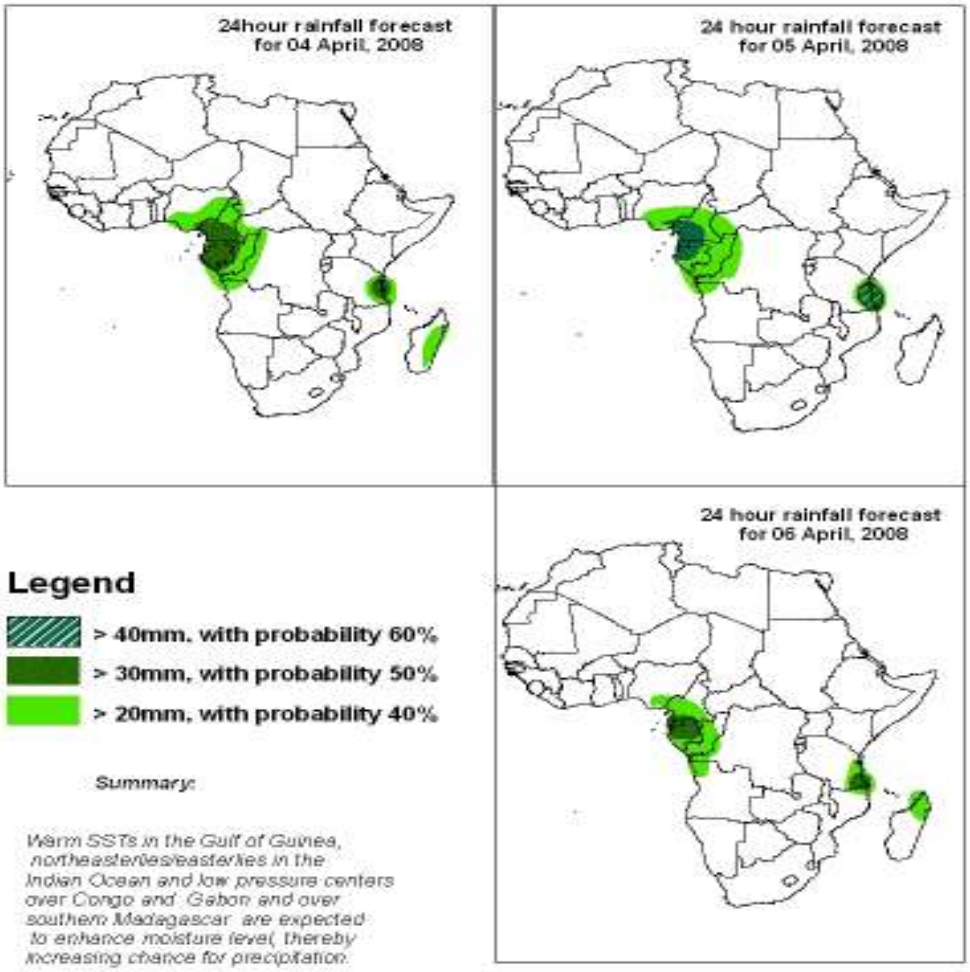
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 03 APRIL 2008
Valid: 00Z, 04-06 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; 03 March 2008): Over all, there is a general agreement between the UKMET, ECMWF, and GFS models with respect to positioning large scale features. However, the UKMET model underestimates the intensity of surface pressure over land, especially in the tropics between 10oN-10oS. It also underestimates the relative humidity at 700hPa. In addition, the 200hPa winds are stronger in magnitude than both the UKMET and ECMWF models.

2.1. Flow at 850hPa

T+24h, an anticyclonic circulation is expected to dominate over southwestern Indian Ocean up to southern Mozambique, Zimbabwe, southern Zambia, eastern Botswana and northeastern South Africa due to the Mascarine high pressure system that will enclose a low pressure system over southern Madagascar. A trough system is expected to dominate from northern Namibia and western Botswana to the southern tip of South Africa with a low pressure system over southern Gabon and Congo. The St. Helena high pressure ridge is expected to dominate over western South Africa. A confluent flow is expected to dominate over the Tanzanian coast due to the northeasterly flow emanating from an anticyclonic flow system at the tip of the Horn of Africa.

T+48h, the low pressure area over southern Madagascar is expected to stretch southeastward splitting the Mascarine high pressure system in two parts, one over northeastern Madagascar and other over southern Mozambique, Zimbabwe, southern Zambia, eastern Botswana and northeastern South Africa. The trough system over Namibia, western Botswana and southern South Africa is expected to prevail. A low pressure over southern Gabon and Congo is expected to move further to the west while the confluent flow pattern over the Tanzanian coast is expected to prevail. The St. Helena high pressure system ridge to the west of South Africa is expected to prevail.

T+72h, an anticyclonic flow pattern is expected to dominate over the southern part of the subcontinent (Mozambique, Zambia, Zimbabwe, Botswana and northeastern South Africa including Madagascar) from the Atlantic to western south Indian Ocean with a trough over southern South Africa that is expected to strengthen and expand slightly northwards to join with the trough over northern Namibia and western Botswana. The confluent flow system at the Tanzanian coast is expected to prevail while the low pressure over southern Gabon and Congo is expected to fill.

2.2. Flow at 500hPa

T+24h, a middle level cyclonic circulation pattern is expected to dominate over the Mozambique Channel including central and northern Mozambique. This system is associated with a frontal system to the south west of Madagascar. Another cyclonic circulation system is expected to dominate over the Atlantic Ocean southwest of South Africa. An anticyclonic circulation system is expected to dominate over Namibia and

Zimbabwe. An easterly flow pattern is expected to dominate over the northern part of the subcontinent through Tanzania to the Atlantic Ocean due to the two anticyclonic circulation systems over the Indian Ocean to the south and the Arabian anticyclone to the north.

T+48h, the middle level cyclonic circulation associated with the frontal system to the south west of Madagascar is expected to weaken, while the middle level trough circulation in the Atlantic Ocean is expected to expand to western Namibia. An easterly flow pattern is expected to dominate the northern part of the subcontinent due to the prevailing Arabian and Mascarene anticyclones.

T+72h, the middle level cyclonic circulation associated with the frontal system to the south west of Madagascar is expected to move to the southeast of Madagascar, while the middle level trough circulation in the Atlantic Ocean is expected to extend over to Namibia and South Africa. An easterly flow pattern is expected to prevail over the northern part of the subcontinent including Zimbabwe, Mozambique and Madagascar.

2.3. Flow at 200hPa

T+24h, a localized upper level divergence is expected to dominate over Congo, Gabon, northern DRC and southern Sudan, with convergence over northern Tanzania. A westerly upper level flow is expected to dominate through southern Angola and Namibia to northern Mozambique and northern Madagascar, causing a significant wind shear at the 500hPa flow. A narrow upper level cyclonic circulation associated with strong wind is expected to separate the upper level anticyclonic circulations into two systems; one to the south east of South Africa and the other to the south east of Madagascar.

T+48h, a localized upper level divergent circulation is expected to prevail and move slightly to western DRC and Gabon, with convergence over western Tanzania, Kenya, southern Sudan and northwestern DRC, while a westerly flow is expected to prevail over the southern part of the subcontinent. The upper level flow system in the southwest Indian Ocean is expected to weaken.

T+72h, a localized upper level divergent circulation is expected to continue moving westward over Congo and in the Atlantic Ocean, while a westerly flow is expected to develop over Namibia, Botswana, South Africa, Zimbabwe and Mozambique when the upper level flow system in the southwest Indian Ocean will move further east. A new upper level anticyclonic flow with a significant divergence is expected to develop in the Indian Ocean to the southeast of the Tanzanian coast as a result of a possibly deep convection.

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