



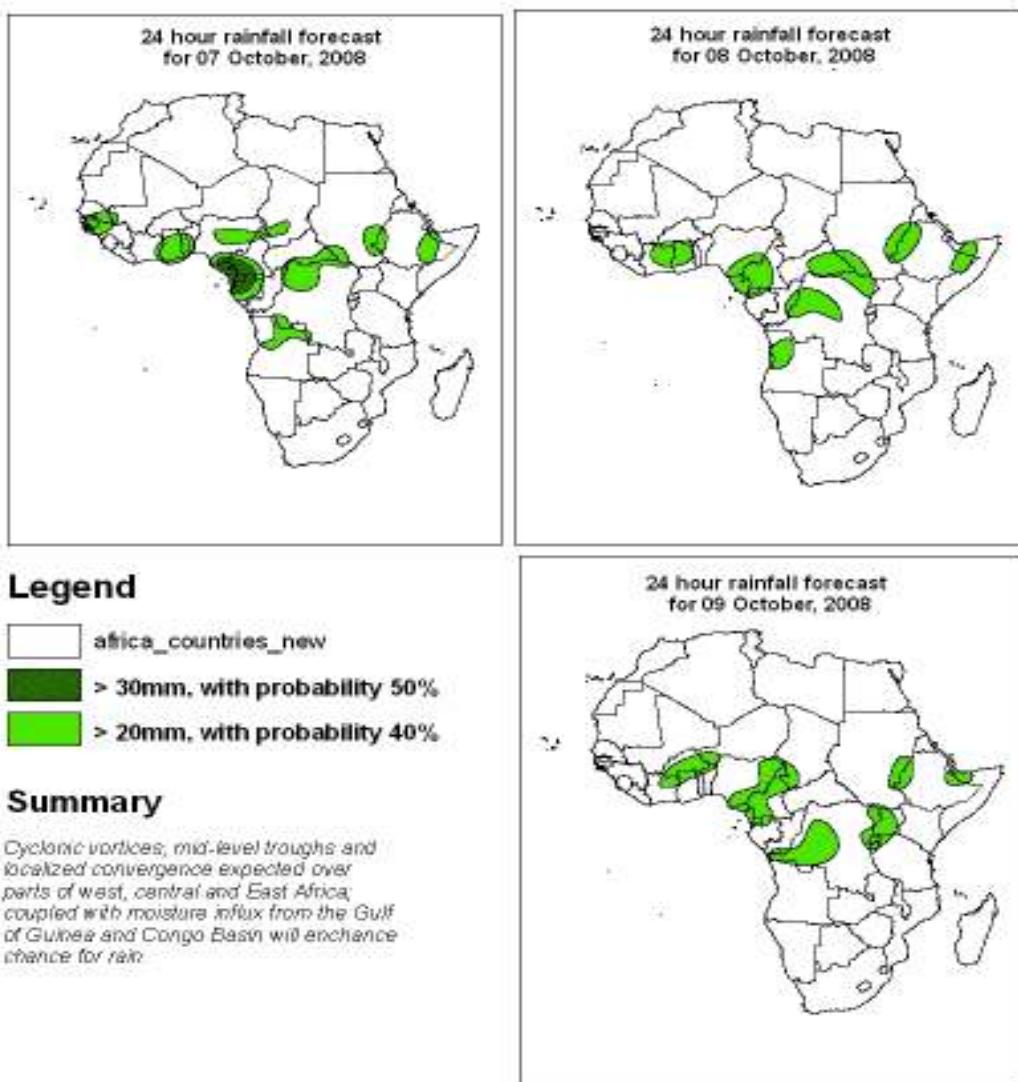
## Forecast Guidance for Africa

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

### FORECAST DISCUSSION 14H00 EST, 06<sup>th</sup> OCTOBER, 2008 Valid: 00Z 07<sup>th</sup> OCTOBER – 09<sup>th</sup> OCTOBER, 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; 07<sup>th</sup> October, 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 Northern Africa except over the coast of Morocco which is likely to be affected by a mid-latitude trough. Cyclonic vortices will be featured over central Mali, northeastern Nigeria and the border between eastern Sudan and northwestern Ethiopia. Shortwave troughs will be featured over northern Cameroon extending onto central Chad and over northeastern CAR. A series of localized convergence are expected over the coast of Togo/Benin, southern Cameroon, central CAR, central Sudan, western Ethiopia, Djibouti, northeastern and western DRC and Angola. Conversely, localized divergence will occur over northeastern Nigeria, southern Sudan, central/western Ethiopia, central DRC and much of East Africa. The Southern African region will be dominated by the Mascarene Ridge, while a cut-off cyclonic system centered off the Tip of South Africa is expected to influence the flow over the area.

T+48, the Saharan anticyclonic system over Northern Africa is expected to merge with the Azores anticyclonic system centered over northeastern Atlantic Ocean. Due to this merging, the mid-latitude trough over the coast of Morocco will fill-up. The cyclonic vortex featured over Mali will decay, the one over northeastern Nigeria will drift northwards while the other over Sudan will remain quasi-stationary. Other cyclonic vortices are likely to evolve over southwestern Niger, central DRC and western Angola. Localized convergence will prevail over southern Burkina, eastern Cote d'Ivoire, eastern Gulf of Guinea, western Cameroon, central Chad, central Sudan, scattered over DRC, northeastern Namibia and southern Botswana. On the other hand localized divergence will likely occur over southeastern Sudan, southern Ethiopia and most parts of East Africa. Much of Southern Africa will continue to be dominated by the Mascarene Ridge; with the cut-off cyclonic system shifting slightly northeastwards to affect much of South Africa.

T+72, the merger between the Azores and Saharan anticyclonic systems is likely to be split/separated by the intrusion of a mid-latitude trough over the northwestern Maghreb. The cyclonic vortex featured over southwestern Niger will propagate northwestwards onto central Mali while its counterpart which was over the border with northern Nigeria will also propagate northwestwards onto western Niger. The one over Sudan will remain quasi-stationary and the other over DRC weakened. Other cyclonic vortices are likely to evolve over central Chad and eastern Cameroon. The St. Helena's ridge will influence the flow over western Sectors of Southern Africa; whereas, its counterpart Mascarene will prevail on the eastern coast, with the cut-off cyclonic system moving off-shore but will continue to dominate the flow over South Africa.

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

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over most of North Africa, from Western Sahara to Egypt. A deep trough will prevail over Morocco. A cyclonic circulation is expected over southwest of the Canary Islands. Easterlies will prevail equator-wards with localized confluent flows over north Sudan, north Somalia, eastern DRC and central Zambia. On the other hand, diffluent flows will be featured over southeastern DRC, southern CAR and central Chad. The flow over much of

Southern Africa will be dominated by a Sub-Tropical anticyclonic system; except off the northeastern coast of Madagascar which is likely to be affected by a cyclonic circulation.

T+48, the trough over Northwestern Maghreb will deepen and move eastwards onto Algeria, extending into northern Mali covering parts of Morocco, north Western Sahara, and western Algeria; while the anticyclonic circulation system is expected to merge with the one over the North Atlantic Ocean. Cyclonic circulation is likely to evolve over central DRC and northeastern Angola. Localized confluent flows are featured over coastal Gabon, western Cameroon, northeastern DRC, southwestern Uganda, central Ethiopia and northeastern Madagascar. The flow over Southern Africa will be dominated by the Mascarene anticyclonic circulation and a trough from the mid latitude cyclonic circulation will affect the southern South Africa.

T+72, the trough over the western Maghreb will weaken and move slightly northwards and still cover most of Algeria, Tunisia, and western Libya. A cyclonic circulation is featured over North Angola, southwestern DRC, south Congo and south Gabon with localized convergences over north Namibia, central Zambia, southwestern Angola, eastern DRC, south Nigeria, North Ghana, north Cameroon and central Sudan. The trough featured over southern of South Africa will move eastwards and also influence the flow over the Southwestern Indian Ocean and southern Madagascar

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

T+24h, much of northern Africa will be under the influence of a westerly wave with an upper-level trough over Morocco and a deep cyclonic circulation system featured to the southwest of the Canary Islands. An upper-level anticyclonic system dominates the flow over much of West Africa; whereas, a cut-off cyclonic system centered over northern Cameroon and Eritrea respectively will influence the flow over those areas. Diffluent flow patterns are expected to prevail over Central Africa. Northwestern Southern Africa will be under the influence of an upper-level anticyclonic system while the eastern and southern sectors will be dominated by a westerly wave with a trough extending from the southwest Indian Ocean onto southwestern Tanzania.

T+48h, the westerly wave over Northern Africa and its associated trough will intensify and propagate eastwards extending southwards onto western Niger. As a result, the equator ward extension of the upper-level trough will weaken the anticyclonic system featured over Western Africa. The cyclonic system featured over northern Cameroon will fill-up; whereas, the one over Eritrea is expected to deepen and traverse southwards creating a trough which extends from the Red sea onwards to the equatorial Western Indian Ocean. The diffluent flow featured over Central Africa will persist but expected to drift slightly westwards. Much of Southern Africa will be under the influence of a westerly wave with two back hanging troughs likely to occur over the southwestern and northeastern sectors.

T+72h, a massive upper-level trough is expected to dominate the flow over Northern Africa with the anticyclonic system over west Africa continued to be weakened. Diffluent flow patterns are expected to prevail over the entire equatorial region except over to the horn of Africa where a cut-off cyclonic system will dominate the flow. A westerly wave will continue to influence the flow over much of Southern Africa but with its associated back hanging troughs degenerated.

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