

Opportunities for Capacity Development: How Home-Grown AI Tools Build Sustainable Forecasting Capacity

Okanlawon Abiola Abayomi (Expert/NWP)

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NIGERIAN METEOROLOGICAL AGENCY



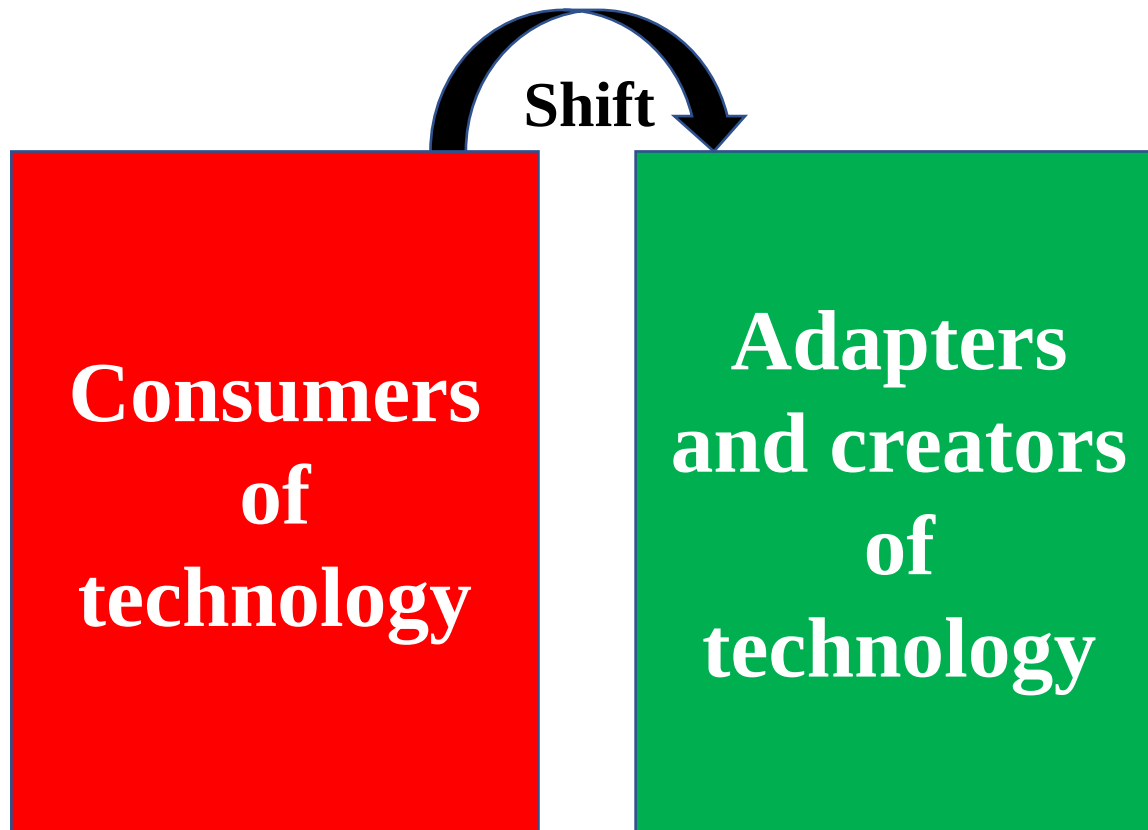
www.nimet.gov.ng





The Opportunity In AI4Wx - A New Paradigm for Developing Nations

- Challenges: Acquiring expensive supercomputers



Case Study: Meteowiz platform

An AI-powered nowcasting and forecasting system platform developed in-house at the Nigerian Meteorological Agency that leverages local observation data to generate high-resolution, multi-scale weather forecasts and climate prediction tailored to specific sector needs.

Meteowiz: More Than a Tool – A Capacity Building Platform

METEOWIZ SYSTEM

1. Observation and data management and infrastructure

WIGOS

1.1 Meteowiz
(Observation Workstation)

- Desktop App
- Mobile APP
- Web App

Local database

Synchronization

1.2 Forecaster's Tools and Display

- Trend
- TAF
- Aerodrome Warning

1.3 Control Tower Display
METAR, SECI, TAF

1.4 Local Weather Board
(TV display)

3.1 Meteowiz-CDMS
Climate Data Management System

4.1 GTS/WIS 2.0
Local Transmission System (LTS)

WISBox

11.2 Weather widget
(Render Hosting)

- Website
- Mobile App
- Weatherbot

11.1 Database
(Cloud Computing)

- MongoDB, Mysql
- Google Form
- Google drive

API

API

Synchronization & API

10.1 Early Warning System

- Workstation
- Mobile Application
- Email

Local database

2. Advance Modelling and Analysis: Model Ensemble, ML and AI

WIPP

2.1 (DPFS)
Data Processing and Forecasting System

Local database

5.1 Marine Forecasting Workstation

Local database

6.1 Air Quality-DPFS

Local database

7.1 MeteoClim
Sub-seasonal to Seasonal model

Local database

8.1 Tephigram

Local database

9.1 (ARCCS)
Academic Result Computation And Compilation System

Local database

12.1 WASAF

3. Data management and Analysis

4. Communication and accessibility

5. Early Warning System

Satellite Images API (Windy.com)

- 15 Components
- 4 modes of database
- Centralization and Decentralization of data

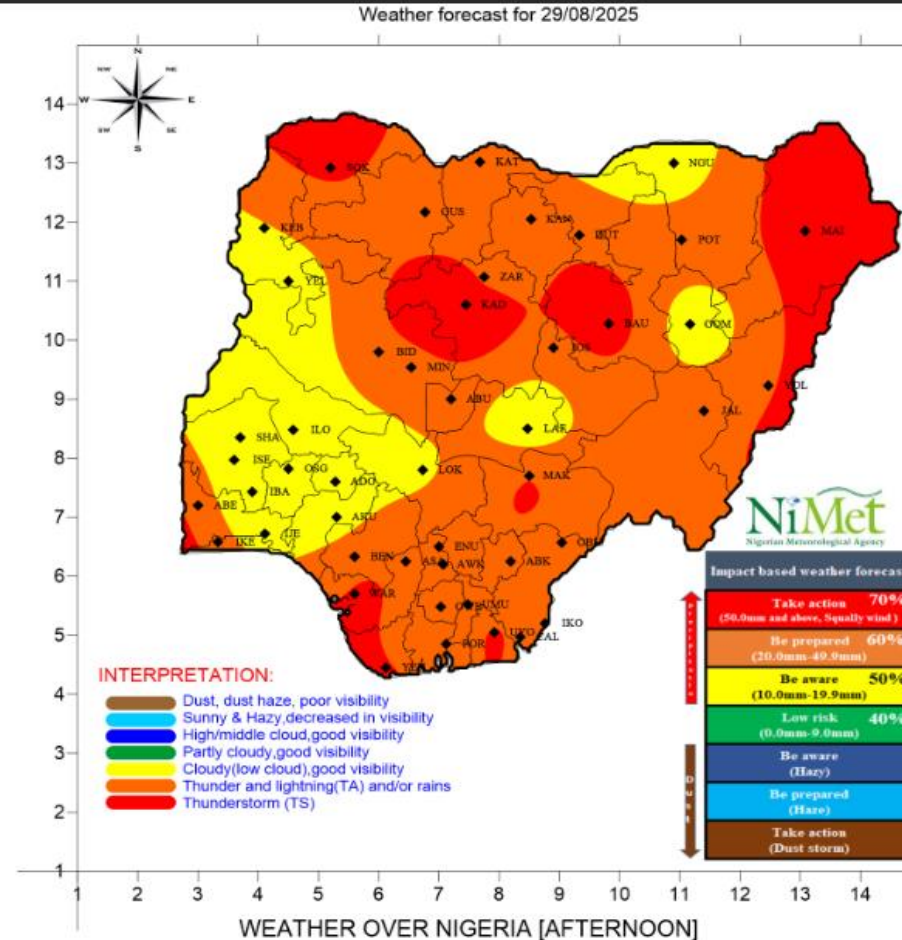


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Hazard Watch

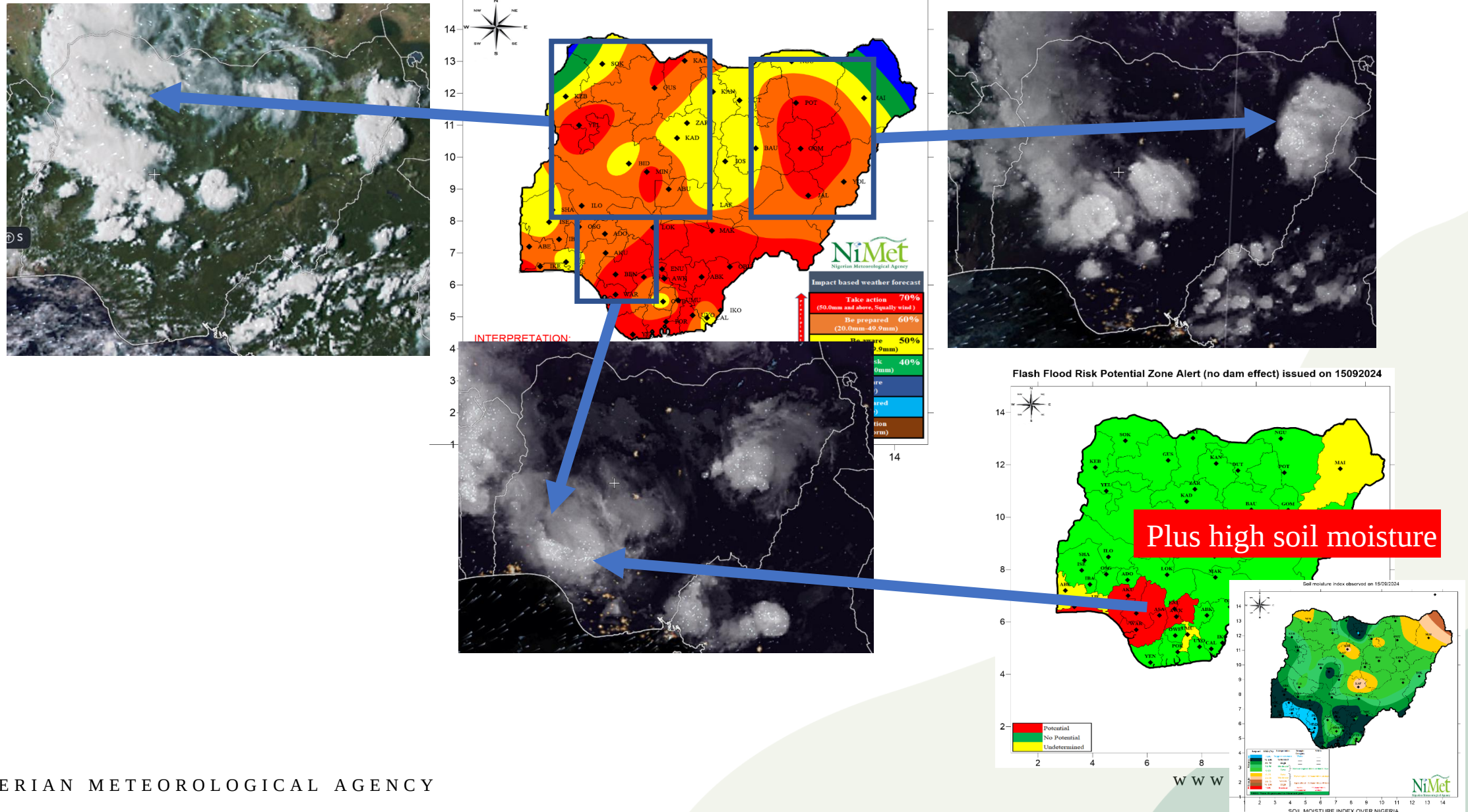
- Satellite
- Weather Watch
- Dekadal Outlook
- Monthly Outlook
- Seasonal Outlook
- Human Health
- Animals Health
- Crops Health
- Maritime
- Air Quality



Early
Warnings
to All

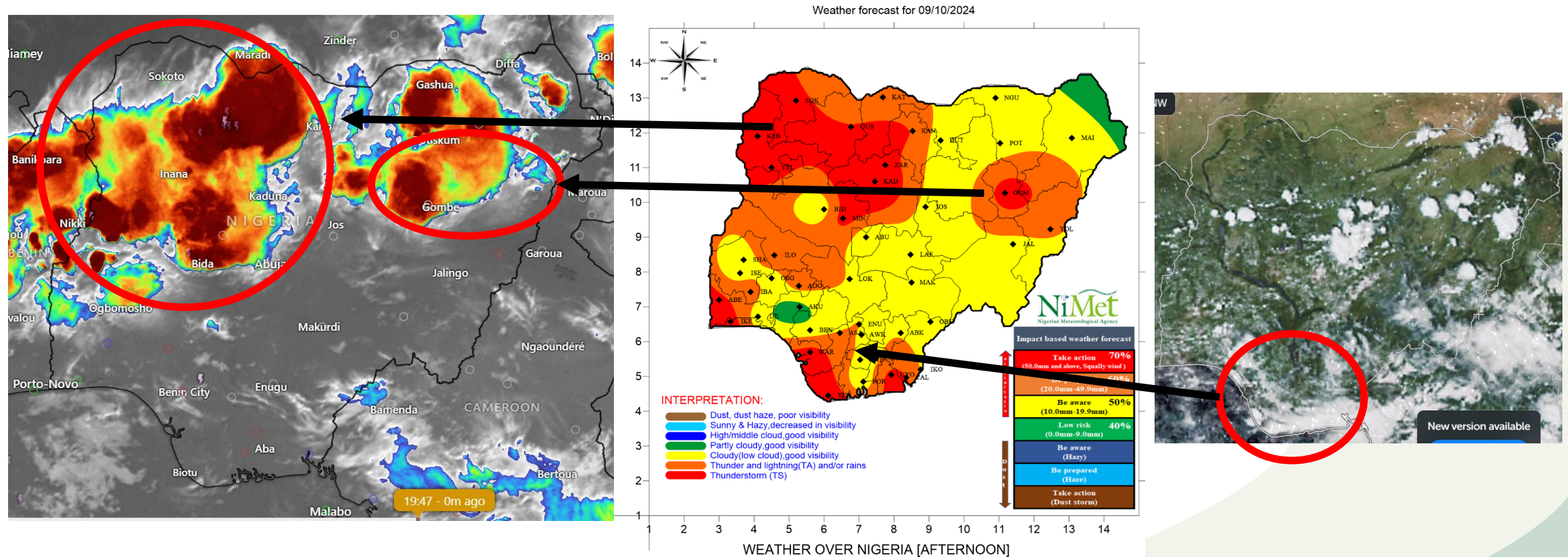


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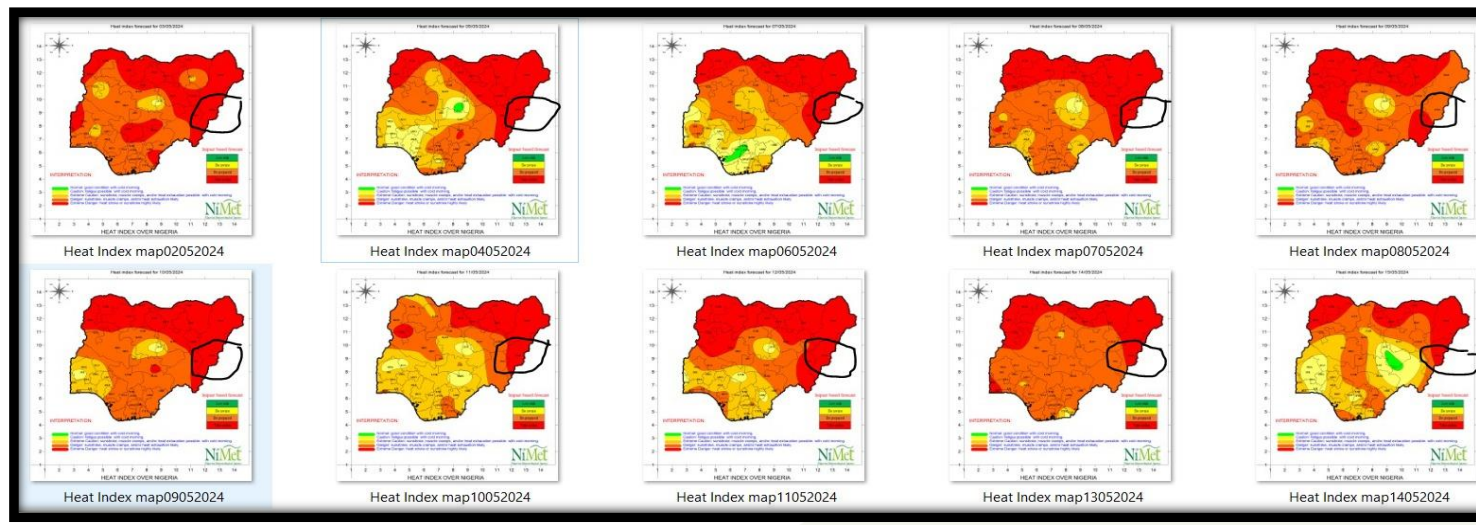
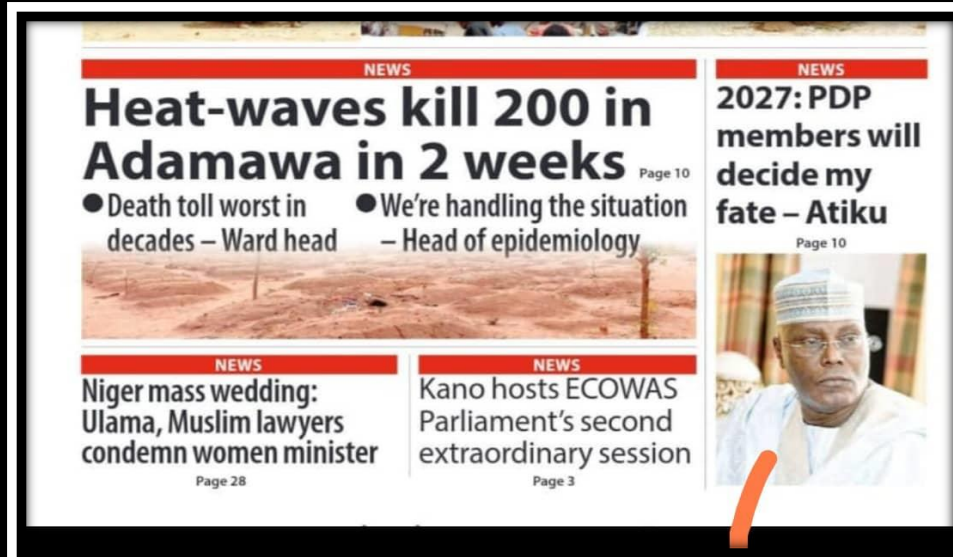




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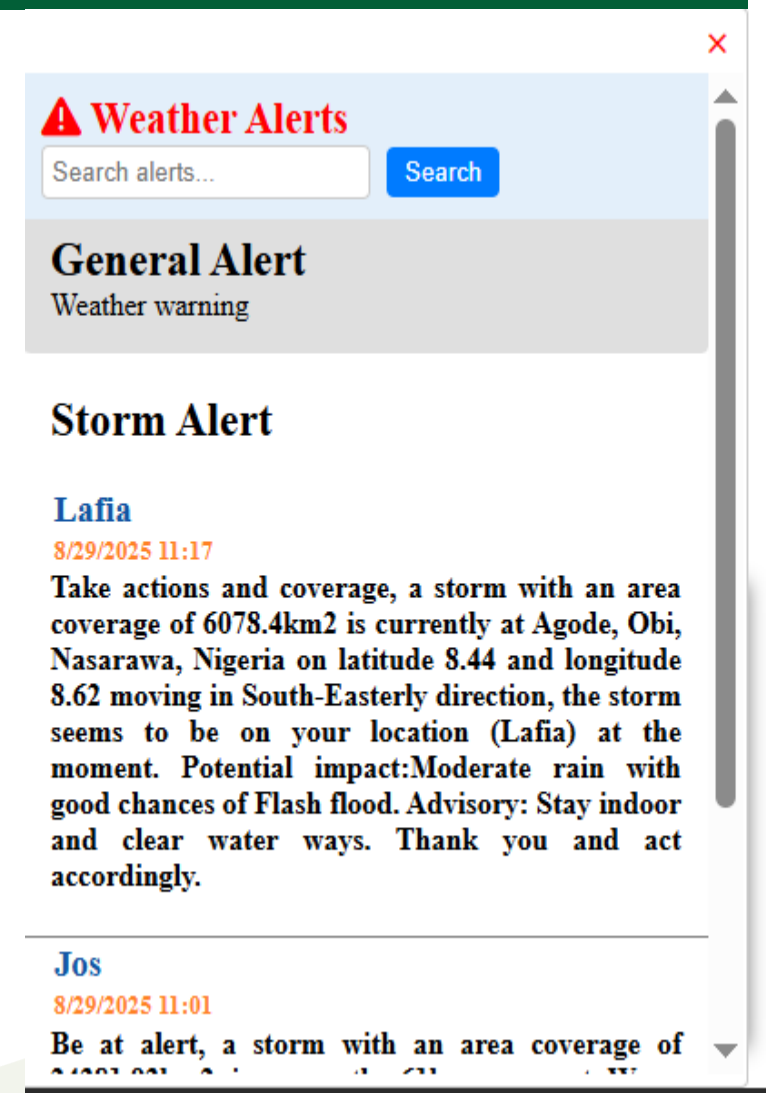
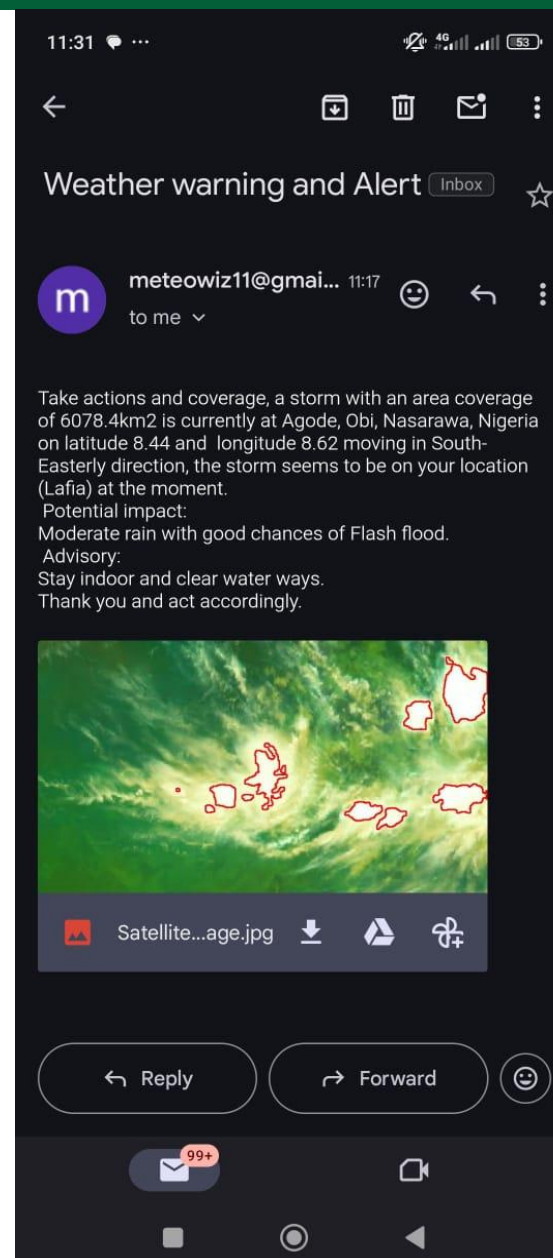
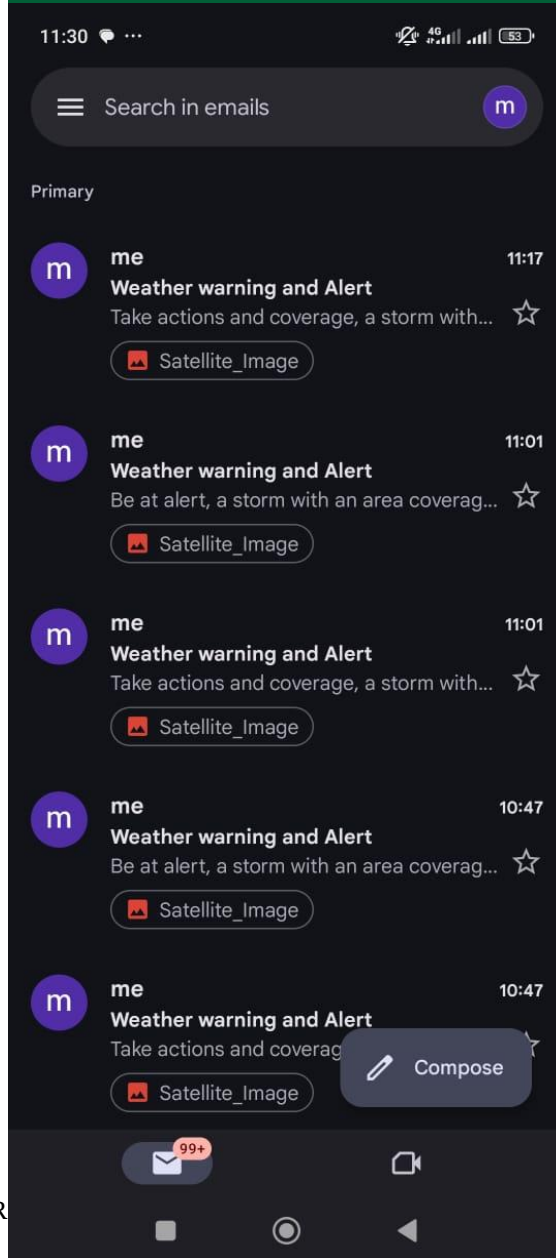
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Meteowiz: More Than a Tool – A Capacity Building Platform





The "How" Flexibility as a Feature

- Meteowiz is not a single, rigid model.
- Its core strength is the ability to test, select, and deploy the most suitable machine learning model for a specific forecast problem.
- The process—from data ingestion to model selection to product generation.



Reasons This Approach is a Game- Changer

- Sovereignty and Relevance
- Inherent Scalability
- Cost-Effectiveness and Sustainability
- Foundation for Innovation



Challenges and the Path Forward

- Acknowledging Hurdles
- Reframing the Challenge as an Opportunity



A Blueprint for the Future

A Blueprint for the Future

- building on domestic expertise controlling adaptable, scalable platforms that leverage the most important asset we have: our local data and our local talent

Call to Action

- I urge other agencies to invest in platforms, not just products.
- Prioritize flexible tools that empower your staff to understand the entire pipeline from input to output.
- Collaborate South-South; our challenges are similar, and our solutions can be shared and adapted.



Final Thought

"Meteowiz's greatest output isn't the rainfall forecast; it is the deep, sustainable capacity within NiMet to own our future in the AI-driven era of meteorology. That is an opportunity we cannot afford to miss."



Thank you.

