

WMO/RA I

African Regional Climate Centre

STATUS REPORT

August 2014

TABLE OF CONTENTS

Table of contents.....	2
1 Introduction	3
2 African Regional Climate Centre.....	3
2.1 Current structure.....	3
2.2 Activities, products and access mechanisms.....	4
3 Concluding remarks.....	14
4 References.....	16

1. INTRODUCTION

Regional Climate Centres (RCCs) are centres of excellence at the middle of the three level infrastructures from global to national under development by the World Meteorological Organization (WMO) to strengthen production, availability, delivery and application of needs-based, science-based climate prediction and services. Global Producing Centers, Regional Climate Centres and National Meteorological and Hydrological Services have been identified as interacting elements of the Climate Service Information System (CSIS) component of the Global Framework for Climate Services. The WMO Commission for Basic Systems (CBS) at its fourteenth session formally included RCCs as part of the WMO network of Centres through the adoption of relevant amendments to the WMO Global Data Processing and Forecasting System (GDPFS) manual (WMO-No.485, 2010 adopted by CBS-XIV).

The WMO Regional Association I at its fifteenth session in November 2010 in Marrakech (Morocco) expressed the need to establish one RCC in each African Regional Economic Community. The association named the centres as IGAD-RCC for East Africa, ECOWAS-RCC for West Africa, SADC-RCC for southern Africa, CEMAC-RCC for Central Africa, NA-RCC network for North Africa. Given the pan-African nature of the African Centre for Meteorological Applications for development (ACMAD), RA I approved the establishment of an African RCC at ACMAD and assigned it a coordinating role among all RCCs in RA I. Following expression of interest by ACMAD, the President of RA I endorsed the commencement of the demonstration phase for the establishment of the African RCC hosted by ACMAD. The African RCC at ACMAD started its demonstration phase in January 2012 as a single multifunctional centre with products covering Long range forecasting, climate monitoring, data services, and training functions. Some products on climate change relevant to highly recommended functions have been provided.

This document describes the status of the African RCC at ACMAD to support the process towards designation as an official WMO Regional Climate Centre for RA I countries. The primary clients of the WMO RA I African RCC are Centres under Regional Economic Communities and all African National Meteorological and Hydrological Services (NMHSs).

2. AFRICAN REGIONAL CLIMATE CENTRE

2.1 Current structure

The WMO/RA I African RCC is presently a single multifunctional centre with products covering all Africa. This structure is based on member's requirements. The African RCC functions include:

- Climate monitoring at <http://www.acmad.net/rcc/climatemonitoring.php> ;
- Long range forecasting at <http://www.acmad.net/rcc/longerange.php> ;
- Data Services at <http://www.acmad.net/rcc/dataservice.php> ;
- Training at <http://www.acmad.net/rcc/training.php> ;

The Centre is open to collaboration with other the RCCs including the RCC network for Europe over the Mediterranean region under a joint RA I/RA VI framework. To further develop highly recommended functions of the African RCC partnerships with universities (eg. University of Dakar and Nairobi) and institutes in RA I are being expanded. The African RCC is providing expertise for the preparation of the demonstration phase at developing RCC in northern, Eastern, Central, Western and Southern Africa. Regional Climate Outlook forums are organized for West, Central, North Africa and countries in the Gulf of Guinea and the South West Indian Ocean. The African RCC products are accessible at <http://www.acmad.net/rcc> .

2.2 Activities, products and access mechanisms

This section describes activities, products and their access mechanisms. It provides information on datasets and methodologies used for developing each product.

- Climate monitoring

Table 1: Products overview

Activity	Products	Spatial coverage	Time of issuance	Mean of provision	Remarks
Production of Climate Diagnostics	Annual state of African climate Report	Africa	First quarter of the following year	Website	Based on analysis of global climate centres products and NMHSs inputs Started in 2012
	Annual state of global climate, Africa section report(WMO, BAMS)	Global	First quarter of the following year	Website	Provided by synthesizing the African climate report above
	Monthly climate diagnostic bulletin	Africa	Middle of the following month	Website and emails	Operational since January 2012
	10-day climate diagnostic bulletin	Africa	Middle of the following dekad	Website and emails	Operational since January 2012
	Precipitation and temperatures indices including anomalies	Africa	Once per month and ad hoc upon request	Website	Based on NOAA/NCEP/CAMS And NOAA/NCEP/CAMS-OPI
Establishment of reference climatologies	Precipitation and temperature reference climatologies for 1931-1960; 1961-1990; 1971-2000;1981-2010	Africa (Synoptic stations)	Every ten years	Website	Based on NOAA/NCDC SYNOP archive and NMHS station datasets

	Climate assessment for precipitation & temperature standardized indices based on station data (African Climate Assessment and Dataset)	Africa (stations)	Once a month	website	Based on quality controlled GTS and NMHS data. Collaboration with KNMI on training and transfer of European Climate Assessment and datasets software
Implementation of a regional climate watch	Climate watch report with advisories focused on significant anomalies and extremes	Africa	Ad hoc	Website and emails	In preparation, an initial workshop planned for April 2015 (under the Monitoring of Environment for Security in Africa-MESA Project)

Table 2: Climate monitoring product description

Product	Methodology, resolution, validation, quality indicators
Annual state of African climate Report	Methodology: Analysis of data/products from recognized international centres (NOAA/NCEP, ECMWF, Europe RCC network, IRI), Compilation of national contributions from RA I members, http://www.acmad.net/rcc/annualbulletin.php) Resolution in space/time: Regional/sub-regional/national, once a year Quality indicators/Validation: internal review; external review by the African Task Team on Annual state of African Climate
Annual state of global climate, Africa section report (WMO, BAMS)	Methodology: Synthesis of the Annual state of African climate report http://www.acmad.net/rcc/climatemonitoring.php ; http://www.ncdc.noaa.gov/bams-state-of-the-climate Resolution in space/time: Regional , sub-regional and national, once a year Quality indicators/Validation: External review and editing by AMS and WMO/CCI experts
Monthly climate diagnostic bulletin	Methodology: Collection and processing of data from international centres (IRI, ECMWF, Europe RCC network, NOAA/NCDC, NOAA/NCE). Compilation of contribution from RA I members, sub-regional centres and global centres http://www.acmad.net/rcc/monthlybulletin.php ; Resolution in space/time: Regional , sub-regional/ , once a month Quality indicators/Validation: Internal review
10-day climate diagnostic bulletin	Methodology: Collection and processing of data from international centres (IRI, ECMWF, Europe RCC network, NOAA/NCDC, NOAA/NCE). Compilation of contribution from RA I members, sub-regional centres and global centres http://www.acmad.net/rcc/dacadebulletin.php Resolution in space/time: Regional , sub-regional and national/ once a dekad Quality indicators/Validation: Internal review
Precipitation and temperature reference climatologies for 1931-	Methodology: Collection and processing of data from international centres (IRI, ECMWF, Europe RCC network, NOAA/NCDC, NOAA/NCE). Compilation of contribution from RA I members, sub-regional centres and global centres

1960; 1961-1990; 1971-2000;1981-2010	<p>http://www.acmad.net/rcc/African-RCC/rcc_country_selection.php Resolution in space/time: Regional , sub-regional and national/ once a decade Quality indicators/Validation: Internal review</p>
Climate assessment for precipitation& temperature standardized indices based on station data (African Climate Assessment and Dataset)	<p>Methodology: Collection and processing of data from international centres (IRI, ECMWF, Europe RCC network (KNMI), NOAA/NCDC, NOAA/NCE). Compilation of contribution from RA I members, sub-regional centres and global centres. Indices are defined using CCL/CLIVAR/JCOMM Expert team called ETCDDI. http://41.138.61.67/utills/mapserver/climatology.php#bottom http://41.138.61.67/indicesextremes/index.php Resolution space/time: daily station data Quality indicators/validation: review by KNMI ECA&D group</p>
Climate watch report with advisories focused on significant anomalies and extremes	<p>Methodology: Collection and compilation of information on significant events/extremes from RA I members, humanitarian and disaster risk management organizations offices in Africa. Analysis of global and regional products http://www.acmad.net/rcc/annualbulletin.php Resolution space/time: Regional , sub-regional and national/ ad hoc Quality indicators/validation: internal review, external review by WMO/CCI experts</p>

- Long range forecasting

Table 1: Products overview

Activity	Products	Spatial coverage	Time of issuance	Mean of provision	Remarks
Interpretation and assessment of Global products	Maps, graphs and text on statistical and dynamical models performance	Global for dynamical systems RA I for statistical systems	When global a dynamical model is upgraded or a new predictor for statistical model is identified	Website	Dynamical models performance products are made following WMO/GDPFS/ SVS for LRF
Generation of regional outlooks including consolidated outlooks	-Maps of dynamical/statistical/tailored forecasts -Maps of consolidated seasonal forecasts	RA I	End of each month	Website	Statistical forecast are generated with observations or dynamical model outputs as predictors. Consolidated outlooks are made by examining and combining existing knowledge and understanding of regional climate variability,

					statistical, single and multi-model ensemble products.
Generation of consensus regional climate outlooks	Maps and outlook statements	RA I region and its sub-regions	Each year one RCOF is organized per sub-region In February for Gulf of Guinea countries, April for West Africa, November for North Africa, September for Central Africa and October for Indian ocean sub-region	Website Forums	Consolidated outlooks are examined with inputs from WMO/RA I members of the target sub-region
Provision of verification products	Verification datasets, graphs and maps of consensus/consolidated outlook	RA I, West Africa, North Africa, Central Africa, Indian ocean and gulf of Guinea regions	Every month targeting the past three months period	Website Ftp site	Based on digitized consensus or consolidated outlooks datasets and available observation or analyses of observations (Collaboration with UK Met Office and IRI is underway)
Development of a webportal	Web site ftp site	RA I	Web site available ftp site under development	http://www.acmad.net/rc/	Website under improvements ftp site being developed; Access to ftp site will be password protected

Table 4: Long range forecasting product description

Product	Methodology, resolution, validation, quality indicators
Maps, graphs and text on statistical and dynamical model performance	Methodology: Analysis of verification products from recognized international, WMO Global and lead centres for verification (NOAA/NCEP, ECMWF, Europe RCC network, IRI, ...), generation of interpretive guidance information for each global forecasting system output,

	<p>http://www.acmad.net/rcc/modelestatique/modelstatique.php , http://www.acmad.net/rcc/modeledynamique/modeledynamique.php)</p> <p>Resolution in space/time: Regional/sub-regional, every month and for the target seasons</p> <p>Quality indicators/Validation: internal review; external review by WMO Commission for climatology experts during Regional Climate Outlook forums</p>
Statements and Maps of statistical/ consolidated forecasts	<p>Methodology: use of statistical tools(eg CPT) to generate statistical forecasts for RA I, collection of global single and multimodel dynamical systems forecasts outputs over RA I, analysis of statistical/ dynamical products and existing historical records together with available regional climate knowledge, generation of consolidated outlooks;(http://www.acmad.net/rcc/longerangebulletin.php)</p> <p>Resolution in space/time: Regional , every month for the next two consecutive overlapping three months periods</p> <p>Quality indicators/Validation: internal review, data methods and tools used provided with technical support from WMO designated global and international centres</p>
Maps and outlook statements	<p>Methodology: Collection of regional consolidated product mentioned above and national outlooks generated with higher resolution data and statistical forecasting tools, forecast discussions involving all participating NMHSs, production of a consensus output following discussions. (http://www.acmad.net/rcc/concensus.php);</p> <p>Resolution in space/time: Sub-regional area covered, product provided once a year during a month determined by countries in the sub-region, product valid for one or two consecutive overlapping three months periods.</p> <p>Quality indicators/Validation: Review by all countries of the target region and WMO/CCI experts on seasonal forecasting</p>
Verification datasets, graphs and maps of consensus/consolidated outlook verification information	<p>Methodology: Verification datasets are being collected. Verification products generation tool available was provided by WMO/CCI experts during training workshops (http://www.acmad.net/rcc/cartelongrange/cartelongrange.php)</p> <p>Resolution in space/time: Regional/sub-regional; update every month</p> <p>Quality indicators/Validation: Internal review, review by WMO/CCI experts during Regional Climate Outlook forums and special training workshops, verification dataset available</p>
Web site ftp site	<p>Methodology: design and development of the web portal. Maps, graphs, reports produced and uploaded on the website. Data related to the products put on the ftp site (http://www.acmad.net/rcc/index.php).</p> <p>Resolution in space/time: Regional and sub-regional, update of the portal at least every month and preferably every week when significant climate events are expected</p> <p>Quality indicators/Validation: links available</p>

-Data Services

Table 5: Data services products overview

Activity	Products	Spatial coverage	Time of issuance	Mean of provision	Remarks
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Development of quality controlled regional datasets for Africa	African climate dataset and update from GTS and country stations	RA I	monthly	Web site	GTS data particularly daily temperature and precipitation from African SYNOP messages. This will be extended to other parameters (eg. Humidity, cloud cover, sunshine, ...). Some countries send CLIMAT messages every month.
	African climate data Rescue (inventory tables from microfiches, images of scanned microfiches, digital data keyed from images and archived in a database) and assessment	RA I and sub-region	Data rescue from microfiche is continuing as related projects are implemented. Following Climate indices workshops (workshop hold for west Africa, workshops dates to be determined for other regions)	Web site	Data provided by countries involved in Climate Assessment and Data rescue (ICA&D) and Belgium following the WMO/DARE project in more than 40 African countries
	African synoptic stations metadata	RA I	Available	Website	Following WMO guidelines
	African gridded precipitation and temperature datasets	RA I	Available	Website	*High resolution((0.1°x0.1°) African only Rainfall Climatology version 2 (http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.FEWS/.Africa/.DAILY/.ARC2/.daily/) *African data extracted from Global datasets: -Climate Anomaly monitoring System (CAMS) monthly precipitation

					<p>(http://iridl.ldeo.columbia.edu/experiment/SOURCES/NOAA/.NCEP/.CPC/.CAM5_OPI/.v0208/.mean/.prcp/) and temperature dataset (http://iridl.ldeo.columbia.edu/experiment/ds/SOURCES/NOAA/.NCEP/.CPC/.CAM5/.anomaly/.temp/) -NCEP/NCAR Reanalysis for daily temperature dataset (http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.DAILY/ , http://www.esrl.noaa.gov/psd/data/gridded/data.ncep.reanalysis.surface.html)</p>
	Country station dataset structured in Climsoft CDMS	RA I and countries	Available for some countries	Upon request	Service available for each country willing to archive national data at RCC.
Provision of climate database and archiving services at the request of NMHS	Climate data Management system (Climsoft) and web based data server (THREDDS)	RA I and countries	Available	Upon request	This service is available for all countries. Climsoft system can be installed at national and local levels. THREDDS is available at RCC to serve African datasets via internet
	Documentation on THREDDS and Climsoft	RA I	Available	Website	Service also available via seminars, workshops, training events.

Table 5: Data services products description

Product	Methodology, resolution, validation, quality indicators
African climate dataset and update from GTS and country stations	<p>Methodology: Daily recovery from GTS or NOAA/NCDC archive through internet, countries records sent by email (change this http://www.acmad.net/rcc/dataclimsoft.php)</p> <p>Resolution in space/time: RA I stations/daily</p> <p>Quality indicators/Validation: quality control procedure in Climsoft CDMS</p>
African climate data Rescue (inventory of microfiches, images of scanned microfiches, digital data keyed from images and archived in a database) for climate assessments	<p>Methodology: A manual for rescuing microfiches data developed by the International Data rescue Organization (IEDRO) is used. ECA&D tool is also used for climate data rescue& assessment. A dedicated training on data rescue was organized with technical support from the International Environmental Data Rescue Organization (IEDRO). (http://41.138.61.67/ ; http://www.acmad.net/rcc/graphmap/maps.php; http://www.acmad.net/rcc/graphmap/maps.php)</p> <p>Resolution in space/time: Station data of RA I countries with daily resolution ,</p> <p>Quality indicators/Validation: External review by IEDRO experts for data rescue and KNMI experts for climate assessments</p>
African synoptic stations metadata	<p>Methodology: Identification of Latitude, longitude, WMO and other identifiers, elevation, information on instrument and environment change following WMO recommendations. (change this http://www.acmad.net/rcc/metadata.php);</p> <p>Resolution in space/time: RA-I stations</p> <p>Quality indicators/Validation: Based on WMO regulations, guides or manuals on metadata.</p> <p>References:</p> <ul style="list-style-type: none"> - WMO Guide (no. 8) to Meteorological Instruments and Methods of Observation - WMO Guide (no. 100) to Climatological Practices
African gridded precipitation and temperature datasets	<p>Methodology: collection of in situ , satellite and model datasets, Analysis or assimilation of these datasets to generate gridded datasets by global centres. Access facilities to these dataset through the African RCC Web site(http://www.acmad.net/rcc/datairi.php)</p> <p>Resolution in space/time: Global (2.5°x2.5°)/monthly ; RA I regional(0.1°x0.1° and lower spatial resolution upon request)/daily</p> <p>Quality indicators/Validation: Interpolation made with WMO Global Centres (NOAA/NCEP, IRI) algorithms</p>
Country station dataset structured in Climsoft CDMS	<p>Methodology: Collection of data from countries, importation, quality control an archiving in Climsoft CDMS (http://www.acmad.net/rcc/dataclimsoft.php).</p> <p>Resolution in space/time: country stations/daily or monthly</p> <p>Quality indicators/Validation: Quality checks are made using algorithms integrated in relevant functions of Climsoft CDMS</p>
Climate Data Management System (Climsoft) and web based data server (THREDDS)	<p>Methodology: Identification of interested countries, training (via workshop and on the job training) of their experts and transfer of Climsoft software and source code for tailoring and further development in the countries(http://www.acmad.net/rcc/dataclimsoft.php ; http://www.acmad.net/rcc/dataacces.php). Data request form submitted by NMHSs, Provision of data on storage devices or a login and password for access</p>

	<p>to dataset on ACMAD's data server through internet. Resolution in space/time: not applicable Quality indicators/Validation: Climsoft specifications and functions reviewed by WMO/CCI experts on climate data management, THREDDS is developed and maintained by UNIDATA at UCAR in Colorado-USA.</p>
Documentation on THREDDS and Climsoft	<p>Methodology: ACMAD provided support for development of training materials, user and administrator manuals by Climsoft software developers. ACMAD funded training and transfer of THREDDS data server to Africa. Collaboration with IRI to transfer of IRI data library to Africa. (change this http://41.138.61.73:3000/doc/sit-course/index.php; http://www.acmad.net/rcc/climsoftdoc.php). Resolution in space/time: not applicable Quality indicators/Validation: Climsoft developers are responsible for the quality of climsoft documentation, THREDDS documentation is prepared by UNIDATA at UCAR Colorado-USA</p>

- Training service

Table 6: Training services products overview

Activity	Products	Spatial coverage	Time of issuance	Mean of provision	Remarks
Provision of training materials, methodologies, tools, procedures, working instructions, guides and manuals	-Data quality control procedures (in CLIMSOFT, RCLIMDEX)	RA I	monthly	Web site	These procedures are part of CLIMSOFT and RCLIMDEX software
	- Manual on data rescue(IEDRO manual)	RA I	Available	Web site	An MoU with IEDRO provides a framework for exchange on training materials and transfer of data rescue technology
	-Climate Data Management materials (CLIMSOFT) administration and user manuals	RA I	Available	Web site	Basis: CLIMSOFT developers materials
	- training material on THREDDS server	RA I	Available	Web site	Basis: UCAR/UNIDATA capacity building materials

	- Training programmes for data rescue, management	RA I	Available	Print version , Web site soon	Basis: IEDRO , CLIMSOFT development team and UNIDATA materials
	- Procedures for production of climate monitoring and forecasting products	RA I	Available	Print version, Web site	Based on monitoring and forecasting products from WMO recommendations and practices
	- Training programmes/materials on climate monitoring and forecasting	RA I	Available	Print version, Web site	Based on WMO documents, regional workshops and forums materials
Training on interpretation and use of RCC products	On the job training reports, workshops and seminars reports	RA I and countries	Available	Website or Upon request	-Two countries experts are regularly selected for 4 to 6 months on the job training, 4 to 6 national experts are trained every year, -RCOFs pre-forum training are additional opportunities to train on interpretation/use of Regional and global products -workshops in collaboration with GPCs(eg. UKMET Office) are organized to further train on interpretation and use of GPC/RCC products
	Conferences on African climate reports	RA I	Every two to three years	website	Global partners including WCRP are involved The First conference held in October 2013 in Arusha/Tanzania

	Survey questionnaire, analysis reports	Global and RA I	Available	Website	-Feedbacks from NMHSs are collected during RCOFs -Feedbacks from RCC with sub-regional responsibilities are collected during global or regional RCCs/GPCs meetings or other events
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Table 7: Training services products description

Product	Methodology, resolution, validation, quality indicators
-Data quality control procedures (CLIMSOFT, RCLIMDEX)	Methodology: Collection of available documentation, presentation to NMHSs experts online and during training events (http://www.acmad.net/rcc/climsoftdoc.php ; link to RCLimdex user manual) Resolution in space/time: not applicable Quality indicators/Validation: developed by CCI/WCRP ETCCDI and CLIMSOFT volunteers
- Manual on data rescue(IEDRO manual)	Methodology: Organization of a dedicated training of trainers with technical support by IEDRO.Transfer of the manual for rescuing microfiches data developed by IEDRO for training of NMHSs experts. (http://www.acmad.net/rcc/document/IEDRO_manual.pdf) Resolution in space/time: RA I countries/not applicable , Quality indicators/Validation: Review by IEDRO
-Climate Data Management materials (CLIMSOFT administration and user manuals)	Methodology: Collection of countries needs during training events. Production/update of the manuals by CLIMSOFT development team. (http://www.acmad.net/rcc/climsoftdoc.php ; link to Climsoft); Resolution in space/time: RA-I countries/ not applicable Quality indicators/Validation: Review by CLIMSOFT developers
- training material on THREDDS server	Methodology: Collection of UNIDATA materials and transfer trough training of trainers by UNIDATA and UNESCO/ICTP. (http://41.138.61.73:3000/doc/sit-course/index.php) Resolution in space/time: not applicable Quality indicators/Validation: material developed by UNIDATA and UNESCO/ICTP
- Training programmes for data rescue and management	Methodology: Collection of training needs from countries, collection of available programmes and materials with support of IEDRO and data base management system development teams, preparation of relevant materials for RA I countries (http://www.acmad.net/rcc/reporttraining.php ; http://www.acmad.net/rcc/climsoftdoc.php). Resolution in space/time: not applicable Quality indicators/Validation: programmes are developed or reviewed by IEDRO experts, CLIMSOFT development team

<p>- Procedures for production of climate monitoring and forecasting products</p>	<p>Methodology: Identification of processing steps, inputs datasets and outputs products. Adaptation to the working environment of RA I countries. Test of procedures with NMHS experts on secondment or on hands on training (http://www.acmad.net/rcc/reporttraining.php). Resolution in space/time: not applicable Quality indicators/Validation: review by NMHSs experts</p>
<p>- Training programmes/materials on climate monitoring and forecasting</p>	<p>Methodology: Identification of countries needs, collection of relevant documentation, preparation of relevant training materials;(http://www.acmad.net/rcc/reporttraining.php). Resolution in space/time: not applicable Quality indicators/Validation: Review by national and international experts</p>
<p>On the job training reports, workshops and seminars reports</p>	<p>Methodology: Selection of countries trainees, organization of training events. Preparation of reports on data rescue and management, climate monitoring and forecasting, climate change detection and scenario generation (http://www.acmad.net/rcc/reporttraining.php). Resolution in space/time: not applicable Quality indicators/Validation: review by international partners for training (eg. UKMET OFFICE)</p>
<p>Conferences on African climate reports</p>	<p>Methodology: Definition of Theme and subthemes for different sessions and conference announcement including a programme . Identification of sessions chairs and rapporteurs. Organization of the conference and production of reports based on rapporteurs inputs(change this http://www.acmad.net/rcc/dacadebulletin.php). Resolution in space/time: not applicable Quality indicators/Validation: review by international partners</p>
<p>Survey questionnaire, analysis reports</p>	<p>Methodology: Identification of questions from interactions with NMHSs experts at meetings, workshops and forums. Preparation of a draft list of questions and submission for comments to national experts. Collection of questionnaire responses and analysis. Analysis report preparation and publication. (change this http://www.acmad.net/rcc/dacadebulletin.php). Resolution in space/time: every two to three years Quality indicators/Validation: review by international partners (eg. UKMET OFFICE)</p>

3. CONCLUDING REMARKS

This status report provides background information on RCCs at global and RA I region. It describes products and quality indicators, methodologies, tools and access mechanism. It sets the frame within which African RCC will operate. However, further effort is expected including:

- Application for official designation as WMO RCC through RA I working Group on climate matters Chair and RA I president;
- Presentation of the status report including a proposed mechanism to support other developing RCCs in Africa at the coming RA I session in Cabo Verde;
- Dissemination of products through WMO Information System (WIS) as a Data Collection and production Centre (DCPC);

- Enlargement the functions to more highly recommended functions;
- set up a help desk to facilitate interaction with customers, review RA I requirements through questionnaires, focus group discussion, experts evaluation to ensure quality services to members;
- continue support to planning and implementation of RA I RCCs with responsibilities over sub-regions;
- coordination of RCCs operations in RA I with annual coordination meetings and ad hoc continental technical and scientific events; coordination meetings address issues of better service provision, partnerships and networks with other RCCs and GPCs.

4. REFERENCES

- 1- How to establish and run a WMO Regional Climate Centres. (WMO/TD-No. 1534, <http://www.wmo.int/pages/prog/wcp/wcasp/RCCs.html#Functions> .
- 2- Final report of the meeting of the RA I Task Team on Regional Climate Centres (WMO 2011, http://www.wmo.int/pages/prog/wcp/wcasp/meetings/documents/RAI-RCC-TT-Meeting_Jan2011_Report.pdf).
- 3- Abridged final Report with Resolutions of the Fifteenth Session of the Regional Association I (1-8 November 2010, Marrakech/Morocco, WMO No. 1068, ftp://ftp.wmo.int/Documents/PublicWeb/mainweb/meetings/cbodies/governance/ra_reports/english/pdf/1068_en.pdf).