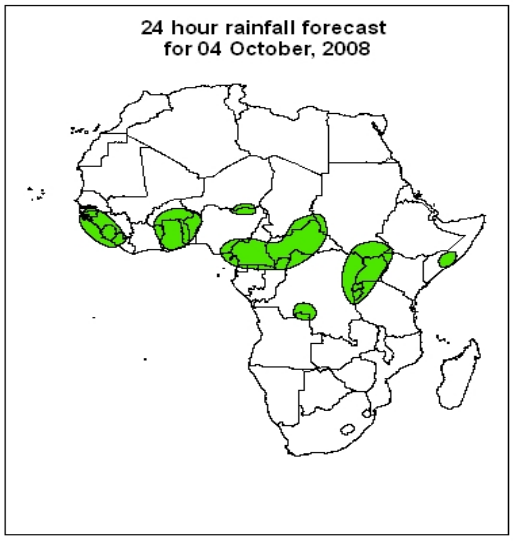
Forecast Guidance for Africa

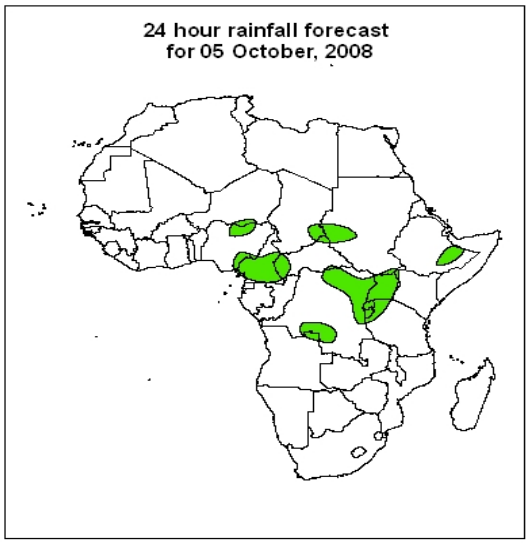
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 03rd OCTOBER, 2008
Valid: 00Z 04th OCTOBER – 06th 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.



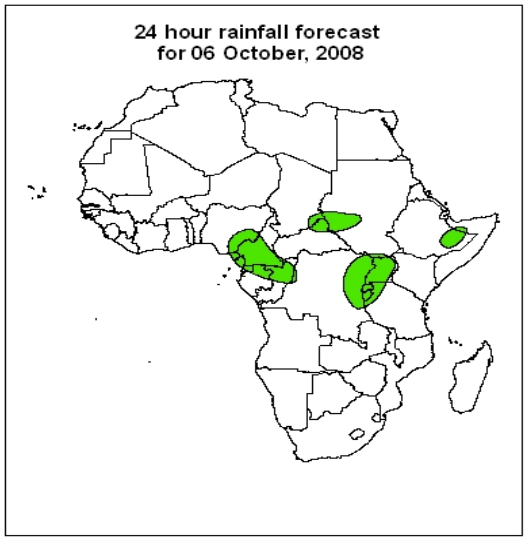


Legend

- 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, central and East 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; 04th 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^oS and 10^oN) Continental Africa.

2.1. Flow at 850hPa:

T+24h, the Saharan anticyclonic circulation is expected to dominate the flow over much of Northern Africa except over the western Maghreb where a cut-off cyclonic circulation is likely to develop over the border between eastern Morocco and western Algeria. Cyclonic circulations are likely to be featured over southern Cameroon, CAR and over the northeastern Tip of Somalia. A series of localized convergence are expected over central Mali, southern Niger, eastern Chad, central and eastern Sudan, southern Ethiopia, Lake Victoria region, southern DRC and southern Angola stretching onto northeastern Namibia. Conversely, localized divergence will occur over the eastern sectors of the Gulf of Guinea states, southern Sudan, central Ethiopia and much of East Africa. The Southern African region is expected to be dominated by the St. Helena and Mascarene Ridges; with a mid-latitude trough likely to affect the southern coast of South Africa.

T+48, the Saharan anticyclonic system is expected to prevail over Northern Africa while the Azores anticyclonic ridge is expected to influence the flow over the western bulge of western Africa. The cut-off cyclonic circulation featured over the border between eastern Morocco and western Algeria will propagate southwestwards onto the coast between Morocco and Western Sahara. The cyclonic circulations featured over southern Cameroon and CAR will likely merge over the former, while the one over Somalia will decay. Cyclonic vortices are likely to evolve over western and eastern Sudan. Localized convergence will prevail over central Mali, southern Niger/northern Nigeria, eastern Ethiopia, Lake Victoria region and Angola. On the other hand localized divergence will prevail over Gabon, southern Sudan, western Ethiopia and western DRC. The Southern African region will continue to be dominated by the St. Helena and Mascarene Ridges; with the mid-latitude trough shifting slightly northeastwards to affect the eastern coast of South Africa.

T+72, similar flow patterns will prevail over northern Africa as compared to that of the previous day. The cyclonic vortices featured over Sudan will merge and move to the border with Chad; whereas, the one over southern Cameroon will intensify and drift to the southwest of Cameroon. A new cyclonic vortex will likely evolve over eastern Ethiopia. Localized divergence will likely prevail over most parts of the Congo Basin and East Africa. The ridge system from an off-shore anticyclonic systems “St. Helena” will dominate the flow over much of Southern Africa except for the western coastline, for which cyclonic flows are likely to be featured over Angola and between the border of Namibia and South Africa.

2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system will to prevail over much of North Africa and is expected to be centered over southeastern Libya. A westerly wave will dominate the flow pole-wards featuring a mid-level trough over the Canary Islands. Easterlies will dominate equator-wards with shortwave troughs over eastern Nigeria and western Cameroon. A deep cyclonic circulation is expected to prevail over Djibouti and

environs, while a confluent flow is likely to occur over the border between Cameroon/Chad. The flow over much of Southern Africa will be dominated by a Sub-Tropical anticyclonic system; except over the southwestern sectors, which will be under the influence of a westerly wave.

T+48, similar flow patterns to that of the previous day are expected to prevail over Northern and Southern Africa. The cyclonic circulation featured over the Eastern Sahel will persist but weakened, while another will likely develop over eastern Cameroon. A weak shortwave trough is likely to occur over Cote d'Ivorie stretching onto southwestern Niger. Confluent flow patterns will emerge over central DRC and eastern Tanzania.

T+72, similar flow patterns to that of the previous day are expected to prevail over Northern Africa. The shortwave trough over Cote d'Ivorie will propagate westward onto Guinea/Sierra Leone while another is likely to be featured over northern Sudan. A series of cut-off cyclonic cells are expected to evolve over southwestern Cameroon and DRC respectively; whereas, confluent flows are likely over Gabon and southeastern Uganda. A massive Sub-Tropical anticyclonic circulation system is expected to dominate the flow over Southern Africa with an off-shore anticyclonic circulation likely off the Southern coast.

2.3. Flow at 200hPa:

T+24h, an extensive upper-level anticyclonic flow pattern will prevail over the equatorial Atlantic and spreading right across Sahel/Sahara. A Westerly wave will dominate the flow pole-ward of the anticyclonic system; whereas, easterlies will dominate the flow equator-ward with shortwave troughs featured over Ghana stretching onto western Niger. Another will have its axis extending from southern to northern Chad. A well pronounced cyclonic system is expected over the eastern Sahel; whereas, diffluent flow patterns are expected to prevail over DRC. Much of Southern Africa will be under the influence of an upper-level anticyclonic system, except over parts of the southern sector which will be dominated by a westerly wave. An intense trough will be featured stretching from the southwest Indian Ocean and onto East Africa with a cut-off cyclonic circulation over northern Madagascar.

T+48h, similar flows are expected over Northern and Southern Africa as compared to that of the previous day. However, an upper-level trough is likely to develop off the Moroccan coast and over eastern Egypt. The shortwave trough over Ghana/Niger will propagate westwards with its axis expected to be centered over Liberia, stretching onto western Mali. The other trough over Chad will develop into a cyclonic vortex over central Chad. The cyclonic system featured over eastern Sahel will remain quasi-stationary and it is expected to intensify. Likewise the one featured over Madagascar will drift onto northern Mozambique Channel. It will also intensify and dominate the flow over much of Eastern Africa and northeastern Southern Africa. The flow over other regions of Southern Africa will be similar to that of the previous day.

T+72h, the main differences on the general flow over the continent as compared to that of the previous day will be the eastward propagation of the upper-level trough to the coast of Morocco. The shortwave trough featured over Liberia/Mali is expected to be over the Guinean coast and the cyclonic system over the Mozambique Channel will move onto northern Mozambique.

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