



## Forecast Guidance for Africa

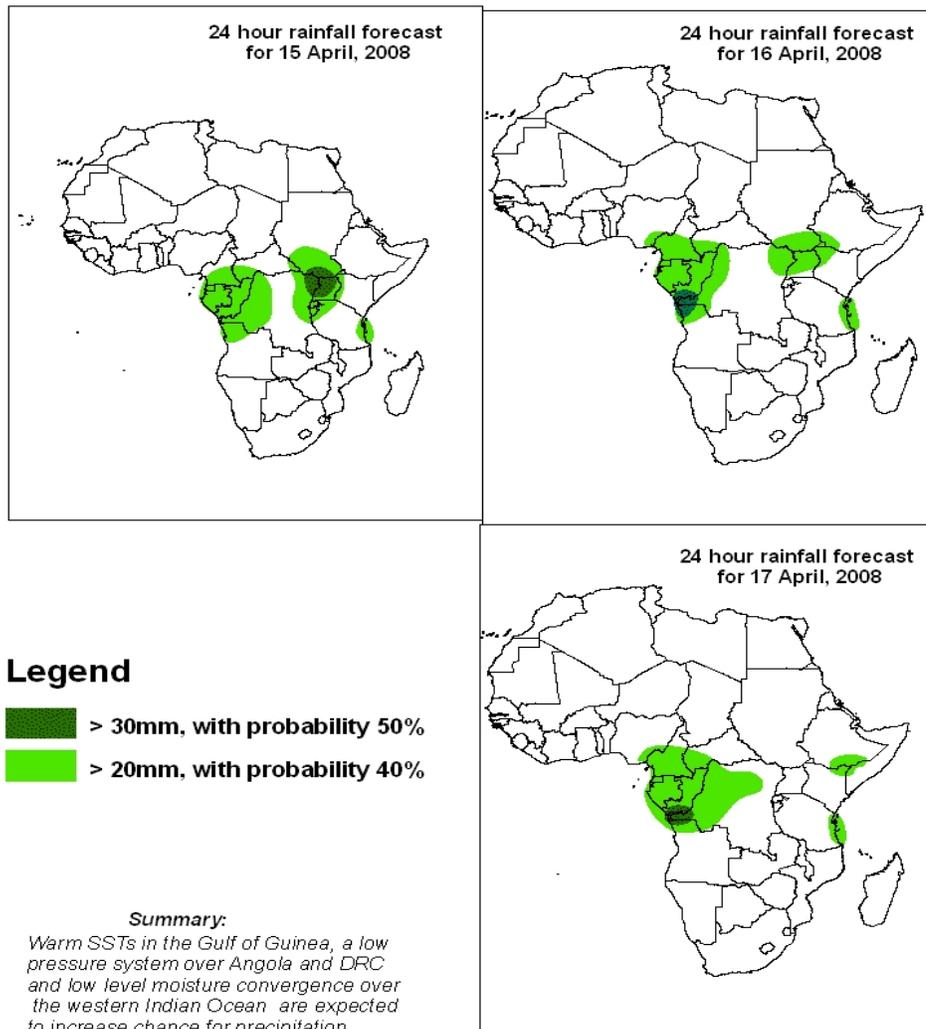
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

**FORECAST DISCUSSION 14H00 EST, 14 APRIL 2008**

**Valid: 00Z, 15-17APRIL, 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; 14 April 2008): There is a general agreement between the UKMET, ECMWF, and GFS models with respect to positioning of large scale features. However, the UKMET MSLP fails to capture the east African ridge which it is well-defined by the GFS and ECMWF models. The UKMET model therefore underestimates the semi-permanent anticyclone over Ethiopia.*

### **2.1. Flow at 850hPa**

T+24, an anticyclonic flow pattern is expected to dominate over Western Sahara desert (over Algeria, Tunisia, Libya, northwestern Chad, northern Niger, northern Mali and Mauritania) with a trough off the coast of Morocco and low pressure over Ethiopia and Sudan border, Eastern DRC and off the coast of Tanzania including northern Madagascar. An extensive anticyclonic flow pattern is expected to dominate the southern Africa, from the Atlantic Ocean to western Indian Ocean with a trough over southern Namibia and western South Africa and a low pressure system over southern Madagascar. A south easterly flow pattern is expected to dominate over northern Mozambique.

T+48, an anticyclonic flow pattern is expected to prevail over the Western Sahara desert, with a trough over northeastern Sudan and northwestern Ethiopia and over Gabon, Uganda and northern Angola. Northeasterlies associated with the anticyclonic flow over the Western Sahara desert and the trough over Sudan and Ethiopia border are expected to converge with the southeasterlies from the Gulf of Guinea and create convergence activities over western Africa. An extensive anticyclonic flow pattern is expected to prevail over southern Africa with a trough over southern Namibia and south of the Mozambique Channel.

T+72, an anticyclonic flow pattern is expected to dominate over the central part of the Sahara desert with a low pressure to the west (over western Algeria and eastern Morocco) and a trough to the east (over Sudan and western Ethiopia). A trough is expected to dominate over Gabon, Congo, northern Angola and western DRC while a low pressure system is expected to dominate over northern Madagascar. An extensive anticyclonic flow pattern is expected to dominate over southern Africa with a trough over southwestern Namibia and southern Madagascar.

### **2.2. Flow at 500hPa**

T+24h, an expansive anticyclonic circulation system is expected to dominate over the Sahara with divergent northeasterlies over Sahel. Eastern Africa and central Africa will also be dominated by an anticyclonic flow system. These systems will cause a middle level convergence over southwestern Sudan, Central African Republic, southern Cameroon, western DRC, and northwestern Angola. A weak cyclonic circulation is expected to dominate over southeastern Africa including the Mozambique Channel.

T+48h, an anticyclonic circulation system is expected to prevail over north, east and central Africa, and maintain a middle level convergent flow pattern over Central African Republic, Congo, western DRC and northwestern Angola. A localized cyclonic circulation is expected to develop over the Horn of Africa. In general, a weak cyclonic circulation

associated with a frontal system to the south of South Africa is expected to prevail over southern Africa including the Mozambique Channel.

T+72h, the anticyclonic circulation over North Africa is expected to expand and force the cyclonic circulation over the Horn of Africa to move further east over the Gulf of Aden. A new anticyclonic circulation system is expected to develop over central Africa, causing a localized convergent flow over northwestern DRC, Congo, Gabon and southern Cameroon, and a cyclonic circulation to develop over northwestern Namibia. An anticyclonic circulation associated with the St. Helene ridge is expected to dominate over southern Africa and push a frontal system to the east in the southwest of Indian Ocean.

### **2.3. Flow at 200hPa**

T+24h, two upper level westerly jets are expected to dominate respectively over northern and southern Africa, with a localized divergent flow pattern in between the jets over the tropical region (eg. : Ghana, Cameroon, DRC and eastern Tanzania).

T+48h, the upper level jet over northern Africa is expected to move slightly to the south over southwestern Sahel and contribute to confluent flow further east over central Sudan. A divergent flow pattern is expected to dominate over Congo, northwestern Angola, northwestern DRC and southwestern Ethiopia, with an upper level convergent flow over Tanzania and southern DRC. A westerly flow pattern is expected to prevail over southern Africa with a divergent southerly flow over the Tip of South Africa.

T+72h, the upper level jet over northern Africa is expected to go back to the north while a divergent flow pattern is expected to develop over Congo, Cameroon, Gabon, northern DRC, southern Ethiopia and northern Tanzania. An upper level anticyclonic circulation is expected to dominate over South Africa with upper level divergent flow over the Indian Ocean to the south of South Africa.

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