

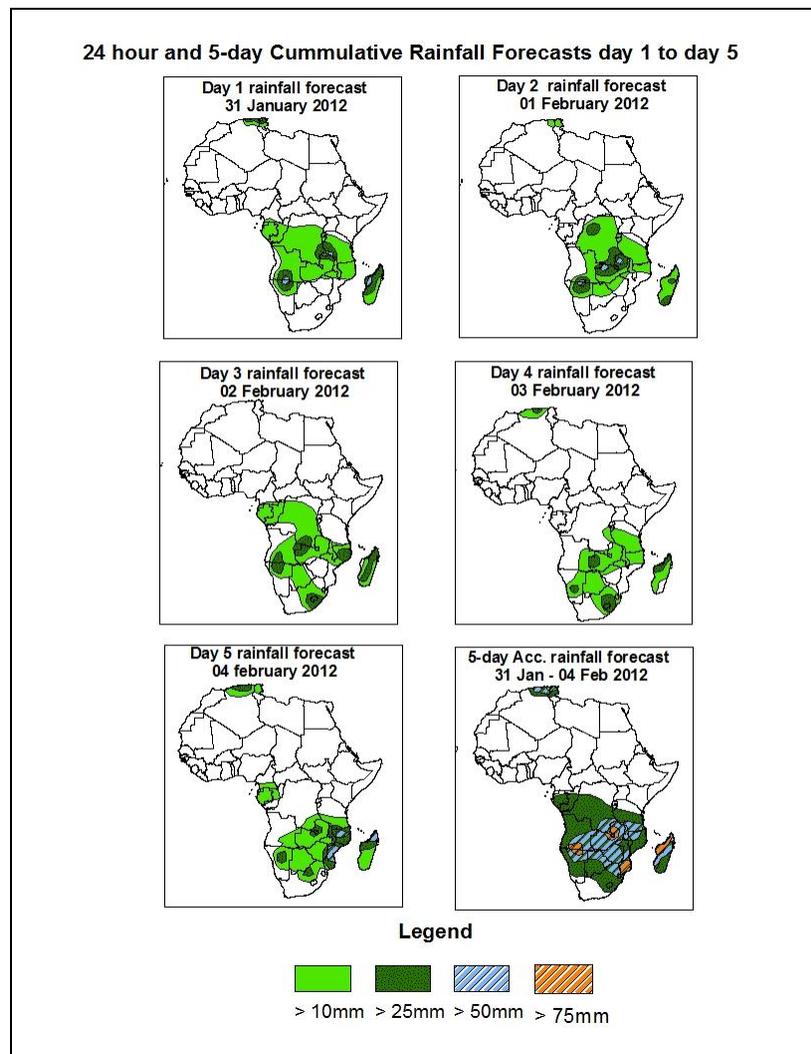


NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 31 January – 06Z of 04 February 2012, (Issued at 16:00Z of 30 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 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 northern Algeria, northern Tunisia, southern DRC, southern Angola, northern Namibia, Zambia, Malawi, southern Mozambique and Madagascar.

1.2. Models Comparison and Discussion-Valid from 00Z of 30 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 1008mb to 1007mb while shifting slightly to the north towards end of the forecast period according to **GFS** model. According to the **ECMWF** model, it is expected to deepen, with its MSLP value decreasing from 1008mb to 1006mb while shifting to the north through 24 to 72 hours and then it tends to fill up to 1008mb while shifting to east towards end of the forecast period. According to the **UKMET** model, it is expected to fill up, with its MSLP value increasing from 1007mb to 1008mb through 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 1005mb to 1010mb while shifting to the south towards end of the forecast period according to both **GFS** and **UKMET** models. This low pressure is expected to fill up, with its MSLP value increasing from 1007mb to 1012mb while shifting to the north towards end of the forecast period according **ECMWF** model. Another low pressure is expected to form across Mozambique Channel and tends to deepen, with its mean sea level pressure value decreasing from 1003mb to 1002mb while shifting to the east to reach Madagascar then it tends to fill up to 1008mb while shifting slightly to the west towards end of the forecast period, according **GFS** model. According to the **ECMWF**, this low pressure is expected to fill up, with its MSLP value increasing from 1007mb to 1012mb towards end of the forecast period. This low tends to deepen, with its MSPL value decreasing from 1008mb to 1007mb and then it tend to fill up back to 1012mb towards end of forecast period, according **UKMET** model. The fourth low over Sudan tends to fill up, with its MSLP value increasing from 1004mb to 1006mb towards end of the forecast period, according to **GFS** model. This low pressure is expected to fill up, with its MSLP value increasing from 1005 to 1007mb towards end of the forecast period according to **ECMWF** model. According the **UKMET** model, this low pressure tends to increase from 1003mb to 1005mb 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 1024mb to 1022mb while shifting slightly

to the east towards end of the forecast period according to **GFS** model. This high pressure system is expected to deepen, with its MSLP value decreasing from 1024mb to 1020mb according to **ECMWF** model. According to **UKMET** model, this high pressure tends to fill up, with its MSLP value increasing from 1024mb to 1028mb while shifting slightly to the east and then it tends to deepen to 1024mb towards end of the forecast period. The Mascarene high pressure system over southwest Indian Ocean is expected to fill up with its central pressure value increasing from 1012mb to 1014mb while shifting to the west towards the end of the forecast period according to **GFS** model. This high pressure system is expected to fill up, with its MSLP value increasing from 1012mb to 1020mb towards end of the forecast period, according to both **ECMWF** and **UKMET** models.

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 DRC and then 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 to shift to the east to reach Zambia and Botswana 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 weaken towards end of the forecast period. Another lower tropospheric cyclone and its associated trough are expected to dominate the flow over Madagascar and it tends to intensify 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 5820gpm extending to the latitudes of Morocco through 24hours and it tends to propagate towards Algeria then to Tunisia by 96 with the low geopotential value of 5700gpm towards end of the forecast period. A second trough is expected to prevail over Mediterranean Sea and northern Africa during the forecast period; with the low geopotential value of 5700gpm extending to the latitude of Tunisia through 24hours and it tends to propagate towards Egypt by 72 hours .A mid latitude frontal system is also expected to propagate eastwards across the Southern African countries with the low geopotential value of 5820gpm through 24 to 72 hours.

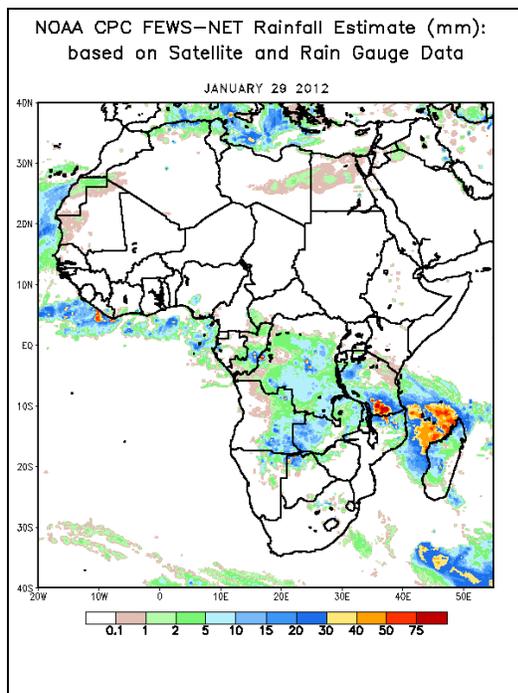
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 150kts in the region between Atlantic Ocean and the Persian Gulf across Mauritania, southern Algeria, southern Libya and Sudan 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 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 northern Algeria, northern Tunisia, southern DRC, southern Angola, northern Namibia, Zambia, Malawi, southern Mozambique and Madagascar.

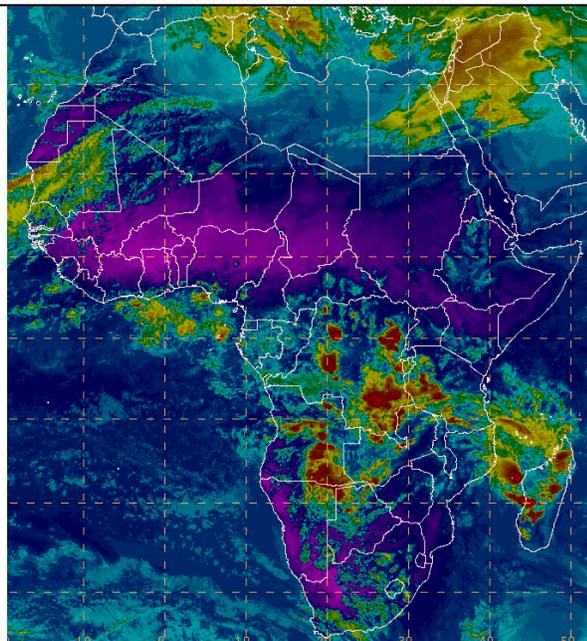
2.0. Previous and Current Day Weather Discussion over Africa (29 January – 30 January 2012)

2.1. Weather assessment for the previous day (29 January 2012): During the previous day, moderate to locally heavy rainfall was observed over parts of DRC, northern Botswana, parts of Zambia, northern Mozambique, southern Tanzania and northern Madagascar.

2.2. Weather assessment for the current day (31 January 2012): Intense clouds are observed over DRC, Angola, northern Namibia, Zambia, Botswana and parts of Madagascar.



IR Satellite Image (valid 1552Z of 30 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

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