



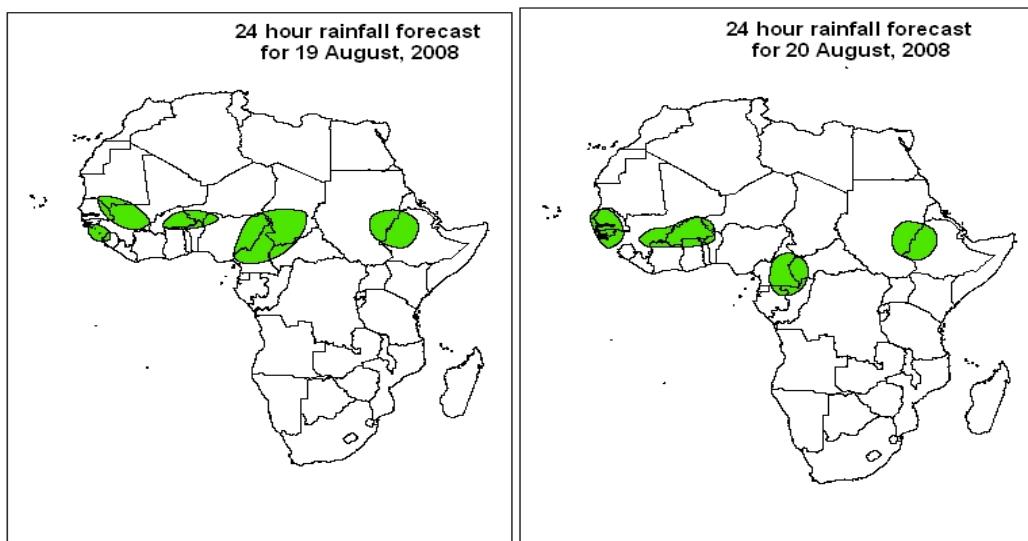
## Forecast Guidance for Africa

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

### FORECAST DISCUSSION 14H00 EST, 18<sup>th</sup> AUGUST 2008 Valid: 00Z 19<sup>th</sup> August – 21<sup>st</sup> AUGUST, 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.

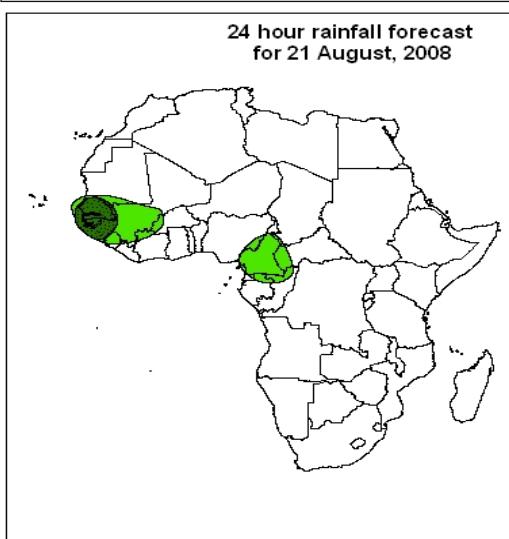


#### Legend

- > 30mm, with probability 50%
- > 20mm, with probability 40%

#### Summary

A series of cyclonic vortices and mid-level troughs traversing the Sahel coupled with the influx of moisture from the Gulf of Guinea will enhance chance for rain over the region. Localized convergence and Moisture advection from the Gulf of Guinea, Congo Basin and western Indian Ocean will also enhance rain over some parts of Central Africa and Eastern Sahel.



## **2. Model discussion**

*Model comparison (Valid from 00Z; 19<sup>th</sup> August 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 Saharan anticyclonic circulation is expected to be centered over North Africa. A series of cyclonic vortices are featured off Senegal and Mauritanian coast, western Mali, western Niger and central Chad while, an anticyclonic vortex is featured over northern DRC. Localized convergence will occur over southern Chad, eastern Sudan, western Ethiopia, Congo, southern DRC, northern and western Angola. A cyclonic outdraft will be featured over the western sectors of Southern Africa while the rest of the region will be under the influence of a ridge from the St. Helena anticyclonic circulation merging with the Mascarene anticyclonic systems.

T+48, a cyclonic circulation is expected to develop over northeastern Morocco and over the eastern coast of Libya thus, weakening the Saharan anticyclonic system. The cyclonic vortices featured over the Sahel during the previous day will propagate westwards except for the one over Chad which will decay. The anticyclonic vortex over DRC will prevail and propagate northwestwards to be centered over southwestern CAR. Localized convergence will be featured over Guinea Conakry including those of the previous day i.e. southern Chad, eastern Sudan, western Ethiopia, Congo, southern DRC, northern and western Angola. The western sectors of Southern Africa as well as southern Madagascar will remain under the influence of a well developed cyclonic circulation while, the rest of the region will be under the influence of the Mascarene anticyclonic system.

T+72, the flow over North Africa is expected to be similar to that of the previous day. The cyclonic vortices are expected to continue their westward propagations with the last amongst the series expected to be moving towards western Mali and intensifying. The anticyclonic and cyclonic circulation over CAR and Madagascar will decay. A mid-latitude trough is expected to affect the western sectors of Southern Africa while the Mascarene anticyclonic system will dominate the flow over the rest of the region.

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

T+24, the flow over Northern Africa is expected to be dominated by a Sub-Tropical anticyclonic system with centers over Algeria and extending a ridge eastwards across the Sahara. South of the anticyclonic systems lies the easterlies with a shortwave centered over Lake Chad. Cyclonic circulations are expected over Cameroon and between the border of Ethiopia/Somali while diffluent flows will affect Senegal, Ghana and DRC. An anticyclonic circulation will dominate the flow over the northern sectors of Southern Africa; whereas, a westerly wave will characterize the flow to the south.

T+48, generally the flow pattern over Northern and Southern Africa will be similar to that of the previous day except that a cyclonic circulation is expected to develop over northeastern Egypt with its associated trough splitting the Sub-Tropical anticyclonic system. The shortwave featured over Lake Chad will propagate westwards to Burkina. The cyclonic circulation over Nigeria will move southwards into the eastern Gulf of Guinea while the one over Tanzania is expected to decay.

T+72, not much changes are expected on the flow as compared to that of the previous day. However, the shortwave over Burkina will propagate steadily westwards and will be centered over western Mali with a cyclonic vortex developing to its south over Guinea Conakry. The cyclonic circulation over the eastern Gulf of Guinea will decay while an anticyclonic circulation is expected to develop within the same region.

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

T+24h, an extensive upper level anticyclonic flow pattern will prevail over northern Africa. A short wave trough is expected to develop over central Niger. Easterlies will dominate equator-ward. Likewise, a large part of southern Africa is expected to be influenced by a subtropical anticyclone, to the south of which, a westerly wave is expected to prevail.

T+48h, the flow pattern will similar to the previous day, but the short wave trough over central Niger is expected to move to northeastern Mali and southern Algeria.

T+72h, the wind flow pattern is expected to remain as that of the previous day with a trough to the northwest, but a short wave trough over northeastern Mali and southern Algeria is expected to move to eastern Mauritania and western borders of Mali.

*Authors:*

- 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).*