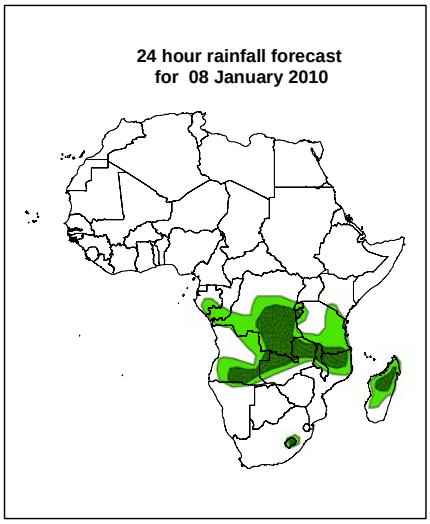
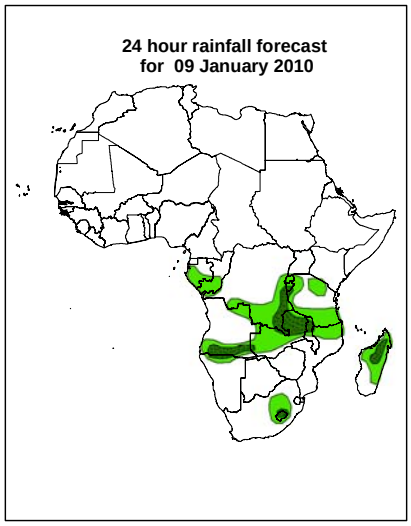
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 08 January –06Z of 10 January 2010, (Issued at 14:00EST of 07 January 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

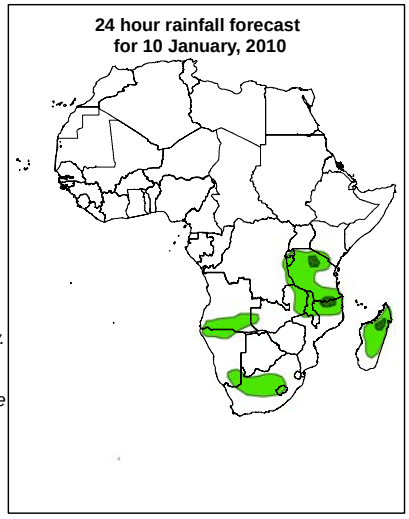
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

- > 40mm per day
- > 20mm per day
- > 10mm per day



Summary

In the coming three days, the convergence associated with the zonal arm of the ITCZ is expected to weaken gradually over western and central parts of equatorial Africa. Hence, there a high chance for decreased rainfall activity over western parts of equatorial Activity. On the other hand the meridonial convergence zone over the CAB region is expected to maintain the moderate rainfall activity in the region. Moreover, the coastal areas of eastern and southeastern African countries, including Madagascar will continue receiving light to moderate rainfall due to the active east African monsoon flow and cyclonic circulation in Mozambique Channel.

1.2. Models Comparison and Discussion - Valid from 00Z of 08 January 2010

Through 24 hrs, the Siberian high is expected to have two ridge axes extending towards Libya across Egypt and towards Ethiopia across the Arabian Peninsula. A mid-latitude low pressure system is expected to move from Northeast Atlantic Ocean towards the Mediterranean sea with the maximum sea level pressure values within the extent of the western branch of the ridge decreases through 24 to 72 hrs, while the eastern branch of the ridge intensifies with its central pressure values increasing from about 1018 to 1025mb in 72hrs.

At 850mb level, an anticyclonic circulation over Jordan is expected to have two ridges, extending towards Libya and towards Ethiopia through the Arabian Peninsula and the red sea, through 24 hrs. The anticyclonic circulation is expected to move slightly to the east through 48 to 72 hrs, as a result of which the western branch of the ridge weakens, while its eastern branch maintains its intensity. The ITCZ related zonal convergence over eastern parts of Equatorial Atlantic Ocean and its inland extension over western and central parts of equatorial Africa is expected to weaken gradually in the coming three days, resulting in a gradual decrease in rainfall activity in the respective regions. On the other hand, the ITCZ related meridonial convergence over the CAB region is expected to remain active, while slightly shifting towards the east. Hence, much of the CAB areas will continue receiving moderate to heavy rainfall in the coming three days. The east African monsoon flow and the persistent cyclonic circulation in Mozambique channel is expected to maintain light to moderate rainfall activity over coastal areas of East Africa including northern portions of Madagascar.

At 500mb level, a wavy pattern exists in the subtropic wind flow with a ridge over the north east Africa. The mid latitude trough over the Mediterranean will move eastwards while weakening while a trough will build up over the Arabian peninsula and deepen through 24 to 72 hrs due to an eastward moving mid-latitude frontal system. The flow associated with this frontal system is expected to dominate much of the northwest African region through 24 to 72 hrs. Ahead of this trough, much of the northeastern parts of Africa will remain under the influence of a high geoptential field. The Mozambique Channel will have a low geo potential field.

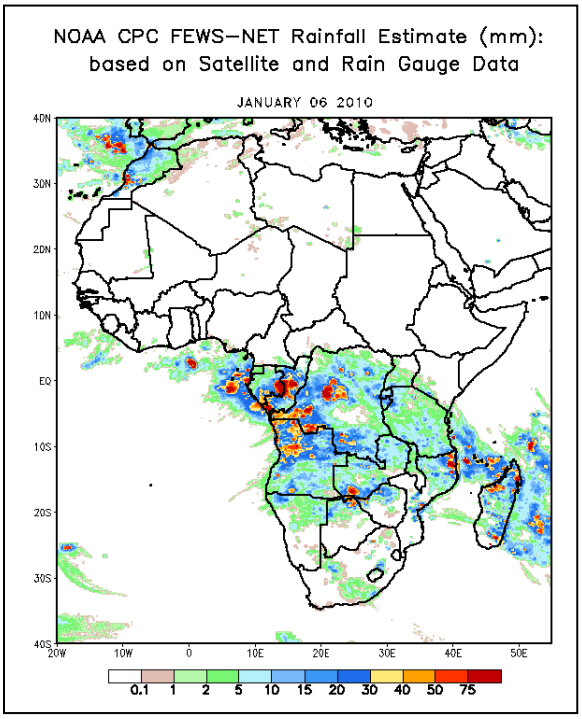
At 200mb, consistent with the mid-tropospheric flow, a wavy pattern is expected, extending across Algeria, with speeds exceeding 110knotts with pockets of wind with speed up 130knotts. In 24 to 48hrs, Jet streams will attain a wavy pattern with increase in speed up to 130 knots over Algeria. Change in the orientation of Jet streams from wavy to zonal with axis shifted to the north with velocity exceeding 110knots is expected in 48 to 72 hrs.

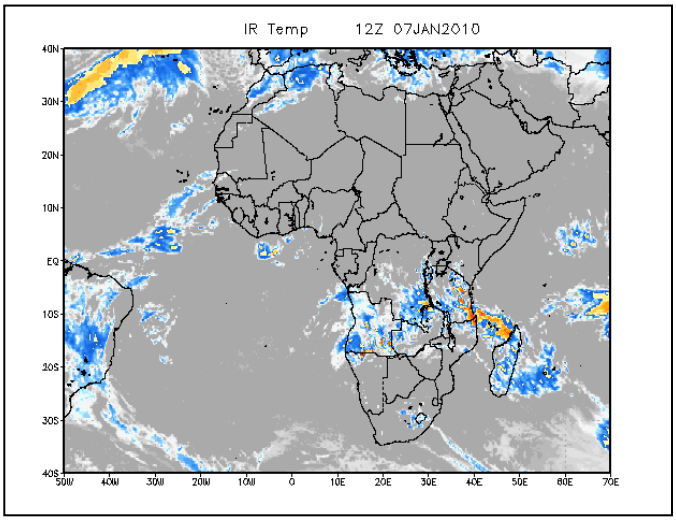
In the coming three days, the convergence associated with the zonal arm of the ITCZ is expected to weaken gradually over western and central parts of equatorial Africa. Hence, there a high chance for decreased rainfall activity over western parts of equatorial Activity. On the other hand the meridonial convergence zone over the CAB region is expected to maintain the moderate rainfall activity in the region. Moreover, the coastal areas of eastern and southeastern African countries, including Madagascar will continue receiving light to moderate rainfall due to the active east African monsoon flow and cyclonic circulation in Mozambique Channel.

2. 0. Previous and Current Day Weather Discussion over Africa (06 –07 January 2010)

2.1. Weather assessment for the previous day (06 January 2010): During the previous day, intense to moderate rainfall events were observed over parts of Gabon, Congo, DRC, Angola, Mozambique and parts of Madagascar.

2.2. Weather assessment for the current day (07 January 2010): Clouds are observed over Angola, parts of DRC, Great lake Region, and Tanzania, Swaziland and Madagascar.





Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (up) based on IR Satellite image

Author(s): *Edson Nkonde (Zambia Meteorological Department/CPC-African Desk)*
Anthony Twahirwa (Rwanda Meteorological Services / CPC-African Desk)
