

CPC's International Outreach: From the African Desk to the International Desks,

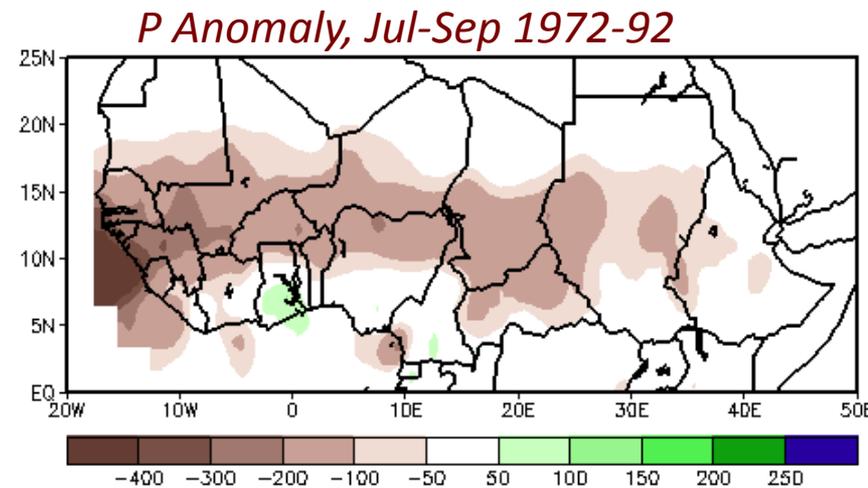
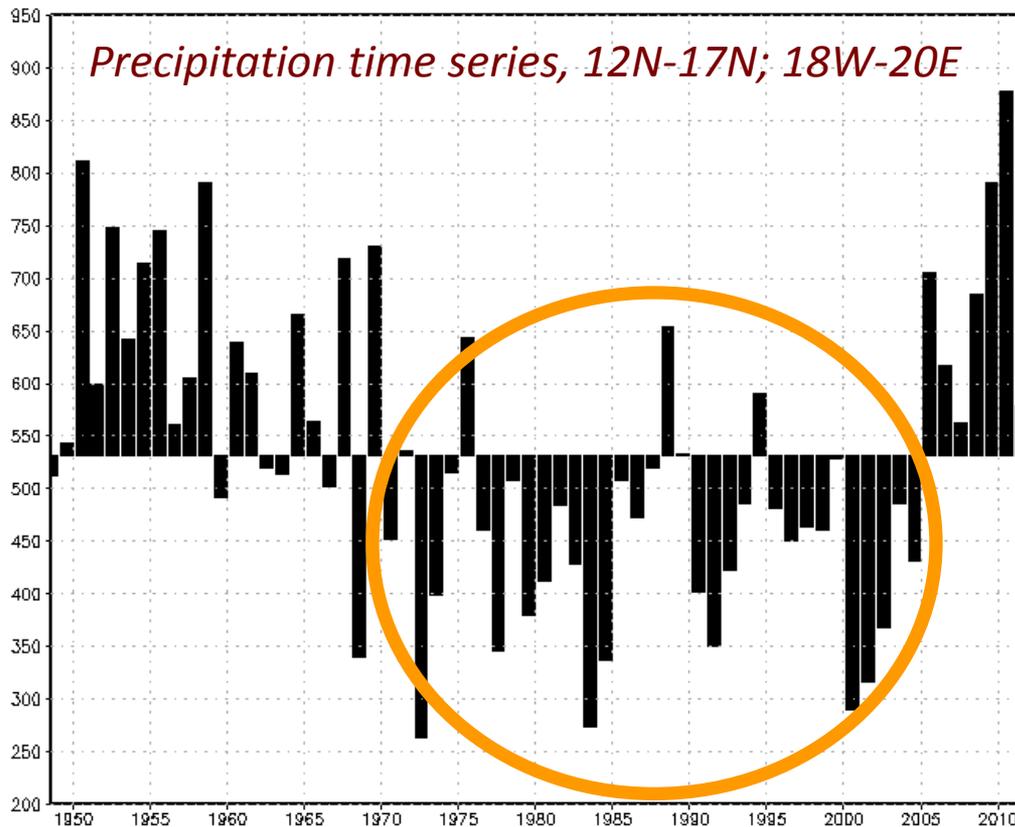
twenty years of developing the capacity of meteorological services

W. Thiaw, V. Kumar, E. Bekele, N. Novella, M. Robjhon, S. Fuhrman, C. Oonariya, B. Pugh, T. DiLiberto, and many others

Climate Prediction Center
National Centers for Environmental Prediction

African Desk – Historical Context

The Sahel Drought of the 1970s through the 1990s



African Desk – Historical Context

1980s

- Sahel countries established
 - The Permanent Interstate Committee for Drought Control in the Sahel (CILSS)
 - The Agriculture Hydrology and Meteorology (AgrHyMet) Centre
- USAID/FFP established the Famine Early Warning System (FEWS)
- CPC Early Support to USAID/FEWSNET

CPC Early Support to FEWSNET

CPC began to provide USAID with:

- Gauge-based 10-day weather summaries to enable operational monitoring of crop conditions
- Access to real-time satellite rainfall estimates

Ten-Day Weather Summary

Highlights: Rains decreased seasonally in the Sahel as the ITCZ retreated southward. Heavy rainfall continued pounding northwestern and southeastern Nigeria. Light to moderate rains fell in central and northern Somalia, likely signaling the start of the minor rainy season. Favorably dry conditions covered South Africa.

Details: In West Africa, the abundant rains recorded during September 11-20 over Senegal, Gambia, southern Mauritania, Burkina Faso, southern Niger and southern Mali gave way to drier conditions, favoring the harvest of crops. Satellite precipitation estimates and surface reports indicated locally heavy rains (100-250 mm) over northwestern and southeastern Nigeria, Benin, northern Togo, Ghana and western parts of Cote d'Ivoire and Liberia. Temperatures averaged near normal across the sub-region except over Mauritania, Senegal and western Mali, where they averaged 2 to 4 degrees C above normal.

In central Africa, significant rains (100-250 mm, according to satellite precipitation estimates) fell over western Cameroon. Moderate showers dampened western CAR and northern Congo. Light to locally moderate rainfall amounts extended to Equatorial Guinea, northern and eastern DRC.

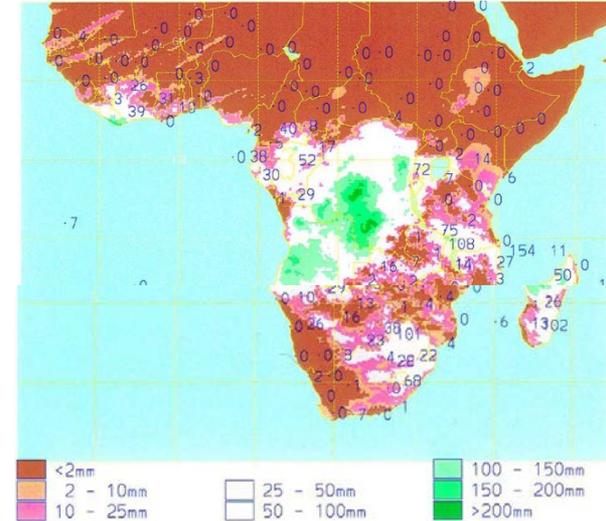
In East Africa, surface reports and satellite estimates indicated locally heavy rains (115 mm, 137-622% of normal) over western Kenya and parts of northern Uganda. Moderate showers (38-89 mm) fell locally over central and southern Sudan, most of Uganda, Rwanda, Burundi and extreme western Ethiopia. Scattered light rains fell over central and northern Somalia, but southern Somalia remained dry. The minor (deyr) rainy season typically starts around late September or early October in Somalia. Abnormally dry weather covered the southeast coast of Kenya and the northeast coast of Tanzania, as amounts of 0 to 1 mm contrasted with normal totals of 20 to 25 mm.

In southern Africa, drier conditions prevailed in South Africa and Lesotho following earlier heavy rains. Only light showers fell over the extreme southern coast of South Africa.

Monthly Summary for September 2001

In West Africa, a band of heavy rains (150-300 mm; 73-248% of normal) stretched across the region from Mali, Senegal and Guinea to southern Chad. Generally abundant rainfall has characterized the Sahel growing season this year. Apart from coastal areas of Liberia, Cote d'Ivoire and Ghana, which recorded below-normal rainfall, the Guinean climate zone recorded normal rains. Normal to above-normal heavy rains (250-400 mm) fell in southeastern and northwestern Nigeria. Temperatures averaged near normal across the area save for Senegal and southern Mali, where readings averaged 2 to 3 degrees C above normal.

Satellite Rainfall Estimates (RFE v1)



1990s

NWS established the African Desk

African Desk – Early Years

- Provided NMHSs with up-to-date global climate information
- Took over the update of the 10-Day Weather Summary
- Began to host trainees
- Developed climate products for Africa
- Began collaboration with NOAA/CPO (OGP)
 - Regional Climate Outlook Forums founded
- Created a website within the CPC domain

African Desk - Expansion

2000s

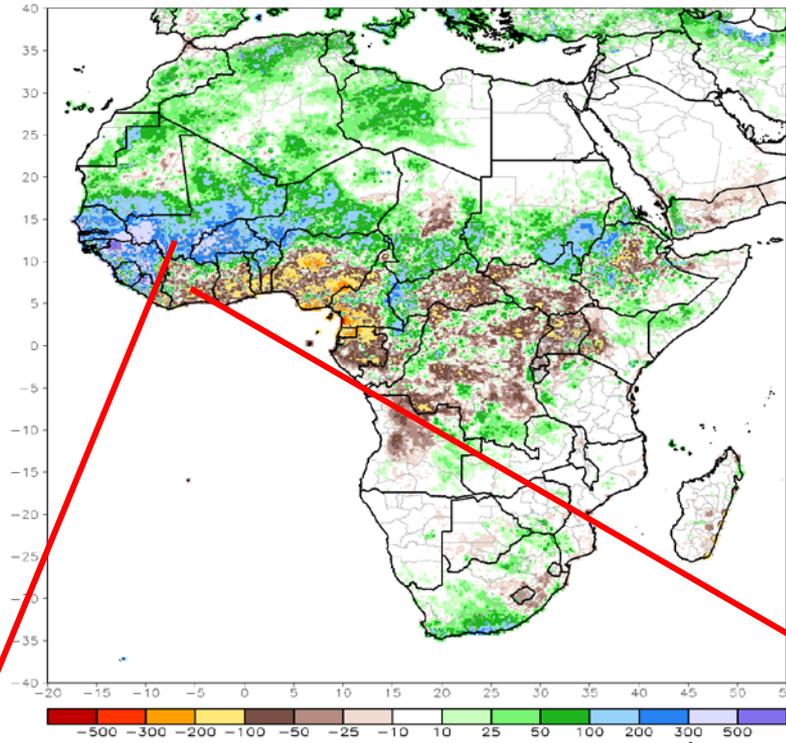
- CPC developed RFEv2
- FEWSNET Expanded to include Central America
- USAID/OFDA became interested in extreme climate events
- WMO launched the SWFDP for Africa
- CPC launched
 - MJO monitoring and the global tropical hazards
 - The global monsoon monitoring

African Monsoon Monitoring

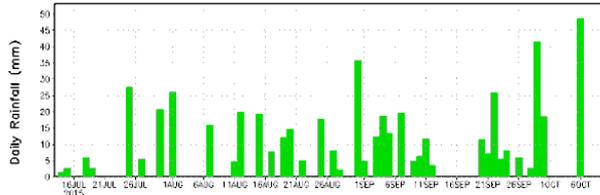
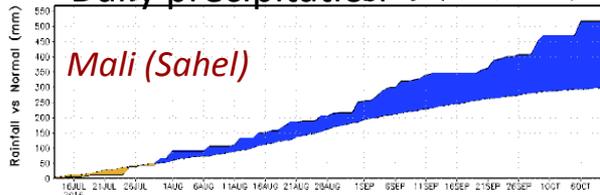
Weekly monsoon Brief

- Evolution of precipitation
- Circulation
- Forecasts
- Posted on the website

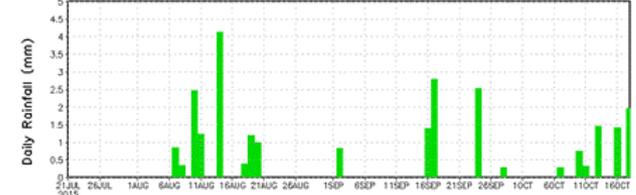
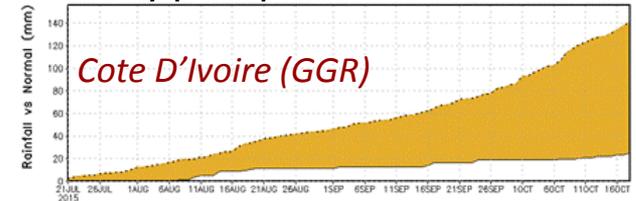
RFE v2)



Daily precipitation



Daily precipitation



Real Time Weather and Climate Products

NOAA's International Desks Website

National Weather Service
Climate Prediction Center

Home Site Map News

HOME > African Desk > International Climate

Climate Prediction Center - International Desks

[NCEP Climate Forecast System Version 2 \(CFSv2\) Seasonal Outlooks](#)

[North American Multimodel Ensemble \(NMME\) Seasonal Outlooks](#)

GLOBAL

Current Satellite IR Imagery

| | | | | |
|------------------------|--|--------------------------------------|---------------------------------------|------------------------------------|
| Global | Pacific & Atlantic | Indian & Pacific | Atlantic & Indian | CMORPH-GoogleEarth |
|------------------------|--|--------------------------------------|---------------------------------------|------------------------------------|

http://www.cpc.ncep.noaa.gov/products/african_desk/cpc_intl/index.shtml

Africa Section

Products are organized under five major tabs:

The screenshot displays the National Weather Service Climate Prediction Center website. The main content area is titled "AFRICA WEATHER AND CLIMATE" and is organized into five major product categories, each indicated by a red arrow and a blue text label:

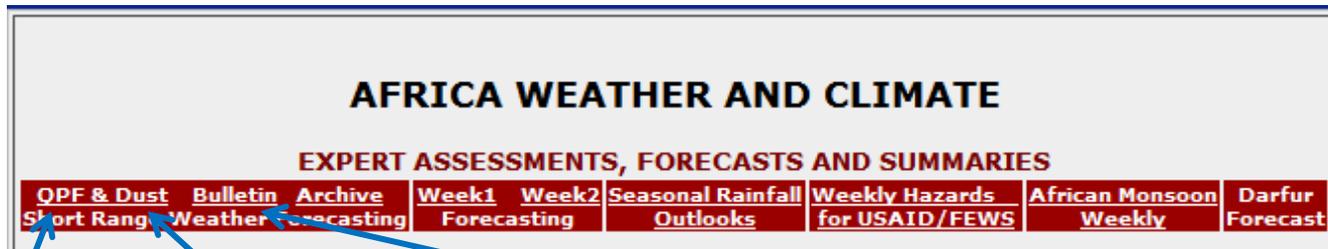
- Expert Assessments, Forecasters and Summaries:** This category includes links for QPF & Dust, Bulletin, Archive, Short Range Weather Forecasting, Week1, Week2, Seasonal Rainfall Outlooks, Weekly Hazards For USATO/FEWS, African Monsoon Weekly, and Darfur Forecast.
- Regional NWP Products:** This category includes links for West Africa, East Africa, Southern Africa, and Northern Africa.
- All Africa NWP Products:** This category includes links for Precip, Temp, Wind, RH, Heights, ReVort, Vert.Vel, ThetaE, and Column & Surface Variables.
- Surface Observations, Analyses and Monitoring Products:** This category includes links for Temp, Wind, RH, Heights, Rel.Vort, Vert.Vel, ThetaE, and Sfc Vars.
- Satellite Precipitation Estimates:** This category includes links for CurrentIR, DayNightIR, CurrentIRFE, ARC Clim, Seasonal ARC, Daily Archive, and Dekadal Archive.

The website also features a navigation menu on the left with categories such as Introduction, WebPage Description, Climate Forecasts, African Training Desk, Monsoon Desk, Special Products, General Products, Ocean Regions, CPC Briefing Pages, NCEP CFS, and Training Program. The top navigation bar includes Home, Site Map, News, Organization, and a search box.

Africa Section

- **The Expert Assessments tab features:**

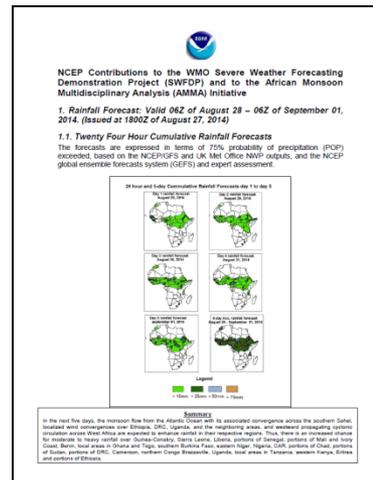
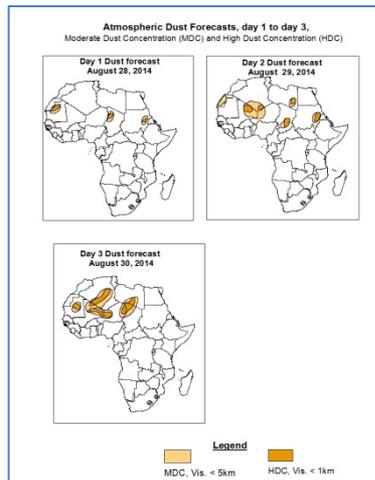
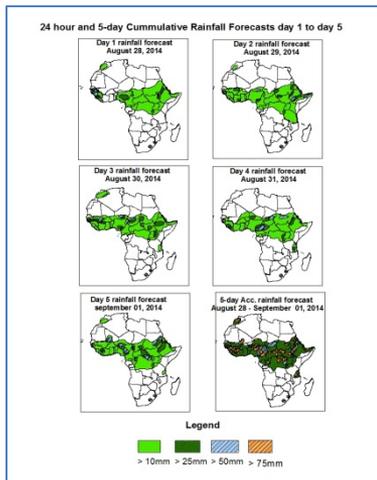
- Severe Weather Forecasts
- Sub-seasonal and Seasonal outlooks, weekly Hazards Outlooks for FEWS, Weekly African Monsoon Updates and special products



1 to 5-day Precipitation Forecasts

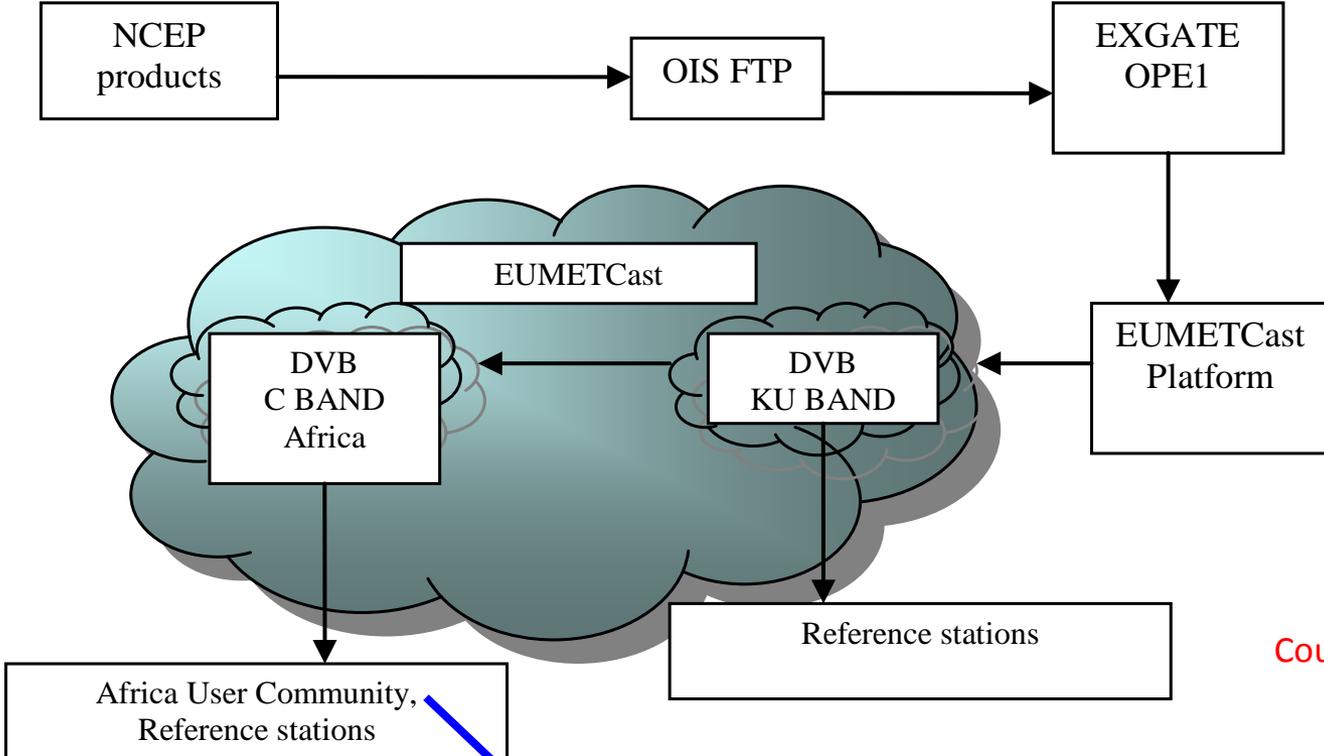
1 to 3-day Dust Forecasts

Weather Bulletin

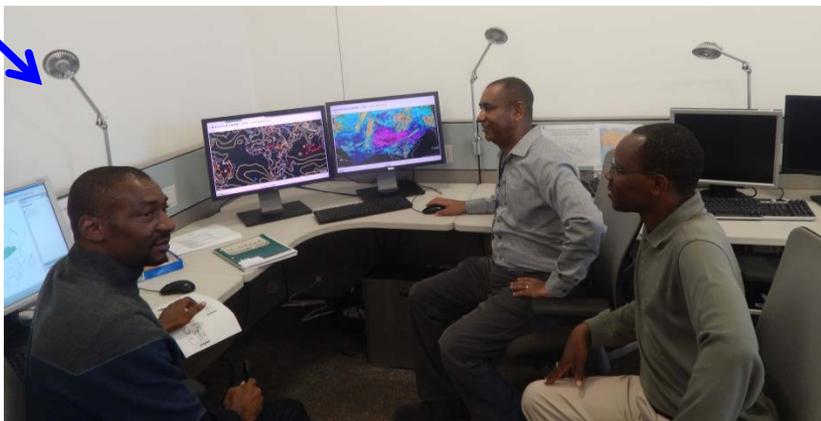


EUMETCast

Broadcasting NCEP GFS data on Africa



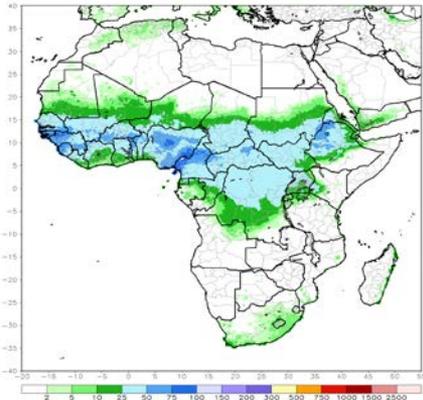
Courtesy of EUMETSAT



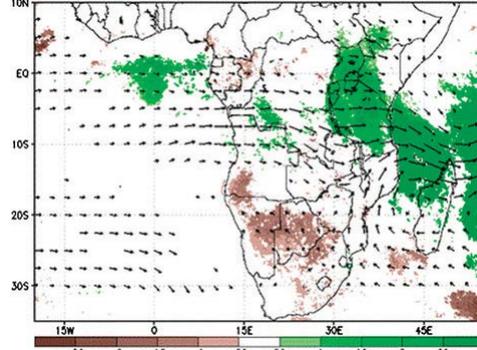
African NMHS Staff can access NCEP GFS with a EUMETCast reception station similar to other European models

Tools for Week-1 and Week-2 Outlooks

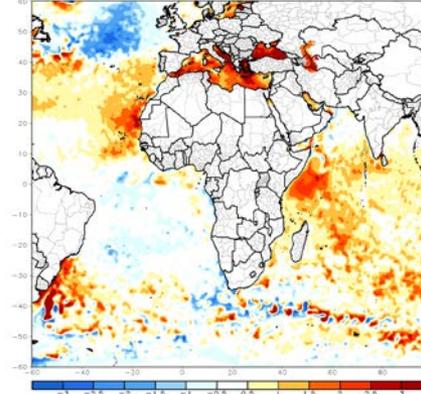
Weekly P Climatology



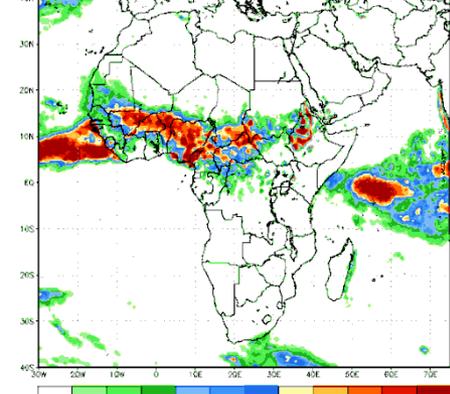
MJO P Anomaly Composite



SST Anomaly



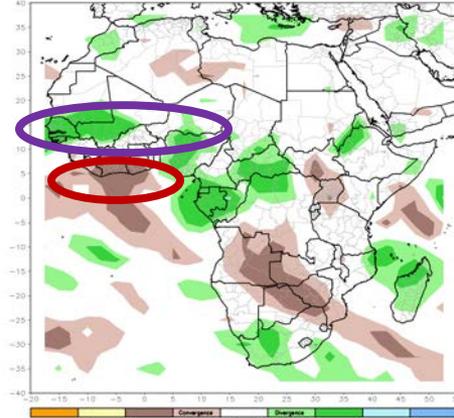
P 50 mm Prb of Exdance



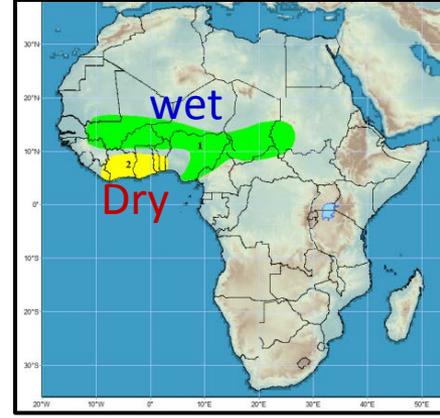
Wind 850 hPa



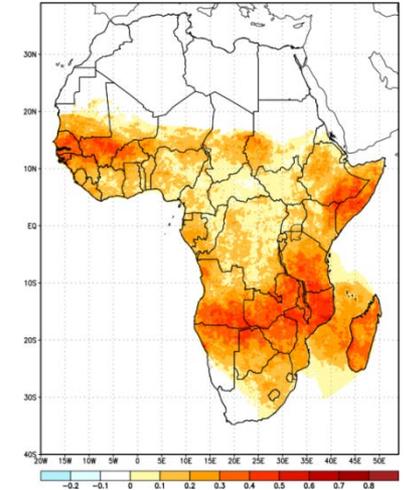
Div 200 hPa



Week1&2 Outlook



Heidke Skill – W1



CFSv2 and NMME Regionalized Seasonal Climate Forecasts

<http://www.cpc.ncep.noaa.gov/products/international/nmme/nmme2.shtml>

NMME FORECASTS FOR INTERNATIONAL REGIONS

MULTI-SEASON DISPLAY **MULTI-MODEL DISPLAY** **DATA DOWNLOADS** **VERIFICATION**

SEA SURFACE TEMPERATURE

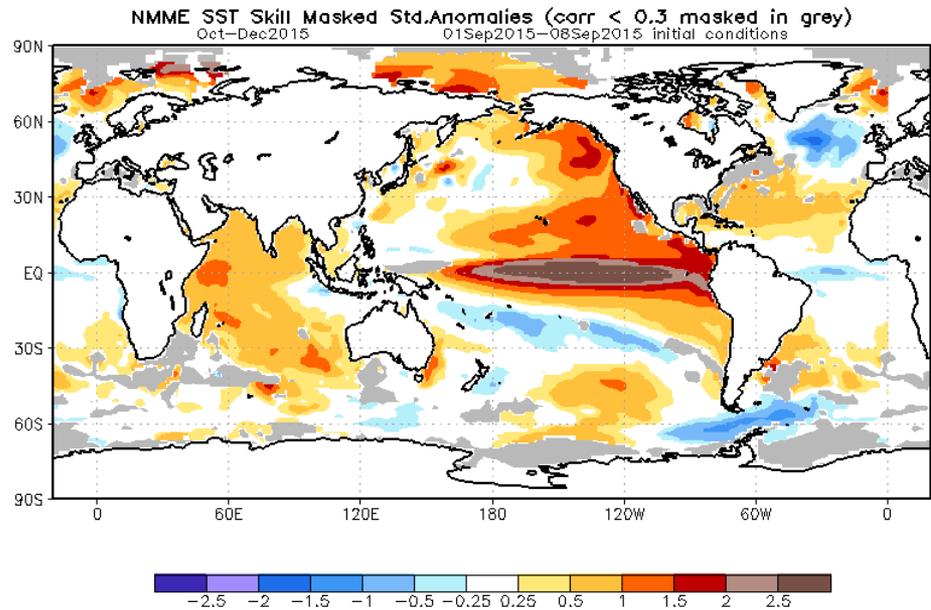
| Region Season | SEASON1 | SEASON2 | SEASON3 | SEASON4 | SEASON5 | SEASON6 |
|-------------------|---------|---------|---------|---------|---------|---------|
| Global Oceans | ○ | ○ | ○ | ○ | ○ | ○ |
| Pacific Ocean | ○ | ○ | ○ | ○ | ○ | ○ |
| Atlantic Ocean | ○ | ○ | ○ | ○ | ○ | ○ |
| Indian Ocean | ○ | ○ | ○ | ○ | ○ | ○ |
| Atlantic & Indian | ○ | ○ | ○ | ○ | ○ | ○ |

PRECIPITATION

| Region Season | SEASON1 | SEASON2 | SEASON3 | SEASON4 | SEASON5 | SEASON6 |
|-----------------|---------|---------|---------|---------|---------|---------|
| Global | ○ | ○ | ○ | ○ | ○ | ○ |
| Africa | ○ | ○ | ○ | ○ | ○ | ○ |
| CAM&Caribbean | ○ | ○ | ○ | ○ | ○ | ○ |
| Maritime-CONT | ○ | ○ | ○ | ○ | ○ | ○ |
| Central Asia | ○ | ○ | ○ | ○ | ○ | ○ |
| South Asia | ○ | ○ | ○ | ○ | ○ | ○ |
| East Asia | ○ | ○ | ○ | ○ | ○ | ○ |
| South America | ○ | ○ | ○ | ○ | ○ | ○ |

2-METER AIR TEMPERATURE

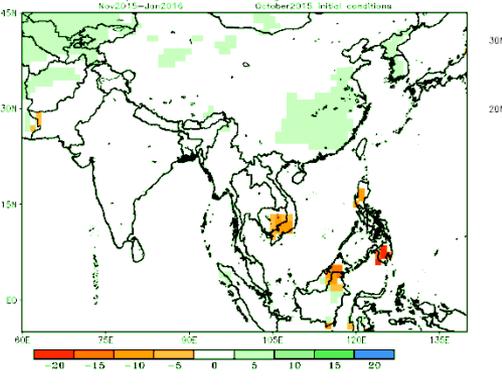
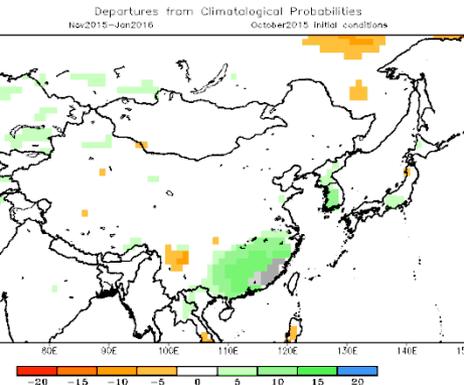
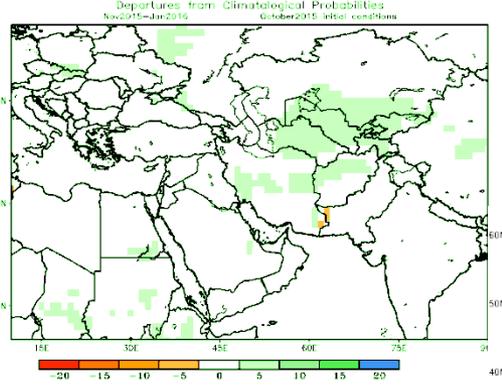
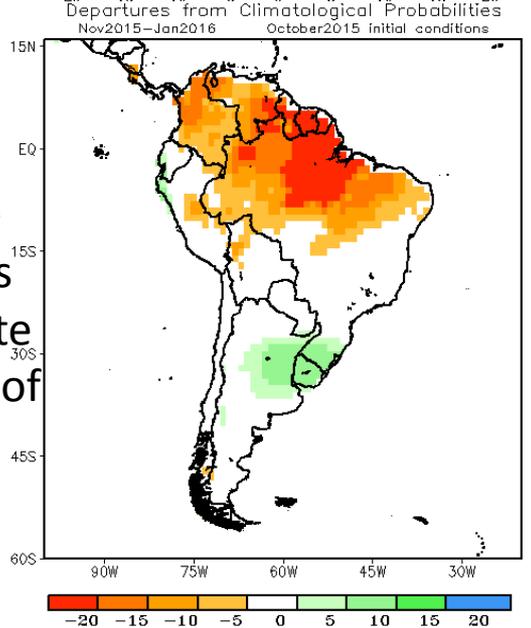
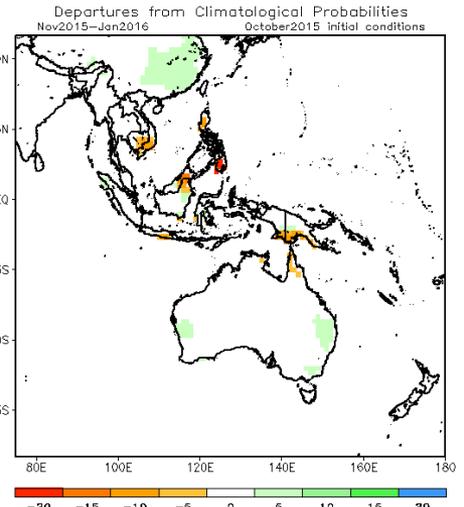
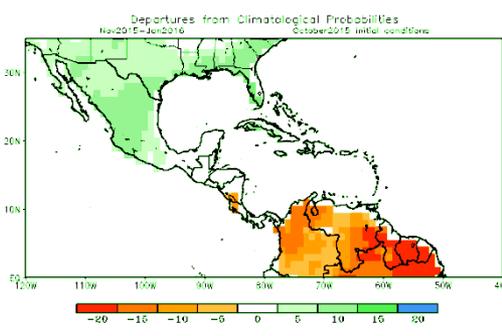
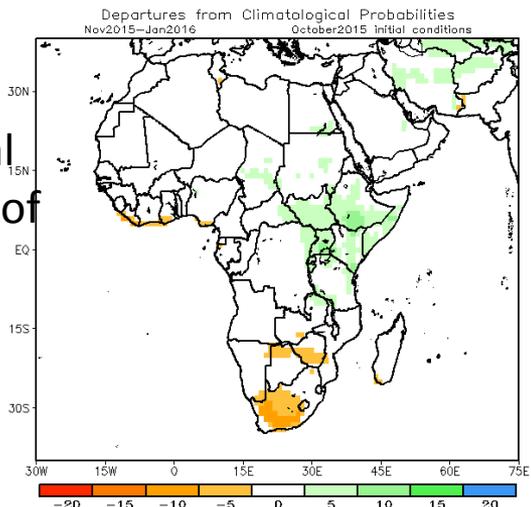
| Region Season | SEASON1 | SEASON2 | SEASON3 | SEASON4 | SEASON5 | SEASON6 |
|-----------------|---------|---------|---------|---------|---------|---------|
| Global | ○ | ○ | ○ | ○ | ○ | ○ |
| Africa | ○ | ○ | ○ | ○ | ○ | ○ |
| CAM&Caribbean | ○ | ○ | ○ | ○ | ○ | ○ |
| Maritime-CONT | ○ | ○ | ○ | ○ | ○ | ○ |
| Central Asia | ○ | ○ | ○ | ○ | ○ | ○ |
| South Asia | ○ | ○ | ○ | ○ | ○ | ○ |
| East Asia | ○ | ○ | ○ | ○ | ○ | ○ |
| South America | ○ | ○ | ○ | ○ | ○ | ○ |



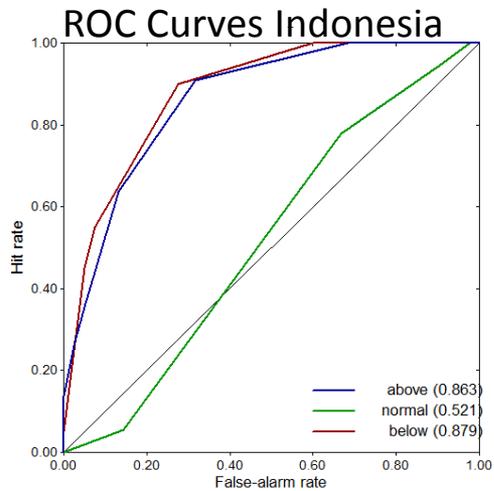
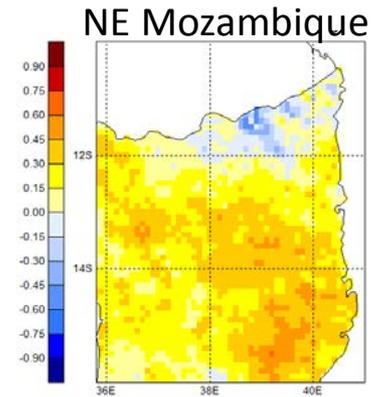
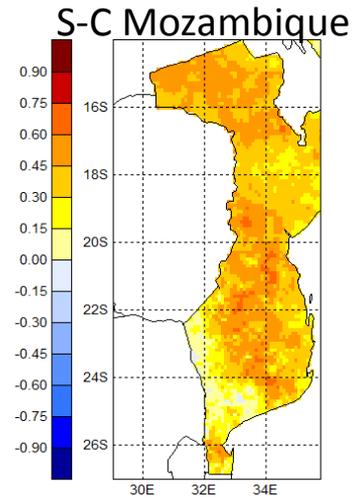
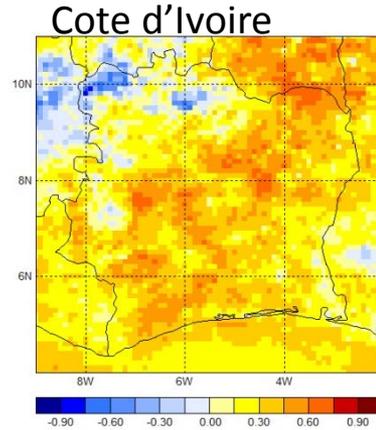
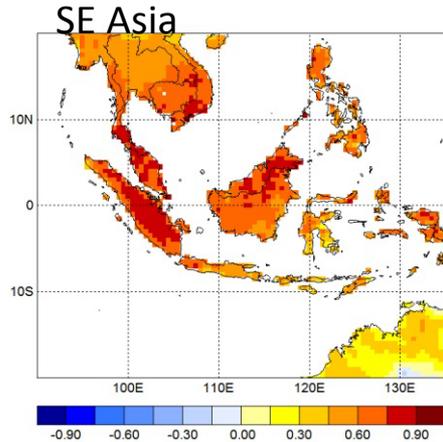
Global Seasonal Forecast Updates

Calibrated seasonal
Forecasts in terms of
departures from
climatological
probabilities

Forecasts graphics
and data are made
available to NMHSs
and regional climate
centers in support of
RCOFs and NCOFs



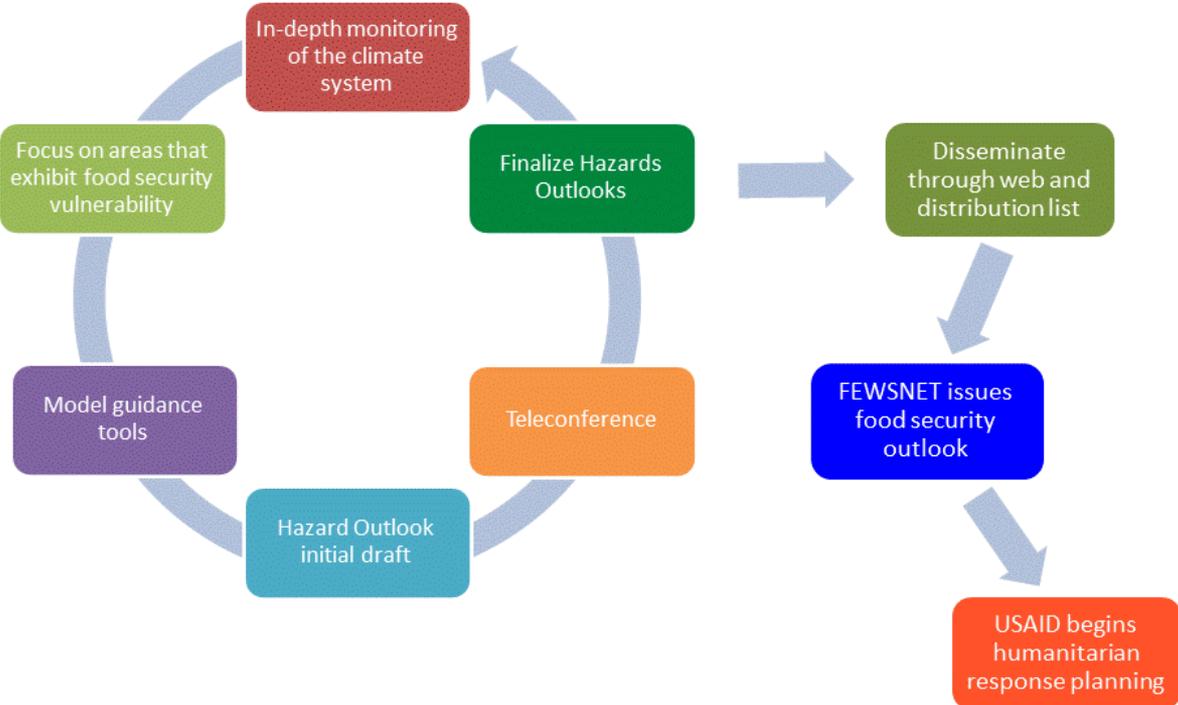
NMME and CFSv2 Seasonal Forecasts Skill



NMME Skill with CCA Correction, SE Asia 2m Temperature

| Experment | CFSv2 | CMC1 | CMC2 | GFDL | NASA | NCAR | NMME |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Lead 0: Forecasts | 0.53 | 0.56 | 0.56 | 0.53 | 0.56 | 0.39 | 0.56 |
| CCA Corrections | 0.65 | 0.61 | 0.58 | 0.64 | 0.67 | 0.39 | 0.61 |
| Lead 1: Forecasts | 0.51 | 0.50 | 0.55 | 0.49 | 0.54 | 0.40 | 0.55 |
| CCA Corrections | 0.64 | 0.58 | 0.56 | 0.63 | 0.66 | 0.47 | 0.65 |
| Lead 2: Forecasts | 0.44 | 0.50 | 0.54 | 0.44 | 0.49 | 0.39 | 0.55 |
| CCA Corrections | 0.39 | 0.28 | 0.37 | 0.46 | 0.38 | 0.09 | 0.42 |
| Lead 3: Forecasts | 0.50 | 0.57 | 0.57 | 0.45 | 0.56 | 0.52 | 0.57 |
| CCA Corrections | 0.65 | 0.65 | 0.66 | 0.61 | 0.68 | 0.51 | 0.69 |
| Lead 4: Forecasts | 0.52 | 0.57 | 0.59 | 0.48 | 0.60 | 0.56 | 0.58 |
| CCA Corrections | 0.65 | 0.62 | 0.67 | 0.61 | 0.68 | 0.57 | 0.69 |

Regional Hazards Outlooks for Food Security



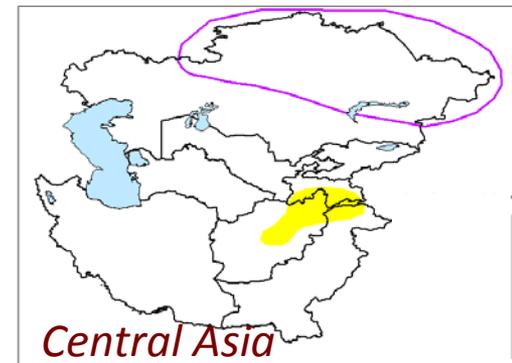
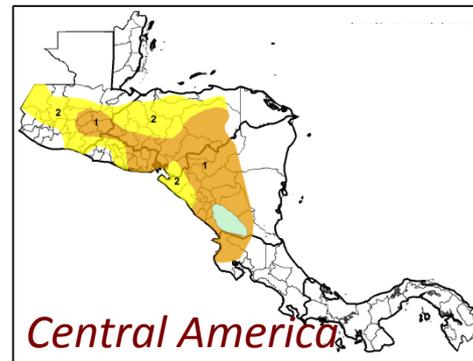
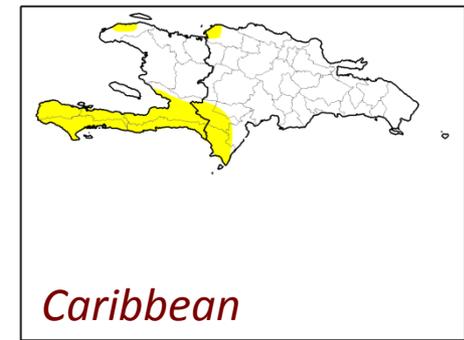
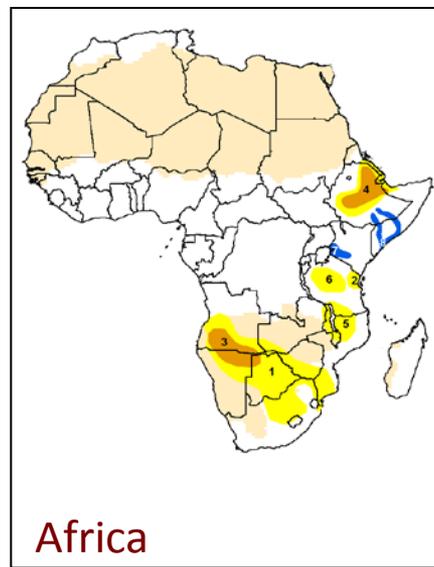
Regional Hazards Outlooks for Food Security

Numerical model forecasts and satellite derived products: precipitation, NDVI, soil moisture are analyzed to prepare regional hazards outlooks for food security.

Information is used to assess climate impacts on agriculture and water resources.

Flood (drought) risk areas are shaded in blue (brown).

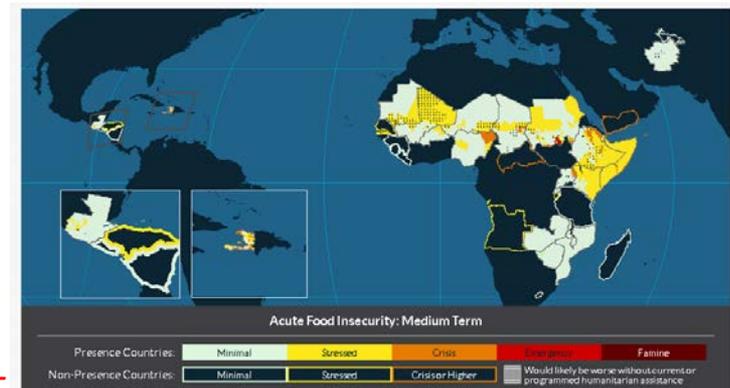
Enable USAID to develop strategies for humanitarian relief in affected areas.



FEWSNET

Global Food Security Outlook

Courtesy of FEWSNET



Capacity Development

Forecasting Session, African Desk



Trainee at Desk



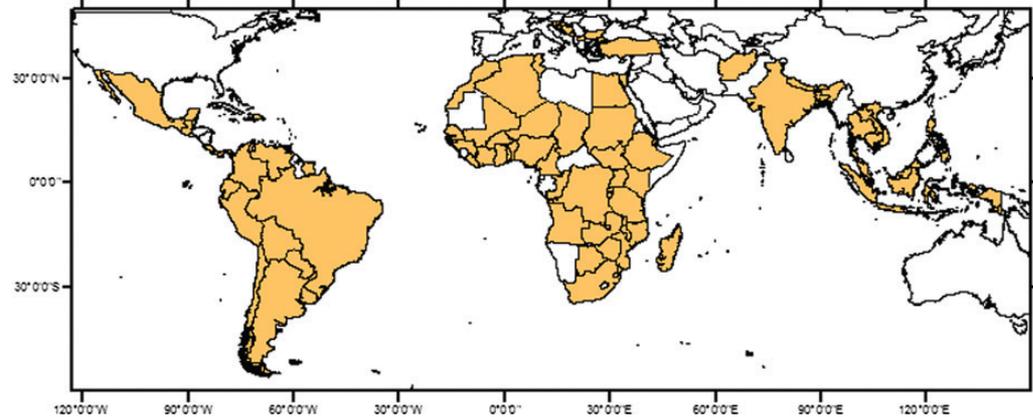
Group Picture 1st Int Training Workshop



Classroom Session 4th Int Training Wkshp



CPC Residency and Off Training Workshop Coverage



Over 300 meteorologists from 110 countries participated in combined CPC Residency and CPC-OFDA off-site training workshops

Summary International Desks Activities

- Weather forecasts in support of the WMO SWFDP
- Week-1 & Week-2 outlooks feed into CPC weekly GTH
- Seasonal climate outlooks feed into RCOFs
- African monsoon, part of the CPC global monsoon monitoring
- Regional hazards outlooks for food security, support to FEWSNET
- Tropical Cyclone monitoring, support to USAID/OFDA
- Provide the global community with access to NCEP forecasts
- Develop capacity in climate monitoring and forecasting

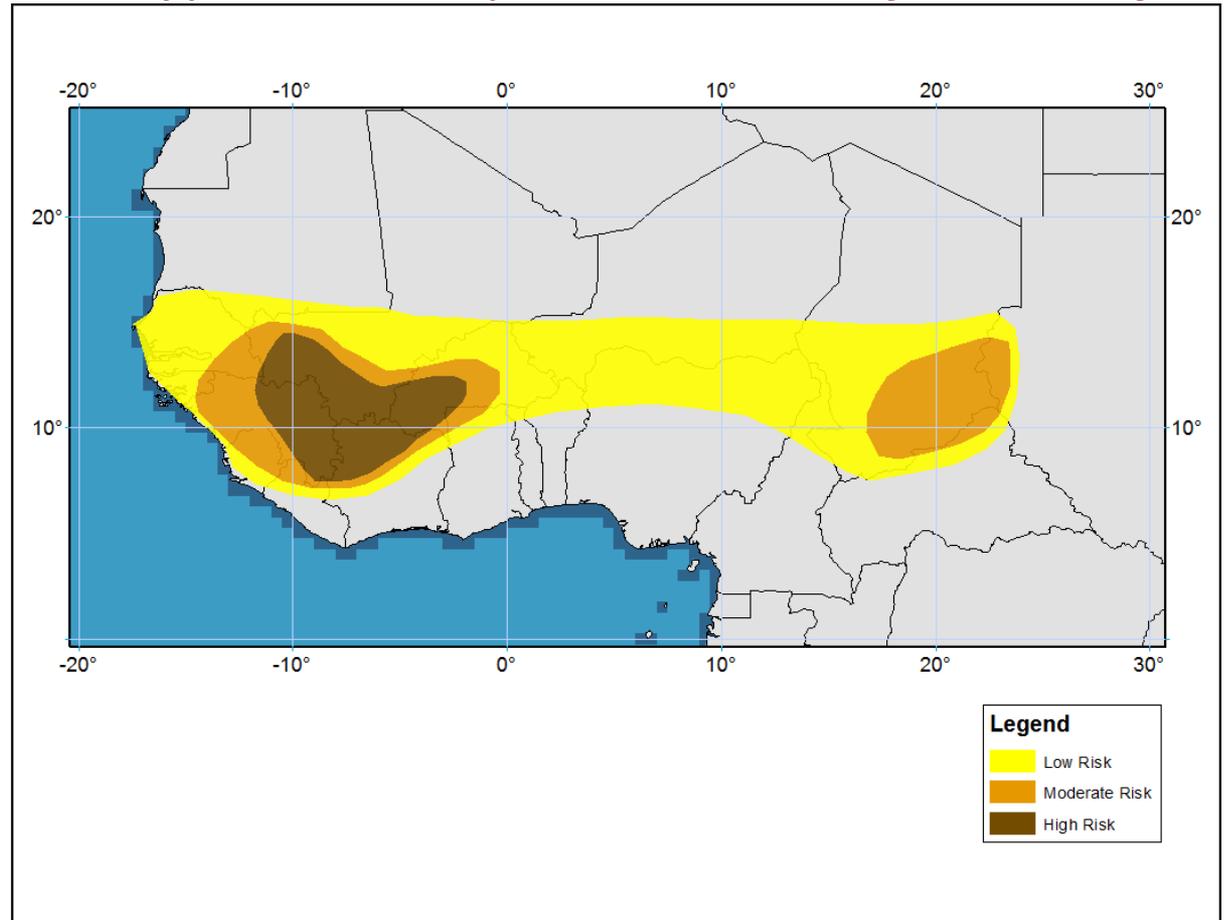
Vision

Expand the use of climate information in health decision making

In-situ data, satellite observations, and model data are used to continuously monitor and predict climatic events that can be linked to outbreaks of malaria epidemics.

Shaded in dark and light brown are areas of high and moderate risk of epidemic outbreaks. The areas shaded in yellow are at low risk

Prototype Malaria Epidemic Outlook for West Africa



Acknowledgements

- Louis Uccellini
- Laura Furgioni
- Joseph Friday
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- William Lapenta
- Dennis Staley
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- Wayne Higgins
- Mike Halpert
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- David Rodenhuis
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- Ants Leetmaa
- James Miller
- Gary Eilerts

All CPC and NCEP staff and former staff who contributed to the International Desks