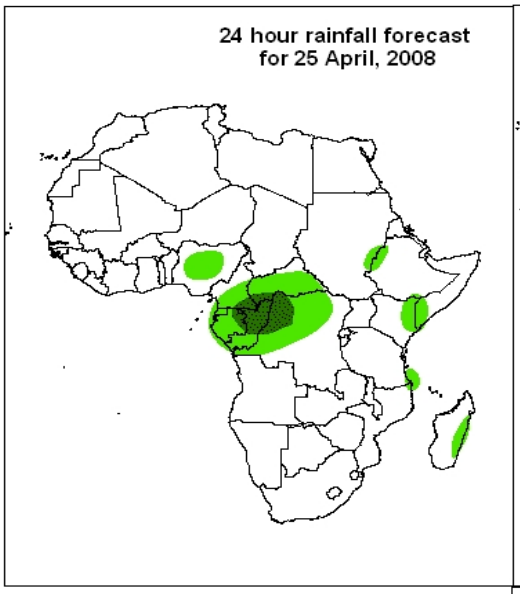
Forecast Guidance for Africa

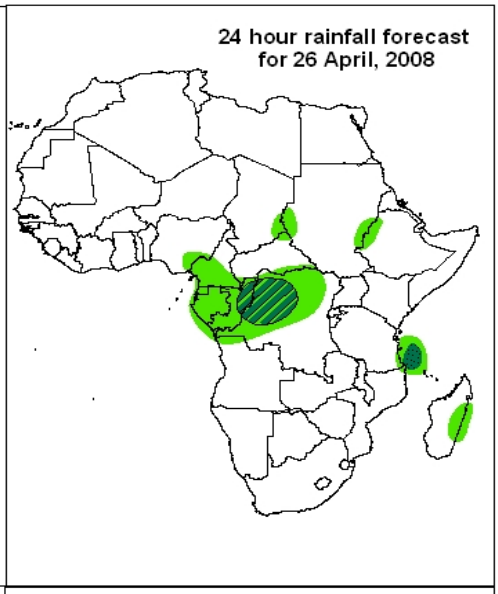
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

FORECAST DISCUSSION 14H00 EST, 24 APRIL 2008
Valid: 00Z, 25-27 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.





Legend

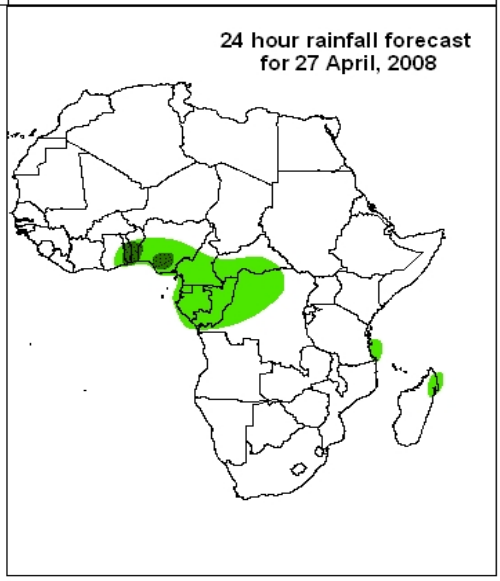
> 40mm, with probability 60%

> 30mm, with probability 50%

> 20mm, with probability 40%

Summary:

Warm SSTs in the Gulf of Guinea with associated moist southeasterly and southwesterly; a prevailing low pressure area over central Africa with associated low level moisture convergence and low level moisture convergence over the western Indian Ocean are expected to increase chance for precipitation.



2. Model discussion

Model comparison (Valid from 00Z; 24 April 2008): The UKMET model persistently underestimates the values of PMSL in comparison to the ECMWF and GFS models.

2.1. Flow at 850hPa

T+24h, an anticyclonic flow pattern is expected to dominate over North Africa with a low pressure off the coast of Mauritania and a general low pressure area over the Sahel, Central and Eastern Africa, causing isolated convergence in the area. A low pressure is expected to dominate over tropical western Indian Ocean to northern Madagascar contributing to a southeasterly flow over Kenya, Tanzania and northern Mozambique to Angola and DRC. The moist southeasterly flow over the Gulf of Guinea is expected to turn into southwesterlies over southern Sahel causing convergence over western Mali, Burkina Faso, northern Benin and Nigeria. An extensive anticyclonic flow pattern is expected to dominate over southern Africa, from the Atlantic Ocean to western Indian Ocean with a trough over southwestern South Africa and northern Mozambique Channel.

T+48h, an anticyclonic flow pattern is expected to prevail over a large part of North Africa with a low pressure off the coast of Mauritania and a general low pressure area over the Sahel, Central and Eastern Africa. A low pressure area is expected to prevail off the coast of Somalia and Kenya to northern Madagascar. A southeasterly flow pattern is expected to prevail along the coast of Somalia, Tanzania and northern Mozambique. An extensive anticyclonic flow pattern is expected to prevail over southern Africa, from the Atlantic Ocean to western Indian Ocean with a trough over southwestern South Africa and a low pressure over central Mozambique Channel including western Madagascar.

T+72h, an anticyclonic flow pattern is expected to prevail over North Africa as well as the general low pressure area over the Sahel and Eastern Africa while a low pressure off the coast of Mauritania is expected to move slightly westwards in to the Atlantic Ocean . A low pressure area is expected to prevail off the coast of Somalia and Kenya to northern Madagascar. A southeasterly flow is expected to prevail along the coast of Somalia to northern Mozambique. An anticyclonic flow system is expected to prevail over a large part of southern Africa due to St. Helena and Mascarene high pressure ridges with a low pressure over Central Mozambique Channel and over southwestern Madagascar.

2.2. Flow at 500hPa

T+24h, an upper level trough is expected to dominate over Tunisia, northern Libya and northern Egypt. An anticyclonic circulation system is expected to dominate to the southern Africa, to the Red Sea, with the exception of over Nigeria through Cameroon, southern Chad, C.A.R, northern DRC, southern Sudan and western Ethiopia where a cyclonic circulation system is expected to extend westward. An anticyclonic circulation is expected to dominate over eastern and southern Africa with a weak middle level trough associated with a frontal system over central Mozambique and southern Madagascar.

T+48h, an upper level trough is expected to prevail over Tunisia, northern Libya and northern Egypt. An anticyclonic circulation system is expected to dominate to the southern

Africa, to the Red Sea, with the exception of over Nigeria through Cameroon, southern Chad, C.A.R, northern DRC, southern Sudan and western Ethiopia where a cyclonic circulation system is expected to extend westward. A trough system associated with a frontal system to the southeast of South Africa is expected to dominate over southern Africa with an embedded anticyclonic circulation over Botswana, Zimbabwe and Zambia.

T+72h, the trough system over northern Africa is expected to extend southward and weaken the anticyclonic circulation over western Africa, allowing for a cyclonic circulation is expected to dominate over the Sahel coastal countries, and over Gabon, Congo and western DRC. An anticyclonic circulation is expected to prevail over eastern and southern Africa with a weak cyclonic circulation over Angola and northern Namibia.

2.3. Flow at 200hPa

T+24h, an upper level westerly jet stream is expected to dominate over North Africa with an upper level trough over Mediterranean region. A divergent flow pattern is expected to dominate over Cameroon, Gabon, Central African Republic (C.A.R.) and western DRC. A westerly flow pattern is expected to dominate over southern Africa with an upper level ridge associated with a frontal system to the southeast of South Africa.

T+48h, an upper level westerly jet is expected to prevail over North Africa with a slight southward movement as a result of a northward development of divergent flow over Nigeria, Cameroon, « C.A.R. » and southwestern Sudan. A divergent flow pattern is expected to prevail over western DRC. A westerly flow pattern is expected to dominate over southern Africa.

T+72h, an upper level westerly jet is expected to prevail over North Africa with divergent flow over western Nigeria and southern Chad. An upper level trough is expected to develop over the Gulf of Guinea causing divergent flow pattern to develop further east (over northern DRC, Kenya, and Somalia). A westerly flow pattern is expected to prevail over southern Africa.

Authors: 1. Leon Guy Razafindrakoto ("Direction Generale de la Meteorologie" (DGM), Madagascar and African Desk)

2. Arlindo Meque ("Instituto Nacional de Meteorologia" (INAM), Mozambique and African Desk).