



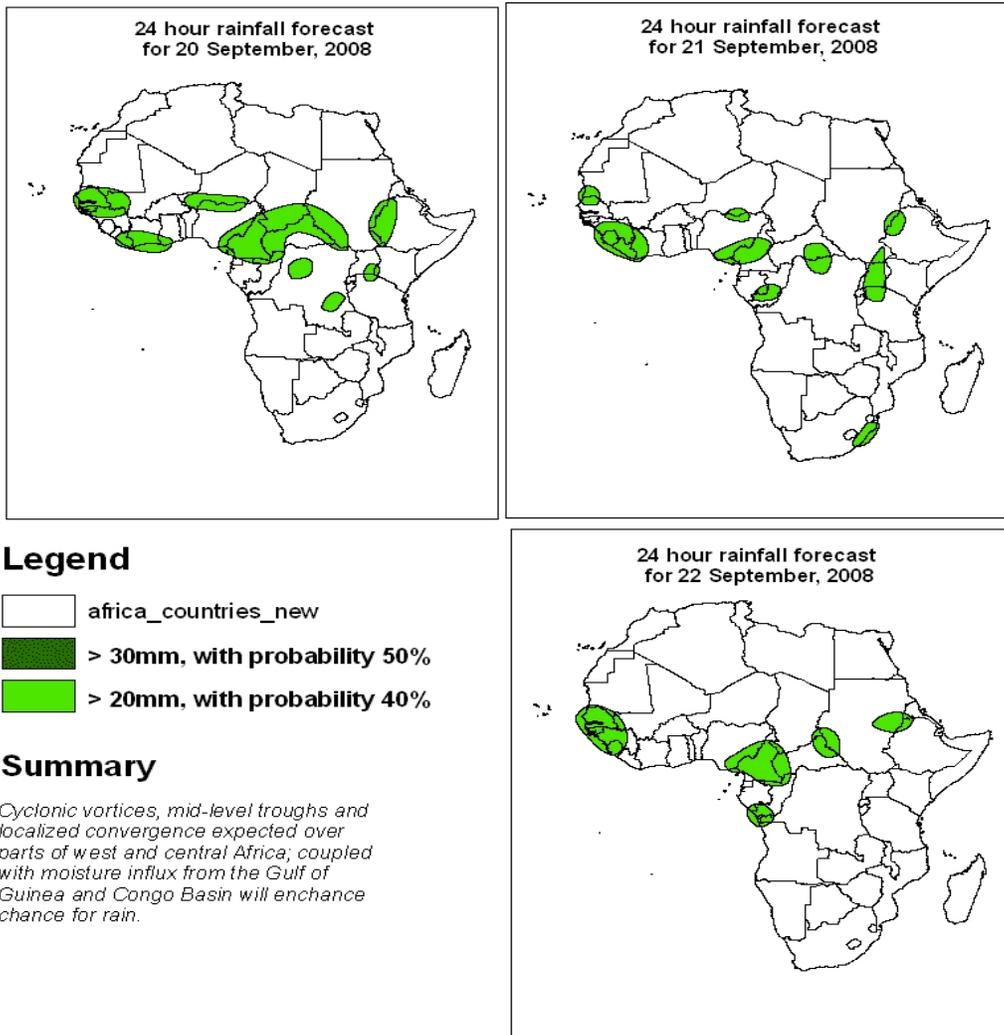
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 19th SEPTEMBER, 2008
Valid: 00Z 20th September – 22nd 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; 20th 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 Northern Africa except over Western Sahara which will be affected by a mid-latitude trough generated by a cyclonic circulation centered over northwest of the Azores Islands. A low-level trough will be featured over Cote d'Ivoire Cameroon. Localized convergence is likely to occur over western Mali, northern Nigeria, southern Sudan, western Ethiopia, northern Congo, northern and southern DRC, Lake Victoria region and Angola. Conversely, localized divergence is likely to occur over much of Nigeria, eastern CAR, western Sudan, central DRC and over East Africa. The Southern African region is expected to be dominated by the merger between the St. Helena's and Mascarene Ridges; with a westerly wave to the south and a sharp back hanging trough to the east of South Africa.

T+48, the entire North Africa is expected to be dominated by the Saharan anticyclonic circulation with cyclonic circulations over the northeast Atlantic Ocean "off-shore the Moroccan coast" and over eastern Mediterranean Sea "off-shore the Libyan and Egyptian coasts". Cyclonic vortices are likely to evolve over eastern Mali, the border between southern Niger and northern Nigeria, over southeastern Nigeria and central Chad. Localized convergence will occur over the borders between southwestern Mauritania/northern Senegal, southern Mali/Guinea Conakry, eastern Chad/western Sudan, northern Ethiopia, southern Sudan, western Congo, Lake Victoria region stretching from eastern Uganda to northwestern Tanzania, southern DRC and over Angola; whereas, localized divergence will prevail over Ghana and environs, much of southeastern Sahel and East Africa. The merger between the St. Helena's and Mascarene ridges over Southern Africa is expected to prevail including the mid-latitude cut-off cyclonic circulation from the previous days sharp back hanging trough over southern Mozambique Channel and southern Madagascar.

T+72, a mid-latitude trough is expected to intrude over northwestern and northeastern Africa with cyclonic vortices likely to develop over western Algeria, western Mauritania and the border between Libya/Chad; hence, as a result, will weaken the Saharan anticyclonic circulation system. The cyclonic vortex featured over eastern Mali will shift slightly southwards to western Niger while the rest will decay. Another cyclonic vortex will likely evolve over northeastern Sudan. Localized convergence will likely occur over central Mali, southern Niger, western and eastern Sudan, the border between Cameroon, CAR and Congo, over Lake Victoria region, southern DRC and Angola. Much of Southern Africa will be dominated by the merger between the St. Helena's and Mascarene ridges with a weak trough over the southwestern coast of South Africa and the persistence of the mid-latitude cyclonic circulation over southern Mozambique Channel.

2.2. Flow at 500hPa:

T+24, an extensive Sub-Tropical anticyclonic circulation system is expected to prevail over Northern Africa, stretching from the tropical Atlantic Ocean onwards to Arabia. A deep cyclonic circulation and a mid-level trough will be featured over the Atlantic north of the Azores Islands and over the northern borders between Libya/Egypt respectively; featuring an omega-block pattern, over the Maghreb region and environs. Equator-wards of these

systems lie the easterlies with a weak shortwave trough featured over western Sudan. Confluent flow-lines are likely to occur over southern Sudan, southwestern Ethiopia, northern DRC and western Tanzania. The flow over the northern sectors of Southern Africa will be dominated by a Sub-Tropical anticyclonic system while, the southern sectors will be under the influence of a westerly wave with a weak trough over South Africa and Mozambique/Malawi respectively.

T+48, a similar flow pattern to that of the previous day is expected over Northern and Southern Africa. However, the Sub-Tropical anticyclonic circulation system over the Maghreb will weaken; as a result, the trough over Libya/Egypt is expected to extend further southwards. The shortwave trough featured over western Sudan will degenerate while another one will be featured over eastern Guinea Conakry. Confluent flows are likely to occur over northeastern DRC. The trough over South Africa will propagate eastwards and slant northwestwards while the one over Mozambique/Malawi will degenerate.

T+72, the omega-block pattern over northern Africa will remain quasi-stationary. The shortwave trough over Guinea will degenerate while another will develop over central Cameroon stretching to southern Chad. Confluent flow-lines will be featured over the Great Lakes region. The slanting trough over eastern South Africa will regenerate to a cut-off mid-level cyclonic circulation over southern Mozambique Channel with the rest of Southern Africa being under the influence of a Sub-Tropical anticyclonic circulation system.

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, a westerly wave polewards and easterlies equator-ward. Embedded within the westerly wave is a cyclonic circulation centered over northeast Atlantic “Azores Islands” and an upper-level trough with its axis extending over Libya onto the northern border of Niger/Chad; which indicates that the omega-block pattern is quite deep. A shortwave trough is likely to develop within the easterlies, over central Nigeria stretching onto southern Niger. 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.

T+48h, the flow over Northern and Southern Africa are expected to be similar to that of the previous day; except for the extension of the upper-level troughs further southwards onto the tropical Atlantic Ocean and eastern Niger respectively. The shortwave trough featured over Nigeria is likely to propagate westwards to Burkina with a cyclonic circulation expected to develop over western Burkina.

T+72h, the troughs over the northern Maghreb are expected to fill-up while the cyclonic circulation featured over Burkina will propagate southwestwards and degenerate into a shortwave trough off the coast of the western Gulf of Guinea States. Upper-level convergence will likely develop over central Niger, at the border between southern Sudan and northeastern DRC, and over the Kenyan coast; whereas a confluent flow is expected over western Ethiopia and a well pronounced trough over the Mozambique Channel.

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