



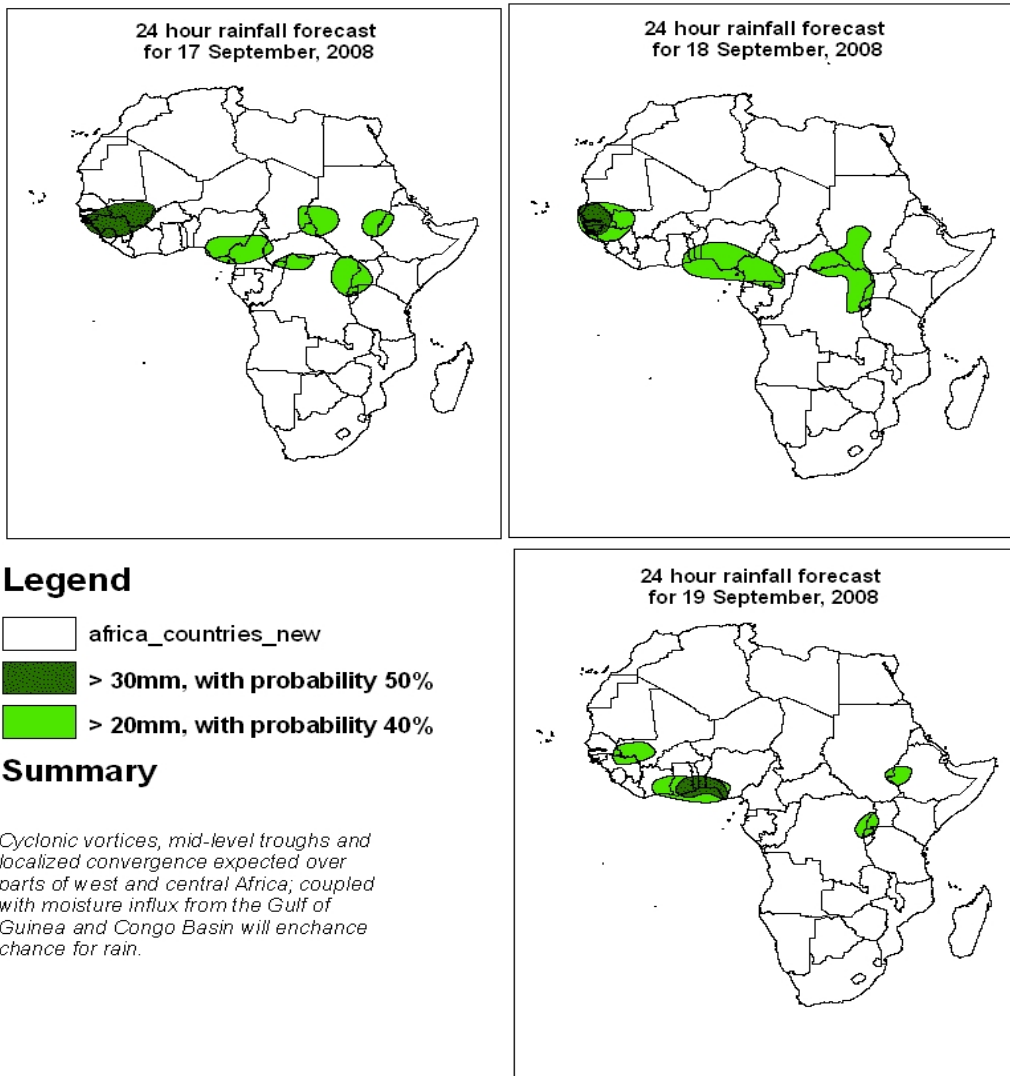
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 16th SEPTEMBER, 2008
Valid: 00Z 17th September – 19th 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; 17th 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 is expected to influence the flow over much of North Africa except over Morocco and western Algeria which will be affected by a cyclonic vortex. A cut-off anticyclonic circulation will be featured over northern Mauritania and as a result it is expected to influence the flow over northwestern Sahel and Western Sahara. Cyclonic vortices will develop over western Mali and over the coast of Guinea Conakry. Localized convergence is likely over the border between Niger/ Nigeria, Chad/ Sudan, central Sudan, Eritrea, northwestern and eastern Ethiopia, over southeastern Nigeria/ western Cameroon, northwestern Gabon, western sectors of Lake Victoria and Angola. Conversely, localized divergence is likely to occur over the eastern Gulf of Guinea countries, much of the Congo Basin, 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 Ridge.

T+48, the entire North Africa is expected to be dominated by the Saharan anticyclonic circulation. Both the cyclonic vortex and anticyclonic circulation over the northwestern Maghreb will decay. However, the cyclonic vortex featured over western Mali and the coast of Guinea, will propagate to western Mauritania and the Atlantic Ocean respectively. Other cyclonic vortices are likely to evolve over northwestern Niger, northeastern Sudan, and off the Nigerian coast. Localized convergence will occur over Mauritania, central Niger, eastern Chad stretching to central Sudan, western Nigeria, Rwanda, western DRC, and Angola; whereas, localized divergence will prevail over most of the western Gulf of Guinea Countries, much of Congo Basin, southeastern Sahel and East Africa. The merger of St. Helena and Mascarene ridge's over Southern Africa is expected to remain quasi-stationary except for the intrusion of a mid-latitude trough over the southwestern sector.

T+72, the flow over North Africa is expected to be similar to that of the previous day. The cyclonic vortex over Mauritania will decay giving way to the regeneration of the anticyclonic flow over western Sahel. The cyclonic vortex featured over northeast Sudan is expected to intensify while remaining quasi-stationary. The one off the coast of Nigeria will propagate to the coast of Cote d'Ivoire/ Ghana; whereas, the one over Niger will degenerate. Much of Southern Africa will be dominated by the merger of St. Helena and Mascarene ridge's except for South Africa which will be under the influence of a mid-latitude trough.

2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system stretching from the Atlantic Ocean on-wards to Arabia is expected to prevail over Northern Africa, with a westerly wave pole-wards and easterlies equator-wards. Embedded in the easterlies are two cyclonic circulations accompanied by shortwave troughs with their axis centered over Guinea Conakry/western Mali and the border between Nigeria and Cameroon. Confluent flow-line is likely to occur over central DRC stretching towards the northwest. The flow over the northern sectors of Southern Africa will be dominated by a Sub-Tropical anticyclonic system which stretches southeastwards to Madagascar while; the southern sectors will be under the influence of a westerly wave.

T+48, a similar flow pattern is expected over Northern and Southern Africa with the westerly wave becoming more pronounced over to the North, featuring a mid-level cyclonic circulation over the Northeast Atlantic and a mid-level trough towards the Egyptian coast. The cyclonic circulation featured over Guinea and Cameroon will shift slightly west to the Atlantic i.e. off Bissau and Nigerian coast while their associated shortwave troughs will degenerate. Confluent flows are likely to occur over CAR, Lake Victoria region and northwestern Zambia.

T+72, the main change that is expected will be the decay of the cyclonic circulation over the Gulf of Guinea. A shortwave trough is likely to be featured stretching from Cote d'Ivoire to western Mali; whereas, confluent flows will prevail over Lake Chad region, central Kenya onto southern Lake Victoria, central DRC and northwestern Zambia.

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 with westerly wave pole-wards and easterlies equator-wards. Embedded within the westerly wave are upper-level troughs with their axis centered over northeast Atlantic and towards northwestern Libya. 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 slanting upper-level trough expected over Madagascar.

T+48h, the westerly wave is likely to intensify extending its associated troughs further southwards. A shortwave trough is likely to develop over Lake Chad region. The flow to the south is expected to remain quasi-stationary; but, with the degeneration of the trough over Madagascar.

T+72h, a similar flow pattern to that of the previous day will persist with the westerly wave over Northeast Atlantic and Northern Africa expected to deepen.

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