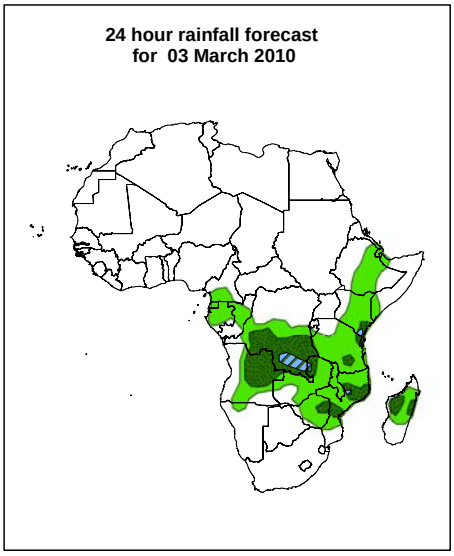
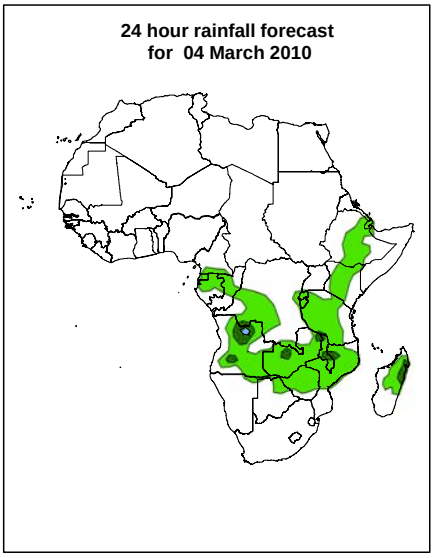
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 03 March –06Z of 05 March 2010, (Issued at 14:00EST of 02 March 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

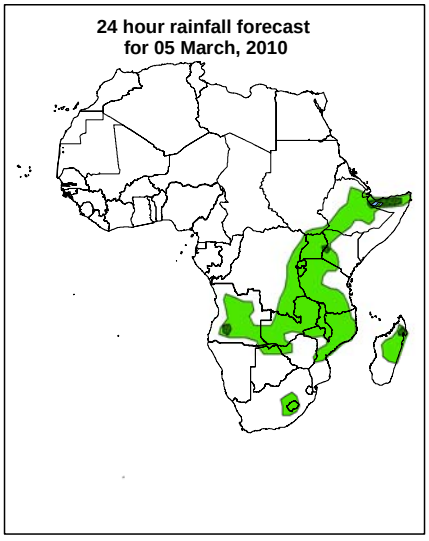
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

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



Summary

The interaction between the mid-latitude frontal and tropical weather systems across the northeast Africa is expected to maintain the light to moderate rainfall over the Horn of Africa. Moreover, the seasonal low level convergence zone over the Congo Air Boundary (CAB) and southeastern parts of Africa is expected to maintain rainfall in excess of 10mm per day through 24 to 48 hours with the Angola, southern DRC, Zambia, pocket areas of Kenya and Mozambique are expected to receive rainfall exceeding 20mm per day.

1.2. Models Comparison and Discussion - Valid from 00Z of 02 March 2010

In 24 hours, two embedded high pressure cells, with central pressure values ranging between 1020 and 1022mb are expected to develop within the ridge of the Saharan high pressure system in 24 to 48 hours. Besides, the Azore's high is expected to move eastwards extending its ridge axis up to Mali in 24 to 48 hours. Moreover, a high pressure system developed over southeast of Africa with central pressure value of 1023mb is expected to persist in the same position while weakening in 24 to 72 hours. On the other hand, the mid latitude trough over southeastern Europe is expected to move eastwards while deepening and extending its trough axis up to central Libya through 24 to 72 hours. Low pressure system located over Northern Atlantic Ocean with mean sea level pressure value of 991mb is expected to move eastwards while weakening and extending its trough axis up to central Algeria in 24 to 48 hours. Weak low pressure systems developed over west coast of South Africa and Namibia with central values of 1010 and 1011mb are expected to persist. Further more, low pressure systems associated with the equatorial trough are expected to show little or no change in the coming three days

At 850mb level, the Saharan anticyclone is expected to dominate the flow over much northern Africa regions, while shifting towards east through 24 to 72 hours. This high pressure is expected to be disintegrated in to two cells of feeble high pressures. The Arabian anticyclone is expected to shift towards the Sea with its center located around 60^0E longitude and 10^0N latitude, resulting in increased easterly flow across the Horn of Africa that will transport excessive moist air towards regions through 24 to 72 hours. On the other hand, a mid latitude trough is expected to move between northeast Atlantic Ocean and central Mediterranean Sea through 24 to 72 hours. The peripheral winds of the east African ridge are expected to enhance moisture incursion towards the coastal areas of southeast Africa.

In 24 to 72 hours, the seasonal convergence over the CAB region is expected to remain active. In addition, localized convergences are expected to dominate the flow over parts of east, central and southern Africa through 24 to 72 hours. Especially, the convergence zones over southern Angola, western South Africa, central Cameroon, eastern Zimbabwe and Lesotho as well as border between Burkina Faso and Guinea are expected to enhance wet weather activity through 24 to 72 hours. Furthermore, convergence of the southeasterly to easterly flow from the east African monsoon and the easterly flow towards Ethiopia and Somalia is expected to persist through 24 to 72 hours.

At 500mb level, deep mid latitude westerly troughs with a strong wavy pattern is expected to dominate the flow over subtropical regions of Africa. Especially, the mid latitude trough originating from the northeast Atlantic Ocean is expected to move eastwards while extending its trough axis up to 10^0N to the west coast of Africa in 24 to 72 hours. On the other hand, the Saharan high is expected to dominate parts of North and West Africa regions, in 24 to 72 hours. The sub tropical high in the southern

hemisphere is expected to dominate the flow over southern Africa regions in 48 to 72 hours. Similarly, the southern hemisphere is expected to assume a wave flow pattern in the sub tropical areas through 24 to 72 hrs.

At 200mb, North Africa will experience a mid-latitude weak wave flow pattern with wind speeds of up to 90 knots stretch across northern Atlantic to eastern Libya, while a narrow stretch from western Morocco to central Algeria will assume wind speeds of 110 knots, in 24 to 72 hours, tending to a slight shift.

The interaction between the mid-latitude frontal and tropical weather systems across the northeast Africa is expected to maintain the light to moderate rainfall over the Horn of Africa. Moreover, the seasonal low level convergence zone over the Congo Air Boundary (CAB) and southeastern parts of Africa is expected to maintain rainfall in excess of 10mm per day through 24 to 48 hours with the Angola, southern DRC, Zambia, pocket areas of Kenya and Mozambique are expected to receive rainfall exceeding 20mm per day.

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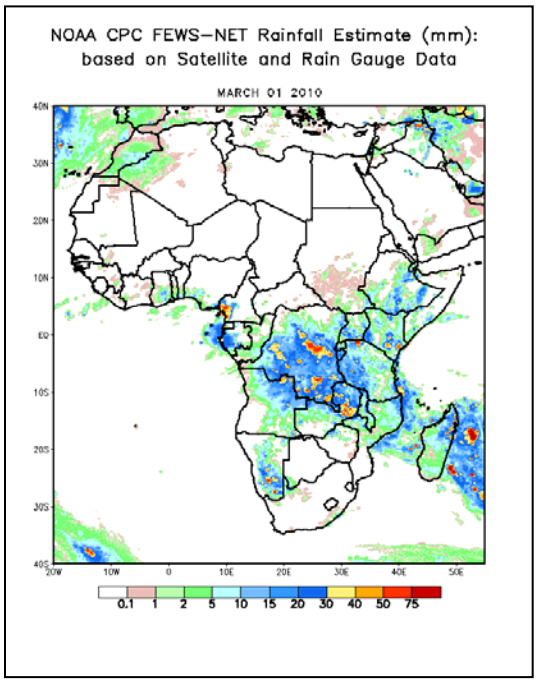
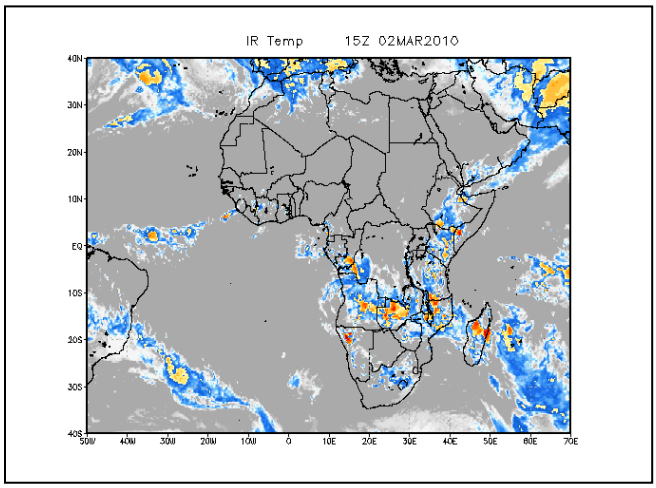
2. 0. Previous and Current Day Weather Discussion over Africa (01-02 March 2010)

2.1. Weather assessment for the previous day (01 March 2010): During the previous day, moderate to heavy rainfall events were observed over much of DRC, eastern Zambia, parts of southern Namibia, northern Angola, few places of western Cameroon and Gabon, parts of eastern Tanzania, few places of southern Kenya, southern Uganda as well as east, south and southeastern Ethiopia, the southern, eastern and southeastern parts of Ethiopia and northern Madagascar.

2.2. Weather assessment for the current day (02 March 2010): isolated patches of intense clouds are observed over parts of Angola, northwestern Namibia, Zambia, Malawi, northern Mozambique, western Congo, southwestern DRC, Tanzania, Kenya, southern Ethiopia and central 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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