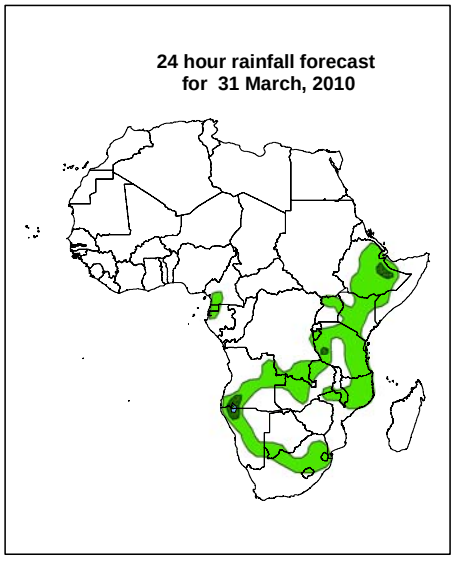
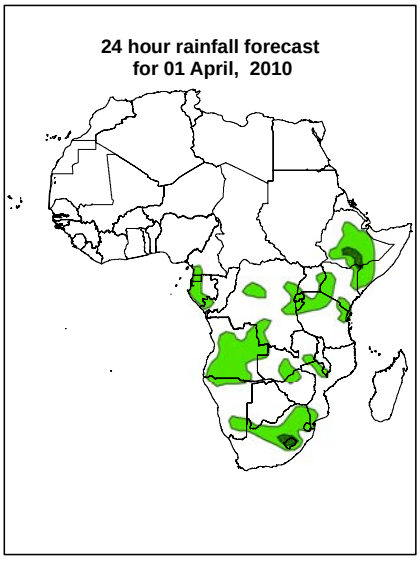
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 31 March –06Z of 02 April 2010, (Issued at 14:00EST of 30 March 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

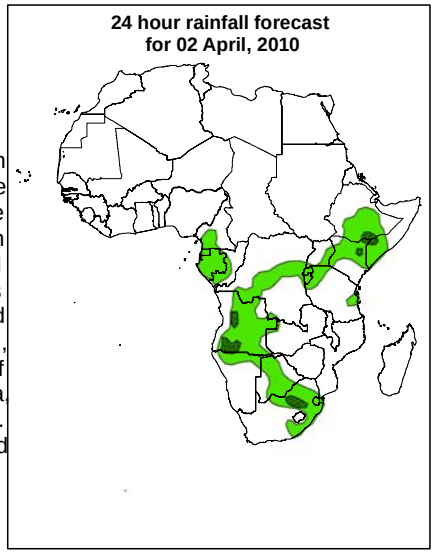
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

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



Summary

The persistent moist easterly flow from the Indian Ocean and its associated lower level convergence over East Africa will continue producing moderate to heavy rainfall over southwestern and southern Ethiopia, south and central parts of Angola and central part of South Africa. The onshore winds from the Atlantic and Indian Oceans are expected to maintain moderate to heavy rainfall over Gabon, Tanzania, Equatorial Guinea, and coastal areas of Cameroon as well as central part of DRC, Botswana, Lesotho, Swaziland and southern part of Malawi. The passage of the frontal system is also expected to enhance rainfall over parts South Africa.

1.2. Models Comparison and Discussion - Valid from 00Z of 30 March 2010

High pressure systems, with central pressure values of 1020mb and 1022mb located over northern Algeria and northern Red Sea, respectively, are expected to move slightly towards east maintaining their intensity through 24 to 48 hours, while weakening in 72 hours. In the southern hemisphere localized high pressure cell with central pressure value of 1022mb located over southeast of South Africa is expected to persist through 24 to 72 hours, while its associated ridge extending up to Zimbabwe in 24 to 48 hours. On the other hand, the Arabian high is expected to continue having a maritime ridge that will enhance moisture incursion towards East Africa. A low pressure system with central pressure value of 1010mb located off the coast of Angola is expected to maintain its position and central value in 24 to 48 hours, while slightly weakening in 72 hours. The low pressure zones associated with the equatorial trough are expected to deepen slightly from 1008mb to 1006mb over Gulf of Guinea, from 1007mb to 1005mb over central Africa and 1007mb to 1004mb over southern Sudan through 24 to 72 hours.

At 850mb level, a westerly trough over central Mediterranean Sea is expected to move eastwards while deepening in a back hanged orientation in 24 to 72 hours. On the other hand, the Saharan anticyclone is expected to dominate the flow over northern African regions, while expanding towards the Arabian Peninsula across Red Sea through 24 to 72 hours. With eastward expansion of the subtropical ridge, the interaction between the mid-latitude and tropical system is expected to weaken, through 24 to 72 hours. However, the moist southeasterly winds from central Indian Ocean and their associated convergence are expected to maintain the moderate to heavy rainfall activity over parts of East African countries through 24 to 72 hours. On the other hand, a mid-latitude frontal system is expected to pass across the southern portions of South Africa through 24 to 48 hours while deepening in 72 hours. The convergence in the CAB region is expected to remain active through 24 to 72 hours. Besides, the lower tropospheric convergence zones over parts of the Gulf of Guinea countries and western parts of equatorial and southern Africa are expected to weaken slightly through 48 to 72 hours.

At 500mb level, a mid-latitude trough near the 35^0E longitude and 20^0N latitude is expected to move eastwards in 24 to 48 hours, while weakening in 72 hours. The associated westerly flow is expected to expand towards northeastern Sudan 24 to 72 hours. On the other hand, the mid latitude flow over the southern hemisphere is expected to be zonal through 24 to 72 hours.

At 200mb, the flows over the subtropical regions of northern Africa are expected to remain zonal across the northern Africa region through 24 to 72 hours. On the other hand a wavy pattern in the westerly flow is expected to dominate the subtropical regions of the southern hemisphere, with a ridge axis over southern Africa courtiers and the trough axes over the Atlantic and Indian Oceans. In the northern hemisphere, the maximum wind speed associated with this flow is expected to exceed 110 knots across Arabian Peninsula to west Asia, while the maximum wind speed values are expected to

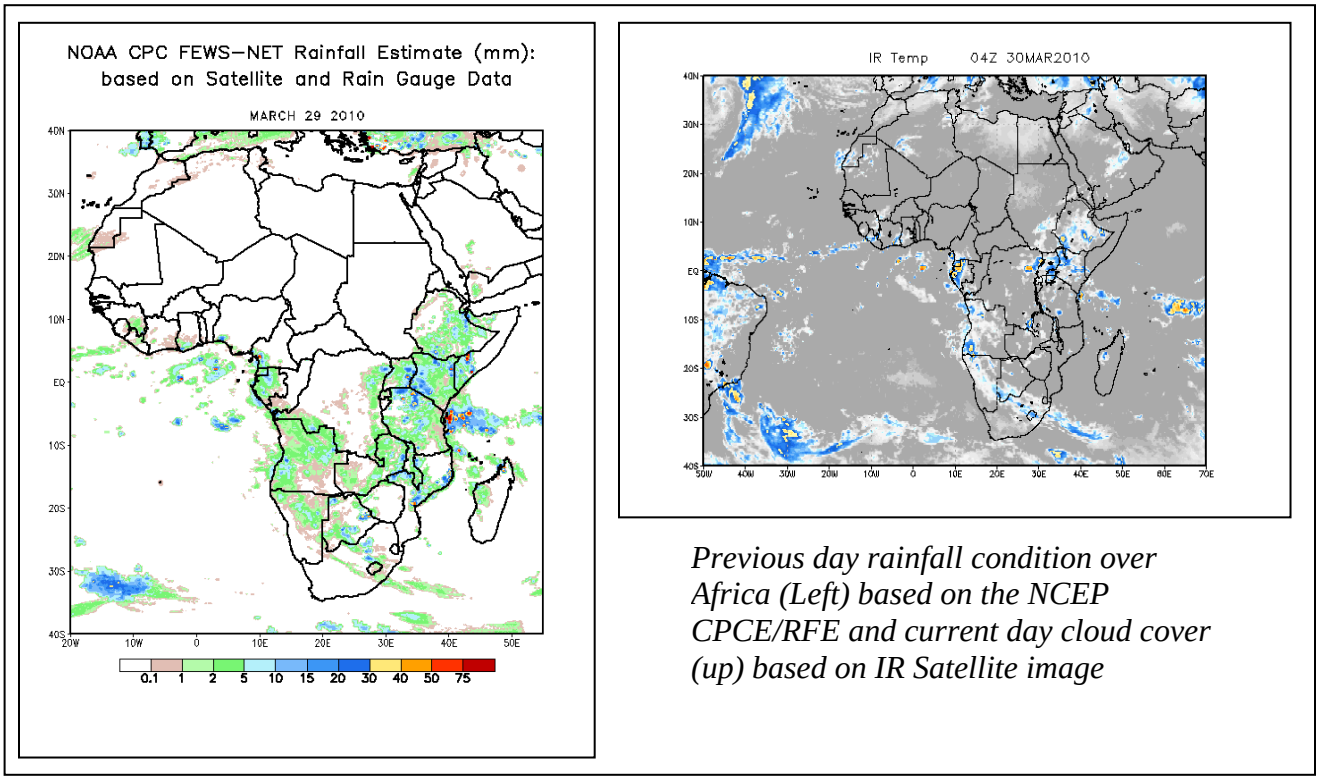
exceed 90 knots across west of Arabian Peninsula to east of Asia through 24 to 72 hours.

The persistent moist easterly flow from the Indian Ocean and its associated lower level convergence over East Africa will continue producing moderate to heavy rainfall over southwestern and southern Ethiopia, south and central parts of Angola and central part of South Africa. The onshore winds from the Atlantic and Indian Oceans are expected to maintain moderate to heavy rainfall over Gabon, Tanzania, Equatorial Guinea, and coastal areas of Cameroon as well as central part of DRC, Botswana, Lesotho, Swaziland and southern part of Malawi. The passage of the frontal system is also expected to enhance rainfall over parts South Africa.

2.0. Previous and Current Day Weather Discussion over Africa (29-30 March 2010)

2.1. Weather assessment for the previous day (29 March 2010): During the previous day, moderate to heavy rainfall events were observed over few places of Uganda, Tanzania, southern Somalia, central Mozambique and Botswana.

2.2. Weather assessment for the current day (30 March 2010): isolated patches of intense clouds are observed over Gabon, Uganda, and Kenya, southwestern part of Angola and central part of South Africa as well as southwest and southeast 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)*
