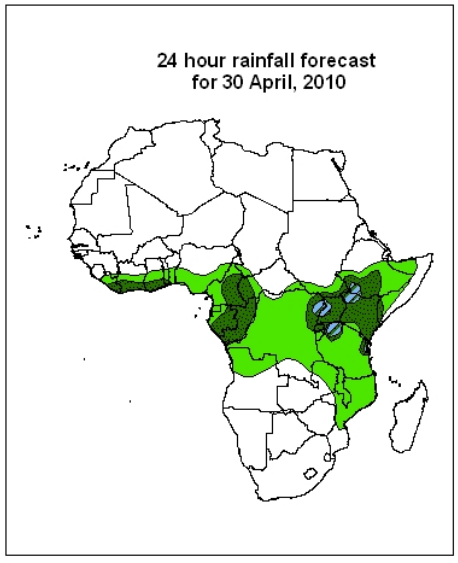
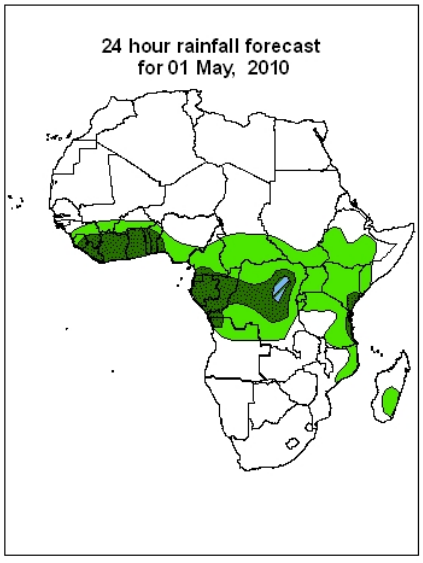
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 30 April –06Z of 02 May 2010, (Issued at 14:00EST of 29 April 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

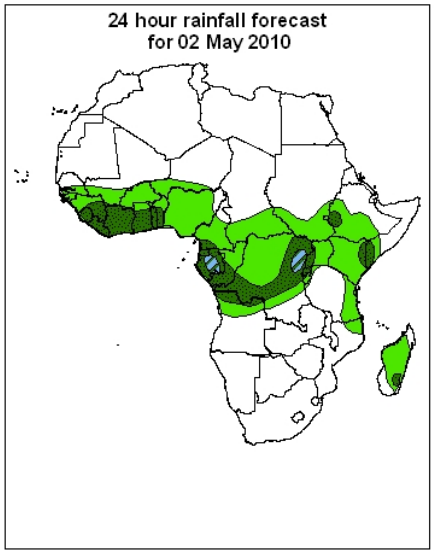
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

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



Summary

The seasonal lower level convergence in the Congo Air Boundary (CAB) region is expected to be more active through 24 to 72 hours, enhancing rainfall in the region. The southeasterly moist winds and their associated convergence in the Horn of Africa will continue producing moderate to heavy rainfall in southern Ethiopia, parts of Kenya and southern Somalia through 24 hours. However, the rains in the Horn of Africa are expected to weaken gradually through 48 to 72 hours. On the other hand, the seasonal onshore winds towards the Gulf of Guinea region will continue enhancing rainfall in much of the gulf of guinea countries through 24 to 72 hours.

1.2. Models Comparison and Discussion - Valid from 00Z of 29 April 2010

A high pressure system located over southern Europe, with central pressure value of 1020mb is expected to shift southwards, while maintaining its intensity through 24 to 48 hours. Localized low pressure systems, with central pressure values of 1005mb and 1008mb located in the Red Sea and Gulf of Aden respectively are expected to maintain their position through 24 to 72 hours, while slight deepening over Red Sea in 72 hours. A ridge associated with this high pressure is expected to extend up to Libya. The sub-tropical high pressure system located over South Africa, with central pressure value of 1024mb, is expected to weaken slightly while maintaining its through 24 to 72 hours. The ridge extending from this high is expected to reach up to Botswana and Zimbabwe in 24 to 72 hours. Localized high pressure cells with central pressure values of 1020mb each located over Angola and Zimbabwe are expected to persist through 48 to 72 hours. A low pressure system located over central DRC, with central pressure value of 1009mb, is expected to shift slightly to the south through 24 to 48 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 respectively are expected to persist through 24 to 72 hours. The equatorial trough is expected to maintain its position with central pressure values of 1006mb in the Gulf of Guinea and 1004mb over Central Africa while slightly deepening through 24 to 72 hours. The heat low over Sudan, with central pressure value of 1002mb is expected to maintain its position with slight change through 24 to 72 hours.

At 850mb level, the sub-tropical anticyclonic circulation is expected to dominate the flow over northern Africa through 24 to 72 hours. A mid-latitude trough located near 30^0E longitude is expected to move eastwards in 24 to 48 hours while deepening as it approaches the 40^0E longitude through 48 to 72 hours. The northeasterly and southwesterly trade winds are expected to converge along areas near 10^0N 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 near 20^0W longitude is expected to move eastwards through 24 to 72 hours. Another mid-latitude trough, with a back

hanged orientation; near 10^0E longitude is expected to move eastwards while deepening in 24 to 48 hours. This trough is expected to move further eastwards extending its axis along Red Sea reaching up to 20^0N in 48 to 72 hours. On the other hand, a wavy pattern in the mid-latitude westerlies dominates the flow in the sub-tropical regions of the southern hemisphere. 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.

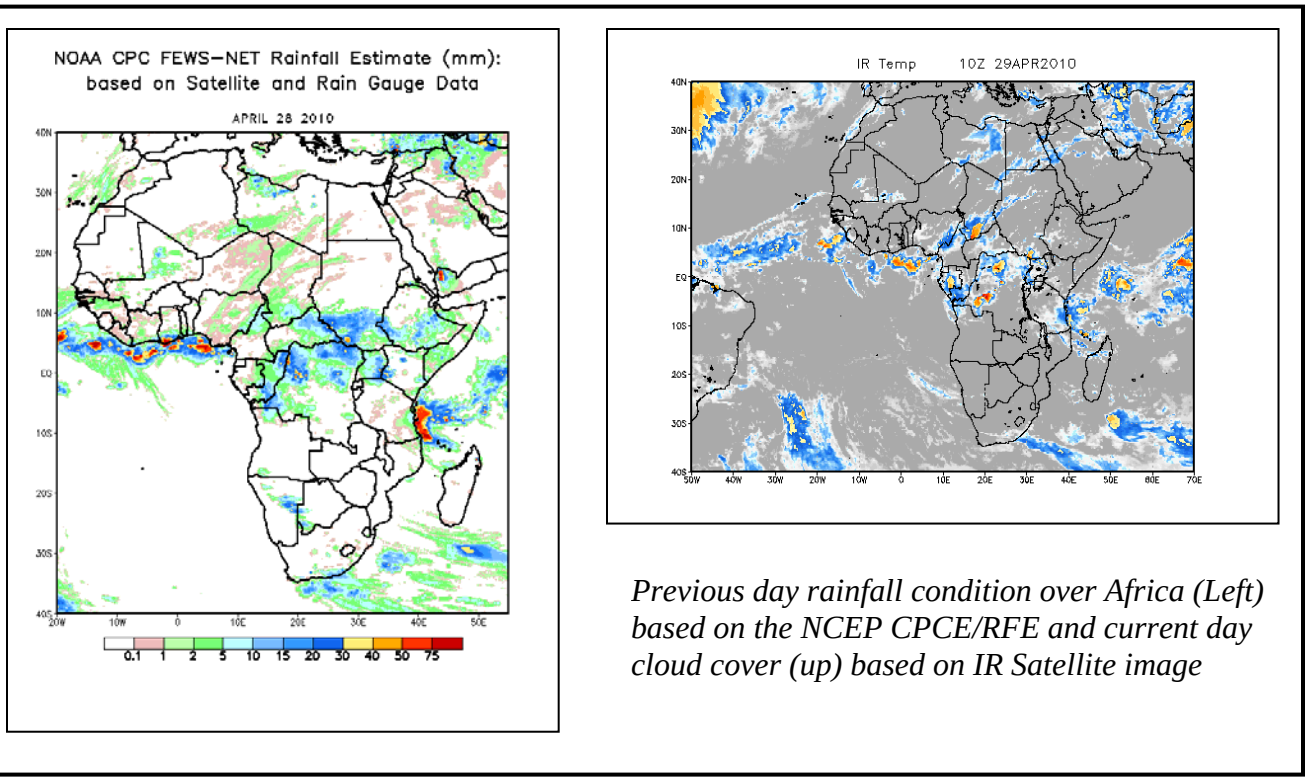
At 200mb, the persistent wavy pattern in the subtropical areas of the northern hemisphere and its associated trough is expected to move eastwards across western Africa through 24 to 48 hours. On the other hand, a southeast-northwest oriented trough between the Indian and Atlantic Oceans across southern 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 Mauritania to southwest Algeria, southwest of Egypt to Persian Gulf and east of Libya to Persian Gulf, while exceed 90 knots across east coast of west Africa to Persian Gulf, southwest of Algeria to Persian Gulf and Mauritania to Persian Gulf. In the southern hemisphere, the maximum wind speed is expected to exceed 110 knots in the region between near 0^0E to 30^0E, 10^0E to 40^0E and 30^0E to 50^0E longitude while exceed 90 knots between 0^0 to 30^0E, 10^0 to 40^0E and 15^0 to 50^0E 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 be more active through 24 to 72 hours, enhancing rainfall in the region. The southeasterly moist winds and their associated convergence in the Horn of Africa will continue producing moderate to heavy rainfall in southern Ethiopia, parts of Kenya and southern Somalia through 24 hours. However, the rains in the Horn of Africa are expected to weaken gradually through 48 to 72 hours. On the other hand, the seasonal onshore winds towards the Gulf of Guinea 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 (28 April 2010 – 29 April 2010)

2.1. Weather assessment for the previous day (28 April 2010): During the previous day, moderate to heavy rains was observed over coasts of Ghana and Nigeria, Congo, northern half of DRC and adjacent areas, southern part of Sudan, east of Uganda, east coast of Tanzania and few places of east of Namibia and Kenya as well as southern half of Ethiopia.

2.2. Weather assessment for the current day (29 April 2010): Isolated intense clouds are observed over Gabon, Equatorial Guinea, southern Congo, southern part of Chad and adjoining areas of Central African Republic, southeastern part of Nigeria, southeastern part of Tanzania, Uganda and northern and western parts of 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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