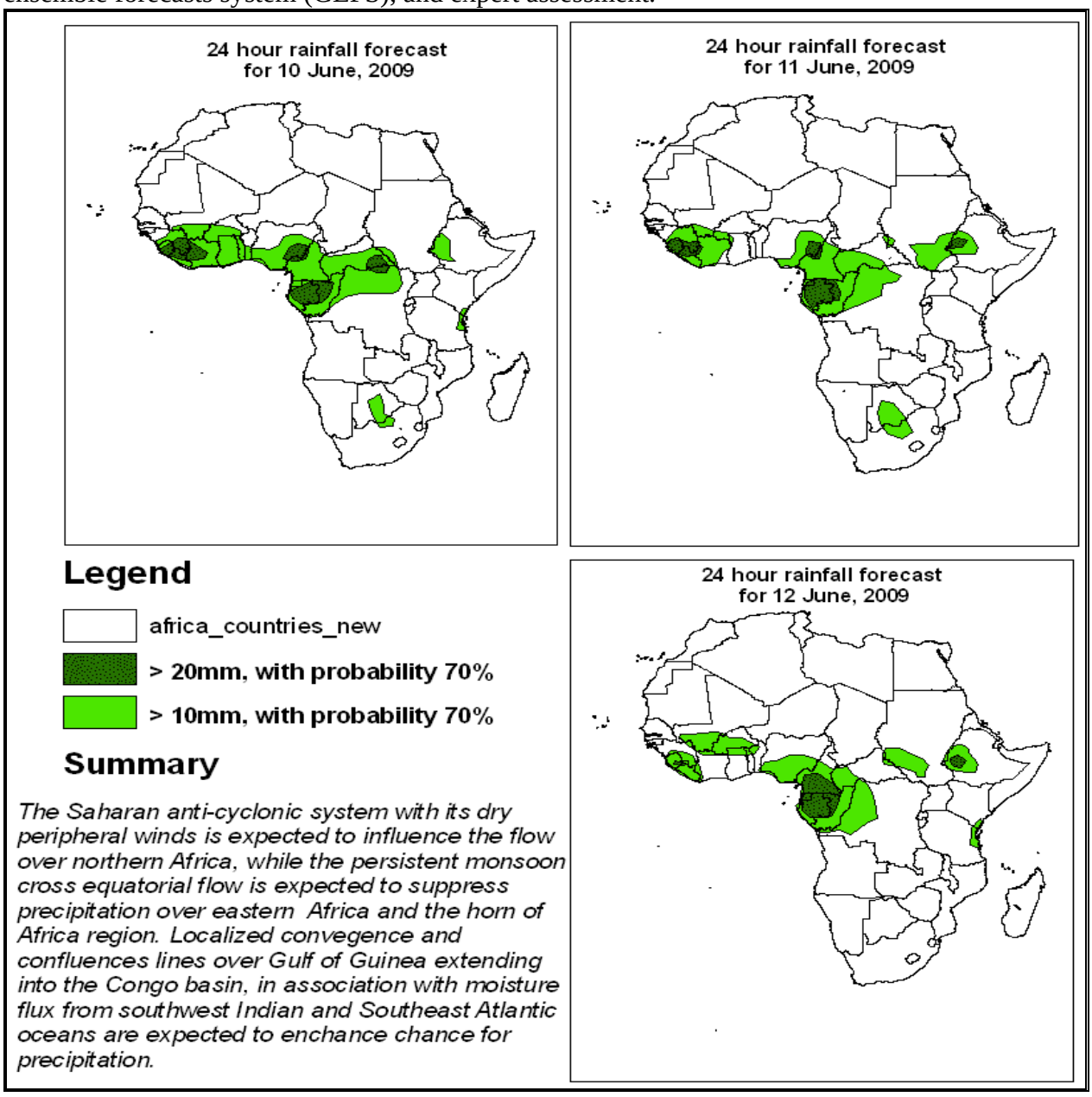
Forecast Guidance for Africa

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

FORECAST DISCUSSION 14H00 EST, 09 JUNE, 2009
Valid: 00Z 10 JUNE – 12 JUNE, 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.



2. Model discussion

Model comparison (Valid from 00Z; 09 June, 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 with its dry peripheral winds is expected to influence the flow over northern Africa, while the persistent monsoon cross equatorial flow is expected to suppress precipitation over coastal areas of eastern Africa and the horn of Africa region. As the Saharan anti-cyclonic system moves westwards, the interaction between the mid-latitude and Equatorial troughs is expected across the horn of Africa region. Localized convergence and confluent lines are expected over the Gulf of Guinea region, Cameroun, Central African Republic, northern DR Congo, southern Sudan, and Ethiopia. In the southern hemisphere, much of southern Africa is expected to be under the influence of the Mascarene anti-cyclonic system as it extends on to the continent; while the St. Helena is expected over southern Atlantic expected with its peripheral winds extending northwards to the gulf of Guinea.

T+48h: In the northern hemisphere, the Saharan anti-cyclonic system is expected to slightly strengthen and merge with the Azores anti-cyclonic system, suppressing the interaction between the mid-latitude and Equatorial troughs across the horn of Africa region. The localized convergence and confluent lines are expected to be suppressed over western Africa, while maintaining their previous day positions over central and eastern Africa. In the southern hemisphere, the flow is expected to be more similar to the previous day; however the trough associated with the westerly wave over southeastern Atlantic Ocean is expected to extend northwards up to 10^0S latitude.

T+72h: In the northern hemisphere, the significant change is the expected weakening and westward movement of the Saharan anti-cyclonic system which is expected to enhance localized convergence and confluent lines over western Africa; while over central and eastern Africa these localized convergence and confluent lines are expected to maintain their previous day positions. In southern Africa, the significant change is the expected weakening of the Mascarene anti-cyclonic system and southward movement of the St. Helena anti-cyclonic system; while the trough associated with the westerly wave over southeastern Atlantic Ocean is expected to expand and deepen.

2.2. Flow at 500hPa

T+24h: In the northern hemisphere, the sub-tropical ridge is expected to extend further northwards over northern Africa and the Arabian Peninsula; while troughs associated with the westerly wave are expected over North Africa and northeastern Atlantic, creating a disturbed flow pattern of the westerlies over northern Africa. In the southern hemisphere, the sub-tropical anti-cyclonic system is expected to extend to the mid-latitudes over southwestern Indian Ocean; while a closed cyclonic system associated with the westerly wave is expected over Southwestern Africa, creating a disturbed flow pattern of the westerlies.

T+48h: In the northern hemisphere the sub-tropical ridge is expected to maintain their previous day positions; while the trough associated with the westerly waves over northern

Africa is expected to suppressed, but a disturbed flow pattern of the westerlies is expected to continue. In the southern hemisphere, the sub-tropical ridge system is expected to weaken and the westerly flow is expected to take a more zonal flow.

T+72h: In the northern hemisphere the flow is expected to be more similar to the previous day; however the trough over northern Africa is expected to be more enhanced and creating more disturbances in the westerly flow. In the southern hemisphere, though some feeble troughs associated with the westerly wave are expected over southeastern Atlantic Ocean, the westerly flow is expected to take a more zonal pattern.

2.3. Flow at 200hPa

T+24h: The sub-tropical anti-cyclonic systems in both hemispheres are expected to continue their flow close to the Equator, creating strong easterly flow over eastern Africa. Feeble troughs associated with the westerly wave are expected over northern Africa creating disturbances in the flow of the westerlies; however a generally zonal flow pattern of the westerlies is expected. In the southern hemisphere, a ridge over southwestern Indian Ocean and a feeble trough over southern Africa are expected to create disturbances in the flow of the westerlies, but a generally zonal flow pattern of the westerlies is expected.

T+48h: Over northern Africa, the trough associated with the westerly wave is expected to be enhanced over northwestern Africa; however the westerlies are expected to take a more zonal flow pattern. In the southern hemisphere, the flow is expected to be similar to the previous day.

T+72h: Troughs associated with the westerly wave are expected to be slightly more enhanced in the northwestern hemisphere, creating a disturbed flow pattern of the westerlies. In the southern hemisphere, the flow is expected to be similar to the previous day.

Authors:

1. *Khalid Muwembe (UGANDA MET / Uganda and African Desk).*
2. *Mamadou Savadogo (Direction de la MET Burkina and African Desk)*