



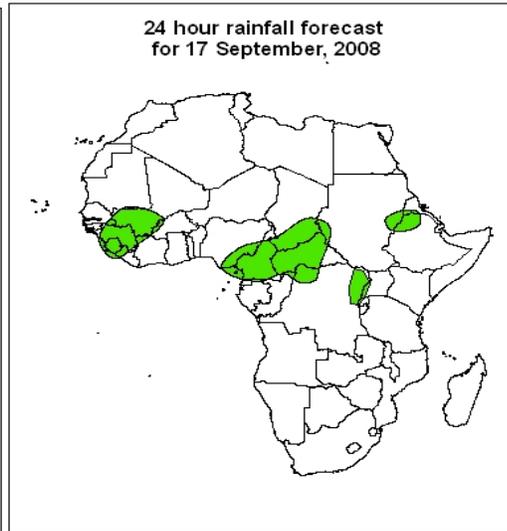
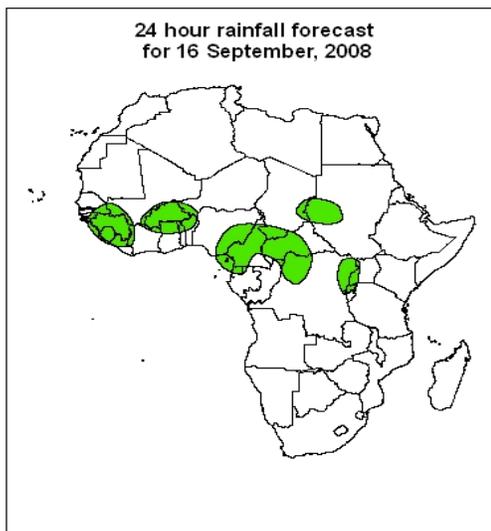
## Forecast Guidance for Africa

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

**FORECAST DISCUSSION 14H00 EST, 15<sup>th</sup> SEPTEMBER, 2008**  
**Valid: 00Z 16<sup>th</sup> September – 18<sup>th</sup> SEPTEMBER, 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.

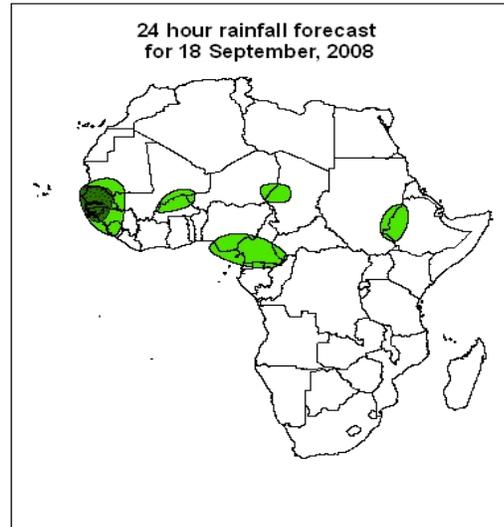


#### Legend

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

#### Summary

*The Azores anticyclonic circulation featured at the mid levels will gradually weaken over the western Sahel. However, cyclonic vortices, mid-level troughs and localized convergence expected over other parts of west and central Africa; with, moisture influx from the Gulf of Guinea and Congo Basin will enhance chance for rain.*



## 2. Model discussion

*Model comparison (Valid from 00Z; 16<sup>th</sup> September 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 influence the flow over much of North Africa except over Morocco and western Algeria which will be affected by a cyclonic vortex. The Azores anticyclonic ridge is still active over the Atlantic Ocean with a daughter cell to the northeast of Cape Verde Islands and as a result it is expected to influence the flow over Western Sahel. Cyclonic vortices will develop over southern Algeria, southeastern Mali, southern Guinea Conakry, central Sudan and western CAR.

Localized convergence is likely over central Mali, eastern Nigeria, the border between Chad and Sudan, Eritrea, eastern Ethiopia, central Cameroon, northwestern Gabon, northeastern Uganda, northwestern Tanzania, central and southern DRC, and northern Angola. Conversely, localized divergence is likely to occur over the Gulf of Guinea, eastern and southern Niger, central Chad, southern sectors of Sudan, southern Congo, western DRC and over East Africa. The Southern African region is expected to be dominated by the merger between the St. Helena's and Mascarene Ridge. However, the southern coastline will be under the influence of a mid-latitude back-hanging trough.

T+48, the flow pattern over Northern Africa is expected to be similar to that of the previous day; however, the cyclonic vortex over Mali will propagate westwards to southern Mauritania but weaken. The ones featured over southern Guinea, central Sudan and western CAR will propagate southwestwards to the Atlantic Ocean, western Sudan and western Cameroon respectively while the one over southern Algeria is expected to decay. Other cyclonic vortices are likely to develop over central Niger and southeastern CAR. Localized convergence will occur over northern Nigeria, southern Sudan, Eritrea, western Ethiopia, the Great Lakes region and western Angola; whereas, localized divergence will prevail over most of the Gulf of Guinea Countries, northern Congo and East Africa. The merger of St. Helena and Mascarene ridge's over Southern African is expected to remain quasi-stationary except for the eastward progression of the mid-latitude trough to the southwest Indian Ocean.

T+72, the Azores ridge is expected to weaken over western Sahel and retreat westwards to the Atlantic Ocean giving way to the intensification of the cyclonic vortex over Mauritania. All other cyclonic vortices featured during the previous day are expected to weaken while new ones are likely to evolve over northeast Sudan and the coast of Eritrea. Much of Southern Africa will be dominated by the Mascarene anticyclonic circulation centered over the Mozambique Channel, whereas, the northwest and southwest will be under the influence of the St. Helena's ridge and mid-latitude trough respectively.

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

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over Northern Africa, with a westerly wave pole-wards and the easterlies equator-wards. Embedded in the easterlies are shortwave troughs with their axis centered over Burkina and southern Chad onto central CAR. Two mid-level Confluent flow-lines are likely to occur, with one stretching from the eastern Atlantic through DRC onto Rwanda; while, the other will be featured over the border between Ethiopia and Somalia. Diffluent flows will prevail over southeastern Sahel and much of East Africa. The flow over the northern sectors of Southern Africa will be dominated by a Sub-Tropical anticyclonic system which stretches southeastwards to the Indian Ocean. The southern sectors will be under the influence of a westerly wave while a cut-off cyclonic circulation is likely to dominate the flow over Madagascar.

T+48, a similar flow pattern is expected over Northern and Southern Africa with the westerly wave more pronounced to the Northern, featuring two mid-level troughs over the northeast Atlantic and towards the coast of Libya. A cyclonic circulation will be featured over Guinea/Sierra Leone and is likely to merge with the shortwave trough traversing westwards from Burkina. The other shortwave trough over Chad/CAR will move to Nigeria/Cameroon. Mid-level convergence is likely to occur over eastern Ethiopia, northwestern Gabon and western Tanzania.

T+72, a cyclonic circulation is expected to evolve from the mid-level trough over the Northeast Atlantic and others over the coast of Nigeria and south eastern Ethiopia; while, the one over Guinea/Sierra Leone will weaken. The Shortwave troughs featured over Mali and over Nigeria/Cameroon will degenerate while another is likely to be featured over central Sudan. Both the Convergent flow over northeast Tanzania and the general flow over southern Africa are likely to persist with the cut-off cyclonic flow over Madagascar expected to be replaced by a trough.

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

T+24h, an extensive upper-level anticyclonic flow pattern will prevail over much of Northern Africa extending to Arabia with westerly wave pole-wards and easterlies equator-wards. A confluent zone is expected over Senegal and environs. The northern sectors of Southern Africa will be dominated by an anticyclonic flow while the southern sectors will be under the influence of a westerly wave with a slanting upper-level trough expected over Madagascar.

T+48h, the westerly wave is likely to intensify particularly over the northeast Atlantic Ocean, extending a trough to the tropics. The convergent zone over Senegal and environs will degenerate giving way to an anticyclonic flow. The flow to the south is expected to remain quasi-stationary.

T+72h, a similar flow pattern to that of the previous day will prevail; except that the westerly wave over northeast Atlantic and Northern Africa will continue to deepen, with another well pronounced upper-level trough featured over Libya. A shortwave trough is likely to occur over western Chad extending to central Cameroon; whereas, the trough over Madagascar will degenerate.

*Author: George Stafford (Department of Water Resources, The Gambia and African Desk).*