



**The Abdus Salam
International Centre for Theoretical Physics**



1945-2

**Conference on African Drought: Observations, Modeling,
Predictability, Impacts**

2 - 6 June 2008

**Predictability of African Drought
Part II: Evaluation of the
UKMetoffice/ECMWR/IRI operational
seasonal forecasting systems**

Andre' KAMGA Foamouhoue

ACMD

Niamey

Niger



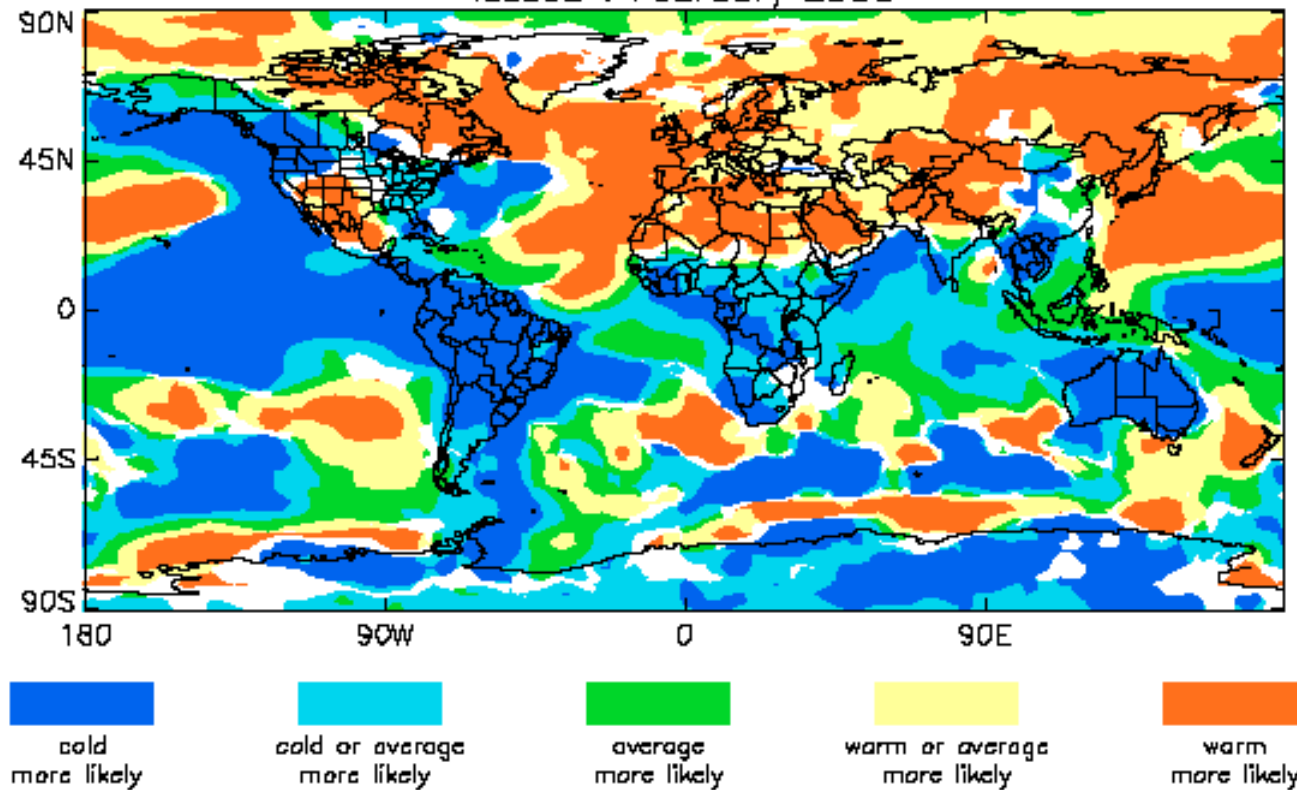
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Part II: Evaluation of the
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Andre KAMGA FOAMOUHOUE

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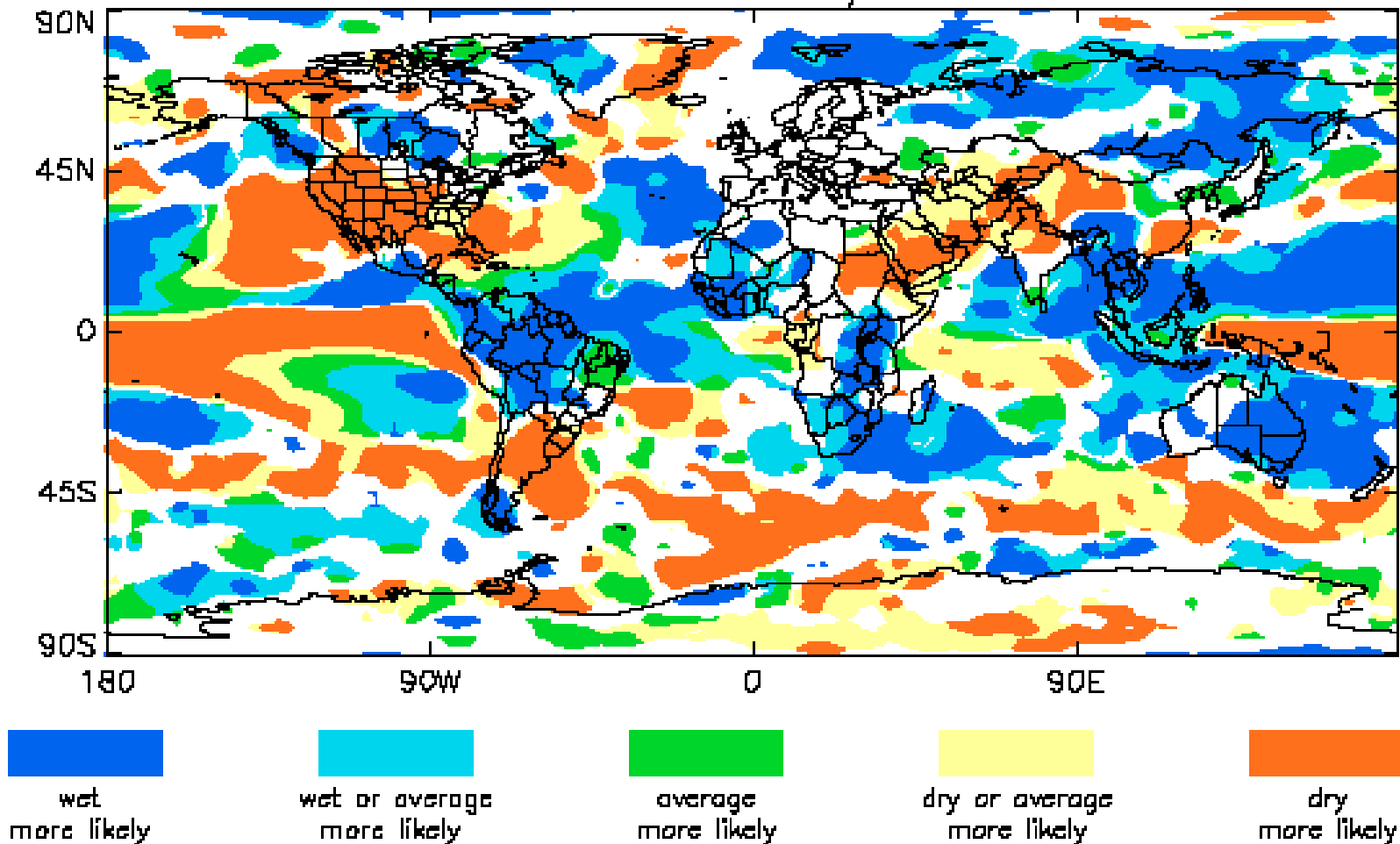
**Africa Drought Conference ICTP-June
2008.**

Met Office : More likely 2m temperature tercile categories Mar/Apr/May
Issued : February 2008

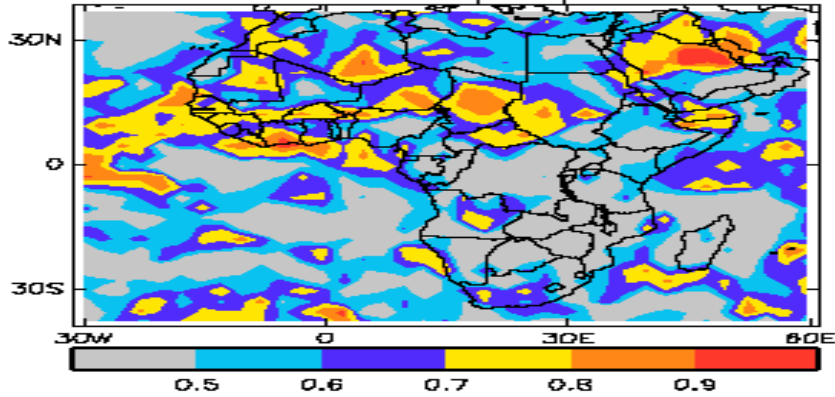


Seasonal forecasts - indications for the next three months

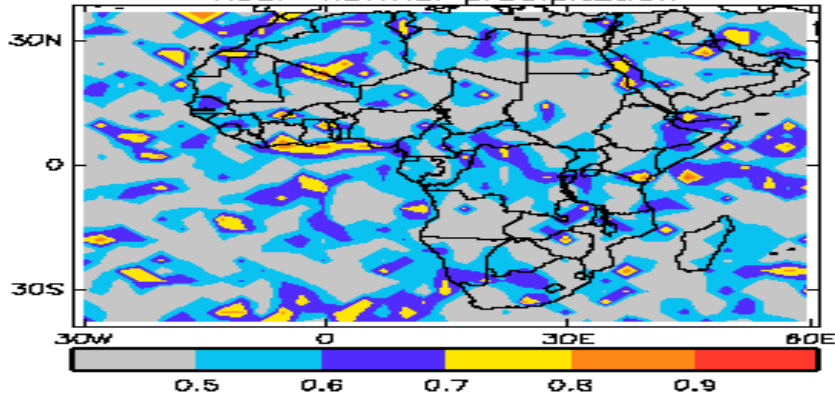
Met Office : More likely precipitation tercile categories Mar/Apr/May
Issued : February 2008



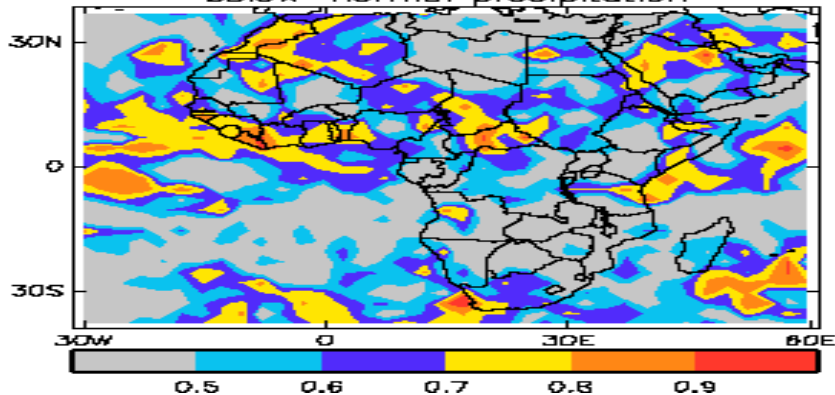
Roc scores for tercile categories Aug/Sep/Oct : Issued June
above-normal precipitation



near-normal precipitation



below-normal precipitation

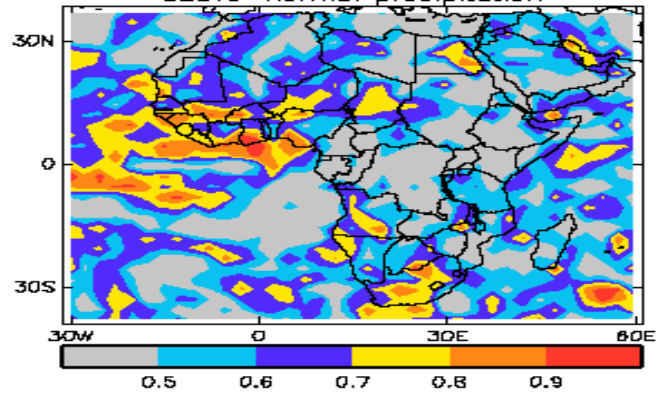


1- Over parts of sub-saharan Africa (a domain severely hit by drought in the past), the met Office seasonal forecasts have some skill to predict the wet category.

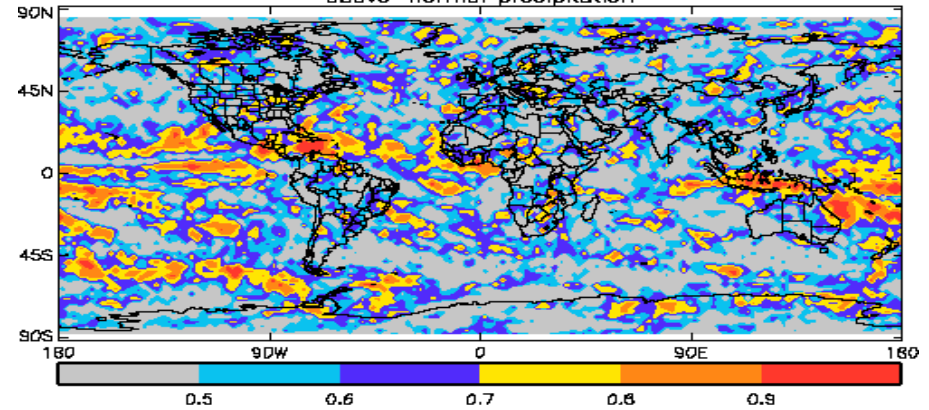
2- Very limited skill is found in forecasts of dry years. Useful skill is only located over the southern Chad region.

Signals very similar to the above

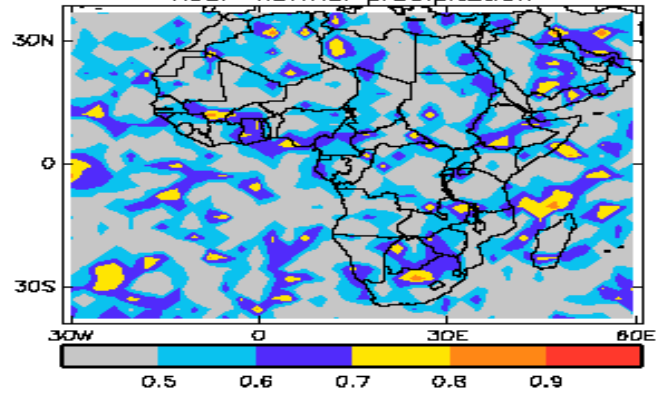
Roc scores for tercile categories Jul/Aug/Sep : Issued June
above-normal precipitation



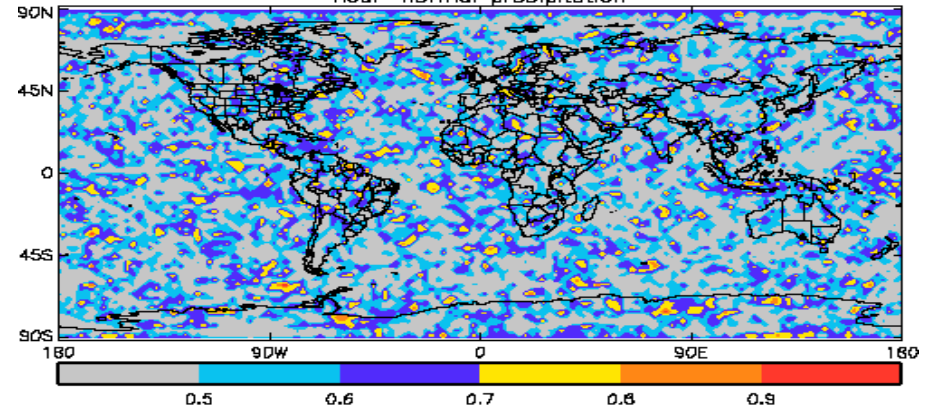
Roc scores for tercile categories Jul/Aug/Sep : Issued May
above-normal precipitation



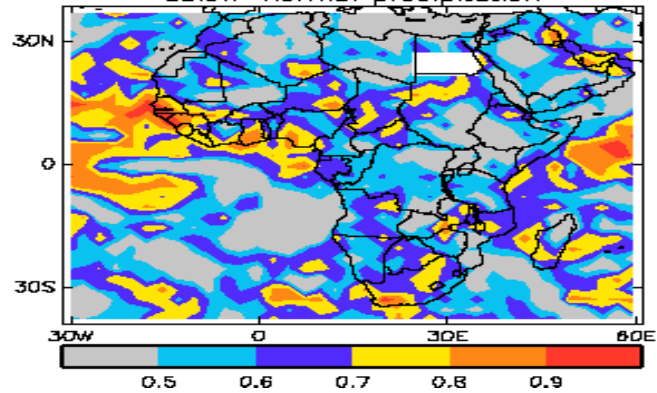
near-normal precipitation



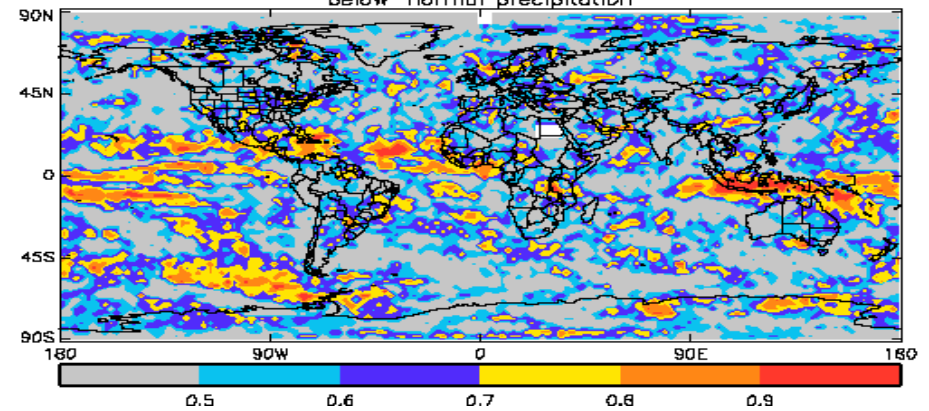
near-normal precipitation



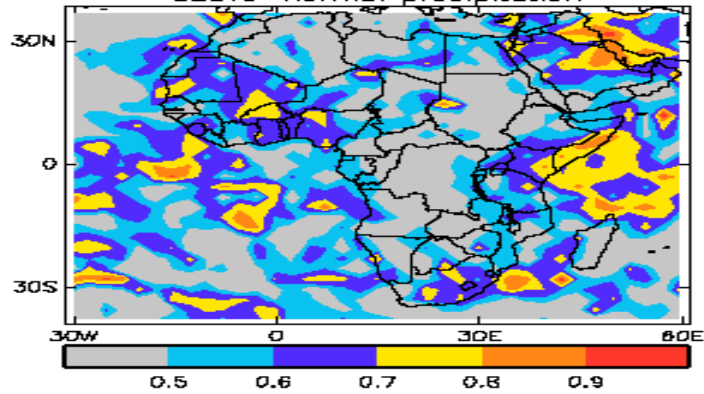
below-normal precipitation



below-normal precipitation

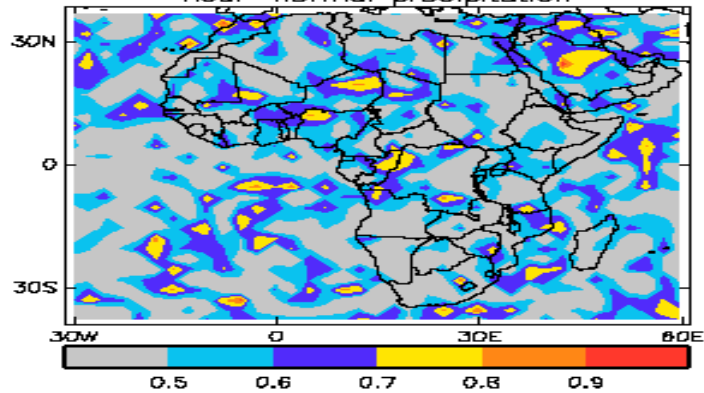


Roc scores for tercile categories Oct/Nov/Dec : Issued September
above-normal precipitation

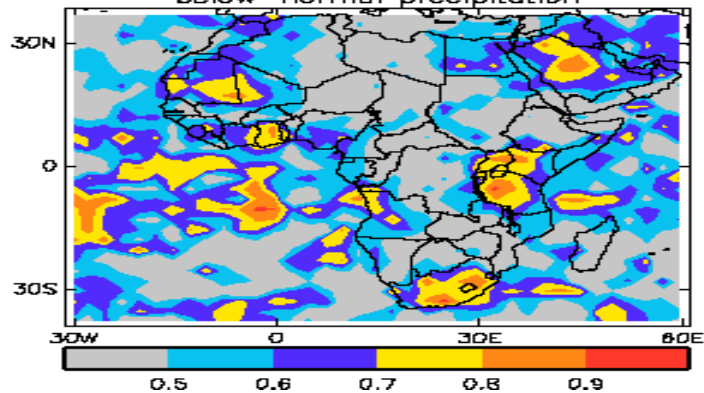


For Oct-Dec dry years in East Africa, the Met Office system is skillful over Parts of Kenya, Uganda and Tanzania

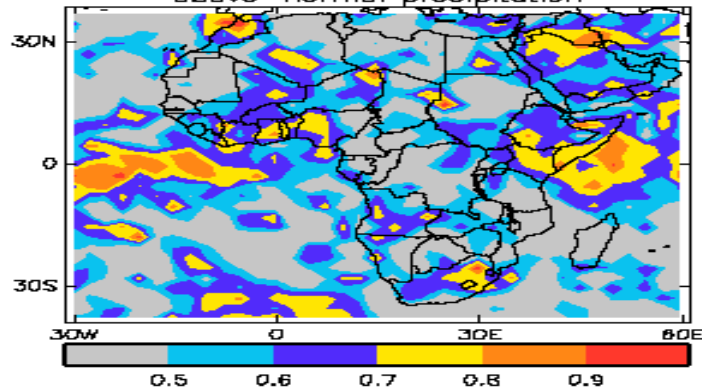
near-normal precipitation



below-normal precipitation

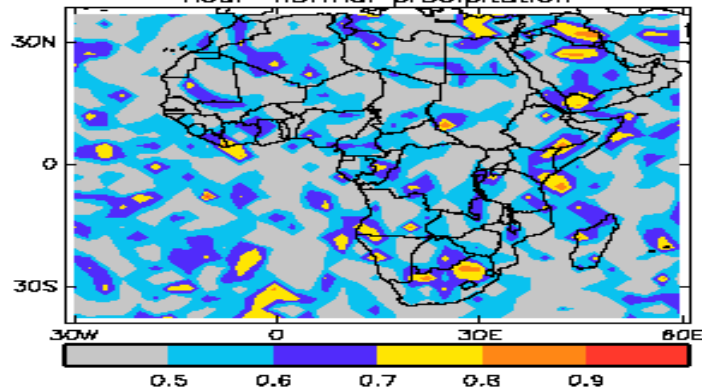


Roc scores for tercile categories Oct/Nov/Dec : Issued August
above-normal precipitation



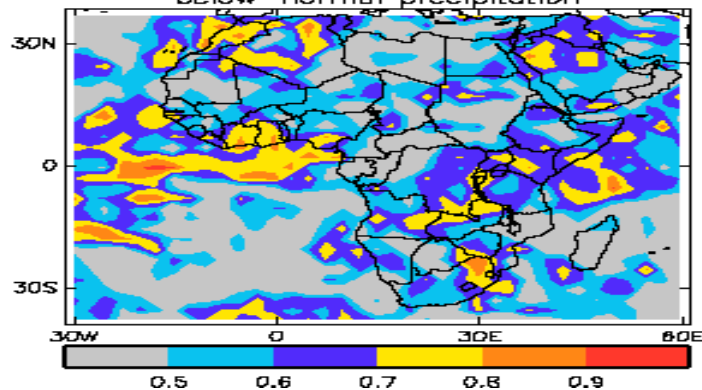
1- The forecasts issued in August are almost useless to predict Drought over East Africa.

near-normal precipitation



2- The forecast performs better for wet events.

below-normal precipitation

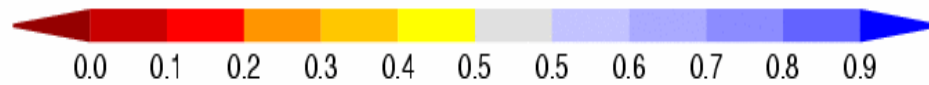
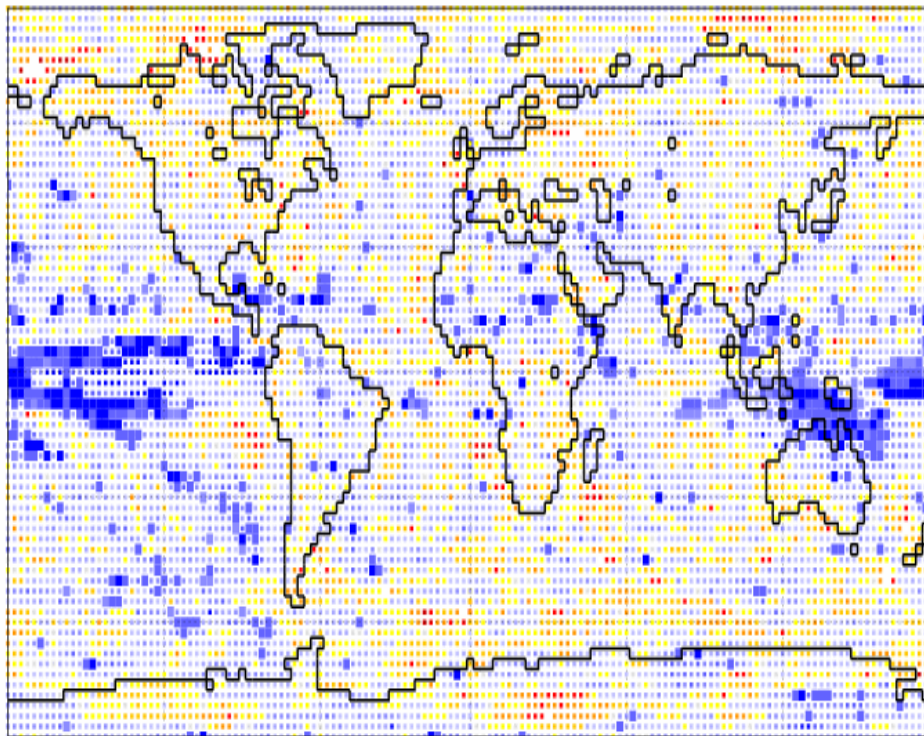


ROC Score: EXP(ECMWF_oper) with respect to GPCP

Event: Total Precipitation Anomaly in lower tercile

Forecast start month and years: August / 1987-2001

FC period: months 2-4 (SON), ens: 0-4

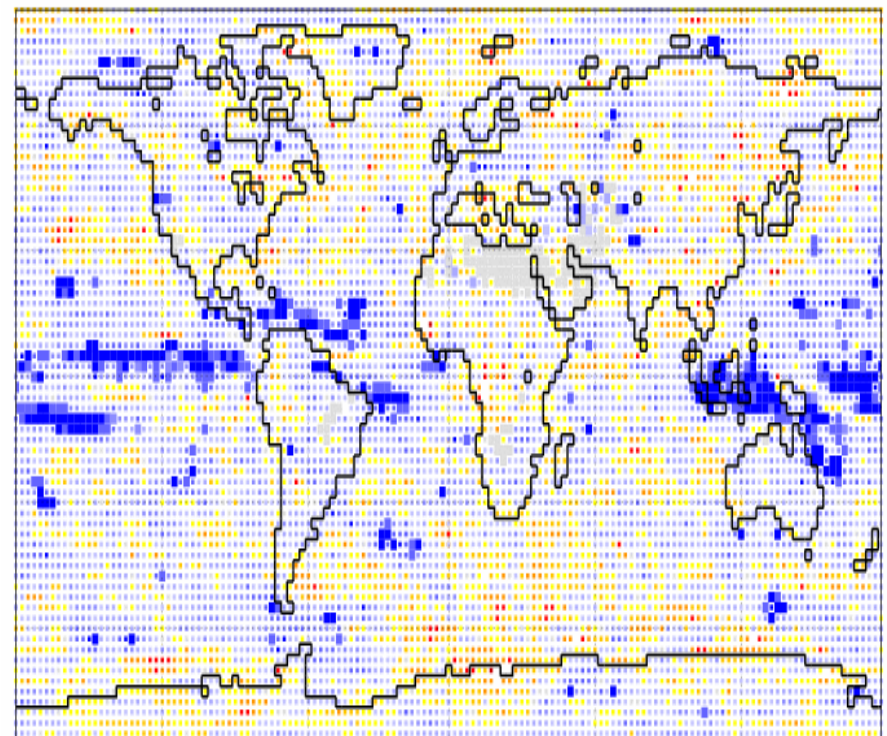


ROC Score: EXP(ECMWF_oper) with respect to GPCP

Event: Total Precipitation Anomaly in lower tercile

Forecast start month and years: May / 1987-2002

FC period: months 2-4 (JJA), ens: 0-39

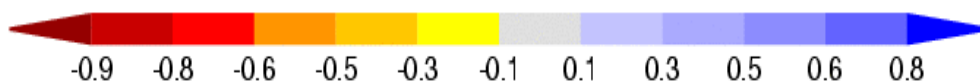
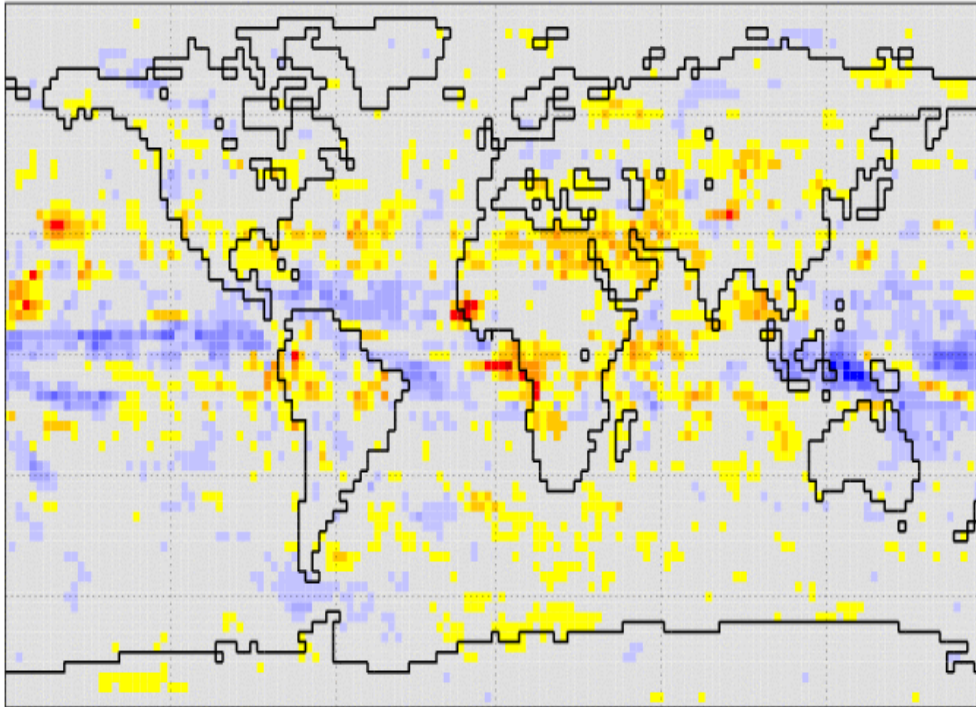


Total Precipitation

Ranked Probability Skill Score: EXP(ECMWF_oper) with respect to GPCP

Forecast start month and years: May / 1987-2002

FC period: months 2-4 (JJA), ens: 0-39

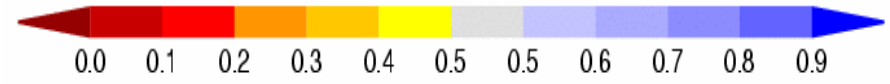
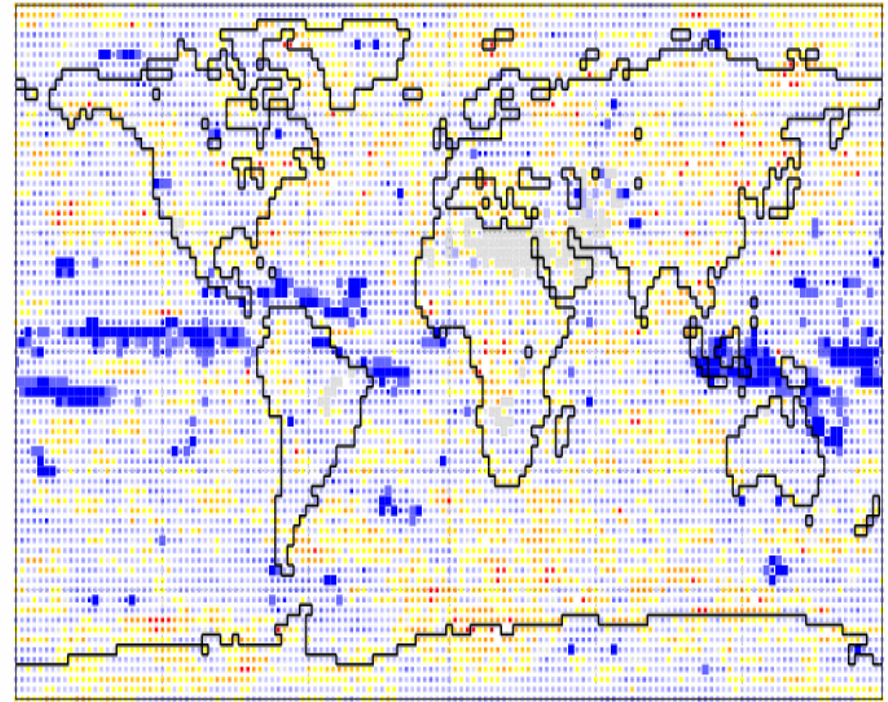


ROC Score: EXP(ECMWF_oper) with respect to GPCP

Event: Total Precipitation Anomaly in lower tercile

Forecast start month and years: May / 1987-2002

FC period: months 2-4 (JJA), ens: 0-39



Using Climatology as the forecast is as good as the ECMWF system over much of Africa (left).

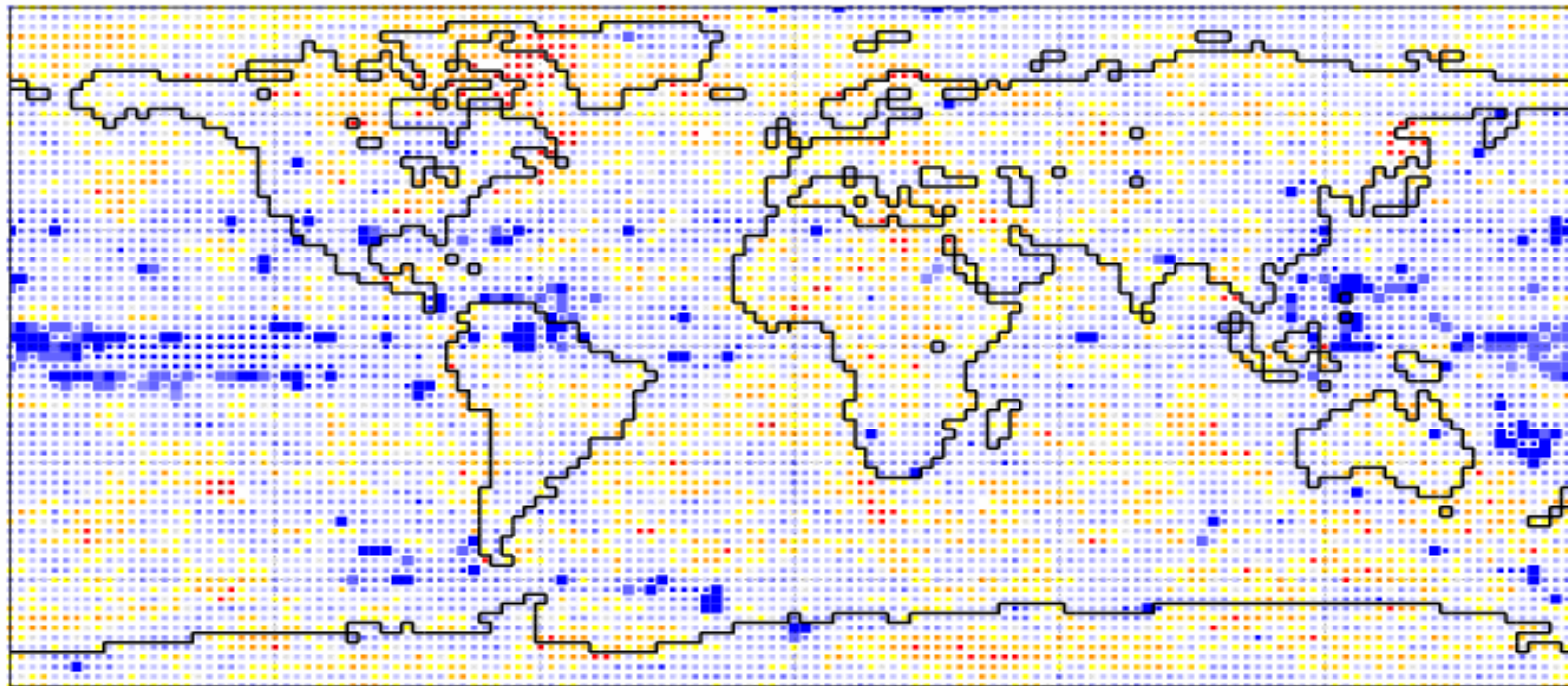
Forecast of dry category is even worse (right).

ROC Score: EXP(ECMWF_oper) with respect to GPCP

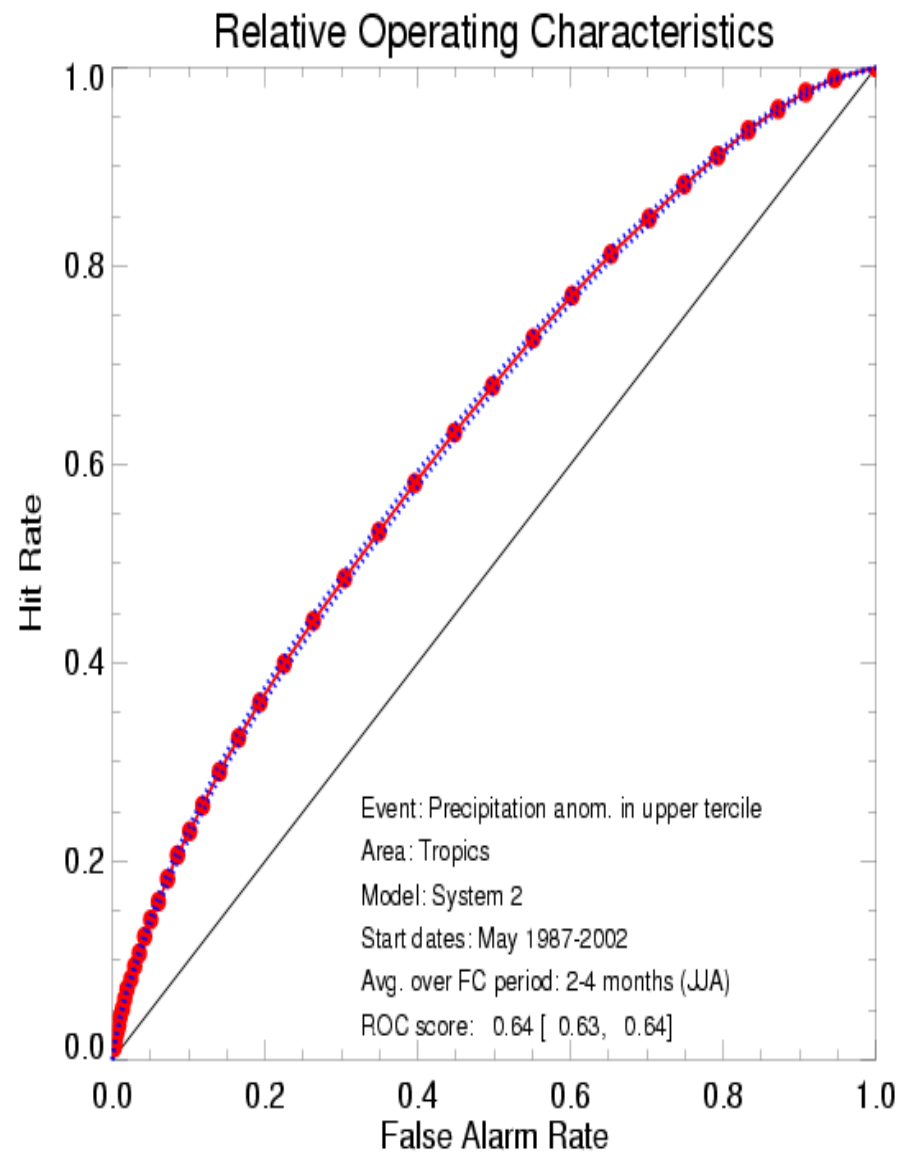
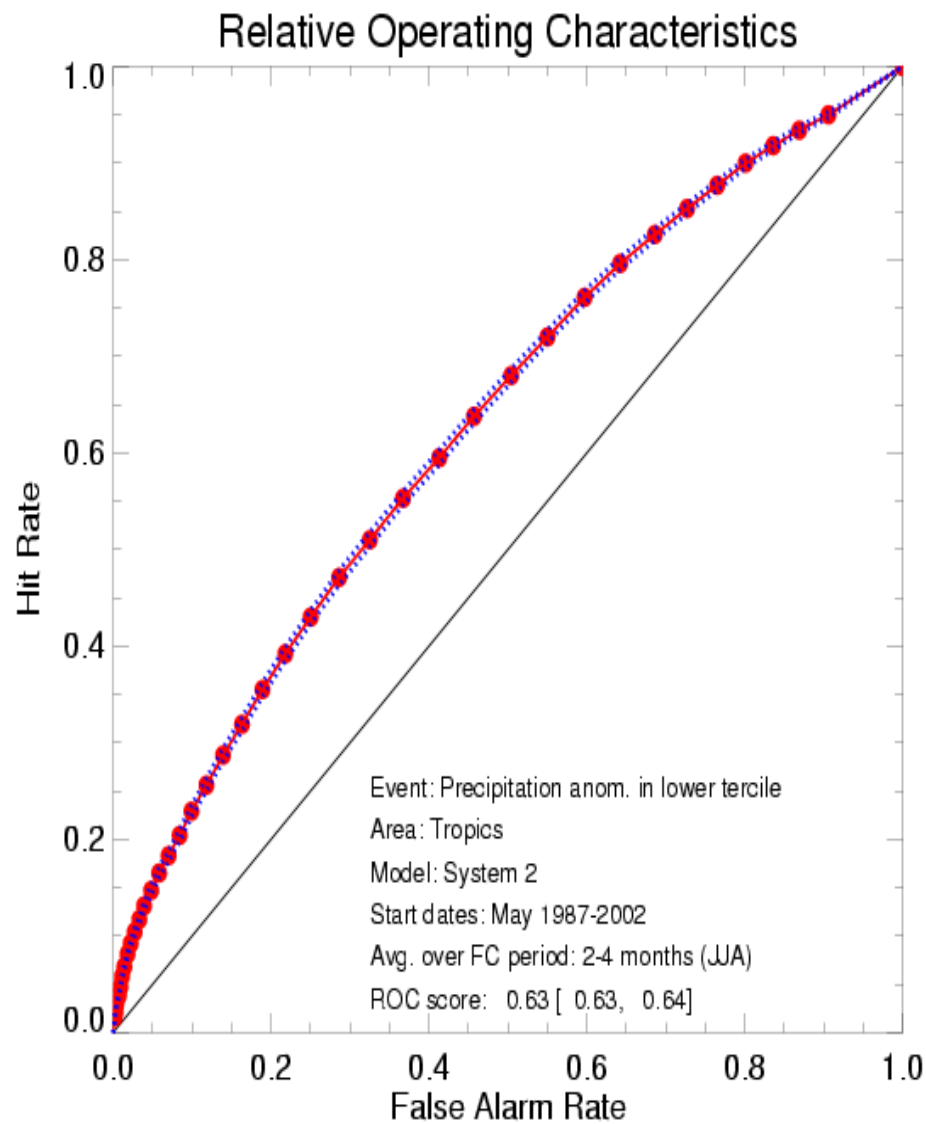
Event: Total Precipitation Anomaly in lower tercile

Forecast start month and years: November / 1987-2001

FC period: months 2-4 (DJF), ens: 0-39

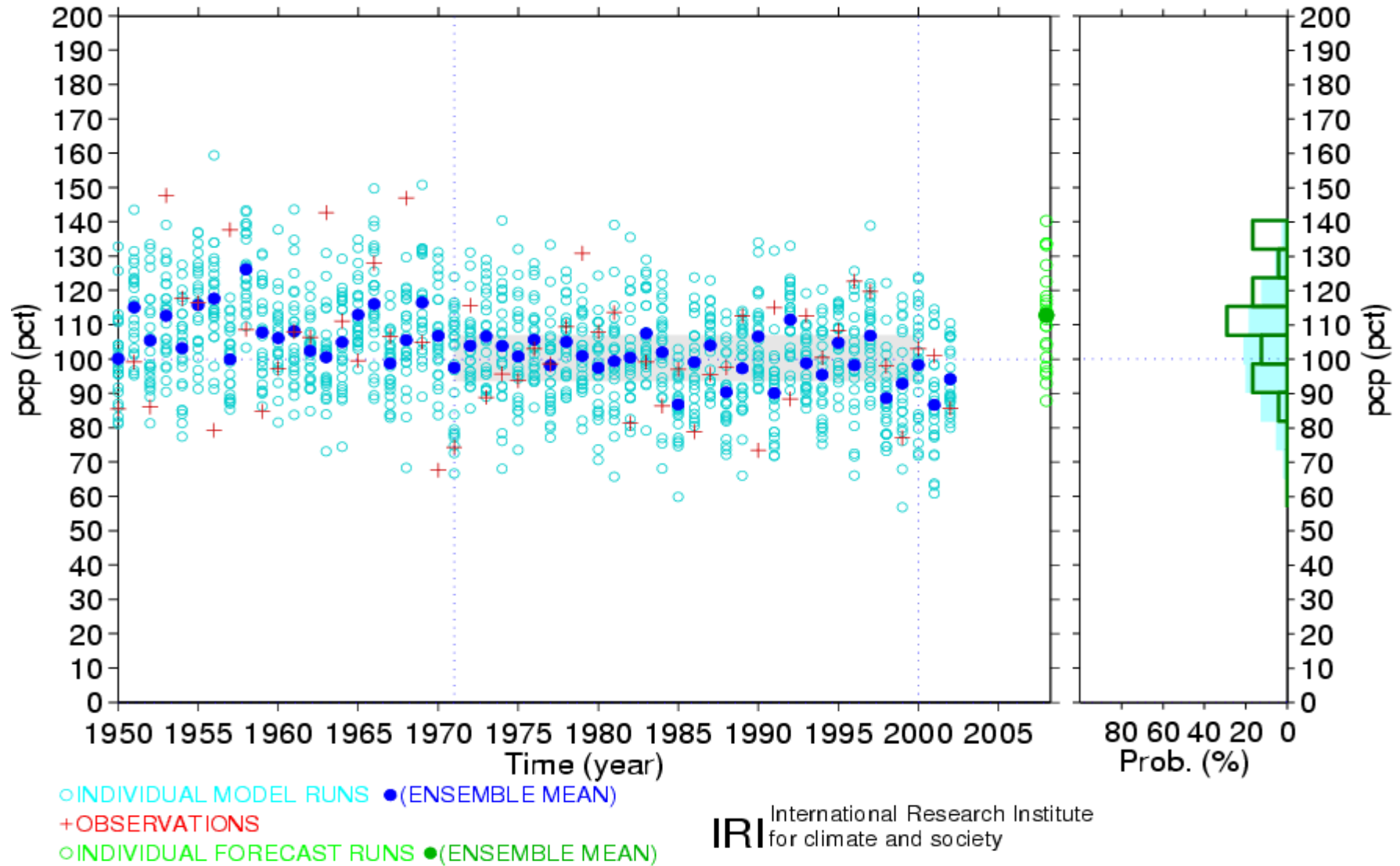


In DJF over southern Africa no significant skill is identified.



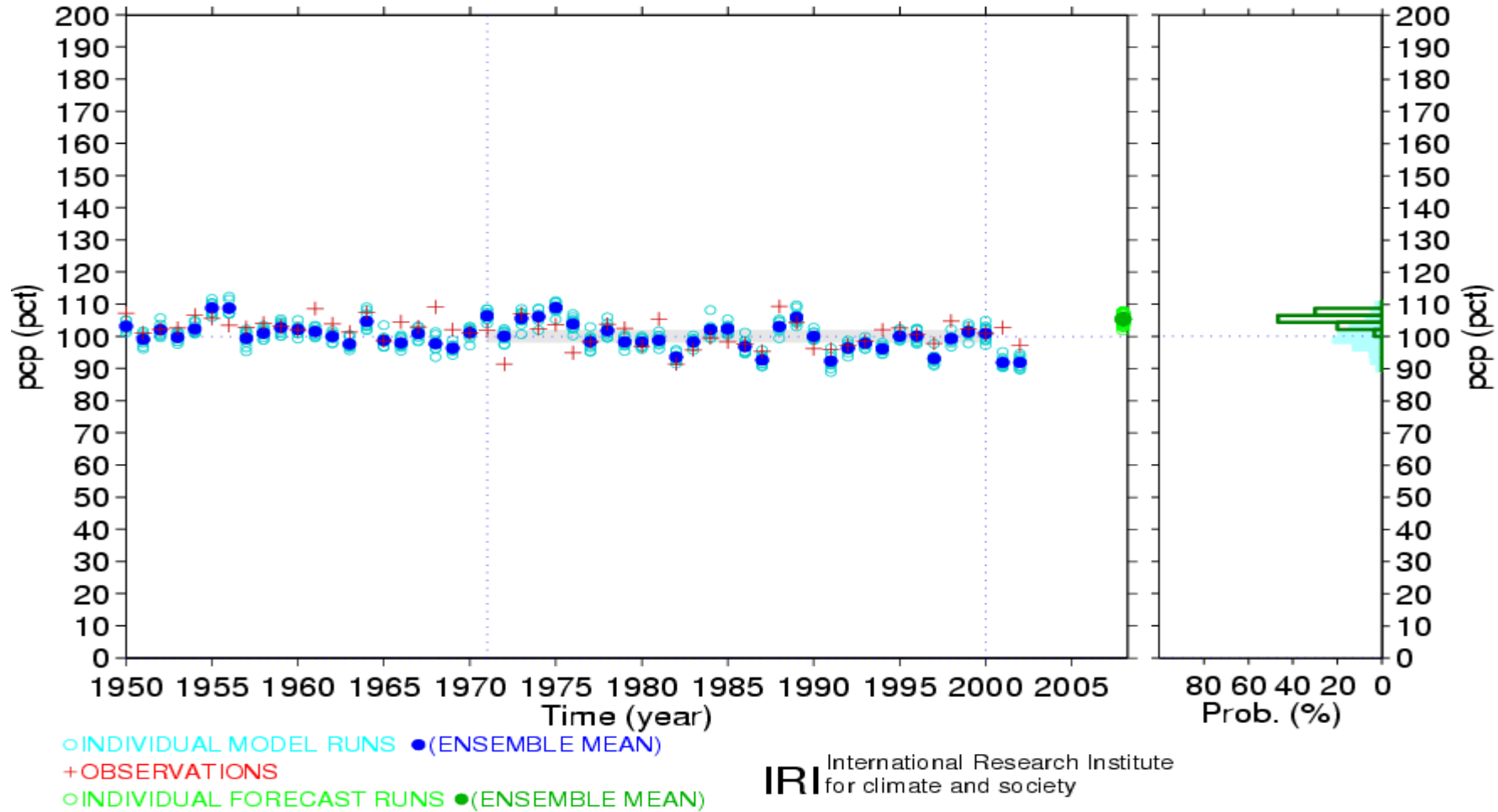
The Pictures are better for the global tropics !!!.

ecm4.pst 08 amj pcp 24 FCSTS run apr08
R = 0.10, P = 0.21, "SAHEL": 10N-17N; 20W-50E



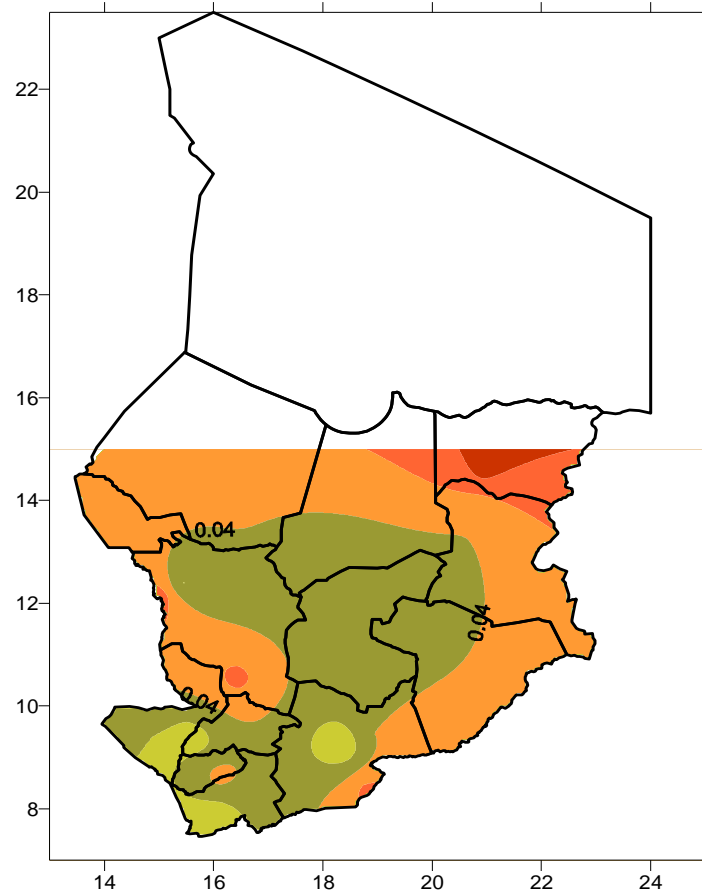
The IRI system does not simulate dry years (percentages below 90)

ncep.ssst 08 jja pcp 30 FCSTS run apr08
R = 0.47, P = 0.53, "GLOBE": 90S-90N; 0-360

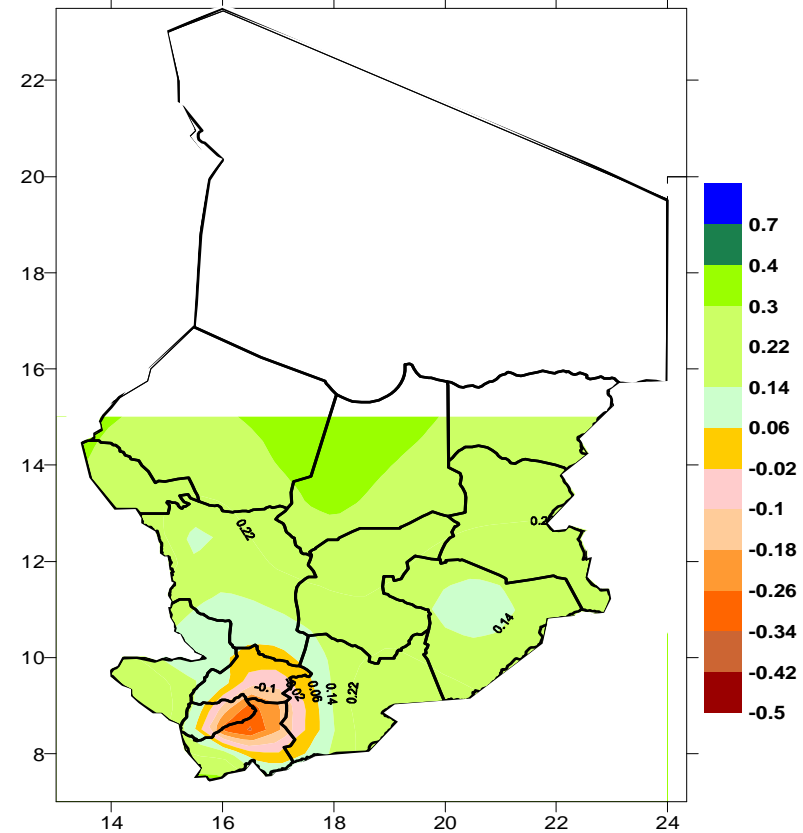


Quite Ok but for the whole globe !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Verification of COFs over Chad



RPSS 1998-2005



RPSS 1999

**1999 was the wettest year of the period over Chad.
Better performance for extremes !!!**

END