasonal wind convergence in the CAB region, localized convergences and the interaction between eastward propagating mid-latitude and tropical systems across southern and southeastern Africa are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over southern DRC, eastern Angola, parts of Zambia, Malawi, Tanzania, eastern South Africa, Northern of Mozambique and Madagascar.

## 2.0. Previous and Current Day Weather Discussion over Africa (04 January – 05 January 2012)

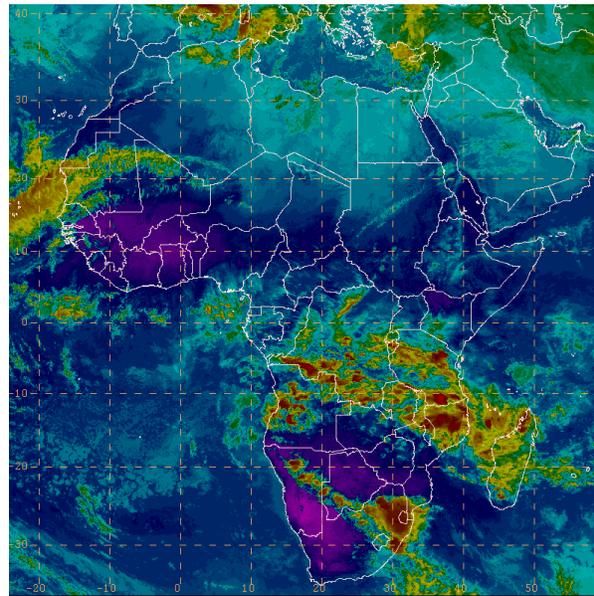
**2.1. Weather assessment for the previous day (04 January 2012):** During the previous day, moderate to locally heavy rainfall was observed over southern Tanzania and northern Madagascar.

**2.2. Weather assessment for the current day (05 January 2012):** Intense clouds are observed over southern DRC, Angola, eastern Zambia, northern Mozambique, Tanzania, eastern South Africa and Madagascar.

NOAA CPC FEWS-NET Rainfall Estimate (mm):  
based on Satellite and Rain Gauge Data  
JANUARY 04 2012



IR Satellite Image  
(valid 1622 Z of 05 January 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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