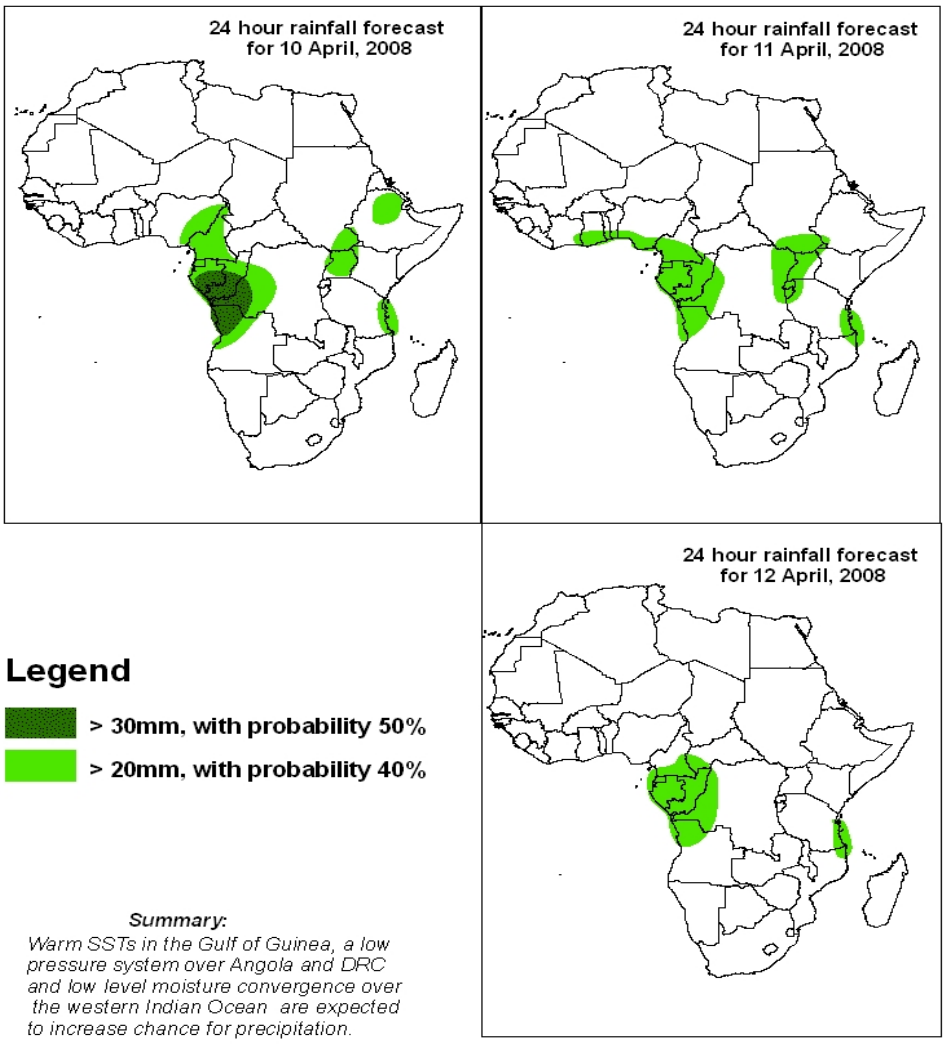
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 09 APRIL 2008
Valid: 00Z, 10-12 APRIL, 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; 09 April 2008): There is a general agreement between the UKMET, ECMWF, and GFS models with respect to positioning of large scale features. However, ECMWF model underestimates the mean sea level pressure at T+24h and the UKMET model compared with GFS and ECMWF models initiates its forecast with a lower MSLP field, especially over the tropic.

2.1. Flow at 850hPa

T+24, an extensive anticyclonic flow pattern is expected to dominate over the southern part of the subcontinent, from the Atlantic Ocean to the western Indian Ocean with a trough over Namibia and southwestern South Africa and another one over southern and western Madagascar. A low pressure area is expected to dominate over Angola and southwestern DRC with a trough along the Tanzanian and Kenyan coasts. An anticyclonic flow system is expected to dominate over the Sahara desert causing a northeast flow of cold air from Egypt trough Sudan and western Ethiopia while an easterly flow pattern is expected to dominate over Somalia and eastern Ethiopia and cause convergence over western Ethiopia, eastern Sudan and western Uganda.

T+48, an extensive anticyclonic flow pattern is expected to prevail over the southern part of the subcontinent with a trough over southern Namibia and another one over southern Madagascar. A low pressure system is expected to dominate over northeastern Madagascar with another one over Angola and western DRC and a trough over the Tanzanian and Kenyan coasts. A trough is expected to dominate over Sudan and Ethiopian boarders while a northeasterly flow pattern is expected to dominate over Somalia. An anticyclonic circulation system is expected to dominate over the Sahara desert and cause convergence over the Sahel with the south easterlies emanating from the coast of Guinea.

T+72, the extensive anticyclonic flow pattern is expected to prevail over the southern part of the subcontinent with a low pressure over southeastern South Africa, a trough over southern Namibia and another one over southern Madagascar. A low pressure system is expected to prevail over northeastern Madagascar as well as the other one over Angola and western DRC and the trough over the Tanzanian and Kenyan coasts. The trough over the Sudan and Ethiopian boarders is expected to prevail with an easterly flow pattern over Somalia.

2.2. Flow at 500hPa

T+24h, two anticyclonic circulation systems are expected to dominate over the northern hemisphere part of Africa; associated respectively with the Sahara and the Arabian ridges separated by a cyclonic circulation that extends from northeastern Egypt through northern Sudan to southern Chad. In general, a large part of the Southern Africa subcontinent is expected to be dominated by an anticyclonic circulation with a weak cyclonic circulation

over the Gulf of Guinea, and another one that is associated with a frontal system over the southwest Indian Ocean to the southeast of Madagascar.

T+48h, the anticyclonic/cyclonic circulation systems over the northern hemisphere as well as over the southern hemisphere are expected to prevail while the middle level convergence over the Gulf of Guinea is expected to be enhanced by an increasing northerly flow from Sahel and southerly flow from the Atlantic.

T+72h, the cyclonic circulation over the northern part of the continent is expected to expand southwards to northern Cameroon and Central African Republic and contribute to a middle level convergence over southwestern Sudan, while the middle level convergence is expected to prevail over the Gulf of Guinea. The cyclonic circulation to the south of Madagascar is expected to weaken but a cyclonic circulation will mostly dominate over southern Mozambique, the Mozambique Channel, eastern South Africa and southern Madagascar. The rest of the continent will be dominated by an anticyclonic circulation.

2.3. Flow at 200hPa

T+24h, two upper level anticyclonic circulation systems separated by a trough over Libya, Egypt and Sudan are expected to dominate over North Africa. A divergent flow pattern is expected to dominate over DRC, northern Angola and Tanzania, while a westerly flow pattern is expected to dominate over southern Africa.

T+48h, an anticyclonic circulation is expected to prevail over west Africa causing divergence over southern Chad and western Cameroon. The cyclonic flow pattern over Sudan is expected to expand to western Ethiopia and northern Kenya. The divergent flow pattern over DRC is expected to weaken while a westerly flow is expected to prevail over southern Africa.

T+72h, the upper level anticyclonic circulation over western Africa Sahel is expected to weaken with a divergent flow pattern over Nigeria, while the cyclonic circulation over Ethiopia is expected to expand eastward causing the anticyclonic circulation to the east to move further east to the Gulf of Aden. A divergent flow pattern is expected to prevail over northern DRC and western Angola while a cyclonic circulation is expected to develop over western Tanzania and southern Kenya.

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