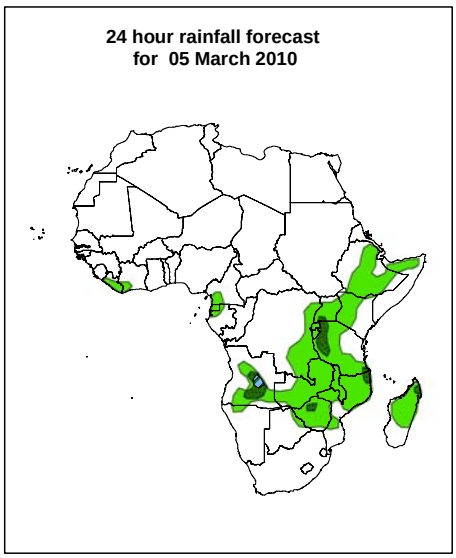
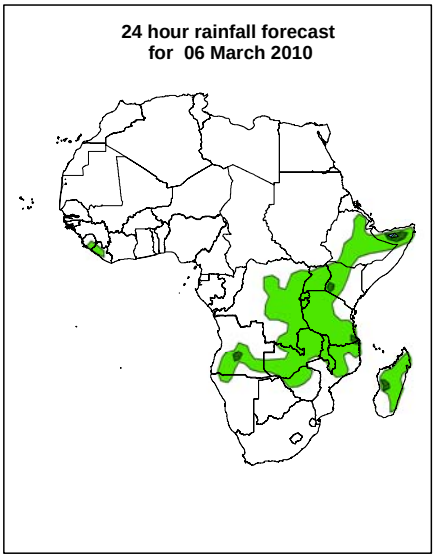
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 05 March –06Z of 07 March 2010, (Issued at 14:00EST of 04 March 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

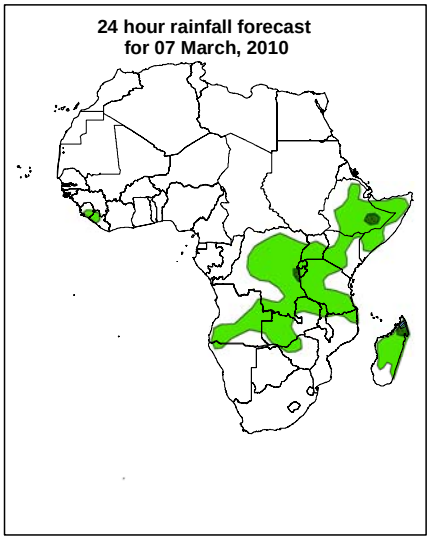
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





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 few places in the southeastern parts of Africa are expected to maintain rainfall in excess of 10mm per day through 24 to 72 hours with the central Angola, northwestern Tanzania, northern Somalia, southeastern Ethiopia and northern extreme of Madagascar are expected to receive rainfall exceeding 20mm per day in 24 hours.

1.2. Models Comparison and Discussion - Valid from 00Z of 04 March 2010

In 24 hours, a high pressure cell located over Northern Africa, with central pressure value of 1019mb is expected to move slightly eastwards while weakening in 24 to 48 hours. A high pressure system over north of the Arabian Peninsula with central pressure value of 1019mb is expected to shift slightly eastwards while weakening in 24 to 48 hours. This high pressure system is expected to move further southwards and disintegrated in to two high pressure cells with central values of 1019mb each in 72 hours. In the southern hemisphere, a sub tropical high pressure cell with a central pressure value of 1022mb located over east of South Africa is expected to persist, while maintaining its position with its ridge extending up to Namibia and Zimbabwe through 24 to 72 hours. Besides, another high pressure cell with central pressure value of 1019mb is expected to develop over Namibia through 48 to 72 hours. On the other hand, a low pressure system located over Northern Atlantic Ocean with mean sea level pressure of 996mb is expected to move eastwards while further weakening in 24 to 72 hours. Moreover, a mid latitude trough originating from southern Europe is expected to stretch its trough axis up to the Persian Gulf southeastwards in 24 to 48 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 1009 to 1007mb over Gulf of Guinea, 1008 to 1005mb over Central African Republic and 1008 to 1005mb over southern Sudan through 24 to 72 hours.

At 850mb level, The Saharan anticyclonic circulation is expected to dominate the flow over much of northern Africa 24 to 72 hours. Its western extent is however expected to be weakened by a westerly mid latitude trough centered over the Azores through 48 to 72 hours. The Saharan anticyclonic system is expected to move slightly eastwards while in 72 hours. The Arabian anticyclone is expected to strengthen while slightly moving eastwards in 48 to 72 hours. The monsoon flow is expected to be easterly and southeasterly favoring moist air towards eastern regions of Africa from its peripheral wind flow in 48 to 72 hours. On the other hand, a mid latitude trough located over 15^0W and 25^0N is expected to move eastwards with its trough axis reaching up to the equator and 25^0N 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 and central Africa through 24 to 72 hours. localised convergence zones over southern Angola, west and northeast coast of South Africa, Guinea, Cameroon, Northern DRC, northwestern Tanzania, northern Somalia and southwestern Ethiopia are expected to enhance wet weather activity through 24 to 72 hours over the areas. 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. The mid latitude trough originating from southern Europe is expected to move eastwards while weakening gradually in 48 hours. On the other hand the sub tropical high in the southern hemisphere is expected to dominate the Southern Africa regions in 24 to 72 hours. Unlike the northern hemisphere it is expected to assume a strong wavy flow in 24 to 48 hours while weakening gradually in 72 hours.

At 200mb, North Africa will experience a mid-latitude strong wave flow pattern with wind speeds of up to 150 knots stretching across Northern Atlantic to northwest coast of Africa while southwest Algeria to eastern Libya, eastern Algeria to eastern Mediterranean Sea and Arabian Peninsula to Asia will assume wind speeds of 110 knots, in 24 to 72 hours.

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 few places in the southeastern parts of Africa are expected to maintain rainfall in excess of 10mm per day through 24 to 72 hours with the central Angola, northwestern Tanzania, northern Somalia, southeastern Ethiopia and northern extreme of Madagascar are expected to receive rainfall exceeding 20mm per day in 24 hours.

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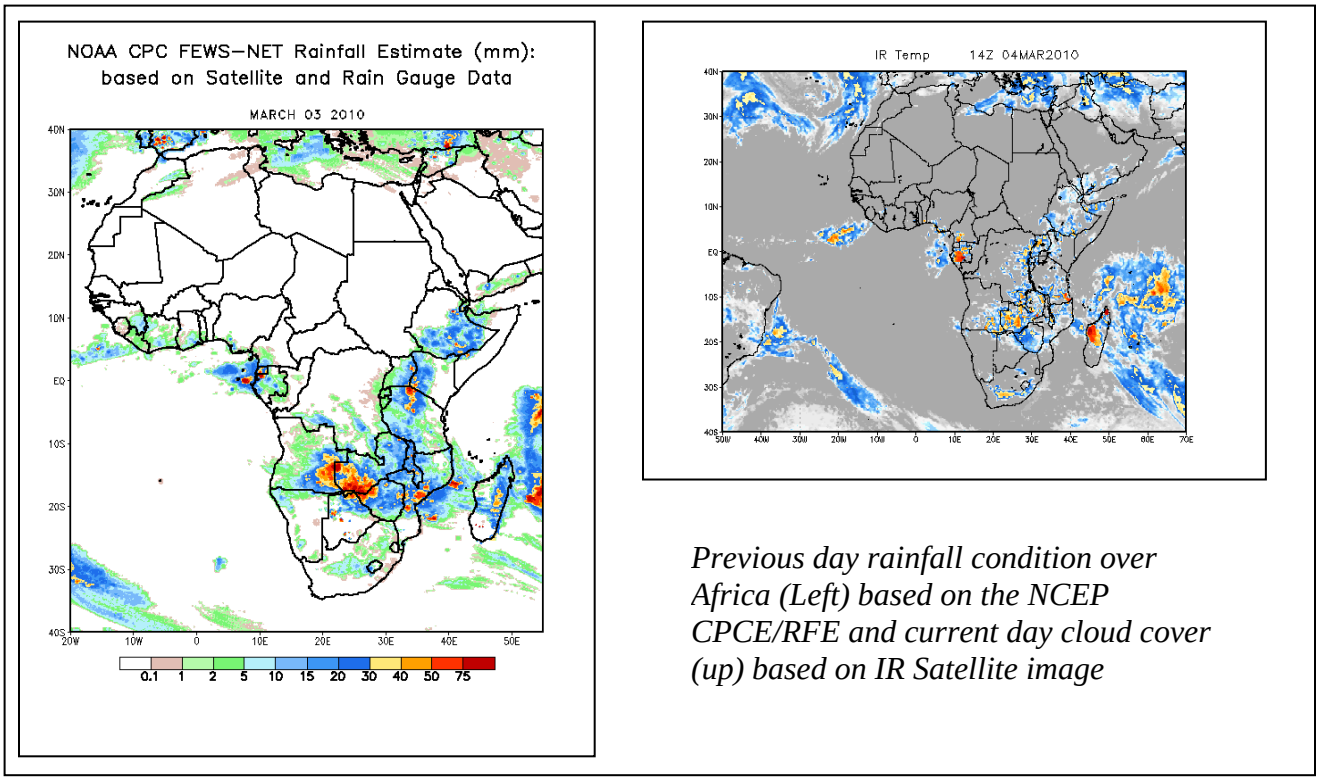
2. 0. Previous and Current Day Weather Discussion over Africa (03-04 March 2010)

2.1. Weather assessment for the previous day (03 March 2010): During the previous day, moderate to heavy rainfall events were observed over places of southeastern Angola, southwestern Zambia and adjacent areas of Zimbabwe and Botswana, central Mozambique, Equatorial Guinea, northwestern Gabon and few places of southern Ethiopia.

2.2. Weather assessment for the current day (04 March 2010): isolated patches of intense clouds are observed over eastern parts of Gabon, southwestern Cameroon, parts of Zambia, Mozambique, Angola, Uganda, southern Tanzania, eastern parts of Madagascar, few places of southern parts of South Africa, Swaziland, DRC and Ethiopia.



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): *Solomon Yohannes (National Meteorological Agency of Ethiopia / CPC-African Desk)*
Edson Nkonde (CPC-African Desk)

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