

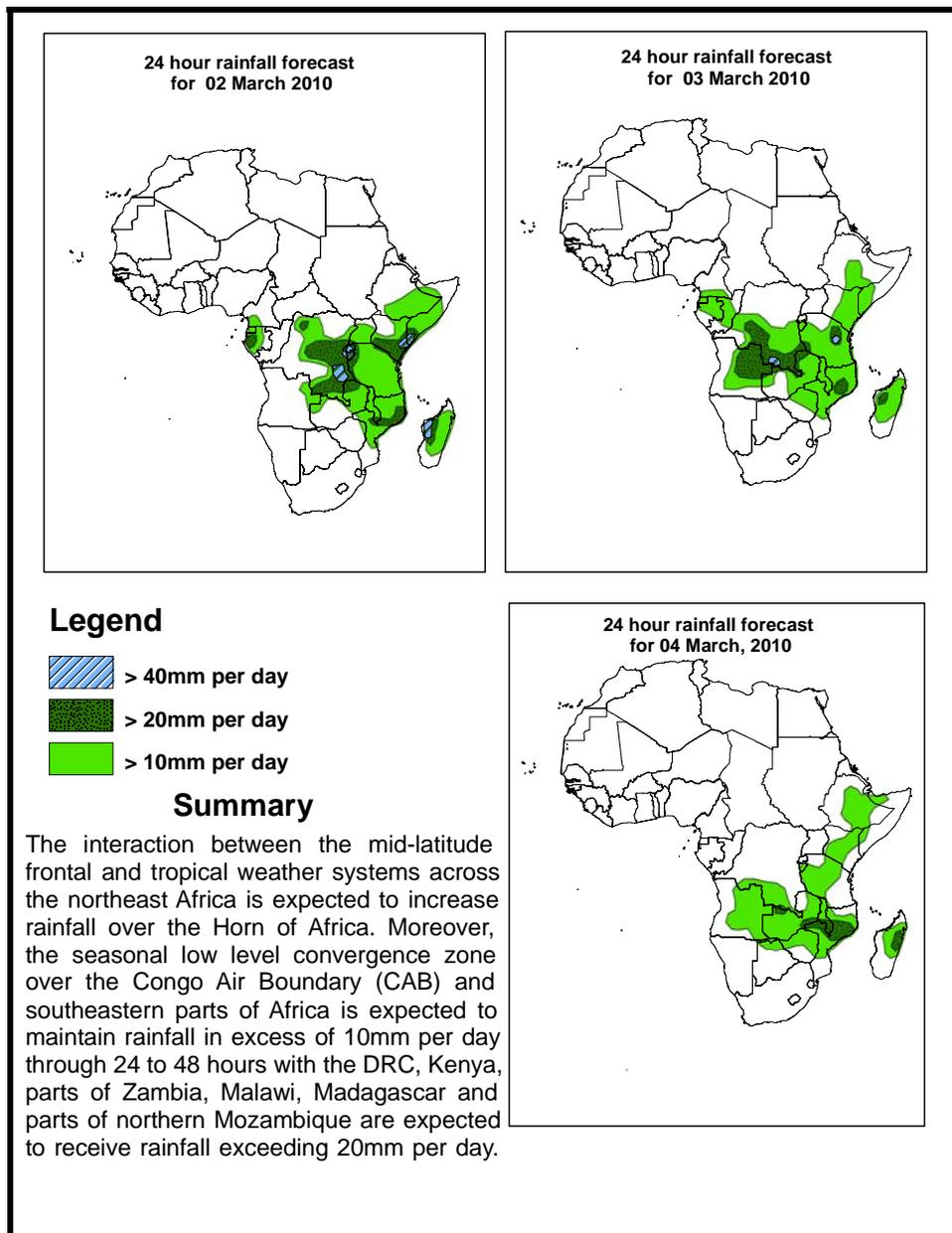


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 02 March –06Z of 04 March 2010, (Issued at 14:00EST of 01 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.



## **1.2. Models Comparison and Discussion - Valid from 00Z of 01 March 2010**

In 24 hours, the sub-tropical high pressure, with a central pressure value of about 1024mb is extending its ridge axis towards south up to northwestern Libya. Besides, series of weak high pressure systems, with central pressure values ranging between 1020 and 1022mb are expected to develop over the Saharan region through 24 to 48 hours. These high pressure systems are expected to merge together and move eastwards, the associated ridge extending up to Chad in 72 hours. Moreover, a high pressure system developed over southeast coast of Africa with central pressure value of 1023mb is expected to shift slightly to the west, while its ridge axis extends up to central Zimbabwe in 48 hours. On the other hand, a deep low pressure system with a central pressure value of 984mb is expected to move between Northeast Atlantic and Algeria while filling up through 24 to 72 hours. In addition, a weak westerly trough situated over central Mediterranean Sea with a central pressure value of 1010mb extends its axis up to Northern Africa. Low pressure zone associated with the equatorial trough is expected to dominate over much of equatorial Africa, in 24 to 72 hours, with a slight change in central pressure values of about 1008 to 1010mb over the Gulf of Guinea and 1008 to 1011mb over Central Africa Republic as well as about 1007 to 1011mb over southern Sudan.

At 850mb level, the Saharan high pressure system is expected to dominate the flow over much northern Africa regions, while expanding towards east through 24 to 72 hours. The Arabian high pressure system with its position located over the sea resulting in increasing easterly flow across the Horn of Africa that will transport excessive moist air towards regions through 24 to 72 hours. A feeble cyclonic circulation is expected to develop in the vicinity of Mozambique, favoring the east coast with wet weather activity in 72 hours. A deep westerly trough in southern hemisphere is expected to move eastwards. In the contrary, the St Helena high is expected to dominate the flow over southern Africa regions in 48 to 72 hours, while its peripheral winds are carrying moisture into the region. A mid-latitude trough across eastern Mediterranean Sea, is expected to move slightly to the east, while .deepening.

In 24 to 72 hours, the seasonal convergence over the CAB region is expected to remain active. In addition, most parts of east, central and southern Africa are expected to be influenced by the strong convergence of the northeasterly to easterly flow, from the northern Indian Ocean, and southwesterly flow from the Atlantic Ocean through 24 to 72 hours. Localized convergence zones are expected to dominate the flow over northern Angola, South Africa, east coast of Nigeria, Lesotho and Swaziland. 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, much of North Africa is expected to experience a westerly wave flow pattern, in 24 to 72 hours, with a trough extending southwards over Sudan reaching up to 10°N. The axis of this trough is expected to move from 30°E to 40°E longitudes through 24 to 72 hours, resulting in increased rainfall activity over the Horn of Africa. Similarly, the southern hemisphere is expected to assume a wave flow pattern in the sub tropical areas through 24 to 72 hrs.

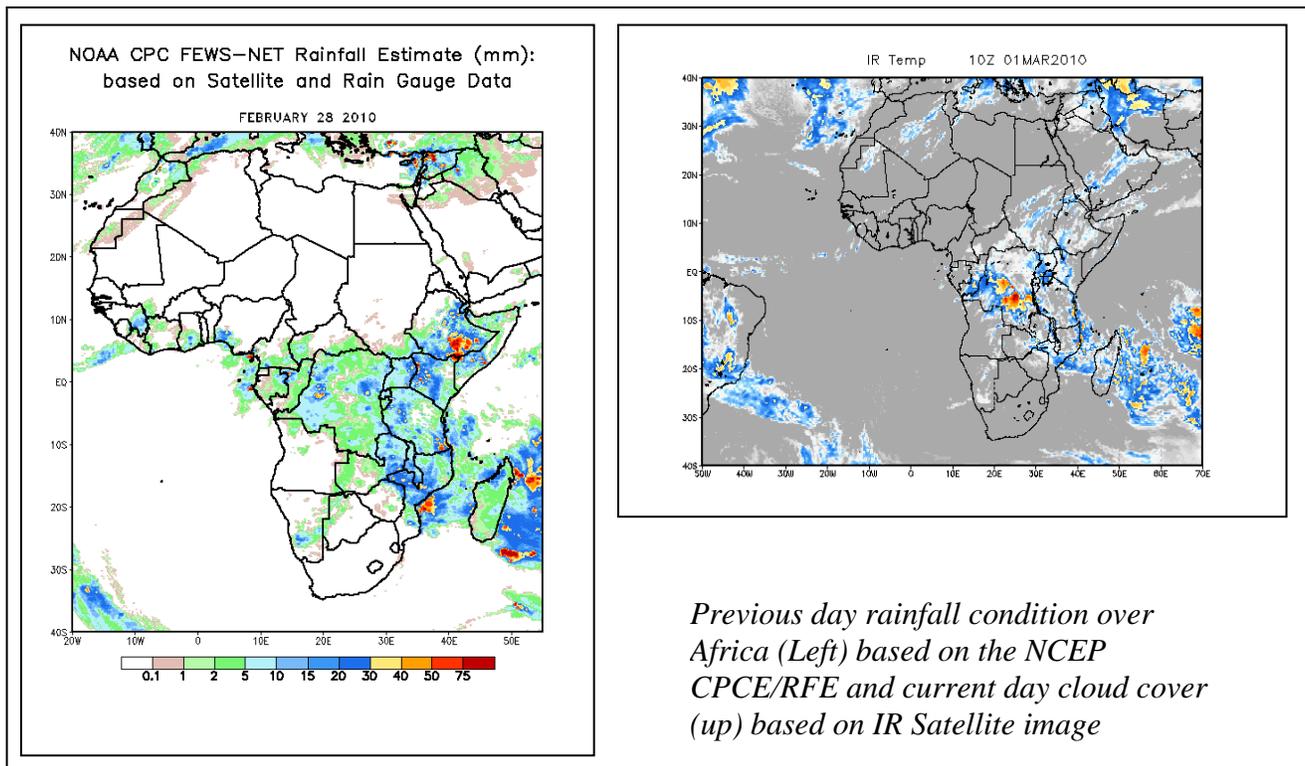
At 200mb, North Africa will experience a mid-latitude strong wave flow pattern with wind speeds of up to 110 knots, while a narrow stretch from central Arabian peninsula will assume wind speeds of 150 knots, in 24 to 48 hours, tending to shift eastwards over eastern Arabian peninsula, in 48 to 72 hours.

The interaction between the mid-latitude frontal and tropical weather systems across the northeast Africa is expected to increase 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 DRC, Kenya, parts of Zambia, Malawi, Madagascar and parts of northern Mozambique are expected to receive rainfall exceeding 20mm per day.

## 2. 0. Previous and Current Day Weather Discussion over Africa (25-26 February 2010)

**2.1. Weather assessment for the previous day (28 February 2010):** During the previous day, moderate to heavy rainfall events were observed over the southern, eastern and southeastern parts of Ethiopia, western half of Kenya and the adjacent areas of Uganda, southern Somalia, few places of Tanzania, much of central Mozambique and the adjoining areas of Zambia as well as Malawi and few places of DRC.

**2.2. Weather assessment for the current day (01 March 2010):** isolated patches of intense clouds are observed over parts southern and central DRC.



*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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