

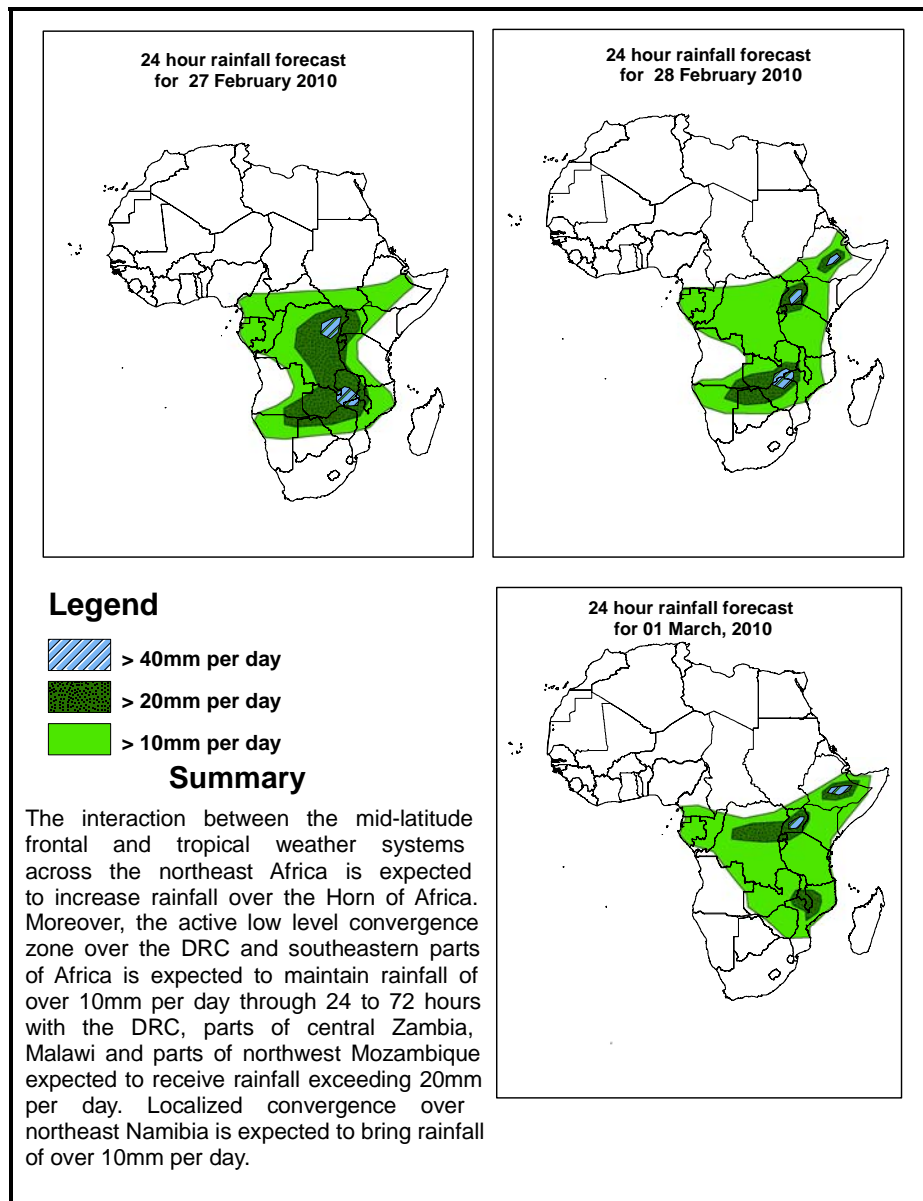


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 27 February –06Z of 01 March 2010, (Issued at 14:00EST of 26 February 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 26 February 2010**

In 24 hours, much of North Africa will be covered by the Saharan high, with central pressure value of 1019mb. This high pressure system is expected to weaken, while moving slightly to the east through 48 to 72 hours. The eastward movement of the high pressure system will allow a deep mid-latitude low pressure system to move in the northeast direction towards southern Europe in 24 to 72 hours. Another mid latitude low pressure system is expected to appear over eastern Mediterranean Sea that moves towards the Arabian Peninsula and the adjoining areas of the Persian Gulf through 24 to 72 hours.

Much of southern parts of West Africa will experience a low pressure system with central pressure values ranging from 1006mb over eastern Nigeria up to 1008mb over Senegal. In addition, low pressure zone associated with the equatorial trough is expected to dominate over much of equatorial Africa, in 24 to 72 hours, with central pressure values reaching 1009mb over the Gulf of Guinea, 1006mb over Central Africa Republic, northern DRC, and over southern Sudan. Besides, places over southern Africa are expected to reach pressure values of 1009mb over Botswana, Namibia and South Zambia, while the Mozambique Channel will reach central pressure values of 1011mb. A ridge from the St. Helena high is expected to extend northwards over the eastern part of south Africa and reach the Zimbabwean border in 24 to 72 hours.

At 850mb level, a deep mid latitude cyclonic circulation over Northeast Atlantic Ocean and another mid-latitude trough across the Red Sea area, with the sub-tropical anticyclone between them dominating the flow over northern Africa are expected to move slightly to the east through 24 to 72 hours. Especially, the trough over the Red Sea area is expected to deepen through 24 to 72 hours to enhance interactive weather between mid-latitude and tropical weather systems across the Horn of Africa. With eastward movement of this trough, the peripheral winds of the Arabian Peninsula are expected to attain more easterly direction that will carry more moisture towards the Horn of Africa.

In 24 to 72 hours, the seasonal convergence over the CAB region is expected to be maintained. 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 westerly flow from the Atlantic Ocean through 24 to 72 hours. Localized convergence is expected to remain active over southern Angola and Namibia. 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<sup>0</sup>N. The axis of this trough is expected to move from 30<sup>0</sup>E to 40<sup>0</sup>E longitudes

through 24 to 72 hours, resulting in increased rainfall activity over the Horn of Africa. On the other hand, the southern hemisphere is expected to assume a weak wave flow pattern in the sub tropical areas through 24 to 72 hrs.

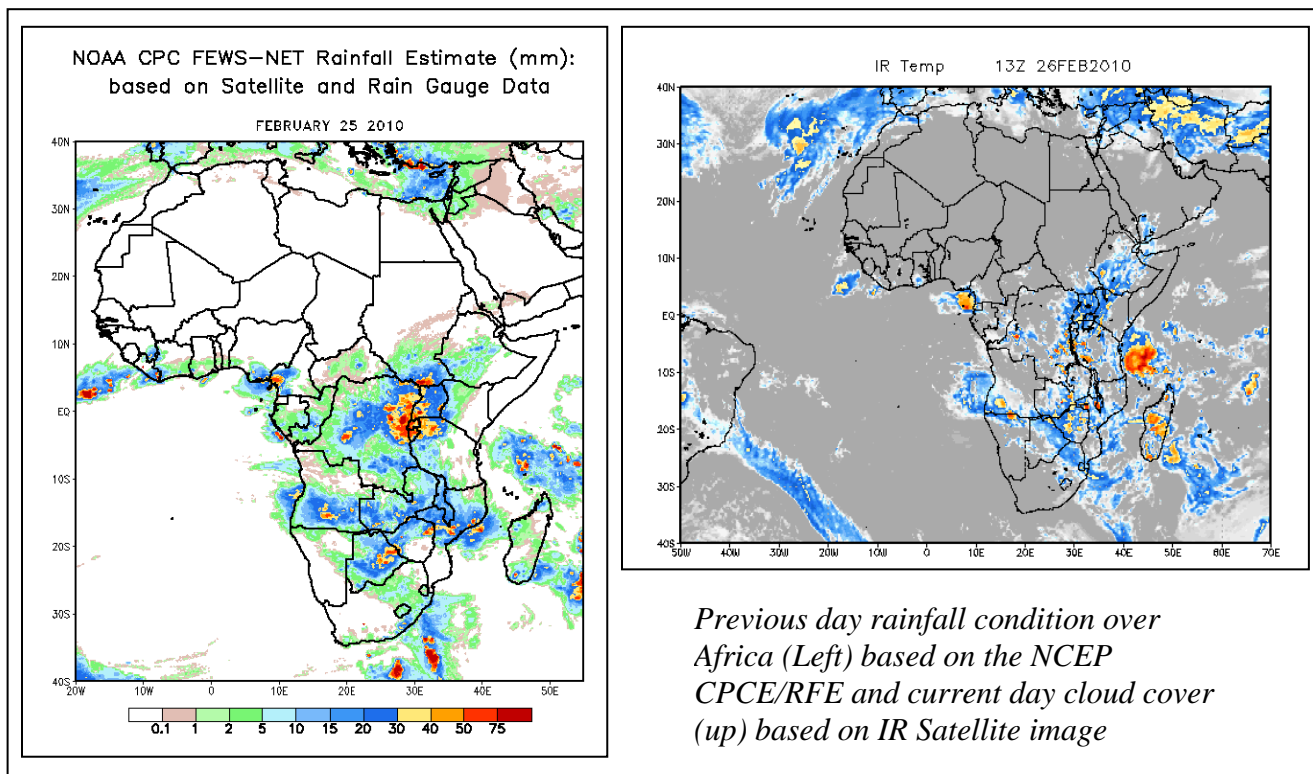
At 200mb, North Africa will experience a mid-latitude strong wave flow pattern with wind speeds of up to 110 knots, while a narrow stretch from central Arabian peninsula will assume wind speeds of 130 knots, in 24 to 48 hours, tending to shift eastwards over eastern Arabian peninsula, in 48 to 72 hours.

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 active low level convergence zone over the DRC and southeastern parts of Africa is expected to maintain rainfall of over 10mm per day through 24 to 72 hours with the DRC, parts of central Zambia, Malawi and parts of northwest Mozambique expected to receive rainfall exceeding 20mm per day. Localized convergence over northeast Namibia is expected to bring rainfall of over 10mm per day.

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

**2.1. Weather assessment for the previous day (25 February 2010):** During the previous day, moderate to heavy rainfall events were observed over the northeast DRC, Rwanda, Burundi extreme southern Sudan, southern Angola, east central Botswana and central and coastal Mozambique.

**2.2. Weather assessment for the current day (26 February 2010):** isolated patches of intense clouds are observed over parts central DRC, parts of southern Zambia, parts of southern Angola and, central and southern Madagascar.



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