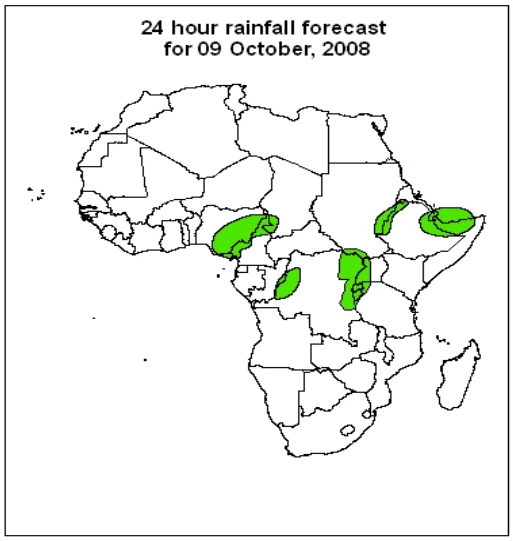
Forecast Guidance for Africa

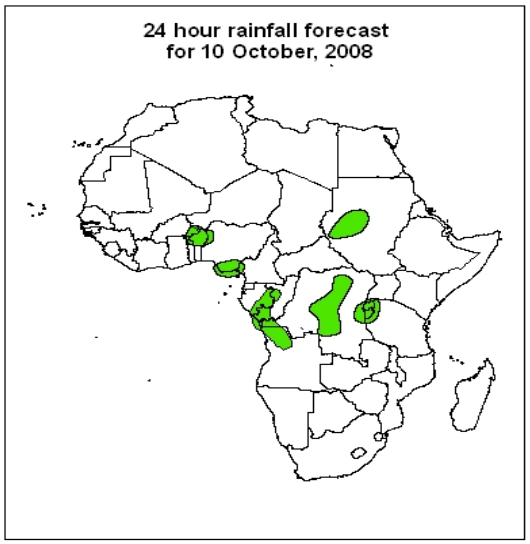
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 08h OCTOBER, 2008
Valid: 00Z 09th OCTOBER – 11th 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.



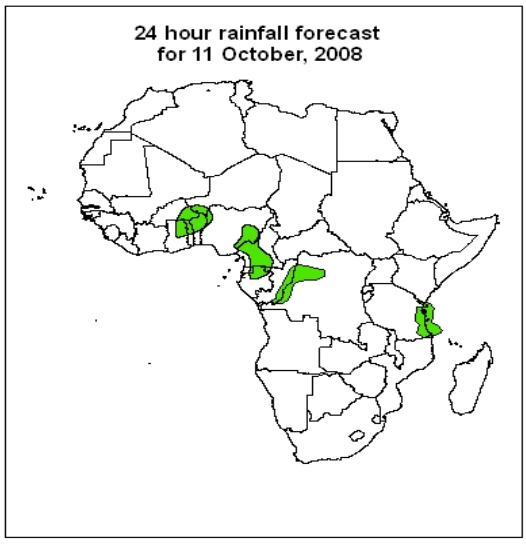


Legend

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

Summary

A ridge from the Azores anticyclonic system will suppress rain over much of Western and Central Sahel and Western Gulf of Guinea States. However, cyclonic vortices, mid-level troughs and localized convergence line expected over Eastern Gulf of Guinea States, 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; 09th 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 system will dominate the flow mainly over Northeastern Africa while the Azores anticyclonic system centered over Northeastern Atlantic Ocean is expected to influence the flow over the western bulge of Africa. A mid-latitude trough will be featured over northwestern Maghreb and a well pronounced cyclonic circulation over southern Algeria/Mali and environs. A series of cyclonic vortices will develop over southeastern Nigeria, southern Chad and over the border between Sudan, Eritrea and Ethiopia. A shortwave trough will emerge over southeastern Ethiopia stretching onto the Tip of Somalia. Localized convergence is expected over Niger, eastern Nigeria, eastern Chad, central Sudan, eastern Ethiopia, Rwanda, western and eastern DRC, and over Angola. Conversely, localized divergence will occur over much of the Gulf of Guinea states, eastern Chad, southern Sudan, northeastern/central DRC and most parts of East Africa. Much of Southern Africa will be under the influence of the St. Helena and Mascarene ridges while an off-shore cyclonic system will likely affected the southern coast of South Africa.

T+48, the Azores and Saharan anticyclonic systems centered over the Northeast Atlantic and Northeastern Africa are expected to merge over northern Morocco. However, the mid-latitude trough featured over northwestern Maghreb will merge with the cyclonic circulation featured over southern Algeria/Mali; hence, featuring a massive cyclonic circulation over western Sahel/Sahara. The cyclonic vortex featured over southern Nigeria will remain quasi-stationary, it's counterpart over southern Chad will decay while the one over eastern Sudan will propagate westwards onto central Sudan. Localized convergence is likely to occur over eastern Mali, northern Benin, Congo, Lake Victoria region, southeastern DRC and Angola. On the other hand, localized divergence will likely occur over the western sectors of the Gulf of Guinea states, Ethiopia, southern Sudan, eastern CAR, DRC and most parts of East Africa. Much of Southern Africa will be dominated by the St. Helena and Mascarene Ridges; except for the southern coastline, which will likely be affected by westerlies.

T+72, similar flow patterns as that of the previous day are expected to prevail over much of Northern and Southern Africa. The massive cyclonic system featured over western Sahel/Sahara will propagate onto the coast of Northwestern Africa. The cyclonic vortex featured over southern Nigeria will drift southwestwards to be centered off the coast of Cote d'Ivorie while the other over central Sudan will degenerate.

2.2. Flow at 500hPa:

T+24, a trough is expected to prevail over most of Morocco, Algeria and Tunisia while the rest of North Africa is likely to be under the influence of the Saharan anticyclonic circulation. Localized convergences are featured over north Ghana, southwestern and central Nigeria, and over central Sudan. Conversely, a strong divergence is featured over the border between southeastern Libya and southwestern Egypt. A cyclonic circulation will prevail over western DRC, north Angola, most of Congo and Gabon with confluent flows over north Gabon and northeastern DRC. Most of Southern Africa will be under the

influence of an anticyclonic circulation system with localized strong divergences over northeastern Namibia and over the channel of Mozambique. The south coast of South Africa is likely to be affected by a trough from the mid latitude cyclonic circulation.

T+48, a deep cyclonic circulation with its center over Morocco will prevail over most of Western Sahara, Algeria, Mauritania and North Mali. The Saharan anticyclonic circulation is expected to prevail over the rest of North Africa. The cyclonic circulation over DRC and Congo will move westwards and its trough will extend to southwestern Gabon, western Congo and DRC and northwestern Angola .Confluent flows are likely to occur over Guinea, northern Niger, central Chad and southern DRC. On the other hand, diffluent flows will be featured over central Nigeria, north Cameroon, southeastern Tanzania, northeastern Zimbabwe and central Madagascar. Southern Africa will be dominated by the anticyclonic circulation system and a trough from the mid latitude westerly wave will affect the flow over the Indian Ocean.

T+72, the cyclonic circulation featured over northern Mali will move northwards while still prevailing over Morocco, western Algeria, Western Sahara and northern Mauritania. The rest of North Africa is likely to be under the influence of an anticyclonic circulation system. Easterlies will prevail equator-wards. Confluent flows will be featured over southern Mauritania, Guinea, northeastern DRC, north Angola, central Zambia onto eastern Angola and over the southeastern coast of Tanzania; whereas, diffluent flows will be featured over southwestern Libya, eastern Nigeria and over the south coast of Namibia. The trough over southern South Africa will propagate eastwards towards southern Madagascar.

2.3. Flow at 200hPa:

T+24h, much of northern Africa will be under the influence of a westerly wave with a massive upper-level trough which extends equator-wards from western Mediterranean Sea onto central Mali. An upper-level anticyclonic system dominates the flow over West Africa with diffluent flow patterns over eastern Gulf of Guinea and Congo Basin regions respectively; whereas, a weak trough and cut-off cyclonic circulation are likely to be featured over Eritrea and over southern Ethiopia/Somalia. Much of Southern Africa will be under the influence of a westerly wave with an intense back hanging trough stretching from the Southwest Atlantic Ocean across South Africa and extending onto southern Angola.

T+48h, similar flows to that of the previous day will prevail over much of Africa. However, a cyclonic circulation will evolve over Morocco, while the one featured over Ethiopia/Somalia will deepen, with its associated trough likely to extend southwestwards onto Zambia hence influencing the upper-level flow over the entire East African region. An anticyclonic system is expected to develop over central Chad. The back hanging trough featured over Southern Africa will traverse eastwards while weaken.

T+72h, the main differences likely to affect the flow as compared to the previous day will be the weakening and northwest propagation of the cyclonic circulation featured over Eastern Africa onto eastern Sudan; and the eastward propagation of the back hanging trough over Southern Africa onto Madagascar/western Indian Ocean.

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