African Center of Meteorological Applications for Development

Climate Services in Africa Project

is funded by the European Union and

SIXTH QUARTER PROJECT PROGRESS REPORT

July_August_Sept 2022

Prepared

By

Mr. ABANI AHMED ALI

- IT and Data Management Expert- Acting Chief Computing and Telecommunications Department-DIT (July 1st 2015-to date)
- Regional Advanced Retransmission Service- RARS Telecommunications Expert ACMAD /SAWIDRA-Project: (July2017-Sept 30th 2020)
- Head of Computing and Telecommunications Department at ACMAD (July 1st, 2007 - June 30th, 2015)
- IT and Data Base Management Specialist ACMAD/ ISACIP project (July 2015-June 2016)
- IT Specialist ACMAD PDIPC /PKRESMIN Initiative (July 2016-June 2017)

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COMPUTER NETWORK ADMINISTRATOR ACMAD/CLIMSA

Submitted to: ACMAD

Prepared (Month/Year): Sept/2022

African Center of Meteorological Applications for Development

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PROGRESS REPORT

Region Covered by activities	Africa
Institution	ACMAD
Department/Service	DIT
Project	CLIMSA Project
Position Title	Computer Network Administrator
Start Month and Year	July 2022
Expected end month and year	September 2022

1. General Information

Lead Partner Organization(s)	African Centre of Meteorological Applications for Development (ACMAD)
Other Partners Involved	Afdb/SOLETOP/Pinkmatters/Callisto/CliSA/Uclip/AGEOS/ICPAC/AGRHYMET/CIMA
Names and position of Activity Lead (Corresponding author of this report)	ABANI Ali, Computer Network Administrator ACMAD-DIT
Support Staff contributing or co-authors if applicable	N/A
Reporting Period (start and end months and years)	July-August-Sept 2022
Date of Report	Sept 30th 2022

Introduction:

The GFCS Intra ACP Climate Services and related Application (ClimSA) "support to is a project in the framework of the 11th European Development Fund EU contributing to the Global Framework for Climate Services (GFCS). It's overall objective is to foster sustainable development by combating climate change through strengthening climate service value chain.

In line with CLIMSA, ACMAD action focuses on climate services delivery to agriculture, Health and Disaster Risk Reduction sectors. ACMAD action builds capacity of national and regional centres to provide climate services meeting regional and country needs, support the African Union and Regional Economic Communities as a global player in climate, disaster and sustainable development policy dialogue through climate information and statements for policy making.

This action is in line with ACMAD's mission to provide continental weather and climate watch information and act as the centre for excellence on the applications of meteorology for sustainable development in Africa.

This report convers IT and data management activities conducted in the framework of ClimSa at IT department of ACMAD.

Previous projects such as SAWIDRA, which implementation at ACMAD included, in addition to the four RARS stations the deployment of the High Performance Computing system – HPC composed of 13 servers with 344 cores 35TB local storage and 694 TB storage on SAN have significantly improved scope of IT and data management activities in support of ClimSa project.

ACMAD has provided also technical support to countries for the access to data via PUMA 2015 stations. Locally ACMAD has successfully updated the PUMA2015 Station and got access to new set of products that improved the forecasting.
The deployment of new data processing station: Climate station in collaboration with the joint research centre JRC, has successfully been implemented at ACMAD.
Important information and communication activity has been provided through the continuous upgrade and update of the Regional Climate Center RCC as well as the main ACMAD Web site.
The Thredds server has been regularly maintained and updated with centre's information and data.
The table below summarised the key achievement in terms of Information and communication Technology-ICT Technical support and DATA ACCESS for straightening research.

2. Activities/deliverables planned and related achievements

Activities/Deliverable	Achievements	Constrains/opportunities
OUTPUT 3: **OPERATIONAL Status of RARS stations; Climates station, PUMA station.** **1- Monitoring of RARS stations Network**	All sites have been visted by SOLETOP and full maintenance report provided and accessible on the following link: http://sgbd.acmad.org:8080/thredds/catalog/ACMAD/PROJECTS/SAWIDRA/RARS/SOLETOP_Maintenance_Hosting_sites_Tour/catalog.html The RARS teleconference have been organized in July and Septembre 27th, 2022 As result of challenges with the implementation of some of the articles of the MoU with SANSA, SANSA station operations have been temporary stopped. Discussions are on-going with ACMAD, to overcome issue ACMAD has prepared for attendance to the 6etc coordination group of the DBnet panned for October 4-6 2022 in Geneva, WMO.	The running cost of RARS stations needs to be mastered for the sustainability of the network. Running cost of operation of RARS station has been shared by SOLETOP. SANSA suspended operation until sustainable solution is found for the RARS station.
2- Monitoring of the PUMA station:	The PUMA station is operational at ACMAD. Somme degraded signal	Degraded images and missing model data are still observed.

	reception have been observed during this quarter making impact on satellite images and some data. the investigation going on. This period we experienced breakdown associated with the cable of the antenna which has been changed. Station is back to normal operation sin 1rth My 2022	E-mail has been sent to EUMETSAT OPS for necessary support.
3- **Monitoring of the Climate Station**	During this quarter we updated successfully the climate station with the support of JRC on 11 May 2022. Data activation has occurred on the station. The administration tool "Portfolio" has been presented with all features of setting up station data reception and processing. The user interface has also been presented	ACMAD's credentials to Climatestation : http://154.66.222.51:8080/ User : acmaduser Passwrd: Acmad22! Also http://climatestation.acmad.org:8080/ has been arranged for safer use.
4- Data Management and Processing –HPC	This period's activities include the monitoring of the warranty with InterTech, system administration and support to users for management of access and accounts. Due to power failure, we have gone through the HPC maintenance for mounting the luster storage system. Bright software, the main Server administration and management tool, has expired on June 03rd 2022, many Read HAT licences will also expire soon. The HPC has been delivered and installed in 2021 by INTERTECH. The site acceptance test occurred on 2nd December 2021. The	Upon guidance from Management, we contacted exact-lab, a technical partner who installed HPC infrastructure at ACMAD under AAP programme in 2014. We expressed the wish of ACMAD to Switch to open source software and tools on our HPC. The replied and confirmed that there is need to reinstall ACMAD's HPC with open source software and tool. They have shared with us a quotation on the cost of such operation. Cost of such operation 1s 18,000 Euros.: Preventivo-21/2022-ACMAD

		Training occurred from 13th to 17th December 2021. This activity is the last component of the SAWIDRA project which has been completed. The COVID-19 Pandemic situation has affected this programme. The technical summary of ACMAD HPC is below: Server: **13 servers,** CPU**:** **344 cores,** RAM: **3 TB;** Local Storage SAS cards to SAN**:** **35 TB local storage** **694 TB on SAN** Climsoft vertion 4.1.12 has been installed at ACMAD by the consultant Mr Marcelin Habimana in june 2022. New features such as integration of data from paper archives have been integrated. The R-Instat feature as well has been integrated.	• Metadata management • Status of data management in countries • Climsoft Performance • Climsoft installation procedures • Climsof and R-instat set up Full Expert's mission report available at link below : http://154.66.220.45:8080/thredds/fileServer/ACMAD/CTD/dataservice/Climsoft2022/Climsoft_R-Instat_Documentation/02062022Report_of_the_work_visit_to_ACMAD_Regional_Climate_Centre_Niamey_Niger_23-26_May_2022.pdf
	5- Website dissemination	In the framework the secondment IT expert of ACMAD provided a quality support to improve Web access (cf IT expert's report)	www.acmad.org https://rcc.acmad.org

3. Results or Outputs

List of Results and Outputs

OUTPUT 3:

I) OPERATIONAL Status of RARS stations; Climates station, PUMA station.

1. Monitoring of RARS stations Network

6 RARS coordination meetings have been organized and reports generated and dispatched. Maintenance plan provided by SOLETOP. Sites visits as per schedule below:

Date	Sites	Tasks	Remarks (Working Day)
23. May, 2022 ~ 26. May, 2022	Republic of South Africa (SANSA)	• Installation D-300 - Replace HRD-200 and LRD-200 to D-300* • Receiving Test • Progress regular maintenance work • Operation Training regarding to antenna and receiver.	**4 Days**
30. May, 2022 ~ 01. June, 2022	Kenya (ICPAC)	• Retrieve HRD-200 and LRD-200 - It is operation from July.03.2021 • Progress regular maintenance work • Operation Training regarding to Antenna, Receiver, etc.	**3 Days**
03. June, 2022 ~ 08. June, 2022	Niger (ACMAD)	• Integrated D-300 - Replaced HRD-200 and LRD-200 to D-300* • Receiving Test • Progress regular maintenance work • Meeting regarding 4 sites maintenance reports • Operation Training regarding to antenna and receiver.	**4 Days**
10. June, 2022 ~ 15. June, 2022	Gabon (AGEOS)	• Support install CENTOS - SOLETOP will bring the CD disk for server in order to re-install CentOS. - Also, SOLETOP will bring the hard disk as a spare in case of the hard disk issue. • Integrated D-300 - Replaced HRD-200 and LRD-200 to D-300* • Receiving Test • Progress regular maintenance work • Operation Training regarding to antenna and receiver.	**4 Days**

* The previously installed receivers (HRD-200 and LRD-200) will be retrieved by SOLETOP.

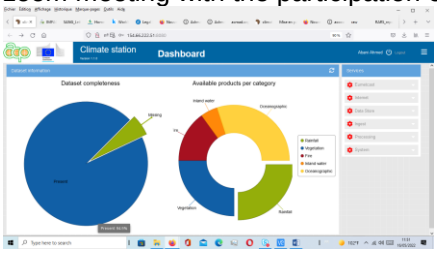
All sites have been visted by SOLETOP and full maintenance report provided and accessible on the forlowing link: http://154.66.220.45:8080/thredds/catalog/ACMAD/PROJECTS/SAWIDRA/RARS/SOLETOP_Maintenance_Hosting_sites_Tour/catalog.html

4. Monitoring of the PUMA station:

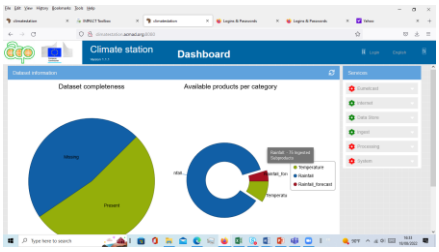
The PUMA station is operational at ACMAD. Somme degraded signal reception have been observed during this quarter making impact on satellite images and some data. the investigation going on. This period we experienced breakdown associated with the cable of the antenna which has been changed. Station is back to normal operation since 1rth My 2022.

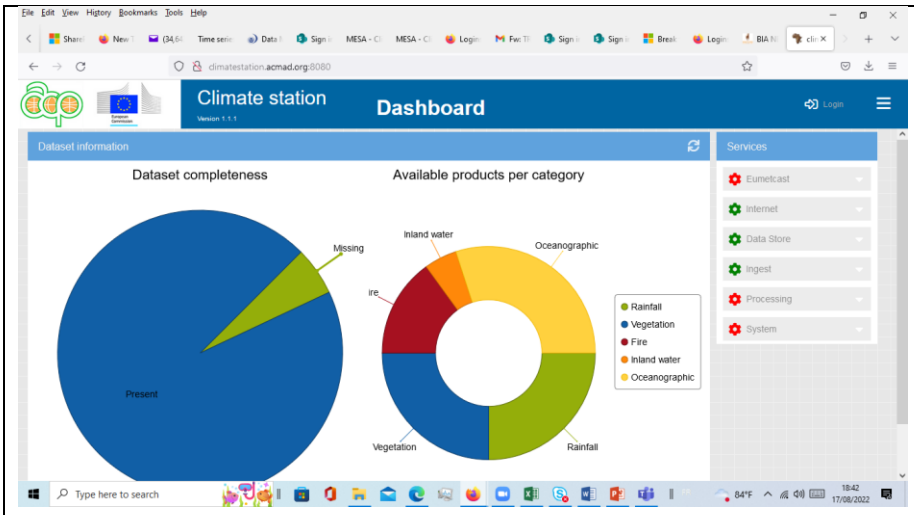
5. Monitoring of the Climate Station:

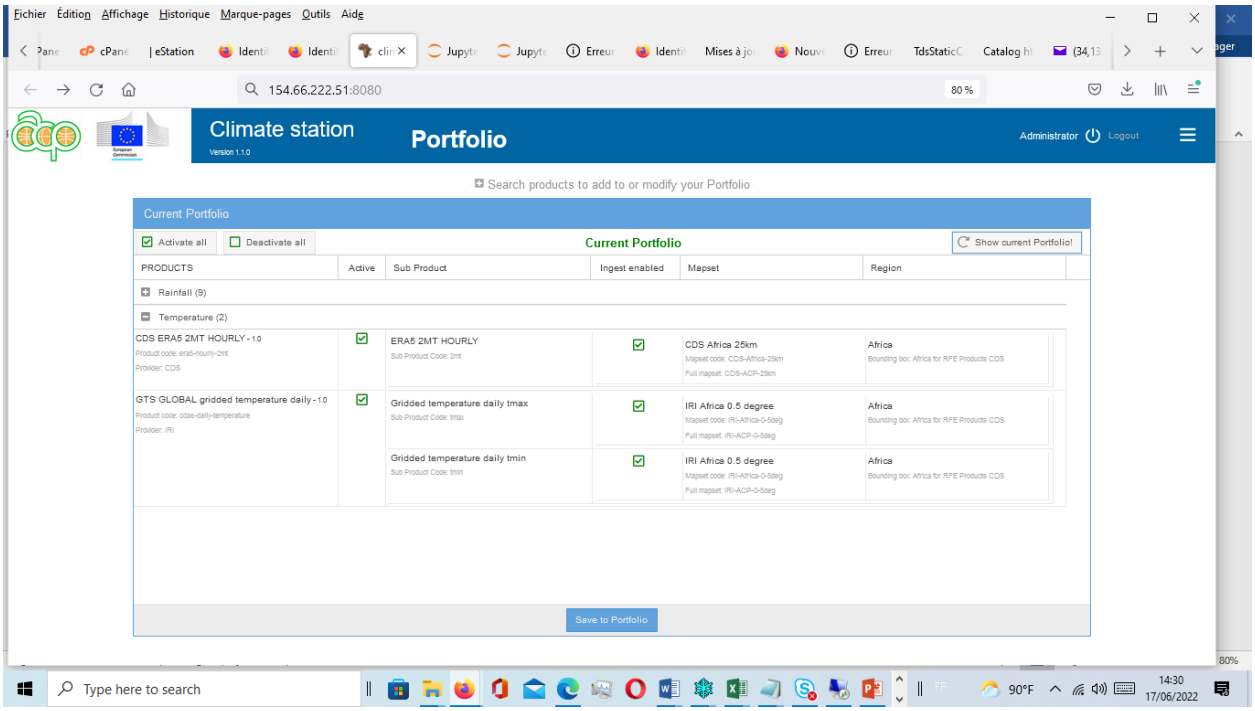
During this quarter we updated successfully the climate station with the support of JRC on 16 August 2022 to version 1.1.1.
Successful Update of the Climate station occurred on August16th2022 in collaboration with JRC trough a zoom meeting with the participation of ICPAC. version of Climate station Changed from : V1.1.0

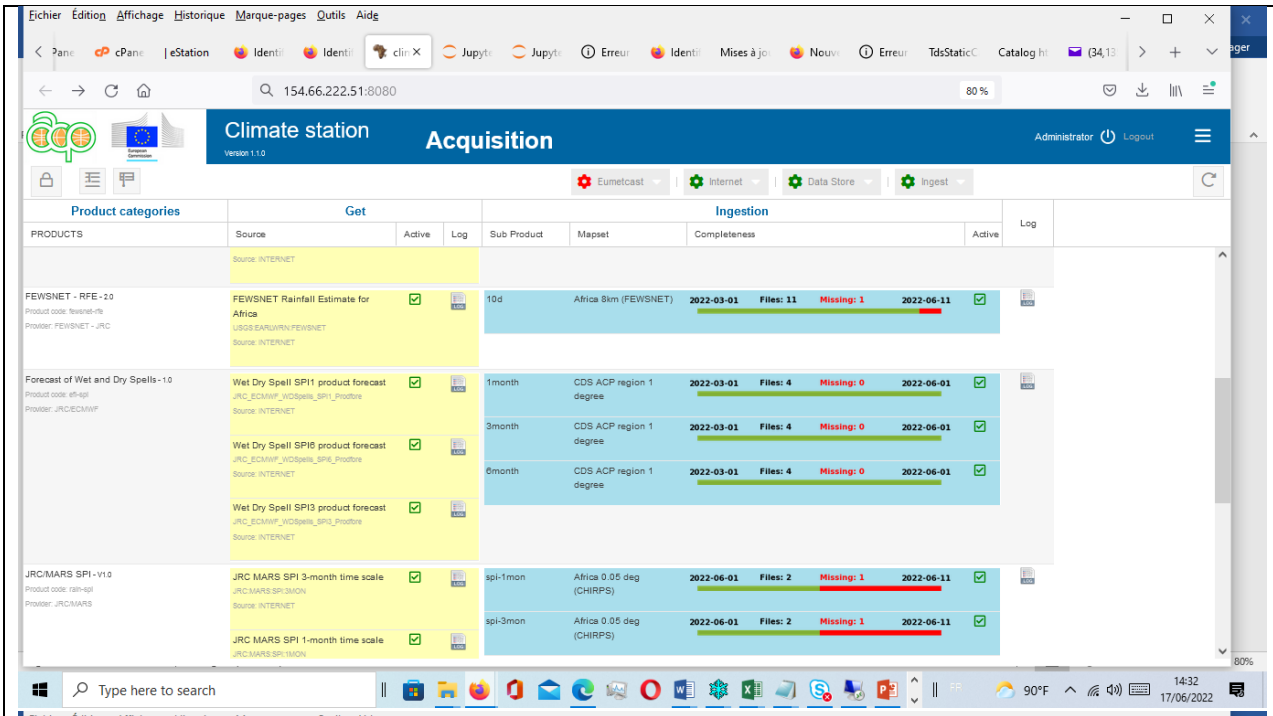


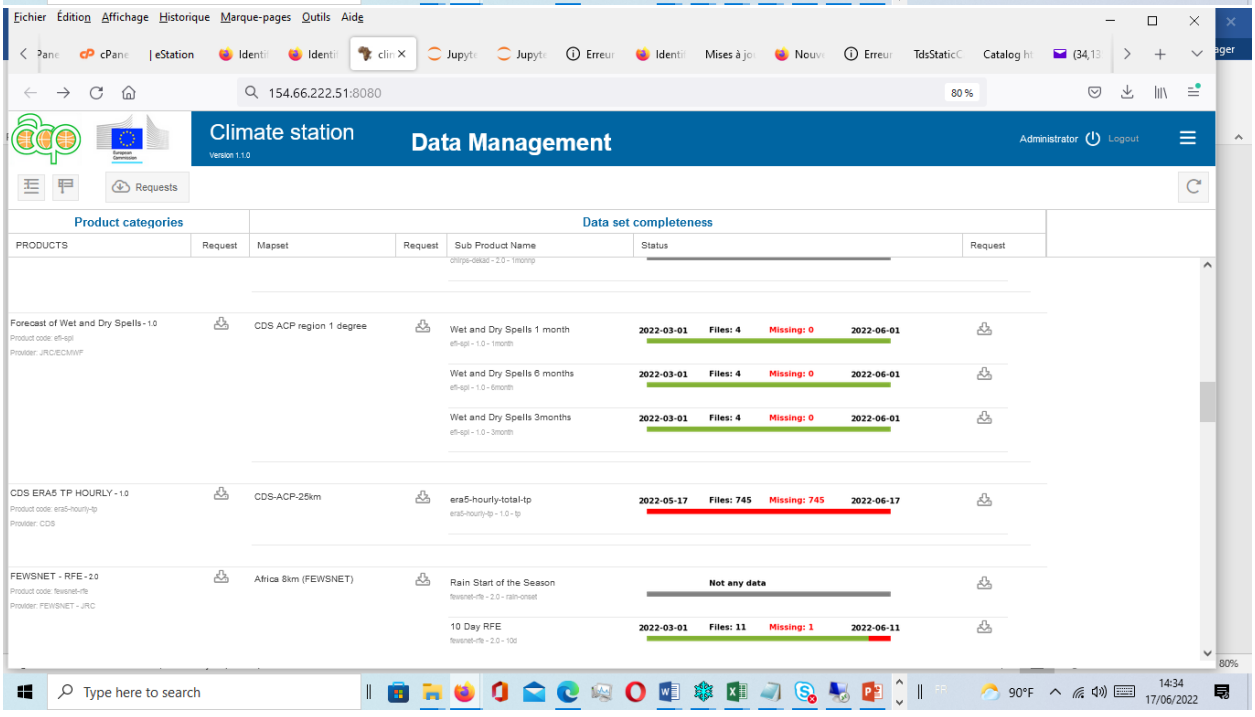
To version 1.1.1:




Climate station
Dashboard
Dataset information
Dataset completeness
Available products per category
Missing
Present
Inland water
Oceanographic
Vegetation
Rainfall
Rainfall
Vegetation
Fire
Inland water
Oceanographic
Services
Eumetcast
Internet
Data Store
Ingest
Processing
System


154.66.222.51:8080
Climate station
Portfolio
Administrator
Logout
Search products to add to or modify your Portfolio
Current Portfolio
Activate all
Deactivate all
Current Portfolio
Show current Portfolio!
PRODUCTS
Active
Sub Product
Ingest enabled
Mapset
Region
Rainfall (9)
Temperature (2)
CDS ERA5 2MT HOURLY - 1.0
ERA5 2MT HOURLY
CDS Africa 25km
Africa
GTS GLOBAL gridded temperature daily - 1.0
Gridded temperature daily tmax
IRI Africa 0.5 degree
Africa
Gridded temperature daily tmin
IRI Africa 0.5 degree
Africa
Save to Portfolio



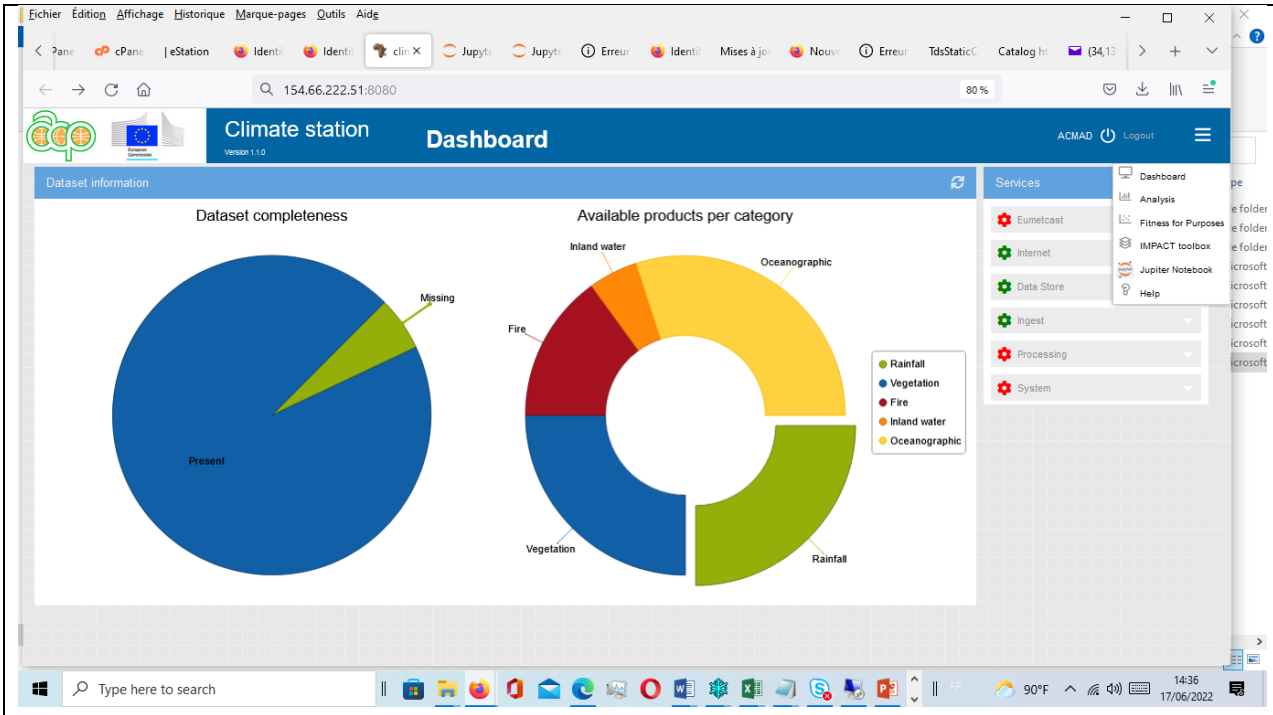


ACMAD's credentials to Climatestation :

http://154.66.222.51:8080/ or http://climatestation.acmad.org:8080/

User : acmaduser

Passwrd: Acma22 !



6. Data Processing –HPC

This period's activities include the monitoring of the warranty with InterTech, system administration and support to users for management of access and accounts. Due to power failure, we have gone through the HPC maintenance for mounting the luster storage system.

Bright software, the main Server administration and management tool, has expired on June 03rd 2022, many Read HAT licences will also expire soon.

The HPC has been delivered and installed in 2021 by INTERTECH. The site acceptance test occurred on 2nd December 2021. The Training occurred from 13th to 17th December 2021.

This activity is the last component of the SAWIDRA project which has been completed. The COVID-19 Pandemic situation has affected this programme.

The technical summary of ACMAD HPC is below:

Server: **13 servers,**
CPU**:** **344 cores,**
RAM: **3 TB;**
Local Storage
SAS cards to SAN**:**
35 TB local storage
694 TB on SAN

The renewal process of the software licences installed on the HPC is on-going. Below is the cotation received from supplier for equipment for the renewal.

Article	Description de l'article	Quantité	Prix Unitaire Euro	Prix Total Euro
1	Bright Cluster Manager, public customer, 1 year support, subscription license	13	338,00 €	4 394,00 €
2	Red Hat Enterprise Linux Server, Premium (Physical Node with up to 1 Virtual Node) , 1 year	9	1 691,00 €	15 219,00 €
3	Red Hat Enterprise Linux Server for HPC Compute Node, Self-support (Physical or Virtual Node, L3-only) 1 year	4	123,00 €	492,00 €
4	Intel Parallel Studio XE Cluster Edition for Linux 1 year	1	1 867,00 €	1 867,00 €
5	**Envoi par mail des licences ou online**	1	Inclus	Inclus
	Prix TOTAL €uro HT	**21 972 €**		

Upon guidance from Management, we contacted exact-lab, a technical partner who installed HPC infrastructure at ACMAD under AAP programme in 2014. We expressed the wish of ACMAD to Switch to open source software and tools on our HPC. The replied and confirmed that there is need to reinstall ACMAD's HPC with open source software and tool. There will soon share with us a quotation on the cost of such operation.

Factors that prevented full achievement of the related tasks
None

7. Synthesis on Deliverables

List deliverables (as stated in the work plan - indicate new deliverables) and detail progress towards completion.

1. Monitoring of RARS stations Network

http://sgbd.acmad.org:8080/thredds/catalog/ACMAD/PROJECTS/SAWIDRA/RARS/SOLETOP_Maintenance_Hosting_sites_Tour/catalog.html

2. Monitoring of the PUMA station:

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3. Monitoring of the Climate Station

During this quarter we updated successfully the climate station with the support of JRC on 11 May 2022. Data activation has occurred on the station
ACMAD's credentials to Climatestation :

http://154.66.222.51:8080/ or http://climatestation.acmad.org:8080/
User : acmaduser
Passwrd: Acma22 !

4. Data Management and Processing –HPC

This period's activities include the monitoring of the warranty with InterTech, system administration and support to users for management of access and accounts. But in July 2022 ACMAD stopped HPC since licenses expired and it is not usable. This is the optimize power resources until solution is found for either reinstallation on freeware's or renewal of the expired licenses.

Climsoft vertion 4.1.12 has been installed at ACMAD by the consultant Mr Marcelin Habimana in june 2022. New features such as integration of data from paper archives have been integrated. The R-Instat feature as well has been integrated.

Full Expert's mission report available at link below :

http://sgbd.acmad.org:8080/thredds/fileServer/ACMAD/CTD/dataservice/Climsoft2022/Climsoft_R-Instat_Documentation/02062022Report_of_the_work_visit_to_ACMAD_Regional_Climate_Centre_Niamey_Niger_23-26_May_2022.pdf

- Metadata management
- Status of data management in countries
- Climsoft Performance
- Climsoft installation procedures
- Climsof and R-instat set up

8. Risks, issues and mitigation actions

Provide detail on any risks or issues you have encountered in the implementation period. Please include detail on the mitigating actions you are taking in response to this.

Identified risk or issue	Mitigation action
RARS station running cost may be challenge to some hosting sites	ACMAD recommended to SOLETOP to provide indicative running cost of all RARS station which will be considered by ACMAD and its partners for the sustainability strategy.
For the HPC on going action to go for freeware, warranty implementation conditions may be exposed.	ACMAD will inform INTERTECH SA all action regarding the changes on HPC for the freeware option.
CLIMSOFT database migration needs a high speed computer	ACMAD will run on the server the migration of the climsoft database from V3 to version3.1.12.

9. Lessons learned and recommendations

Please describe any key lessons learned during the period that you feel could be shared with others. Do you have any recommendations for future initiatives based on these lessons learned?

10. Additional items for discussion

Please add any further bullet points on key items to discuss.
None

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