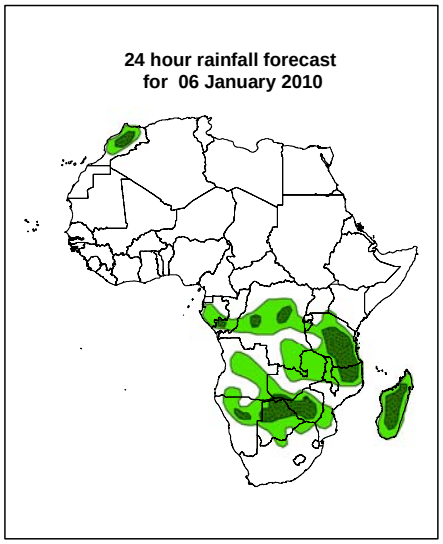
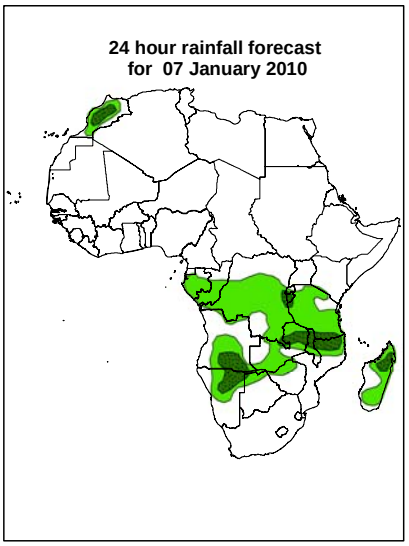
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 07 January –06Z of 09 January 2010, (Issued at 14:00EST of 06 January 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

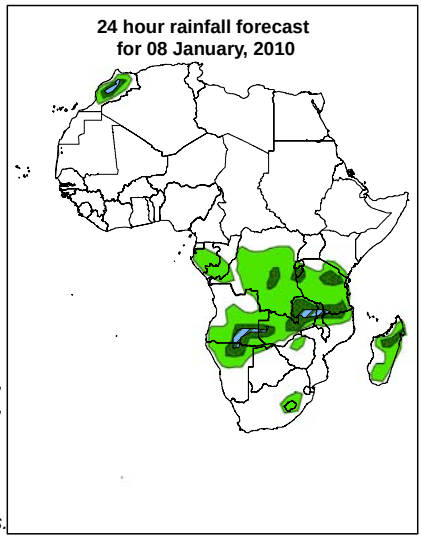
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

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



Summary

In the coming three days, the seasonal zonal convergence over western and central parts of equatorial Africa is expected to remain active. Moreover, the meridonial arm of the ICTCZ is expected to continue enhancing rainfall over the Congo Air Boundary areas. On the other hand, the persistent lower level convergence over Angola, Namibia, Botswana and Zambia is expected to enhance rainfall to over 20mm per day, while the East African monsoon flow over the coastal areas of East and southeast Africa is expected to maintain the light to moderate rainfall in the regions.

1.2. Models Comparison and Discussion - Valid from 00Z of 07 January 2010

The Siberian high is expected to have two ridge axes extending towards Libya across Egypt and towards Ethiopia across the Arabian Peninsula through 24 hrs. With a deep mid-latitude low pressure system expected to move from Northeast Atlantic Ocean towards the vicinity of Algeria, 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 centered in the vicinity of Jordan is expected to have two ridges, extending towards Libya and the Arabian Peninsula 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, the persistent zonal flow over the subtropical regions of northern Africa is expected to get disturbed and attain a wavy pattern 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 48 to 72 hrs. Ahead of this deep trough, much of the northeastern parts of Africa will remain under the influence of a high geoptential field. This wavy patter is also expected to induce another trough in the westerly across Arabian Peninsula with a northeast southwest orientation.

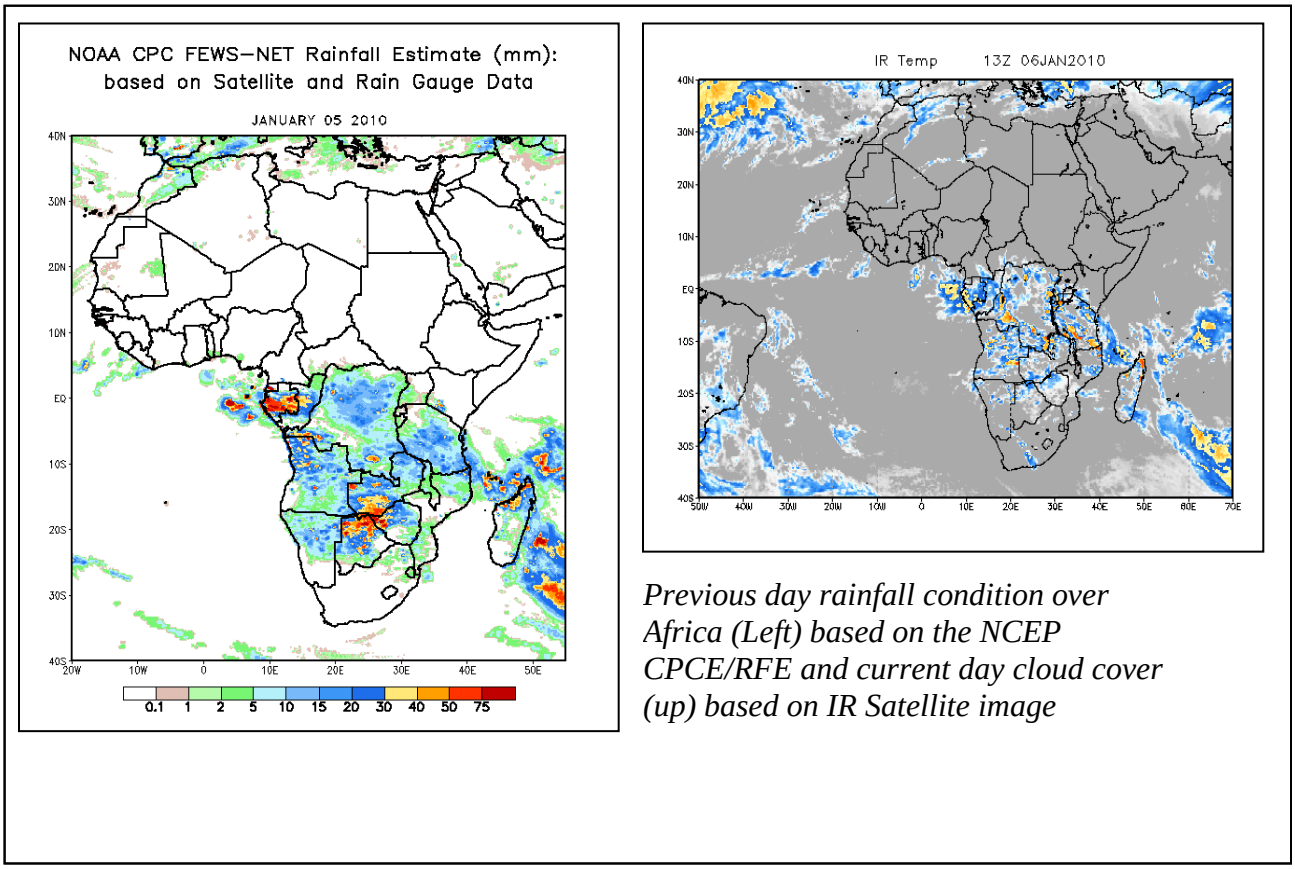
At 200mb, consistent with the mid-tropospheric flow, the expected wavy pattern is expected to change the orientation of the jet stream from a zonal pattern into a wavy pattern through 48 to 72 hrs and the jet stream is expected to intensify gradually as well attaining wind speed values that exceed 130kts through 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 to heavy 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 persistent cyclonic circulation in Mozambique Channel.

2. 0. Previous and Current Day Weather Discussion over Africa (05 –06 January 2010)

2.1. Weather assessment for the previous day (04 January 2010): During the previous day, intense to moderate rainfall events were observed over Gabon, Congo, parts of DRC, Zambia Botswana, southern Tanzania, parts of Angola, Namibia and Zimbabwe, and northern parts of Madagascar.

2.2. Weather assessment for the current day (05 January 2010): Clouds are observed in Gabon, Congo, western DRC, eastern parts of Angola, northern Botswana and Zimbabwe, parts of Zambia, Madagascar, Tanzania and the great lakes region.



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

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