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CAPACITY BUILDING INITIATIVES AT THE NATIONAL METEOROLOGICAL SERVICES FOR AN EFFECTIVE ADAPTATION IN NIGERIA



20/11/2024



An initiative of the Organisation of African, Caribbean and Pacific States funded by the European Union



Faire du temps, du climat et de l'environnement des ressources pour le développement
Making weather, climate and environment resources for development

BRIEF HISTORY of Meteorological Services in Nigeria: *Over 130 years of Service*

1887 at Akassa (present Bayelsa State)

- + **1891** for Lagos (PWD),
- + **1907** for Ilorin,
- + **1909** for Lokoja
- + **1911** for Zungeru,
- + **1949** for Kano

In 1937, it became one of the constituent services
of the British West African Meteorological
Services

**For efficiency and improved service
delivery, NiMet Act of 2003 has been
repealed and replaced with a new
Act: NiMet Establishment Act, 2022.**

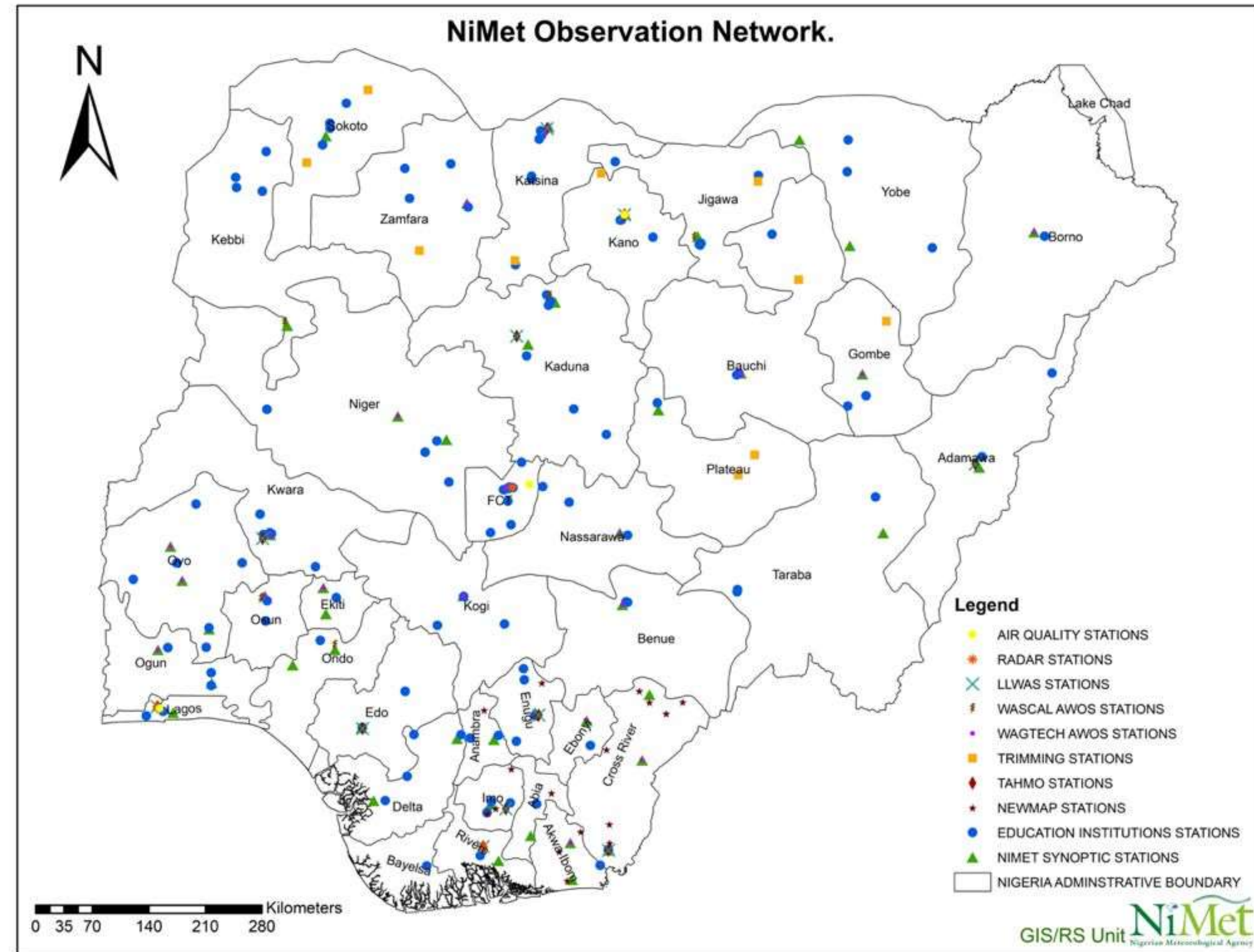
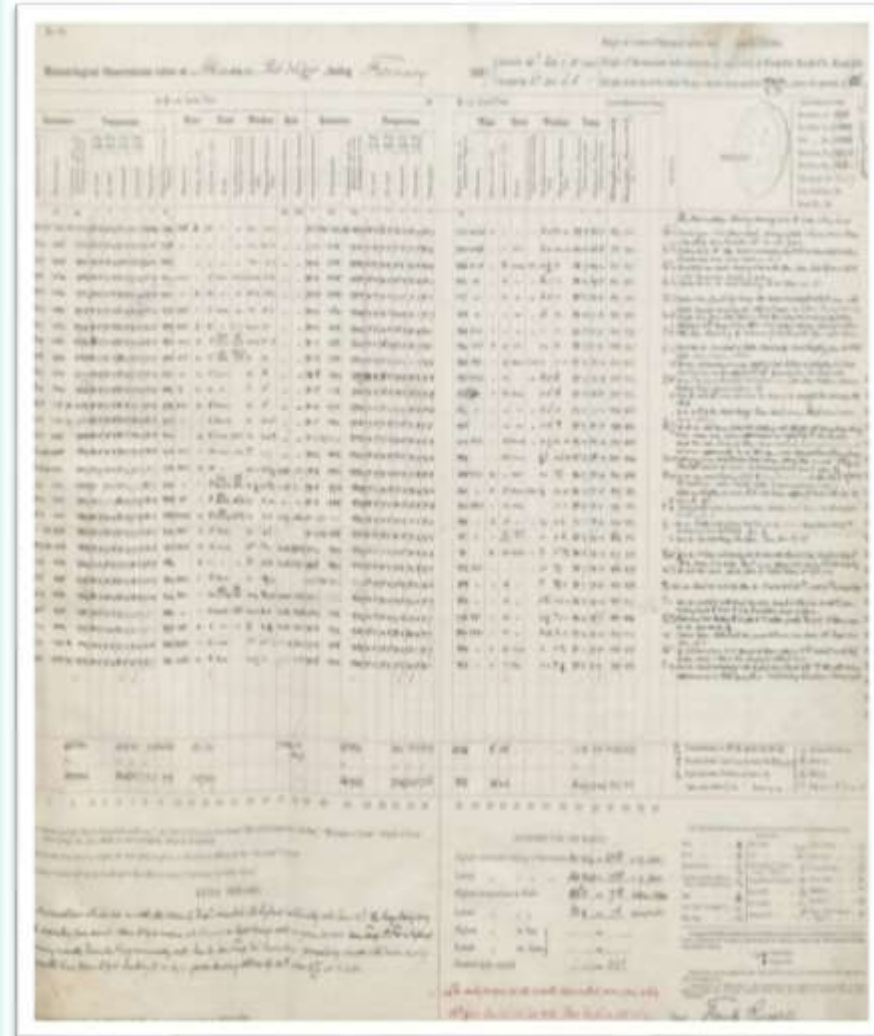
In 1949, the service became a full-fledged
department and was one of the seven colonial
department structures used in running Nigeria

In 2003, arising from the strategic importance of
weather, **Federal Executive Council (FEC)**
approved the setting up of NiMet.

NETWORK OF STATIONS



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With over 130 years of existence, some of these stations are over 100 years old.

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CERTIFICATIONS



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- ✓ Certification for Aeronautical Meteorological Service delivery started in 2013 with **ISO 9001:2008** and was certified in **June 2015**
- ✓ The Agency got **ISO 9001:2015** certification in **May 2017**
- ✓ NiMet Achieved ISO 9001:2015 re-certification in **July 2020 for another three years**
- ✓ NiMet passed the ISO 9001:2015 maintenance Audit in **June 2021 and June 2022**
- ✓ NiMet Achieved ISO 9001:2015 re-certification in **July 2023 for another three years**

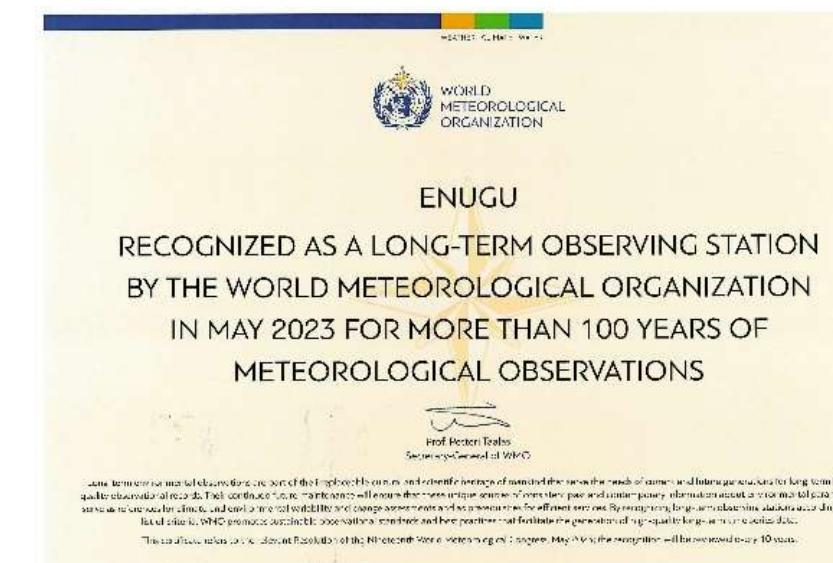
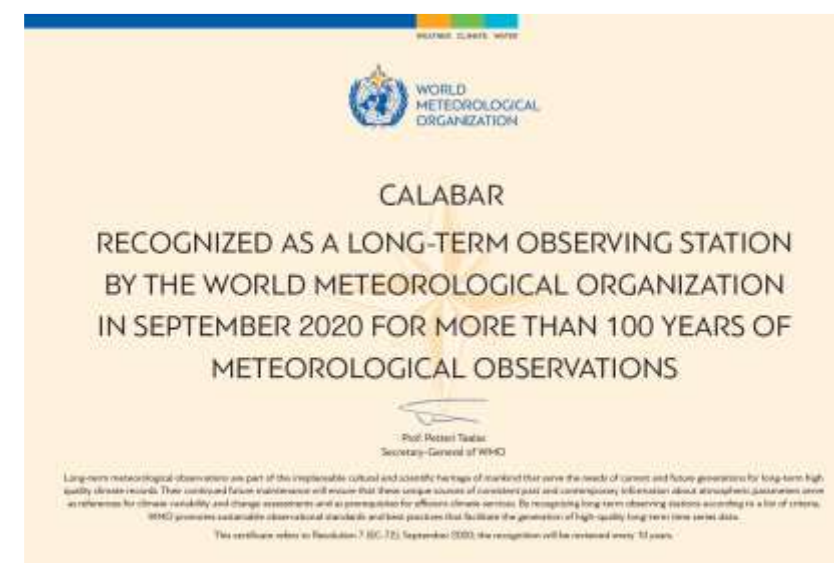
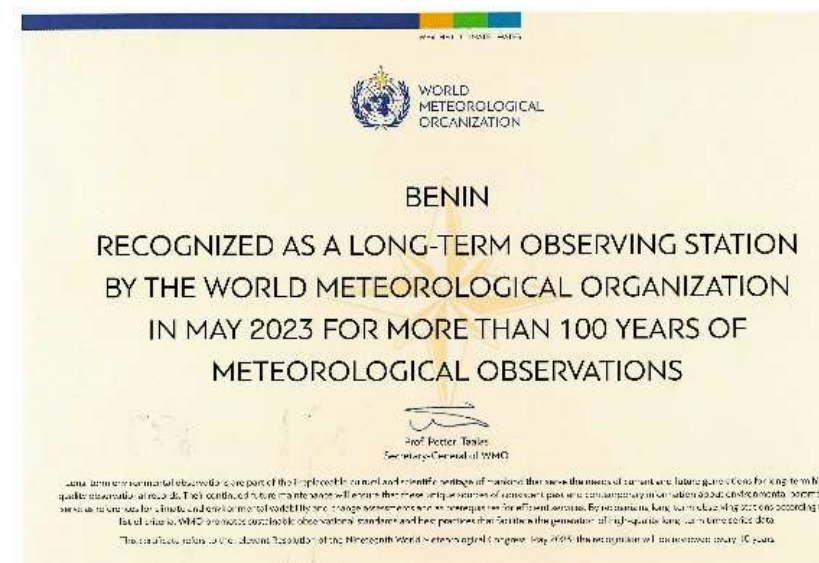
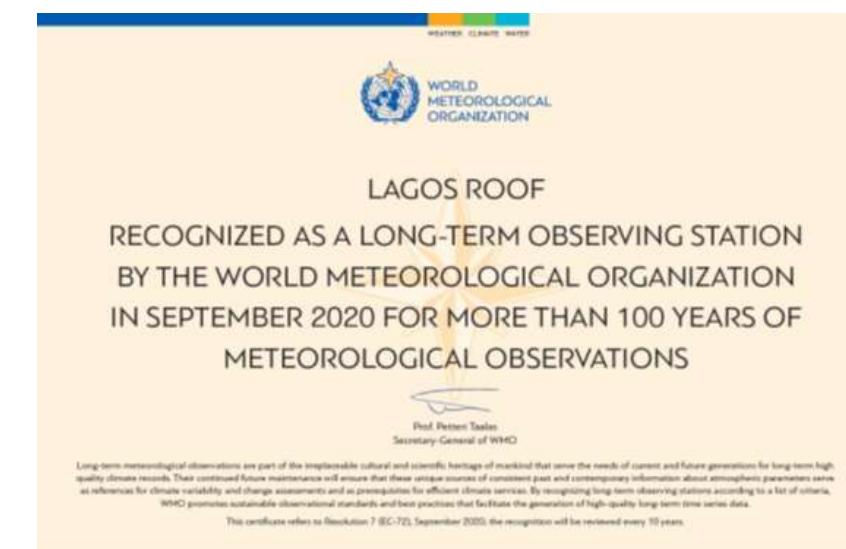
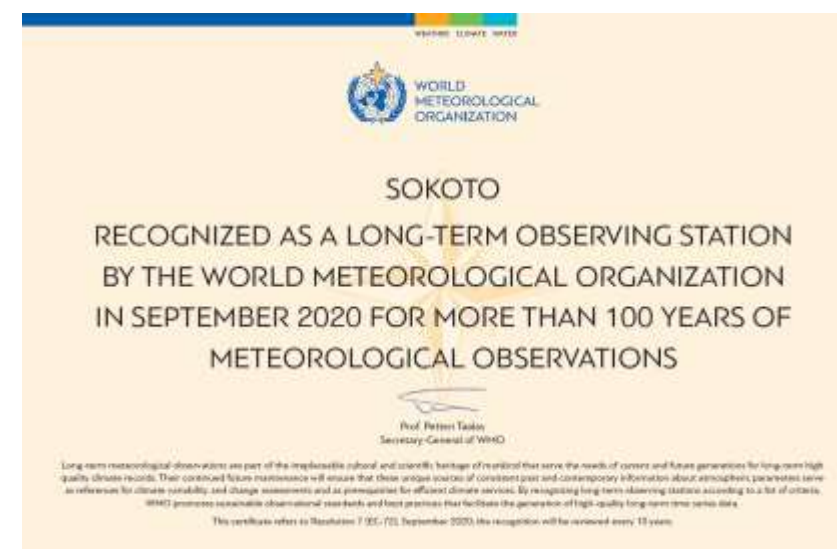
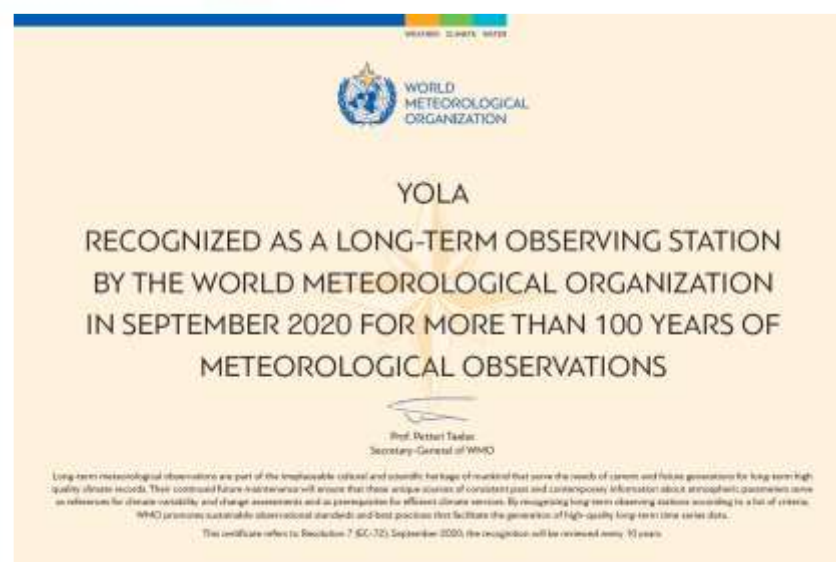
- ❖ The Agency achieved ISO 29990:2010 certification in August 2019 for training services at the **Regional Training Centre, Lagos**.
- ❖ ISO 29990:2010 certification was extended till **May 2023 following a successful audit in July 2022; and achieved further extension till August 2024 after another successful audit in August 2023**





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WMO RECOGNITION OF **CENTENNIAL** OBSERVING STATIONS.



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Centre Africain pour les Applications
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CLIMATE CHANGE RESOURCE CENTRE



Capacity Development and Opportunities

**Decades of Training Meteorologists and
Climate Change Scientists for Western &
Central Africa Regions**

WMO REGIONAL TRAINING CENTRE, LAGOS



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- ❑ Established in 1957 as the National Meteorological Training School.
- ❑ In 1994, it became the World Meteorological Organization (WMO) Regional Training Centre, Lagos, with a University component in FUTA, Ondo State, Nigeria (for the Western and Central African regions).
- ❑ WMO RTC, Oshodi, Lagos, is responsible for the training of Meteorological Personnel from Nigeria, English-speaking West African countries, and other African countries including Niger and Cameroon.
- ❑ The Centre has served as a training hub for the region over the years. Its training courses range from short to long-term for weather observers and forecasters.
- ❑ Support on WMO Fellowship to Nigeria
- ❑ The centre trains students and senior personnel from **W/A**.





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WMO RECOGNITION OF TRAINING COMPETENCIES



CERTIFICATE OF RECOGNITION

*This is to certify that
the World Meteorological Organization (WMO),
a specialized agency of the United Nations (UN),
reconfirmed the "Meteorological Research and Training Institute (MRTI)" in Lagos,
as WMO Regional Training Centre (RTC) in Nigeria,
according to the Resolution 9 (EC-71) made by
the WMO Executive Council (EC) at its seventy-first session in June 2019.*

Prof. Petteri Taalas
Secretary-General

1 June 2021

**Highly experienced,
skillful, and well-trained
personnel to discharge
their duties as well as
impart knowledge and
transfer skills.**

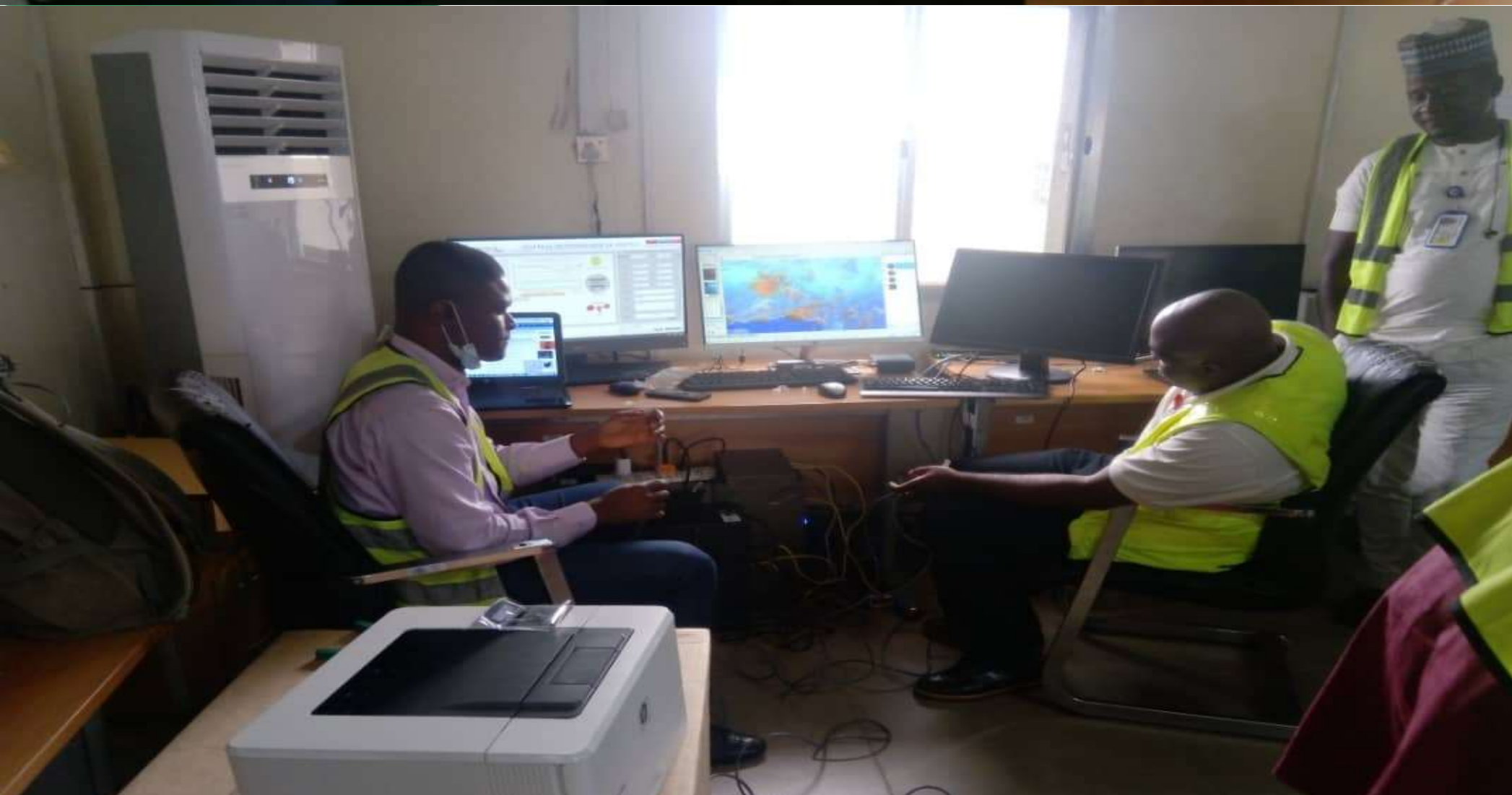
**MUHAMMADU BUHARI METEOROLOGICAL INSTITUTE OF SCIENCE AND
TECHNOLOGY, KATSINA
ND & HND METEOROLOGY
ND & HND CLIMATE CHANGE**



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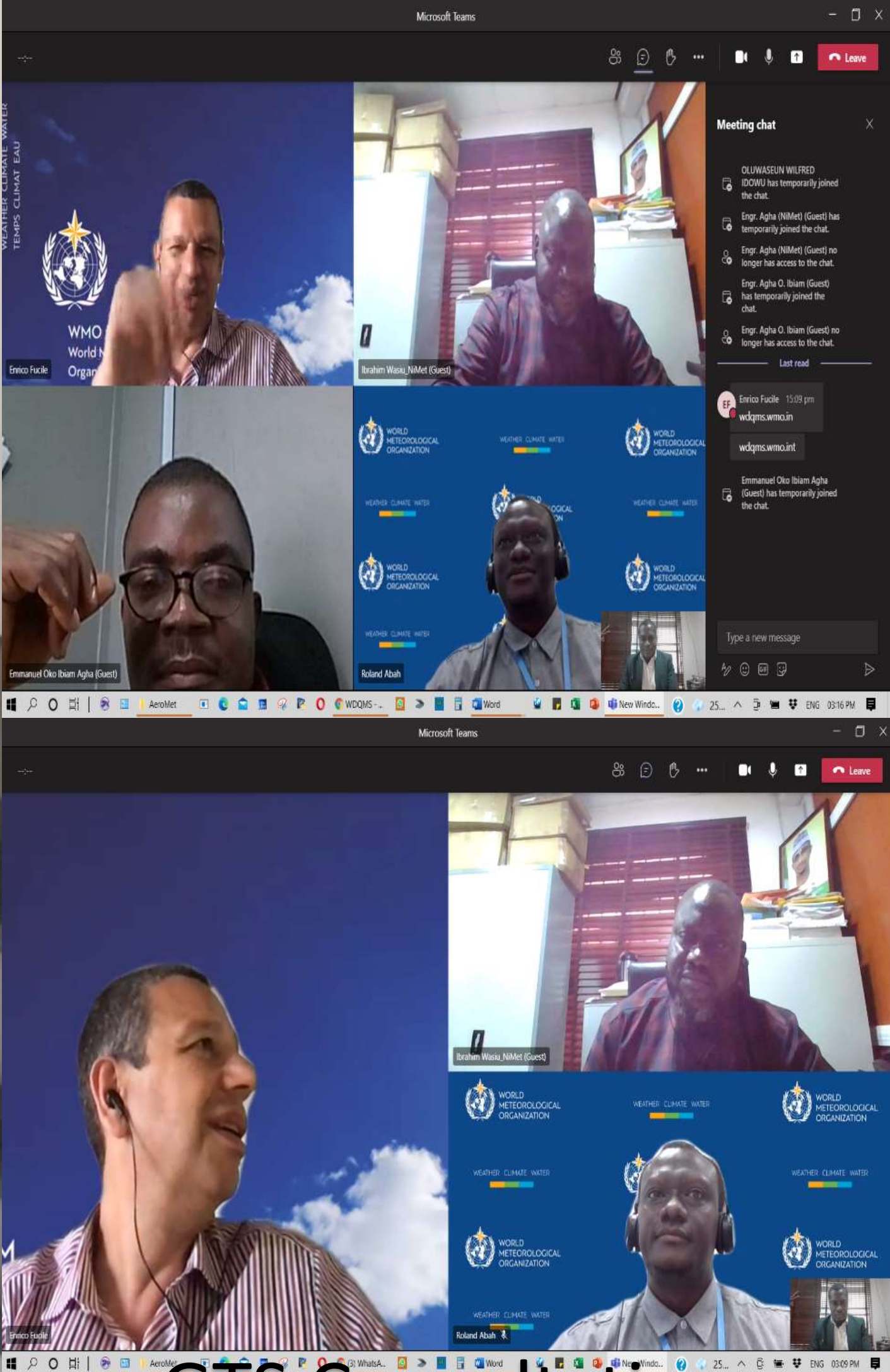


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MSG TRAINING

AMF & AMO TRAINING



GTS FACILITY AT ABUJA AIRPORT

GTS Consultation
with WMO



Train the Trainer on Aviation Warnings (Aerodrome & Wind Shear Warnings, Volcanic Ash & SIGMET) and dissemination



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- ❖ **In-service training** at RTC Lagos, MBMIST, and Tertiary Institutions within outside Nigeria (BSc., MSc. and PhD)
- ❖ Intervened in **Curriculum development** for 12 Universities (ABU, KUST, UNILAG, FUDUTSINMA, etc.) in Nigeria and the **University of The Gambia**
- ❖ **MoU on Capacity Development** with The Gambia Met. Services
- ❖ Played an active role in the **conceptualisation and development of the ECOWAS Meteorology programme**
- ❖ Actively involved in the **establishment and curriculum development** of African Aviation and Aerospace University (AAAU), Abuja
- ❖ **Exchange programmes** with Universities on **Sabbaticals** for both Officers of University and NiMet
- ❖ **Young Meteorological Ambassadors** programme in Secondary Schools
- ❖ Collaboration with institutions on **expansion of network of stations**
- ❖ **Co-production** of Seasonal Climate Prediction (SCP) with **relevant Stakeholders** across weather and climate-sensitive sectors of the economy
- ❖ Build & Utilises internal resources to **develop mobile applications and the Agency's websites**
- ❖ Participation in international projects **e.g. SWIFT project, CHD, SOFF to improve Capacity of Staff members**
- ❖ **Co-production** of Climate Change Book with the **Academia**

In-Country Capacity Dev Model

CAPACITY DEVELOPMENT IN THE GAMBIA

In the spirit of WMO's Voluntary Cooperation Programme (VCP) and on the official request of the Gambia Meteorological Services; Department of Water Resources, the Nigerian Government through the Nigerian Meteorological Agency (NiMet) signed a Memorandum of Understanding (MoU) to:

- ☐ Assist the Government of Gambia on capacity development to implement the Strengthening of Climate Services & Early Warning Systems;
- ☐ Train personnel on fundamental aspects of weather observation & forecasting;
- ☐ Develop a Quality Management Systems; and Aeronautical Meteorology Competency framework
- ☐ Perform medium and long-term adaptation planning for disaster risk resilience.
- ☐ This MoU has been implemented
- ☐ The PR of Gambia was recently part of a Study Visit to Nigeria, covering NWP, Climate Services, Public Weather and User engagement



QMS Capacity Support Service In Malawi



QUALITY MANAGEMENT SYSTEM (QMS) FOR MALAWI

- ❑ The Nigerian Meteorological Agency (NiMet) having achieved ISO certifications for its Aeronautical Meteorological services and the training services conducted by the Agency at the WMO Regional Training Centre in Oshodi, Lagos, maintained well trained Quality Management System staff of the Agency, has:
- ❑ Under the WMO Voluntary Cooperation Programme (VCP), NiMet provided technical assistance to Malawi on Quality Management Systems.



NETWORK EXPANSION OF OBSERVING STATIONS: Secondary & Tertiary Institutions; **Win Win Situation**

Established Weather Stations across Universities, Polytechnics, COEs and Secondary Schools in Nigeria for improved Forecasting Services: **118 so far..**

African Center of Meteorological Applications for Development
Centre Africain pour les Applications de la Météorologie au Développement

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| | | | |
|--|---------------|------------|------------|
| University of Jos, Plateau State | North Central | 8.8892° E | 9.9497° N |
| Bayero University Kano, Kano State | North West | 8.4753° E | 11.9836° N |
| University of Maiduguri, Borno State | North East | 13.1981° E | 11.8038° N |
| University of Calabar, Cross River State | South South | 8.3410° E | 4.9738° N |
| University of Ibadan, Oyo State | South West | 3.8995° E | 7.4443° N |
| Federal University of Technology, Owerri, Imo State | South East | 6.9916° E | 5.3866° N |
| Federal University of Technology Minna, Niger State | North Central | 6.434362 | 9.524778 |
| Department of Geography, Ahmadu Bello University Zaria, Kaduna State | North Central | 7.6559° E | 11.1517° N |
| Abubakar Tafawa Balewa University Bauchi, Bauchi State | North East | 9.7968° E | 10.2784° N |
| University of Benin, Edo State | South South | 5.6037° E | 6.3350° N |
| Obafemi Awolowo University, Ile – Ife, Osun State | South West | 4.530315 | 7.520767 |
| University of Nigeria Nsukka, Enugu State | South East | 7.4083° E | 6.8645° N |
| University of Ilorin, Kwara State | North Central | 4.5950° E | 8.4912° N |
| Federal University Dutsinma, Katsina State | North West | 7.4883° E | 12.4722° N |
| Federal University Kashere, Gombe State | North East | 11.0068° E | 9.9134° N |

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SEASONAL CLIMATE PREDICTION



An Early Warning Tool providing information on:

- ❖ Onset and cessation dates of rainy season;
- ❖ Length of the rainy season;
- ❖ Annual Total amount of rainfall;
- ❖ Dry Spell Occurrence;
- ❖ Little Dry Season (August Break)
- ❖ Temperature (Day & Night) Forecast;
- ❖ Malaria Vigilance;
- ❖ Meningitis Vigilance

Summarized for easy access and readability for the Nation's **Policy Makers** and **translated into three (3) Nigerian languages** to increase access and improve uptake for improved climate-resilient communities.

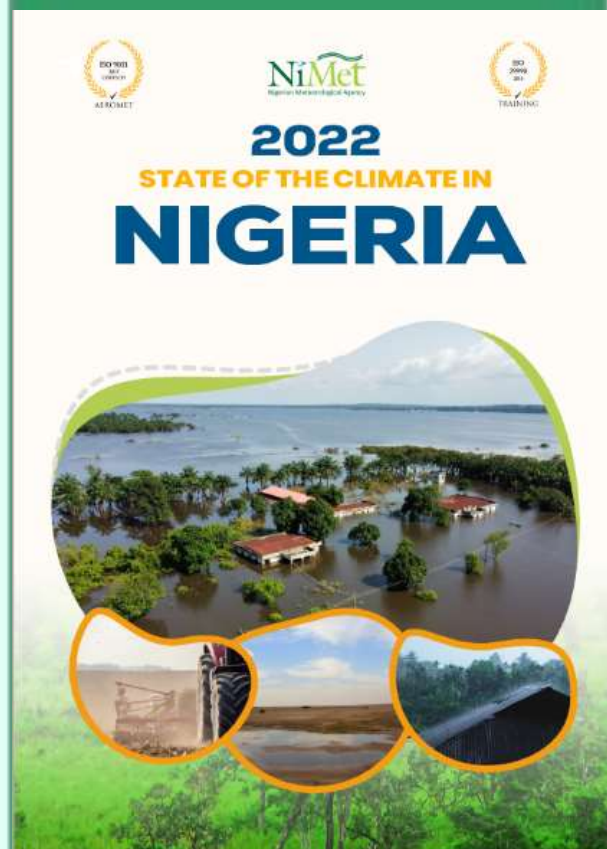
Efforts are ongoing to include 'pidgin translation'.

With Support from Stakeholders,
the Socio-economic implications of the predictions are also detailed in the publication.

EDUCATIVE AND RESEARCH PUBLICATIONS



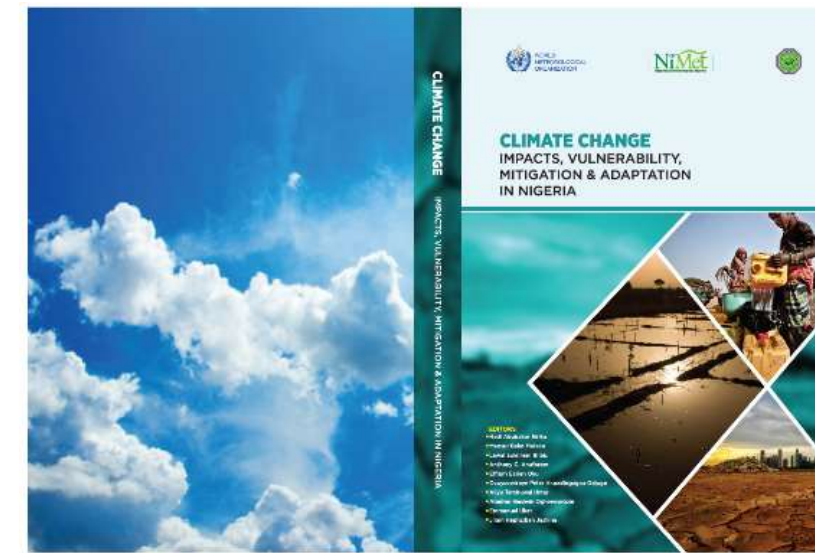
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A research document which details the climatic situation of the country in the preceding year:

- ❖ Observed temperature in various forms;
- ❖ Observed rainfall amount;
- ❖ Solar radiation;
- ❖ Harmattan Dust Haze;
- ❖ Evidence of climate change/changes in the observed climatic variables
- ❖ Drivers of climate & climate change in Nigeria;
- ❖ Detailed extreme weather events;
- ❖ Air quality in Nigeria;
- ❖ Socio-economic implications of the climate parameters; etc.

Climate Change Book



The Climate Change Book

was produced by a team of experts from within the Agency and the academia using local data and evidence that indeed our climate has been changing.

This is a valuable resource, not only for this generation, but for others to come.

It contains information on;

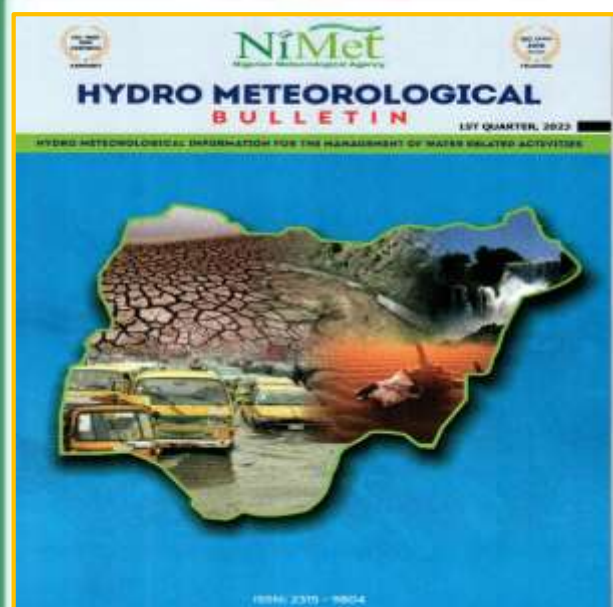
- ❖ Analysis of rainfall and temperature over time;
- ❖ Climate Change Impacts;
- ❖ Climatic Change Variability;
- ❖ Climate Change Mitigation
- ❖ Climate Change Adaptation Strategies;
- ❖ Climate and the Ecosystem
- ❖ Socio-economic implications of Climate Change; etc.

Over Coastal Region, Rainforest Region, Guinea Savannah Region, Sokoto Basin, Hadejia-Jama'are River Basin, Lake Chad Basin, Jos-Plateau Region, Obudu Mountain and Mambilla Plateau.

APPLIED METEOROLOGICAL PRODUCTS



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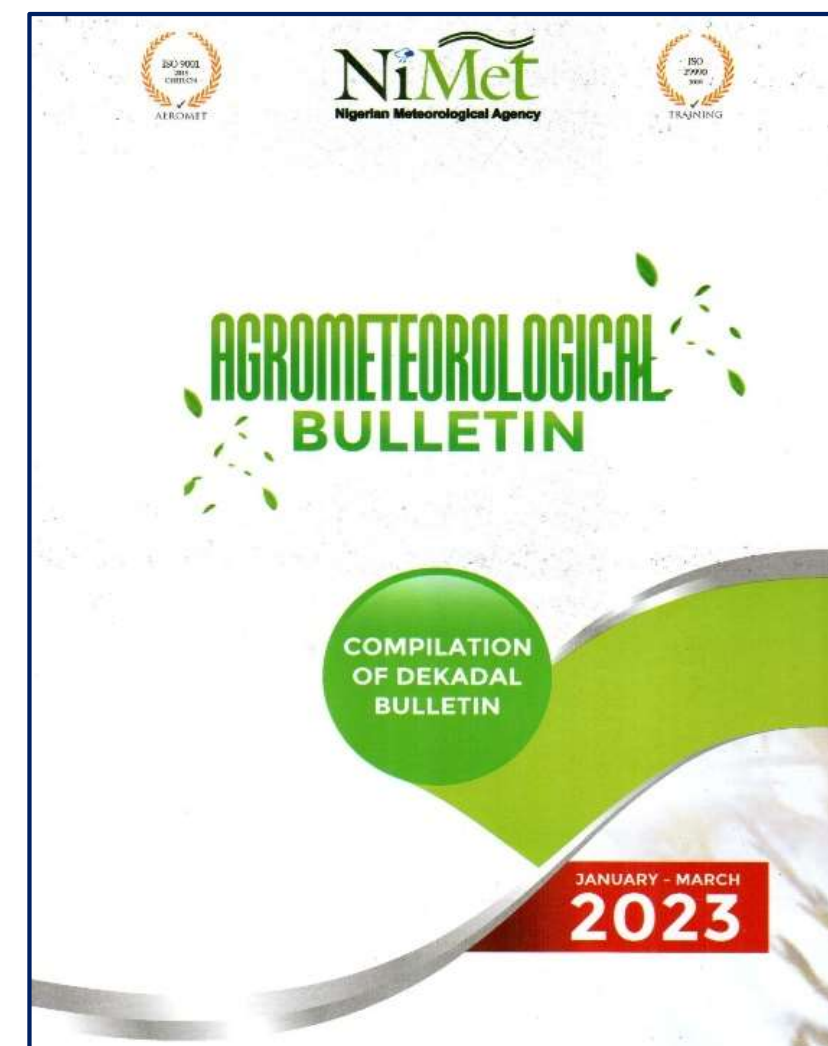
It contains information on:

- ❖ Observed hydrometeorological parameters;
- ❖ Flood events in past month;
- ❖ Flood Outlook for the current and future months;



It contains information on ;

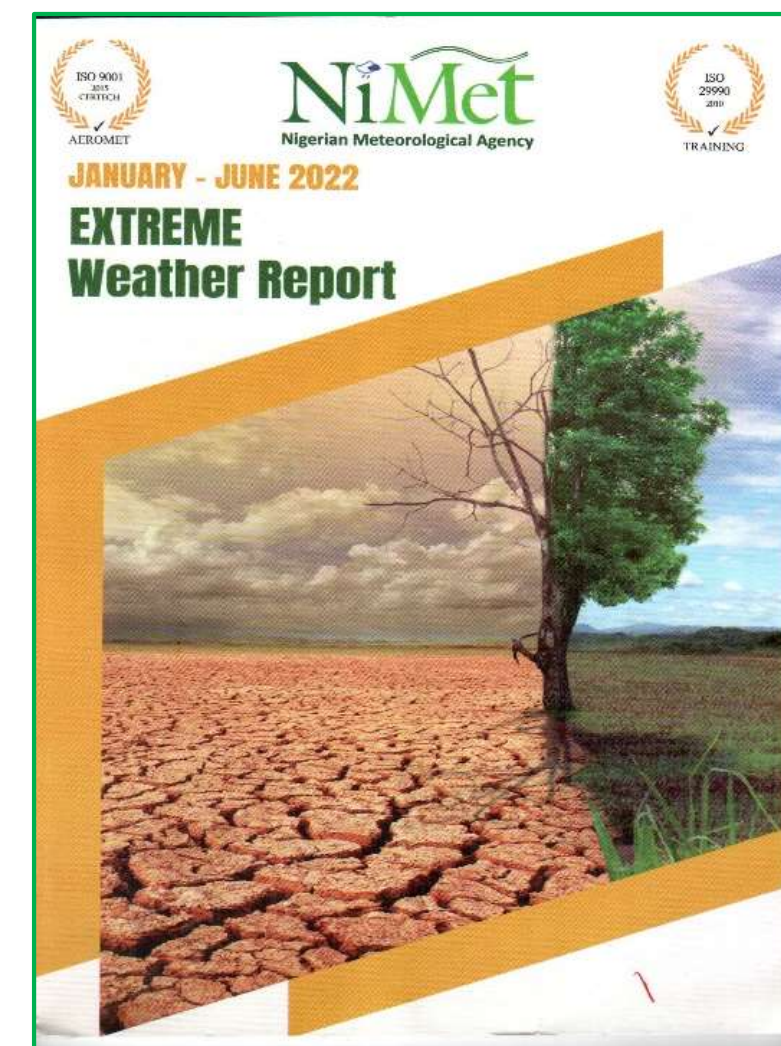
- ❖ Forecast for Rainfall, Relative Humidity, Mean Temperature, Maximum Air Temperature and Minimum Air Temperature;
- ❖ Based on some determined thresholds, vigilance of some climate sensitive diseases and drug stability i.e., Meningitis, Malaria, Cholera, Heat Index, Medication Stability
- ❖ Advisories



It contains dekadal (i.e., 10-days) information on:

- ❖ Rainfall patter;
- ❖ Soil moisture Index;
- ❖ Normalized Difference Vegetation Index (NDVI);
- ❖ Temperature;
- ❖ Agrometeorological Outlook for the next dekad etc.

A valuable tool for food security in Nigeria.



The reality of the Changing Climate is here with us, manifesting in form of extreme and severe weather events.

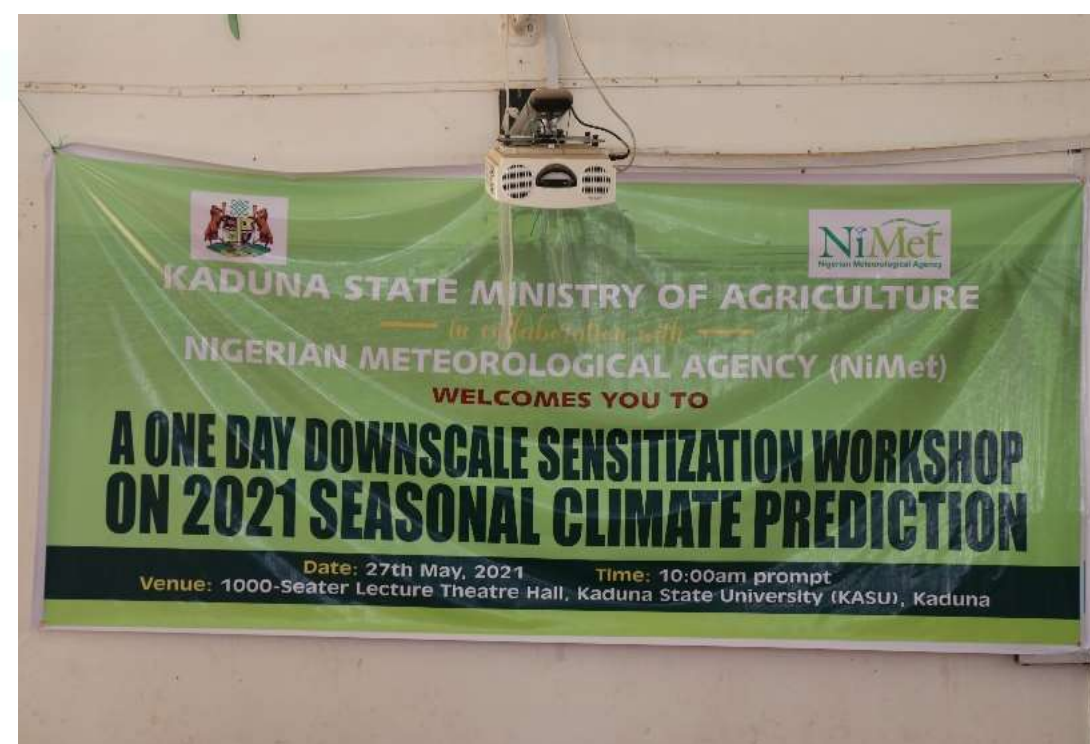
It contains information on ;

- ❖ Harmattan Haze;
- ❖ Extreme Rainfall events
- ❖ Extreme temperatures
 - ❖ Maximum temperatures
 - ❖ Minimum temperatures



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DOWNSCALING ACTIVITIES THROUGH PARTNERSHIP WITH RESEARCH INSTITUTES



Oyo State 2023

|  2022 RAINFALL CHARACTERISTICS FOR AGRO-ECOLOGICAL ZONES IN NIGERIA  | | | | | |
|---|---|-------------------|------------------|---------------------------------|-------------------------------|
| AGRO ECOLOGICAL ZONES | PLACES COVERED | ONSET DATES | CESSATION DATES | LENGTH OF GROWING SEASON (DAYS) | SEASONAL RAINFALL AMOUNT (mm) |
| Coastal Swamp | Aba, Brass, Ikot-Akasi, Nembe, Oron, Warri, Eket, Otuoke, Patani, Sagbama, Yenagoa, Port Harcourt, Ughelli, Uyo, Calabar, Ekeremor, Degema, Badagry, Bakassi. | 28 Feb - 21 Mar | 5 Dec - 27 Dec | 250 - 300 | 1800 - 3000 |
| Tropical Rain Forest | Abeokuta, Benin, Afikpo, Ekiti, Osogbo, Asaba, Owerri, Owo, Sango-Ota, Sagamu, Etsako, Ijebu, Ifedayo, Bekwarra, Ihiala, Arochuku, Ilesha | 15 Mar - 30 Apr | 10 Nov - 10 Dec | 225 - 270 | 1300 - 2200 |
| Guinea Savannah | Abakiliki, Oturkpo, Agbani, Ezegwu, Saki, Ajaokuta, Ilorin, Awka, Minna, Bida, Ogoja, Makurdi, Jere, Jne, PCT (Abuja), Ibi, Lafia, Doma, Awe, Gwer, Wukari, Takam, Bassa, Mokwa | 10 Apr - 25 May | 1 Nov - 25 Nov | 175 - 250 | 950 - 1950 |
| Sudan Savannah | Ikara, Shani, soba, Madagali, Yauri, Bogoro, Bia, Gulani, Igabi, Birnin Gwari, Lere, Danja, Samna, Mubi, Yola, Bauchi, Akko, Dava, Shiroro, Zaria, Kaduna, Sabuwa | 12 May - 15 June | 10 Oct - 30 Oct | 120 - 180 | 730 - 1100 |
| Sahel Savannah | Bama, Nguru, Illala, Zaki, Sokoto, Maiduguri, Dutse, Katsina, Gasau, Shinkafi, Daura, Argungu, Wamako, Rahah, Augie, Yusufari, Geidam, Babura, Mungono, Dutse, Mafaru, Aleiro, Fika | 05 June - 10 July | 28 Sept - 20 Oct | 85 - 130 | 340 - 760 |



Kwali, Abuja 2023



The WMO Secretary-General Visited Nigeria: HCA

Supporting Capacity Building Initiatives in Africa





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Appreciating the Quality-of-Service Delivery



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CONCLUSION

To SUCCEED:

NiMet
Nigerian Meteorological Agency

**Joint
collaborative
Research**

**Research &
Exchange
Programmes**