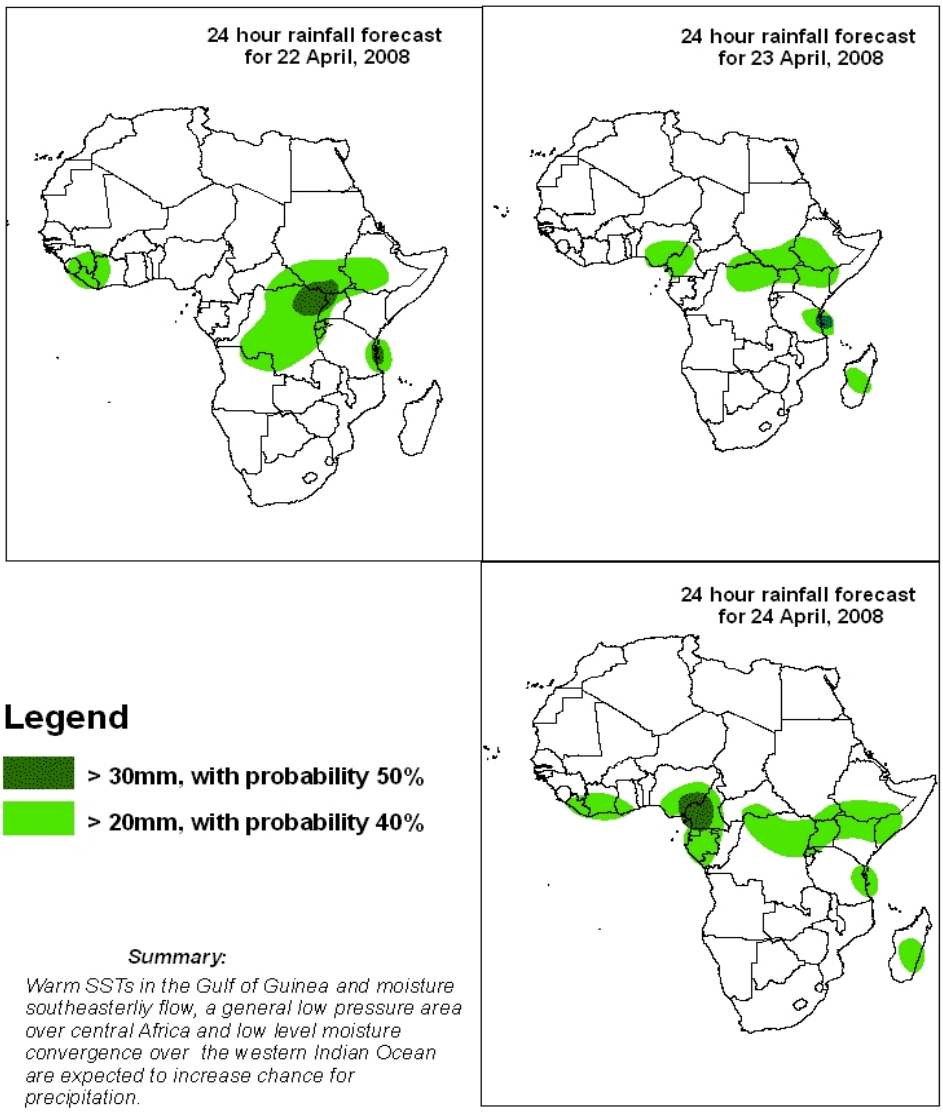
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 21 APRIL 2008
Valid: 00Z, 22-24 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; 21 April 2008): There is a general agreement between the UKMET, ECMWF, and GFS models with respect to positioning of large scale features. However, the GFS model gives higher values of PMSL in the tropical region between $10^oN – 10^oS$ as compared to the ECMWF and UKMET models.

2.1. Flow at 850hPa

T+24h, an anticyclonic flow system is expected to dominate over eastern North Africa with a trough to the west (over eastern Morocco and western Algeria) and a general low pressure area over the Sahel and Eastern Africa, causing isolated convergence. A trough is expected to dominate off the coast of Somalia and Kenya while a southeasterly flow is expected to dominate along the coast of Tanzania causing moisture advection inland from the Indian Ocean. An anticyclonic flow pattern is expected to dominate over a large part of southern Africa due to the St. Helena and Mascarene ridges with a low pressure over south of the Mozambique Channel separating the two high pressure centers.

T+48h, an anticyclonic flow system is expected to dominate over a large part of North Africa with a shallow trough over northern Libya. A general low pressure area is expected to prevail in the Sahel and Eastern Africa, causing isolated convergence over there. A low pressure is expected to dominate off the coast of Somalia and Kenya while a strong southeasterly flow pattern is expected to dominate over Tanzanian and northern Mozambique coasts to Angola and West Africa. An anticyclonic flow pattern is expected to prevail over a large part of southern Africa due to the St. Helena and Mascarene ridges with a low pressure over south of the Mozambique Channel separating the two high pressure centers.

T+72h, an anticyclonic flow system is expected to dominate over a large part of North Africa and a general low pressure area is expected to prevail in the Sahel and Eastern Africa, causing isolated convergence over there. A low pressure area is expected to prevail off the coast of Somalia as well as the southeasterly flow pattern over Tanzanian and northern Mozambique coasts to Angola to West Africa. An anticyclonic flow pattern is expected to prevail over a large part of southern Africa due to the St. Helena and Mascarene ridges with a trough over southern Madagascar of separating the two high pressure centers.

2.2. Flow at 500hPa

T+24h, an anticyclonic circulation system is expected to dominate over northern and western Africa, and a cyclonic circulation system over Central Africa including the Gulf of Guinea, eastern Nigeria, with middle level convergence over southwestern Cameroon. An easterly flow pattern is expected to dominate over eastern Africa and contribute to convergence over central DRC, southern Sudan, western Ethiopia and western Kenya. An anticyclonic circulation system is expected to dominate over southern Africa with a middle level trough associated with a frontal system over eastern South Africa, Zimbabwe and southern Mozambique.

T+48h, the anticyclonic circulation system over northern Africa is expected to prevail and maintain convergent flow pattern over northeastern Nigeria, western Sudan. An easterly

flow pattern is expected to prevail over eastern Africa contributing to convergence over Congo, western and northern DRC, southern Sudan and southern Somalia. An anticyclonic circulation system is expected to develop over southwestern Africa while the trough system over the southeastern Africa is expected to extend towards southern Zambia and northern Mozambique.

T+72h, the anticyclonic circulation over northern Africa is expected to expand to the south and to the west and reduce the convergent flow pattern over central Africa while a localized middle level convergent flow is expected to dominate over southern Ethiopia and Somalia. An anticyclonic circulation system is expected to dominate over southwestern and a middle level trough associated with a frontal system is expected to extend over Zambia, Zimbabwe, northern Mozambique and the Mozambique Channel.

2.3. Flow at 200hPa

T+24h, a small anticyclonic circulation system is expected to dominate over western Africa with a divergent flow pattern over Cameroon. Divergent flow pattern with anticyclonic circulation system is expected to dominate over northern Zambia, Central African republic, southern Somalia, and eastern Tanzania. An easterly flow pattern is expected to dominate over southern Africa with an upper level trough associated with a frontal system into the Indian Ocean east of South Africa.

T+48h, the small anticyclonic circulation system over western Africa is expected to be centered over northern Nigeria with divergent flow pattern over southern Chad, while localized divergent flow pattern is expected to increase over central and eastern Africa (Gabon, Congo, central DRC, southern Sudan, northern Tanzania and northern Kenya). An easterly flow pattern is expected to prevail over southern Africa while the upper level trough associated with a frontal system into the Indian Ocean is expected to move eastward.

T+72h, a localized divergent flow pattern is expected to develop over Benin and northern Cameroon. A weak divergent flow pattern is expected to prevail over Gabon, western and central DRC and southern Sudan, while it is expected to be suppressed over eastern Africa. An easterly flow pattern is expected to prevail over southern Africa while the upper level trough associated with a frontal system into the Indian Ocean is expected to weaken.

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).