



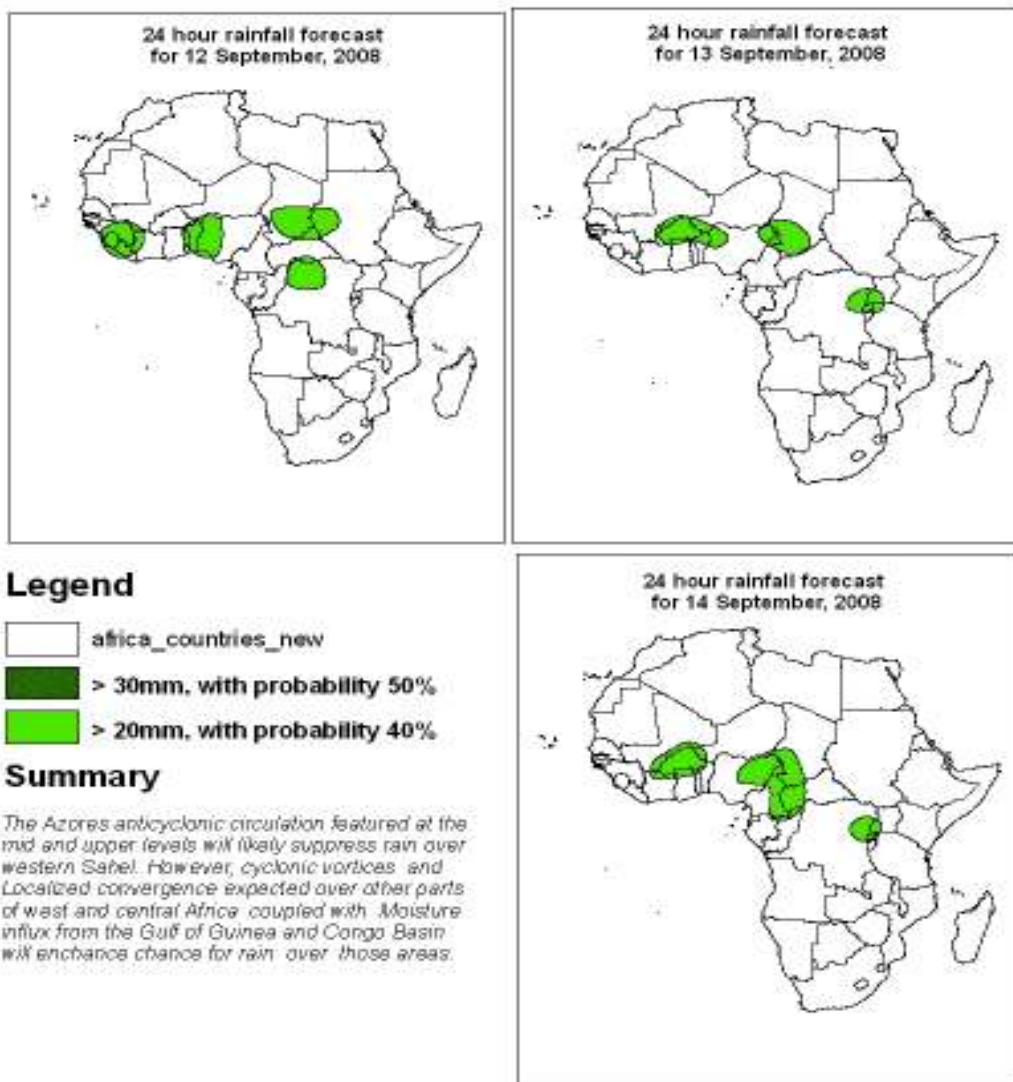
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 11th SEPTEMBER, 2008
Valid: 00Z 12th September – 14th 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.



2. Model discussion

Model comparison (Valid from 00Z; 12th 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 will be centered over the coast of Tunisia/Libya and is expected to influence the flow over parts of North Africa. A deep cyclonic circulation will be featured over western Algeria and a weak one over northeastern Libya. Northerly component airstreams are expected to prevail over the western bulge of North and West Africa. Cyclonic vortices will develop over western Nigeria, central Chad and northern Sudan. Localized convergence is likely over Mali, Burkina, Niger, southern Chad, central and eastern Ethiopia, Congo, Lake Victoria region southern DRC and northeastern Angola. Conversely, localized divergence is likely to occur over the Gulf of Guinea Countries stretching from Guinea Conakry onwards to Cameroon, CAR and further to much of Sudan and over East Africa. The entire Southern African region is expected to be under the influence of an anticyclonic system centered at the southern coastline of South Africa.

T+48, the cyclonic circulation over western Algeria is expected to prevail while the one over Libya will decay. The northerly component airstreams over the western bulge of North and West Africa will retreat westwards to the Atlantic Ocean. All cyclonic vortices developed during the previous day are expected to decay while new ones will evolve off the coast of Mauritania and over central Mali. Localized convergence is likely to occur over southern Chad, northwestern and central Sudan, Rwanda and southern DRC; whereas, localized divergence will prevail over northwestern Mauritania, the entire Gulf of Guinea Countries, much of Congo Basin, western Sudan and over much of East Africa. The entire Southern African region is expected to be under the influence of the Mascarene anticyclonic system centered off the southeastern coastline of South Africa.

T+72, similar flow patterns are expected to prevail over north Africa as compared to that of the previous day. The cyclonic vortex off the Mauritanian Coast will deepen while the one over Mali will weaken. Another cyclonic vortex is expected to evolve between the borders of Niger, Chad and Nigeria. Localized convergence will likely occur over eastern Chad, eastern Sudan and eastern Ethiopia and southeastern Uganda; whereas localized divergence will continue to prevail over the Gulf of Guinea Countries onwards to southern Sudan and over much of the Congo Basin and over East Africa. Much of Southern African is expected to be dominated by the Mascarene anticyclonic system except for the southwestern sector which is likely to be affected by a mid-latitude trough.

2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over Northern Africa with two well pronounced mid-level troughs featured over Morocco/Algeria and Libya/Egypt respectively. Embedded within these troughs are cut-off cyclonic circulations. Cyclonic circulations are also featured over northwestern Nigeria and eastern Chad; whereas, an intense anticyclonic vortex is expected over eastern Nigeria. Confluent flow-lines are likely to stretch from Sierra Leone to northern Cote d'Ivoire, from central Congo to western DRC, and to the southeast of Lake Victoria. The flow over much of Southern Africa will be dominated by a Sub-Tropical anticyclonic system centered over the coastline of Namibia; whereas, a westerly wave will prevail over the southern sectors and a mid-level trough likely to affect Madagascar.

T+48, similar flow patterns to that of the previous day are expected to prevail over Northern Africa. However, the cut-off cyclonic circulation over western Algeria will prevail while the other one over Egypt is expected to fill-up. The cyclonic circulation featured over Nigeria will propagate westwards to southern Mali; whereas its counterpart over eastern Chad will move to the south and generate a mid-level shortwave trough over central Chad. The anticyclonic vortex featured over Nigeria is likely to propagate southwestwards to the coast of Ghana, Togo and Benin. Confluent flows are likely to occur over western Mali, northeastern Burkina and south of Lake Victoria. The trough over Madagascar will prevail but weaken while the rest of Southern Africa will be under the influence of a Sub-Tropical anticyclonic circulation.

T+72, the main changes expected on the general flow as compared to that of the previous day will be the westward shift of the mid-level cut-off cyclonic circulation from Algeria over to Morocco. The cyclonic vortex over southern Mali and Chad will decay; whereas the anticyclonic vortex featured over the coast of Benin, Togo and Ghana will propagate northwestwards to Guinea/Sierra Leone. Shortwave troughs are expected to be featured over eastern Burkina/Mali and northeastern Nigeria. The trough over Madagascar will regenerate and intensify while another is expected to develop over the western sectors of Southern Africa.

2.3. Flow at 200hPa:

T+24h, an extensive upper-level anticyclonic flow pattern will prevail over Sahel/Sahara extending to Arabia. A westerly wave accompanied by upper-level troughs, are expected over North Africa with the trough axes centered over Morocco and Libya/Egypt respectively. Easterlies will dominate the flow equator-wards with shortwave troughs featured over western Ethiopia, southeastern Nigeria and Cote d'Ivoire. The northern sector of Southern Africa will be dominated by an anticyclonic flow while the southern sector will be under the influence of a westerly wave.

T+48h, the flow is expected to be similar to that of the previous day except, that the shortwave troughs will propagate westwards by ~8 degrees of longitude.

T+72h, the main changes that are of significance to the general flow will be the development of a cyclonic circulation over the border between eastern Morocco and western Algeria. All Shortwave troughs featured are expected to degenerate.

Author: George Stafford (Department of Water Resources, The Gambia and African Desk).