



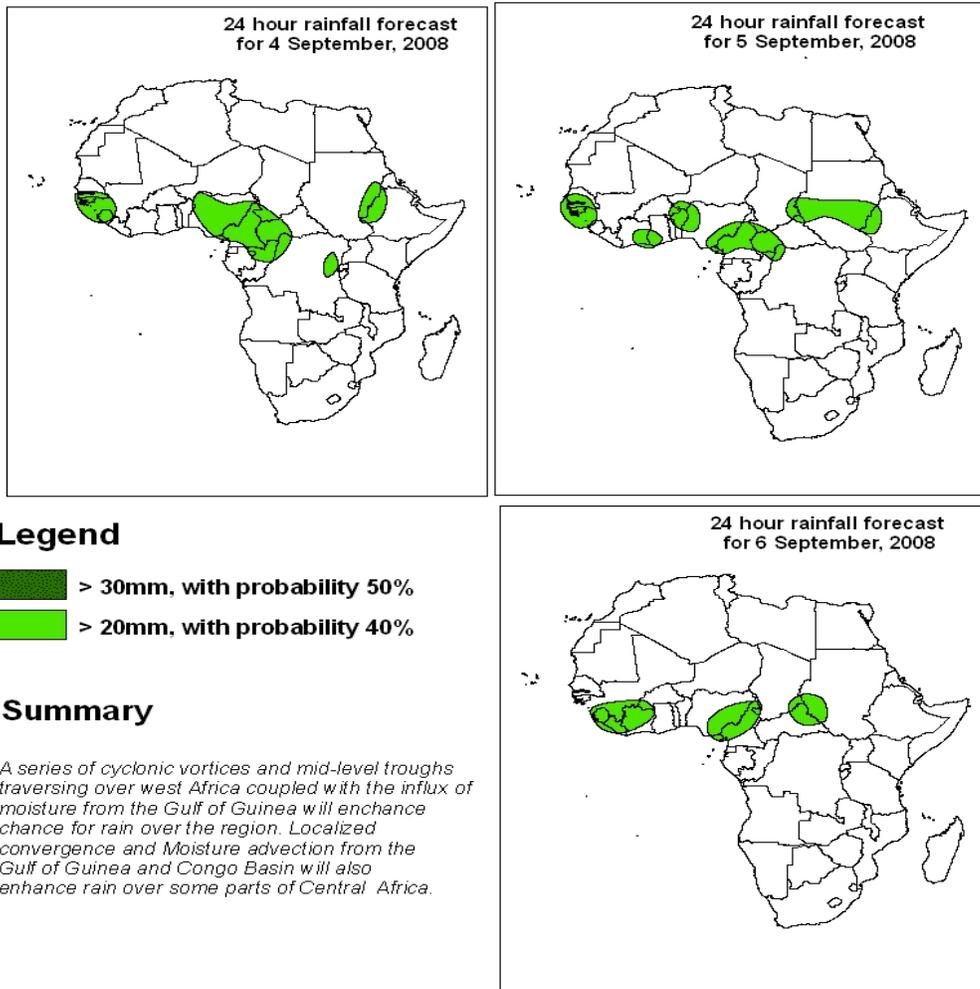
## Forecast Guidance for Africa

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

**FORECAST DISCUSSION 14H00 EST, 03<sup>rd</sup> SEPTEMBER, 2008**  
**Valid: 00Z 04<sup>th</sup> September – 06<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.



## 2. Model discussion

*Model comparison (Valid from 00Z; 04<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 dominate the flow over much of North Africa except over the coastal areas of Morocco and western Sahara due to the extension of a mid-latitude trough. Series of cyclonic vortices are featured over western Algeria, coast of Guinea Bissau / Conakry and between the border of Chad and Sudan. Localized convergence is likely over northern Mauritania, northwestern Nigeria, eastern Sudan, eastern Ethiopia, northwestern and eastern DRC, coast of Congo and northern Angola. Conversely, localized divergence is likely over southern parts of eastern Sahel and East Africa. Southern Africa will mainly be under the influence of the Mascarene anticyclonic system. A westerly wave will dominate the flow south of South Africa with a weak trough affecting the western coast.

T+48, a similar flow to that of the previous day will prevail over North Africa and most parts of the Sahel. The cyclonic vortex over western Algeria will decay. The one over Guinea will propagate slightly west-northwestwards to the Atlantic Ocean while the one over the border of Chad/Sudan is expected to be quasi-stationary. Other cyclonic vortices are expected to develop over northeastern Sudan and southern Nigeria respectively. Localized convergence will occur over southern Mali, northern Ethiopia, and northwestern Congo Basin, eastern DRC and northeastern Angola; whereas localized divergence will prevail over most parts of south eastern Sahel, Kenya and central DRC. The mid-latitude trough featured off the western coast of South Africa will progress eastwards into the mainland and is expected to deepen. The rest of Southern Africa will be under the influence of both the St. Helena and Mascarene anticyclonic systems centered over the Southeast Atlantic Ocean and Mozambique respectively with the later dominating the flow.

T+72, the Saharan anticyclonic circulation over North Africa is expected to move slightly north thus allowing the mid-latitude trough to penetrate deeper into northwestern Maghreb. The Cyclonic vortex over Chad/Sudan and Nigeria will persist over their respective positions while the one to the northeast of Sudan will decay. New cyclonic vortices are expected to develop over central Mauritania, southern Niger and Liberia. Confluent flow is likely over eastern Mali, Lake Chad, central CAR, western DRC and northern Angola; whereas, diffluent flow will prevail over Burkina, most parts of Mali, cote d'Ivoire, Ghana and is expected to persist over south eastern Sahel and the Great lakes region. An off-shore anticyclonic system is expected off the southern coast of South Africa to dominate the flow over much of Southern Africa except for the southwestern coast and the southern Tip of Madagascar that will be affected by mid-latitude troughs.

### 2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over Northern Africa. Featured north of the anticyclonic system is a westerly wave with troughs over the Atlantic Ocean and northeastern Libya. South of the anticyclonic system are

easterlies, in which shortwave troughs are embedded with their axes lying over Senegal, Niger and western CAR. A cyclonic circulation is featured over southern Libya and is expected to be a deep system. Much of Southern Africa will be under the influence of a Sub-Tropical anticyclonic system while the southern most part will be dominated by a westerly wave.

T+48, similar flow patterns to that of the previous day are expected over Northern and Southern Africa. However, the anticyclonic circulation system over North Africa will extend its ridge southwestwards over western Sahel. The cyclonic circulation featured over southern Libya will move to northeastern Chad thus allowing the trough over Libya to extend further south. The shortwave trough over Senegal will propagate westwards and will be centered over Cape Verde, the one over Niger and western CAR will likely merge and move over to Burkina and Ghana. Another shortwave trough will develop over central Sudan. The flow pattern over Southern Africa will be similar to that of the previous day.

T+72, the main changes expected on the general flow as compared to that of the previous day will be the decay of the cyclonic circulation over northeastern Chad which is likely to be replaced by a shortwave trough. The trough over Burkina/Ghana will propagate to Guinea Conakry/ Sierra Leone.

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

T+24h, an extensive upper-level anticyclonic flow pattern is expected to prevail over the Sahel/Sahara including parts of western Gulf of Guinea countries. A westerly wave will dominate the flow over the Maghreb region north of the anticyclonic flow with upper-level troughs featured over the northeast Atlantic Ocean and over northeastern Libya extending into southern Algeria. Easterlies will prevail to the south with perturbations likely over southern Niger, western and eastern Sudan. Much of Central and Southern Africa will be under the influence of a Sub-Tropical anticyclonic system; except for a deep slanting upper-level trough which will affect Mozambique Channel and environs.

T+48h, both troughs over the North Atlantic Ocean and Libya respectively are expected to progress eastwards and weaken. A series of short wave troughs will be featured over Senegal, the border between Mali and Burkina; northeastern Nigeria stretching to central Niger and over Chad. The flow pattern over northwestern and southeastern sectors of Southern Africa will be dominated by anticyclonic circulation systems; whereas a cut-off wedge is likely to occur to the southwest. The deep slanting upper-level trough featured over Mozambique Channel and environs will deepen; thus generating a cut-off cyclonic flow over the border between Tanzania and Mozambique.

T+72h, the westerly wave is expected to persist over the Maghreb region with the development of a cut-off ridge likely over northern Morocco. The cut-off cyclonic flow over the border between Tanzania and Mozambique will deepen and propagate westwards to northwestern Zambia. The cut-off wedge over Namibia will fill-up while the trough over the Indian Ocean will propagate further eastwards. An anticyclonic flow will still persist over northeastern and northwestern sectors of Southern Africa while westerlies will dominate the flow to the south.

*Authors:*

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