

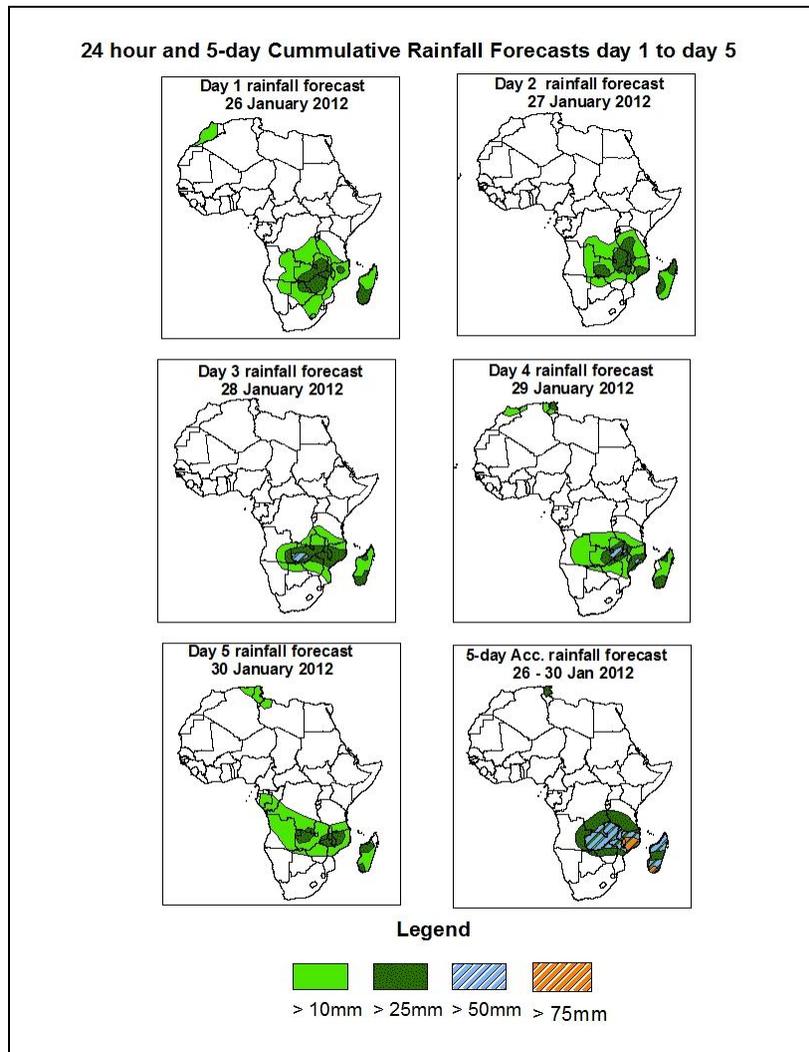


NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 26 January – 06Z of 30 January 2012, (Issued at 16:30Z of 25 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 Mozambique Channel are expected to enhance rainfall in its neighbors regions. Hence, there is an increased chance for heavy rainfall over Zambia, northern Mozambique, northern Zimbabwe and Madagascar.

1.2. Models Comparison and Discussion-Valid from 00Z of 25 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 fill up, with its mean sea level pressure value increasing from 1006mb to 1007mb through 24 to 48 hours and then it tends to deepen to 1003mb while shifting slightly to the south towards end of the forecast period according to both **GFS** and **ECMWF** models. According to the **UKMET** model, it is expected to fill up, with its MSLP value increasing from 1005mb to 1006mb while shifting slightly to the east through 24 to 48 hours and then it tends to deepen back to 1002mb towards end of the forecast period. Another low is expected to form in the vicinity of Botswana and tends to fill up, with its MSLP value increasing from 1006mb to 1007mb while shifting slightly to the northwest through 24 to 72 hours and then it tends to deepen back to 1003mb while shifting to the south towards end of the forecast period according **GFS** model. According to **ECMWF** model, the low pressure is expected to fill up, with its MSPL value increasing from 1008mb to 1011mb while shifting slightly to the south through 24 to 48 hours and then it tends to deepen back to 1006mb towards end of the forecast period. This low pressure is expected to deepen, with its MSLP value decreasing from 1008mb to 1007 while shifting to the south through 24 to 48 hours and then it tends to fill up to 1008mb towards end of the forecast period according **UKMET** model. Another low pressure is expected to form across Mozambique Channel and tends to fill up, with its mean sea level pressure value increasing from 978mb to 987mb while shifting to the south through 24 to 96 hours and then it tends to deepen to 977mb towards end of the forecast period, according **GFS** model. According to the **ECMWF**, this low pressure is expected to deepen, with its MSLP value decreasing from 998mb to 993mb while moving to the south through 24 to 96 hours and then it tends to fill up to 1004mb towards end of the forecast period. This low tends to fill up, with its MSPL value increasing from 992mb to 1000mb while moving to the south towards end of forecast period, according **UKMET** model. The fourth low over Sudan tends to fill up, with its MSLP value increasing from 1006mb to 1007mb through 24 to 48 hours and then it tends to deepen, with its MSLP value decreasing from 1007mb to 1004mb towards end of the forecast period, according to **GFS** model. This low pressure is expected to maintain its MSLP value of 1008mb towards end of the forecast period according to **ECMWF** model. According the **UKMET** model, this low pressure tends to increase from 1005mb to 1006mb through 24

to 48 hours and then it tends to deepen back to 1004mb towards end of the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to deepen, with its MSLP value decreasing from 1023mb to 1021mb while shifting slightly to the east towards end of the forecast period according to **GFS** model. According to both **ECMWF** and **UKMET** models, this high pressure tends to deepen, with its MSLP value decreasing from 1023mb to 1020mb while shifting slightly to the east towards end of the forecast period. The Mascarene high pressure system over southwest Indian Ocean is expected to deepen with its central pressure value decreasing from 1020mb to 1012mb towards the end of the forecast period according to **GFS**, **ECMWF** models. This high pressure system is expected to deepen, with its MSLP value decreasing from 1020mb to 1016mb towards end of the forecast period, according to **UKMET** model.

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 south and reach Mozambique 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 to shift to the east to reach Malawi and the neighboring areas towards end of the forecast period. Lower tropospheric anticyclone and its associated ridge are expected over South Africa and the neighboring areas and tend to intensify towards end of the forecast period. Another lower tropospheric cyclone and its associated trough are expected to dominate the flow over Mozambique Channel and it tends to shifting to the south towards end of the 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 southern Libya through 24 to 72 hours. Another mid-latitude frontal system is expected to approach coastal Morocco through 24hours with the low geopotential value of 5640gpm and it tends to propagate towards Algeria through 24 to 72 hours then to Tunisia with the low geopotential value of 5700gpm 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 5820gpm towards end of the forecast period. Another trough is expected to prevail over Mozambique Channel with the low geopotential value of 5640gpm and tends to weaken with the low geopotential value of 5776gpm through 24 to 72 hours.

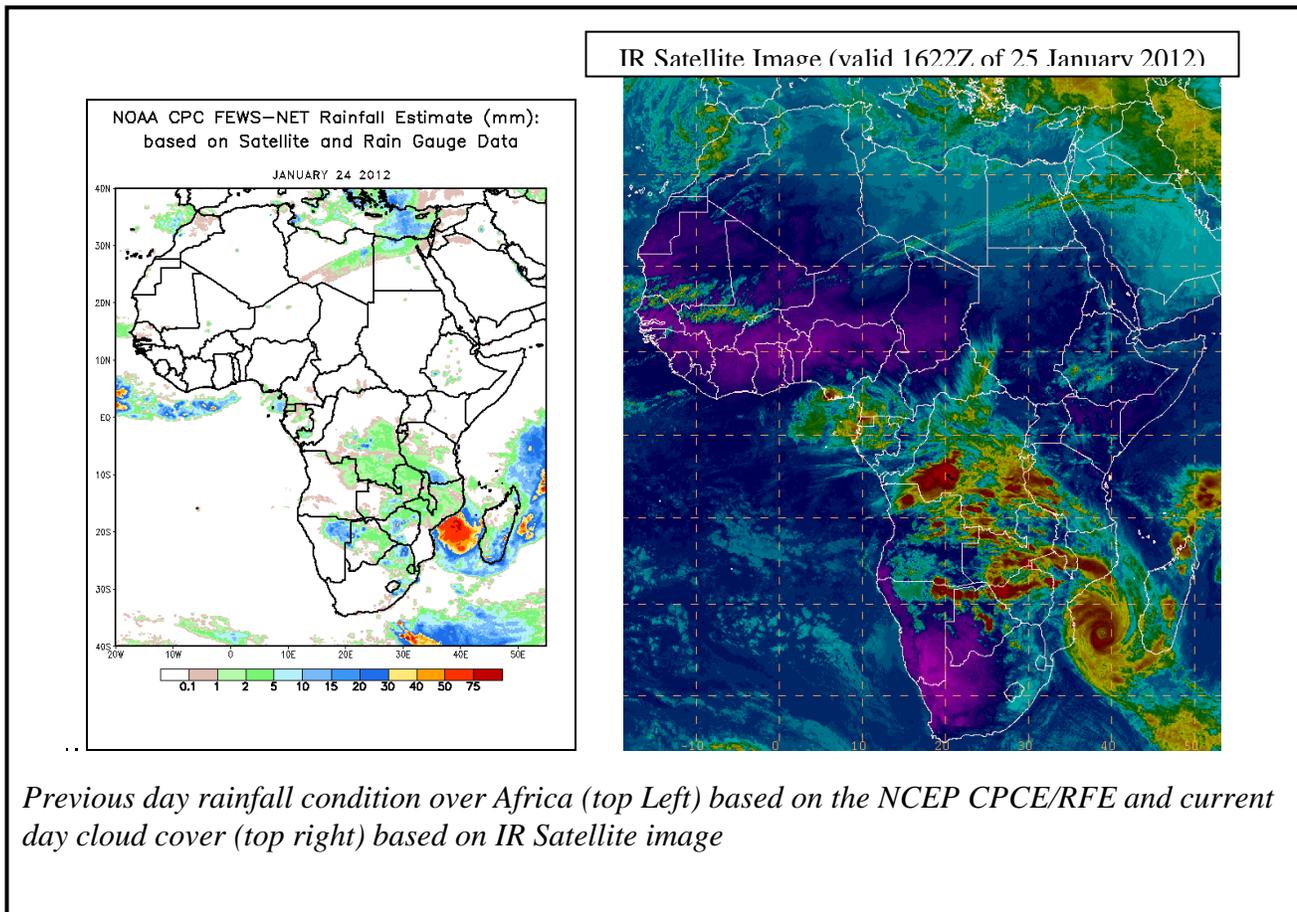
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 150kts in the region between Atlantic Ocean and the Persian Gulf across Mauritania, southern Algeria, Tunisia, southern Libya and Egypt while moving to the east towards end of the forecast period. The Sub-tropical Westerly Jet in the Southern Hemisphere is expected to dominate the flow over the South Africa. The intensity of the jet is expected to exceed 90kts in the region between southeastern Atlantic Ocean and Indian Ocean across South Africa.

In the next five days, seasonal wind convergence in the CAB region, localized wind convergences and cyclonic circulations in the vicinity of Mozambique Channel are expected to enhance rainfall in its neighbors regions. Hence, there is an increased chance for heavy rainfall over Zambia, northern Mozambique, northern Zimbabwe and Madagascar.

2.0. Previous and Current Day Weather Discussion over Africa (24 January – 25 January 2012)

2.1. Weather assessment for the previous day (24 January 2012): During the previous day, moderate to locally heavy rainfall was observed over northeastern Namibia, southern Tanzania, eastern South Africa and parts of Madagascar.

2.2. Weather assessment for the current day (25 January 2012): Intense clouds are observed over DRC, Zambia, northern Namibia, Malawi, western Tanzania, Botswana, northern Zimbabwe, Mozambique and Madagascar.



Author(s): Lotfi Khammari (Tunisian Meteorological Authority) / CPC-African Desk), lotfi.khammari@noaa.gov, and

Author(s): Amira Ibrahim (Egyptian Meteorological Authority) / CPC-African Desk), Amira.ibrahim@noaa.gov