

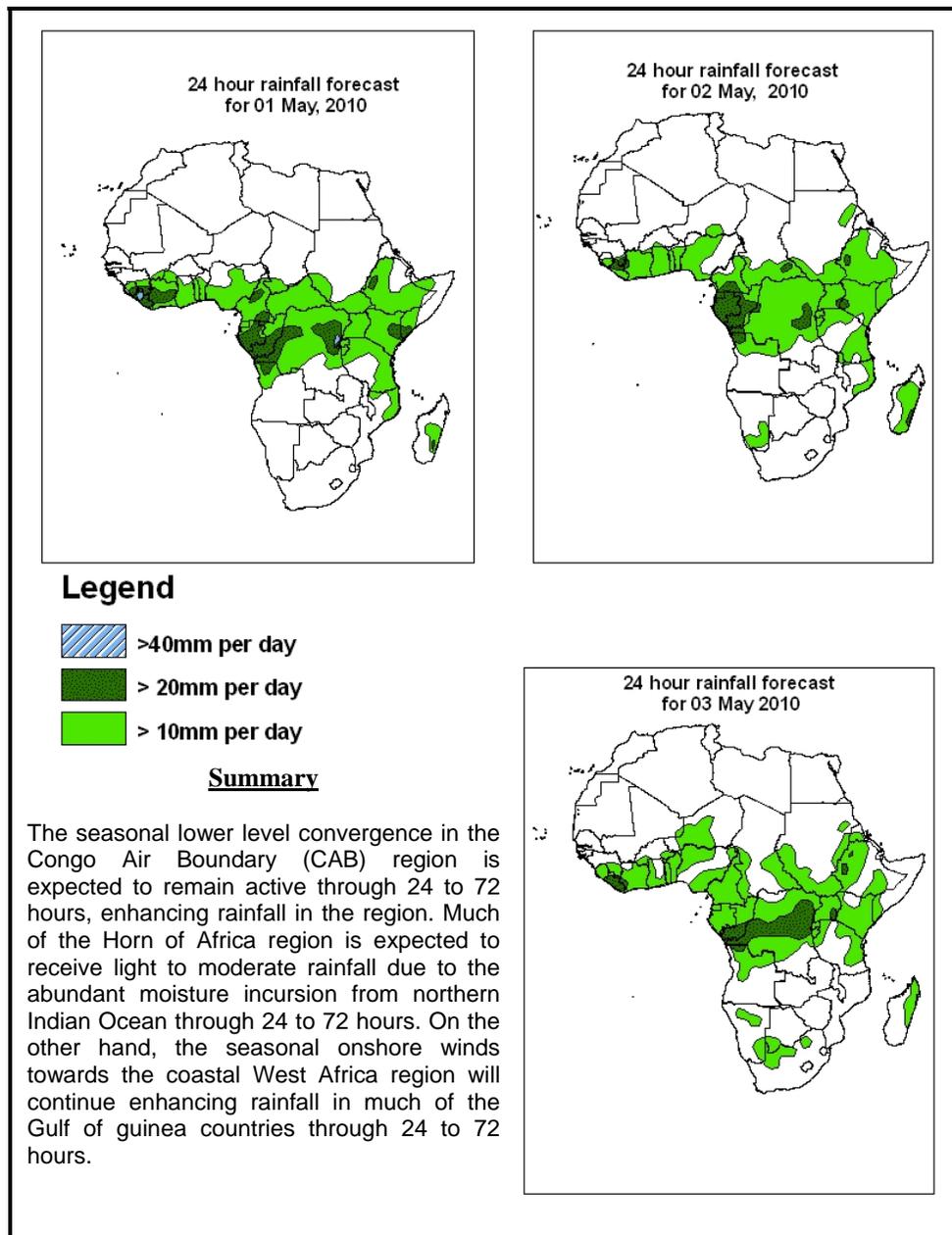


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid, 06Z of 01 May – 06Z of 03 May 2010, (Issued at 14:00EST of 30 April 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 30 April 2010**

Localized low pressure systems, located in the Red Sea and Gulf of Aden with central pressure values of 1005mb and 1008mb, respectively, are expected to maintain their position through 24 to 72 hours. The sub-tropical high pressure system located over South Africa, with central pressure value of 1021mb, is expected to intensify in 24 to 48 hours and tending to weaken slightly through 48 to 72 hours. The ridge extending from this high is expected to reach up to Zambia and Mozambique in 24 to 72 hours. The St Helena high pressure system with central pressure value of 1024mb is expected to move westwards, while weakening through 48 to 72 hours. A Localized high pressure cell with central pressure value of 1020mb located over Zimbabwe is expected to persist with slight change through 24 to 72 hours. A low pressure system, with central pressure value of 1008mb, located off the coast of Somalia is expected to maintain its position through 24 to 72 hours. Low pressure systems with central pressure values of 1011mb and 1010mb located along the coasts of Gabon and Angola are expected to persist with slight change through 24 to 72 hours. The equatorial trough is expected to maintain its position with central pressure values of 1005mb in the Gulf of Guinea and 1006mb over Central Africa through 24 to 72 hours. The heat low over Sudan, with central pressure value of 1004mb is expected to maintain its position with slight change through 24 to 72 hours.

At 850mb level, the mid latitude trough situated along 30<sup>0</sup>E longitude is expected to move eastwards near 30<sup>0</sup>E longitude along Red Sea in 24 to 72 hours, while shifting further eastwards in 72 hours. On the other hand, the sub-tropical anticyclonic circulation is expected to dominate the flow over northern Africa through 24 to 72 hours. The northeasterly and southwesterly trade winds are expected to converge near 10<sup>0</sup>N latitude in the region between coastal West Africa and Sudan through 24 to 72 hours. Meanwhile, the southeasterly winds from the periphery of the anticyclone in the Indian Ocean are expected to continue carrying moisture towards a strong lower level convergence in East Africa through 24 to 72 hours.

At 500mb level, a mid-latitude westerly trough, located along 20<sup>0</sup>E longitude, is expected to move eastwards through 24 to 72 hours. This trough is expected to move further eastwards extending its axis along Red Sea and reaching up to 20<sup>0</sup>N in 48 to 72 hours. On the other hand, the mid tropospheric wind flow in the western Africa is expected to remain more or less zonal through 24 to 72 hours. In the southern

hemisphere, a wavy pattern in the mid-latitude westerlies dominates the flow in the subtropical regions. The trough axes associated with this flow are expected to extend northwards along the coastal regions of southwest Africa and the Mozambique Channel, with the whole trough-ridge system is expected to shift eastwards through 24 to 72 hours.

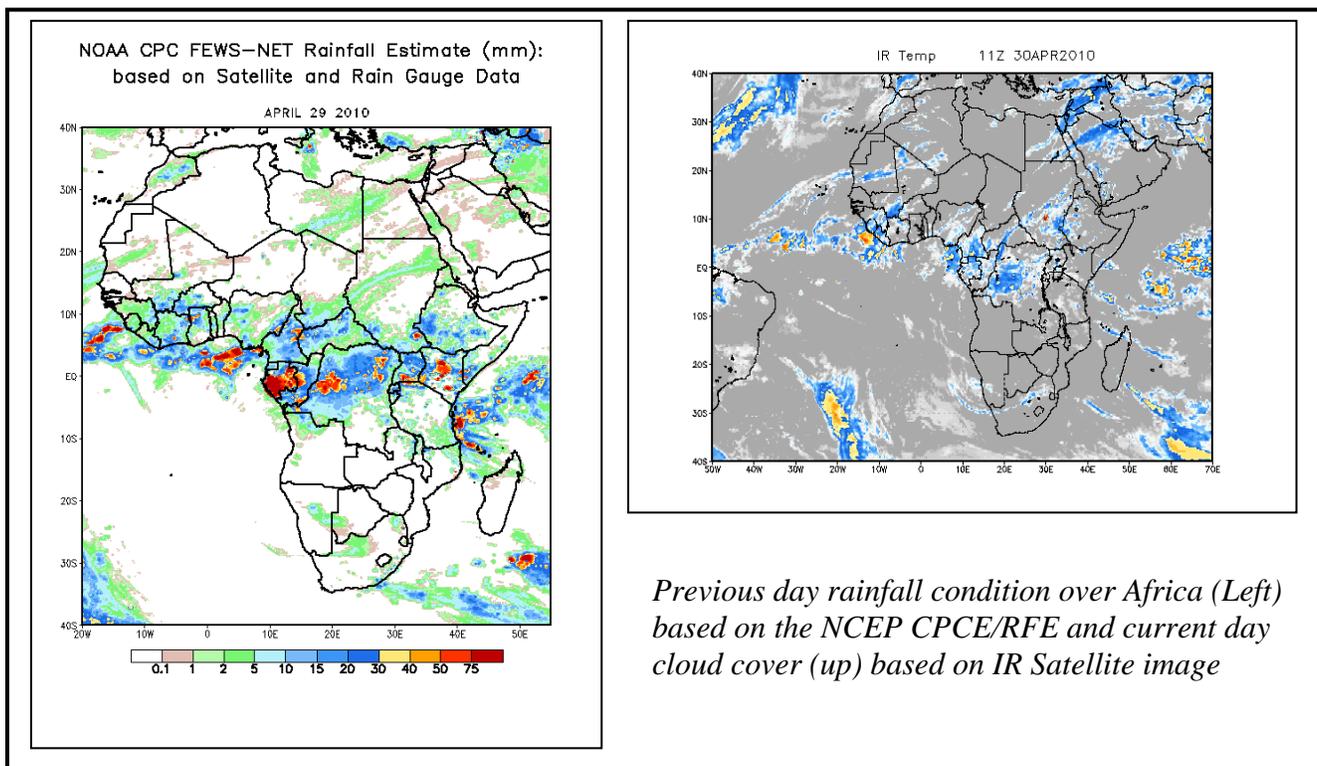
At 200mb, a deep westerly trough located along west coast of Africa is expected to propagate eastwards. The flow in the northern Africa regions is expected to remain more or less zonal through 24 to 72 hours. On the other hand, a southeast-northwest oriented trough between the Indian and Atlantic Oceans across southern parts of South Africa is expected to move slightly eastward, while deepening through 24 to 48 hours. In the northern hemisphere, the maximum wind speed associated with this flow is expected to exceed 110 knots across western Libya to western Egypt, northern part of Mali to western Libya, eastern Libya to Persian Gulf and southeastern Algeria to west of Arabian Peninsula, while exceed 90 knots across northern Mauritania to Persian Gulf, east of Mauritania to eastern Europe and southern Algeria to west of Arabian Peninsula. In the southern hemisphere, the maximum wind speed is expected to exceed 130 knots in the region between near  $30^{\circ}\text{E}$  to  $40^{\circ}\text{E}$ , while exceed 110 knots between  $10^{\circ}\text{E}$  to  $40^{\circ}\text{E}$ ,  $35^{\circ}\text{E}$  to  $45^{\circ}\text{E}$  and  $20^{\circ}\text{W}$  to  $15^{\circ}\text{E}$  longitude. The maximum wind speed exceeds 90 knots in the region between  $0^{\circ}$  to  $40^{\circ}\text{E}$ ,  $20^{\circ}$  to  $50^{\circ}\text{E}$  and  $25^{\circ}\text{W}$  to  $15^{\circ}\text{E}$  longitude in 24 to 72 hours. The speed of the jet wind is expected to weaken in 48 to 72 hours in association with an east ward propagating the westerly wave.

The seasonal lower level convergence in the Congo Air Boundary (CAB) region is expected to remain active through 24 to 72 hours, enhancing rainfall in the region. Much of the Horn of Africa region is expected to receive light to moderate rainfall due to the abundant moisture incursion from northern Indian Ocean through 24 to 72 hours. On the other hand, the seasonal onshore winds towards the coastal West Africa region will continue enhancing rainfall in much of the Gulf of guinea countries through 24 to 72 hours.

## **2.0. Previous and Current Day Weather Discussion over Africa (29 April 2010 – 30 April 2010)**

**2.1. Weather assessment for the previous day (29 April 2010):** During the previous day, moderate to heavy rains was observed over much of Gabon, and adjacent areas, northern half of DRC, most parts of Cameroon, Uganda, Kenya and adjacent areas of Somalia, Central African Republic and few places of Ghana, Ivory Coast, southern Sudan and southern half of Ethiopia as well as coastal areas of Tanzania and Nigeria.

**2.2. Weather assessment for the current day (30 April 2010):** Isolated intense clouds are observed over Sierra Leone, Gabon, Equatorial Guinea, and southern part of Central African Republic, eastern and southern parts of Sudan and adjoining areas of Ethiopia and most parts of DRC.



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