



## Forecast Guidance for Africa

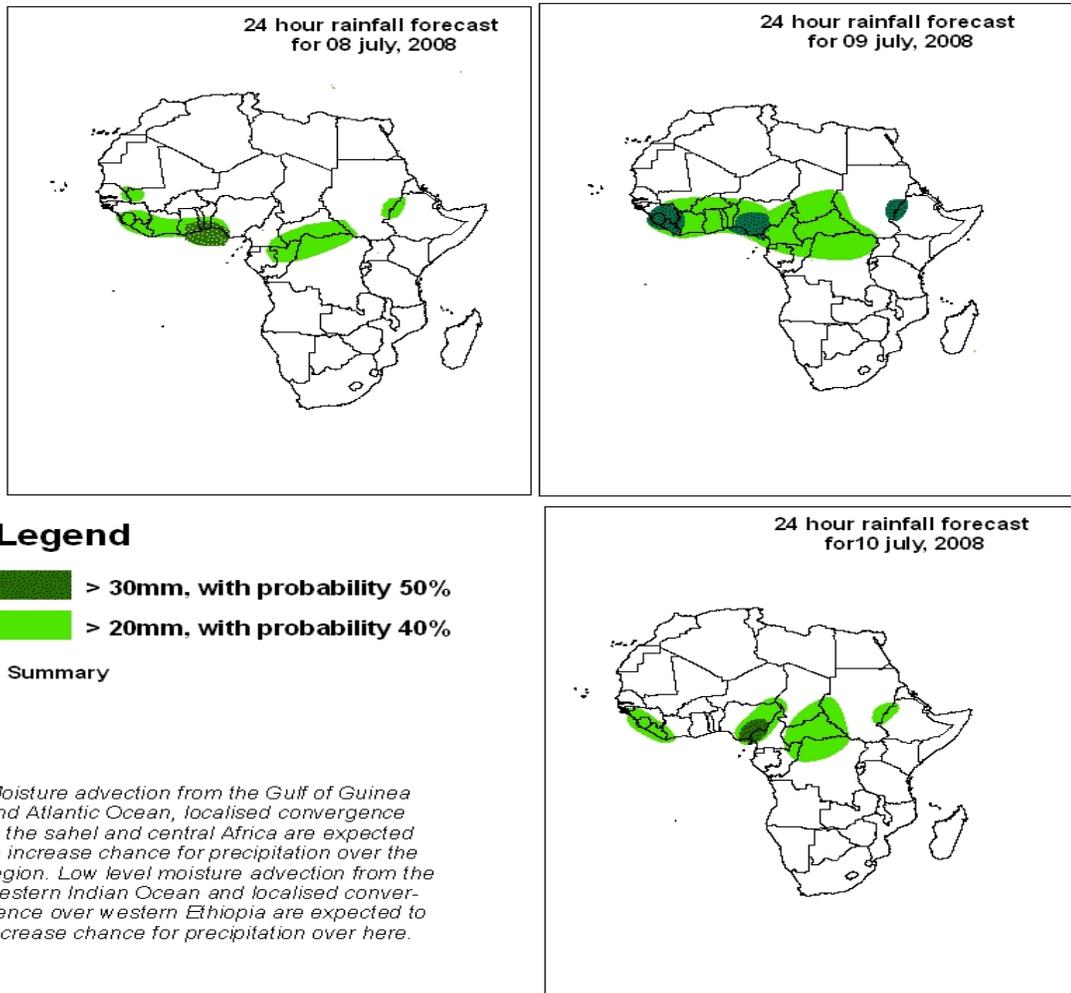
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

**FORECAST DISCUSSION 14H00 EST, 07 JULY 2008**

**Valid: 00Z 08 - 10 JULY, 2008**

### 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.



## **2. Model discussion**

*Model comparison (Valid from 00Z; 08 July 2008): all the three models are in general agreement especially with respect to the positioning of large scale features, however, the UK model has a tendency to give lower values than the GFS and ECMWF models in the Equatorial (10°S and 10°N) Continental Africa.*

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

T+24h, the entire North African region is expected to be under the influence of an anticyclonic circulation. A series of cyclonic vortices are featured over the Sahel, the border of Niger/Nigeria, the central areas of Chad and Sudan; as well as over northeast Angola, the Great lakes region and northeastern Ethiopia; Whereby, the northeasterly trades converge with southeasterly/southwesterly winds from the southern hemisphere. The main flow pattern over the southern half of the African continent is generated by an anticyclonic vortex centered over the south western Indian Ocean off the southwestern tip of Madagascar, with its ridge extending to the northwestern sector of southern Africa. On the contrary, northwesterly winds emanating from the cyclonic vortex further south into the south Atlantic will dominate the flow over the southwestern sector of southern Africa.

T+48h, the flow pattern is expected to be similar to that of the previous day over the Maghreb States. However, a cyclonic vortex is expected to develop over Sierra Leone/Liberia. The ridge over the northwestern sector of Southern Africa will weaken as the anticyclonic Vortex moves to the southwest Indian Ocean, causing much of Southern Africa to be under the influence of a Trough from the cyclonic vortex located over the South Atlantic Ocean.

T+72h, over the Maghreb, the flow pattern is expected to remain as that of T+48h. The cyclonic vortex that was featured over Sierra Leone/ Liberia will deepen and move westwards into the Atlantic. The trough from the Cyclonic vortex featured over the south Atlantic is expected to propagate south-easterwards giving way to the intrusion of a ridge from an anticyclonic vortex centered over the south Atlantic.

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

T+24h, a large part of the northern half of the African continent is expected to be under the influence of an anticyclonic circulation. The axis of convergence over the great lakes region is quite deep as it is still evident at this level. On the other-hand, much of Southern Africa lies under the influence of an anticyclonic circulation, except over South Africa where the flow will mainly be northwesterly, as a result of the cyclonic circulation centered over the south Atlantic.

T+48h, a similar flow pattern will prevail as that of the previous day; however, a trough is expected to develop over Egypt. The flow over equatorial Africa will be dominated by an easterly wave perturbation. The situation over Southern Africa is expected to remain as that of the previous day.

T+72h, a similar flow pattern will prevail over northern Africa as that of the previous day, except that the trough featured over eastern Egypt will deepen and stretch into northeastern Chad. An axis of convergence will develop over northern DRC/Central African Republic and over Ethiopia. The systems over the southern half of the Continent will remain quasi-stationary.

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

T+24h, an extensive upper level anticyclonic flow pattern will prevail over a large part of Africa north of latitude 20<sup>0</sup>N with a divergence circulation centered over southwestern Mali. Also featured between latitudes 00<sup>0</sup> and 20<sup>0</sup>S are a series of upper level anticyclonic circulations. Easterlies will dominate the flow equator-ward, whereas westerlies will prevail over the entire Southern African region.

T+48h, the divergent flow over Mali is expected to weaken whereas the centre of the anticyclonic circulation to the north will propagate slightly westwards to be located over central Libya. The series of anticyclonic flow pattern to the south will merge with the centre located over the coastline of Angola, while northwesterlies are expected to dominate the flow over Southern Africa.

T+72h, the wind flow pattern is expected to remain as that of the previous day, except that the centers of the respective anticyclones of each hemisphere are expected to shift over to the borders of Algeria/Libya and Mozambique.

*Author:*

- 1- *Hilaire Elenga (Direction de la Meteorologie Nationale du Congo Brazzaville and African Desk).*
- 2- *George Stafford (Department of water Resources, The Gambia and African Desk).*