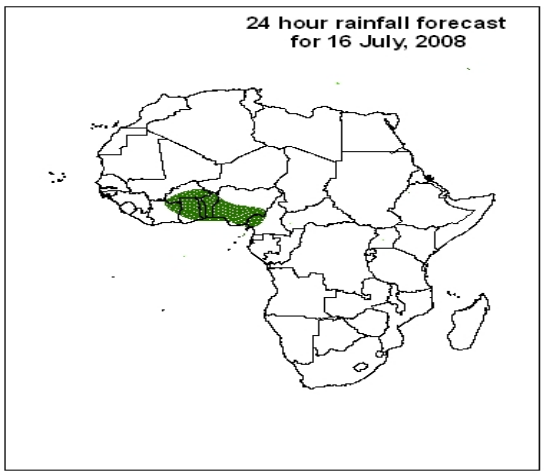
Forecast Guidance for Africa

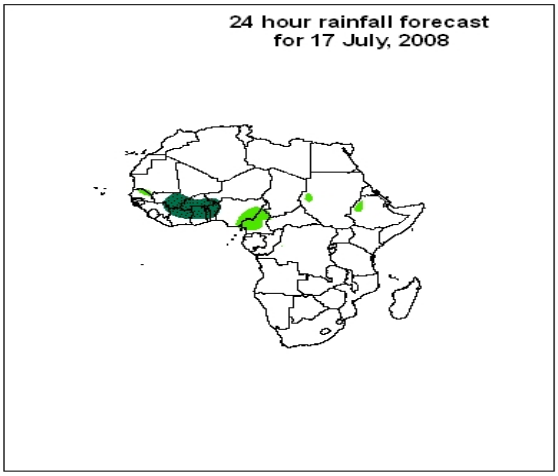
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

FORECAST DISCUSSION 14H00 EST, 15 JULY 2008
Valid: 00Z 16 – 18 JULY, 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.





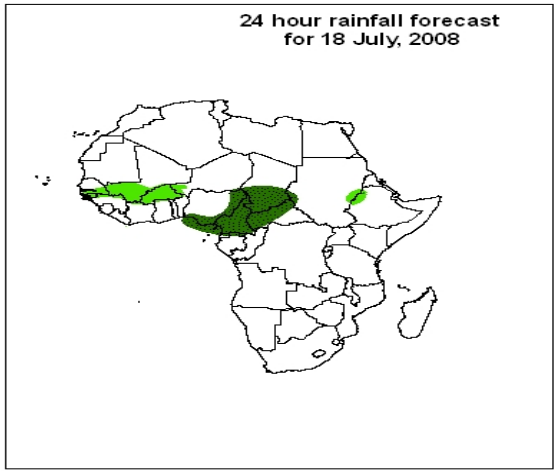
Legend

> 30mm, with probability 50%

> 20mm, with probability 40%

Summary

Moisture intrusion from the Gulf of Guinea with the prevalence of convergence over Sahel and Benin are expected to increase chances of rain over the region. Low level moisture advection from the western Indian Ocean will enhance rainfall over parts of central Africa.



2. Model discussion

Model comparison (Valid from 00Z; 16 July 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 entire North African region is expected to be under a zone of an anticyclonic ridge system. Cyclonic vortices will prevail over central Mali and northern Benin while localized convergence will be featured over northwest and eastern Sudan, northwestern Ethiopia and eastern DRC. Central African Republic and much of central Southern Africa will be under the influence of an anticyclone circulation that will generate strong southeasterly flow over northern parts of Southern Africa extending across DRC into the Gulf of Guinea; while western South Africa will be dominated by a trough that will cause convergence over central South Africa. Southeasterly and southwesterly monsoon are expected to prevail over the Western Indian Ocean region of Eastern Africa.

T+48h, the anticyclonic circulation over North Africa will remain quasi-stationary with its centre located over Tunisia. However, the cyclonic circulation over central Mali will propagate westwards to central Mauritania merging with the vortex from Benin and deepen, causing deep inland intrusion of southwesterlies from the Gulf of Guinea; while another vortex will develop over central Niger. Localized convergence will prevail over central Sudan stretching from the western to eastern parts of the country. The anticyclonic circulation over Central Africa will fade away while that over Southern Africa will intensify and expand southward.

T+72h, the flow pattern will be similar to that of the previous day, except that the cyclonic vortex traversing westwards over western Sahel will continue to deepen, while the intrusion of southwesterly monsoon will spread across the entire Gulf of Guinea region and further inland. Localized convergence axis is expected from Gabon stretching through the Congo basin into Chad.

2.2. Flow at 500hPa

T+24h, an anticyclonic circulation will prevail over the Maghreb flanked by two troughs located off the Moroccan coast and over Egypt respectively. Equator-ward of these systems lie the Easterlies with a perturbation located over central Sahel. Convergence is evident over western Nigeria. The main systems affecting Southern Africa will be a trough over Namibia, north westerlies to the South and an anticyclonic circulation to the east.

T+48h, the situation will remain similar to that of the previous day over Northern Africa but, with the development of cyclonic vortices over western Sahara, Egypt and over the southern tip of Mali; while, a diffluent flow will prevail off the coast of Ghana. A cyclonic circulation will develop over northern Mozambique and environs, while an anticyclone will be featured over southern Madagascar with northerly and northwesterly winds dominating the flow over the eastern and western parts of Southern Africa respectively.

T+72h, the entire Maghreb region will be under the influence of an anticyclonic circulation, while a trough embedded by a cyclonic vortex is expected over Egypt. The flow over the Sahel and Gulf of Guinea Countries will mainly be dominated by easterlies with a cyclonic vortex over western Guinea Conakry. Much of the southern part of the African Continent will be under the influence of an anticyclonic system except over Kenya, Tanzania and Mozambique where cyclonic circulations will be featured and over South Africa where northwesterlies will prevail.

2.3. Flow at 200hPa

T+24h, an extensive upper level subtropical anticyclonic flow pattern is expected to prevail over the entire northern and parts of southern African. Easterlies will dominate equator-ward of the subtropical anticyclones with a diffluent flow over western Nigeria and environs. A trough will prevail over Morocco and westerlies over much of Southern Africa.

T+48h, the trough over Morocco is expected to split the anticyclonic flow over North Africa. Diffluent wind fields will prevail over the eastern and western Sahel, whereas, confluent wind fields will prevail over Lake Victoria and southern DRC. The circulation patterns to the south will be quasi-stationary.

T+72h, the trough over Morocco is expected to weaken giving way to an extensive upper level subtropical anticyclonic flow pattern over North Africa. Diffluent flow patterns are expected over central Sahel embedded on the easterlies. The entire southern part of the continent will be under the influence of a massive anticyclonic system.

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