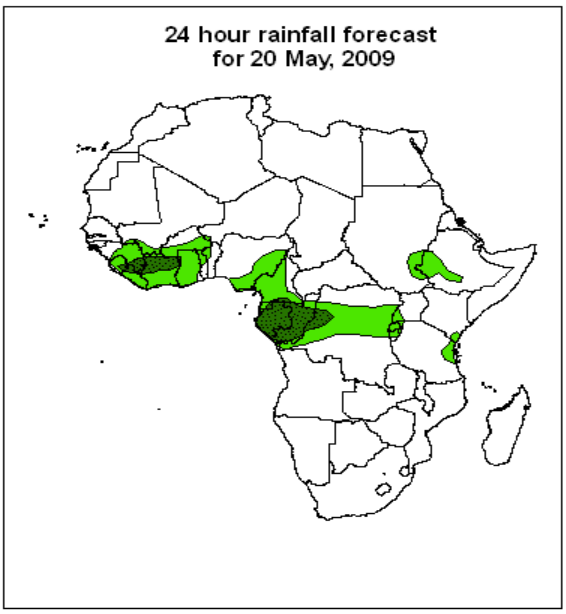
Forecast Guidance for Africa

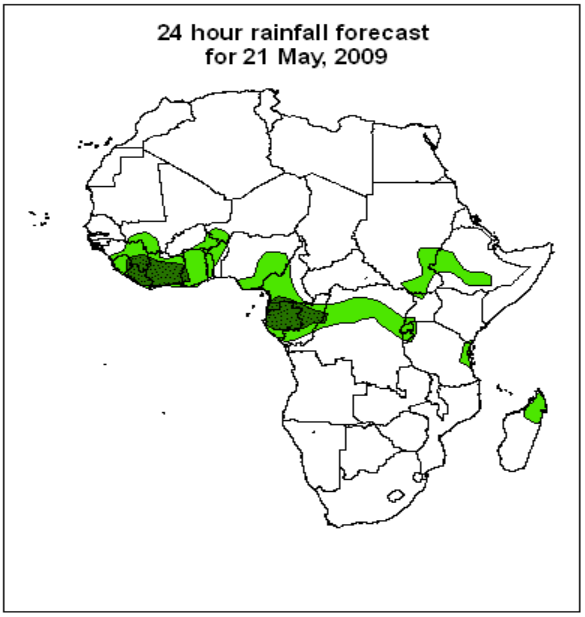
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative.

FORECAST DISCUSSION 14H00 EST, 19 MAY, 2009
Valid: 00Z 20 MAY – 22 MAY, 2009

1. Twenty Four Hour Cumulative Rainfall Forecasts

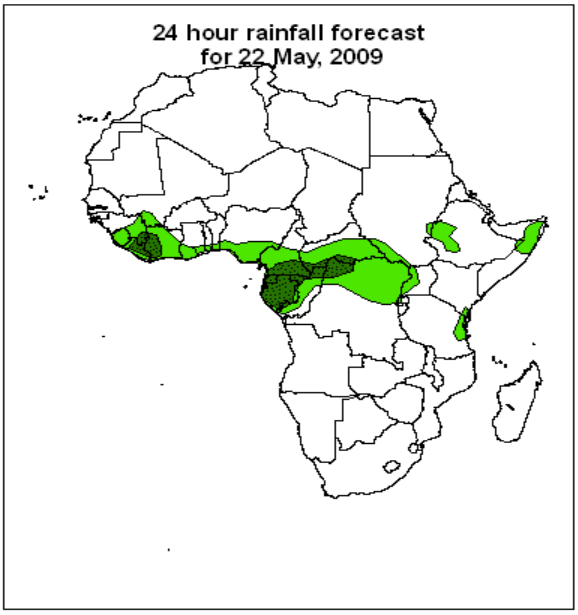
The forecasts are expressed in terms of probability of precipitation (POP) exceedance based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS), and expert assessment.





Legend

- africa_countries_new
- **> 30mm, with probability 50%**
- **> 20mm, with probability 40%**



Summary

The Saharan anti-cyclonic system is expected to influence flow over north Africa and the low level cross equatorial flow is expected to significantly influence the horn of Africa region. 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; 19 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 Saharan anti-cyclonic system is expected to influence flow over North Africa and the low level cross equatorial flow is expected to significantly influence the flow over the horn of Africa region. A closed cyclonic circulation system is expected to persist over eastern Mediterranean Sea as part of the mid latitude cyclonic circulation system. Localized convergence and confluent lines are expected over the Gulf of Guinea region, Cameroun, Central African Republic, northern DR Congo, southern Sudan and southern Ethiopia. In the southern hemisphere, subtropical anti-cyclonic systems are expected to intensify and expand over much of southern Africa. A closed cyclonic system associated with the westerly wave over southeast Atlantic Ocean is expected to extend northwards up to 20^0S latitude; while a trough associated with the westerly wave over southeastern Indian Ocean is expected to separate the anti-cyclonic systems.

T+48h: In the northern hemisphere, the Saharan anti-cyclonic system is expected to move westwards. The Arabian ant-cyclonic system is expected to further weaken over Arabian peninsula, allowing a minimal interaction between the mid-latitude and equatorial troughs across the horn of Africa region. Localized convergence and confluent lines are expected to maintain their previous day positions. In the southern hemisphere, the significant features are expected to maintain their previous day positions; however the troughs associated with the westerly wave are expected to merge over southeastern Atlantic Ocean.

T+72h: In the northern hemisphere, the significant features are expected to maintain their previous day position; however, the mid-latitude trough over northeast Atlantic Ocean is expected to contract and move slightly eastwards. 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 Mascarene anti-cyclonic system is expected to expand eastwards over southwestern Indian Ocean.

2.2. Flow at 500hPa

T+24h: In the northern hemisphere, a trough associated with the westerly wave is expected over North Africa across the eastern Mediterranean Sea, creating a disturbed flow pattern of the westerlies over northern Africa. A weak cyclonic system is expected to persist over the Gulf of Aden region. In the southern hemisphere, the development of a feeble trough over southeast Atlantic Ocean and a ridge off the tip of South Africa is 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 the troughs associated with the westerly wave are expected to extend their southern extent to 20^0N latitude over North Africa and northeast Atlantic Ocean, while the cyclonic system over the gulf of Aden is expected to slightly expand. In the southern hemisphere, the flow is expected to be similar to the previous day.

T+72h: In the northern hemisphere the flow is expected to be more similar to the previous day; however the troughs associated with the westerly wave are expected to move slightly eastwards. In the southern hemisphere, the cyclonic systems associated with the westerly wave are expected to be suppressed and the flow is expected to take a more zonal pattern.

2.3. Flow at 200hPa

T+24h: In the northern hemisphere, a feeble trough associated with the westerly wave is expected over the Mediterranean Sea, creating a disturbed flow pattern of the westerlies over North Africa, however, the flow is expected to take a more zonal pattern. In the southern hemisphere, the flow is expected to take a generally zonal pattern.

T+48h: The flow is similar to that of the previous day but a second trough associated with the westerly wave is expected to develop over northeast Atlantic Ocean in the northern hemisphere. In the southern hemisphere, the flow is expected to be similar to the previous day.

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 generally zonal flow pattern of the westerlies is expected.

Authors:

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