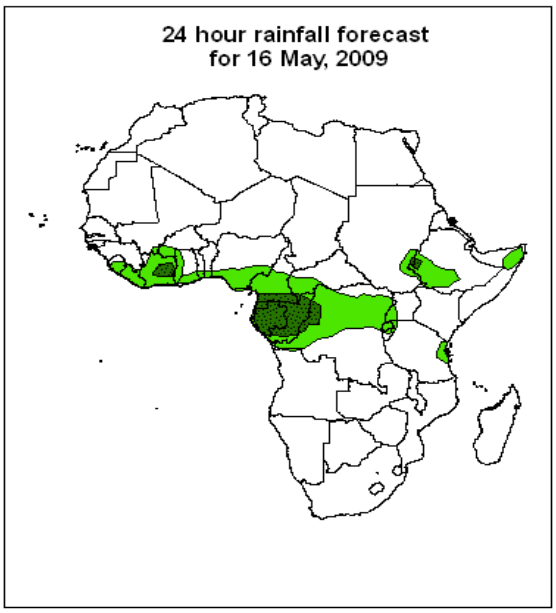
Forecast Guidance for Africa

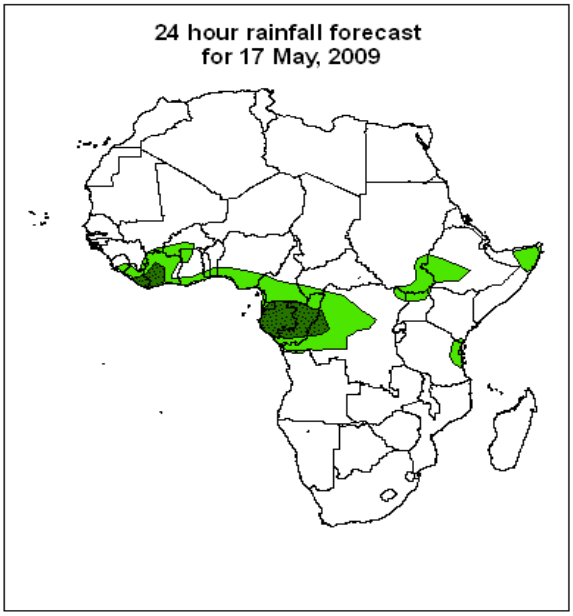
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 15 MAY, 2009
Valid: 00Z 16 MAY – 18 MAY, 2009

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.



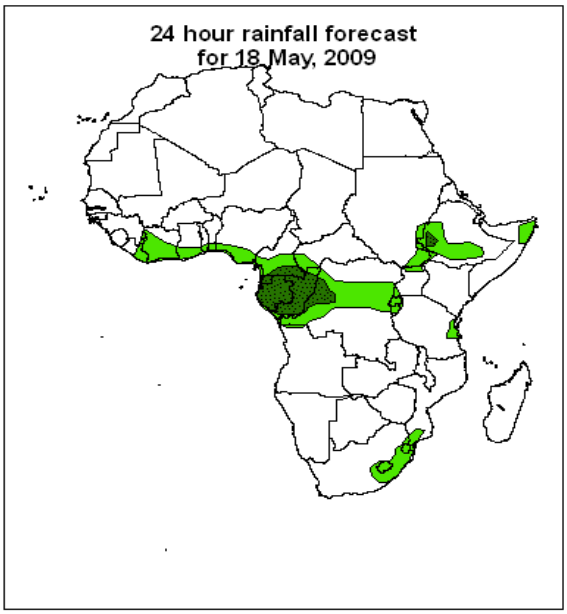


Legend

africa_countries_new

> 30mm, with probability 50%

> 20mm, with probability 40%



Summary

The apparent merger of the Saharan with the Azores anti-cyclonic systems is expected to block the interaction between the mid-latitude and Equatorial troughs across northwestern Africa. Localized convegence and confluences lines over Gulf of Guinea extending into Congo basin, in association with moisture flux from Southwest Indian and Atlantic oceans are expected to enchance chance for precipitation.

2. Model discussion

Model comparison (Valid from 00Z; 15 May, 2009): all the three models are in general agreement especially with respect to the positioning of large scale features, however, the UK model tends to give lower values than both the GFS and ECMWF models especially in the Equatorial region (10^oS and 10^oN).

2.1. Flow at 850hPa

T+24h: In the northern hemisphere, the apparent merger of the Saharan with the Azores anti-cyclonic systems is expected to block the interaction between the mid-latitude and Equatorial troughs across northwestern Africa; however the weakening of the Arabian anti-cyclonic system and its southward movement over northwestern Indian Ocean is expected to allow the interaction between the mid-latitude and Equatorial troughs across the horn of Africa. A closed cyclonic circulation system is expected to develop over central Mediterranean Sea. Localized convergence and confluent lines are expected over the Gulf of Guinea region, Cameroun, Central African Republic, northern DR Congo, southern Sudan, northern Uganda and southern Ethiopia. In southern Africa, the Mascarene and St. Helena anti-cyclonic systems are expected to intensify and expand; while the trough associated with the westerly wave over southeast Atlantic Ocean off the coast of southern Africa is expected to extend northwards up to 20^0S latitude and separate the anti-cyclonic systems; while a closed cyclonic system associated with the westerly wave is expected to develop over southern Atlantic Ocean.

T+48h: In the northern hemisphere, the Saharan anti-cyclonic system is expected to weaken and contract eastwards, giving way to the interaction between the mid-latitude and equatorial troughs across northwestern African. Localized convergence and confluent lines are expected to maintain their previous day positions. In southern Africa, the anti-cyclonic systems are expected maintain their previous day positions; while the cyclonic systems associated with the westerly wave over southeastern Atlantic Ocean are expected to move slightly westwards.

T+72h: In the northern hemisphere, a closed cyclonic circulation system is expected to move eastwards to eastern Mediterranean Sea, while the Saharan anti-cyclonic system is expected to expand westwards. The localized convergence and confluent lines are expected to maintain their previous day positions. In southern Africa, the flow is expected to be similar as the previous day; however the troughs associated with the westerly wave are expected to merge and move eastwards with northward extent up to 20^0S latitude over southern Atlantic and southwestern Indian Ocean.

2.2. Flow at 500hPa

T+24h: In the northern hemisphere, feeble troughs associated with the westerly wave are expected one over North Africa across the Mediterranean Sea, creating a disturbed flow pattern of the westerlies over northern Africa. A closed cyclonic system is expected to persist over the Gulf of Aden region. In the southern hemisphere, the developments of anti-cyclonic system together with cyclonic circulation systems over southeast Atlantic Ocean are expected to create a disturbed flow pattern of the westerlies.

T+48h: In the northern hemisphere the flow is expected to be more similar to the previous day; however feeble troughs associated with the westerly wave is expected to move slightly

eastwards while the cyclonic system over the gulf of Aden is expected to expand over the horn of Africa and northwestern Indian Ocean. In the southern hemisphere the flow is expected to be similar to the previous day.

T+72h: In the northern hemisphere the feeble troughs associated with the westerly waves are expected to fill and the flow is expected to take a slightly disturbed pattern. In the southern hemisphere, the closed cyclonic systems within the westerly wave is expected to move eastwards to the tip of South Africa and generally, the flow is expected to take a more zonal pattern.

2.3. Flow at 200hPa

T+24h: In the northern hemisphere, feeble troughs associated with the westerly wave are expected over the Mediterranean Sea and Arabian peninsula, creating a disturbed flow pattern of the westerlies over North Africa. Moreover in the south, the flow is expected to take a slightly disturbed pattern with an anti-cyclonic system over southeast Atlantic Ocean and a trough associated with the westerly wave off the tip of South Africa.

T+48h: The flow is similar to that of the previous day but the troughs associated with the westerly wave are expected to fill-up and shift slightly to the east in the northern hemisphere. In the southern hemisphere the flow is expected to be similar to the previous day; however the flow is expected to take on a more zonal pattern over southern Indian Ocean.

T+72h: The feeble troughs associated with the westerly wave in the northern hemisphere are expected to cause some disturbances of the westerlies; however the flow is expected to take a more zonal pattern. In the southern hemisphere, a disturbed flow pattern is expected over southeast Atlantic Ocean with the development of some feeble troughs associated with the westerly; however generally a more zonal flow pattern is expected.

Authors:

1. *Ado Kalaki Kasongo (METTELSAT / DR Congo and African Desk)*
2. *Khalid Muwembe (UGANDA MET / Uganda and African Desk).*