



# African Regional Climate Centre

## Demonstration phase: Monitoring products

*African Centre for Meteorological Applications for Development (ACMAD)*

*Climate and Environment Department (CED)*

*P.OBOX: 13 184*

*Niamey-Niger*

*Email: [dgacmad@acmad.org](mailto:dgacmad@acmad.org)*

*<http://www.acmad.net/rcc/index.php>*

*Presenters*

*-Andre KAMGA FOAMOUHOUE, Chief, CED/ACMAD*

*-- MBAIGUEDEM MIAMBAYE, Climate Applications Specialist, CED/ACMAD*



World Meteorological Organization  
Organisation météorologique mondiale

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Tél.: +41 (0) 22 730 81 11 – Fax: +41 (0) 22 730 81 81  
wmo@wmo.int – www.wmo.int

TEMPS • CLIMAT • EAU  
WEATHER • CLIMATE • WATER

No 0119/MT/DNM/14

Conakry, August 15 2014

Secretary General,  
World Meteorological Organization  
7 bis, avenue de la paix, Case Postale 2300  
CH 1211 Geneva 2, SWITZERLAND

**Subject:** Designation of the African Regional Climate Centre

**Dear Secretary General,**

It is my pleasure to inform you that following the fifteenth session of WMO/RA I session in November 2010 in Marrakech (Morocco), the African Centre for Meteorological Applications for Development (ACMAD) started the RCC demonstration phase in January 2012.

I hereby request the initiation of the process for its designation as the African Regional Climate Centre. The RCC demonstration phase report is attached.

Sincerely

**Dr. Mamadou Lamine BAH**  
President of WMO/RA I



**COPIES TO:**

- Dr. Thomas C. PETERSON (President of WMO/CCI, email: [thomas.c.peterson@noaa.gov](mailto:thomas.c.peterson@noaa.gov) )
- Dr. Fred BRANSKI (President of WMO/CBS, email: [fred.branski@noaa.gov](mailto:fred.branski@noaa.gov) )
- M. Adama Alhassane DIALLO (Director General of ACMAD, email: [a.diallo@acmad.org](mailto:a.diallo@acmad.org);  
[djacmad@acmad.org](mailto:djacmad@acmad.org))



# OUTLINE



- ✓ <http://www.acmad.net/rcc/climatemonitoring.php>
- ✓ Annual state of African climate
- ✓ Monthly Climate diagnostics for Africa
- ✓ Dekadal climate diagnostics for Africa
- ✓ Climate Assessments
- ✓ Precipitation and temperature climatologies
- ✓ Significant climate anomalies and extremes

# RCC HOMEPAGE

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www.acmad.net/rcc/index.php

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## African Regional Climate Centre



- Homepage
- Data Services
- Climate Monitoring
- Long Range Forecasting Function
- Training
- Highly recommended Function
- Coordination

### Contact

55, Avenue des ministeres PPL6 BP: 13 184  
Niamey - Niger Tel: +227 20 73 49 92 Fax:  
2272072327  
Email:  
dgacmad@acmad.net/dgacmad@acmad.org  
site web: www.acmad.net

### Lastest New

In conjunction with the sixteenth session of the commission for climatology and the thirty-fifth Meeting of the joint scientific committee of the World Climate Research Programme. 30 June - 2 July 2014 Heidelberg Germany for information [www.wmo.int/clipsconf-2014](http://www.wmo.int/clipsconf-2014)

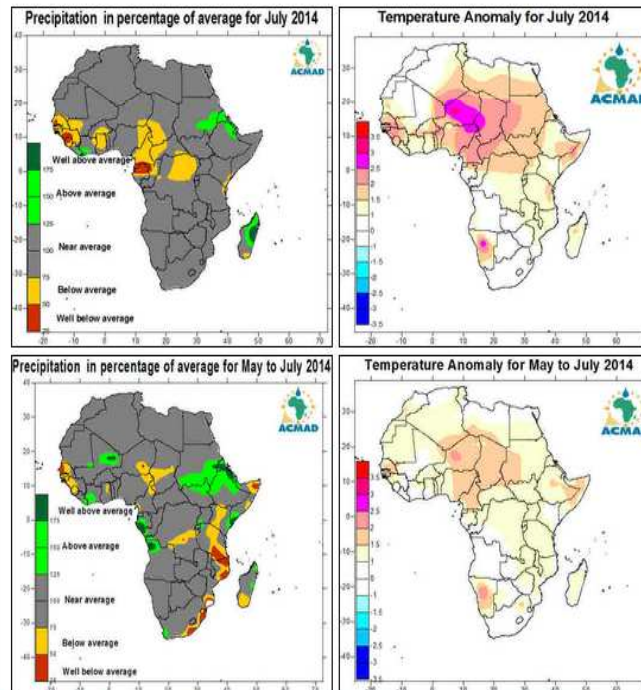
### Partners

WMO  
NOOA  
IRI  
ACMAD

### WMO Regional Association I Pilot African Regional Climate Centre (WMO RA I Pilot African RCC).

The World Meteorological Organisation (WMO) has defined a 3 level meteorological infrastructure at global, regional and national levels to address his member's needs for climate services. [more information](#)

### Seasonal 2M Temperature / Seasonal Precipitation Forecast for July / August 2014 over Africa



FR 17:06 02/09/2014



# Climate Monitoring Products

<http://www.acmad.net/rcc/climatemonitoring.php>

The screenshot shows a web browser window displaying the African Regional Climate Centre (ACMAD) website. The browser's address bar shows the URL [www.acmad.net/rcc/climatemonitoring.php](http://www.acmad.net/rcc/climatemonitoring.php). The website header features the ACMAD logo on the left and the WMO OMM logo on the right. Below the header, there are several navigation menus and sections:

- Navigation Menu:** A vertical list of links including Homepage, Data Services, Climate Monitoring, Long Range Forecasting Function, Training, Highly recommended Function, and Coordination.
- Contact:** Provides the address (55, Avenue des ministères PPL6 BP: 13 184 Niamey - Niger), telephone (+227 20 73 49 92), fax (2272072327), email (dgacmad@acmad.net), and website (www.acmad.net).
- Lastest New:** Announces the sixteenth session of the commission for climatology and the thirty-fifth Meeting of the joint scientific committee of the World Climate Research Programme, held from 30 June to 2 July 2014 in Heidelberg, Germany.
- Partener:** Lists partner organizations: WMO, NOAA, IRI, and ACMAD.
- Climate Monitoring:** A section describing the African RCC's monitoring activities, including temperature, precipitation, and circulation over Africa and the globe.
- Climate Monitoring Function:** A table detailing specific activities and the products they generate.

| Activities                                 | Products  |
|--|---|
| Climate diagnostics and assessment         | Annual state of the climate report (ACMAD)  |
|  | Annual state of the climate report (WMO/BAMS), Africa section   |
|  | Monthly climate diagnostic bulletin   |
|  | 10 day climate diagnostic bulletin  |
| Establishment of reference climatiques     | Precipitation, temperatures, anomalies climate indices maps, time series graphs with trends   |
|  | Precipitation and temperature reference climatologies for 31_60,61-90 averages for 71-00, 81-10                                       |
| Implementation of a regional climate watch | Climate assessment and datasets climatologies for precipitation, temperature, significant anomalies and indices based on station data |
|  | Climate information and advisories focus on significant anomalies and extremes  |

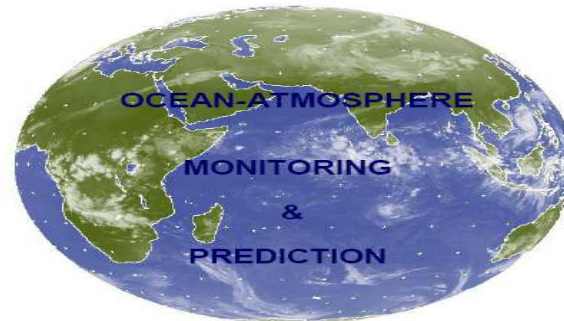
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**AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT  
CENTRE AFRICAIN POUR LES APPLICATIONS DE LA METEOROLOGIE AU  
DEVELOPPEMENT**



METS 15 NOV 2003 1800 BT01



<http://www.acmad.net/rcc/index.php>

RCC AFRICA

www.acmad.net/rcc/index.php

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**Homepage**  
Data Services  
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site web: www.acmad.net

**Lastest New**

The 8th Forum on Seasonal Climate Forecasts for central Africa countries, PRESAC-08 was held in KINSHASA (Democratic Republic of Congo) from 22 to 26 September 2014

The African Centre of Meteorological Applications for Development (ACMAD) and METELSAT organized the PRESAC-08. This Forum to improve understand and exchange knowledge on climate variability in the region by training experts climates in seasonal rainfall forecasting, production of climate information and better interpretation and use to manage risks in the navigational activities in the Oubangui and Congo rivers; stream flows in the river basins and agricultural production in central Africa countries. The Forum was also an opportunity to share and learn about the proposed creation of a Regional Climate Centre (RCC) for central

**WMO Regional Association I Pilot African Regional Climate Centre (WMO RA I Pilot African RCC).**

The World Meteorological Organisation (WMO) has defined a 3 level meteorological infrastructure at global, regional and national levels to address his member's needs for climate services. more information

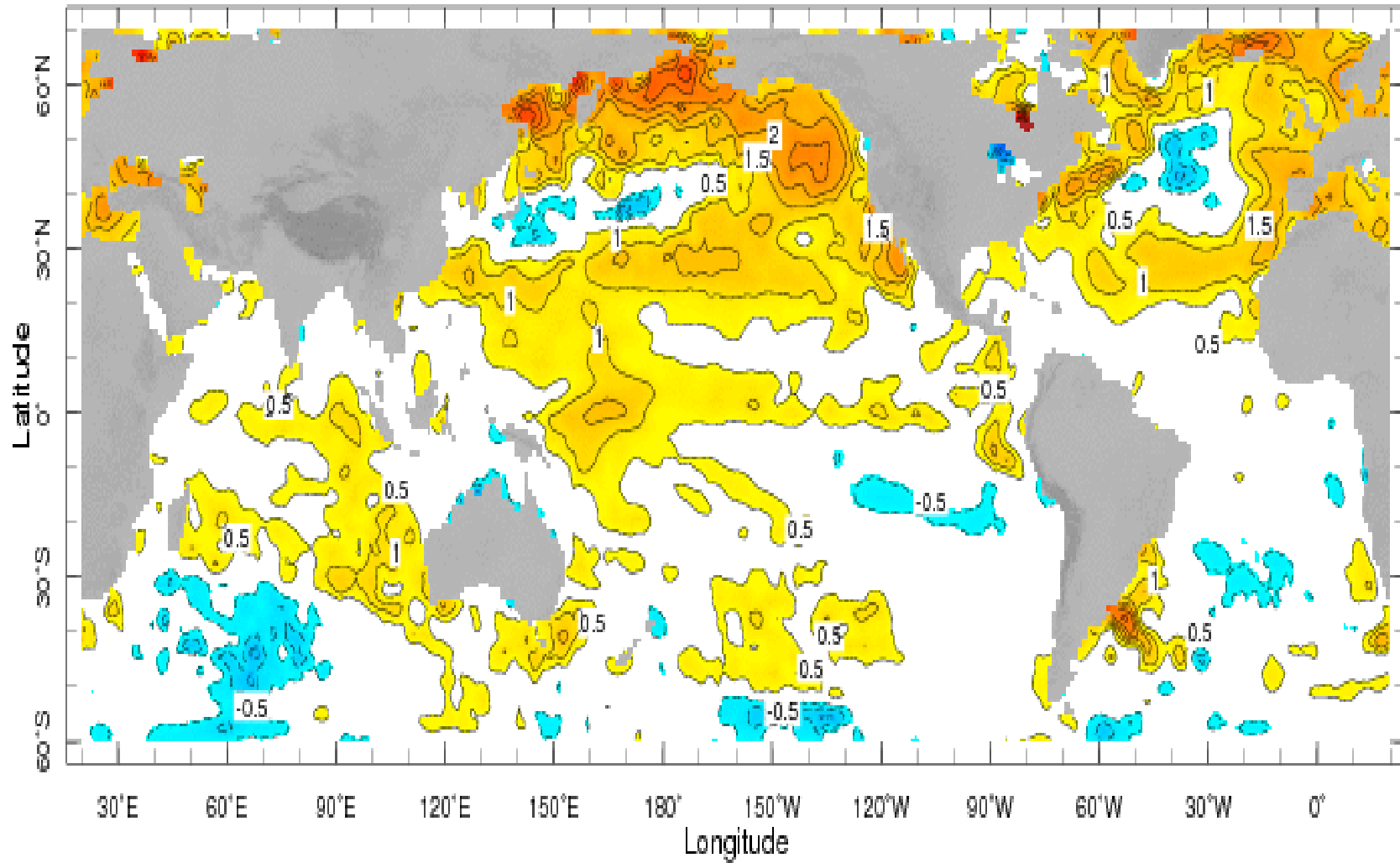
**Seasonal 2M Temperature / Seasonal Precipitation Forecast for Nov / Jan 2014 / 2015 over Africa**

|  |  |
|--|--|
| <b>Precipitation in percentage of average for September 2014</b><br>             | <b>Temperature anomaly for September 2014</b><br>  |
| <b>Precipitation in percentage of average for July-August-September 2014</b><br> | <b>Seasonal temperature anomaly for July-August-September 2014</b><br>                                       |
| <b>Precipitation in percentage of average from 1 to 10 November 2014</b><br>     | <b>SEASONAL PRECIPITATION FORECAST FOR DECEMBER-JANUARY-FEBRUARY 2014/2015 ISSUED ON OCTOBER 31 2014</b><br> |

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# Global SST anomaly Monitoring September 2014

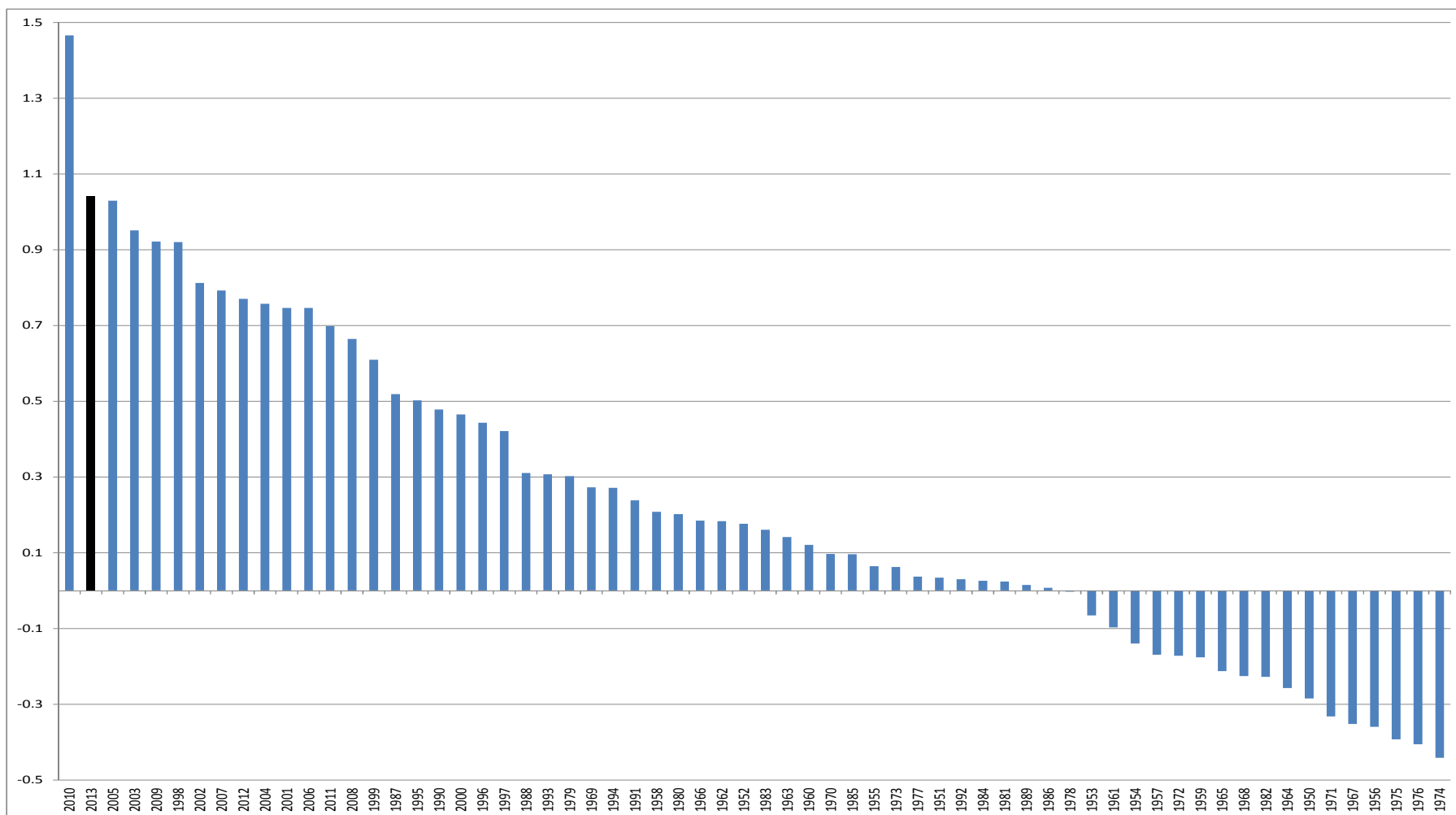
Sep 2014





## Annual state of African climate in 2013

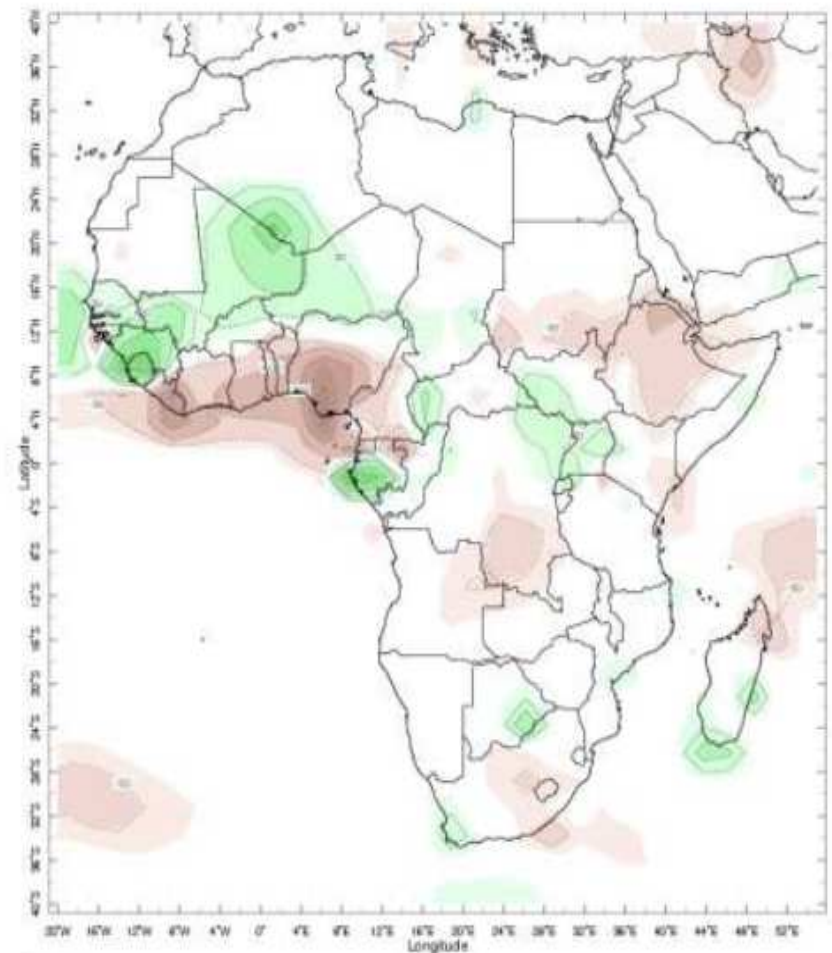
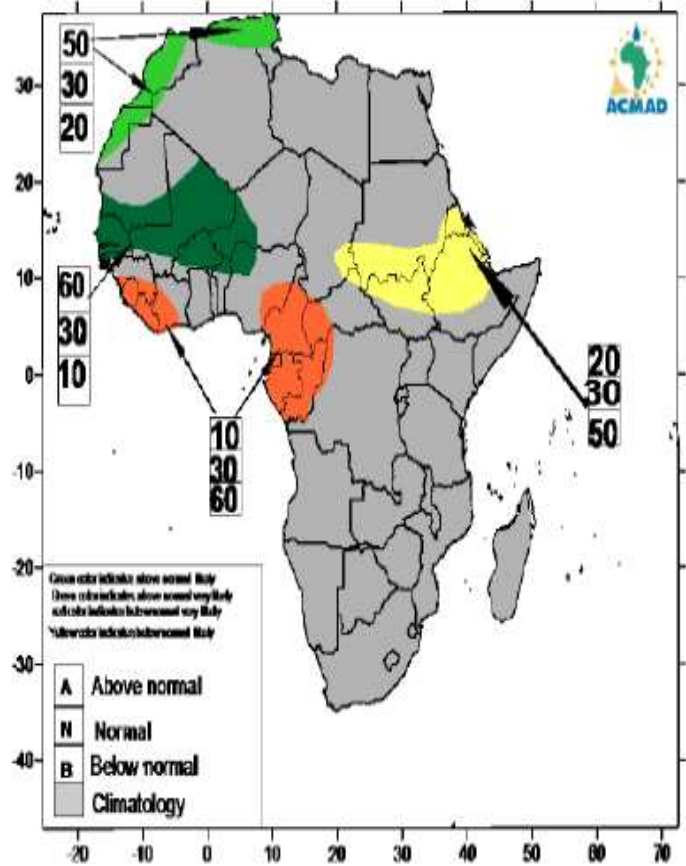
Ranked surface temperatures difference (°C) from 1961-1990 average since 1950 for all Africa.  
(Source: NOAA/NCEP/CPC/GHCN\_CAMS)





# Visual Evaluation of ACMAD Long Range forecasts for Aug-Oct 2013

## SEASONAL PRECIPITATION FORECAST FOR AUGUST- SEPTEMBER-OCTOBER 2013 ISSUED ON JULY 31 2013



Aug-Oct 2013

# From products to services



August 2014

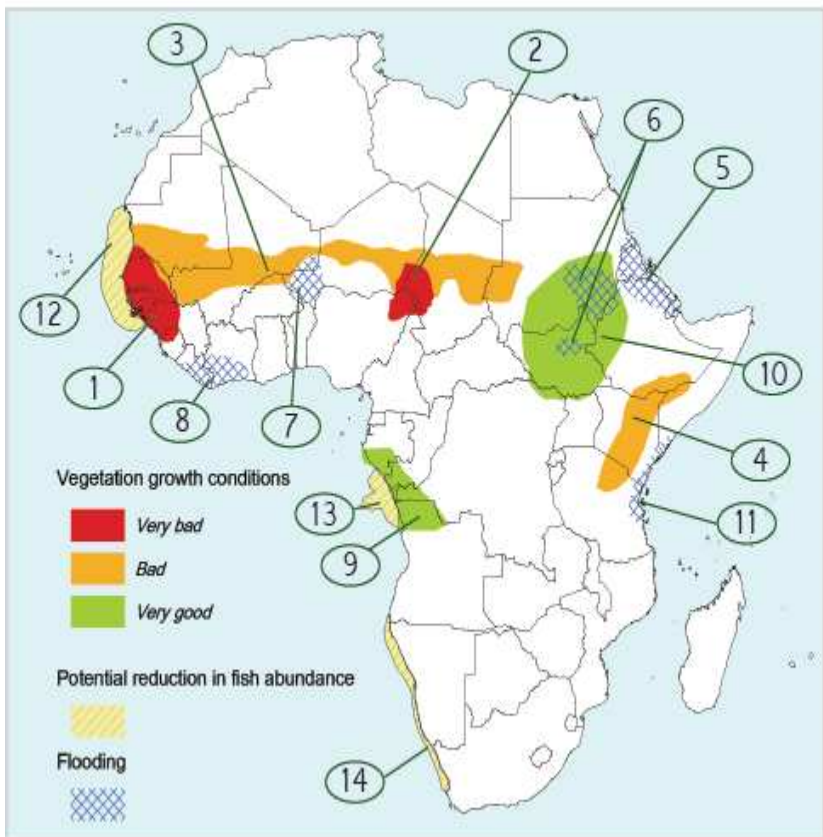


Figure 1. Map of the main events

## HIGHLIGHTS

- Persistent dry conditions** were observed from May to July. This might lead to poor crop and pastoral production and impact negatively on food security for millions of people. Seasonal rainfall forecast indicates that the situation is not expected to improve for the rest of the season. Close monitoring of the area is highly recommended.
- Bad start of the growing season** is observed due to the delay and/or poor distribution of rainfall. Poor yields and below average biomass production are expected as rainfall forecasts indicate average to below rainfall during the remaining period of the season. Close monitoring is recommended.
- Favourable conditions of vegetation growth** resulting from good rains led to above average vegetation, reaching in some areas the historical maximum.
- Flooding events** due to heavy rains from June to August caused loss of lives and displacement of people, damage to infrastructure, properties, crops and livestock.
- The coast of Senegal-Mauritania and parts of the Indian Ocean north of Madagascar** were cooler than usual. Warming of the ocean surface is expected along some parts of the African coast which has the potential for reducing biological production in the major fishing grounds.



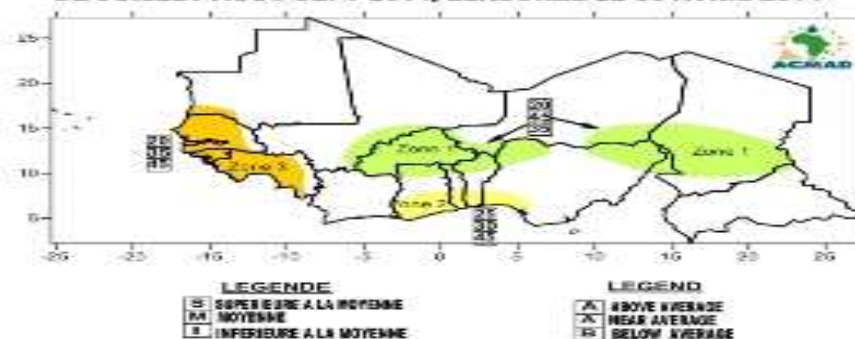
## **Gambia Early warning bulletin of Dekad 3 of October 2014**

- The Country average as of 20<sup>th</sup> October 2014, **stood at 638.9mm, 33% below the country average of last year** (as of 20<sup>th</sup> October 2013), and **22% below the long term mean (1981-2010; 30 year period)**.
- Seasonal rainfall totals for individual regions **like in the previous dekads** showed that **only Basse (Upper River Region) has recorded a surplus of 35.1mm** against the long term mean 1981\_2010 depicting a continued an abnormality in the rainfall trend in this year's rainy season

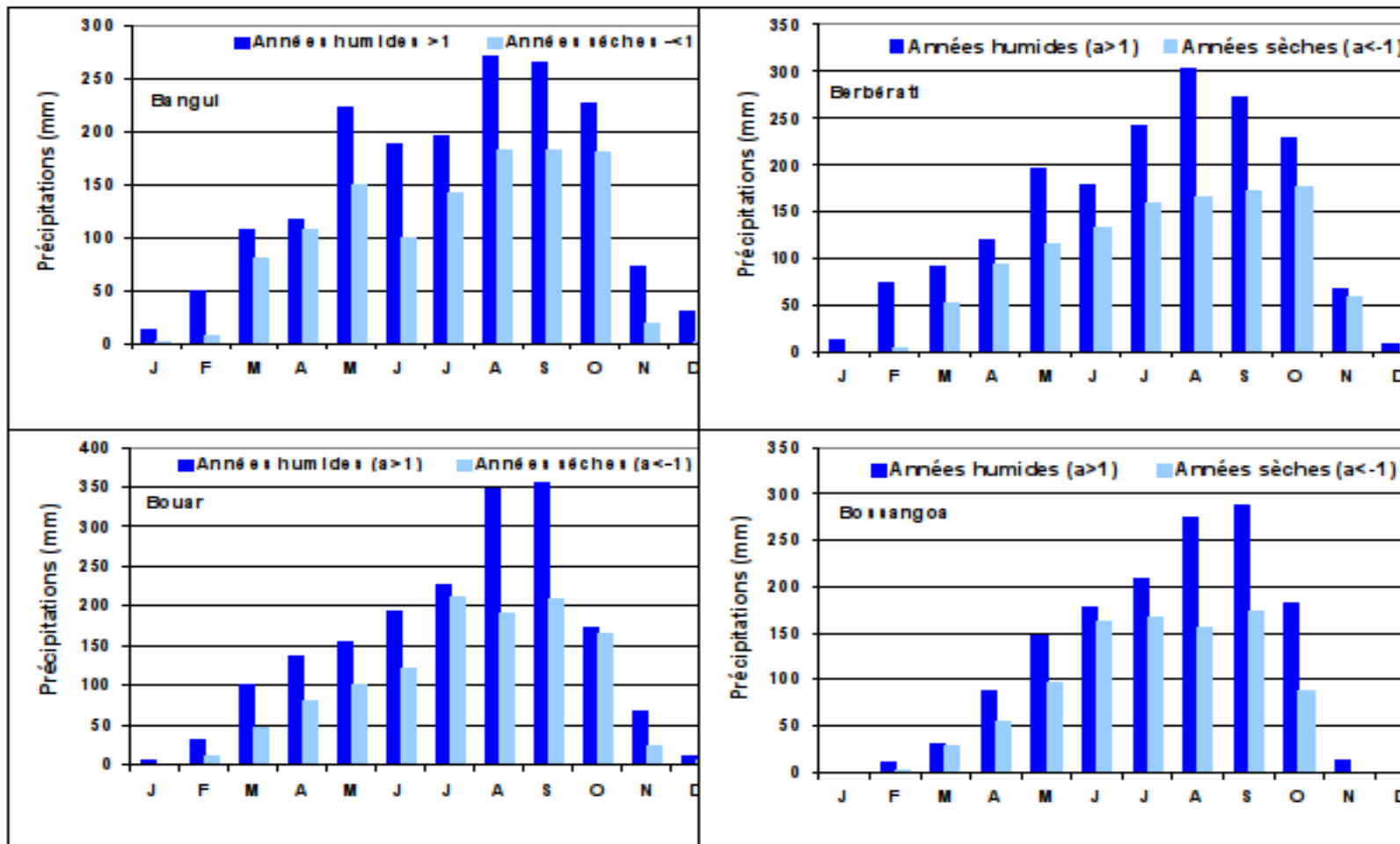
Table : 2014 seasonal rainfalls as of October 20<sup>th</sup> 2014, compared to that of last year and the long term mean (1981\_2010).

| Station Name   | Seasonal total for 2 <sup>nd</sup> dekad October 2014 | Seasonal total for 2 <sup>nd</sup> dekad October 2013 | Dekadal normal for 2 <sup>nd</sup> Dekad October in 30 years period 1981_2010 | Deficit or surplus for 2014 and 2013 2 <sup>nd</sup> dekad of October comparisons |         | Deficit or surplus for 2014 compared to the Normal 1981_2010 |         |
|----------------|---|---|---|---|---------|--|---------|
|                |   |   |   | Deficit   | Surplus | Deficit  | Surplus |
| Yundum Airport | 640.6   | 1202.0  | 887.4   | -561.4  |         | -246.8   |         |
| Sibanor        | 819.2   |   | -   | -   | -       |  | -       |
| Jenoi          | 606   | 1041.4  | 1006.4  | -435.4  |         | -400.4   |         |
| Banjul         | 445.2   | 1192.8  | 816.6   | -747.6  |         | -371.4   |         |
| Kerewan        | 594.5   | 928.8   | 807.0   | -334.3  |         | -212.5   |         |
| Kaur           | 457.1   | 681.6   | 752.7   | -224.5  |         | -295.6   |         |
| Janjanbureh    | 498.1   | 1066.5  | 794.8   | -568.4  |         | -296.7   |         |
| Sapu           | 690.1   | 1517.1  | 854.8   | -827.0  |         | -164.7   |         |
| Basse          | 892.0   | 973.7   | 856.9   | -81.7   |         |  | +35.1   |
| Fatoto         | 746.8   | 980.0   | 844.8   | -233.2  |         | -98.0  |         |

SEASONAL PRECIPITATION FORECAST FOR JULY-AUGUST-SEPT 2014  
ISSUED ON APRIL 30 2014  
PREVISION CLIMATIQUE SAISONNIERE DES PRECIPITATIONS  
DE JUILLET-AOÛT-SEPT 2014, ELABOREE LE 30 AVRIL 2014



# Annual cycle for precipitation in wet and dry years Stations of Central Africa Republic



*Cycles interannuels des anomalies pluviométriques normalisées, 1951-2010*

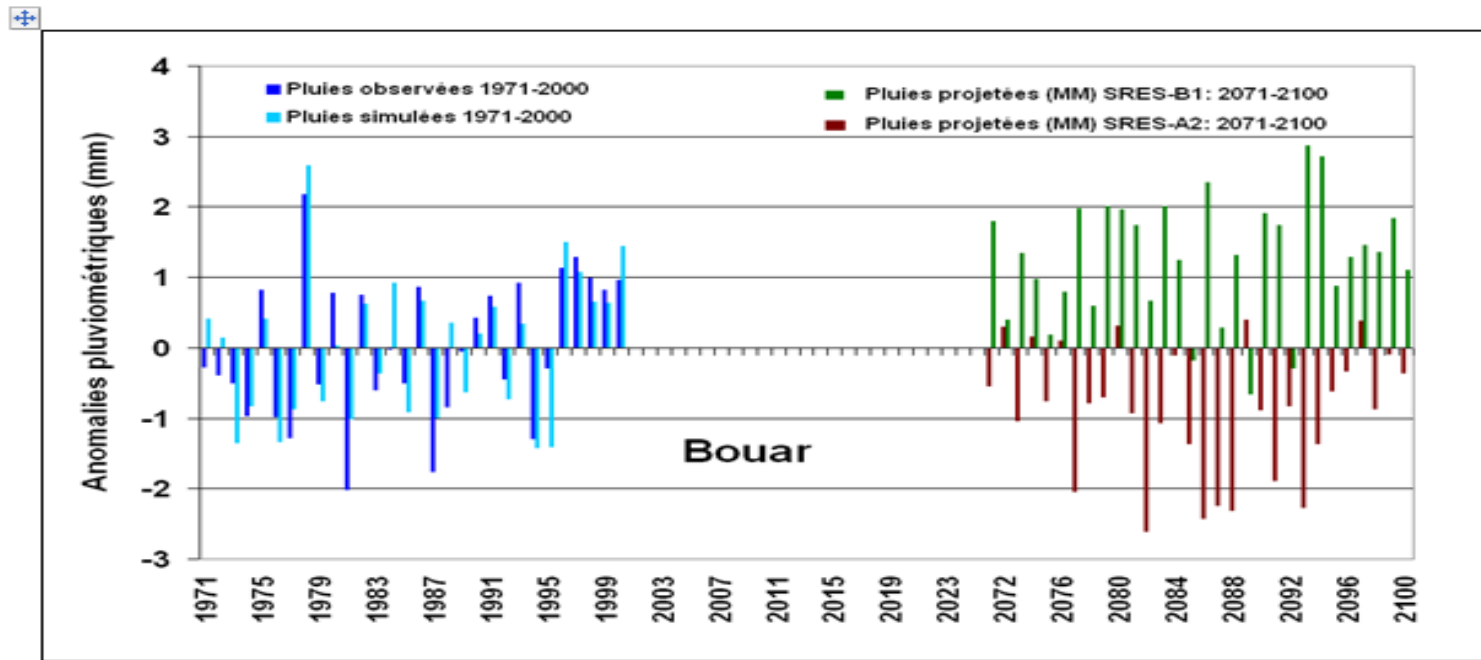
# Climate Assessment

Validation of precipitation (left) and projected scenarios for 2071-2100 (right).

Data sources: Station observations and CMIP3 model outputs

Multimodel average of the best CMIP3 outputs over Central Africa are considered.

Between 22% and 44% reduction in annual rainfall with SRES A2 ; 17% and 39% increase in annual rainfall with B1 scenario



- ✓ L'analyse de la situation à Bouar par exemple, montre qu'aux horizons 2071-2100 avec le scénario A2 plus sec, la baisse des précipitations annuelles (figure ci-dessus) varie entre 17 à 39%; avec un scénario B1 plus humide, la hausse des précipitations annuelle varie entre 22 et 44% par rapport aux observations 1971-2000.





# Station Climatologies

The screenshot shows a web browser window displaying the African Regional Climate Centre (ACMAD) website. The browser's address bar shows the URL [www.acmad.net/rcc/African-RCC/rcc\\_climatology\\_station\\_output.php](http://www.acmad.net/rcc/African-RCC/rcc_climatology_station_output.php). The website header features the ACMAD logo and the WMO OMM logo. The main content area is titled "Precipitation and temperature reference climatologies" and includes a navigation menu on the left with links such as "Homepage", "Data Services", "Climate Monitoring", "Long Range Forecasting Function", "Training on Monitoring", "Highly recommended Function", and "Coordination". The "Contact" section provides the address: 55, Avenue des ministères PPL6 BP: 13 184 Niamey - Niger, along with telephone and fax numbers, an email address (dgacmad@acmad.net), and the website URL (www.acmad.net). The "Lastest New" section contains the Latin phrase "Curabitur velit tellus, placerat et, dapibus varius, aliquet quis, purus." The "Partener" section lists various web and blog links. The main content area displays a "Climatooogy station output" section with a dropdown menu for "Station" (currently showing "ADRAR") and a "Climatology" section with buttons for "10 Year Mean (1981-1990)", "10 Year Mean (1991-2000)", "10 Year Mean (2001-2010)", and "30 Year Mean (1981-2010)". The "Station" dropdown menu lists various African stations including AIN-BESSAM, AIN-SEFRA, ALGER-PORT, ANNABA, ARIS, ARZEW, BARIKA, BATNA, BECHAR, BEJAIA-AEROPORT, BEJAIA-PORT, BENI-ABBES, BENI-SAF, BISKRA, BORDJ-BADJ-MOKHTAR, BORDJ-BOU-ARRERIDJ, BORDJ-EL-BAHRI, BOUCHEGOUF, and BOUIRA. The footer of the website indicates "Copyright © 2014 ACMAD". The browser's taskbar at the bottom shows several open PDF files and a system tray with the date and time "18:27 16/11/2014".

climatology station outpu x

www.acmad.net/rcc/African-RCC/rcc\_climatology\_station\_output.php

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 African Regional Climate Centre 

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**Lastest New**  
Curabitur velit tellus, placerat et, dapibus  
varius, aliquet quis, purus.

**Partener**  
Web Link One  
Blog Link Two  
Template Link Three  
New Link Four  
Free CSS Layouts

**Precipitation and temperature reference climatologies**

Station data from African country. Precipitation and temperature reference climatologies for 31-60, 61-90 ....  
Averages for 71-00, 81-10

**Climatooogy station output**

| Station | Climatology              |
|---------|--------------------------|
| ADRAR   | 10 Year Mean (1981-1990) |
| ADRAR   | 10 Year Mean (1991-2000) |
| ADRAR   | 10 Year Mean (2001-2010) |
| ADRAR   | 30 Year Mean (1981-2010) |

ADRAR  
AIN-BESSAM  
AIN-SEFRA  
ALGER-PORT  
ANNABA  
ARIS  
ARZEW  
BARIKA  
BATNA  
BECHAR  
BEJAIA-AEROPORT  
BEJAIA-PORT  
BENI-ABBES  
BENI-SAF  
BISKRA  
BORDJ-BADJ-MOKHTAR  
BORDJ-BOU-ARRERIDJ  
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# African Regional Climate Centre



- [Homepage](#)
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**Lastest New**  
 Curabitur velit tellus, placerat et, dapibus  
 varius, aliquet quis, purus.

- Partener**
- [Web Link One](#)
  - [Blog Link Two](#)
  - [Template Link Three](#)
  - [New Link Four](#)
  - [Free CSS Layouts](#)

## Preciitation and temperature reference climatologies

Station data from African country. Precipitation and temperature reference climatologies for 31-60, 61-90 ....

Averages for 71-00, 81-10

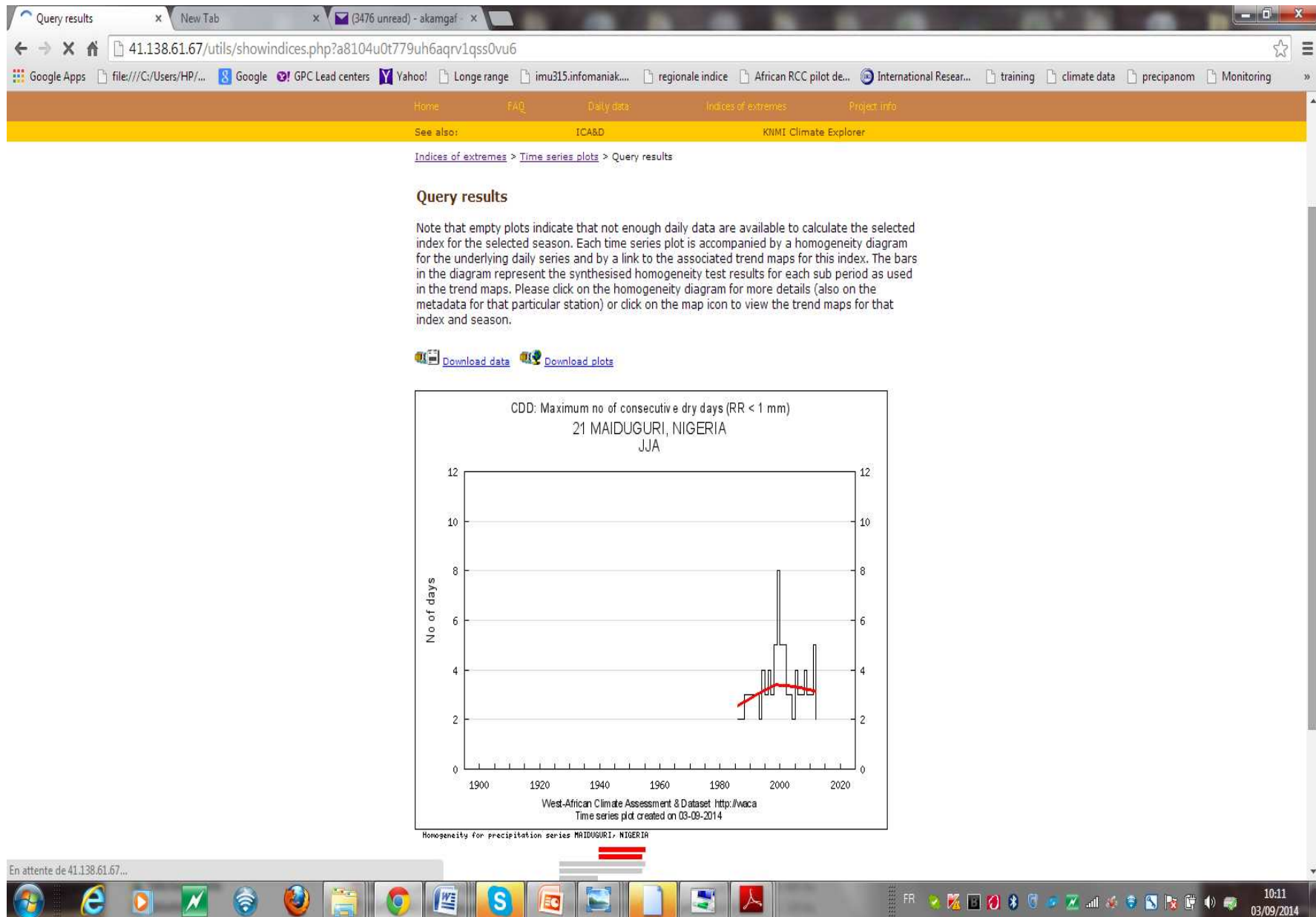
### Country Selection

Post by ACMAD

- ALGERIA
- ALGERIA
- ANGOLA
- BENIN
- BOTSWANA
- BURKINA FASO
- BURUNDI
- CAMEROON
- CAPE VERDE
- CENTRAL AFRICAN REPUBLIC
- CHAD
- COMOROS
- CONGO
- COTE D'IVOIRE (IVORY COAST)
- DEMOCRATIC REPUBLIC OF CONGO
- DJIBOUTI
- EGYPT
- EQUATORIAL GUINEA
- ERITREA
- ETHIOPIA
- GABON



# Climate assessment and indices based on station data







## Concluding Remarks



- ✓ Expansion of RCC products monitoring based on user requirements leading to climate
- ✓ Monitoring Services with the GFCS.
  
- ✓ Climate change indices and assessments will require stronger collaboration with NMHSs for access to station daily data and use of products generated by the African RCC for climate vulnerability assessments, resilience building and adaptation planning/practices in countries.
  
- ✓ Partnerships with RCCs in Europe, Asia and America will be strengthened to share data, products, software and hardware, best practices and standards moving for RCC products to RCC services for GFCS implementation in Africa
  
- ✓ Sustainability of the RCC will required a minimum of about 5 full time experts on climate data and monitoring for about US\$ 250 000 as cost estimate per annum.
  
- ✓ Scientific and technical partners(UK Met office, Meteo France, DWD, AEMet-Spain, ECMWF, IRI at Columbia University, NOAA/NCEP/CPC and WMO) for climate service development will continue to be mobilized
  
- ✓ Support from the African development Bank, the World Bank, EU through EDF, other bilateral and multilateral cooperation programmes will be required to complement countries contribution for the operations of the RCC.