



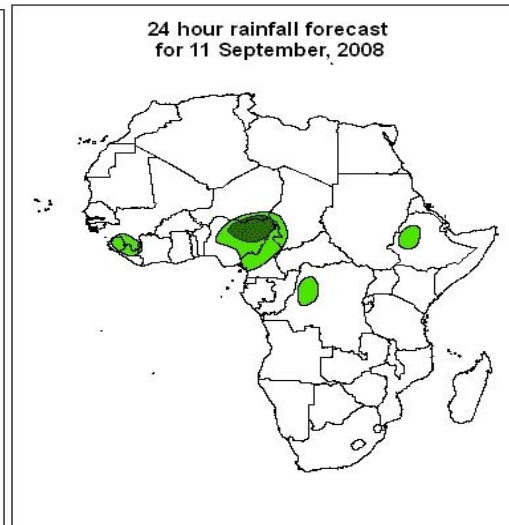
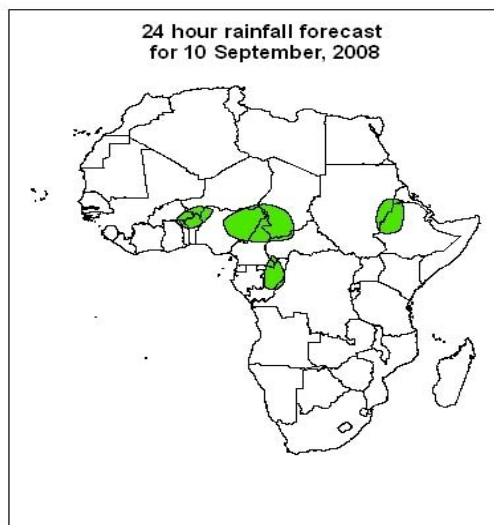
Forecast Guidance for Africa

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



FORECAST DISCUSSION 14H00 EST, 09th SEPTEMBER, 2008
Valid: 00Z 10th September – 12th 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.

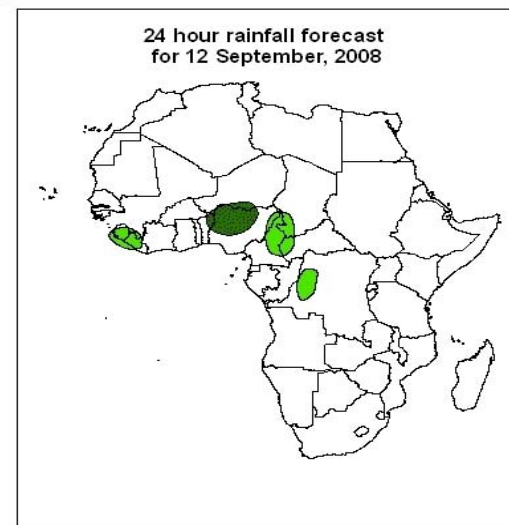


Legend

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

Summary

The Azores anticyclonic circulation featured at the mid and upper levels will likely suppress rain over western Sahel. However, cyclonic vortices and Localized convergence expected over other parts of west and central Africa coupled with Moisture influx from the Gulf of Guinea and Congo Basin will enhance chance for rain over those areas.



2. Model discussion

Model comparison (Valid from 00Z; 10th 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°S and 10°N) Continental Africa.

2.1. Flow at 850hPa:

T+24h, the Saharan anticyclonic circulation system is expected to dominate the flow over much of North Africa and will be centered over the coast of Tunisia. However, the wind flow over northwestern Sahel is expected to originate from the Azores anticyclonic circulation system. Between these two anticyclonic circulation systems will be a mid-latitude cyclonic vortex centered over northeast of Morocco. Cyclonic vortices are expected also over central Mali and southern Chad. Localized convergence is likely over Mali, eastern Sudan, central CAR, central Ethiopia, Lake Victoria region, western and southern DRC and northeastern Angola. Conversely, localized divergence is likely to occur over the Gulf of Guinea countries, Congo Basin, western and southern Sudan and East Africa. Much of Southern Africa is expected to be under the influence of an anticyclonic ridge as a result of the merger from both the St. Helena and Mascarene anticyclonic systems centered over the southern Atlantic and Indian Oceans respectively. However, the southern most sectors will be under the influence of a westerly wave.

T+48, a similar flow to that of the previous day will prevail over North Africa and western Sahel. The cyclonic vortex over Morocco will deepen while those over central Mali and southern Chad will weaken and drift slightly westwards to southeastern Mauritania and northern Nigeria. Localized convergence is likely to occur over central Chad, northwestern Sudan, central Ethiopia, southern sectors of the Gulf of Guinea Countries, northwestern and southern DRC and Lake Victoria region; whereas, localized divergence will prevail over Mali, southern Chad, CAR, much of Sudan and East Africa. The entire Southern African region will be under an anticyclonic ridge system.

T+72, the cyclonic vortex over Morocco will propagate southwards while others will develop over central Mali, northern Nigeria and northeastern Chad. Diffluent flow is expected to prevail over western Sahel and western Gulf of Guinea. The entire Southern African region is expected to be under the influence of an anticyclonic system centered at the southern coastline of South Africa.

2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over Northern Africa with two mid-level troughs featured over northeastern Atlantic Ocean and Libya/Egypt respectively. South of the anticyclonic system are easterlies, in which a shortwave trough is embedded, with its axis centered over central Sudan. A deep cyclonic Vortex is expected to be featured over eastern Cameroon/southern Chad; whereas, confluent flows are likely to occur over southeastern coast of cote d'Ivoire, eastern CAR

and central Somalia. The flow over the northern sectors of Southern Africa will be dominated by a Sub-Tropical anticyclonic system; whereas, a westerly wave will prevail over the southern sectors and a mid-level cut-off cyclonic circulation expected over the Mozambique Channel.

T+48, similar flow patterns to that of the previous day are expected to prevail over Northern and Southern Africa. However, the mid-level troughs are expected to extend slightly southwards with cyclonic circulations likely to develop over western Morocco and northeastern Libya. The cyclonic vortex featured between Cameroon/Chad will propagate northwestwards to northeastern Nigeria; whereas, the mid-level shortwave trough featured over Sudan is likely to persist but weaken. Confluent flows are likely over eastern and southern Chad, southern Ethiopia, western DRC and northwestern Tanzania while diffluent flow will prevail over much of eastern Sahel.

T+72, the main changes expected on the general flow as compared to that of the previous day will be the continued northwest propagation of the cyclonic vortex over Nigeria to its border with Niger and the decay of the shortwave trough over Sudan. The cyclonic circulation over Mozambique Channel will weaken and be replaced by a Trough.

2.3. Flow at 200hPa:

T+24h, an extensive upper-level anticyclonic flow pattern will prevail over Northern Africa extending into Arabia. A westerly wave accompanied by an upper-level trough is expected to affect the flow over the northwestern Maghreb region. Easterlies will prevail equatorwards of the anticyclonic flow with shortwave troughs featured over northeastern Nigeria, eastern CAR and central Ethiopia. Much of Southern Africa will be dominated by a Sub-Tropical anticyclonic flow except over South Africa and Mozambique Channel which are likely to be under the influence of a westerly wave and a cyclonic circulation respectively.

T+48h, the flow is expected to be similar to that of the previous day except, that the westerly wave pole-ward of the upper-level anticyclonic flow will deepen and extend southwards to the Sahara with another upper-level trough likely over Libya. The cyclonic circulation over Mozambique Channel will weaken and degenerate into a trough.

T+72h, the westerly wave over North Africa is expected to deepen with its associated troughs extending further towards northern Sahel as a result, the upper-level anticyclonic flow is expected to shift equator-wards. Similarly, the flow over Southern Africa will be dominated by a westerly wave.

Authors:

1- George Stafford (Department of Water Resources, The Gambia and African Desk).