

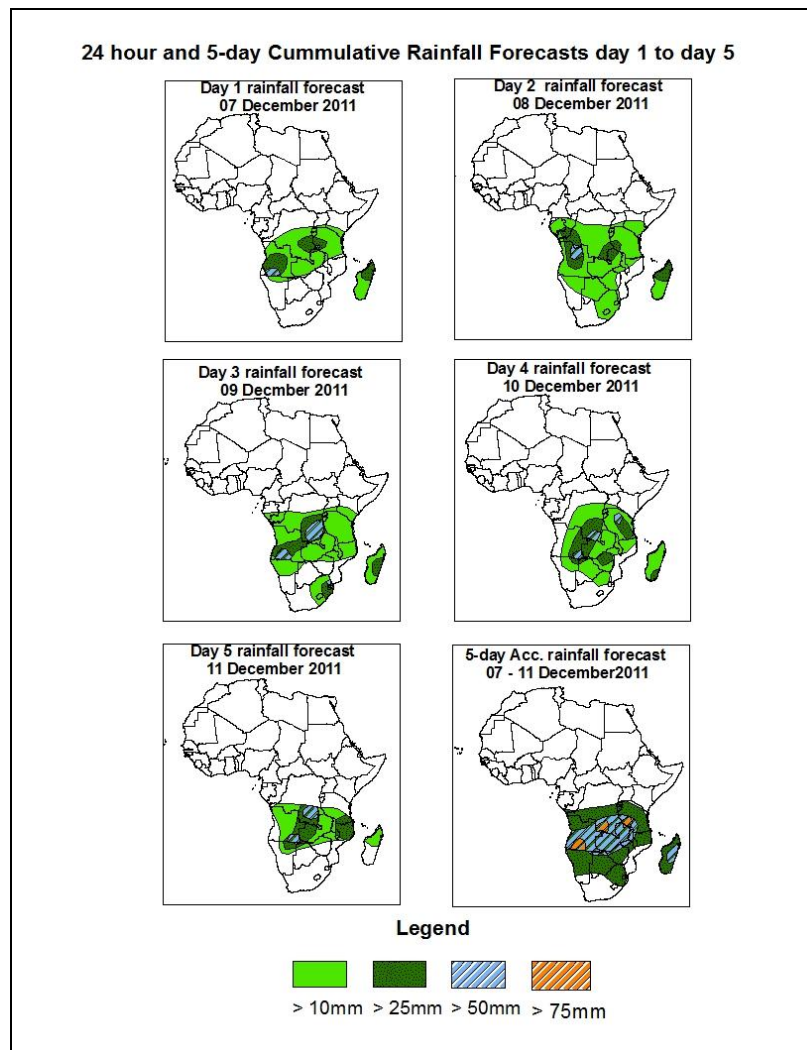


NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 07December – 06Z of 11 December 2011, (Issued at 19:30Z of 06 December 2011)

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 wind convergences and cyclonic circulations in the vicinity of Angola and Mozambique Channel are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over Angola, northern Namibia, Zambia, northern Zimbabwe, Malawi, southwestern Tanzania and southern DRC.

1.2. Models Comparison and Discussion-Valid from 00Z of 06 December 2011

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 1009mb to 1007mb through 24 to 72hours and tends to maintain its central pressure value of 1007mb towards end of the forecast period according to the **GFS** model. According to **ECMWF** model it is expected to deepen from MSLP value of 1009mb to 1008mb through 24 to 48hours and tends to maintain MSLP value of 1008mb through 72 to 96hours, and then it tends to fill up to 1009mb towards end of the forecast period. According to the **UKMET** model, it is expected to deepen from MSLP value of 1008mb to 1006mb through 24 to 72hours and tends to maintain MSLP value of 1006mb through 72 to 120hours. Another low is expected to form in the vicinity of Botswana and tends to deepen, with its MSLP value decreasing from 1009mb to 1003mb through 24 to 72 hours and tends to move towards northern Botswana and the adjoining areas of Zimbabwe, then it tends to fill up to MSLP value of 1006mb towards end of the forecast period according **GFS** model. According to **ECMWF** model, the low pressure is expected to form through 48hours with a central pressure value of 1008mb and it tends to deepen to 1007mb through 48 to 96hours, then it tends to fill up to 1009mb towards end of the forecast period. According the **UKMET** model too, the low pressure forms during 48hours with a MSLP value of 1006mb and it is expected to deepen to 1005mb through 48 to 96hours and then it tends to maintain MSLP value of 1005mb until the end of the forecast period. Another low pressure which is expected to form across Mozambique channel and tends to deepen, with its MSLP value decreasing from 1007mb to 1006mb through 24 to 72hours while shifting towards north, then it tends to fill up to 1008mb in the 96hours before decreasing back to 1006mb towards end of the forecast period according **GFS** model. According to the **ECMWF** model, this low pressure is expected to form during 48hours with a value of 1008mb and tends to fill up during the rest of the forecast period. On the other hand **UKMET** model forecasts, tends to locate the low in across northeastern Mozambique with a MSLP value of 1007mb. The model tends to maintain its central pressure value from 24 to 72hours and then and the low tends to fill up towards end of the forecast period. **The fourth** low over South Sudan Republic tends to deepen, with its MSLP value decreasing from 1008mb to 1006mb through 24 to 72hours, then it tends maintain MSLP value of 1006mb until the

end of the forecast period according **GFS** model, according to **ECMWF** model. According the **UKMET** model, the low pressure tends to decrease from 1007mb to 1006mb through 24 to 72hours and then it tends to maintain MSLP value of 1006mb until the end of the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to intensify, with its MSLP value increasing from 1028mb to 1032mb through 24 to 48hours and then it tends to decrease to 1024mb towards the end of the forecast period according to **GFS** models while moving to northwest. This high pressure system tends to intensify, with its MSLP value increasing from 1024mb to 1028mb through 24 to 72hours, then its tends to maintain the same value until the end of forecast period According to **ECMWF** while moving to east. According to **UKMET** model, it is expected to intensify, with its MSLP value increasing from 1028mb to 1032mb through 24 to 48hours and then tends to weaken to 1026mb towards the end of the forecast period. The Mascarene high pressure system over southwest Indian Ocean is expected to weaken, with its central pressure value decreasing from 1020mb to 1016mb through 24 to 48hours and tends to maintain its value of 1016mb towards the end of the forecast period according to both **GFS** and **ECMWF** models. According to **UKMET** it is expected to weaken, with its central pressure system value decreasing from 1020mb to 1016mb through 24 to 72hours, then it tends to maintain its central MSLP value until 96hours then its tends to intensify, with its MSLP value increasing from 1016mb to 1020mb through 96 to the end of forecast.

At the 850hpa level, a lower tropospheric seasonal wind convergence is expected to remain active over parts of CAB region during the forecast period. Localized wind convergences are also expected to dominate the flow over southern Angola while the convergence line moving to the east up to 72hours and then towards the south through 72 to 96hours. Another local cyclonic circulation is also expected in the Mozambique Channel tending to change its location and intensity during the forecast period and finally settling near costal Mozambique. Lower tropospheric anticyclone and its associated ridge are expected to dominate the flow over northeast South Africa and the neighboring areas.

At 500hpa, eastward propagating trough in the westerly is expected to dominate the flow over Mediterranean Sea and northern Africa during the forecast period; with the low geopotential value of 5760gpm extending to the latitudes southern Algeria by 24. The northeast-southwest oriented trough, associated with low is expected eastwards during the forecast period. Another mid-latitude frontal system is expected to approach coastal Morocco through 96hours and it tends to propagate towards Algeria towards end of the forecast period. A mid latitude frontal system is also expected to propagate eastwards across the Southern African countries through 24 to 48hours.

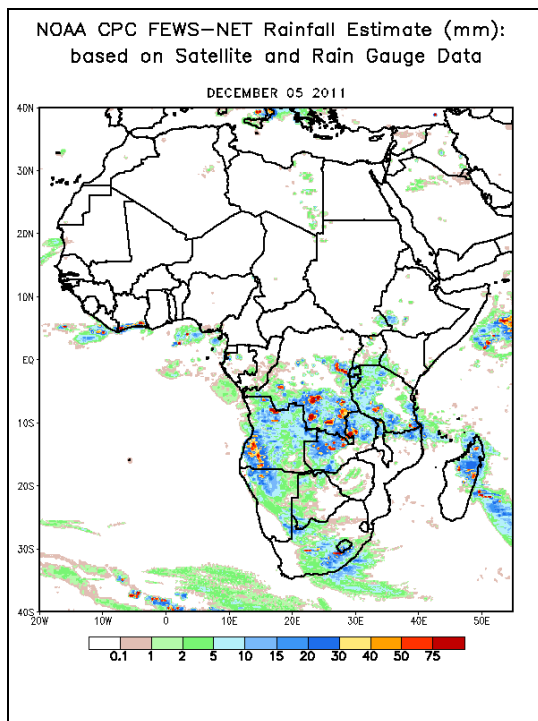
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 110kts in the region between southeastern Algeria and the Persian Gulf while moving to the east by 24hours. The jet core tends to propagate towards in the region between southern Libya and Persian Gulf through 48 and 72 hours, with the maximum wind values decreasing to >90kts values. Towards end of the forecast period, the core of the jet tends to shift further to the east in the region between Niger and Persian Gulf with its maximum wind speed exceeding 110kts. Wind speed values associated with the southern Hemisphere sub-tropical westerly jet are expected to exceed 110kts and tend to weaken towards the end of the 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 and Mozambique Channel are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over Angola, northern Namibia, Zambia, northern Zimbabwe, Malawi, southwestern Tanzania and southern DRC.

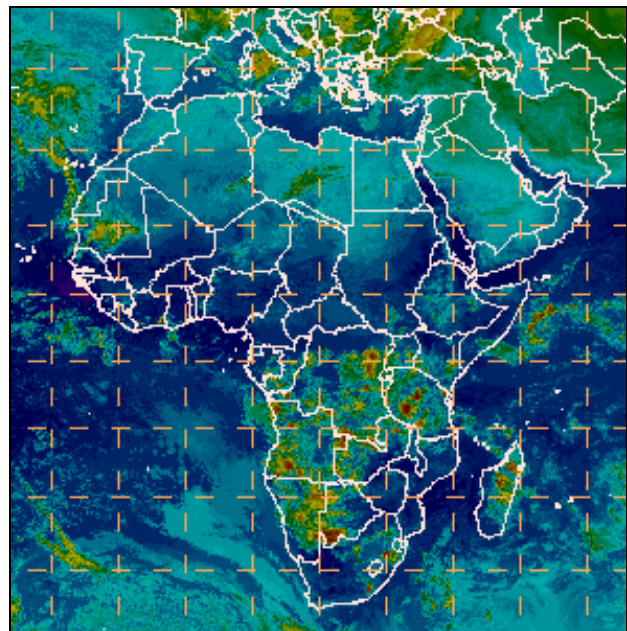
2.0. Previous and Current Day Weather Discussion over Africa (05 December – 06December 2011)

2.1. Weather assessment for the previous day (05December 2011): During the previous day, moderate to locally heavy rainfall was observed over portions of Angola, northern Namibia, parts of DRC, Zambia, parts of Tanzania northern Madagascar and parts of South Africa.

2.2. Weather assessment for the current day (06December2011): Intense clouds are observed over Angola, Zambia, parts of Tanzania, much of DRC, portion of Madagascar, parts of Botswana and Namibia.



IR Satellite Image (valid 1922Z of 06December 2011)



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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