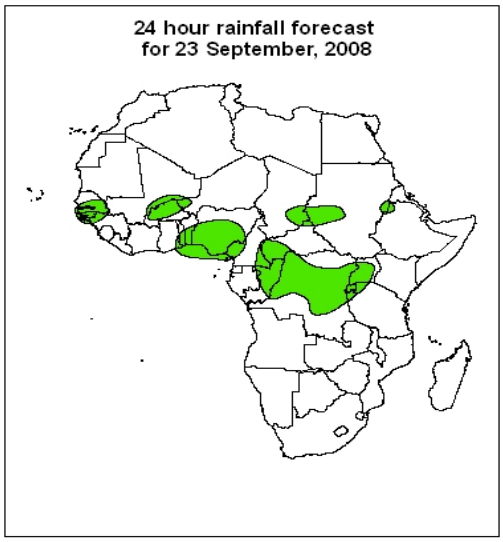
Forecast Guidance for Africa

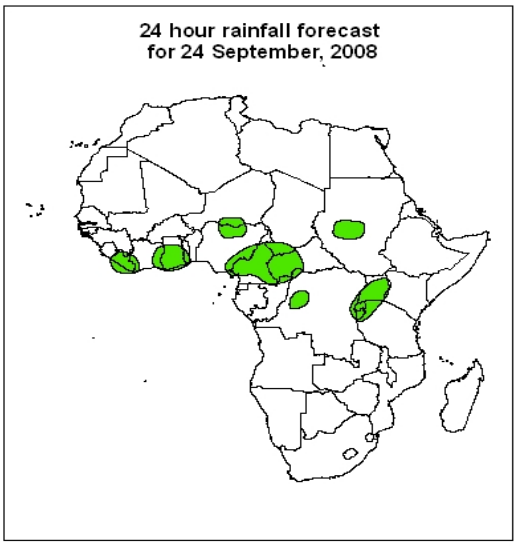
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 22nd SEPTEMBER, 2008
Valid: 00Z 23rd September – 25th 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.



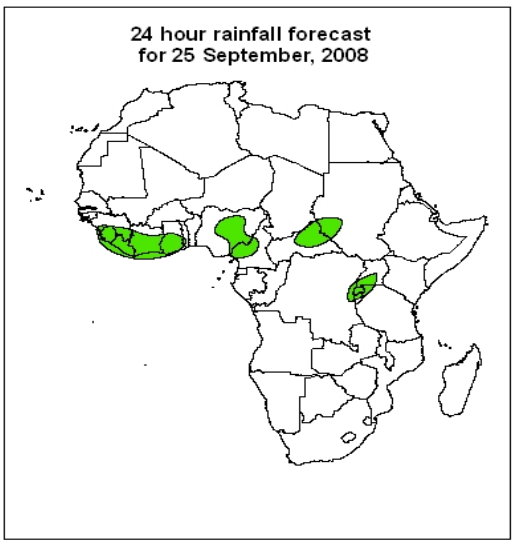


Legend

- africa_countries_new
- > 30mm, with probability 50%
- > 20mm, with probability 40%

Summary

Cyclonic vortices, mid-level troughs and localized convergence expected over parts of west and central Africa; coupled with moisture influx from the Gulf of Guinea and Congo Basin will enchance chance for rain.



2. Model discussion

Model comparison (Valid from 00Z; 23rd 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^oS and 10^oN) Continental Africa.

2.1. Flow at 850hPa:

T+24h, the Saharan anticyclonic circulation is expected to influence the flow over North Africa while the Azores ridge will dominate over the western bulge of West Africa. Cyclonic circulations are likely over central Mali and central Sudan with localized convergence expected over northern Burkina, southern Nigeria, the entire stretch from western to eastern Sudan, the stretch from northwest to southern DRC, Lake Victoria region and Angola. Conversely, localized divergence is likely to occur over northern Benin and environs, eastern CAR, southeastern Sahel and over East Africa. The Southern African region is expected to be dominated by the merger between the St. Helena's and Mascarene Ridges; with two cut-off mid-latitude cyclonic circulations featured off the southwestern Tip of South Africa and off-shore of the southeast coast.

T+48, a similar flow to that of the previous day is expected to prevail over Northern and Southern Africa with the Azores anticyclone extending its ridge northeastwards onto Morocco. The cyclonic circulation featured over central Mali will move to southern Mauritania and weaken; whereas, the one featured over central Sudan will remain quasi-stationary and intensify. Other cyclonic vortices are likely to evolve over western Mali, the border between southern Burkina and northern Cote d'Ivorie and between the border of Sudan and Eritrea. Localized convergence will occur over central Niger, between Ghana/Togo, northern Nigeria, Cameroon, Lake Victoria region stretching from eastern Uganda to western Tanzania, southern DRC and over Angola; whereas, localized divergence will prevail over western Niger and much of Mali/Burkina, southeastern Sahel, southeastern Chad, northern DRC and over East Africa. The merger between the St. Helena's and Mascarene Ridges over Southern Africa is likely to persist, with a westerly wave to the south.

T+72, the Azores ridge is expected to retreat from Senegal/The Gambia and parts of Mauritania. All cyclonic vortices featured during the previous day will decay except for the slowly moving one over central Sudan. Localized convergence will likely occur over northern Mali, Sierra Leone/Liberia and environs, northern Nigeria, over Lake Victoria region, southern DRC and Angola. Much of Southern Africa will be dominated by the merger between the St. Helena's and Mascarene ridges with a weak trough over the southwestern coast of South Africa and an anticyclonic flow over the eastern coast.

2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over Northern Africa, stretching from the tropical Atlantic Ocean onwards to Arabia. A westerly wave dominates the flow pole-wards; whereas, easterlies prevail equator-wards of these systems. Embedded within the easterlies are shortwave troughs with their axis centered over western Senegal, central Nigeria stretching onto western Cameroon and Chad.

Confluent flow-lines are likely to occur over north of Lake Victoria and environs. The flow over much of Southern Africa will be dominated by a Sub-Tropical anticyclonic system centered over northern Botswana while, South Africa will be under the influence of a westerly wave with a deep trough over Madagascar.

T+48, a similar flow pattern to that of the previous day is expected over Northern and Southern Africa except that all shortwave troughs featured during the previous day will degenerate. Confluent flows are likely to occur mainly over northeastern Uganda and off the coast of Nigeria. The trough over Madagascar will propagate slightly eastwards.

T+72, a cut-off cyclonic circulation is expected to develop over northeast Atlantic within the westerly wave. Confluent flow is likely over Ghana and Rwanda. The northern sectors of Southern Africa including Madagascar will be dominated by a Sub-Tropical anticyclonic system centered between Zambia and Zimbabwe while, westerly wave will persist to the south.

2.3. Flow at 200hPa:

T+24h, an extensive upper-level anticyclonic flow pattern will prevail over much of Northern Africa extending from the tropical Atlantic to Arabia. Westerlies dominate the flow over much of North Africa while easterlies are expected equator-ward. Embedded within the easterlies are shortwave troughs with their axis centered off the coast of Senegal, The Gambia, and Guinea Bissau and over western Sudan. 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 deep upper-level trough over Madagascar.

T+48h, the flow over Northern and Southern Africa are expected to be similar to that of the previous day. However, the shortwave troughs featured off The Gambia's coast and western Sudan will propagate westwards while another shortwave trough is likely to develop over Cameroon / western Chad. A cyclonic circulation is expected to develop over northern DRC; whereas, the westerly wave to the south and trough over Madagascar will move further to the east.

T+72h, the main changes expected to affect the flow pattern will be the development of an upper-level trough over the northeast Atlantic Ocean off the Moroccan Coast, the westward propagation of the shortwave trough from Cameroon/Chad onto Nigeria/Southern Niger and the decay of the cyclonic circulation over northern DRC, while another cyclonic circulation will develop over the eastern coast of Somalia and the trough over Madagascar will extend northwards to influence the coast of East Africa (Kenya and Tanzania).

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