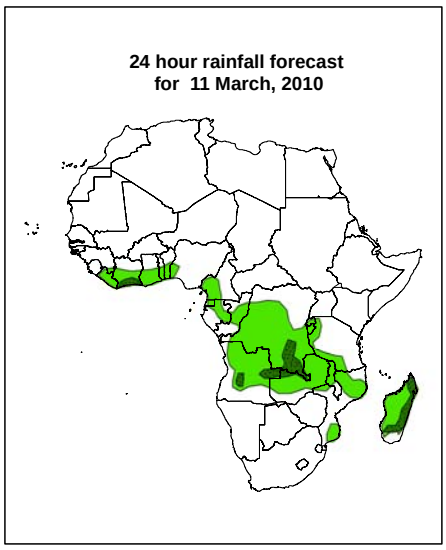
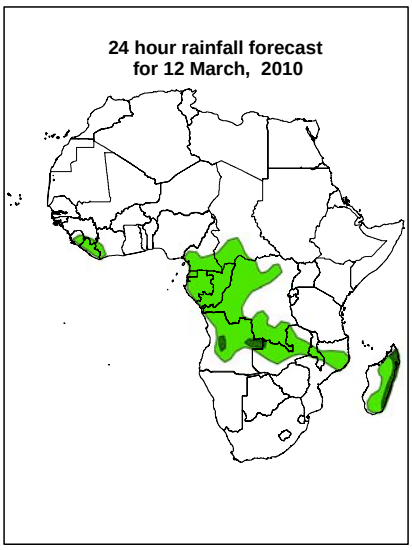
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 11 March –06Z of 13 March 2010, (Issued at 14:00EST of 10 March 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

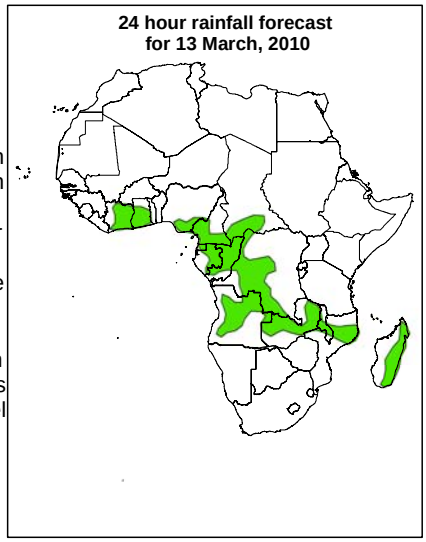
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

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



Summary

In the coming three days, the cyclonic circulation formed off the coast of Madagascar together with the East African monsoon flow are expected to maintain moderate to heavy rainfall activity over parts of Madagascar. Moreover, southern DRC, parts of Zambia and Angola are expected to have moderate rainfall due to the active seasonal convergence in the region. The rainfall activity will also remain active over central and western parts of equatorial Africa, including the costal areas of the Gulf of Guinea, due to persistent lower level convergence in the regions.

1.2. Models Comparison and Discussion - Valid from 00Z of 10 March 2010

A mid latitude low pressure system over Northeast Atlantic Ocean, with central pressure value of 1009mb is expected to move eastwards while weakening in 24 to 48 hours. Another mid-latitude low pressure system with central pressure value of 1008mb located north of Egypt is expected to retreat northwards in 48 hours. Low pressure systems located along west parts of Angola and Namibia as well as northwest South Africa, with central pressure values of 1010mb, 1012mb, and 1011mb, respectively, are expected to maintain their position, while slightly weakening in 24 to 48 hours. The low pressure system off the coast of Madagascar is expected to persist in more or less same position, while slightly deepening in 24 to 48 hours. On the other hand, the sub tropical high pressure over the Arabian Peninsula is expected to have a ridge that extends towards Ethiopia in 24 to 48 hours and the ridge is expected to weaken through 48 to 72 hours. A low pressure zone associated with the equatorial trough is expected to deepen slightly across the western and central parts of equatorial Africa, with central pressure values of about 1008 to 1006mb over Gulf of Guinea, 1005 to 1003mb over Central African Republic and 1004 to 1002mb over southern Sudan through 24 to 72 hours.

At 850mb level, a deep mid latitude trough with a trough axis extending up to Mali is expected to move eastwards in 24 to 72 hours. This trough is expected to retreat slightly northwards through 48 to 72 hours, as a result of expansion of the sub-topical high pressure system in the region. The axis of deep trough extending along 10^{o}W longitude near 35^{o}S in the southern Atlantic Ocean is expected to move eastwards, crossing the southern tip of Africa and reaching up to 30^{o}E longitudes through 24 to 72 hours.

In general, strong east African monsoon flow converging into a cyclonic activity of the coast of Madagascar is expected to enhance rainfall in the region in the coming three days. On the other hand, the seasonal convergence is expected to remain active over western and central parts of equatorial Africa and parts of southern Africa. Moreover, localized convergence and confluence zones are expected to dominate the flow over Angola, northern part of South Africa, Botswana, Guinea, Nigeria, Ivory Coast, Congo, Central African Republic, Northwestern DRC, western Tanzania and western and Ethiopia.

At 500mb level, the wavy pattern associated with the mid latitude westerly flow is expected to continue dominating the flow over subtropical regions of northern and southern Africa in through 24 hrs and the wave pattern will weaken through 48 to 72 hours, as a result of which the interaction between the mid-latitude and tropical systems is expected to decrease gradually in the coming three days.

At 200mb, northern parts of Africa will have westerly flow with a strong wavy pattern. The wind associated with this flow is expected to exceed 130 knots stretching across Northern Atlantic to western Algeria, northern Algeria to east Mediterranean Sea while 110 knots, stretching across northern Morocco to eastern Mediterranean Sea and

northern Atlantic Ocean to western Algeria. On the other hand, across western Algeria up to central Mediterranean Sea the wind speeds will have 90 knots, in 24 to 72 hours.

In the coming three days, the cyclonic circulation formed off the coast of Madagascar together with the East African monsoon flow are expected to maintain moderate to heavy rainfall activity over parts of Madagascar. Moreover, southern DRC, parts of Zambia and Angola are expected to have moderate rainfall due to the active seasonal convergence in the region. The rainfall activity will also remain active over central and western parts of equatorial Africa, including the costal areas of the Gulf of Guinea, due to persistent lower level convergence in the regions.

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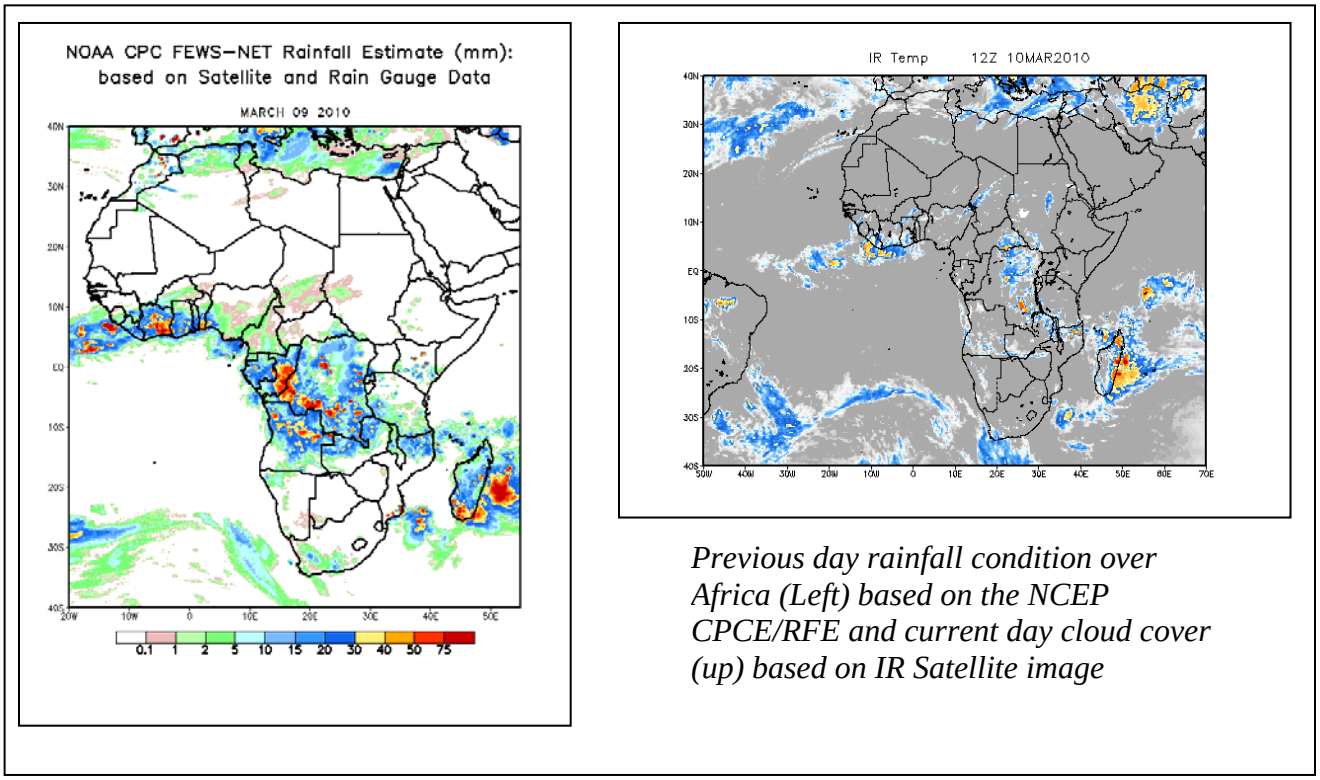
`2. 0. Previous and Current Day Weather Discussion over Africa (09-10 March 2010)

2.1. Weather assessment for the previous day (09 March 2010): During the previous day, moderate to heavy rainfall events were observed over much of DRC and adjacent areas of Zambia and Rwanda, Ivory Coast, Ghana, Togo, Benin, Congo, Gabon, northern half of Angola, central and southern Madagascar and few places of central Kenya.

2.2. Weather assessment for the current day (10 March 2010): isolated patches of intense clouds are observed over coastal areas of Madagascar, eastern half of DRC and northern part of Mozambique.



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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