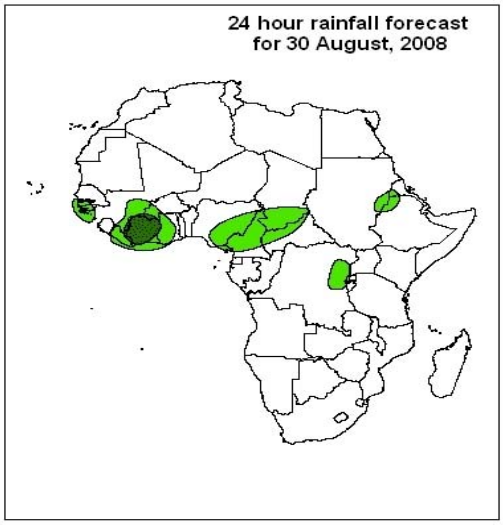
Forecast Guidance for Africa

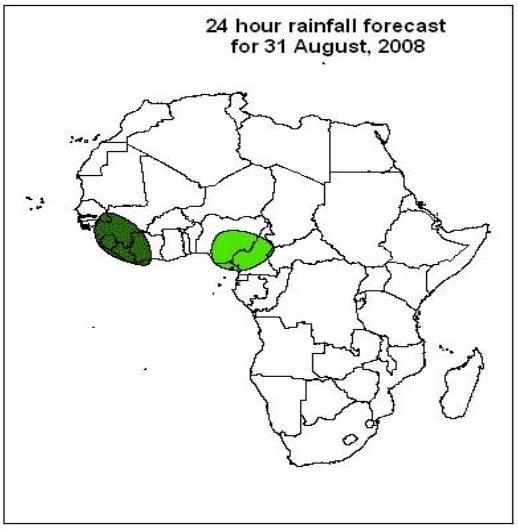
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 29th AUGUST 2008
Valid: 00Z 30th August – 01st 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.





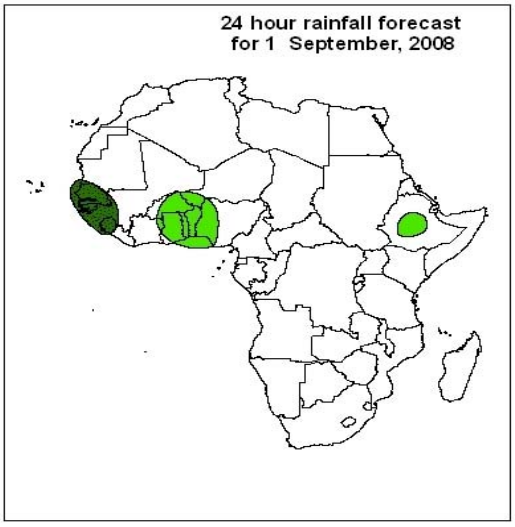
Legend

> 30mm, with probability 50%

> 20mm, with probability 40%

Summary

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



2. Model discussion

Model comparison (Valid from 00Z; 30th 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^oS and 10^oN) Continental Africa.

2.1. Flow at 850hPa:

T+24h, the Saharan anticyclonic circulation is expected to be centered over northern Algeria and will dominate the flow over much of North Africa, except for the Moroccan coast which will be affected by the penetration of a mid-latitude trough. Cyclonic vortices are featured over south of Cape Verde Islands, Cote d'Ivorie, central Niger and northern Sudan. On the other hand, anticyclonic vortices are featured over the coast of Nigeria/Cameroon and southern Sudan. Localized convergence is likely over western Mali, southern Guinea Conakry, southern Niger, southern Chad/northern CAR, central Ethiopia, Gabon/Congo, western and southern DRC and Angola. Conversely, localized divergence is likely over most areas between Central and Eastern Africa. Much of Southern Africa will be under the influence of a ridge from both St. Helena's and Mascarene anticyclonic systems centered over the South Atlantic Ocean and Southern Indian Ocean respectively. However, the southern sector will be affected by a mid-latitude trough.

T+48, a similar flow to that of the previous day will prevail over North and Southern Africa. The cyclonic vortex over Ivory Coast will propagate to Guinea Conakry and the one over Sudan will move to the border with Chad. The other cyclonic vortex over central Niger is likely to decay while another is expected to evolve to the south. Conversely, the anticyclonic vortex featured over the coastal border of Nigeria/Cameroon will propagate westwards and will be centered over Ghana/Cote d'Ivorie. Localized convergence will occur over Liberia, eastern Nigeria/western Cameroon, central Ethiopia, Lake Victoria region, southern Congo and central Angola; whereas localized divergence will prevail over southern and central Sudan, CAR, southern Ethiopia, Kenya and DRC. The mid-latitude trough featured over Southern Africa will prevail and is expected to deepen.

T+72, the Saharan anticyclonic circulation is expected to remain quasi-stationary. The Cyclonic vortices featured during the previous day will propagate westwards with centers over the coast of Guinea Bissau, northeastern Burkina, western Chad; whereas, new ones are expected to evolve over southern coast of Nigeria and northeastern Sudan. The anticyclonic vortex will also progress westwards and will be centered over Liberia. The diffluent flow over the Great lake region is expected to persist. The St. Helena ridge is expected to extend further eastwards over Southern Africa while the Mascarene retreats. However, the southern coast will be under the influence of a westerly wave while the trough will be over southern Mozambique Channel.

2.2. Flow at 500hPa:

T+24, two massive Sub-Tropical anticyclonic circulation systems are expected to prevail over Northern Africa. The one to the west stretches from the North Atlantic Ocean to southern Libya while the other extends from Egypt/northern Sudan towards Arabia. These two systems are separated by a mid-level trough centered over eastern Libya. South of the

anticyclonic systems are easterlies, in which shortwave troughs are embedded with their axes, centered just east of Cape Verde Islands, Burkina and the border between Chad and Sudan. A cyclonic circulation is expected to develop over Cote d'Ivorie. A confluent flow is likely over central Cameroon while, diffluent flow will occur over Eastern Africa. The northern sector of Southern Africa will be under the influence of a Sub-Tropical anticyclonic system while the southern sector 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 cyclonic circulation featured over cote d'Ivorie will propagate westwards and will be centered off the coast of Sierra Leone/Liberia. Another is expected to develop over eastern Kenya. The shortwave troughs featured will persist and also propagate westwards having their axes over the Atlantic, Guinea Conakry/ western Mali and northeastern Chad. Diffluent flow will be featured over Nigeria, Cameroon and DRC; whereas a deep back hanging trough will affect the Atlantic shores of Southern Africa.

T+72, not much changes are expected on the general flow as compared to that of the previous day except that the shortwave trough over Guinea/Mali will deepen and be centered off–shore, while the one over Chad will move to Mali/Niger border. The trough featured over the Southern Atlantic Ocean during the previous day will weaken as it traverses over Southern Africa.

2.3. Flow at 200hPa:

T+24h, an extensive upper level anticyclonic flow pattern is expected to prevail over the Sahel/Sahara but will be massive to the east onwards to Arabia. A westerly wave will dominate the flow over the Maghreb region north of the anticyclonic flow with an upper-level trough featured over western Libya; whereas easterlies will prevail to the south with short wave trough over southern Niger and Central Chad. Diffluent flow will occur over the Congo Basin while a deep cyclonic circulation will develop over western Kenya. The northern parts of southern Africa will be under the influenced of a Sub-Tropical anticyclonic system, while a westerly wave will dominate to the south with a deep trough extending to Tanzania.

T+48h, the flow pattern will be similar to that of the previous day. The short wave troughs will propagate westwards to Senegal and Ghana/Burkina while others will develop over southern Chad and western Ethiopia. The upper-level trough over Tanzania is expected to develop into a cyclonic circulation.

T+72h, the situation will be similar to that of the previous day only that all the short wave troughs will degenerate and diffluent flow prevailing over much of West Africa.

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