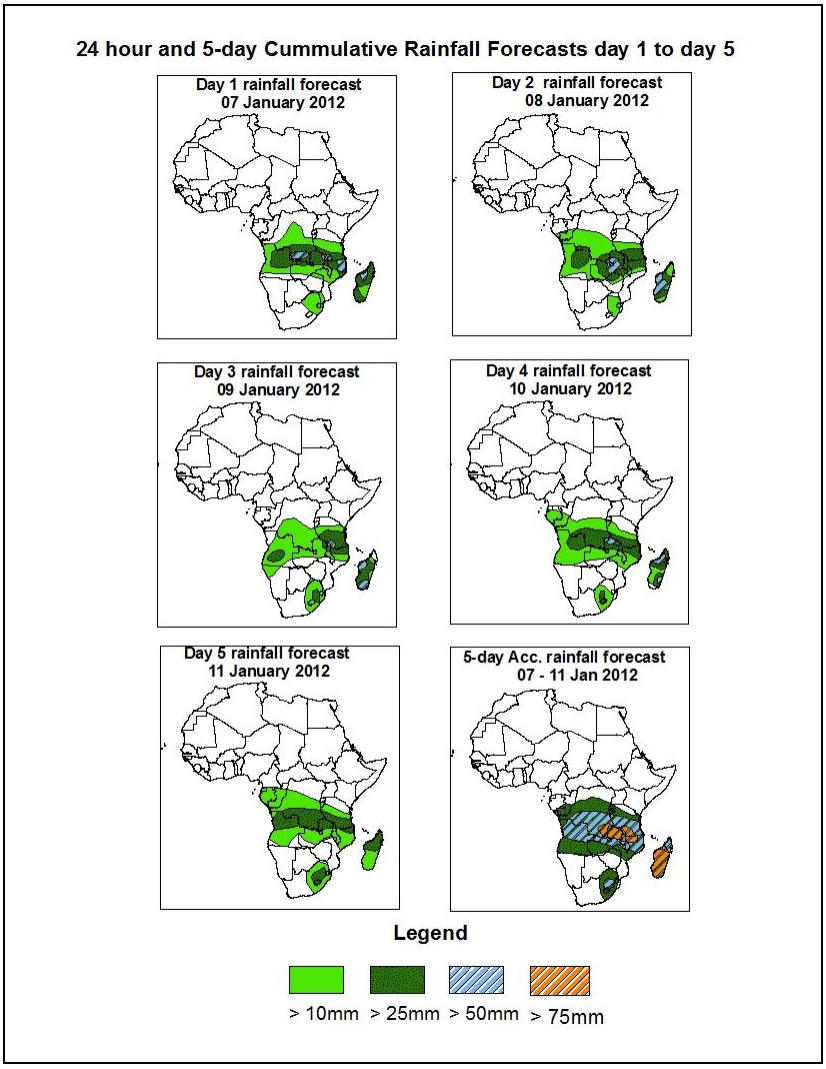
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 07 January – 06Z of 11 January 2012, (Issued at 16:30Z of 06 January 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 in the CAB region, localized wind convergences and cyclonic circulations in the vicinity of Angola, Namibia and Mozambique Channel are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over northern Angola, northern Zambia, southern Tanzania, southern DRC, northern Malawi and Madagascar.

1.2. Models Comparison and Discussion-Valid from 00Z of 06 January 2012

The GFS, ECMWF and UKMET models indicate series of lows and their associated troughs across central and the South African countries. **T**he low over DRC is expected to deepen, with its mean sea level pressure value decreasing from 1009mb to 1006mb through 24 to 96 hours and it tends to fill up back to 1006mb towards the end of the forecast period according to the **GFS** model. **A**ccording to **ECMWF** model, it is expected to deepen from MSLP value of 1009mb to 1008mb towards the end of the forecast period. **A**ccording to the **UKMET** model, it is expected to maintain its MSLP value of 1008mb while moving slightly eastwards towards the end of the forecast period. **A**nother low is expected to form in the vicinity of Botswana and tends to deepen, with its MSLP value decreasing from 1008mb to 1005mb through 24 to 96 hours and tends to move towards southern Botswana and the adjoining areas of South Africa, then it tends to fill up to MSLP value of 1007mb towards end of the forecast period according **GFS** model. **A**ccording to both **ECMWF** and **UKMET** models, the low pressure is expected to deepen, with its MSPL value decrease from 1009mb to 1006mb while moving slightly to the south towards end of the forecast period. **A**nother low pressure which is expected to form across Mozambique Channel and tends to deepen, with its mean sea level pressure value decreasing from 1002mb to 999mb through 24 to 48 hours and then it tends to fill up, with its MSLP value increasing from 999mb to 1007mb through towards end of the forecast period according **GFS** model. **A**ccording to the **ECMWF** this low pressure is expected to deepen, with its MSLP value decreasing from 1007mb to 1004mb through 48 to 72 hours and then it tends to fill up back to 1008mb towards end of forecast period. This low tends to deepen, with its MSPL value decreasing from 1004mb to 999mb while through while shifting to the eastern areas to reach the central Madagascar 24 to 72hours and then it tends to fill up back to 1008mb towards end of forecast period according **UKMET** model. **T**he fourth low over Sudan tends to deepen, with its MSLP value decreasing from 1008mb to 1006mb towards end of the forecast period, according to both **GFS and ECMWF** models. **A**ccording the **UKMET** model, this low pressure tends to decrease from 1007mb to 1006mb through 24 to 72hours and then it tends to fill up to 1007mb until 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 1025mb to 1020mb towards end of the forecast period according to **GFS** model. According to **ECMWF** model this high is expected to weaken, with its MSLP value decreasing from 1024mb to 1020mb through 24 to 72 hours and then it tends to fill up back to 1024mb towards end of the forecast period. **A**ccording to **UKMET** model, it tends to weaken, with its MSLP value decreasing from 1025mb to 1023mb through 24 to 72 hours and then it tends to fill up, with its MSLP value increasing from 1023mb to 1024mb towards end of the forecast period while shifting slightly to west. **T**he Mascarene high pressure system over southwest Indian Ocean is expected to weaken, with its central pressure value decreasing from 1019mb to 1016mb while shifting to west through 24 to 72 hours and then it tends to fill up, with its MSLP value increasing from 1016mb to 1020mb towards the end of the forecast period according to both **GFS** model. **A**ccording to **ECMWF** model it is expected to weaken, with its MSLP value decreasing from 1018mb to 1016mb towards end of the forecast period towards the end of forecast period. **T**his high pressure system is expected to maintain its MSLP value of 1016mb towards end of the forecast period, according the **UKMET** model.

At the 850hpa level, a lower tropospheric seasonal wind convergence is expected to remain active over parts of CAB region then it tends to intensify while extending towards Zambia towards end of the forecast period. Localized wind convergences are also expected to dominate the flow over both Angola and Namibia while the convergence line is expected to intensify and shift to the east by 72hours. Lower tropospheric anticyclone and its associated ridge are expected prevail over South Africa and the neighboring areas. **A**nother 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 Mediterranean Sea and northern Africa during the forecast period; with the low geopotential value of 5760gpm extending to the latitudes of Chad by 24hours. This northeast-southwest oriented trough is expected to move eastwards until reaching Sudan and the adjoining areas 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 through 72 to 120 hours.

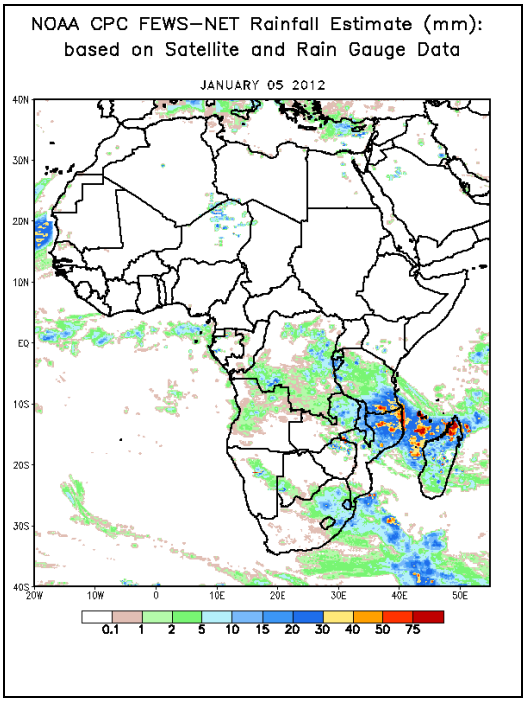
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 150kts in the region between Atlantic Ocean and the Persian Gulf while moving to the east by 24hours. The jet core tends to propagate towards in the region between Niger and Persian Gulf through 48 and 72 hours then it tends to propagate towards in the region between Chad and Persian Gulf towards the end of forecast period.

In the next five days, seasonal wind convergence in the CAB region, localized wind convergences and cyclonic circulations in the vicinity of Angola, Namibia and Mozambique Channel are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over northern Angola, northern Zambia, southern Tanzania, southern DRC, northern Malawi and Madagascar.

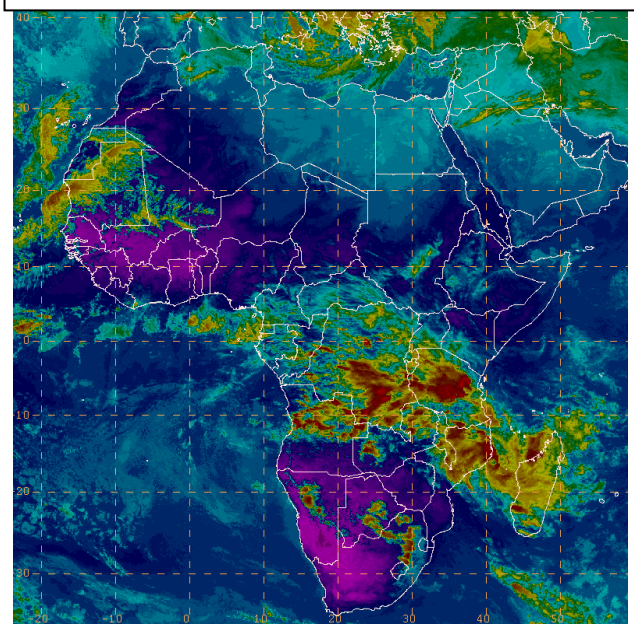
2.0. Previous and Current Day Weather Discussion over Africa (05 January – 06 January 2012)

2.1. Weather assessment for the previous day (05 January 2012): During the previous day, moderate to locally heavy rainfall was observed over southern Tanzania, Northern Mozambique part of Malawi and central Madagascar.

2.2. Weather assessment for the current day (06 January 2012): Intense clouds are observed over Angola, DRC, Zambia, eastern South Africa, Tanzania northern Mozambique and Madagascar.



IR Satellite Image (valid 1600Z of 06 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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