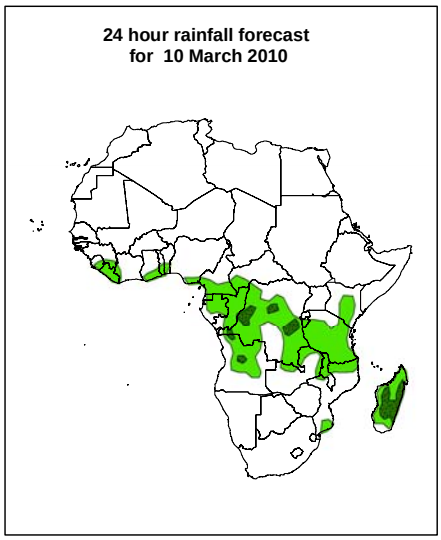
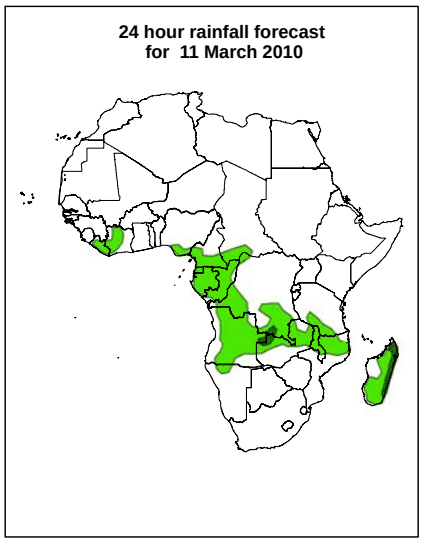
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 10 March –06Z of 12 March 2010, (Issued at 14:00EST of 09 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.



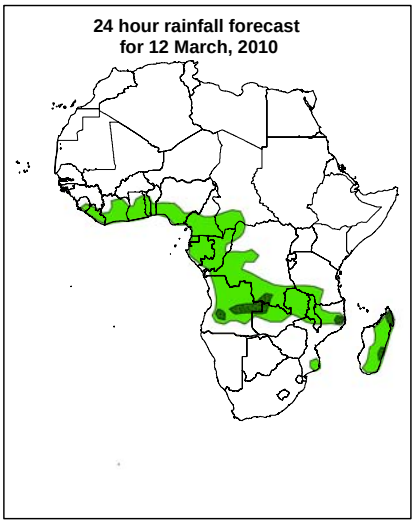


Legend

> 40mm per day

> 20mm per day

> 10mm per day



Summary

In the coming three days, a 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 Madagascar and northern Mozambique. The seasonal convergence over the Congo Air Boundary areas is expected to shift slightly to the west through 24 to 72 hours, resulting in decreased rainfall activity over the Great Lake regions, while western parts of equatorial Africa including Angola are expected to have increased rainfall activity as a result of the persistent lower level convergence zone in the region.

1.2. Models Comparison and Discussion - Valid from 00Z of 09 March 2010

A mid latitude low pressure system over southern Europe, with central pressure value of 998mb is expected to extend its trough axis up to Libya in 24 hours. Another low pressure system located off the west coast of North Africa, with central pressure value of 1002mb, is expected to move slightly eastwards while weakening and its central pressure value becomes through 24 to 48 hours. The low pressure system off the coast of Madagascar is expected to deepen through 24 to 72 hours. Besides, low pressure systems located along the west coasts of Angola, Namibia and South Africa with central pressure values of 1010mb, 1011mb and 1012mb, respectively, are expected to maintain their position with a slight change in central pressure in 24 to 72 hours. On the other hand, a sub tropical high pressure system located over the Arabian Peninsula with central pressure value of 1021mb is expected to maintain its position with a slight change in 24 to 72 hours. Localized high pressure system located over Ethiopia with central pressure value of 1020mb is expected to remain in the same position with slight change through 24 to 72 hours. A low pressure zone associated with the equatorial trough is expected to deepen slightly across the western to central parts of equatorial Africa, with central pressure values of about 1006 to 1007mb over Gulf of Guinea, 1006 to 1004mb over Central African Republic and 1004 to 1003mb over southern Sudan through 24 to 72 hours.

At 850mb level, a deep mid latitude trough is expected to dominate the flow over parts the sub-tropical Africa, with its trough extending between western Mediterranean Sea and extending and Mali in 24 hours and moving towards Niger in 48 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 a deep trough in the southern Atlantic Ocean is expected to move between 20^{o}W and 10^{o}E longitudes through 24 to 72 hours. Moreover, a cyclonic circulation and its associated convective activity off the coast of Madagascar are expected to enhance rainfall in the region in the coming three days. On the other hand, the peripheral winds from the Arabian anticyclone are expected maintain the incursion of moist air towards eastern Africa region in 24 hours. Besides, the East African monsoon flow is expected to maintain the light to moderate rainfall activity over southeastern regions of Africa through 24 to 48 hours.

In 24 to 72 hours, the seasonal convergence over the Congo Air Boundary (CAB) region is expected to remain active. In addition, localized convergences are expected to dominate the flow over Angola, central part of South Africa, Togo, Congo, Central African Republic, Northwestern DRC and Uganda as well as southwestern and western and Ethiopia.

At 500mb level, mid latitude troughs with a strong wavy pattern are expected to dominate the flow over subtropical regions of Africa. Especially, the deep mid latitude trough extending from southern Europe is expected to reach the border between Niger and Mali in 24 to 48 hours. This mid latitude trough is expected to weaken gradually in

72 hours. Similarly, a mid latitude trough in the southern hemisphere is expected to assume a strong pattern in 24 to 48 hours while weakening in 72 hours.

At 200mb, northern parts of Africa will have westerly flow with a wavy pattern. The wind associated with this flow is expected to exceed 110 knots, stretching across southern Tunisia to eastern Mediterranean Sea and northern Algeria to northwestern Libya. On the other hand, across western Algeria up to eastern Mediterranean Sea the wind speeds will have 90 knots, in 24 to 72 hours.

In the coming three days, a 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 Madagascar and northern Mozambique. The seasonal convergence over the Congo Air Boundary areas is expected to shift slightly to the west through 24 to 72 hours, resulting in decreased rainfall activity over the Great Lake regions, while western parts of equatorial Africa including Angola are expected to have increased rainfall activity as a result of the persistent lower level convergence zone in the region.
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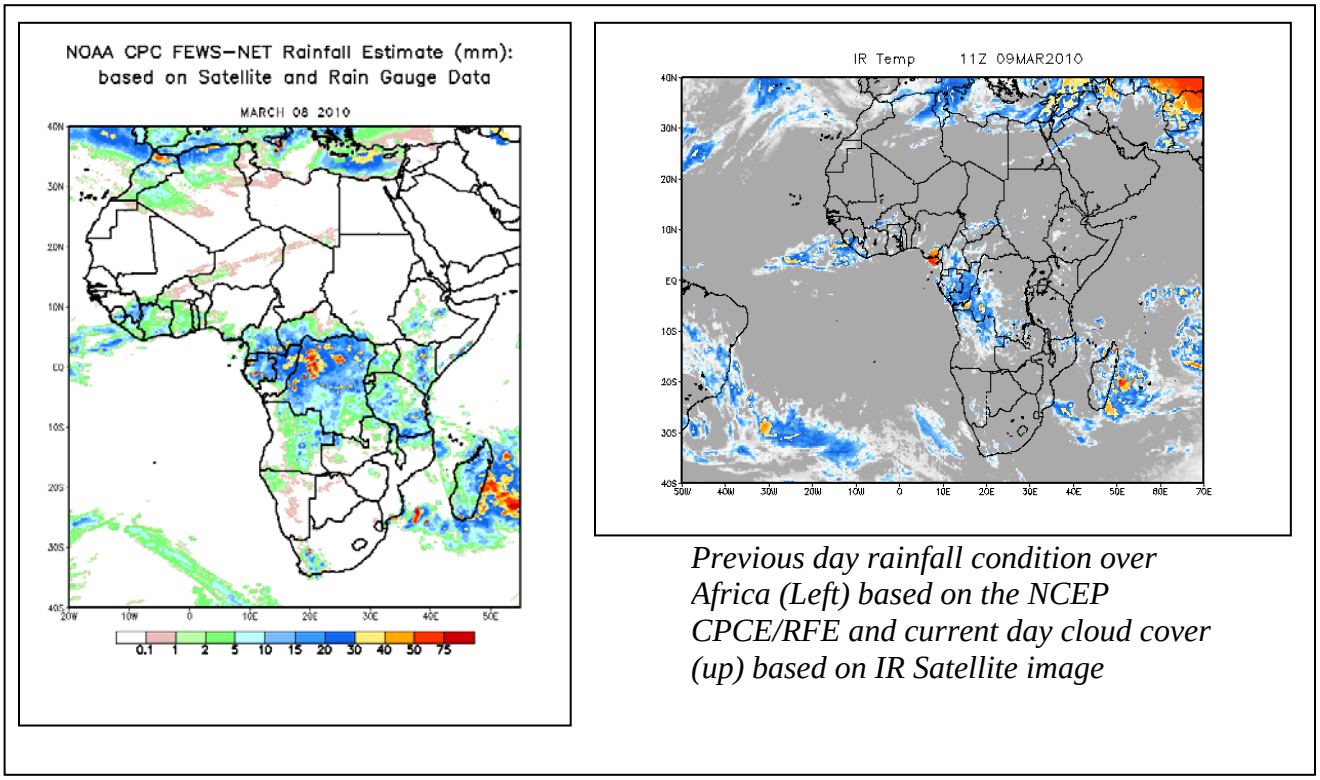
2. 0. Previous and Current Day Weather Discussion over Africa (08-09 March 2010)

2.1. Weather assessment for the previous day (08 March 2010): During the previous day, moderate to heavy rainfall events were observed over much of DRC, Congo, Gabon and adjacent areas, some places of Kenya, Tanzania and Madagascar as well as few places of eastern Ethiopia.

2.2. Weather assessment for the current day (09 March 2010): isolated patches of intense clouds are observed over coastal areas of border between Nigeria and Cameroon, Congo, western DRC and northern tip of 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

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