



## Forecast Guidance for Africa

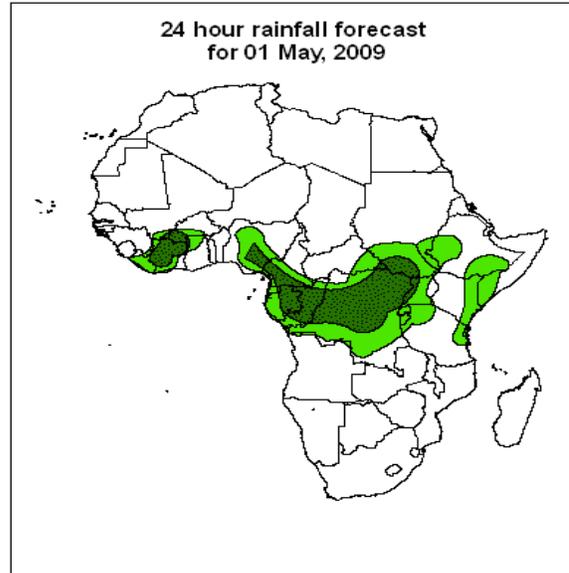
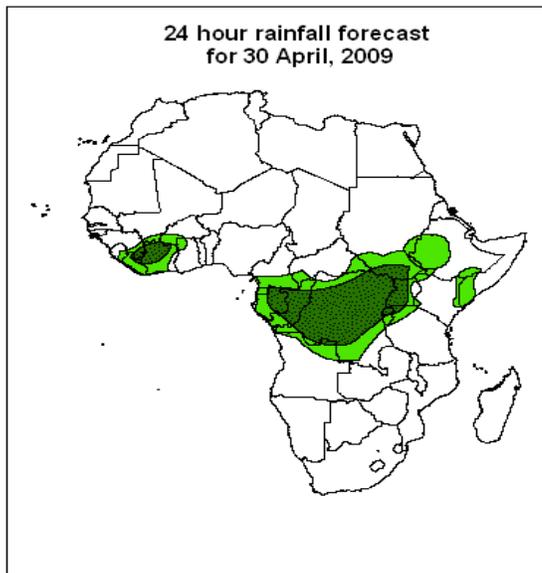
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

**FORECAST DISCUSSION 14H00 EST, 29 APRIL, 2009**

**Valid: 00Z 30 APRIL – 02 MAY, 2009**

### 1. Twenty Four Hour Cumulative Rainfall Forecasts

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

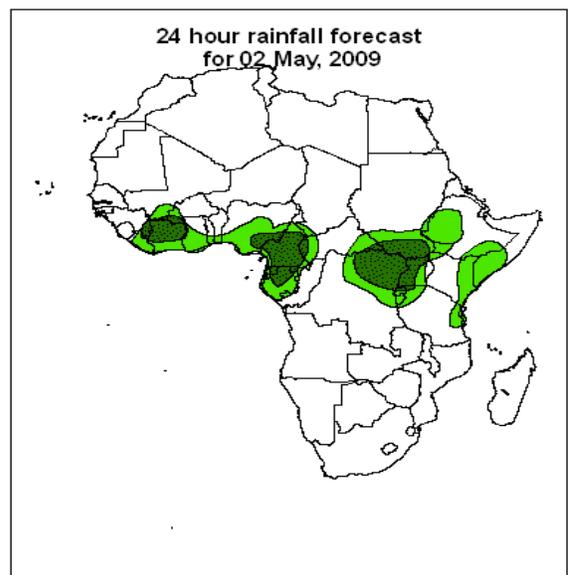


#### Legend

-  africa\_countries\_new
-  > 30mm, with probability 50%
-  > 20mm, with probability 40%

#### Summary

*The strengthening of sub-tropical ridge system over both Northern and southern hemispheres is expected to narrow and maintain the equatorial trough within the Equatorial region. Localized convergence and confluence lines over gulf of Guinea extending into the Congo basin, in association with moisture flux from Southwest Indian and Atlantic oceans are expected to enhance chance for precipitation.*



## **2. Model discussion**

*Model comparison (Valid from 00Z; 29 April, 2009): all the three models are in general agreement especially with respect to the positioning of large scale features, however, the UK model tends to give lower values than both the GFS and ECMWF models especially in the Equatorial region (10°S and 10°N).*

### **2.1. Flow at 850hPa**

**T+24h:** The merging of the Saharan and Azores anti-cyclonic circulation system over Northern parts of Africa is expected to influence the flow over Northern Africa and the interaction between the mid latitude and equatorial trough across Ethiopia is expected to enhance precipitation over eastern Africa. Localized convergence and confluent lines are expected over the gulf of Guinea region, Central Africa Republic, northern DR Congo, southern Sudan, Uganda and Ethiopia. The merger between the Mascarene and St. Helena anti-cyclonic systems is expected to influence much of Southern Africa with the Mascarene system assuming continental characteristics as it extends into southern Africa, while to the South, a series of cyclonic systems associated with a westerly wave and the frontal system extends northwards up to 20°S latitude over southern Atlantic ocean.

**T+48h:** The flow in the Northern Africa is similar to the previous day except for the slight movement of the mid latitude trough to the east. Localized convergence and confluent lines are expected to maintain their previous day positions. The cyclonic systems associated with the westerly wave extends northwards over the tip of southern Africa, separating the Mascarene and St. Helena anti-cyclonic circulation.

**T+72h:** The sub-tropical ridge system over Northern parts of Africa and Arabia is expected to weaken and move slightly eastwards; a closed cyclonic system is expected over northeastern Atlantic Ocean, Morocco and western Algeria. The localized convergence and confluent lines are expected to shift northwards over western Africa and maintain their previous day positions in central and eastern Africa. The cyclonic systems associated with the westerly wave in southern hemisphere are expected to move eastwards.

### **2.2. Flow at 500hPa**

**T+24h:** Troughs associated with westerly waves are expected in sub-tropical areas of the southern hemisphere with a closed cyclonic circulation over the southeast Atlantic Ocean, while the flow in the northern hemisphere is characterized by zonal flow except for a closed cyclonic circulation over the Gulf of Aden.

**T+48h:** In the northern hemisphere, the flow is more similar to the previous day; while in the southern hemisphere an omega pattern of flow is expected with the development of anti-cyclonic circulation system over southeastern Atlantic Ocean.

**T+72h:** A closed cyclonic circulation system is expected over northeast Atlantic Ocean; otherwise the flow is similar to the previous day in the northern hemisphere. The cyclonic systems in the southern hemisphere are expected to be more pronounced and in association with the anti-cyclonic circulation, an omega circulation pattern is expected in the westerly wave.

### **2.3. Flow at 200hPa**

**T+24h:** Westerly wave with trough axis over 55<sup>0</sup>E longitude is expected to dominate the flow over the Gulf of Aden and adjoining areas of the horn Africa. Moreover in the south, the flow takes on more of zonal pattern with a small cut-off low over southeast Atlantic Ocean.

**T+48h:** The flow is similar to that of the previous day but the axis of the trough associated with the westerly wave shift slightly to the east in the northern hemisphere. In the southern hemisphere anti-cyclonic circulation is expected to give way to an omega pattern of flow in the westerly wave.

**T+72h:** The flow is taking more of a zonal pattern in the northern hemisphere, while in the southern hemisphere, a cut-off low and an omega pattern is expected to dominate the flow within the westerly wave.

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