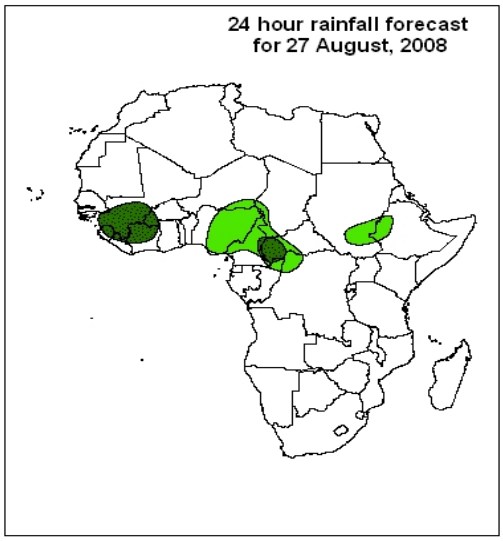
Forecast Guidance for Africa

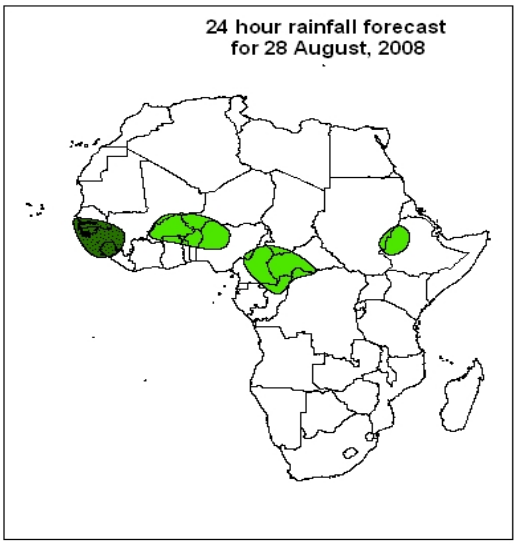
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 26th AUGUST 2008
Valid: 00Z 27th August – 29th 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.





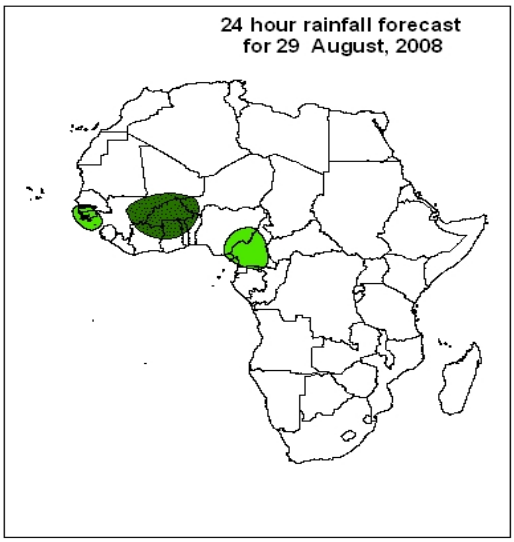
Legend

> 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 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; 27th 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 Tunisia thus influencing the flow over North Africa. Cyclonic vortices are featured over central Niger, central Sudan, northwestern cote d'Ivorie and eastern Nigeria. Localized convergence is likely over southern Mauritania, northwestern Mali, northern Guinea Conakry, northern Nigeria, central Chad, southern Sudan, western Ethiopia, northeastern Congo, southwestern Lake Victoria, southern DRC and Angola. Localized divergence is likely over western Mauritania, central Mali, western Sudan, the area stretching from central Ethiopia onto western DRC. The northwestern sector of Southern Africa will be under the influence of the St. Helena's ridge, while the southwestern sector will be affected by a forward hanging mid-latitude trough and the rest of the region will be dominated by a ridge from the Mascarene anticyclonic circulation system.

T+48, the Saharan anticyclonic circulation will weaken mainly over Morocco due to the evolution of a cyclonic circulation off its western coast. The cyclonic vortex featured over Niger and Sudan are expected to decay; the one over Cote d'Ivorie is expected to propagate westwards to western Guinea Conakry while that over eastern Nigeria will shift to the northwest. A new vortex is expected to develop over northeastern Sudan. Localized convergence is likely to occur over northern/eastern Burkina, western and eastern Sudan, central/southern CAR, western Congo, southern DRC and central Angola; whereas localized divergence will prevail over the stretch between central Ethiopia and central DRC, and over Tanzania. The flow over Southern Africa particularly the southern sector will be determined mainly by the eastward progression of the forward hanging mid-latitude trough.

T+72, a similar flow to that of the previous day will prevail over North Africa except that the cyclonic circulation off the western coast of Morocco will intensify and move further north over the northeast Atlantic Ocean. The cyclonic vortex over western Guinea Conakry will propagate further westwards and its expected to be centered off the coast of Guinea Bissau. The one over Nigeria will move to central Burkina while intensifying and that over northeastern Sudan is expected to remain quasi-stationary. Localized convergence will prevail over central Chad, western Sudan, Nigeria and Cameroon including the areas from Lake Victoria onto Angola. Conversely, the localized divergence over the stretch between central Ethiopia onto central DRC will shift slightly northwestward. A similar flow pattern will prevail over Southern Africa as compared to that of the previous day. However, due to the passage of the mid-latitude trough, the Mascarene's ridge over the eastern sector is expected to be weakened.

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 onto western Libya while the other stretches from southeastern Libya towards Arabia. These two systems are separated by a cyclonic circulation centered over northeastern Egypt. South of the anticyclonic system are easterlies, in which shortwave troughs are embedded with their axes centered over central Niger, Liberia stretching onto western Burkina and over northeastern Nigeria and northern Cameroon. Confluent flows are likely to occur over Ghana/Cote d'Ivorie while diffluent flows will occur over central Nigeria, southern Cameroon and northern DRC. The northern sectors of Southern Africa will be under the influence of a Sub-Tropical anticyclonic system while the southern sectors 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 Egypt will split the Arabian anticyclonic system with the western portion expected to merge with that over the Maghreb region. All shortwave troughs featured will persist and propagate westwards. Their axes are likely to be over western Guinea Conakry, eastern Mali and southern Niger. Diffluent flows will prevail over southeastern Nigeria, Cameroon and central Sudan. A cyclonic circulation is expected to develop over Tanzania.

T+72, not much changes are expected on the general flow as compared to that of the previous day except that the entire northern most sector of North Africa will be under the influence of a westerly wave. Worth mentioning also is that a cyclonic circulation will evolve over Burkina, generating a shortwave trough over central Mali while that over Tanzania will decay.

2.3. Flow at 200hPa:

T+24h, an extensive upper level anticyclonic flow pattern will prevail over northern Africa with a trough over northeastern Algeria, Tunisia and western Libya. A short wave trough is expected to develop over southeastern Mali.
Easterlies will dominate equator-ward. Likewise, a large part of southern Africa is expected to be influenced by the St Helena and Mascarene subtropical anticyclones, to the south of which; a westerly wave is expected to prevail.

T+48h, the wind flow pattern is expected to remain as that of the previous day, but a short wave trough over southeastern Mali is expected to extend to the center of the country and to Cote D'Ivoire.

T+72h, the flow pattern will be similar to the pervious day, but a short wave trough over central Mali and Cote D'Ivoire will decay. Another one is expected to develop over Central Niger.

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