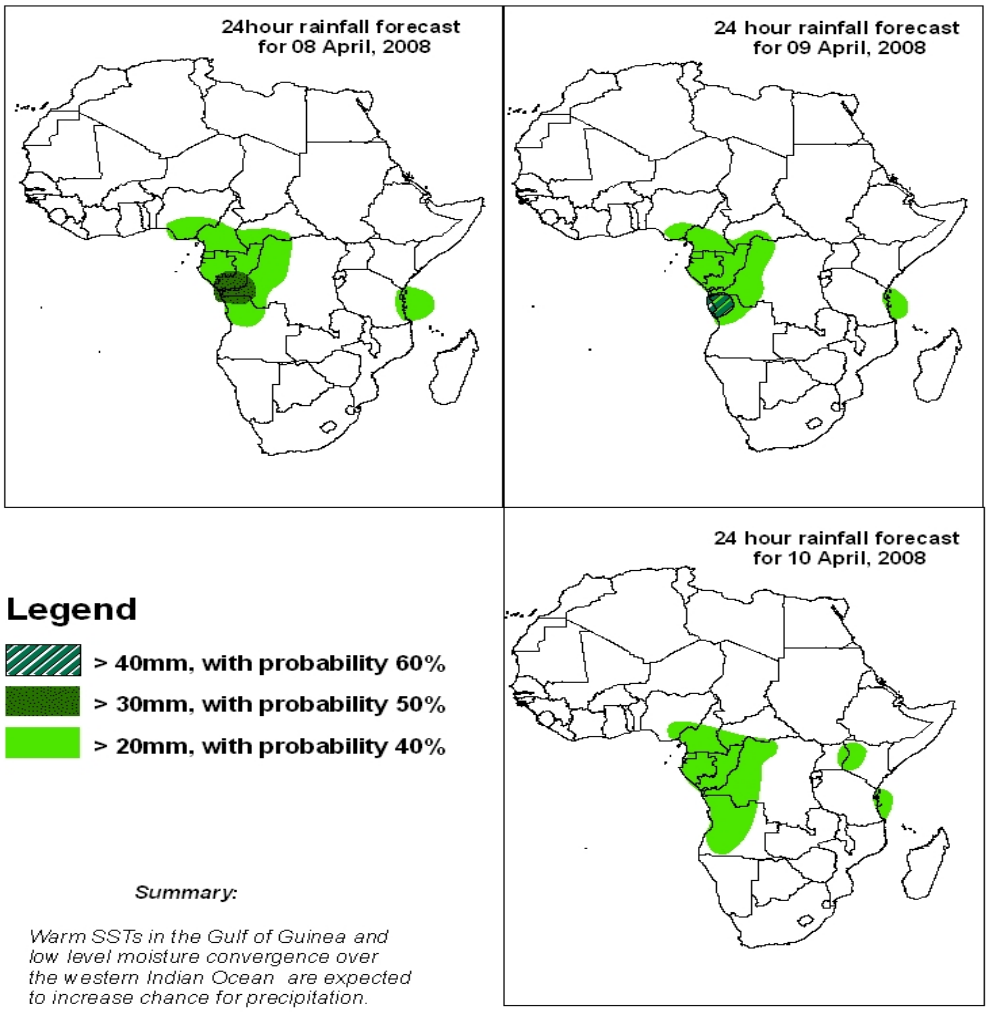
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 07 APRIL 2008
Valid: 00Z, 08-10 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; 07 April 2008): Over all, there is a general agreement between the UKMET, ECMWF, and GFS models with respect to positioning of large scale features. However, according to the GFS and ECMWF models, a high pressure system is expected to develop over eastern Ethiopia during the period, while the UKMET model expects a low pressure system to develop.

2.1. Flow at 850hPa

T+24, two anticyclonic flow systems are expected to dominate over southern (South Africa, southern Mozambique, Zimbabwe, southern Zambia and Botswana) and eastern (eastern Madagascar) parts of the subcontinent with a trough in between (Mozambique Channel and southern Madagascar). A low pressure area is expected to dominate over DRC, off the coast of Tanzania and over western Namibia that will cause convergence over DRC, Uganda, Angola and Gabon. A southeasterly flow is expected to dominate over Tanzania and along the northern coast of Mozambique.

T+48, an extensive anticyclonic flow pattern is expected to dominate over the southern and eastern parts of the subcontinent, from the Atlantic Ocean to the western Indian Ocean with a low pressure system over western Namibia an northwestern South Africa. The low pressure area over DRC is expected to prevail as well as the one off the coast of Tanzania. The southeasterly flow over northern Mozambique and Tanzania is expected to prevail.

T+72, the extensive anticyclonic flow pattern is expected to prevail over the southern and eastern parts of the subcontinent as well as the low pressure over western Namibia and northwestern South Africa that is expected to move slightly southeastwards reaching the tip of South Africa. A shallow trough is expected to dominate over the central part of the Mozambique Channel while another one is expected to dominate over western Angola. The low pressure over DRC and the one off the coast of Tanzania are expected to prevail as well as the southeasterly flow over northern Mozambique and Tanzania.

2.2. Flow at 500hPa

T+24h, two expansive anticyclonic circulations are expected to dominate over the northern hemisphere part of Africa associated respectively with the Sahel and the Arabian anticyclones. These two systems will be separated by a weak cyclonic circulation over northern Chad and Libya. Southern Africa is expected to be dominated by two anticyclonic circulations, one will be centered over eastern Angola, and the other one will be associated with the Mascarene anticyclone. A northeasterly flow pattern will prevail between 10^{o}N – 5^{o}S latitudes, and westerly flow will prevail over southern Africa. A cyclonic circulation is expected to dominate over the Gulf of Guinea and the Indian Ocean to the north of Madagascar, while a weak middle level cyclonic circulation associated with a frontal system is expected to dominate to the east of southern Africa.

T+48h, the Arabian anticyclonic circulation and a cyclonic circulation to its west are expected to move northeastward, while the anticyclonic circulation over Angola is expected to move westward. The cyclonic circulation in the Indian Ocean to the north of Madagascar is expected to expand, while the middle level disturbance over southern Africa is expected to move to the southeast of Madagascar.

T+72h, a cyclonic circulation is expected to develop over western Angola and western Namibia. The anticyclonic circulation associated with the Mascarene anticyclone is expected to expand and dominate over northern Madagascar and northern Mozambique, while a weak cyclonic flow pattern is expected to dominate over the Indian Ocean to the east of southern Mozambique.

2.3. Flow at 200hPa

T+24h, three upper level anticyclonic circulation systems (over southern Sahel, central Africa, and southern Ethiopia) with embedded localized divergent flow patterns are expected to dominate over the continent (over southern DRC, southern Sudan, southern Ethiopia and western Angola respectively) causing a westerly flow pattern over southern Africa. An upper level disturbance is expected to develop over the tip of South Africa.

T+48h, the divergence over Central African Republic, western Angola , and northeastern DRC is expected to prevail and cause an upper level convergent flow over northern Tanzania, while a westerly flow pattern is expected to prevail over southern Africa with an upper level disturbance to the southeast of South Africa.

T+72h, the upper level anticyclonic circulation over the Horn Africa is expected to move northeastward with a significant divergence over central Ethiopia while an upper level divergent flow is expected to prevail over western Angola and an upper level disturbance is expected to prevail over the southwestern Indian Ocean.

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