2025
State of the Climate in Nigeria

A publication of Nigerian Meteorological Agency

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Foreword

Observation records from the Nigerian Meteorological Agency (NiMet) have shown that Nigeria, just like every other country, is faced with a changing climate. The last 10 years (2016–2025) have been marked by a series of exceptionally warm years, with nine out of the ten years being among the 12 warmest on record. This trend underscores the increasing intensity of warming in recent years, aligning with global temperature patterns.

In 2025, Nigeria experienced a few flood events that affected most states of the country, especially Niger, Kwara, Borno, Ondo and Rivers states. These flood disasters caused monumental damage to infrastructure and livelihood of people, as well as loss of lives and property. Mokwa, in Niger state, suffered the most devastating flooding in 2025. These flood disasters were preceded by persistent torrential rainfall. Also, parts of Oyo and Kwara states experience prolonged dry spells, leading to loss of crops.

In 2025, extreme daytime temperatures (≥400c) were recorded across 23 Nigerian cities, with the most intense and persistent heat occurring between March and June. The northwest and the northeastern states recorded the most intense heat. Nguru, Yobe State, recorded the highest number of hot days, with 100 days above 400c and a maximum temperature of 44.60c, followed by Maiduguri, Borno State (82 days, with a maximum temperature of 44.50c), Sokoto (79 days, with a maximum temperature of 44.50c), and Yola, Adamawa state (65 days, with a maximum temperature of 45.00c).

Every year the Nigerian Meteorological Agency (NiMet) publishes the State of the Climate in Nigeria. This publication reviews the key climate variables and highlights extreme weather events that affected different parts of Nigeria in the preceding year. It serves as a resource for policy makers, the research community and all stakeholders, to enable them to keep track of the climate variables and how they affected socio-economic activities in the country during the year. The information in this publication is evidence-based and is tailored to guide decision-making towards achieving climate-resilient development in the face of a changing climate. NiMet's 2025 State of the Climate in Nigeria is therefore recommended for every stakeholder, especially those in climate-sensitive sectors.

NiMet has continued to provide authoritative and science-based knowledge, a critical factor to informed planning and decision-making in Nigeria's rapidly changing climate. As climate variability and extreme weather events increasingly threaten lives, livelihoods, infrastructure, food security, and economic growth, timely and reliable weather and climate information is indispensable for building safer and more climate-resilient communities across the country. The 2025 State of the Climate in Nigeria is therefore a presentation of the latest scientific assessment and updates on key climate indicators as they affect Nigeria. This report highlights the need for increased investment in the Nigerian Meteorological Agency (NiMet).

Professor Charles Anosike
Director General/CEO NiMet & Permanent Representative of Nigeria with WMO

Preface

Nigeria stands at a pivotal moment in its environmental and developmental journey. The year 2025 was marked by rapid climatic shifts, increasing awareness of environmental risks, and renewed national efforts to strengthen resilience across all sectors. As a nation with diverse ecological zones—from the arid Sahel to the humid coastal belt—Nigeria continues to experience the complex and unequal impacts of climate variability and climate change. These realities demand consistent assessment, transparent reporting, and decisive action.

The *State of the Climate in Nigeria 2025* report is prepared to provide a clear, evidence-based overview of the nation's climatic conditions during the year. It highlights key trends in temperature, rainfall, extreme weather events, hydrological changes, and environmental hazards such as flooding, drought, coastal erosion, and land degradation. It also examines how these changes affect agriculture, water resources, public health, infrastructure, and national security.

This edition places particular emphasis on resilience-building, showcasing the progress made in early warning systems, climate-smart agriculture, renewable energy adoption, and adaptation planning at federal and subnational levels. It underscores the growing role of technology, data systems, and community-led initiatives in shaping a climate-resilient future for Nigeria.

The aim of this report is not only to document the climatic realities of 2025 but also to support decision-makers, researchers, development partners, and the public with credible information that can guide policy, planning, and collective action. Addressing climate change is a shared responsibility, and understanding the evolving state of Nigeria's climate is the first step toward safeguarding lives, livelihoods, and ecosystems for generations to come.

This 2025 State of the Climate has Five Chapters. Chapter One captures the observed behaviours of some key climatic parameters such as temperature and rainfall. Chapter Two described the observed evidence of climate change over Nigeria using long-term temperature and rainfall data. Synoptic features and their observed signatures are discussed in Chapter Three, Chapter Four discussed extreme weather events on Aviation, Health, Agriculture, Water Resources, Overview of Air Pollution in Nigeria, Early warning and Disaster-Risk Reduction in 2025 as well as Food Security, while the evaluation of the 2025 Seasonal Climate Prediction (SCP) was captured in Chapter Five.

It is our hope that this report informs, challenges, and inspires stakeholders to strengthen Nigeria's preparedness, promote sustainable development, and contribute meaningfully to global climate goals.

CHAPTER ONE

OBSERVED CHARACTERISTICS OF SOME KEY CLIMATIC PARAMETERS IN 2025

1.1 Solar Radiation

In 2025, the annual average incident solar radiation across Nigeria ranged from 147.5 to 288.5 $Wm^{-2}day^{-1}$, as shown in Figure 1.1. The northern parts of Yobe and Jigawa states experienced the highest mean annual solar radiation exceeding 280.0 $Wm^{-2}day^{-1}$. Sokoto, Zamfara, Kebbi, Katsina, Kaduna, Plateau, Gombe, Bauchi, Kebbi, Taraba, and Kwara states, as well as the FCT, experienced solar radiation between 237.0 to 260.0 $Wm^{-2}day^{-1}$, while the southern states recorded values between 190 $Wm^{-2}day^{-1}$ to 230 $Wm^{-2}day^{-1}$, except the coastal parts of Lagos, Ondo, Rivers and Akwa Ibom states experienced below 190 $Wm^{-2}day^{-1}$.

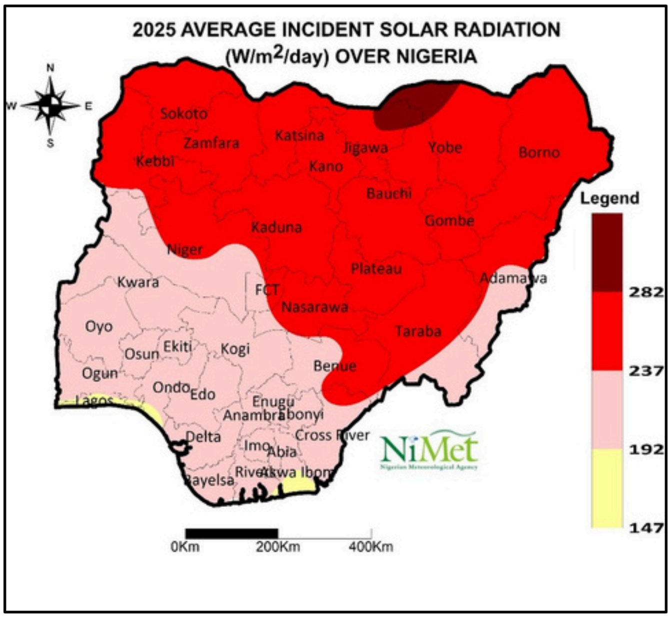


Figure 1.1: Annual Average Incident Solar Radiation over Nigeria in 2025

1.1.1 Daily Average Incidence of Solar Radiation

The highest single-day incident solar radiation in 2025 was recorded between 11th January and 10th April in most states. Jigawa and Yobe states recorded the highest value of 386.6 $Wm^{-2}day^{-1}$ in March 2025, followed by Kano, Yobe, Sokoto, Zamfara, Gombe, and Bauchi states with 371.5 $Wm^{-2}day^{-1}$, 363.4 $Wm^{-2}day^{-1}$, 358.8 $Wm^{-2}day^{-1}$, 355.3 $Wm^{-2}day^{-1}$, 353.0 $Wm^{-2}day^{-1}$, 350.7 $Wm^{-2}day^{-1}$and 350.7 $Wm^{-2}day^{-1}$ respectively as shown in Table 1.0.

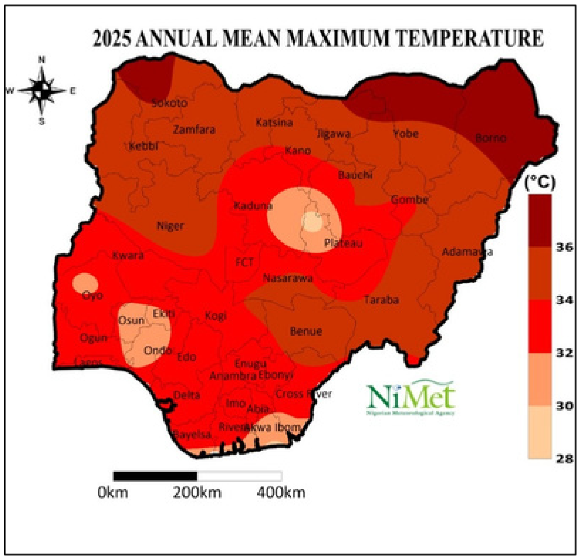
[1]Table 1.0: Average and Highest Single-Day Incident Solar Radiation in 2025

S/N	State	Average (Wm^{-2} day^{-1})	Highest (Wm^{-2} day^{-1})	S/N	State	Average (Wm^{-2} day^{-1})	Highest (Wm^{-2} day^{-1})
1	Abia	224.7	298.6	20	Kano	277.8	371.5
2	Adamawa	235.3	326.4	21	Katsina	249.9	347.2
3	Akwa Ibom	191.0	287.0	22	Kebbi	236.3	338.0
4	Anambra	221.5	310.2	23	Kogi	235.5	332.2
5	Bauchi	269.1	350.7	24	Kwara	235.5	332.2
6	Bayelsa	225.9	324.1	25	Lagos	147.5	225.7
7	Benue	227.4	329.9	26	Nasarawa	267.1	365.7
8	Borno	266.7	344.9	27	Niger	235.6	324.7
9	Cross River	229.8	327.0	28	Ogun	233.7	355.3
10	Delta	216.5	277.8	29	Ondo	250.4	340.9
11	Ebonyi	219.6	321.2	30	Osun	235.8	338.0
12	Edo	200.1	280.1	31	Oyo	209.8	307.9
13	Ekiti	218.7	302.1	32	Plateau	248.8	332.2
14	Enugu	214.5	343.8	33	Rivers	218.0	311.3
15	The FCT	236.7	338.0	34	Sokoto	260.8	358.8
16	Gombe	240.8	350.7	35	Taraba	241.2	331.0
17	Imo	213.5	321.8	36	Yobe	275.8	363.4
18	Jigawa	280.2	386.6	37	Zamfara	259.7	355.3
19	Kaduna	253.3	346.1				

1.2 Temperature

1.2.1 Annual Mean Maximum Temperature

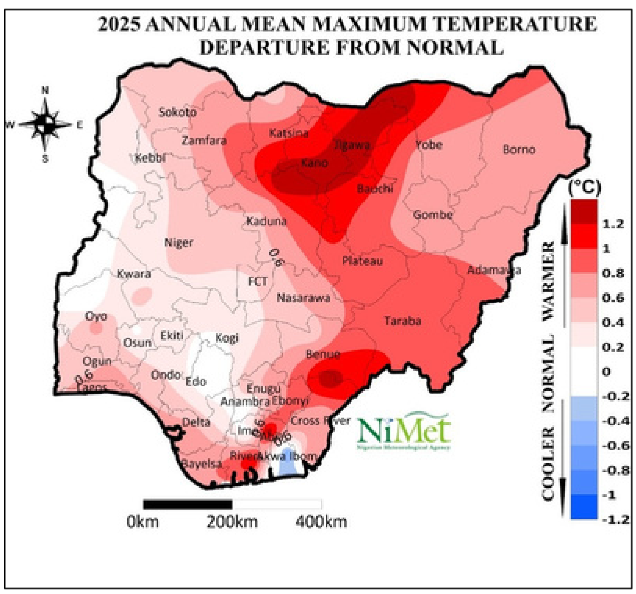
The average annual maximum temperature over Nigeria varied from 29°C to 37°C in 2025. The majority of the central and northern states, covering about 40% of the country reported temperatures between 34°C and 37°C. Parts of Osun, Ekiti, Ondo, Akwa Ibom and northern Plateau state recorded annual mean temperatures of 29°C to 32°C, while the rest of the southern states, the Federal Capital Territory, and some parts of Nasarawa, Bauchi, Kaduna, and Plateau States reported maximum temperatures between 32°C and 34°C during the year under review.



[2]*Figure 1.2: Observed Annual Mean Maximum Temperature across Nigeria in 2025*

1.2.1.1: Annual Mean Maximum Temperature Departure (Deviation from Long-term Average)

The World Meteorological Organization (WMO) reported that warm (El Niño) conditions which raised global temperatures during 2023 and 2024, gave way to neutral phase and a weak La Niña later in 2025. The global mean near-surface temperature from January to August 2025 was therefore observed to be slightly lower compared to 2024 during the same period[1]. Despite the neutral ENSO conditions that prevailed in 2025, most states in the country observed warmer-than-normal conditions, with the hottest weather experienced over Jigawa and some parts of Kano and Kaduna states (Figure 1.3). Kebbi, Niger, Kwara, Oyo, Edo, Anambra, and Akwa Ibom States however, recorded normal to near-normal annual mean maximum temperatures in the year when compared to the 1991 – 2020 average.



[3]*Figure 1.3: Observed annual mean maximum temperature departure from 1991-2020 average (normal) across Nigeria in 2025*

[1] World Meteorological Organization (2025). *WMO State of the Climate 2025 Update*

1.2.1.2 Maximum Temperatures and Hot Season

The hot season during the year commences in February, lasting till March across the Southern states, while the Northern states experienced it during March, April, and May. In 2025, the hot season in Nigeria was characterized by intense solar radiation, increased daily sunshine hours, and heat waves, resulting in heat stress, on livestock and humans. The southern part of the country observed the highest daily maximum temperature of 42℃ over Ogoja (Cross-River state) in March, while the North recorded its highest daily maximum temperature of 45℃, over Yola in March, followed by Maiduguri, which recorded 44.5℃ on 26th April.

1.2.1.3 Hot Season in the Southern States in 2025

The mean hot season temperatures across the southern States ranged from 31.8℃, over Ado-Ekiti (Ekiti State) to 38.5℃ in Ogoja (Cross-River state). All southern cities recorded mean hot season temperatures higher than their long-term average, similar to what was observed in 2024 over most of the southern states (Figure 1.4). The consistently higher-than-normal hot season conforms with the global temperature increasing trend and global warming associated with climate change.

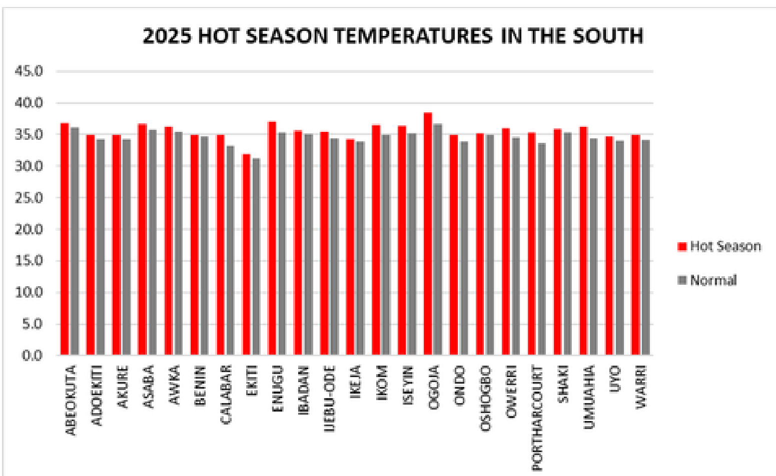
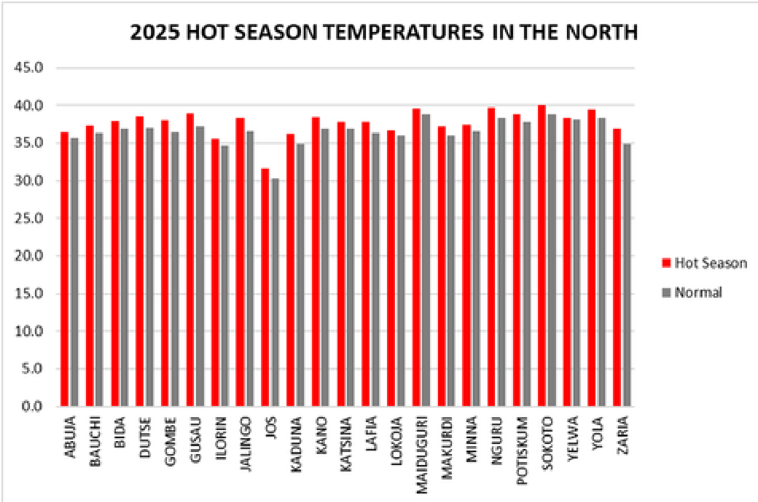


Figure 1.4: Comparison of 2025 Hot Season Mean Maximum Temperatures of Cities in Southern Nigeria with the Normal (1991 - 2020 Average)

1.2.1.4: Hot Season in the Northern States in 2025

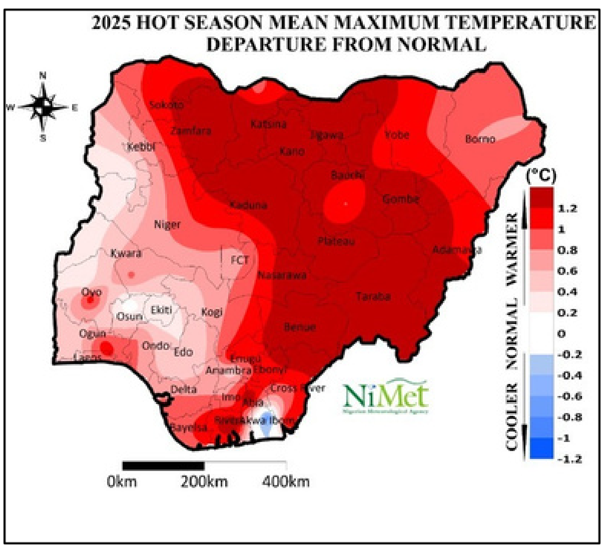
In 2025, the observed hot season average maximum temperatures across the Northern States ranged from 31.2℃ in Jos (Plateau State) to 40℃ in Sokoto (Sokoto State). Like what was observed over the southern states, every state in the North also observed mean hot season temperatures higher than their 1991 – 2020 averages, which confirms an unusually warmer climate in recent years (Figure 1.5).



[5]Figure 1.5: Comparison of 2025 Hot Season Mean Maximum Temperatures of Cities in Northern Nigeria with the Normal (1991 - 2020 Average)

1.2.1.5: Hot Season Departure from Normal in 2025

The country was predominantly characterized by a warmer-than-normal hot season in 2025, just as was the case in 2024, although the degree of warming over the western half of the country was lower in 2025 compared to the previous year. Hot season temperature departures of 0.2°C to 0.8°C were observed over most of the states around the western part of the country. Zamfara, Sokoto, Katsina, Kano, Jigawa, Kaduna, Yobe, Gombe, Bauchi, Plateau, Adamawa, Taraba, Nasarawa, Benue, Enugu, Ebonyi, Abia, Rivers, Cross River, some parts of Bayelsa and Ogun states were the warmest states with temperatures that exceeded long-term hot season values by 1.0°C and above. Some parts of Akwa-Ibom state, however, recorded cooler-than-normal hot season. (See Figure 1.6).



[6]Figure 1.6: 2025 Observed Hot season mean maximum temperature Departure from Normal (1991 - 2020 Average)

1.2.2: Annual Mean Minimum Temperature in 2025

In 2025, annual minimum temperatures across Nigeria ranged from 16℃ to 27℃, with the lowest values observed in parts of Borno, Bauchi, Kaduna, Kano, and Plateau States. Minimum temperatures across most parts of the country were mostly between 19℃ and 27℃. (See Figure 1.7).

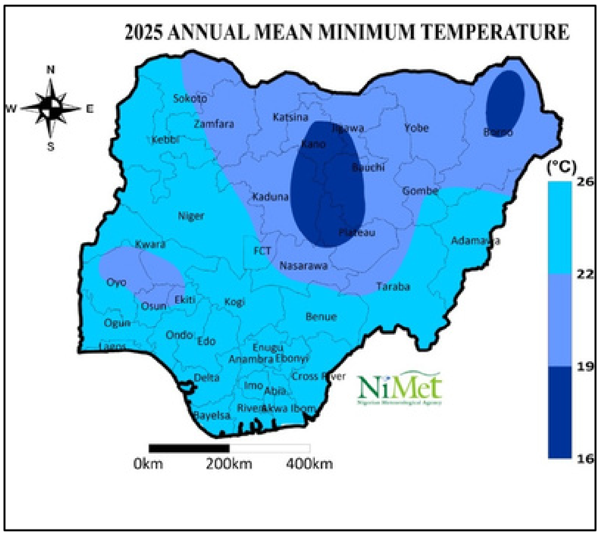
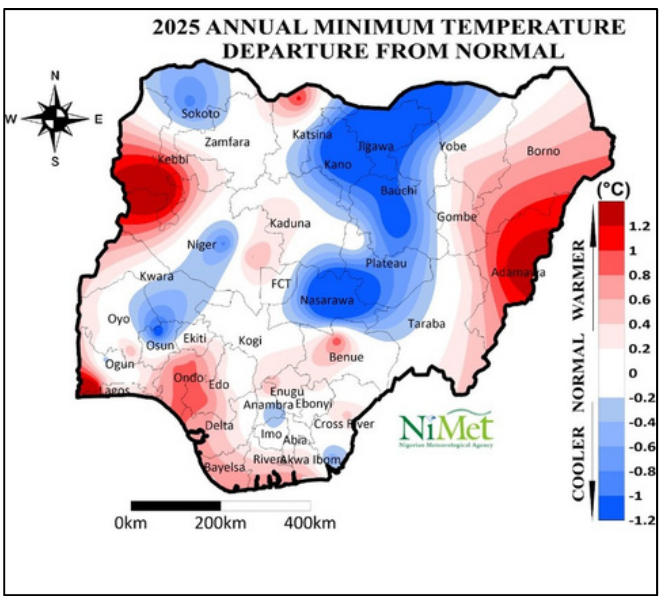


Figure 1.7: 2025 Annual Mean Minimum Temperature Across Nigeria

1.2.2.1: 2025 Annual Minimum Temperature Departure from Normal

Analysis of minimum temperatures and their departures from the long-term average shows that cooler-than-normal temperatures were recorded over parts of Sokoto, Kano, Katsina, Jigawa, Bauchi, Yobe, Plateau, Nasarawa, Niger, Kwara, Osun, Oyo, Taraba, Anambra and Cross River States. Warmer- than- normal to normal minimum temperatures were recorded over most of the rest of the country. (See Figure 1.8).



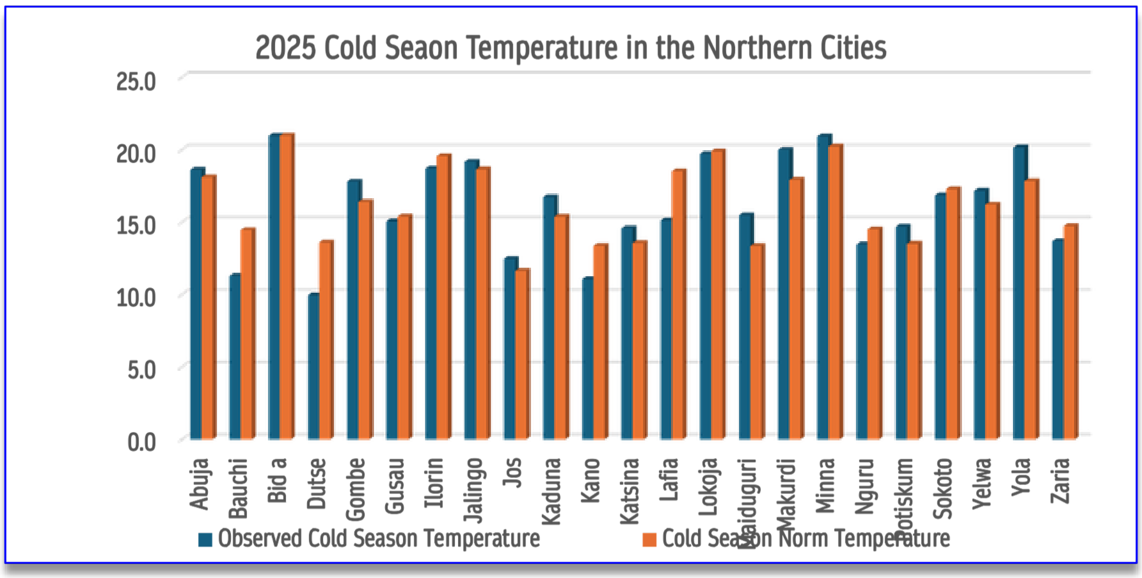
[7] *Figure 1.8: 2025 Annual Minimum Temperature Departure from Normal (1991 - 2020 Average)*

1.2.2.2: Minimum Temperature and Cold Season

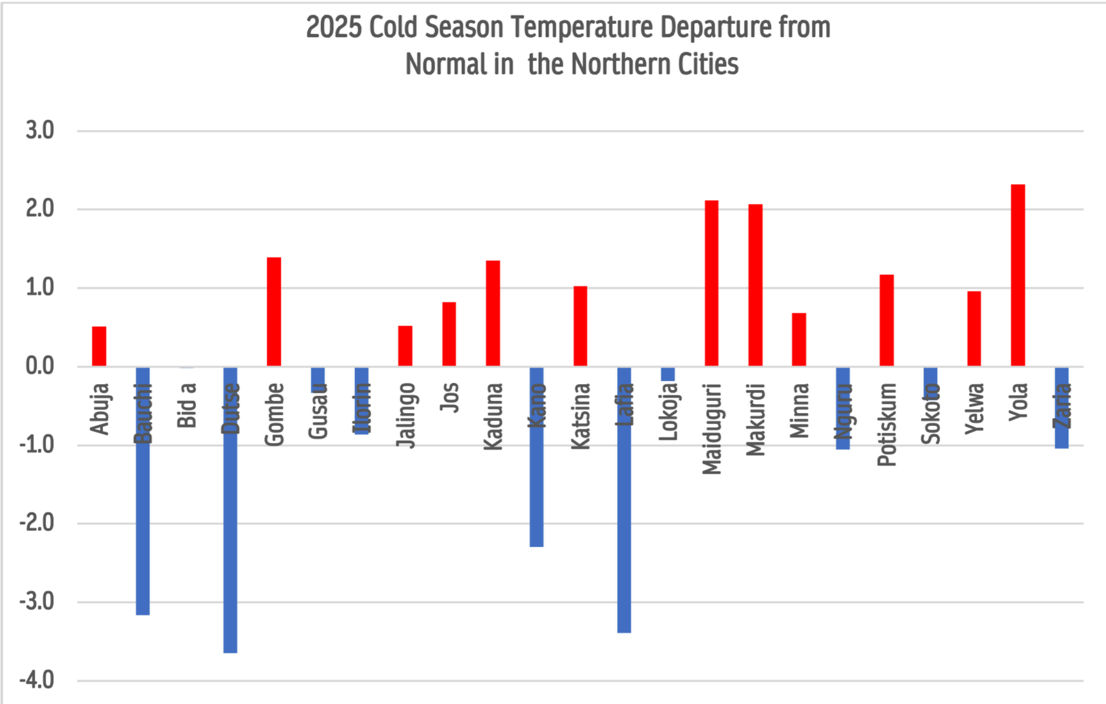
In Nigeria, the cold season normally occurs in December and January. It is the period when the country is predominantly under the influence of the cold, dry northeasterly winds blowing from the Sahara Desert. Minimum temperatures are lowest within these two months, and nights can be slightly chilly, especially in the northern states.

1.2.2.3: Cold season temperatures over the Northern cities

Minimum temperatures during the 2025 cold season were significantly cooler than normal over Bauchi, Jigawa, Kano, Kaduna, Nasarawa, Yobe, and Sokoto states. They were, on the other hand, significantly warmer over Gombe, Borno, Benue, Adamawa, Kebbi, Yobe, and Katsina states. The rest of the cities in Northern Nigeria recorded near normal temperatures during the season. (Figure 1.9 & 1.10).



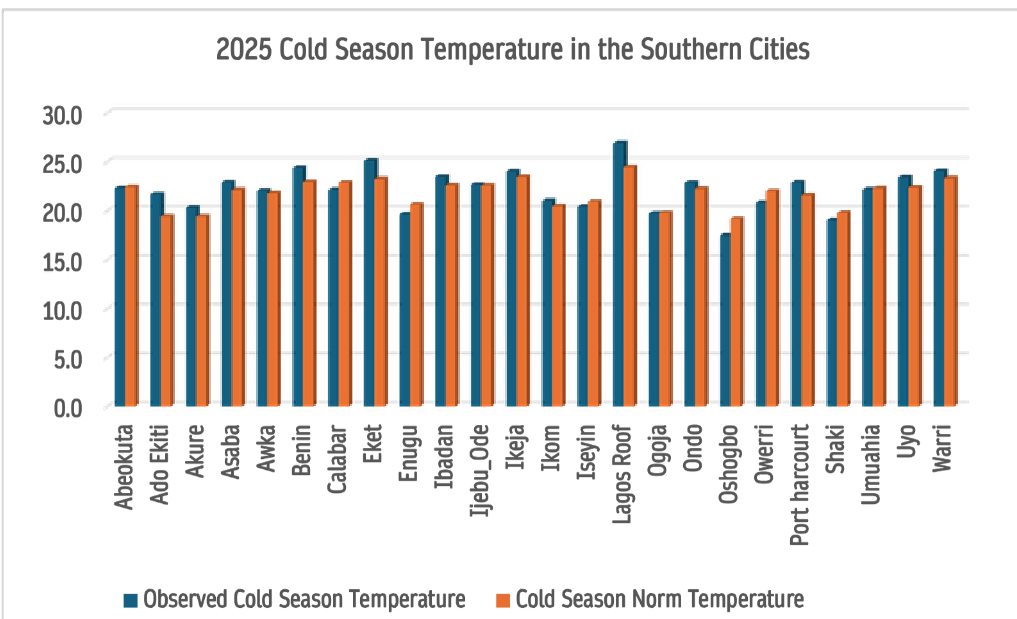
[8]*Figure 1.9: Cold season temperatures over the Northern cities in 2025*



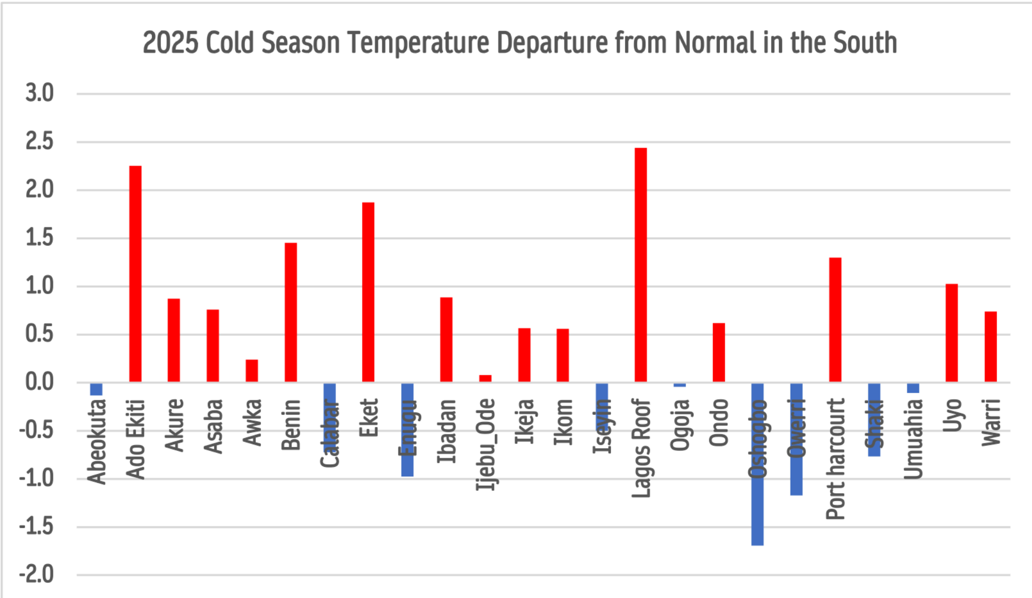
[9] *Figure 1.10: 2025 Cold Season Temperatures Departure over the Northern cities*

1.2.2.4: Cold Season Temperatures Over the Southern Cities

Figures 1.11 and 1.12 show that the minimum temperatures for the 2025 cold season over the Southern cities were generally close to the long–term normal values, indicating a typical cold season overall. However, over some cities, such as Ado-Ekiti (Ekiti state), Lagos, Eket (Akwa Ibom state), and Benin (Edo state), temperatures were warmer than their average cold season temperature.



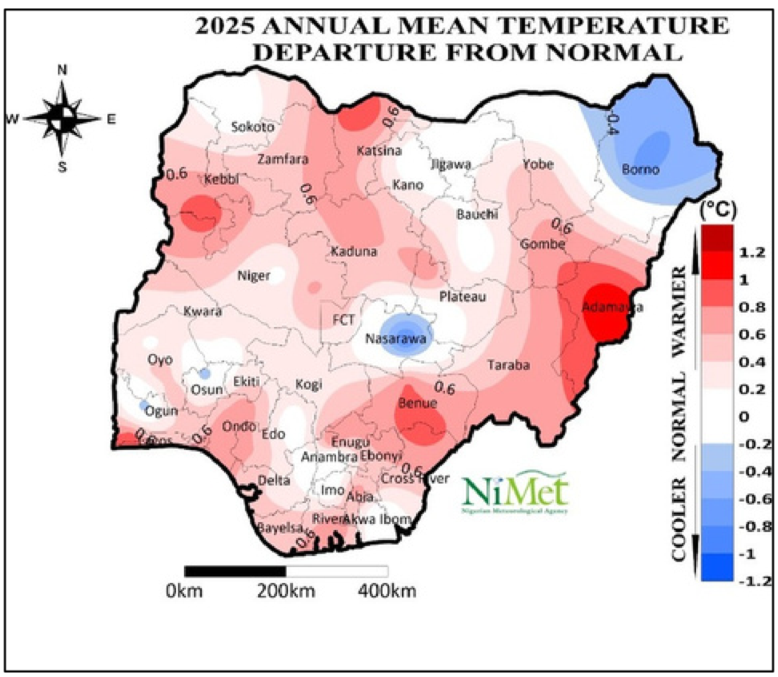
[10] *Figure 1.11: 2025 Cold Season Temperatures Over the Southern Cities*



[11]*Figure 1.12: 2025 Cold season temperatures departure from long term average over the Southern cities*

1.2.3: 2025 Annual Mean Temperature Departure from Normal

Maximum and minimum temperatures 2025 were generally warmer than normal all over the country except for some parts of Borno, Nasarawa, Osun, and Ogun states which were cooler than their long-term averages. (See Figure 1.13).

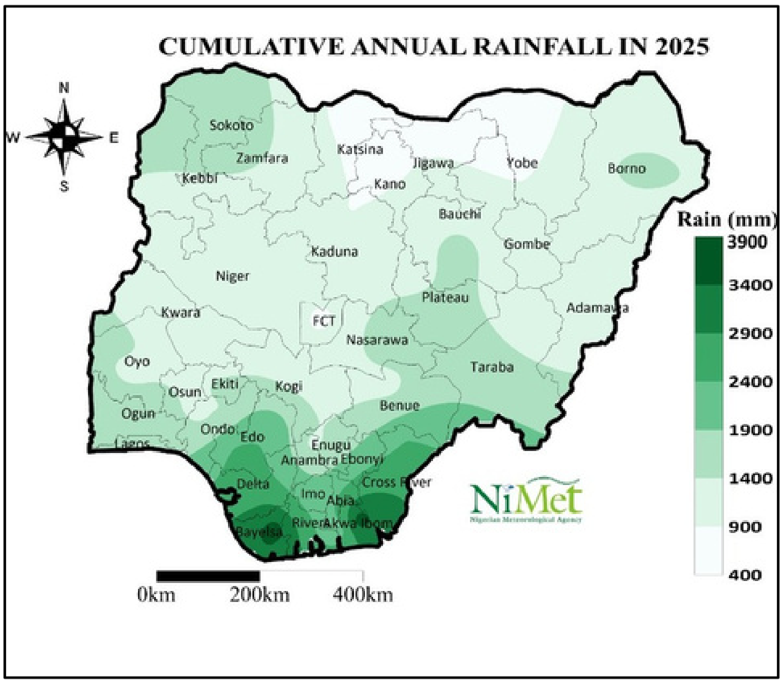


[12]*Figure 1.13: 2025 Annual Mean Temperature Departure from Normal*

1.3 Rainfall

1.3.1 Cumulative Annual Rainfall

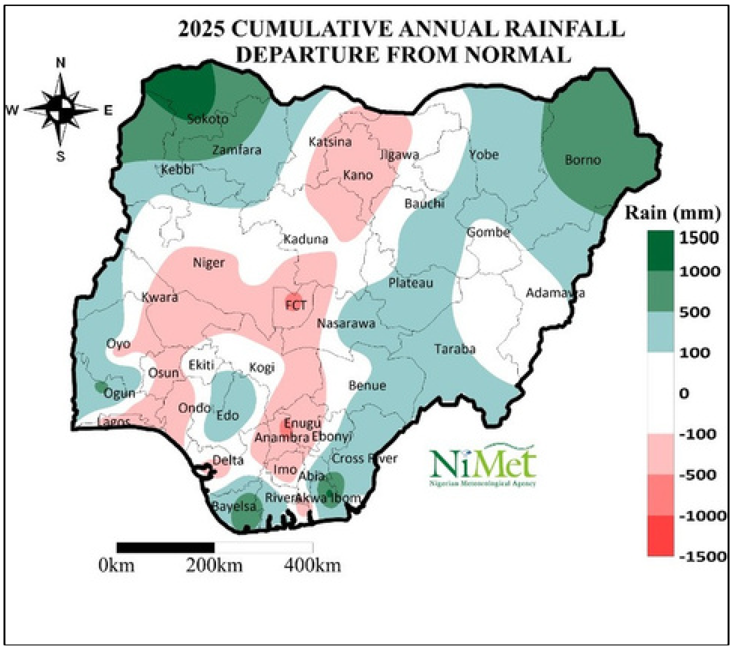
In 2025 rainfall totals across Nigeria ranged from 400 mm in the extreme northern fringes to 3900 mm over the coastal region of the country as shown in Figure 1.14. The lowest and highest annual rainfall totals of 519.3 and 3668.7 mm were recorded over Yobe and Akwa Ibom states, respectively. Yobe, Kano, Katsina, Adamawa and the FCT recorded rainfall amounts below 1000 mm. The rest of the northern and central states recorded rainfall amounts between 900 and 1900 mm. Rainfall amounts between 2400 mm and 3900 mm were observed over the southern parts of the country.



[13]*Figure 1.14: Cumulative Annual Rainfall Across Nigeria in 2025*

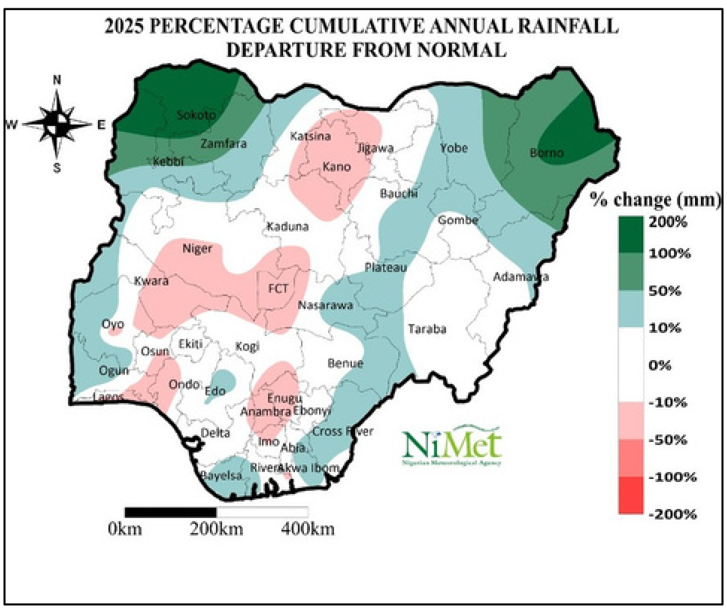
1.3.2 2025 Cumulative Annual Rainfall Departure from Normal

In 2025, the cumulative annual rainfall departure from the long-term average (1991–2020) reveals that Akwa Ibom, Bayelsa, Ogun, Borno, and Sokoto states observed significant positive departures ranging from 500 mm to 1300 mm. The other states where positive departures were recorded include Kebbi, Zamfara, Yobe, Bauchi, Plateau, Nasarawa, Taraba, Benue, Cross River, Edo and Ogun states. However, the FCT, Niger, Kwara, Oyo, Kogi, Enugu, Kano, Katsina, Jigawa, Lagos, Ondo, Delta, Imo, and Anambra states observed below normal rainfall ranging from 100 mm to 700 mm. The rest of the country experienced normal rainfall as shown in Figure 1.15(a).



[14]*Figure 1.15(a): Cumulative Annual Rainfall Departures in 2025*

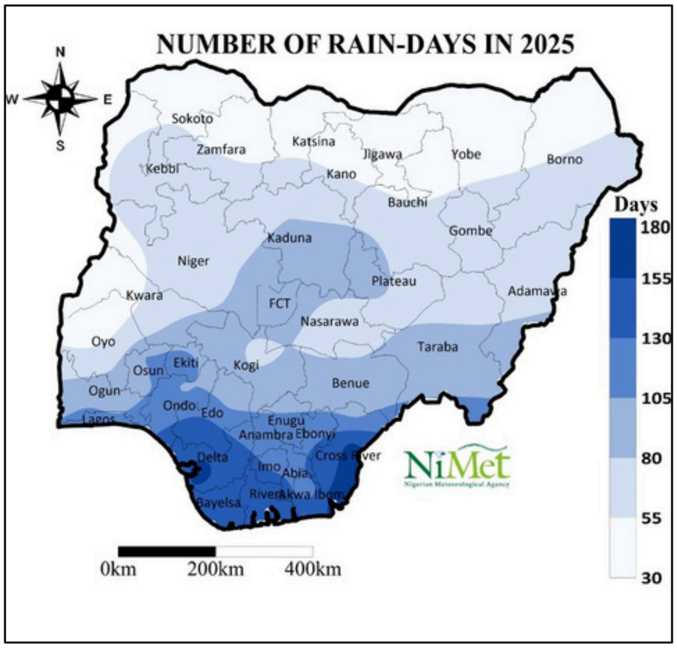
Figure 1.15(b) shows the comparison of the percentage change between the long-term (1991–2020) average and the observed cumulative rainfall over Nigeria for 2025. The observed cumulative rainfall amounts during the 2025 rainfall season were 109% and 170% higher than the long-term average in Maiduguri (Borno state) and Sokoto (Sokoto state) respectively. Other notable increased in cumulative rainfall was over Uyo (51%), Abeokuta (48%), Lafia (31%), and Shaki (30%), However, decrease in rainfall indicates deficit (below normal) when compared to normal was recorded over the cities of Abuja (45%), Kano (38%), Enugu (30%), Ilorin (26%), Ondo (26%), Akwa (25%), Zaria (21%). The rest of the country observed normal rainfall conditions.



[15]*Figure 1.15(b): Percentage Cumulative Annual Rainfall Departures from Long-term Average in 2025*

1.3.3 Number of Rain days in 2025

The term "rain day" at any location is used to denote a day on which 0.3 mm (or more) of measurable rainfall is recorded at that location. Calabar (Cross River state) recorded the highest number of 165 rain days, while Nguru (Yobe State) recorded the least number of 32 rain days. The number of rain days between 30 and 55 days was observed over Oyo, Kwara, and the extreme northern states, while rain days of between 55 and 105 days were observed over the states within latitude 9 - 12°N (Niger, The FCT, Nasarawa, Benue, Kogi, Taraba, Yola, Kaduna, Plateau, Bauchi, Gombe and Kwara states). The southern parts of the country recorded rain days of between 130 and 180 days (Figure 1.16).



[16]*Figure 1.16: Number of rain days across Nigeria in 2025*

1.3.4 2025 Rain Days Departures from Normal

Figure 1.17 shows the departure of 2025 number of rain days from normal (1991-2020 average). A decrease in the number of rain days compared to normal was recorded in most parts of the country in 2025. However, Ekiti, Lagos, Yobe, Borno, Adamawa states observed an increase compared to normal. The remaining parts of country observed normal rain days. The highest positive departures (i.e., an increase) of 26 was recorded in Ado Ekiti, and the lowest negative departure (i.e., a decrease) of (-55) days was recorded in Shaki.

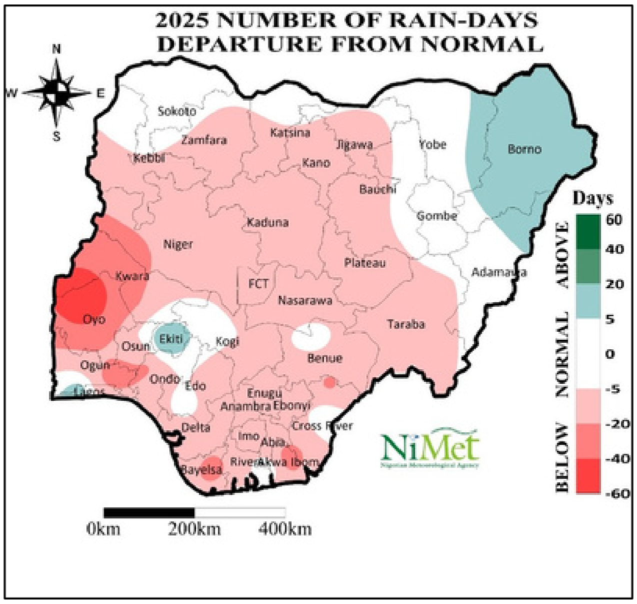
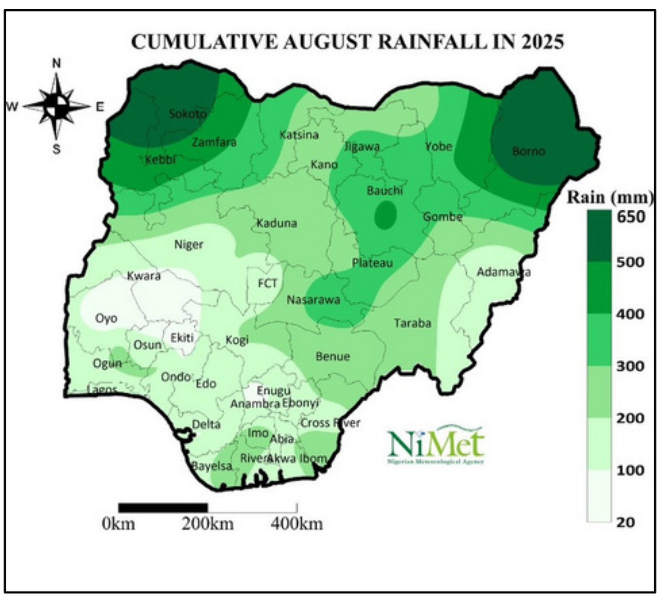


Figure 1.17: Number of Rain-Days Departure from Normal in 2025

1.3.5 2025 August Cumulative August Rainfall

The cumulative rainfall amounts across the country for August 2025 are illustrated in Figure 1.18. These ranged from 20 to 650 mm. The lowest total rainfall amounts ranged between 50 and 100 mm, and were recorded over Kwara, Oyo, Osun, Ekiti, Enugu, and Anambra states. This is not unconnected to the impact of mid-summer drought commonly known as the Little Dry Season (LDS) that was evident in the southwestern states in the month. The highest rainfall range between 300 and 650 mm was observed over the northern states, except Kano and Katsina, which recorded below 300 mm of rainfall. Cumulative rainfall in the range of 100 mm to 300 mm was recorded over the southern and central states. The lowest and highest rainfall values of 21.5 mm and 639.5 mm were recorded over Kwara (Ilorin) and Borno (Maiduguri), respectively.



[17]*Figure 1.18: Cumulative August rainfall in 2025*

1.3.6 2025 August Cumulative Rainfall Departure from Normal

Figure 1.19(a) depicts a comparison of the percentage change between the observed 2025 cumulative August rainfall and the long-term average (1991–2020). The analysis shows that the rainfall in August 2025 was above normal over Borno, Sokoto, Kebbi, Zamfara, Lagos, Ogun, and Nasarawa states. However, Kano, Jigawa, Yobe, Kaduna, FCT, Kwara, Oyo, the inland areas of the southeast, and the coastal region experienced below normal rainfall amounts during the period. The percentage cumulative in August 2025 was 187%, 178%, and 105% above normal in Sokoto, Maiduguri, and Ikeja, respectively. (See Figure 1.19(b). The month of August is known for a general reduction in rainfall amount in the entire south and the peak of the rainy season in the north as the ITD attains its northernmost position. However, in 2025, the cumulative rainfall amounts over Ogun and Lagos states were above normal.

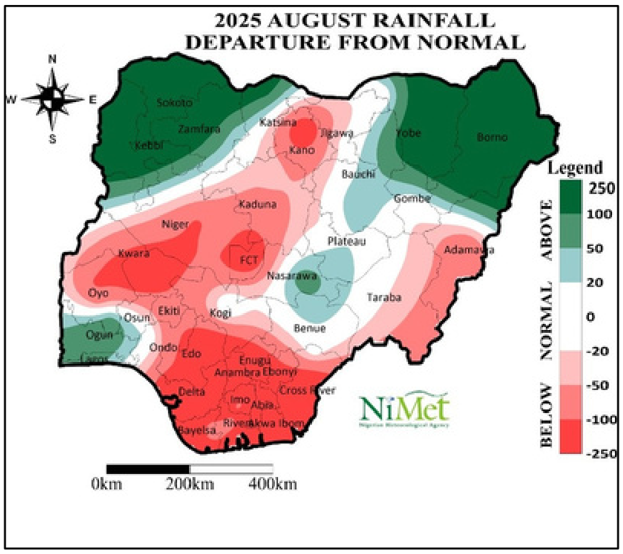


Figure 1.19(a): 2025 August Rainfall Departure from Normal Long-term (1991 – 2020) Average

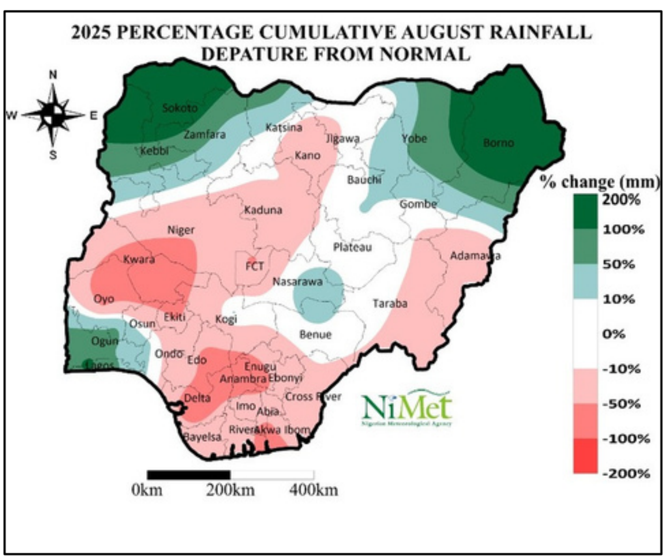


Figure 1.19(b): Percentage Cumulative August Rainfall Departure from Normal in 2025

1.3.7 Standardized Rainfall Anomaly

The Standardized Precipitation Index (SPI) over the country in 2025 shows normal-to-above normal rainfall over most parts of the country. However, below normal standardised rainfall anomaly was observed over some parts of Katsina, Jigawa, Kaduna, Niger, Kwara, Oyo, Ondo, Edo, Anambra, Delta, Bayelsa, Rivers and Akwa Ibom states as shown in Figure 1.20.

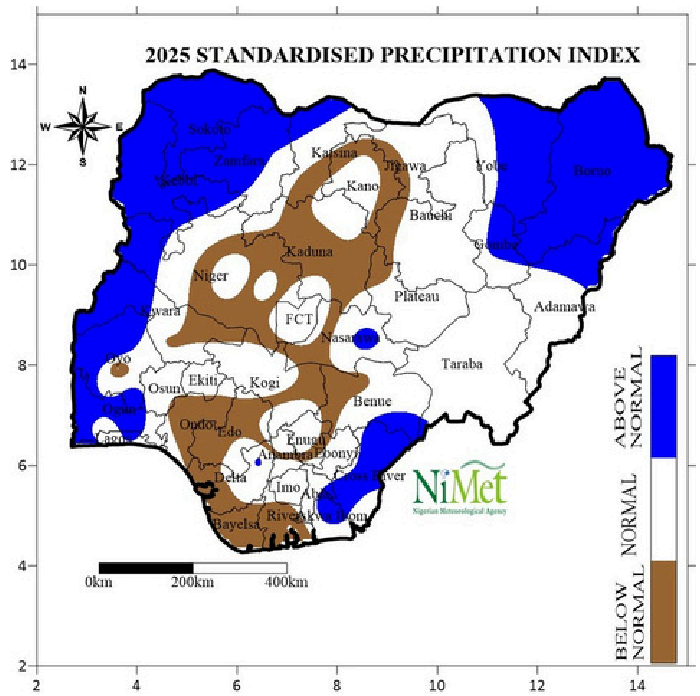
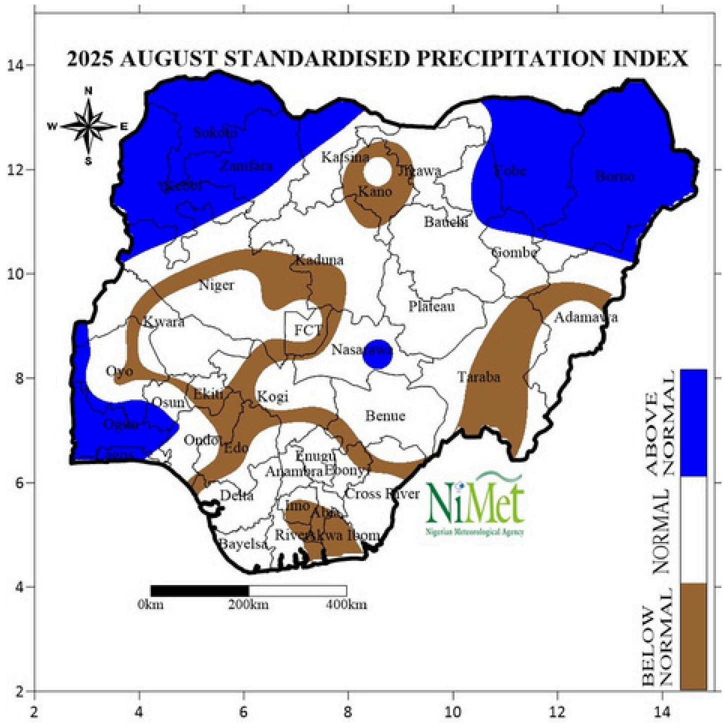


Figure 1.20: Standardized Rainfall Anomaly Across Nigeria in 2025

1.3.8 Standardized Rainfall Anomaly for August 2025

The analysis of the standardised rainfall anomaly in August 2025 shows normal to above-normal conditions across most parts of the country. However, parts of Kano, Katsina, Jigawa, Taraba, Adamawa, Kaduna, Niger, Kwara, Oyo, Ekiti, Edo, Imo, Abia, Rivers and Akwa Ibom states recorded below normal standardised rainfall anomaly as depicted in Figure 1.21, indicating that in 2025, the August rainfall amount was below normal in those areas.



[18]*Figure 1.21: Standardized August Rainfall Anomaly in 2025*

1.4 2024 Little Dry Season

The Little Dry Season (LDS), otherwise known as 'August Break', is a period of little or no rainfall that usually coincides with the end of the first main rainfall season in the southwestern part of Nigeria.

The Little Dry Season event of 2025 began as early as July 9th in Ilorin and Abeokuta, while for other locations in the southwest, it was delayed till July 23rd. Uncharacteristically, there were reports of a few rain days with rainfall amounts greater than 1 mm within the season in more than one instance. This inadvertently reduced the effect of the LDS in several locations.

In Ibadan rainfall amount of 148.6 mm was reported between July 23rd and August 3rd. This was exactly when the season could be said to have been fully established. In summary, the LDS event of 2025 was less intense when compared with the event in 2024 as shown in Figure 1.22(a) and 1.22(b).

Reports from some locations in Kwara state indicated that there was a serious dry spell lasting more than a month in some local governments of the state. The longest length of consecutive dry days in 2024 was more than 27 days, while that of 2025 was only 21 days, as observed in Kwara and Lagos states.

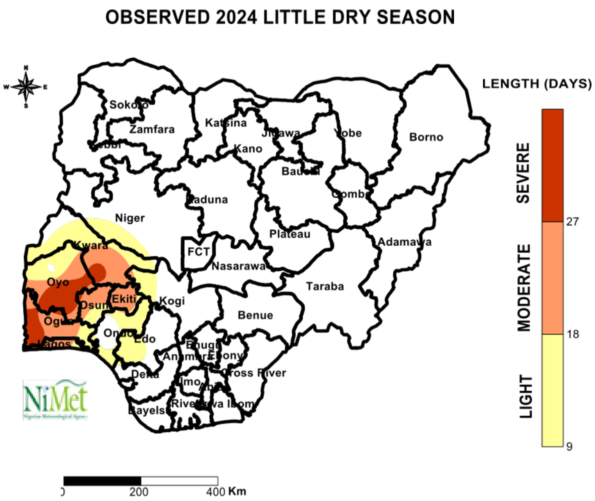


Figure 1.22 (a)

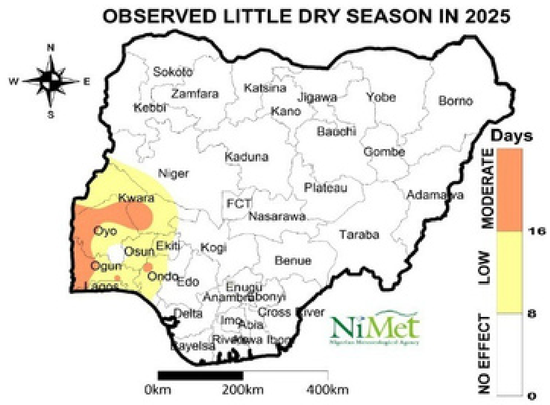


Figure 1.22 (b)

Figure 1.22: Little Dry season impact in 2024 and 2025

Table 1.2: Comparison of the 2025 and 2024 LDS Events

S/N	City	Number of consecutive Dry Days In 2025	Number of consecutive Dry Days In 2024
1	Abeokuta	18	24
2	Ado-Ekiti	9	25
3	Akure	8	16
4	Benin	0	14
5	Ibadan	0	29
6	Ijebu Ode	17	21
7	Ikeja	11	22
8	Ilorin	21	30
9	Iseyin	15	39
10	Lagos Island	20	36
11	Oshogbo	12	23
12	Shaki	16	8

1.5 2025 Dry Spell Episodes

In 2025, severe dry spells lasting at least 21 days and above were reported in Kwara, Oyo, including parts of Borno, Sokoto, Niger, Kogi, Nasarawa and Plateau states.

Mild to moderate dry spells that lasted up to 15 days were reported in other parts of Nigeria as shown in Figure 1.23

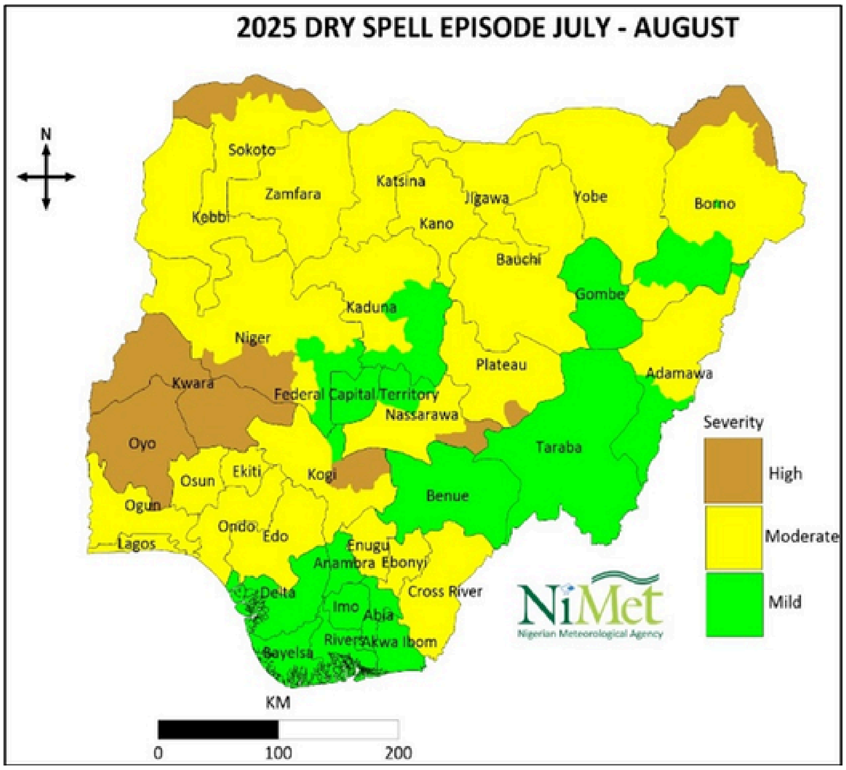


Figure 1.23: Distribution of 2025 Dry Spells Over Nigeria

CHAPTER TWO

SYSTEMATIC CHANGES OF CLIMATE PARAMETERS OVER NIGERIA

In this section, the key climate variables that are critical for tracking climate change and variability across Nigeria are discussed. Although a wide range of meteorological indicators can serve this purpose, temperature and precipitation remain the most globally significant. The World Meteorological Organization (WMO) designates these two variables as the principal surface climatological parameters. For our analysis, we employed Forty-six (46) years of in-situ temperature and rainfall data obtained from the Nigerian Meteorological Agency (NiMet) are used for the analyses presented in this section. These datasets, derived from 47 meteorological stations distributed across the country, offer high-quality, consistent, long-term observations. Among the stations, 23 are situated in the northern states of Nigeria, while 24 are in the southern states, thus ensuring adequate spatial coverage for regional assessments. To enable comparisons with both recent and historical climate conditions, the 1991–2020 average values were used as the climatological standard normal. This updated reference period, adopted in 2021 in accordance with WMO guidelines, captures the influence of recent climate shifts.

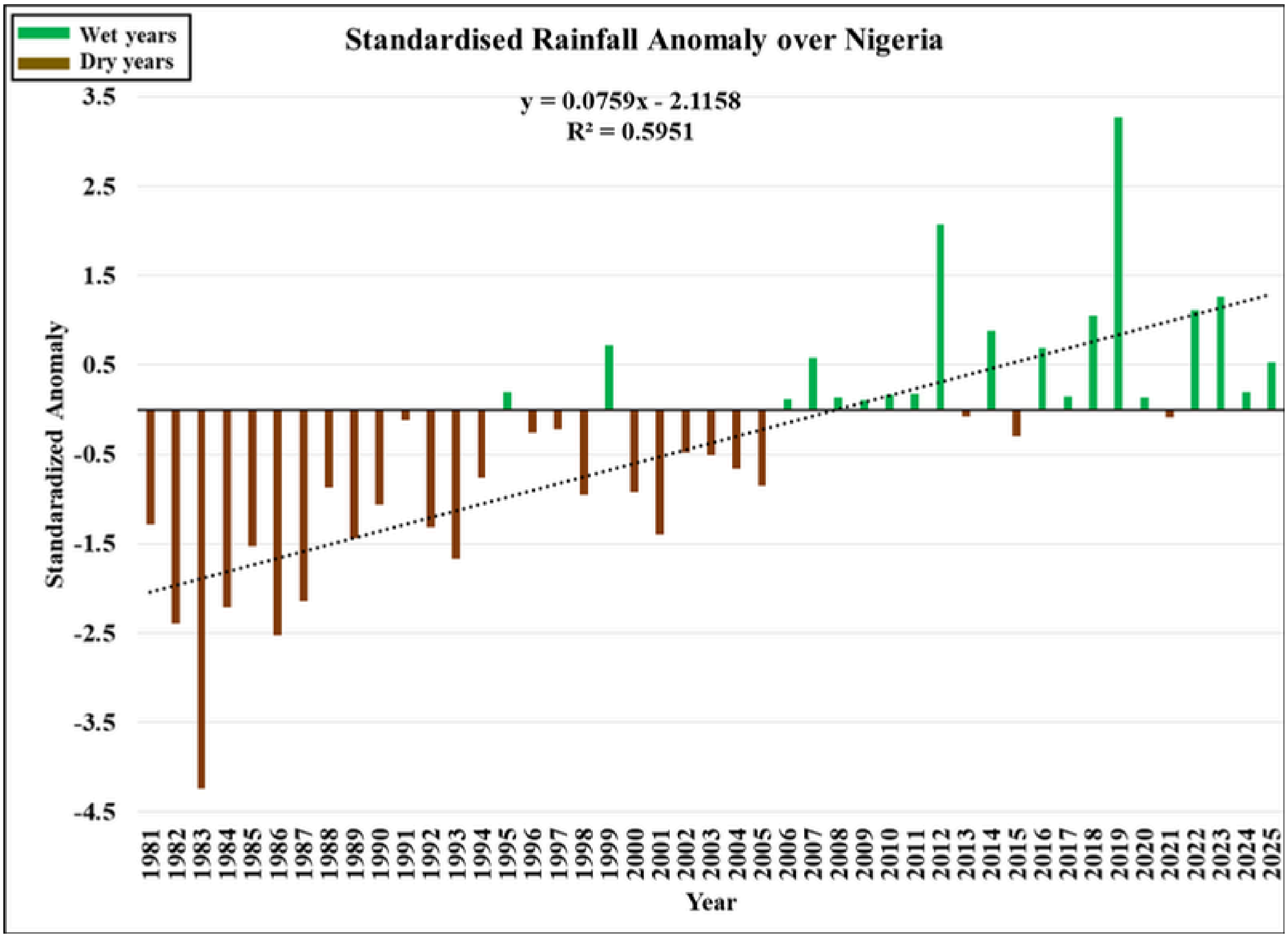
2.1 Rainfall

The 2025 rainy season in Nigeria brought intense and frequent rainfall that caused widespread flooding across 25 states, resulting in major humanitarian challenges and infrastructural damage. According to the National Emergency Management Agency (NEMA)[2], by August 2025, the floods had affected over 270,000 people, left 230 dead, 565 injured, and 108,117 displaced, while 37,958 homes were affected and 45,562 farmlands affected. Thousands of vulnerable people, including children, the elderly, and persons with disabilities, were especially impacted. The flooding, driven by climate change, unpredictable rainfall patterns, and inadequate drainage and infrastructure, underscored the country's growing exposure to severe weather hazards. Early risk assessments had already listed 1,249 communities across 176 LGAs in 30 states and the FCT as high-risk zones, demonstrating how widespread and predictable the threat has become.

2.1.1 The 2025 Standardised Rainfall Anomaly Analysis Over Nigeria

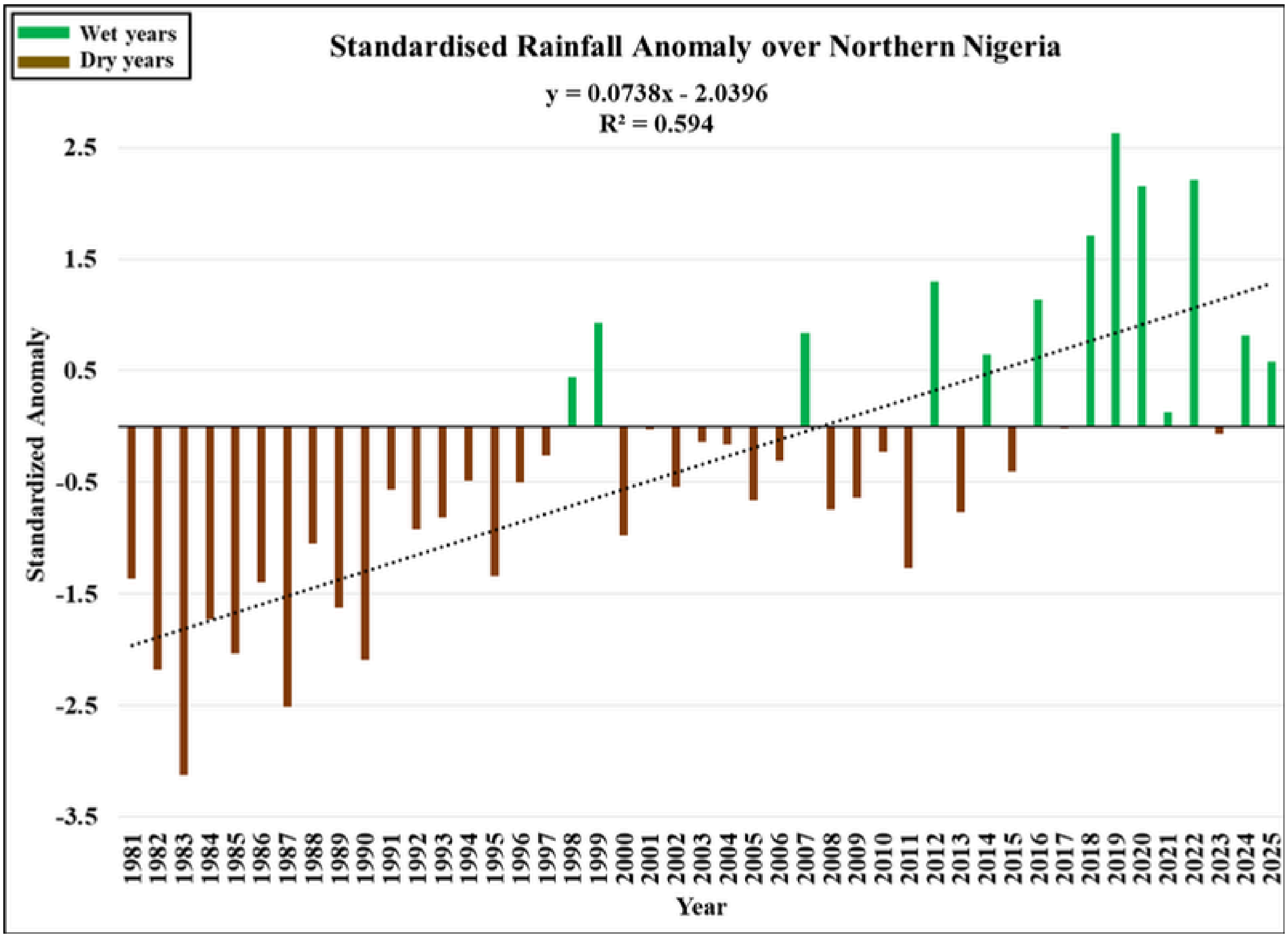
The standardised rainfall anomaly analysis for Nigeria in 2025 shows a continuing upward trend. With a standardised rainfall anomaly of 0.5, 2025 ranks as the tenth wettest year since 1981. In Nigeria, the wettest years on record are 2019 and 2012, which are ranked first and second, respectively (see Figure 2.1, Table 2.1). Additionally, since 2006, Nigeria has experienced consistent wet years, with the exceptions of 2021, 2015, and 2013 (Table 2.1).

[2] https://nema.gov.ng/2025-flood-dashboard-2/



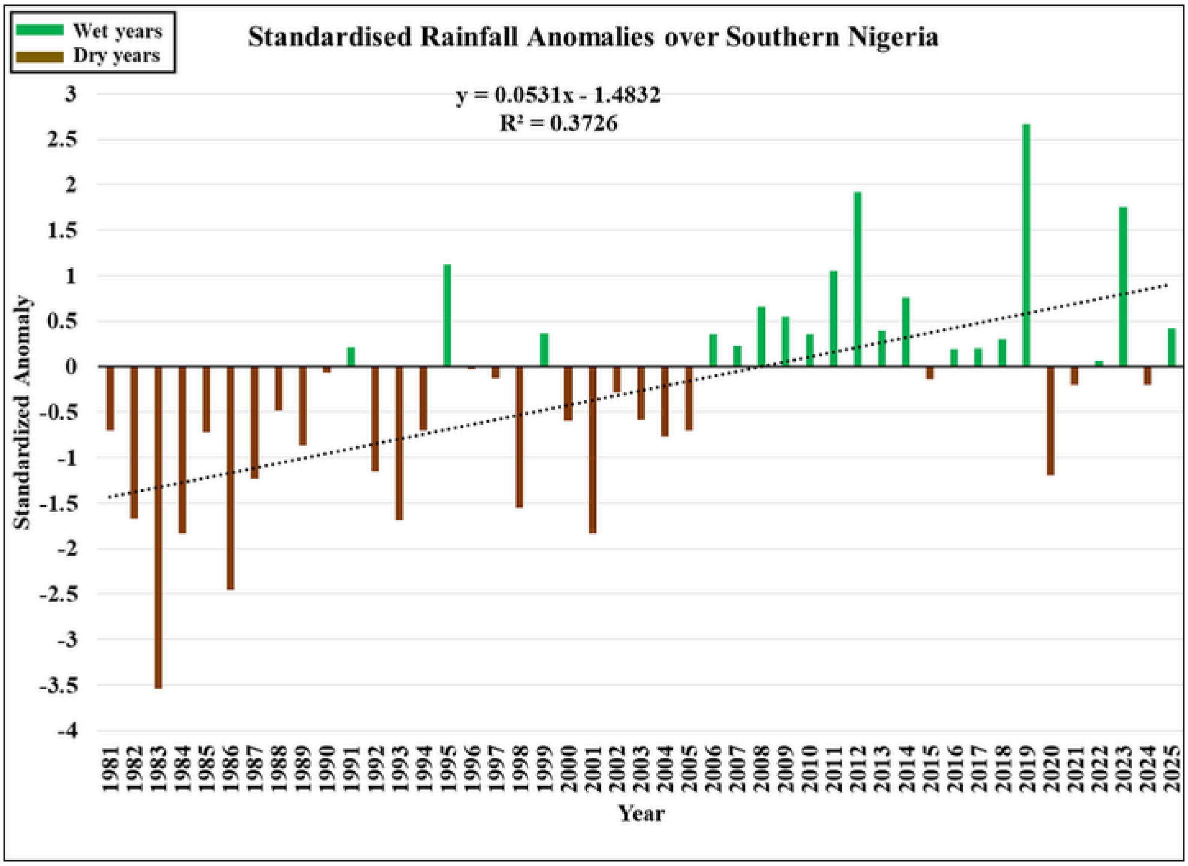
[21] *Figure 2.1: Standardised rainfall anomaly and trend over Nigeria for the period 1981-2025 based on data from 47 Meteorological stations and 1991-2020 Climatological Standard Normal*

A regional analysis of rainfall for 2025 shows that both Northern and Southern Nigeria in the year 2025 stands out as a wet year, reinforcing the long-term shift toward increasing rainfall in recent decades. In each of the charts, 2025 shows a positive standardized rainfall anomaly. This means that in 2025, rainfall was above normal across the country.



[22]*Figure 2.2: Standardised rainfall anomaly and trend over northern Nigeria for the period 1981-2025 based on data from 23 Meteorological stations and 1991-2020 Climatological Standard Normal*

The wetness in 2025 is particularly notable because it appears consistently across all regions, indicating a nationwide coherent wet signal rather than a localized event. Although Southern Nigeria shows a weaker long-term trend compared to the North, even there 2025 registers as a wet year, emphasizing that the recent wetting observed across Nigeria is still ongoing and not isolated to specific zones. The recurrence of wet conditions in 2025 adds weight to the broader conclusion that Nigeria has shifted away from the persistent droughts of the 1980s to 1990s toward generally wetter conditions in the 21st century.



[23] *Figure 2.3: Standardised rainfall anomaly and trend over southern Nigeria for the period 1981-2025 based on data from 24 Meteorological stations and 1991-2020 Climatological Standard Normal*

Table 2.1 Summary of the wet years and standardised rainfall anomalies from 1981-2025 ranked in descending order of wetness

NIGERIA		Northern Nigeria		Southern Nigeria	
Wet Years	Standardised Anomalies	Wet Years	Standardised Anomalies	Wet Years	Standardised Anomalies
2019	3.3	2019	2.6	2019	2.7
2012	2.1	2022	2.2	2012	1.9
2023	1.3	2020	2.2	2023	1.8
2022	1.1	2018	1.7	1995	1.1
2018	1.1	2012	1.3	2011	1.1
2014	0.9	2016	1.1	2014	0.8
1999	0.7	1999	0.9	2008	0.7
2016	0.7	2007	0.8	2009	0.5
2007	0.6	2024	0.8	2025	0.4
2025	0.5	2014	0.6	2013	0.4
1995	0.2	2025	0.6	1999	0.4
2024	0.2	1998	0.4	2010	0.4
2011	0.2	2021	0.1	2006	0.4
2010	0.2			2018	0.3

2017	0.1			2007	0.2
2020	0.1			1991	0.2
2008	0.1			2017	0.2
2006	0.1			2016	0.2
2009	0.1			2022	0.1

Table 2.2 Summary of the dry years and standardised rainfall anomalies from 1981-2025 ranked in descending order of dryness

NIGERIA		Northern Nigeria		Southern Nigeria	
Wet Years	Standardised Anomalies	Wet Years	Standardised Anomalies	Wet Years	Standardised Anomalies
1983	-4.2	1983	-3.1	1983	-3.5
1986	-2.5	1987	-2.5	1986	-2.5
1982	-2.4	1982	-2.2	1984	-1.8
1984	-2.2	1990	-2.1	2001	-1.8
1987	-2.1	1985	-2.0	1993	-1.7
1993	-1.7	1984	-1.7	1982	-1.7
1985	-1.5	1989	-1.6	1998	-1.5
1989	-1.4	1986	-1.4	1987	-1.2
2001	-1.4	1981	-1.4	2020	-1.2
1992	-1.3	1995	-1.3	1992	-1.2
1981	-1.3	2011	-1.3	1989	-0.9
1990	-1.1	1988	-1.1	2004	-0.8
1998	-1.0	2000	-1.0	1985	-0.7
2000	-0.9	1992	-0.9	2005	-0.7
1988	-0.9	1993	-0.8	1981	-0.7
2005	-0.8	2013	-0.8	1994	-0.7
1994	-0.8	2008	-0.7	2000	-0.6
2004	-0.7	2005	-0.7	2003	-0.6
2003	-0.5	2009	-0.6	1988	-0.5
2002	-0.5	1991	-0.6	2002	-0.3
2015	-0.3	2002	-0.5	2024	-0.2
1996	-0.3	1996	-0.5	2021	-0.2
1997	-0.2	1994	-0.5	2015	-0.1
1991	-0.1	2015	-0.4	1997	-0.1
2021	-0.1	2006	-0.3	1990	-0.1
2013	-0.1	1997	-0.3	1996	0.0
		2010	-0.2		
		2004	-0.2		
		2003	-0.1		
		2023	-0.1		
		2001	0.0		
		2017	0.0		

2.2 Temperature

2.2.1 Maximum Temperature

The maximum temperature for any given day is defined as the highest air temperature recorded for that day. In this section, the maximum temperature trends from 1981 to 2024 are analysed. The analysis reveals a clear warming trend, with consistently high-temperature years since 2015. Notably, 2024 stands out as the warmest year on record in Nigeria since 1981, with a standardized maximum temperature anomaly of 4.0, making it the hottest year observed to date. 2025 is the fourth warmest year since 1981 (see Figure 2.5).

It is important to highlight that the last decade (2016–2025) has been marked by a series of exceptionally warm years, with nine out of the ten years being among the 12 warmest on record. This trend underscores the increasing intensity of warming in recent years, aligning with global temperature patterns.

Looking at regional differences, 2025 is the warmest year on record across northern Nigeria, with a standardized maximum temperature anomaly of 3.8 in 2025 (see Table 2.4), indicating a significantly warmer year compared to previous records in the region. In contrast, the southern part of Nigeria, a lower standardized maximum temperature anomaly of 1.9 was recorded in 2025, making the year the sixth hottest year for the south since 1981. These regional variations further emphasize the widespread nature of the warming trend across the country, with both northern and southern Nigeria experiencing record-high temperatures in 2025.

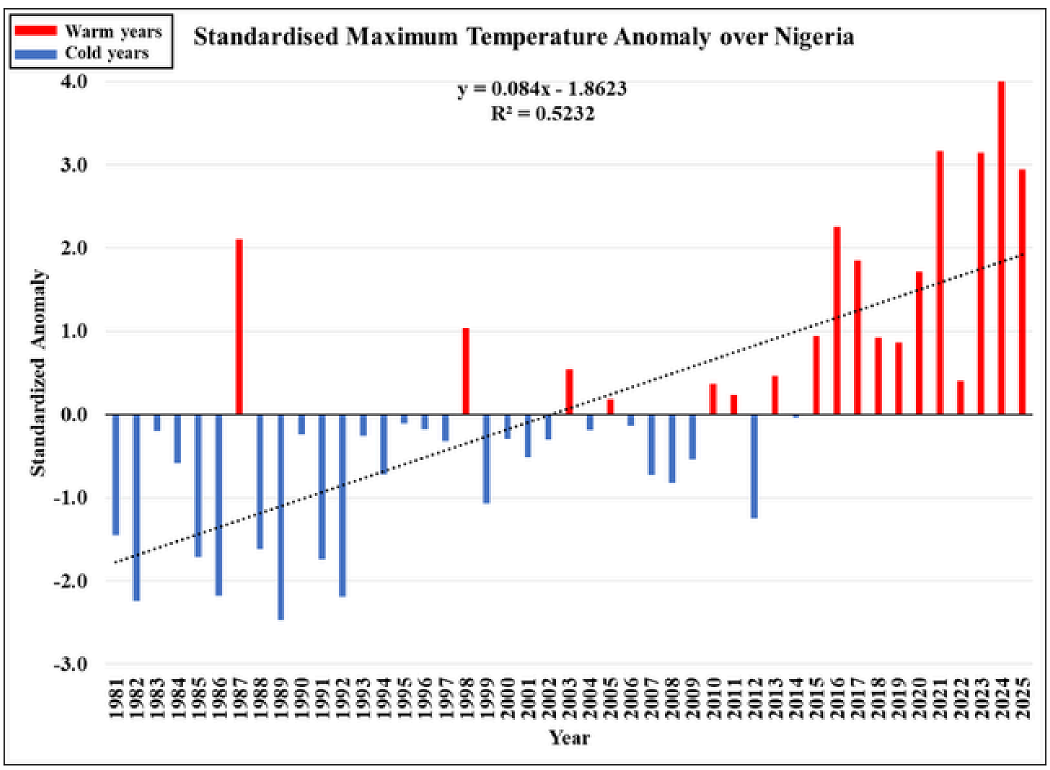


Figure 2.4: Standardised maximum temperature anomaly and trend over Nigeria for the period 1981-2025 based on data from 47 Meteorological stations and 1991-2020 Climatological Standard Normal

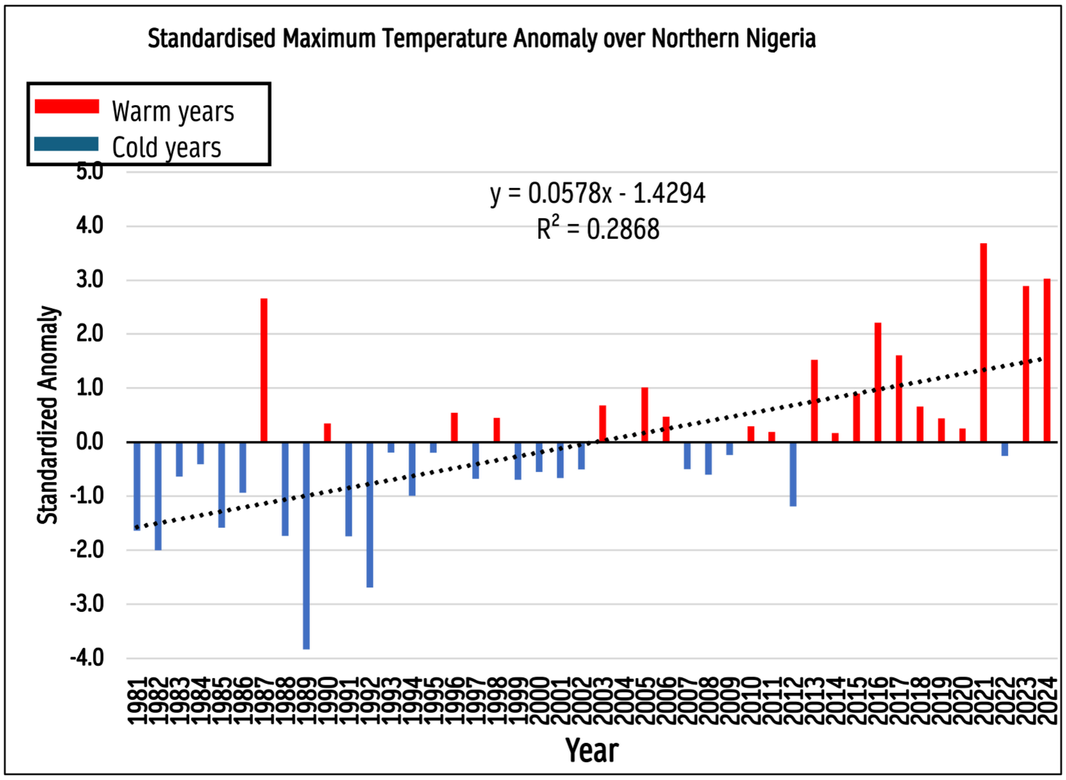


Figure 2.5: Standardised maximum temperature anomaly and trend over northern Nigeria for the period 1981-2025 based on data from 23 Meteorological stations and 1991-2020 Climatological Standard Normal

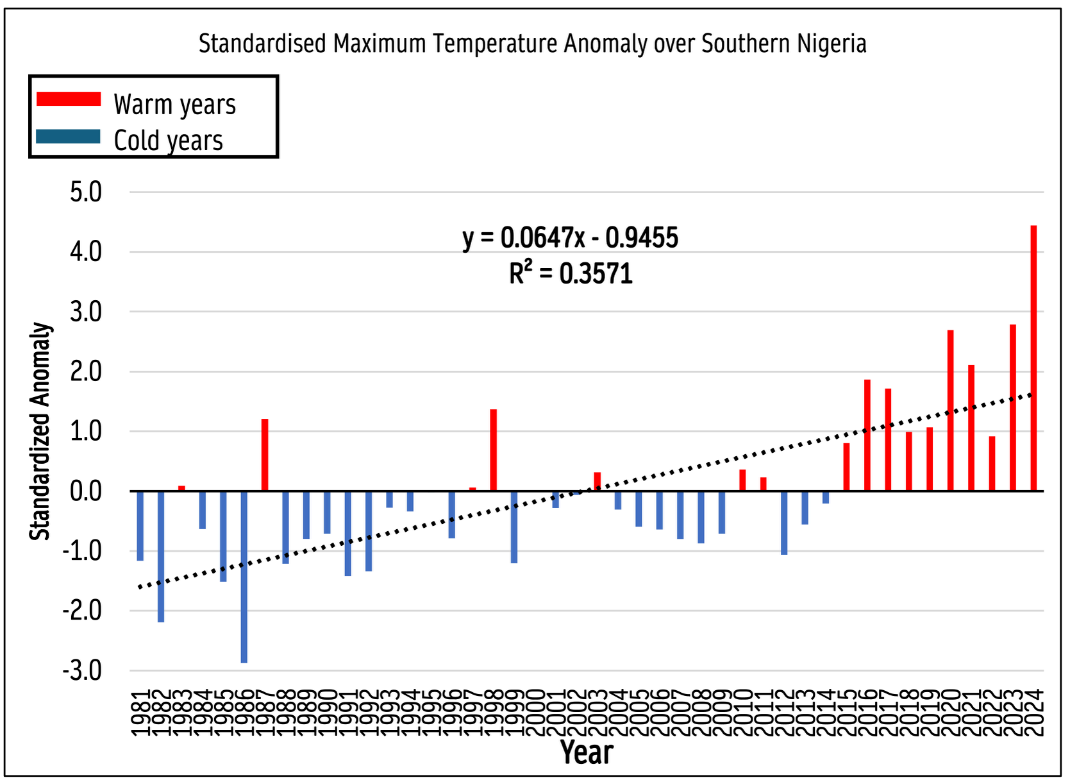


Figure 2.6: Standardised maximum temperature anomaly and trend over southern Nigeria for the period 1981-2025 based on data from 24 Meteorological stations and 1991-2020 Climatological Standard Normal.

Table 2.3 Summary of the warm years and standardised maximum temperature anomalies from 1981-2025 ranked in descending order of warming

NIGERIA		Northern Nigeria		Southern Nigeria	
Warm Years	Standardised Anomalies	Warm Years	Standardised Anomalies	Warm Years	Standardised Anomalies
2024	4.0	2025	3.8	2024	4.4
2021	3.2	2021	3.7	2023	2.8
2023	3.1	2024	3.0	2020	2.7
2025	2.9	2023	2.9	2021	2.1
2016	2.3	1987	2.7	2016	1.9
1987	2.1	2016	2.2	2025	1.9
2017	1.8	2017	1.6	2017	1.7
2020	1.7	2013	1.5	1998	1.4
1998	1.0	2005	1.0	1987	1.2
2015	0.9	2015	0.9	2019	1.1
2018	0.9	2003	0.7	2018	1.0
2019	0.9	2018	0.7	2022	0.9
2003	0.5	1996	0.6	2015	0.8
2013	0.5	2006	0.5	2010	0.4
2022	0.4	1998	0.5	2003	0.3
2010	0.4	2019	0.4	2011	0.2
2011	0.2	1990	0.3	1983	0.1
2005	0.2	2010	0.3	1997	0.1
		2020	0.3	2000	0.0
		2011	0.2	1995	0.0
		2014	0.2		
		2004	0.0		

Table 2.4 Summary of the cold years and standardised maximum temperature anomalies from 1981-2025 ranked in descending order of cooling

NIGERIA		Northern Nigeria		Southern Nigeria	
Cold Years	Standardised Anomalies	Cold Years	Standardised Anomalies	Cold Years	Standardised Anomalies
1989	-2.5	1989	-3.8	1986	-2.9
1982	-2.2	1992	-2.7	1982	-2.2
1992	-2.2	1982	-2.0	1985	-1.5
1986	-2.2	1991	-1.7	1991	-1.4
1991	-1.7	1988	-1.7	1992	-1.3
1985	-1.7	1981	-1.6	1988	-1.2
1988	-1.6	1985	-1.6	1999	-1.2
1981	-1.5	2012	-1.2	1981	-1.2
2012	-1.2	1994	-1.0	2012	-1.1
1999	-1.1	1986	-0.9	2008	-0.9
2008	-0.8	1999	-0.7	2007	-0.8
2007	-0.7	1997	-0.7	1989	-0.8
1994	-0.7	2001	-0.7	1996	-0.8
1984	-0.6	1983	-0.6	1990	-0.7
2009	-0.5	2008	-0.6	2009	-0.7
2001	-0.5	2000	-0.5	2006	-0.6
1997	-0.3	2002	-0.5	1984	-0.6
2002	-0.3	2007	-0.5	2005	-0.6
2000	-0.3	1984	-0.4	2013	-0.6
1993	-0.3	2022	-0.3	1994	-0.3
1990	-0.2	2009	-0.2	2004	-0.3
1983	-0.2	1995	-0.2	2001	-0.3
2004	-0.2	1993	-0.2	1993	-0.3
1996	-0.2			2014	-0.2
2006	-0.1			2002	-0.1
1995	-0.1				
2014	0.0				

2.2.2 Minimum temperature

Minimum temperatures across Nigeria also exhibit a consistent positive trend. In particular, the minimum temperature recorded in 2025 is significantly higher than the 1991 - 2020 climatological standard normal, indicating a persistently increasing nighttime temperature during the period, 1981 - 2025. This upward trend in minimum temperatures has been evident since 2009, with temperatures consistently surpassing the climatological normal in subsequent years.

In northern Nigeria, the minimum temperature in 2025 was moderately above the climatological normal, with a standardized minimum temperature anomaly of 0.8. This reflects a continued warming in the region, which has seen a steady increase in minimum temperatures since 2001. Similarly, the southern part of Nigeria also experienced a warming trend in minimum temperatures since 2001, with a standardized anomaly of 2.0. This trend highlights a broader regional pattern of warming, with both northern and southern Nigeria experiencing sustained increases in minimum temperatures over the past two decades.

The persistently increasing trend in minimum temperatures across the country is indicative of a changing climate, characterized by warmer nights and a shift in the overall temperature profile all over Nigeria. This trend may have implications for agricultural practices, energy consumption, and human health, as warmer nights can disrupt ecosystems and increase the need for cooling during the warmer months. The trend may also have a negative impact on biodiversity.

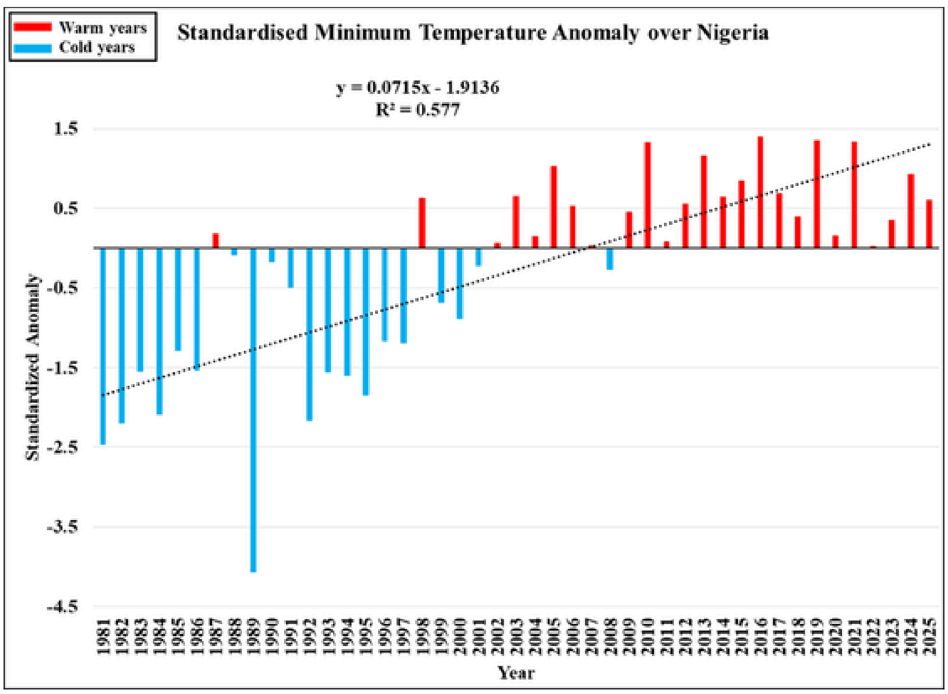


Figure 2.7: Standardised minimum temperature anomaly and trend over Nigeria for the period 1981-2025 based on data from 47 Meteorological stations and 1991-2020 Climatological Standard Normal.

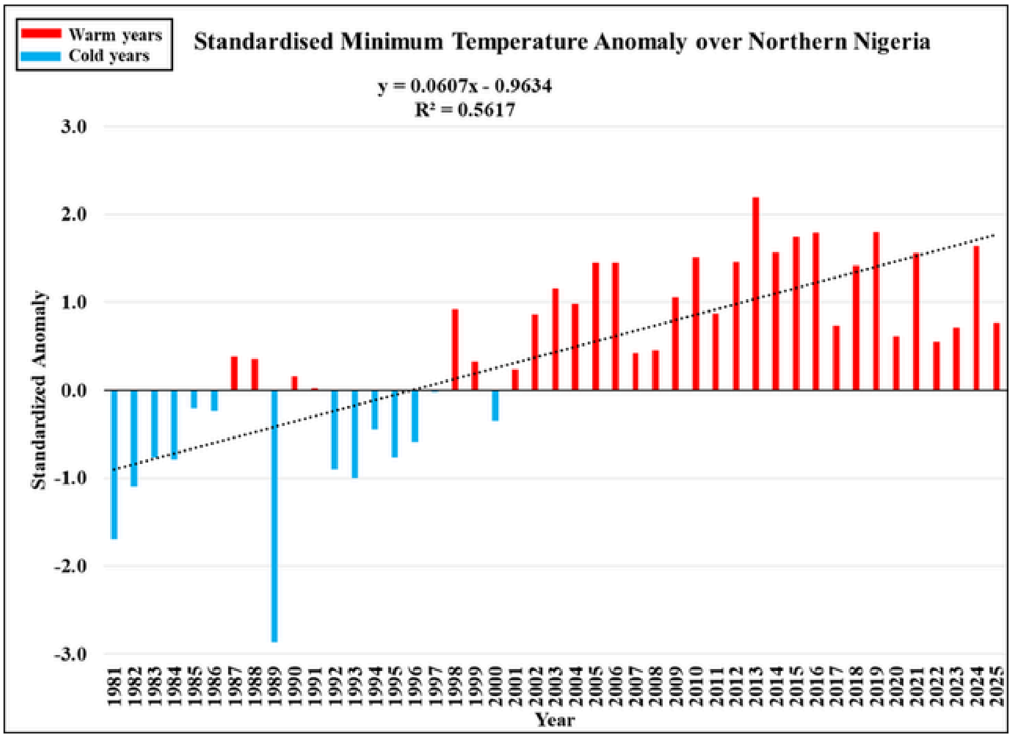


Figure 2.8: Standardised minimum temperature anomaly and trend over northern Nigeria for the period 1981-2025 based on data from 23 Meteorological stations and 1991-2020 Climatological Standard Normal.

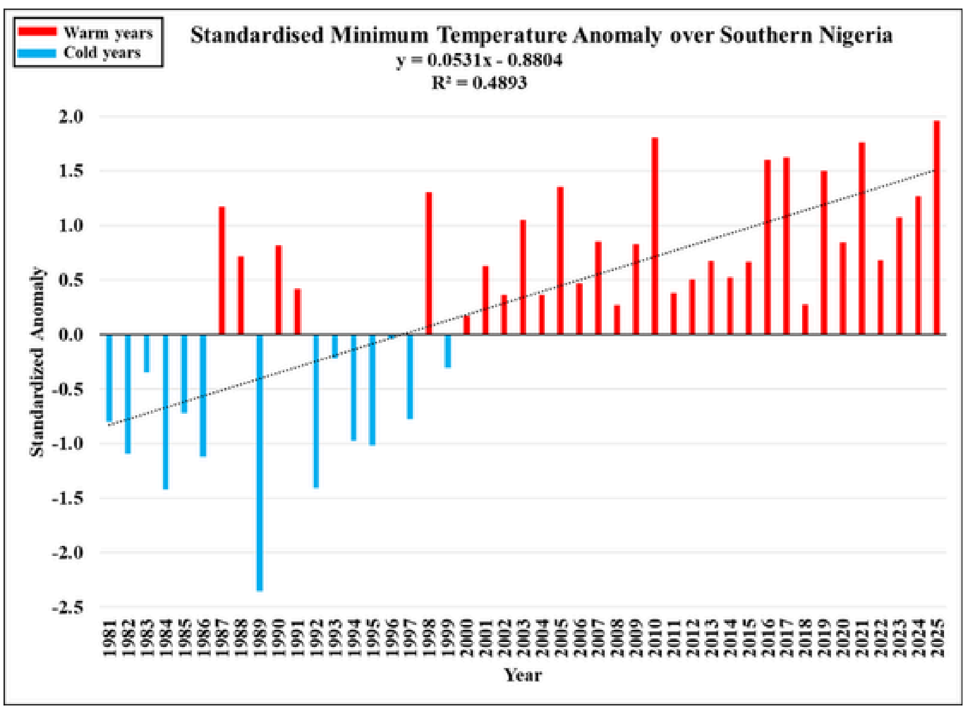


Figure 2.9: Standardised minimum temperature anomaly and trend over southern Nigeria for the period 1981-2025 based on data from 24 Meteorological stations and 1991-2020 Climatological Standard Normal.

Table 2.5 Summary of the warm years and standardised minimum temperature anomalies from 1981-2025 ranked in descending order of warming

NIGERIA		Northern Nigeria		Southern Nigeria	
Warm Years	Standardised Anomalies	Warm Years	Standardised Anomalies	Warm Years	Standardised Anomalies
2016	1.4	2013	2.2	2025	2.0
2019	1.4	2019	1.8	2010	1.8
2021	1.3	2016	1.8	2021	1.8
2010	1.3	2015	1.7	2017	1.6
2013	1.2	2024	1.6	2016	1.6
2005	1.0	2014	1.6	2019	1.5
2024	0.9	2021	1.6	2005	1.4
2015	0.8	2010	1.5	1998	1.3
2017	0.7	2012	1.5	2024	1.3
2003	0.7	2006	1.4	1987	1.2
2014	0.6	2005	1.4	2023	1.1
1998	0.6	2018	1.4	2003	1.1
2025	0.6	2003	1.2	2007	0.9
2012	0.6	2009	1.1	2020	0.8
2006	0.5	2004	1.0	2009	0.8
2009	0.5	1998	0.9	1990	0.8
2018	0.4	2011	0.9	1988	0.7
2023	0.4	2002	0.9	2022	0.7
1987	0.2	2025	0.8	2013	0.7
2020	0.2	2017	0.7	2015	0.7
2004	0.1	2023	0.7	2001	0.6
2011	0.1	2020	0.6	2014	0.5
2002	0.1	2022	0.6	2012	0.5
2007	0.0	2008	0.5	2006	0.5
2022	0.0	2007	0.4	1991	0.4
		1987	0.4	2011	0.4
		1988	0.4	2002	0.4
		1999	0.3	2004	0.4
		2001	0.2	2018	0.3
		1990	0.2	2008	0.3
		1991	0.0	2000	0.2

Table 2.6 Summary of the cold years and standardised minimum temperature anomalies from 1981-2025 ranked in descending order of cooling

NIGERIA		Northern Nigeria		Southern Nigeria	
Cold Years	Standardised Anomalies	Cold Years	Standardised Anomalies	Cold Years	Standardised Anomalies
1989	-4.1	1989	-2.9	1989	-2.4
1981	-2.5	1981	-1.7	1984	-1.4
1982	-2.2	1982	-1.1	1992	-1.4
1992	-2.2	1993	-1.0	1986	-1.1
1984	-2.1	1992	-0.9	1982	-1.1
1995	-1.8	1984	-0.8	1995	-1.0
1994	-1.6	1983	-0.8	1994	-1.0
1993	-1.6	1995	-0.8	1981	-0.8
1983	-1.6	1996	-0.6	1997	-0.8
1986	-1.5	1994	-0.4	1985	-0.7
1985	-1.3	2000	-0.4	1983	-0.4
1997	-1.2	1986	-0.2	1999	-0.3
1996	-1.2	1985	-0.2	1993	-0.2
2000	-0.9	1997	0.0	1996	0.0
1999	-0.7				
1991	-0.5				
2008	-0.3				
2001	-0.2				
1990	-0.2				
1988	-0.1				

2.2.3 Diurnal Temperature Range (DTR)

The DTR, defined as the difference between daily maximum and minimum temperatures, serves as an important indicator of climate change and variability. During the past 46 years, the country has experienced a moderate trend in diurnal temperature range, marked by noticeable daily temperature fluctuations.

The highest variability in DTR occurred from the 1980s to the mid-1990s, reflecting significant fluctuations in temperature patterns during that period. However, a sharp downward trend in DTR became apparent from 1995 to 2012, indicating a period of reduced temperature differences between day and night. Following this decline, a gradual increase in DTR is observed from 2013 to 2025, although with a notable dip in 2019 (see Figure 2.10).

In 2025, the DTR drops from 11.2℃ in 2024 to 11.0℃, marking the second highest value recorded since 1995. This increase in 2025 represents a slight rise of 0.4℃ above the thirty-year climatological average (1991-2020), suggesting a partial recovery or shift in the daily temperature fluctuations. This change could be reflective of broader climatic shifts, potentially linked to regional and global climate patterns.

The DTR trend provides valuable insights into the changing dynamics of temperature extremes in Nigeria, where warming of both daytime and nighttime temperatures has been observed, although the difference between them (the DTR) has been narrowing for much of the past few decades. This could have implications for various sectors, including agriculture, energy demand, and public health, as changes in the diurnal temperature range can affect crop growth cycles, energy consumption patterns, and human comfort. It can also affect the biodiversity.

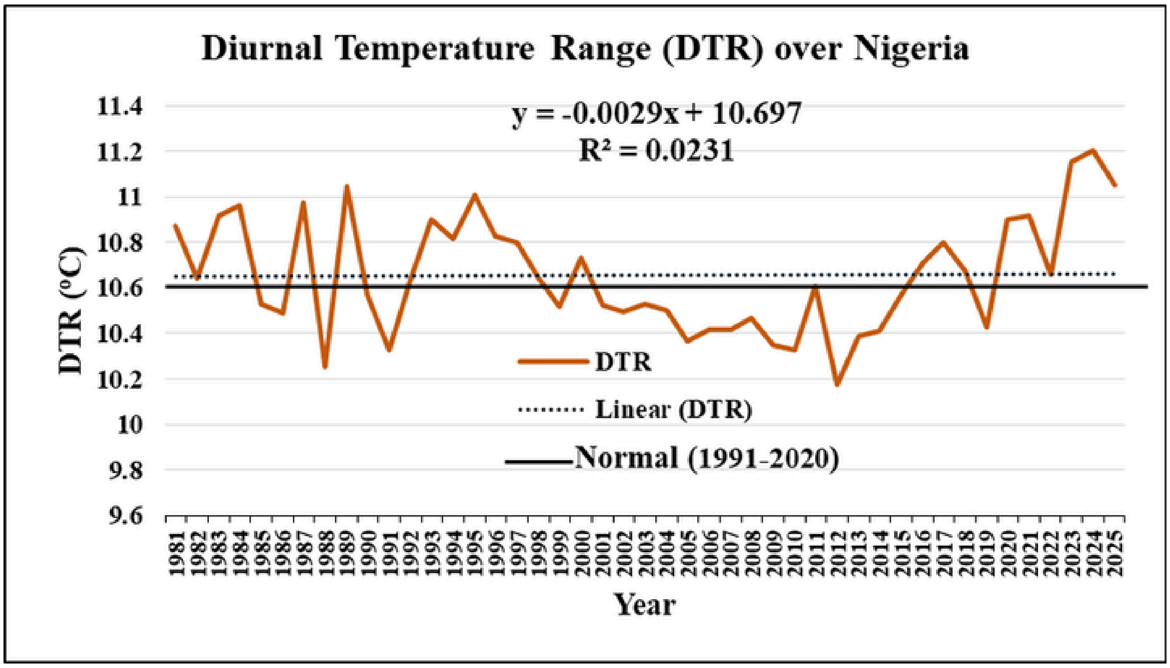


Figure 2.10: Diurnal temperature range (DTR) 1991-2020 climatological average and linear trend over Nigeria during the period 1981-2025 based on data from 47 Meteorological stations

A sharper and more consistent decline in Diurnal Temperature Range (DTR) is evident in northern Nigeria compared to the countrywide trend (see Figures 2.11 and 2.12), indicating that the region has experienced a more significant decrease in daily temperature variability over recent decades. However, 2025 marks a departure from this pattern, showing an uptick in DTR. The northern region recorded a DTR of 13.2℃ in 2025, about 0.8℃ higher than its long-term climatological average. In contrast, southern Nigeria reported a DTR of 8.9℃ in both 2024 and 2025, closely matching its climatological normal.

The regional variations in DTR trends show that temperature patterns across Nigeria are not uniform. Although both the northern and southern zones have generally seen a long-term decline in DTR, the magnitude of this change and the present level of temperature variability differ between them.

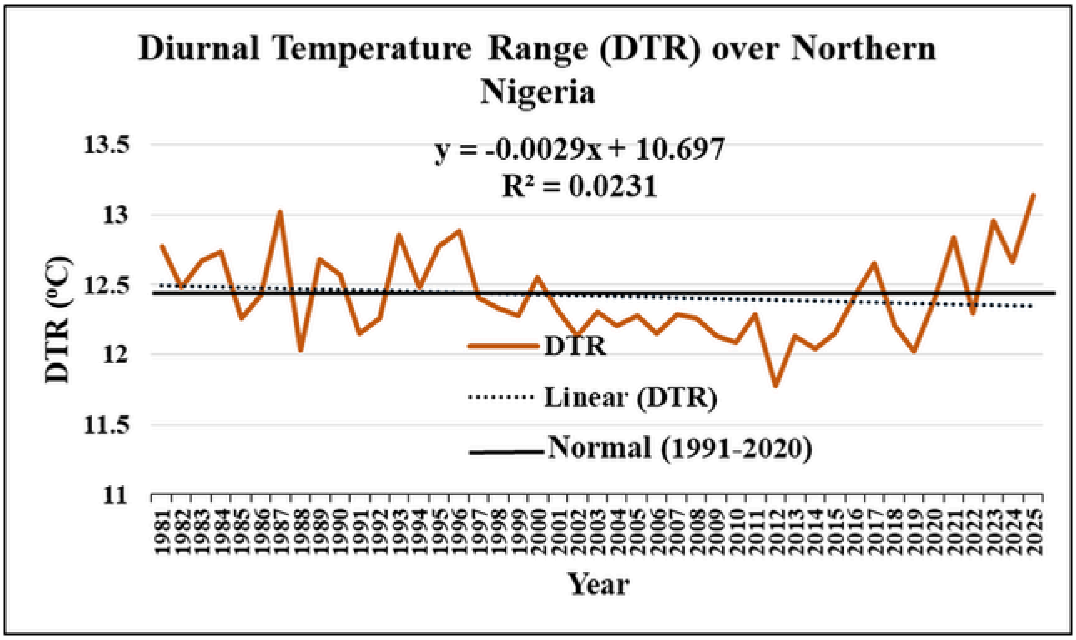


Figure 2.11: Diurnal temperature range (DTR) 1991-2020 climatological average and linear trend over northern Nigeria during the period 1981-2025 based on data from 23 Meteorological stations

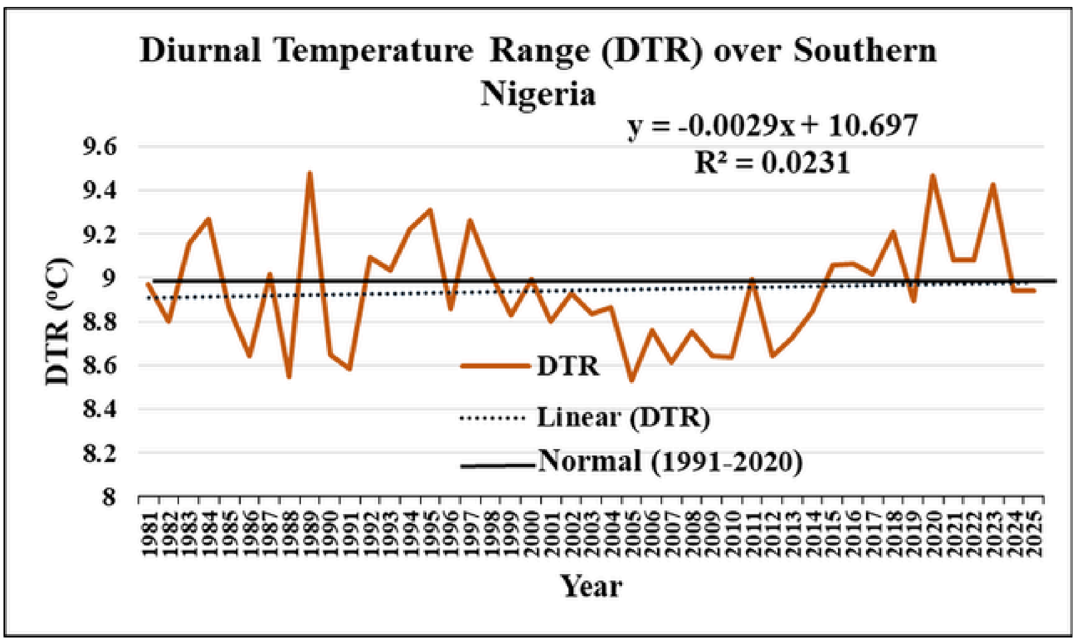


Figure 2.12: Diurnal temperature range (DTR) 1991-2020 climatological average and linear trend over southern Nigeria during the period 1981-2025 based on data from 24 Meteorological stations

CHAPTER THREE
OBSERVED CLIMATE DRIVERS

3.1 Inter-Tropical Discontinuity (ITD)

The monthly movement of the Intertropical Discontinuity (ITD) in 2025 showed marked deviations from its long-term climatological average. (See Figure 3.1). During the first half of the year (January–June), the ITD maintained a consistently northward position relative to the long-term average (except for the period between the 3rd dekad of April and the 2nd dekad of May), with positive anomalies of approximately 1–2° latitude in most dekads. This poleward displacement reflects enhanced meridional moisture flux and a weakened influence of the dry continental northeasterlies. These conditions are favourable for the onset of the rainy season in the southern and central parts of the country.

During the peak monsoon period (July to August), the ITD advanced to its highest latitudinal position, reaching above 20°N and significantly above its normal value. The northward surge is indicative of a strengthened monsoon circulation and deeper moisture influx into the Sudano-Sahelian zone of Nigeria. From mid-September, the ITD began its seasonal retreat but did so more rapidly than the long-term average speed. Between October and December, the ITD position was significantly south of its normal by 1.5–3° latitude.

Overall, the 2025 ITD cycle was characterised by an extended period of northward anomaly during the onset and peak monsoon phases, followed by a rapid southward retreat.

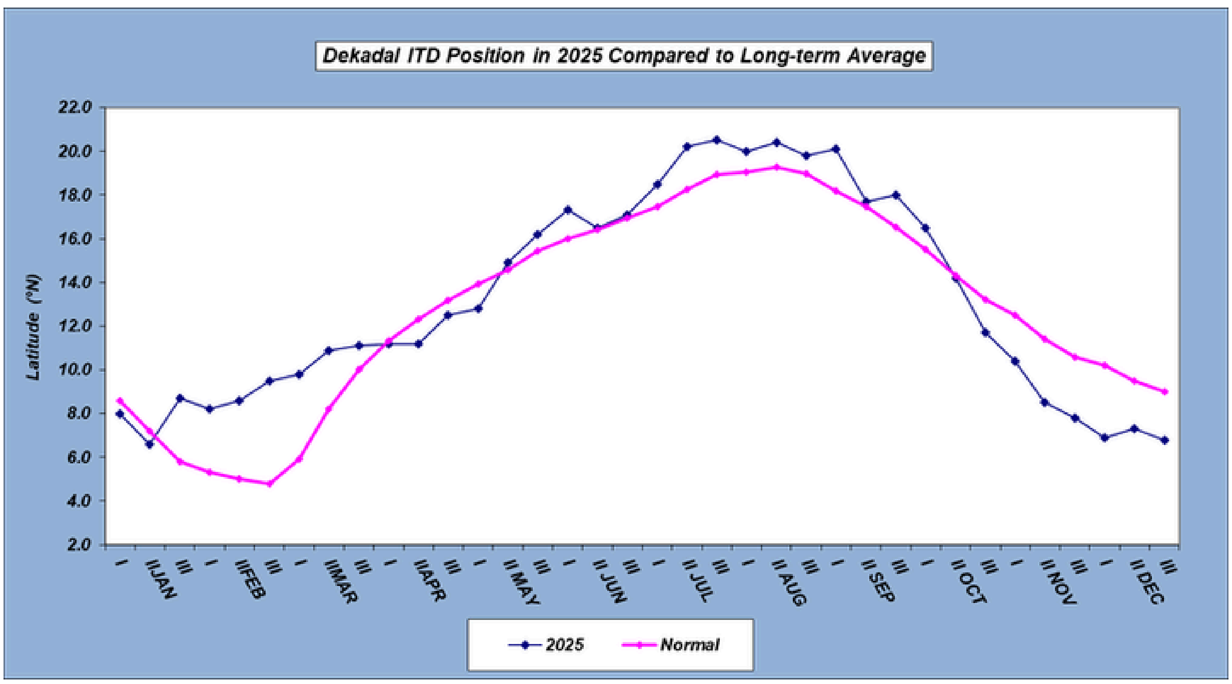


Figure 3.1: Dekadal latitudinal positions of the ITD in 2025 compared with the climatological mean over Nigeria

Figure 3.2 shows that the year began with ITD at approximately 7.8°N in January, rising slightly to 8.6°N in February. A more pronounced northward shift occurred between March and April; from 10.5ON in March to 11.7ON in April. A more rapid northward movement of the ITD was observed in May, when it reached 14.8°N. The ITD continued its seasonal northward movement through June and July, and peaked at approximately 20.0°N in August, marking the peak of the West African monsoon.

From September, the ITD began its southward retreat, pulling back rapidly to 18.8°N, followed by a sharp drop to 14.2°N in October. The retreat accelerated thereafter, with the ITD position falling to 9.0°N in November and further to about 7.0°N by December, signalling the full establishment of dry-season conditions across Nigeria.

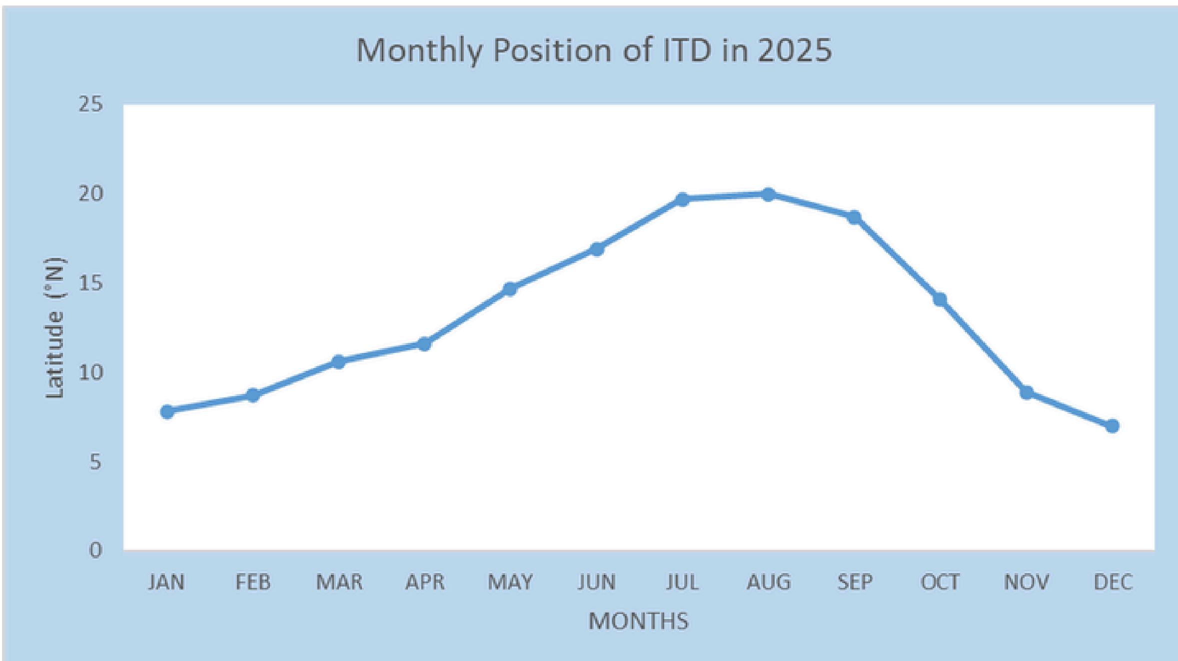


Figure 3.2: Monthly position of the ITD over Nigeria in 2025

Figure 3.3 shows that above normal positions of the ITD were observed in January, February, March, June, July, August, and September, indicating a greater influx of south-westerly wind into the country during these months, compared to the long-term climatological averages. However, in April, October, November, and December, the ITD position over Nigeria was generally south of the normal.

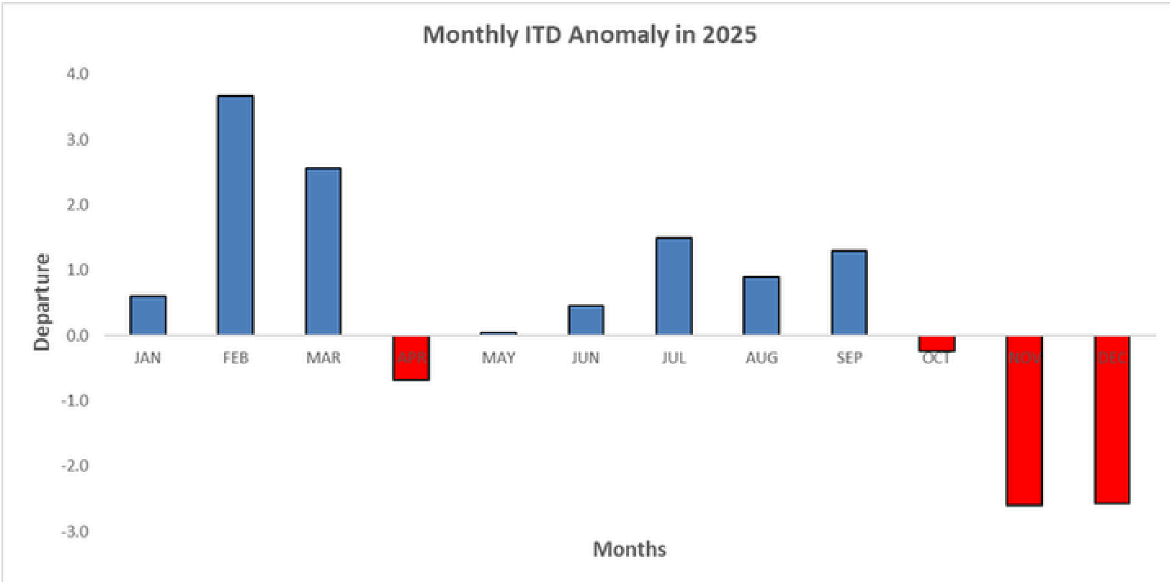


Figure 3.3: Monthly ITD Position Anomaly over Nigeria in 2025

3.2 Surface Pressures

The Azores High and St. Helena High, the two major semi-permanent anticyclones of the Atlantic, showed distinct monthly pressure fluctuations in 2025. Their behaviour played a central role in modulating moisture transport, rainfall and harmattan seasons, as well as the latitudinal movement of the ITD across Nigeria. Their evolution during the year followed a pattern broadly consistent with climatology, but with notable monthly fluctuations.
The Azores High showed moderate variability throughout the year, with pressure values ranging between approximately 1022 hPa and 1032 hPa, Figure 3.4. From January to March, the Azores remained quasi-stationary at 1026-1027 hPa, supporting a typical dry season feature over Nigeria. However, a slight weakening to around 1022 hPa was observed in April, reducing the southward push of dry, cool north-easterly winds and allowing pre-monsoon moisture to begin building up over the southern and central parts of the country. From May through July, there was a gradual weakening to 1024-1027 hPa, contributing to the seasonal deepening of the monsoonal flow from the Gulf of Guinea as the St. Helena was also strengthening. This interplay supported a progressive northward movement of the ITD into central and northern Nigeria. The Azores weakened further in October before a steady rise from November through December, marking a firm establishment of dry-season conditions over the country.

The St Helena High showed more pronounced fluctuations than the Azores High, with monthly mean pressures ranging from 1024 hPa to 1033 hPa, Figure 3.4. It remained relatively weak and steady in January and February, which sustained the dry season. A moderate increase was observed in March and April (1025-1026 hPa). However, significant strengthening of around 1030 hPa occurred in May, which marked a major development in the monsoon driver. The system remained strong through June and July at around 1028–1030 hPa, which ensured a sustained moisture supply and consolidated the seasonal movement of the ITD into the northmost parts of the country. A key feature in St. Helena during this period was the continued incursion of the 1015 hPa isoline into the country as the season progressed, drawing with it a moisture influx. The St. Helena peaked in October at a value of about 1033 hPa and was followed by a marked weakening in November and December, coinciding with the established dry season across the country.

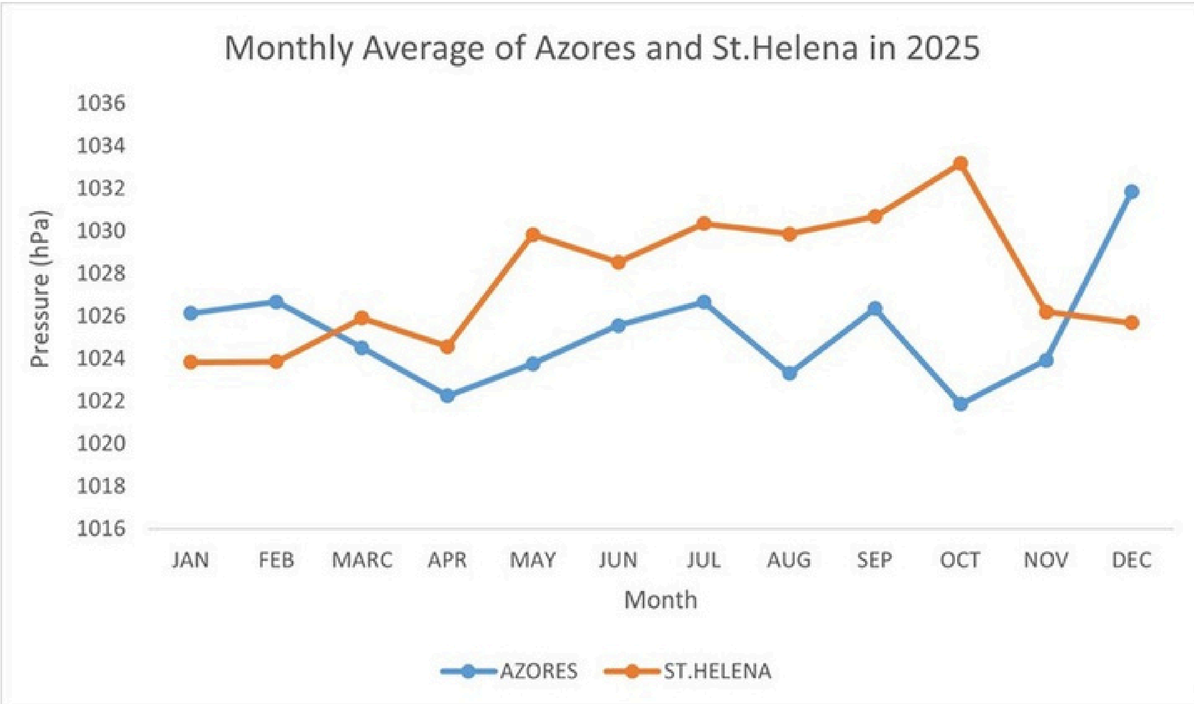


Figure 3.4: Average monthly values of Azores and St. Helena high-pressure systems in 2025

3.3 Winds

Winds at different pressure levels play an important role in determining the onset, intensity, and spatial distribution of weather patterns across all seasons in Nigeria. Seasonal variations in low-, mid-, and upper-level winds influence moisture transport, convective development, raising of dust, and the movement of key synoptic features such as the Inter-Tropical Discontinuity (ITD), African Easterly Jet (AEJ) and Tropical Easterly Jet (TEJ).

In 2025, the observed wind at 10 m showed that the northeasterly (continental) winds dominated most parts of the country, while the south-westerly (maritime) winds were restricted only to the coastal zone of the country in January and February, with an average wind speed in the range of 5 to 15 knots. During the same period, the 925 hPa and 850 hPa levels were dominated by the continental wind across the entire country, with wind speeds of 5 to 40 knots and 5 to 30 knots, respectively. However, in March, at 10 m, the northeasterlies dominated the northern and central parts of the country, while southwesterlies were predominant over the south, coinciding with the onset of the rainy season in some southern parts of the country. The average wind speed observed at 10 m during this period ranged from 5 to 15 knots.

As the onset of the rainy season began to reach more parts of the country in April, southwesterlies were observed to be predominant over the south and parts of the central states, while northeasterlies remained dominant over the north, at the 10 m level. The average wind at this level during the month ranged from 5 to 15 knots. At 925 hPa, northeasterly winds dominated over the north and central states, and southwesterly winds over the southern parts, with wind speeds of 5 to 25 knots. Both northeasterlies and southwesterlies were observed with wind speeds of 5 to 20 knots at 850 hPa. With the onset fully established over the southern and parts of the central states in May, southwesterlies dominated most parts of the country while the northeasterlies were restricted to only the north, at the 10 m level. The average wind speed observed at this level was 5 to 15 knots. Similar patterns were observed at 925 hPa and 850 hPa levels with an average speed of 5 to 25 knots.

With the rainy season already well-established over most parts of the country in June, the winds at 10 m and 925 hPa levels were dominated by southwesterlies with an average speed of 5 to 15 knots and 5 to 25 knots, respectively. However, at 850 hPa, a mixture of northeasterlies and southwesterlies was observed with an average speed of 5 to 15 knots.
With the monsoon season fully established in July, August, and September, winds at 10 m, 925 hPa, and 850 hPa were observed to have been dominated by the southwesterlies, with average wind speeds of 5 to 20 knots, 5 to 30 knots, and 5 to 25 knots, respectively.
October and November, which marked the end of the rainy season across the north and most parts of the south, northeasterlies were observed to have become the dominant wind at 10 m over northern parts of the country, while southwesterlies dominated the south. A similar pattern was also observed at the 925 hPa level. However, the 850 hPa level was dominated by northeasterlies across the country. In December, the winds were predominantly northeasterly at 10 m, 925 hPa, and 850 hPa levels across most parts of the country, except at 10 m, over coastal parts where southwesterlies were observed.

Table 3.3.1 Summary of Wind Direction and Speed in 2025

PERIOD	WIND DIRECTION	AVERAGE SPEED
January & February	10 m: Northeasterlies & Southwesterlies	5 -15 knots
	925 hPa: Northeasterlies	5 - 40 knots
	850 hPa: Northeasterlies	5 - 30 knots
March	10 m: Northeasterlies & Southwesterlies	5 – 15 knots
	925 hPa: Northeasterlies	5 - 30 knots
	850 hPa: Northeasterlies	5 - 25 knots
April	10 m: Southwesterlies & Northeasterlies	5 – 15 knots
	925 hPa: Northeasterlies & Southwesterlies	5 - 25 knots
	850 hPa: Northeasterlies & Southwesterlies	5 – 20 knots
May	10 m: Southwesterlies	5 – 15 knots
	925 hPa: Northeasterlies & Southwesterlies	5 – 25 knots
	850 hPa: Northeasterlies & Southwesterlies	5 – 25 knots
June	10 m: Southwesterlies	5 - 15 knots
	925 hPa: Southwesterlies	5 - 25 knots
	850 hPa: Southwesterlies & Northeasterlies	5 – 15 knots
	10 m: Southwesterlies	5 - 20 knots

July, August & September	925 hPa: Southwesterlies	5 - 30 knots
	850 hPa: Southwesterlies	5 - 25 knots
October & November	10 m: Northeasterlies & Southwesterlies	5 - 15 knots
	925 hPa: Northeasterlies & Southwesterlies	5 - 20 knots
	850 hPa: Northeasterlies	5 - 25 knots
December	10 m: Northeasterlies	5 - 10 knots
	925 hPa: Northeasterlies	5 - 30 knots
	850 hPa: Northeasterlies	5 - 35 knots

3.4 GLOBAL & REGIONAL TELECONNECTIONS

3.4.1 OCEANIC NINO INDEX (ONI)

The Oceanic Niño Index is a primary measure for tracking El Niño-Southern Oscillation (ENSO) phases, based on three months running average of sea surface temperature anomalies in the Niño 3.4 region relative to a 30-year climatological baseline. Values of +0.5℃ or higher indicate El Niño conditions, -0.5℃ or lower indicate La Nina and values in between indicate neutral.

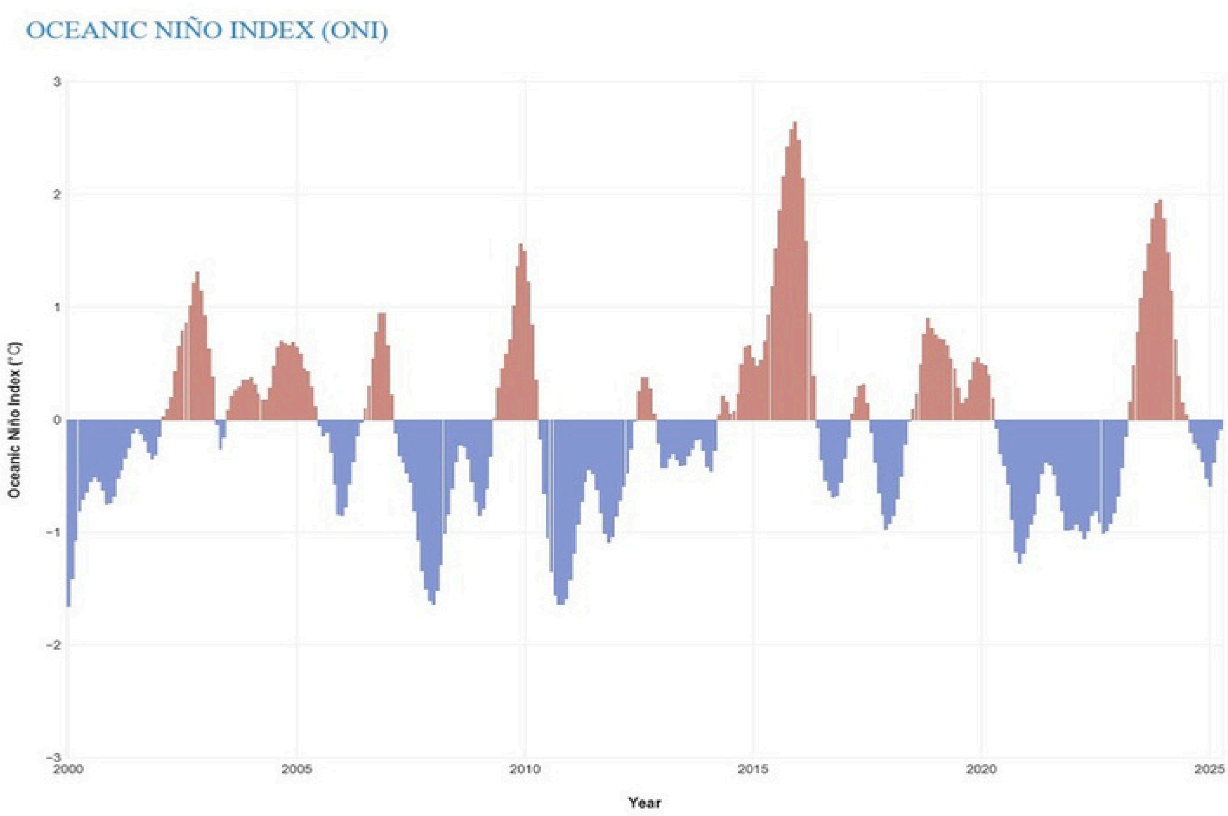


Figure 3.5: Oceanic Niño Index (Sea Surface Temperature Anomaly)[3]
Source: NOAA [1] *https://www.climate.gov/media/15551*

[3] https://www.climate.gov/media/15551

ONI values are typically released monthly by climate prediction centres such as NOAA with a seasonal (three-month) average. Table 3.3.2 shows the ONI values in 2025.

Table 3.3.2: **Oceanic Niño Index (ONI) V**alues in 2025

SEASON	PERIOD	ONI VALUES (℃)	ENSO STATUS
JFM	JAN-MAR 2025	-0.4	NEUTRAL
FMA	FEB-APR 2025	-0.2	NEUTRAL
MAM	MAR-MAY 2025	-0.1	NEUTRAL
AMJ	APR-JUN 2025	-0.1	NEUTRAL
MJJ	MAY-JUL 2025	-0.1	NEUTRAL
JJA	JUN-AUG 2025	-0.2	NEUTRAL
JAS	JUL-SEP 2025	-0.3	NEUTRAL
ASO	AUG-OCT 2025	-0.5	La Nina/Neutral
SON	SEP-NOV	-0.6	Weak La Niña
OND	OCT-DEC 2025	-0.7	Weak La Nina

3.4.2: ENSO PROJECTION IN 2025

The El Niño Southern Oscillation, which influences global weather patterns through variations in Pacific Ocean Sea surface temperatures (SSTs), was characterized by the neutral phase through most of 2025. The year started as La Niña in January, which is cooler than normal, then gradually weakened to an ENSO neutral condition by February and March. By November, La Nina condition reemerged weakly, driven by a renewed cooling trend.

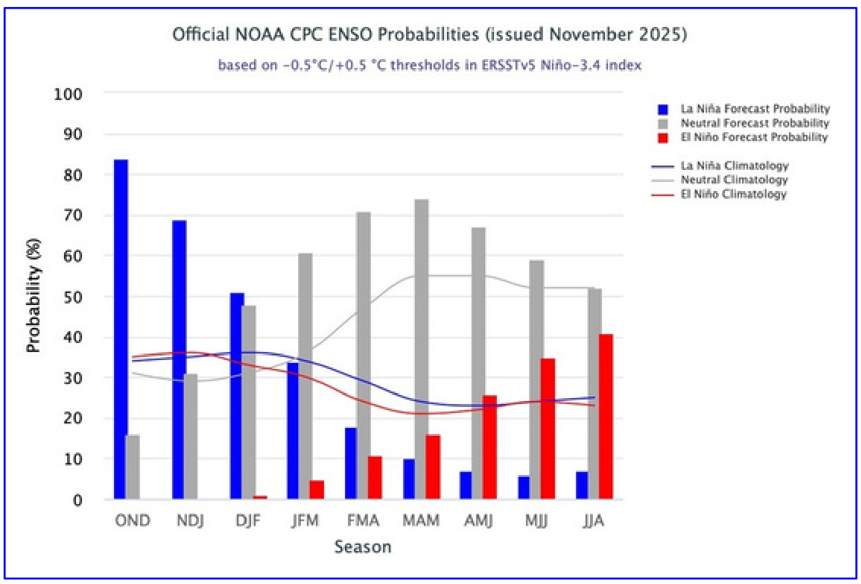


Figure 3.6: [4]Official CPC ENSO Probabilistic ENSO Forecast
[Source: https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/]

[4] https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/

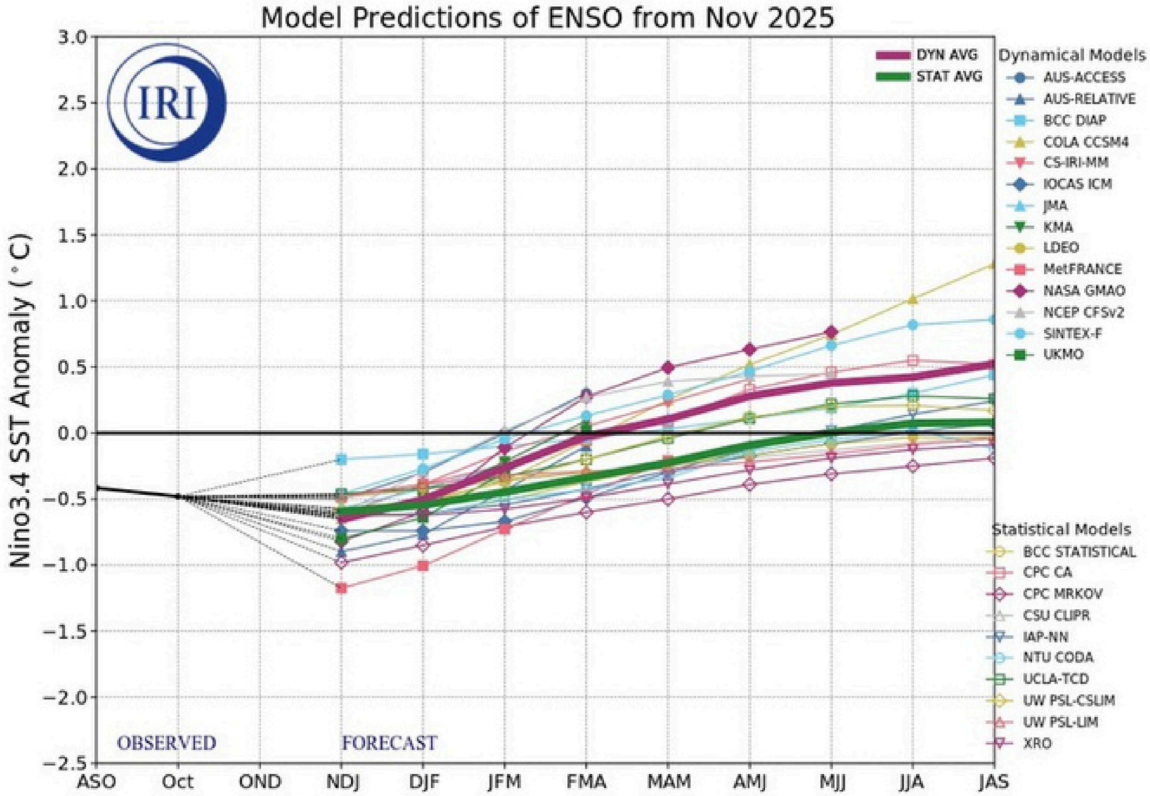


Figure 3.7: Model Predictions of ENSO[5] from December 2025
[Source: https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/]

3.4.3 GLOBAL EXTREME TEMPERATURE RECORD IN 2025

According to the World Meteorological Organization (WMO), 2025 is to be second or third warmest year on record. The past 11 years, 2015 to 2025, have been the warmest years in the 176-year observational record, with the past three years being the warmest years on record. The mean near-surface temperature in January to October 2025 was 1.4℃ ±0.12℃ above the pre-industrial average.

Concentration of heat trapping greenhouses gases in the atmosphere and ocean heat content, which both reached record levels in 2024, continued to rise in 2025. Arctic sea ice extent after the winter freeze was the lowest on record, and Antarctic Sea ice extent tracked well below average throughout the year.

[5] https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/

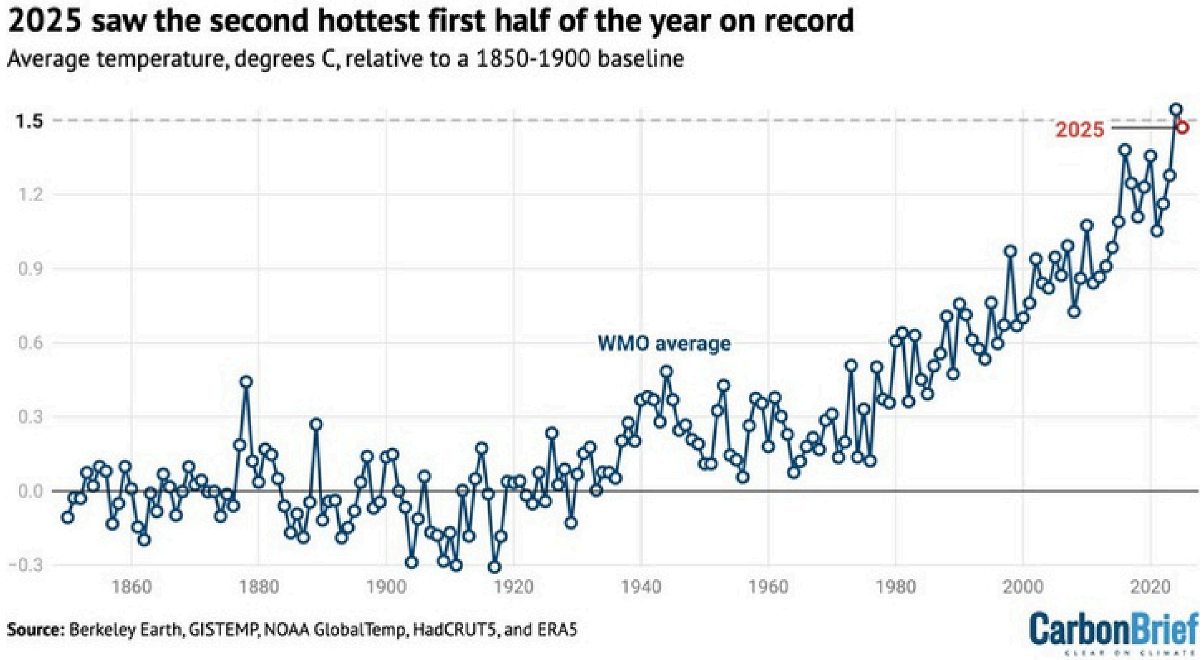


Figure 3.8: Yearly Global Temperature[6] in 2025[7]

[7] State of the climate: 2025 on track to be second or third warmest year on record - Carbon Brief

CHAPTER FOUR
EXTREME WEATHER EVENTS IN NIGERIA IN 2025

Over the years, there has been an alarming increase in the frequency and intensity of weather events worldwide, largely driven by climate change. In Nigeria, this has manifested as extreme weather events, including heatwaves, heavy rainfall, droughts, and flooding.
In 2025, extreme daytime temperatures (≥40℃) were recorded across 23 Nigerian cities, with the most intense and persistent heat occurring between March and June. The northwest and the northeastern states recorded the most intense heat. Nguru recorded the highest number of hot days, with 100 days above 40℃ and a maximum temperature of 44.6℃, followed by Maiduguri (82 days, with a maximum temperature of 44.5℃), Sokoto (79 days, with a maximum temperature of 44.5℃), and Yola (65 days, with a maximum temperature of 45.0℃). Other northern cities, including Kano, Gusau, Dutse, and Potiskum, also experienced prolonged heat above 40℃. In contrast, Ikom and Kaduna recorded only 1 day above 40℃, highlighting the regional variation in extreme daytime temperatures and the pronounced heat stress in northern Nigeria.
A breakdown of cities with high daytime temperatures of 40℃ and above is tabulated in Table 4.1.

4.1: EXTREME DAY-TIME TEMPERATURES IN 2025

Table 4.1: Cities and Number of Days with Day-Time Temperatures >40℃ in 2025

S/N	City	Observed Maximum Value (℃)	Number of Days with Temperatures > 40℃
1	Bauchi	41.8	23
2	Bida	41.6	29
3	Dutse	42.5	57
5	Gombe	42.5	36
6	Gusau	43.0	62
7	Ikom	40.4	1
8	Jalingo	42.7	38
9	Kaduna	40.4	1
10	Kano	43.5	48
11	Katsina	42.5	38
12	Lafia	42.0	21
13	Lokoja	41.5	10
14	Maiduguri	44.5	82
15	Makurdi	40.5	20
16	Minna	41.3	14
17	Nguru	44.6	100
18	Ogoja	41.7	10
19	Potiskum	42.8	58
20	Sokoto	44.5	79
21	Yelwa	42.0	34
22	Yola	45.0	65
23	Zaria	41.0	13

4.2: EXTREME NIGHT-TIME TEMPERATURES IN 2024

In 2025, several Nigerian cities recorded extremely low nighttime temperatures of 12℃ or below. Dutse, Kano, and Bauchi experienced the highest number of cold nights, with 59, 48, and 45 days, respectively, at or below 12℃. The lowest minimum temperatures were observed in Jos (6.2℃), Dutse (6.4℃), and Kano (6.5℃). Abeokuta (12℃) and Kaduna (11.8℃) recorded only one day with nighttime temperatures at 12℃ and 11.8℃.

Table 4.2: Cities and Number of Days with Night-Time Temperatures <12℃ in 2024

S/n	City	Observed Minimum Temperature ≤ 12℃	Number of days with ≤ 12℃
1	Abeokuta	12.0	1
2	Bauchi	8.5	45
3	Dutse	6.4	59
4	Jos	6.2	32
5	Kaduna	11.8	1
6	Kano	6.5	48
7	Katsina	9.8	4
8	Lafia	11.0	12
9	Maiduguri	11.7	2
10	Nguru	9.0	29
11	Potiskum	10.8	6
12	Zaria	11.2	6

4.3: EXTREME RAINFALL EVENTS IN 2024

In 2025, several cities in Nigeria experienced extreme rainfall events in a single day, with amounts exceeding 100 mm. This reflects an increase in rainfall intensity nationwide. The highest one-day rainfall amounts were recorded in Asaba (164.4 mm), Uyo (159.3 mm), Umuahia (157.3 mm), and Lafia (150.5 mm), indicating very intense downpours within short periods. In terms of frequency, Uyo recorded the highest number of extreme rainfall days (five days with rainfall exceeding 100 mm), followed by Calabar (four days), and Asaba, Eket, Maiduguri, Shaki, and Yenagoa (each with three days). These intense rainfall events significantly increased the risk of flash flooding, soil erosion, and damage to infrastructure, particularly in urban and low-lying areas.

Table (3) shows the summary of the highest daily rainfall of 100 mm or above in 2025.

Table 4.3: One day Rainfall of 100 mm and above in 2024

S/n	City	Highest 1-day rainfall amount ≥ 100 mm	Number of days with rainfall ≥ 100 mm	Annual total
1	Abeokuta	125.6	1	1813.0
2	Asaba	164.4	3	1388.1
3	Bauchi	107.3	1	1554.0
4	Benin	126.7	2	2556.9
5	Bida	122.3	1	1076.0
6	Calabar	121.6	4	3135.6
7	Eket	128.2	3	3315.2
8	Enugu	115.0	2	1714.2
9	Ibadan	136.4	2	1598.4
10	Ikom	100.9	1	2770.9
11	Ilorin	108.7	1	1073.5
12	Lafia	150.5	1	1844.2
13	Lagos Roof	124.3	2	1454.2
14	Maiduguri	140.5	3	1426.9
15	Port-Harcourt	108.1	1	2363.0
16	Potiskum	114.9	1	875.1
17	Shaki	125.6	3	1558.4
18	Sokoto	107.0	2	1851.4
19	Umuahia	157.3	2	1921.0
20	Uyo	159.3	5	3833.5
21	Warri	114.1	1	2518.6
22	Yenagoa	115.3	3	3489.8

4.4: REPORTED FLOODING ACROSS NIGERIA IN 2025

NIGER STATE

Flash floods caused by heavy rainfall have devastated Mokwa, a town in Niger State. The floods, said to be the worst in the area for 60 years, swept through the Mokwa districts of Tiffin Maza and Anguwan Hausawa after torrential rains, killing hundreds, displacing thousands, destroying over 3,000 homes, and submerging farmlands. The downpour, which occurred on Thursday, May 29, 2025, also resulted in property damage worth millions.

Figure 4.1: Pictures of flood in Mokwa

Figure 4.2: Pictures of flood in Mokwa

According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the 2025 season floods have impacted 64,649 people across Adamawa, Borno, and Yobe states (BAY states), with 13,847 displaced, 53 deaths, 354 injuries, and 5,716 shelters damaged. Farmlands covering 8,716 hectares have been submerged, affecting livelihoods and food security in 190 communities. The hardest-hit locations include Yola South (Adamawa) with 15,128 affected, 4,241 displaced, and 50 deaths, Potiskum (Yobe) with 13,630 affected and heavy shelter losses, and Damboa (Borno) with 6,000 displaced and over 1,100 shelters destroyed.

a. **Borno State**: On 29 June 2025, severe flooding and windstorm in Borno State affected multiple communities within the Damboa local government area (LGA), particularly those in the Gumsuri, Wavi, and Garjan sites. The flood impacted 19,290 individuals, including 3,687 men, 6,464 women, and 9,139 children across various age groups. The rainfall also resulted in 4,667 damaged shelters and two casualties across the three locations.

Figure 4.3: Pictures of flood in Borno

b. **Adamawa State:** On 28 July 2025, torrential rainfall in Adamawa State, Nigeria, caused devastating flooding across Yola North and Yola South. At least 23 people lost their lives, many others were injured or went missing, and hundreds of families were displaced. Entire communities, including Shagari Low Cost, Sabon Pegi, and Modire Yolde Pate, were severely affected as floodwaters swept through homes and infrastructures (UN-SPIDER)

Figure 4.4: Pictures of flood in Adamawa

Figure 4.5: Pictures of flood in Adamawa

c. **Yobe State:** The 2025 flooding in Yobe State was one of the most devastating disasters in recent years, displacing thousands, destroying homes, and severely impacting livelihoods. Heavy rains between June and August caused widespread damage across multiple communities**.** Over 11,600 people were directly impacted in Yobe State, with 6,687 displaced and 5,077 remaining in damaged homes.

Hardest-Hit Areas

a. Potiskum (Yobe): Over 13,600 people affected, with heavy shelter losses.
b. Damaturu: Floodwaters reached critical facilities, including the Yobe State University Teaching Hospital, disrupting healthcare.
c. Gashua & Garin Kolo: Entire communities were submerged
On 15 August 2025, heavy rainfall in Yobe State caused a river in Potiskum to overflow, resulting in flash floods that impacted 21 communities across five wards.

Figure 4.2: Pictures of flood in Yobe

Table 4.4: Severe Weather Report in Nigeria in 2025

S/N	INCIDENT	STATE	DATE OF OCCURRENCE	PUBLICATION	DETAILS
1	Flood	Niger	May 29th 2025	NEMA	Heavy rainfall resulted in flooding, possibly combined with dam or embankment failure. At least 161 people reportedly died following flooding on 29 May in Mokwa, Niger State. As of 2 June 2025, 3,000 people were displaced, with almost 100 still missing.
2	Flood	Adamawa	28th July and September 16th	UN Spider and Vanguard News Paper	Torrential rainfall in Adamawa State caused severe flooding in Yola North and Yola South LGAs. An initial flood killed at least 23 people and displaced many residents, while a second, more devastating flood struck Limiwa, Rumde, Shinko, and Jambutu communities, resulting in about 232 deaths and the displacement

					of roughly 121,000 people, with extensive damage to homes, livelihoods, and critical infrastructure.
3	Flood	Kaduna	1 September 2025	Vanguard Newspaper	Torrential rainfall and the overflow of the River Kaduna caused flooding in Kaduna metropolis and Zaria LGA, particularly affecting homes in Tudun Wada ward. The floods impacted 476 individuals across 270 households (228 males and 248 females), damaged 64 shelters, and resulted in 71 casualties, all injured, with no fatalities.
4	Flood	Borno	June 29th and 13 and 14 September 2025	IOM Nigeria flash report 169	In Borno State, flash floods affected 19,290 people, damaged 4,667 shelters, and caused two casualties. In Dikwa LGA, heavy rainfall severely impacted three IDP

					camps (Alhaji Bashir, Kamcheji, and the Reception Centre), affecting 5,829 people across 1,058 households. Of 895 shelters affected, 849 were destroyed and 46 partially damaged, leaving many without adequate shelter.
5	Flood	Jigawa	21 and 26 September 2025	IOM, FEWS NET	Severe floods from heavy rainfall and river overflows affected five LGAs in Jigawa State (Guri, Kiri Kasamma, Birniwa, Jahun, and Ringim), impacting 5,878 people from 1,140 households. A total of 825 shelters were damaged, and 68 injuries were reported, with no fatalities
6	Flood	Kogi	July 8th	Vanguard Newspaper, IOM report	Flood waters submerged over 500 houses and displaced households. Another flood episode affected 960 individuals

					(160 households). Of these, 576 individuals (96 households) were displaced, while 384 individuals (64 households) remained within their communities as non-displaced persons. In addition, livelihoods were severely disrupted, with approximately 10 hectares of farmland submerged
7	Flood/windstorm	Kano	May 26th and September 7th & 14th 2025	Punch Newspaper, The Guardian Nigeria, IOM	Heavy rainfall and strong winds damaged homes, infrastructure, and power lines in Madobi LGA, leaving hundreds homeless. The 6 September collapse of the Yaryasa Bridge in Tudun-Wada LGA disrupted transportation, while floods and windstorms on 15–16 September in Bagwai, Bichi, and Rano LGAs affected 1,136 people, damaged 192

					shelters, and caused 120 casualties.
8	Flood	Katsina	31 July and 8 August 2025,	IOM	The 2025 floods affected multiple communities, including Unguwar Yamma, Sabuwar Unguwa, Tudun Baras, Agangaro, and Sabon Gari. The disasters impacted over 22,700 people, displaced nearly 2,000 individuals, and resulted in 16 reported injuries, with children, women, and men among those affected.
9	Torrential rains	Rivers	May 2025	Afrinews, Punch Newspaper	Torrential rains caused floods and landslides that buried homes and swept people away in the city of Okrika and killed at, least 25 people in Okrika, Rivers State
10	Torrential Rainfall	Ondo	July 5, 6 & & 7th	Punch	Torrential rainfall led to the submergence of houses and loss of lives in communities in Ondo State

11	Cholera	Rivers	Saturday, January 12, 2025	The Punch, ThisDay, The Nation, Sunday, Jan 12-Jan 17, 2025	Due to the outbreak, 3 persons were confirmed dead in Andoni Local Government Area, including 9 deaths and 41 cases in two Local Government Areas.
12	Lassa Fever	Across the Nation	Monday, December 23, 2024	The Punch, Sunday, January 12, 2025	1,154 cases reported in six states.
13	Cholera	Akwa-Ibom		Vanguard Monday, January 20, 2025	A few cases of cholera, diarrhoea and vomiting in the Emeroke Community of Obolo Local Government Area with a few fatalities. Number yet to be ascertained.
14	Lassa Fever	Across the country	Thursday, 6, 2025	The Punch, Friday 7, 2025	The Data from the Nigeria Centre for Disease Control (NCDC) revealed that 53 deaths were reported across 54 Local Government Areas in 10 states of the Federation within the first four weeks of 20251. 1171 suspected cases have been

					reported, with 290 cases confirmed.
15	Rainstorm	Kwara	Sunday, March 29, 2025	Daily Trust/The Nation, April 2, 2025	The Ilorin West Local Government Area Secretariat, shops, and businesses around Aleniboro Community and environs in Warah were partially destroyed following a rainstorm on Sunday.
16	Rainstorm /windstorm	Plateau	Thursday, April 3, 2025, & Sunday, August 17, 2025.	The Punch/ The Nation, Friday, April 4, 2025. &The Nation, Sunday, August 17, 2025.	Seventy houses and barns were destroyed by a windstorm that wreaked havoc in Mabudi and Sabon Gida villages, as well as other communities in Langtang South Local Government Council in the state. Also, 50 buildings were destroyed, farmland, and three classrooms in the Shimankar community in Shendam Local Government Area in another episode of flood.
17	Rainstorm	Ekiti		The Guardian,	Many people across 16 local

				Monday, April 28, 2025	councils were rendered homeless, and many lost their livelihoods due to the havoc.
18	Heatwave	Borno	Thursday, May 1	Daily Trust, May 2, 2025	Multiple explosions rocked Giwa barracks in Maiduguri due to extreme heat.
19	Windstorm	Kano	Sunday, 25th May	The Punch, May 27th, 2025	Windstorm destroyed many residential buildings and rendered people homeless.
20	Flood	Delta		The Punch, Wednesday, August 6, 2025.	The swelling River Niger washed away many roads, causing hardship to many agrarian communities in Ogbaruland.
21	Flood	Lagos	Tuesday, August 5, 2025 &	The Punch, Wednesday, August 6, 2025, & The Nation, Sunday, August 17, 2025.	Flood hits communities in Ijede Area of Ikorodu, destroying properties worth millions of naira. Affected communities are Oko Ope, Anjorin, Abule Eko, and Odetedo. Another devastating flood hit the Agboyi-Ketu community, washing away

					livestock and swallowing fences.
22	Flood	Sokoto	Sunday, August 17, 2025	Vanguard, Tuesday, August 19, 2025	Over 3000 farmlands were reportedly destroyed, 25 people were missing, and 25 properties were destroyed in Bodinga, Shagari, and Goronyo Local Government Areas.
23	Flood	Abuja/Katsina	Thursday, September 11, 2025	Daily Trust, Friday, September 12, 2025	Many roads in Abuja experienced flooding due to the heavy downpour around Guzape, Jabi, Kado, and Wuse. Over 1000 residents displaced and houses damaged following a devastating flood that swept through several communities in Kankia Local Government Area in the state.
24	Flood	Ogun		Daily Trust/ The Guardian, Monday, September 15, 2025	The State Government advised residents of coastal and riverine communities to relocate to safer areas in

					anticipation of heavy rainfall in the coming weeks.

4.5 DUST HAZE EPISODES ACROSS NIGERIA IN 2024

Monitoring dust haze events over the country helps to investigate the behavioural strength of the northern sub-tropical high pressure (Azores high pressure), which modulates the system of dust suspension in the Sahara region. The potential of the Azores high pressure usually peaks in the DJF season. At this time of the year, the Inter-Tropical Discontinuity (ITD) line is at its southernmost position over Nigeria.

However, in 2025, the dust haze events during the season were very few and one of the lowest in the last 5 years. This is connected to an unusual weakening of the Azores high and the persistent presence of the ITD in the hinterlands above its monthly average position. Below is the analysis of visibility in some aerodromes in the month of January 2025.

January (Source region**)**

When dust is raised in the source region in Chad and Niger, it is usually advected by the northeasterly winds into Nigeria. The impacts of the dust, such as low visibility, are first observed in the northern states of the country. Locations where dust impact is first felt in terms of visibility reduction are Yobe, Katsina, Jigawa, Kano, Maiduguri, Sokoto, Zamfara and Adamawa states.

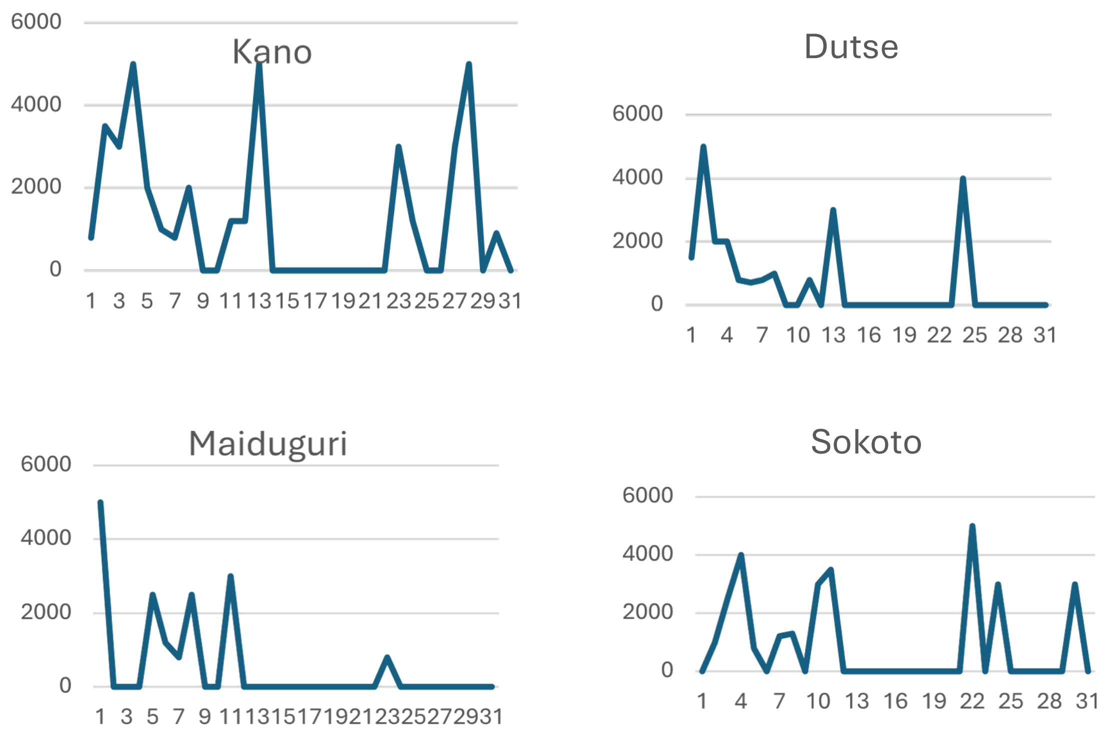


Figure 4.7: VISIBILITY REDUCTION ACROSS SOME NORTHERN STATES AS A RESULT OF DUST INFLUX IN JANUARY 2025

There were six dust spells in January 2025. The episodes of dust spells in January are 1st, 5th, 6th, 7th, 23rd and 30th. This was the most severe period of dust haze in 2025, It's however the least severe in the last 5 years. The lowest horizontal visibility of 700 m in January was reported in Dutse, Jigawa state, on the 6th.

February (Dust haze events)
There were four dust spells in February 2025. Notably on the 6th, 7th, 8th and 13th. The lowest visibility of 400 m was reported in Nguru, Yobe state and Dutse, Jigawa state on the 7th and 8th February, respectively.

March (Dust haze events)
There was no significant dust spell in March 2025. Only Kano reported visibility as low as 2000 m on the 6th and Katsina 1500 m on the 7th.

April (Dust haze events)
Two dust spells were reported in April on the 11th and 13th respectively. This occurrence was isolated. Katsina reported 800 m on the 11th while Kano reported 1000 m in visibility on the 13th.

Table 4.4: Dust Spells During 2024 Harmattan Season in Nigeria

Spell period	Number of days	Places Affected	Visibility Range (m)
1st, 5th – 8th ,11th ,23rd and 30th January	6	All over the country	700-5000
February 6th, 7th ,8th ,13th and 14th	5	All over the country	400-5000
6th -7th March	2	Northern states	2000-5000
April 11th -13th	3	Northern states	800-5000
May 3rd	1	Northern states	500-5000
Nov 14th -15th Nov 25th -26th	4	Northern states Northern and Central states	800-5000
December 1st ,9th, 10th and 15th	4	All over the country	500-5000

4.6 STATE OF AIR QUALITY OVER NIGERIA IN 2025

As observed in previous years, **$PM_{2.5}$ had the highest concentrations in the atmosphere and posed the greatest risk compared to other pollutants in 2025**. The mean monthly $PM_{2.5}$ peak concentrations of about 72 µg/m^3 were recorded in December and January during the dry dusty Harmattan season, while the least monthly mean concentration of about 18µg/m^3 was recorded in July and August over the country (Figure 4.2). The decrease un $PM_{2.5}$ concentration in the atmosphere in July and August was because of high rainfall which effectively removed most of the particulate matter mainly of dust origin, from the atmosphere during this period. The observed $PM_{2.5}$ concentration although, generally high, and above

WHO standard guideline limits of 15,0 µg/m³ in 24 hours, it was much lower compared to 2024 concentrations across most of the states particularly the northern states.

Carbon monoxide (CO) also showed pattern similar to $PM_{2.5}$ with the highest concentration of 415.7ppbv (0.48mg/m³) and 403.4ppbv (0.46mg/m³) in January and October respectively, and the lowest in July and August (See Figure 4.2). The observed daily, monthly and annual mean concentrations were lower than WHO standard limit of 4mg/ m³ in 24 hours (WHO 2021)[8]. The observed NO_2 annual mean concentration of 5.5 µg/m³ was also below WHO standard Air Quality guideline limits of 10 µg/m³/year

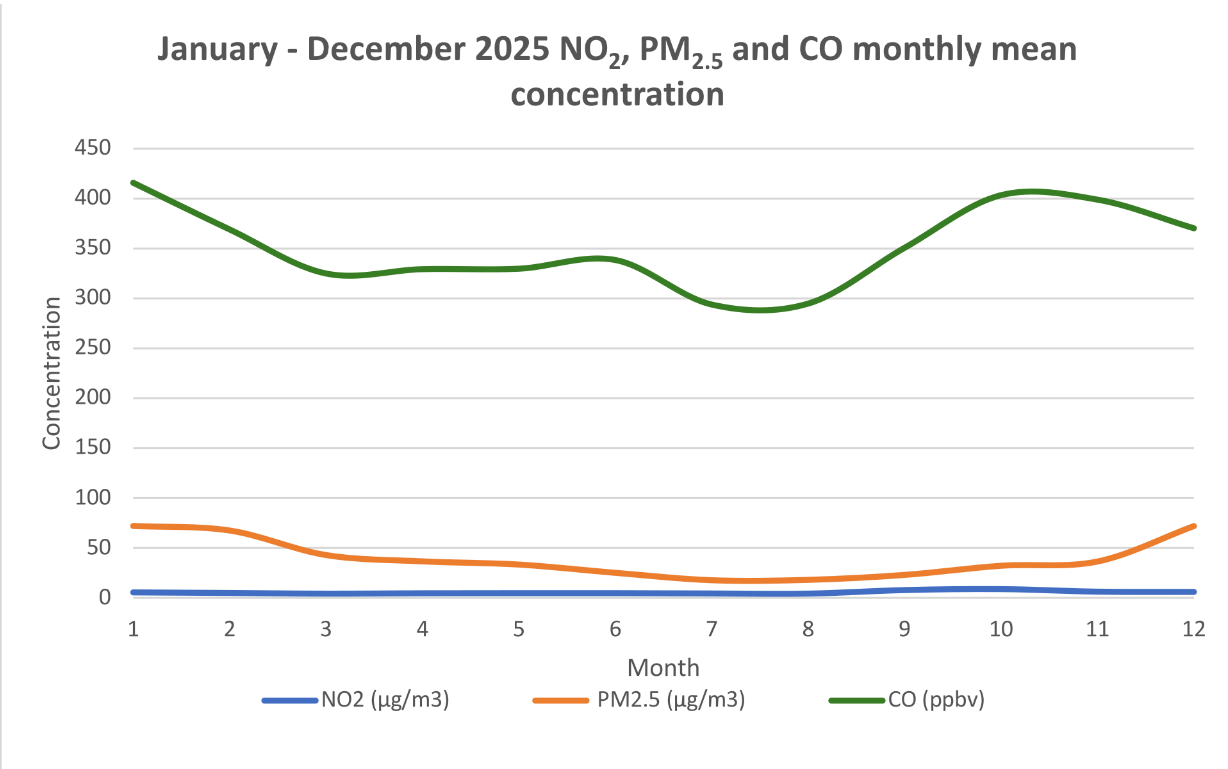


Figure 4.2: January to December 2025 Mean monthly concentration of NO_2, $PM_{2.5}$ and CO Over Nigeria.

4.6.1 SPATIAL DISTRIBUTION OF $PM_{2.5}$ OVER NIGERIA

The Air Quality Index (AQI) is a standardized parameter used to determine the level of air pollution and its potential impact on human health. It translates pollutant concentrations into an index which ranges from 0 to 500. The index is categorized into six health-impact-based classes: 1-50 (Good), 51-100 (Moderate, 101-150 (Unhealthy for sensitive groups), 151-200 (Unhealthy for all), 201-250 (Very unhealthy), 251-500 (Hazardous). Each class reflects the severity of air pollution and provides guidance on exposure risks for the general population and sensitive groups. The AQI is calculated based on the concentrations of key pollutants, including Particulate Matter ($PM_{2.5}$ and PM_{10}), Ground-Level Ozone (O_3), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), and Sulphur Dioxide (SO_2).

[8] WHO 2021 WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide

In January, February and March 2025, the northern and central states of the country experienced generally poor air quality with three-month mean AQI of 101-150. The poorest air quality was observed in some parts of Zamfara, Katsina, Kano, Kaduna, Kano and Bauch states with AQI of 151-200. The observed ranges of AQI during the first quarter of 2025 suggests that the air quality was unhealthy for both sensitive and all group of persons. The high AQI is attributed to the high concentration of $PM_{2.5}$ of dust origin transported into the country from the Sahara Desert especially in January, February and December. AQI observed during the April, May, June (AMJ) and July, August September (JAS) seasons were generally good to moderate without any serious health implication on humans. JAS season had the best air quality because of the high rainfall during this period, while the northwestern states and some of the central and southern states experienced a return to poor air quality with AQI of 101-150 during the last quarter of 2025. Other states experience moderate air quality with AQI of 51-100 during the October, November and December period.

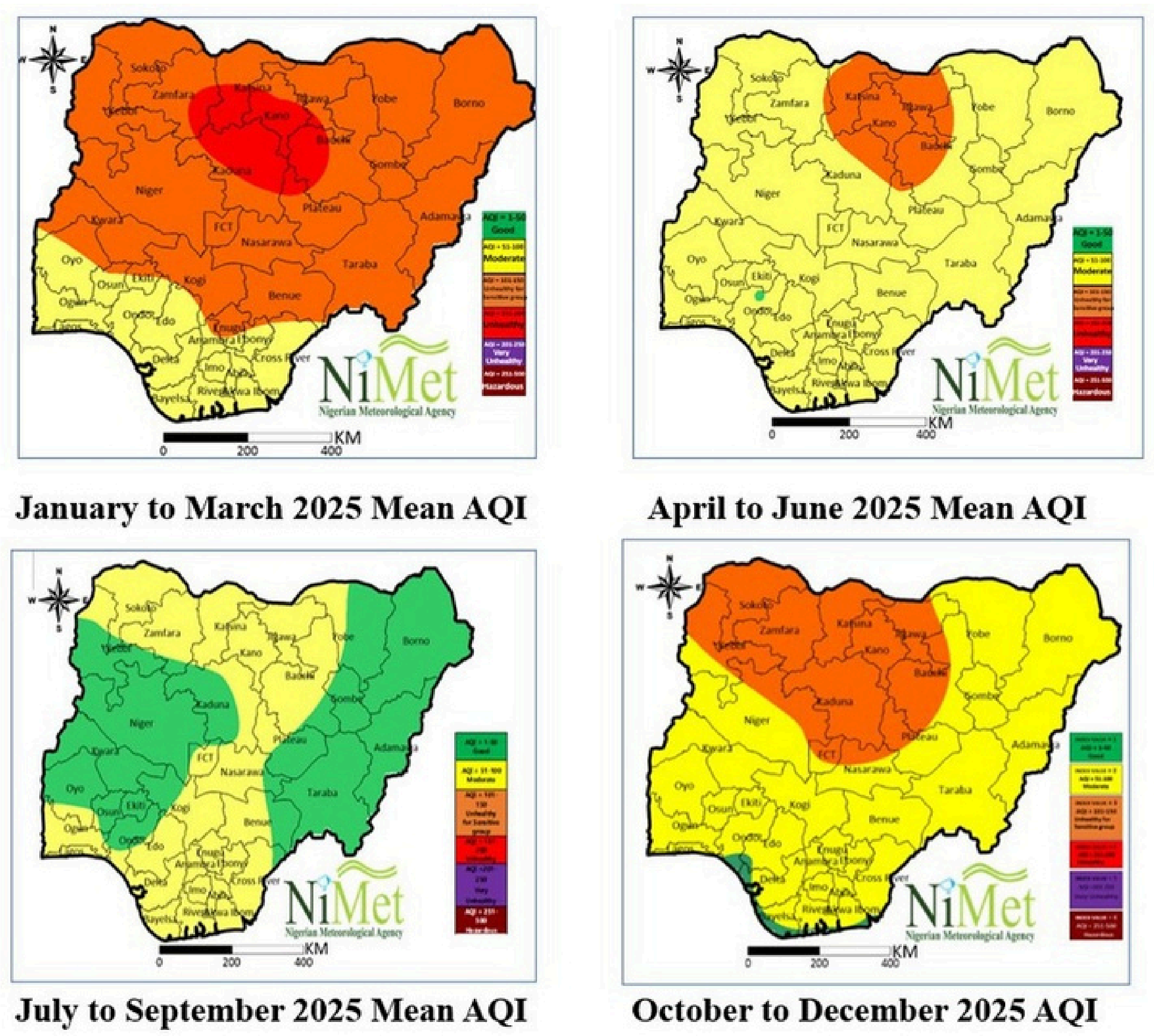


Figure 4.3: 2024 Annual Mean $PM_{2.5}$ Concentration over Nigeria

4.7 SOCIO-ECONOMIC IMPACTS OF EXTREME WEATHER EVENTS IN 2025

In 2025, extreme weather events, especially floods, caused widespread economic damage by destroying infrastructure, disrupting supply chains, and causing death and injury to people in the affected places. Practically every sector of the economy, including agriculture, energy, health, education, marine, transportation, and finance, was negatively impacted by widespread massive flooding that occurred in not less than 30 of the 36 states of the country during the rainy season of 2025.

The flood disasters resulted in reduced agricultural output, increased prices, and greater food price instability. These shocks caused direct physical losses (buildings, roads) and indirect losses (lost income, business interruption), creating cascading effects that challenged economic stability and development.

4.7.1 IMPACTS ON ROAD TRANSPORTATION

Economic impact –Flooding hit large parts of Nigeria in 2025, affecting millions, displacing communities, damaging infrastructure (homes, markets, bridges, farms) and disrupting economic activity. More than 135 000 people were displaced and about 400 000 affected across 27 states. Heavy rainfall and river overflow damaged infrastructure, including bridges and roads notably in Lagos, Adamawa, Niger, Akwa Ibom, Imo, Taraba and Rivers states which translated into economic losses and disruptions to households and businesses[9].

As a result, the 2025 weather events affected national budgets private businesses, and household livelihoods due to infrastructure damage, disruption of movement, and rising maintenance costs. Flooding and storms in 2025 led to the destruction of roads and bridges, plane skidding off the runway, airport shutdowns due to submerged runways[10], and collapse of drainage systems and culverts. These led to disrupted trade routes, delayed emergency response services, and increased transport costs.

Increased Maintenance and Repair Costs – Transport infrastructure required extensive rehabilitation following flood damage. Governments incurred high expenditures on reconstruction, while transport operators faced additional costs repairing vehicles damaged by water-logged and deteriorated roads. Delays in goods and services negatively impacted trade and productivity.

Increased Fuel and Operating Costs - Vehicles travelling on damaged roads experienced higher fuel consumption, frequent breakdowns and increased spare parts replacement. Transport operators passed these costs to consumers through higher fares and freight charges.

Social Impacts - Transport disruptions because of flood in 2025 caused restricted access to schools and hospitals, increased traffic accidents, displacement of communities due to infrastructure collapse, delays in food distribution networks. Rural communities were mostly affected due to limited transport alternatives. Some of the major highlights were:

- The May 2025 flood in Mokwa, Niger State, resulted in the collapse of bridges and roads which not only disrupted economic activity but also transportation. Mokwa is a transit hub, linking

[9] https://watchers.news/2025/10/17/widespread-flooding-damage-nigeria-2025-death-toll-rises-238/

[10] https://dailytrust.com/akure-airport-shut-as-rainstorm-wrecks-control-tower/#google_vignette

traders from southern Nigeria with food producers in the north. The town plays a strategic role in regional commerce and contributing to delays and safety risks[11]. **Nigerian Red Cross** confirmed that hundreds of houses were submerged, bridges collapsed, thousands of residents were displaced, and over 100 persons lost their lives[12].

- Also, in Yola, Adamawa State, heavy rainfall in late July 2025 triggered significant flooding in communities such as Shagari Low-Cost, Sabon Pegi, and Modire Yolde Pate. Roads and buildings were submerged, movement was restricted, and many residents were unable to travel without boats or improvised crossings[13].
- The Federal Road Safety Corps (FRSC), on their website alerted the motoring public of the collapse of a bridge along the Katsina–Batsari route, a few meters after Salbak Filling Station, near Shagari Low-cost, following a heavy downpour on the night of Saturday, 9th August 2025[14].
- According to *Channels Television* reports on the 7th September, 2025, a bridge in Kano State the Yaryasa Bridge in Tudun Wada Local Government Area collapsed after days of torrential rainfall, cutting off a major transport link that serves as a gateway to Kaduna, Plateau, Benue, and Nigeria's southeastern states. The structural failure brought traffic to a standstill and forced authorities to close the area as traffic was diverted, with motorists recounting the delays, losses, and safety risks posed by the incident[15].

Figure 5.1: *Pictures of Mokwa Flood in May 2025*[16]

[11] https://www.unocha.org/publications/report/nigeria/nigeria-floods-mokwa-niger-state-flash-update-1-june-2025
[12] https://www.redcrossnigeria.org/flood-response-mokwa-niger-state
[13] https://www.un-spider.org/news-and-events/news/un-spiders-disaster-response-nigeria-flooding-july-28-2025.
[14] https://pmnewsnigeria.com/2025/08/11/frsc-alerts-motorists-on-collapse-of-katsina-batsari-bridge/
[15] https://www.channelstv.com/2025/09/07/police-alert-commuters-as-kano-bridge-collapses-after-heavy-rain/
[16] https://www.aljazeera.com/news/2025/6/1/nigeria-flash-floods-which-is-most-affected-area-what-caused-the-deluge

4.7.2 WATER TRANSPORTATION

An analysis by the PUNCH[17] from various media reports and statements from government agencies, indicated several of the boat mishaps, but some of the accidents that were weather related, are as extracted:

- In January 2025, while there were 19 survivors, 3 people including a toddler have been confirmed dead when a passenger boat travelling from Port Harcourt to Bonny in Bonny Local Government Area of Rivers State capsized because of a storm at an area called 'Yellow Platform' near Bonny Island.
- Similarly, on April 9, 2025, another tragedy struck Sokun Village in Lapai LGA, when a passenger boat capsized on the river Niger. Daily Trust learnt that several passengers, mostly traders, died in the accident. The victims were said to had departed Bugge Village in Kogi State, heading to Sokun in Niger with over 200 bags of paddy rice, when the boat capsized due to cloudy weather and a strong windstorm.
- Also, on May 15, on the Niger River border, Gbajibo-Mudi Area of Kwara State, a boat carrying passengers returning from the market capsized during a storm, and 27 passengers were confirmed dead.
- Likewise, on August 17, 2025, in Goronyo market in Sokoto state, a boat carrying over 50 passengers capsized because of heavy windstorm. Two days later, it was reported that while 25 passengers were still missing the other 25 were rescued.

Figure 5.2: Boat Mishap on River Niger [18]

[17] https://punchng.com/oyetola-blames-wooden-boats-as-accidents-claim-92-lives/

4.7.3 WATER RESOURCES

In 2025, flood and drought highlighted the vulnerability of the water resources sector to climate hazards. Without urgent investment in infrastructure resilience, disaster preparedness, and climate adaptation strategies, future development goals remain at risk.

Economic Impact - Floods and droughts in 2025 had serious economic consequences for the water sector, especially in northern Nigeria where infrastructure vulnerability is high. The impacts were felt across domestic water supply, hydropower generation, sanitation, and public finances.

- **Water Scarcity and Drought -** In 2025, due to the extended dry spell experienced over most parts of the country, which resulted in drought posing severe threats to food production and domestic water supply, decline in surface and groundwater levels, water rationing, drying of reservoirs, reduced irrigation water supply and conflict between water users.
- **Water Infrastructure Damage -** Floodwaters destroyed water pipelines, boreholes and pumping stations, treatment plants and storage tanks there by polluted drinking water systems increased outbreaks of waterborne diseases.
- **Reduction in Hydropower Generation** -Erratic rainfall patterns and severe dry spell in 2025 reduced water levels in major reservoirs, resulting in reduced electricity generation from hydropower plants, increased reliance on costly fossil-fuel alternative power sources and higher energy tariffs and production costs for industries. Power shortages affected manufacturing, businesses, and household activities.
- **Reduced Access to Safe Drinking Water -** Flooding contaminates rivers, wells, and boreholes, while drought dries up surface and groundwater sources. As a result, communities are forced to rely on unsafe water sources, queues and conflicts occur due to limited water supply. This increases stress and reduces quality of life, especially for vulnerable populations.
- **Public Health Challenges -** Inadequate water supply and polluted water sources led to outbreaks of waterborne diseases (cholera, typhoid, dysentery) and poor hygiene practices resulting from limited water for sanitation.
- **Increased Burden on Women and Children -** Women and children are the primary water collectors in many communities. During dry spell or little dry season, children miss school while searching for water. Women spend several hours daily fetching water.
  It may be recalled that in 2025, Kwara state was one of the worst hit states that suffered the impacts of prolonged dry spells, as a result, Sobi 101.9 FM's post[19], reported that the Ilorin Residents grapple with water scarcity in addition to the farmers' losses, significantly impacting on both the public health and economic activities. All the states that were affected by flood in 2025 also experienced quality water shortages, as one of the resultant effects of flooding is the contamination of water sources with sewages.

[18] https://i.ytimg.com/vi/fxn5b9hs5PQ/sddefault.jpg

[19] https://dareakogun.com/world-water-day-2025-ilorin-residents-graple-with-water-scarcity-amid-infrastructural-decay/

[20] https://rowlandadewumi.com/2021/06/water-supply-system-abuja/

Figure *5.3: Poor Water Supply Source in Abuja*[20]

4.8 MARINE

4.8.1 STATE OF SEA SURFACE TEMPERATURE (SST) OVER THE NIGERIAN COAST IN 2025

Annual Mean SST observed in 2025 across the Nigerian Coast (Figure 5.4) shows that the highest sea surface temperature of 28.8℃ occurred in the western area of Aiyetoro, while the central area of Yenagoa recorded the lowest (28.1℃). The warmest monthly SST of 29.8℃ was recorded in April over Aiyetoro while the lowest 25.3℃ occurred in August over Badagry (Figure 5.5). As the warming ocean expanded, it became a primary driver of the ocean surge responsible for washing away livelihoods and destroying ancestral homes along the Nigerian coastlines.

Apakin, a coastal indigenous town in Lagos state, was devastated by a strong ocean surge in June 2025. Over 3,000 people who have been gradually losing their land and culture to the advancing sea suffered yet another setback when the water destroyed vital fishing equipment and houses (See Figures 5.6 and 5.7).[21]

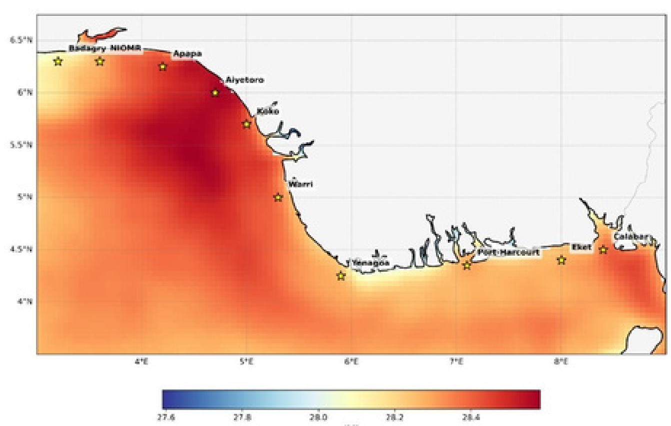


Figure 5.4: 2025 annual mean SST over coastal locations in Nigeria

[21] https://www.reuters.com/sustainability/climate-energy/coastal-surges-sweep-away-nigeria-coastal-community-commonwealth-promise-stalls-2025-08-27/

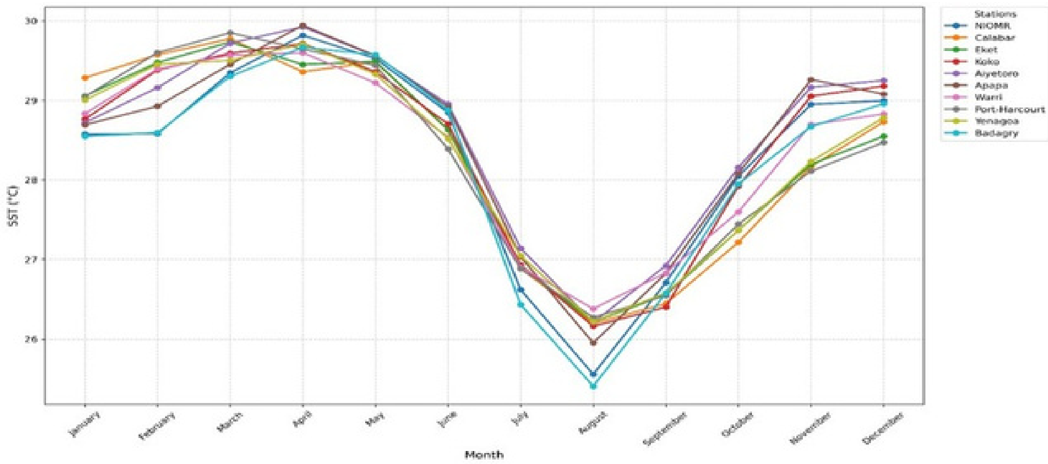


Figure 5.5: January to December 2025 mean monthly SST over the Nigerian Coast.

Figure 5.6: Residential building destroyed in Apakin Community Lagos state by Ocean surge in 2025.

Figure 5.7: Apakin community and neighbouring villages affected by June 2025 Ocean surge on the coastline.

4.9 EDUCATION

Figure 5.8 A school submerged in water due to flood

Extreme weather events such as floods and storms often cause extensive damage to school buildings and essential infrastructure, making it difficult and sometimes impossible for students to access or attend school.

In late May 2025, Mokwa and surrounding communities were hit by a catastrophic flood that destroyed hundreds of homes and critical infrastructure. Entire neighbourhoods, including informal Islamic schools (madrasa), were wiped out. Many students, including young children, were among the victims. Survivors lost homes, school buildings were destroyed, and entire families perished[22]. Also, in the nearby community of Rabba (near Mokwa), the flood destroyed a key bridge that served as access to two schools. As a result, students of Rabba Nursery and Primary School had to wait for canoes to ferry them across a swollen river. When canoes came, those who made it to school often arrived soaked, frightened, and late; many ended up missing school entirely[23].

4.10 ENERGY

Heatwaves and floods are examples of extreme weather phenomena that caused extensive damage in 2025. Nigeria's energy industry was among those affected resulting in power disruptions, decreased economic production, and decreased efficiency.

On the 26th June, 2025 the PUNCHNG reported that Ibadan Electricity Distribution Company informed the public of a power outage caused by a windstorm that damaged several high-tension poles along the Gbagi-Olubadan Estate axis on New Ife Express Road, Ibadan. This affected the Alakia 33 kV, Adogba 33 kV, and New Ife Road 11 kV feeders. Several distribution transformers and the Alakia 7.5 MVA Injection Substation were impacted, disrupting supply to areas including Olubadan Industrial Estate, Biosis, Westlink, Nigerian Brewery Area, Sword Sweet, Dana Pharmacy, and several residential and commercial zones such as Opeyemi,

[22] https://apnews.com/article/nigeria-mokwa-floods-children-killed-beafb74e31f50643e5b10faba2478a7a?utm_source=chatgpt.com

[23] https://www.ap.org/news-highlights/spotlights/2025/teacher-in-nigeria-loses-dozens-of-relatives-and-pupils-in-devastating-floods/?utm_source=chatgpt.com

Alalubosa, Majawe, Airport, Idi Obi, Ogo Oluwa, IGEM, Gbaremu, Isebo Olosan, Ogungbade, Oluwo, Egbeda, Akiti Awaye, Badeku, Jago, Bethel Phase 2, National Kulodi, and Alakia New Ife Road. Source:[24]

Similarly, in Mokwa, Niger State, severe flooding occurred following torrential rainfall between the 28th and 29th of May, 2025. Reports from national and local media confirmed that hundreds of infrastructures were destroyed that left the community in darkness for few weeks[25].

Sahara Reporters on the Thursday 18th September reported that the Transmission Company of Nigeria (TCN) informed the residents of Kaduna State that tower No. 7 along the Kaduna Town Line I and II in Rigasa Community collapsed due to severe downpour and windstorm which left the community in darkness for weeks.[26]

The Transmission Company of Nigeria confirmed that a thunderstorm disrupted the 132 kV Otukpo–Nsukka, New Haven transmission line on September 3, 2025, that caused damage to properties[27].

The guardian newspaper reported that on the 8th of May, 2025 after two hours of intensive rains several electricity poles collapsed in different parts of the city, forcing the Port Harcourt Electricity Distribution (PHED) to cut off power supply from the affected areas. Major streets affected include Murtala Mohammed Highway, Calabar Road, Mary Slessor Avenue, Effio-Ette Junction, Target -Goldie Street axis, UNICAL community, Atimbo Road, and 8-Miles,[28].

[24] https://punchng.com/windstorm-plunges-20-oyo-communities-into-darkness/
[25] https://punchng.com/mokwa-floods-a-predictable-tragedy-unfolds/
[26] https://saharareporters.com/2025/09/20/tower-collapse-disrupts-power-supply-kaduna-tcn-blames-vandals-severe-weather
[27] . https://punchng.com/thunderstorm-destroys-property-kills-livestock-on-tcn-transmission-line/
[28] https://guardian.ng/news/nigeria/metro/children-others-injured-as-heavy-rainfall-windstorm-wreak-havoc-in-calabar/

4.11 Health

In 2025, Nigeria experienced intensified extreme events: heatwaves, floods, droughts/dry spells, and storms that significantly affected public health and socio-economic stability because of the changing climate. This intensified pressures on health systems, with increasing disease outbreaks (waterborne and vector-borne diseases), malnutrition, heat-related illnesses, and displacement. These impacts disrupted livelihoods, strained healthcare resources, and deepened socio-economic vulnerabilities across communities.

Warmer-than-normal day and nighttime temperatures were observed over most parts of the country during the year. Daily records of maximum temperatures over Nigeria in March, April and May (hot season) showed that both Sokoto and Yobe state recorded 40℃ and above for 76 days each, followed by Borno state with same record for 70 days, Zamfara 62 days, Adamawa 58 days, Jigawa 55 days, Kano 47 days, Katsina and Taraba 36 days each, Gombe 33 days, Kebbi, 31 days, Niger 28 days, Bauchi, 23 days, Nasarawa and Benue 20 days each, Kaduna 13 days, Kogi 10 days and finally Cross Rivers 9 days.

In the first and second quarters of 2025, temperatures over the entire country were above normal. These high temperatures resulted in a prolonged heatwave in March, April and May across Nigeria. Records from the Nigeria Centre for Disease Control (NCDC) during this period indicate Cerebrospinal Meningitis cases as follows:

- Suspected cases 3,809 persons,
- Confirmed cases were 262,
- Number of Deaths because of Cerebrospinal Meningitis were 238.

In the same vein, the recoded Measles cases by NCDC were as follows:

- Suspected cases were 16,525,
- Confirmed cases were 11,378, and
- Number of deaths is 0

Heavy rainfall events and the resultant flash floods affected many states in Nigeria in 2025. Significant rainfall events of 30 to 50 millimetres were mainly recorded in July, August, and September across Nigeria. These rainfall events, in many cases, resulted in flash floods and water-borne disease outbreaks. In 2025, series of severe floods in Nigeria, starting in April, affected communities across at least 30 of the country's 36 states. The most devastating single event occurred in Mokwa in Niger state. According to a report by the National Emergency Management Authority (NEMA) as of 8 June 2025, at least 161 people reportedly died following flooding on 29th May in Mokwa, Niger State. Also 3,000 people were displaced, with about 100 missing as of 2nd June 2025,[29]. According to the World Food Programme report as of 9th October 2025, flooding had affected over 315,700 people across 25 states, displacing more than 113,000 individuals, and washing away more than 46,000 hectares of farmland, posing a serious threat to food security and livelihoods [30].

[29] https://reliefweb.int/report/nigeria/nigeria-floods-mokwa-niger-state-flash-update-2-11-june-2025
[30] https://www.wfp.org/news/wfp-scales-anticipatory-action-northeast-nigeria-flood-threat-looms

4.12 AVIATION.

Figure 5.10: Waiting passengers at an airport in Nigeria

Extreme weather events have increasingly become a major challenge to aviation safety, operational efficiency, and economic stability worldwide. Nigeria, situated in the tropics and influenced by multiple atmospheric systems ranging from Saharan dust intrusions to deep convective activities associated with the West African Monsoon, is particularly vulnerable to these disruptions.

In 2025, frequent adverse weather conditions, including dust haze, severe thunderstorms, and episodes of intense rainfall, significantly disrupted flight operations across several major airports. Episodes of dust events were particularly significant in January across parts of the Northern Nigeria. In some locations, visibility dropped to between 500 and 1000 meters, posing significant hazard to aviation operations and leading to flight delays and cancellations. Airlines also reported multiple instances of flight delays and diversions, especially in Lagos, Port Harcourt, and Asaba airports due to persistent rainfall and thunderstorm activities in compliance with established aviation safety protocols. Further examination of the meteorological conditions revealed high rainfall amounts in some of these locations during the affected periods. Asaba recorded rainfall amount of above 100 mm during one of the days of the affected period.

These weather-related disruptions had substantial socioeconomic implications not only for airlines and passengers but also for airport authorities and the broader Nigerian economy. Some incidents of flight disruptions that were reported in 2025 are summarized in Table 4.6

Date	Incident Description	Publication
26th April 2025	Air Peace flight: Benin to Abuja was delayed in the air due to turbulence	https://www.vanguardngr.com/2025/04/why-benin-abuja-flight-was-delayed-mid-air-air-peace/#google_vignette
8th May 2025	Scheduled Air peace flight from Abuja to Asaba diverted to Lagos due to persistent rainfall. NiMet recorded 66.7 mm rainfall amount in Asaba for that day.	https://web.facebook.com/photo?fbid=1094025722768267&set=pcb.1094025732768266
24th June 2025	Scheduled Air peace flight from Abuja to Benin was diverted to Abuja due to persistence rainfall in Benin. NiMet records showed three days persistent rainfall from 23rd to 25th with 70.0 mm, 20.3 mm and 96.2 mm amount of rainfall respectively.	https://www.facebook.com/share/p/1HbKk54UMw/
13th July 2025	Air peace flight (Boeing 373) overshot the runway during landing under heavy rainfall with poor visibility condition at the Port Harcourt International Airport. NiMet had recorded rainfall in most parts of the country with 40.3 mm rainfall amount in Port Harcourt station.	https://freshfactmagazine.ng/panic-in-port-harcourt-air-peace-flight-overruns-runway-passengers-escape-unhurt/
9th September 2025	Air Peace Limited reported significant flight delays across its operating networks due to heavy downpour in Lagos. NiMet record showed rainfall amount of 36.2 mm for Ikeja Met station on that day.	https://www.nigerianeye.com/2025/09/air-peace-reports-lagos-flight-delays.html
15th September 2025	Air peace announced some flight delays due to heavy rain in Port Harcourt and Lagos. NiMet records showed 72.4 mm in Port Harcourt and 44 mm in Ikeja stations.	https://punchng.com/heavy-rain-causes-air-peace-flight-delays-in-lagos/
7th October 2025	Flights scheduled to operate to Asaba was diverted to Murtala Muhammed International Airport due to heavy rain. NiMet recorded 102.5 mm amount of rainfall at Asaba station.	https://www.facebook.com/share/p/17oUDMqJRc/
11th December 2025	Ibom Air flight enroute from Nnamdi Azikiwe International Airport to Murtala Muhammed International Airport made a return to the nation's capital due to poor weather conditions. NiMet reported a squally wind of 22 to 35 kt with rainfall amount of 25.3 mm at Ikeja station.	https://saharareporters.com/2025/12/11/bad-weather-forces-ibom-air-abort-lagos-landing-returns-passengers-abuja#google_vignette

4.13 Role of NiMet in Early Warning and Disaster Risk Reduction in Nigeria

The Nigerian Meteorological Agency (NiMet) provides critical weather, climate, and hydrometeorological information to protect lives, livelihoods, and national infrastructure.
In 2025, NiMet issued warnings and weather alerts for precautionary and mitigation measures, and for early preparedness, through the Seasonal Climate Prediction (SCP), Agro-Meteorological Bulletin, Hydro-Meteorological Bulletin, Marine Weather Bulletin, High Impact Forecast, Daily Weather Forecast, and periodic updates. These products and services were disseminated to the Federal and State Government Agencies, such as the Federal Ministry of Agriculture and Food Security (FMAFS), National Emergency Management Authority (NEMA), Nigeria Hydrological Services Agency (NIHSA), and State Emergency Management Agencies (SEMAs), among others.

As part of its mandate, the Agency conducted sensitization workshops and trainings in Borno, Yobe, Adamawa, Katsina, Sokoto, Bauchi, Kogi, Taraba, Kebbi, Gombe, Kaduna, Jigawa, Niger, Plateau, Benue, Ekiti, Kwara, Osun, Lagos, Ogun, Enugu, Cross River, Anambra, Bayelsa, Delta, Abia states and the FCT. Some of these sensitizations, as shown in the following figures, were done in partnership with FMAFS, NEMA, Sahel Consulting, the United Nations Development Program (UNDP), Save the Children, Nigerian Red Cross Society, and State governments and non-governmental organisations, International Fund for Agricultural Development (IFAD), Harvest Plus, Human and Environmental Development Agenda (HEDA), Global Alliance for Improved Nutrition, among others

Figure 5.11: Sensitization of 2025 SCP, weather and climate information to the stakeholders in Sokoto State.

Figure 5.12: Sensitization of 2025 SCP, weather and climate information to the stakeholders in Sokoto State in collaboration with UNDP.

Figure 5.13: Training of Lead Farmers, Enumerators and Extension Workers on the importance of Downscaling of the 2025 Seasonal Climate Prediction and Crop Calendar in Sokoto State.

Figure 5.14: Downscaling the 2025 SCP to farmers of Jibia Local Government, Katsina State

Figure 5.15: Downscaling the 2025 SCP to farmers of Matazu Local Government, Katsina State

4.14 FOOD SECURITY

The Cadre Harmonise was one of the most trusted early warning tools for food and nutrition insecurity analysis in West Africa. It was based on a consensual food and nutrition security analysis conducted biannually (in March and October) and covered 27 states of Nigeria and the Federal Capital Territory (FCT). It represented a collaborative effort led by the Nigerian Government in association with regional technical agencies, United Nations bodies, and non-governmental organizations (NGOs). The Cadre Harmonise served as a comprehensive tool to evaluate present and future food and nutrition security scenarios and proffered appropriate response interventions to avert food crises.

The October 2025 Cadre Harmonise analysis adopted Version 3.0 protocols to analyse overall populations and areas in the twenty-seven (27) implementing states and the Federal Capital Territory (FCT).

4.14.1 Result

The analysis indicated that despite efforts put in place by the government and partners, critical data gaps remained, especially in areas with high concentrations of internally displaced persons (IDPs) and regions affected by insecurity.

The analysis covered a total of 217,933,704 people, including 1,421,172 internally displaced persons (IDPs) in Borno, Sokoto, and Zamfara States, across 564 Zones/Local Government Areas (LGAs). The findings revealed that 482 areas (85%) were classified as Stressed (Phase 2), 81 areas (14%) were under Crisis (Phase 3), and one area Kala-Balge LGA in Borno State was under Emergency (Phase 4) during the current period.

For the projected period, the situation was expected to deteriorate, with more areas likely to face severe conditions. This was projected to result in Crisis (Phase 3) conditions in 171 LGAs/Zones (30%), while 387 LGAs/Zones (69%) were expected to remain Stressed (Phase 2). Additionally, six areas, all located in Borno State, were projected to be under Emergency (Phase 4). No area was classified under Minimal (Phase 1) or Famine (Phase 5) during either the current or projected periods.

At the time of the analysis, 27,212,933 people (12.5%) were in the Critical Phases (Phases 3 to 5). This included 857,567 people (0.4%) in Phase 4 across Borno (452,448), Sokoto (163,654), Yobe (152,814), Katsina (73,542), and Zamfara (15,108) States. During the lean season, the number of people projected to experience Critical food and nutrition security conditions (Phases 3 to 5) was expected to reach 34,755,459 people, representing 15.9% of the total analysed population.

These outcomes underscored a worsening food and nutrition security situation in the country and highlighted the urgent need for action. Recommended actions focused on rebuilding livelihoods, strengthening resilience, providing food assistance and social safety nets, ensuring adequate healthcare delivery services for malnourished children (0–59 months), and providing adequate care for pregnant and lactating women as well as women of childbearing age. Additionally, the analysis emphasized the need to address the root causes of food and nutrition insecurity to prevent a deepening food crisis and safeguard the well-being of vulnerable communities and populations across the country.

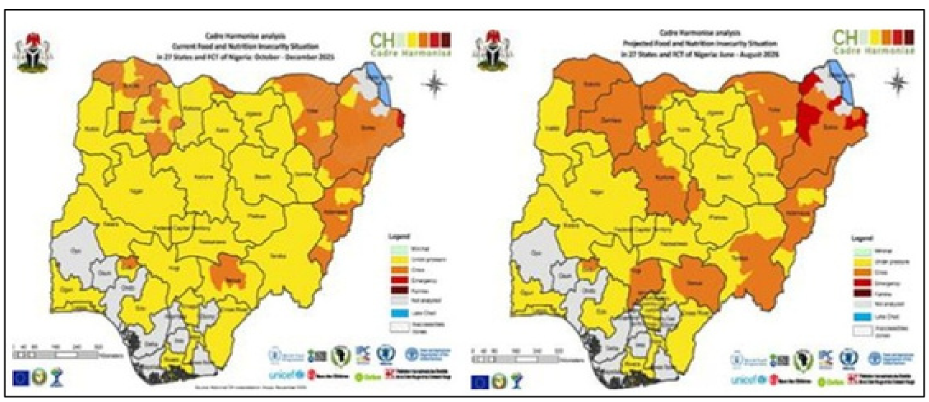


Figure 5.16 Current and projected food security situation in Nigeria

4.14.2 Drivers of the Crisis

According to the analysis, the worsening situation was driven by a combination of factors. Persistent conflicts and violence in some of the major food production belts of the country, alongside economic shocks, armed violence, and organized crime, continued to erode resilience and deepen vulnerabilities in the north-central states of Benue, Nasarawa, Niger, and Plateau. The northwestern states of Zamfara, Katsina, Sokoto, Kebbi, and Kaduna were also affected, as well as the northeastern states of Borno, Adamawa, Yobe, and Taraba.

Other drivers included climate-related stocks such as prolonged dry spells and flooding in some communities, declining purchasing power, high food inflation, and seasonal depletion of household food stocks, among others.

The observed 2025 climatic patterns in Nigeria, particularly prolonged dry spells, erratic rainfall, and severe flooding, had weakened agricultural production and disrupted food availability. These climate shocks, combined with conflict, economic shocks, and high inflation, led to reduced crop yields, early depletion of food stocks, rising food prices, and declining purchasing power. Collectively, these factors deepened the food security crisis, particularly in the north-central, northwestern, and northeastern regions of the country.

4.14.3 Recommendations

✓ Governments at all levels should support food and nutrition security data collection assessments to complement the efforts of partners for a more robust CH outcome.

✓ Government should continue to adopt the CH analysis results as a tool for response planning, policy formulation and resource allocation.

✓ Government should invest in the technical capacity strengthening of the CH analyst, both at the state and national levels

✓ The government needs to prioritize and sustain humanitarian food aid and livelihood-building interventions for IDP households affected by shocks and insecurity to help them get a fresh start-up and rebuild their resilience.

✓ The government needs to continue to deploy technology-driven approaches in communicating and disseminating the CH analysis outcomes among partner MDAs to promote inclusiveness in the annual national planning and development agenda.

✓ Build synergy with the government to sustain the generation of relevant data needed for the conduct of CH analysis on a timely basis, with generated information obtained at the LGA level for all the states.

4.14.4 Conclusion

The analysis concluded that despite efforts put in place by the government and partners, critical data gaps remained, especially in areas with high concentrations of internally displaced persons (IDPs) and regions affected by insecurity.

The Federal Government, in collaboration with international partners, was urged to scale up coordinated interventions to prevent the escalation of the food insecurity situation. Without immediate and sustained action, it was projected that millions more Nigerians could fall into acute food and nutrition insecurity, thereby exacerbating an already dire humanitarian situation.

4.15 Summary of Climate and health Advisories

Climate and Health Advisories provide early guidance on how expected weather and climate conditions may influence public health risks. The Climate and Health Bulletin (CHB) translate predicted climate outlook into actionable information on heat-related diseases, flooding, air quality, and vector-borne outbreaks. By highlighting vulnerable populations and recommending preparedness measures, these advisories supported timely decision-making, strengthen community resilience, and help health agencies, policymakers, and the public reduce climate-related health impacts.

Climate and Health Bulletin (CHB) is a monthly bulletin issued by Climate Division of Applied Meteorological Directorate of NiMet. This bulletin uses monthly climate forecast of Maximum, Minimum, Mean Temperatures, Rainfall, Relative Humidity, Atmospheric dust and in some cases vegetative index to plot the climate disease Vigilance map. Established and verified scientific thresholds that are widely accepted within the tropics are combined in mapping out the disease vigilance areas. The climate-sensitive diseases that are currently covered are as follows: Malaria, Cerebrospinal Meningitis (CSM), Measles, and Cholera. The disease Vigilance maps contain locations in Nigeria where the vigilance of Malaria. Measles, Cerebrospinal Meningitis (CSM), and Cholera will likely be felt most (severe vigilance), moderately, mild, and no case. The bulletin contains drug surveillance map that offers advice on the locations where the potency of drugs will be adversely affected due to some climate indicators if proper care is not taken in handling and transporting these drugs across the country. Heat index is one component of the CHB. Heat Index (HI) is a parameter used in expressing the temperature felt by the human body. It is calculated by combining air temperature and relative humidity. This Bulletin has efficiently served the Nigeria Centre for Disease Control (NCDC) in their disease surveillance across the country. The Ministry of Health and other health sectors have found CHB as an advisory tool.

CHAPTER FIVE
Evaluation of 2025 Seasonal Climate Prediction

Evaluation of the SCP for the previous year (2025) is the process of comparing the forecasts issued at the beginning of the year with the observed data from the Agency's weather observatories across Nigeria. It is an assessment of the level of accuracy of the predictions. NiMet uses the result of the evaluation as a guide towards improving the accuracy of prediction for the subsequent year.

Evaluation of Predicted Onset, Cessation of Growing Season, Length of the season, and Annual Rainfall Amount for 2025.

The performance of the 2025 Seasonal Climate Predictions for the onset of the rainy season, the end of the growing season, the length of the season, and annual rainfall amounts have been assessed. The evaluation results of the rainfall forecasts are presented in Figure 51

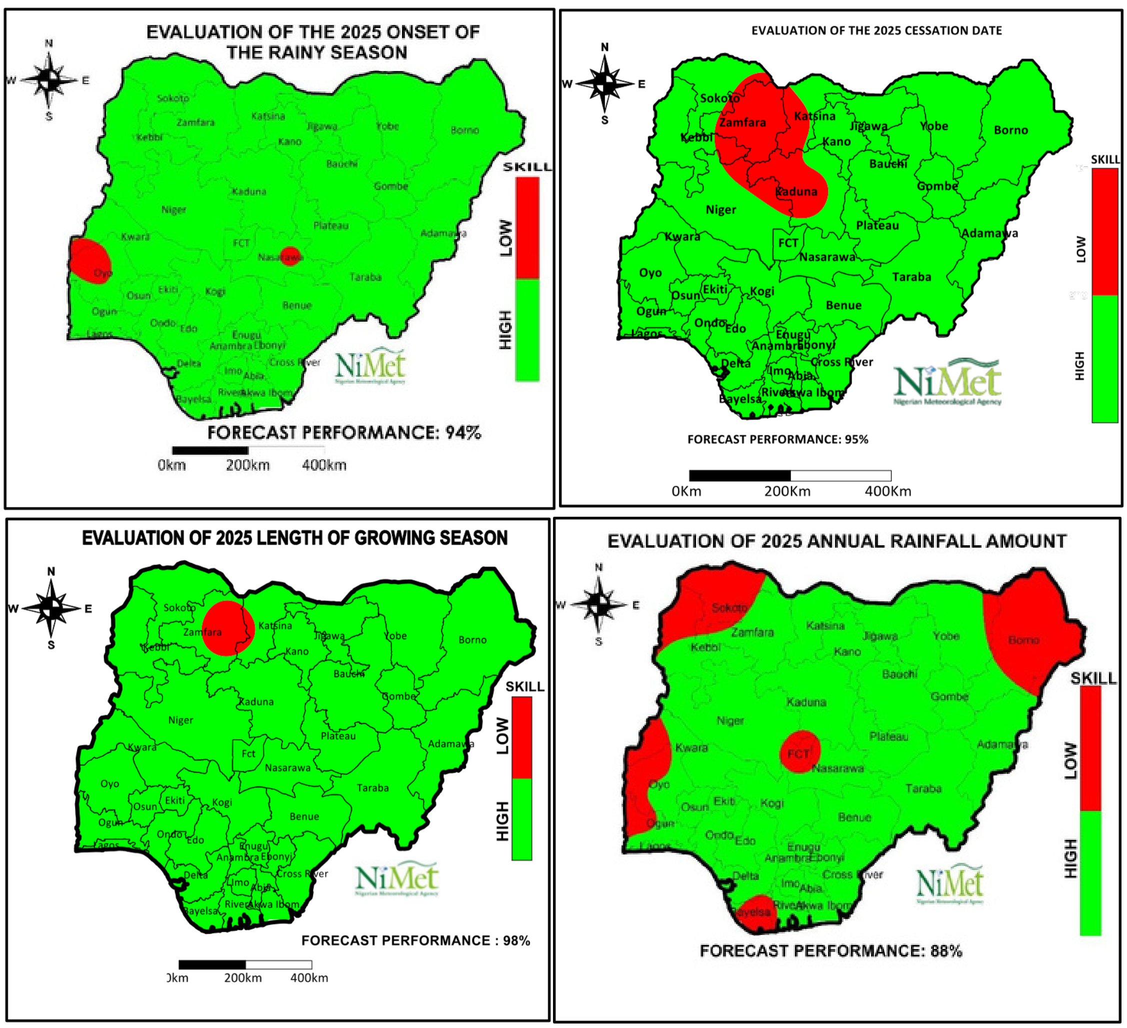


Figure 5.1: Performance Skill for Onset, Cessation, Length of Season and Rainfall amount across Nigeria

The forecast for the onset of 2025 rainy season over the country recorded a high-performance accuracy of 94%. However, level of accuracy was low in parts of Oyo and Nasarawa states. The cessation forecast also achieved a high accuracy skill of 95% but parts of Kaduna, Katsina, Zamfara, and Kebbi states had a low performance skill.

The forecast for the length of the growing season showed high accuracy, with a skill level of 98% in most regions of the country. However, the forecast accuracy was lower in Zamfara state. Amongst the four forecast rainfall amounts recorded the lowest performance skill of 88%. Poor performance skill was recorded in parts of Sokoto, Kebbi, Kwara, Oyo, Ogun, Bayelsa, Yobe, Borno, and the FCT.

Overall, a high-performance skill level of approximately 94% was achieved in NiMet's 2025 for Onset, end, length of season, and annual rainfall amount.

Table 5: Performance of 2025 rainfall forecasts

PERFORMANCE FORECAST PARAMETER	PERFORMANCE (%)
Onset of rainy season	94
Length of growing season	98
Cessation date	95
Annual Rainfall Amount	88
Average Performance	94

Evaluation of Predicted January to May 2025 Temperatures

January 2025 Daytime and Nighttime Temperatures

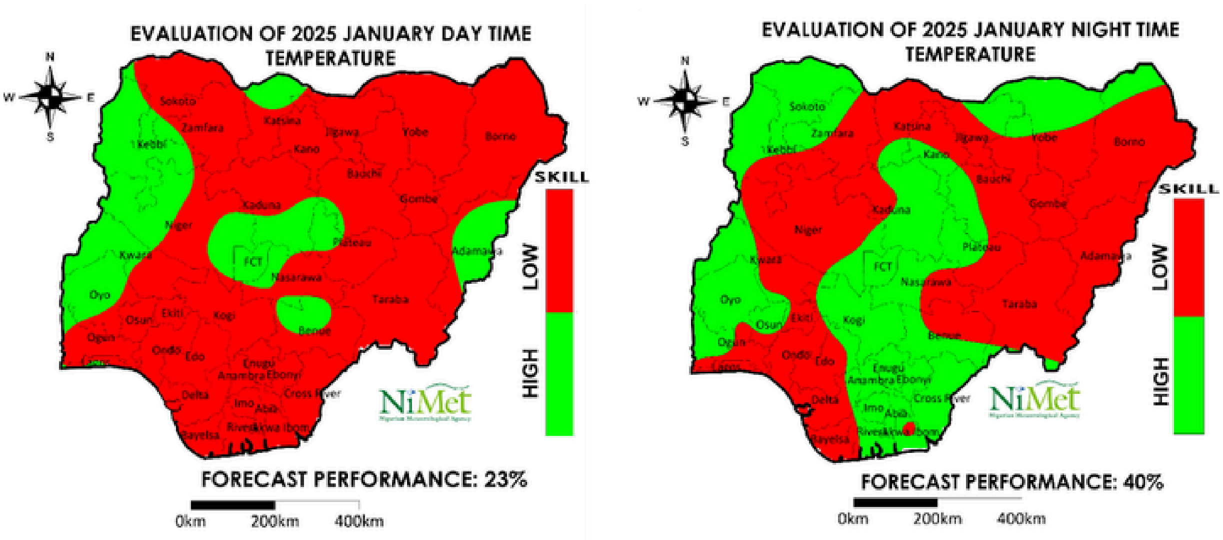


Figure 5.2 : Performance skill (Accuracy) of January Daytime and Nighttime Temperatures forecast across Nigeria

Figure 5.2 shows performance of 2025 January daytime temperature across Nigeria. The forecast performance reveals 23% accuracy skill; this indicates that the observed daytime temperatures turned out warmer than the projected temperatures by as much as 1.3°C.

The January nighttime forecast in Figure xx above indicates a performance of 40% across the country. This shows a low-skill performance over the Northern states except Sokoto, parts of Kebbi, Zamfara and fringes of Borno, Yobe and Jigawa which shows high performance in the region. Low accuracy skill was observed in the central states except for Kogi, FCT and parts of Kaduna, Plateau, Nasarawa and Benue states which shows high accuracy performance in region. In contrast, a high skill performance was observed over the Southern region except Bayelsa, Delta, Edo, Ondo, Ekiti, parts of Ogun, and Osun states as shown on the map.

February 2025 Daytime and Nighttime Temperatures

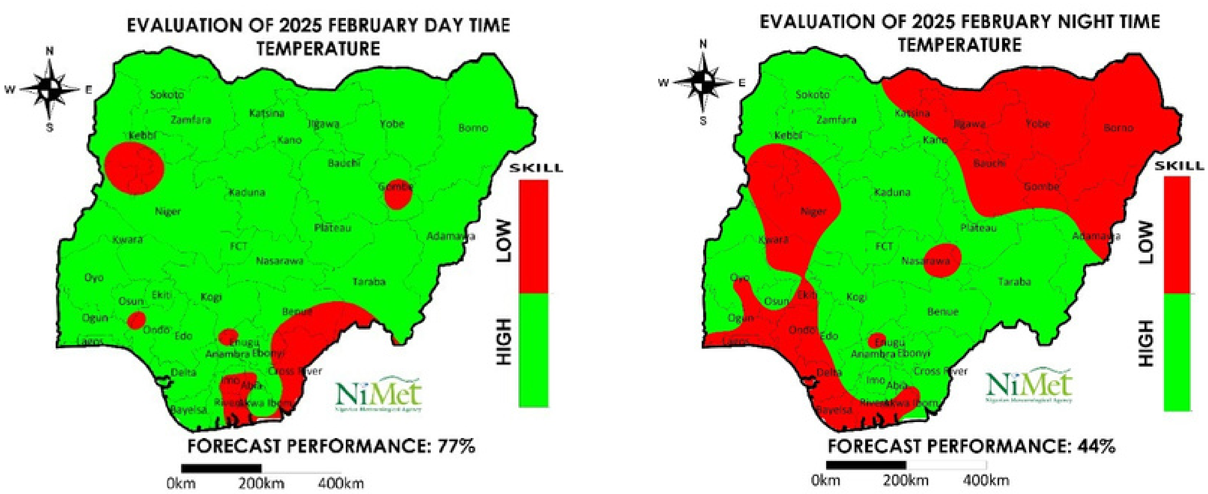


Figure 5.3 : Performance skill (Accuracy) of February Daytime and Nighttime Temperatures forecast across Nigeria

Figure 5.3 shows performance of 2025 January daytime temperature across Nigeria. The forecast performance reveals 23% accuracy skill; this indicates that the observed daytime temperatures turned out warmer than the projected temperatures by as much as 1.30c.
The January nighttime forecast in Figure 5.3 above indicates a performance of 40% across the country. This shows a low-skill performance over the Northern states except Sokoto, parts of Kebbi, Zamfara and fringes of Borno, Yobe and Jigawa which shows high performance in the region. Low accuracy skill was observed in the central states except for Kogi, FCT and parts of Kaduna, Plateau, Nasarawa and Benue states which shows high accuracy performance in region. In contrast, a high skill performance was observed over the Southern region except Bayelsa, Delta, Edo, Ondo, Ekiti, parts of Ogun, and Osun states as shown on the map.

March 2025 Daytime and Nighttime Temperatures

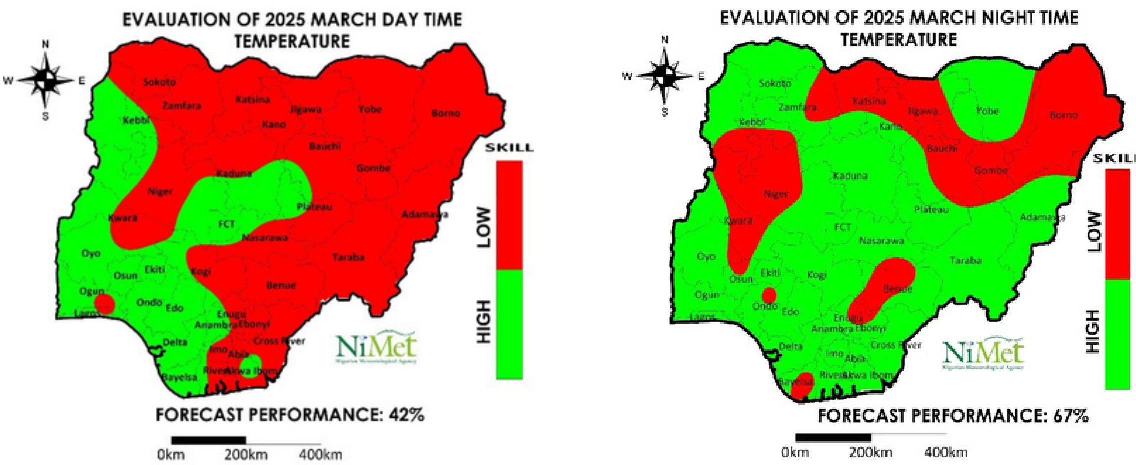


Figure 5.4: Performance skill (Accuracy) of March Daytime and Nighttime Temperatures forecast across Nigeria

The daytime temperature evaluation for March 2025 showed varying levels of accuracy at 42% across the country. As indicated by the green shade in Figure 5.4, parts of the Northwest and Central states, as well as the entire Southwest states, represent locations where the predicted temperatures agreed with the observed.

In contrast, the areas shaded in red, including the entire Northeastern states and most of the Northwestern States, are places where the predicted temperatures differed from observed conditions.

Additionally, the evaluation of the 2025 March nighttime temperature showed high performance (accuracy) skill in areas covered in green, while the region covered in red indicates areas with low performance (accuracy) skill. A high-performance skill of 67% was attained in the forecast made.

April 2025 Daytime and Nighttime Temperatures

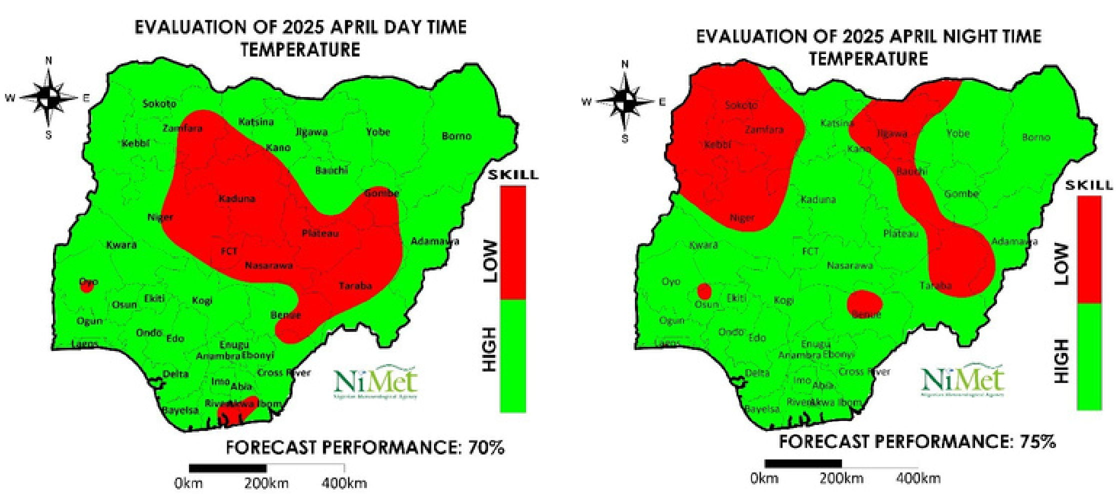


Figure 5.5: Performance skill (Accuracy) of April Daytime and Nighttime Temperatures forecast across Nigeria

The daytime temperature forecast evaluation for the month of April in 2025, shows that the forecast model performance was 70%. Niger, Gombe, Zamfara, Oyo, Taraba, Plateau, Kaduna, Nasarawa, Rivers, Cross River states, and the FCT reported a low performance (accuracy) skill due to the warmer than expected daytime temperatures. On the contrary, Akwa Ibom state, however, recorded cooler temperature than the expected daytime temperature.

The evaluation of the nighttime temperature forecast for April 2025 indicates an overall model performance of 75%. However, cooler than expected nighttime temperatures were observed in parts of Sokoto, Jigawa, Zamfara, Kano, Katsina, Bauchi, Niger, and Osun states, leading to low performance (accuracy) skill in these areas. In contrast, Kebbi, Taraba, Plateau, and Benue states recorded warmer than the expected nighttime temperature.

May 2025 Daytime and Nighttime Temperatures

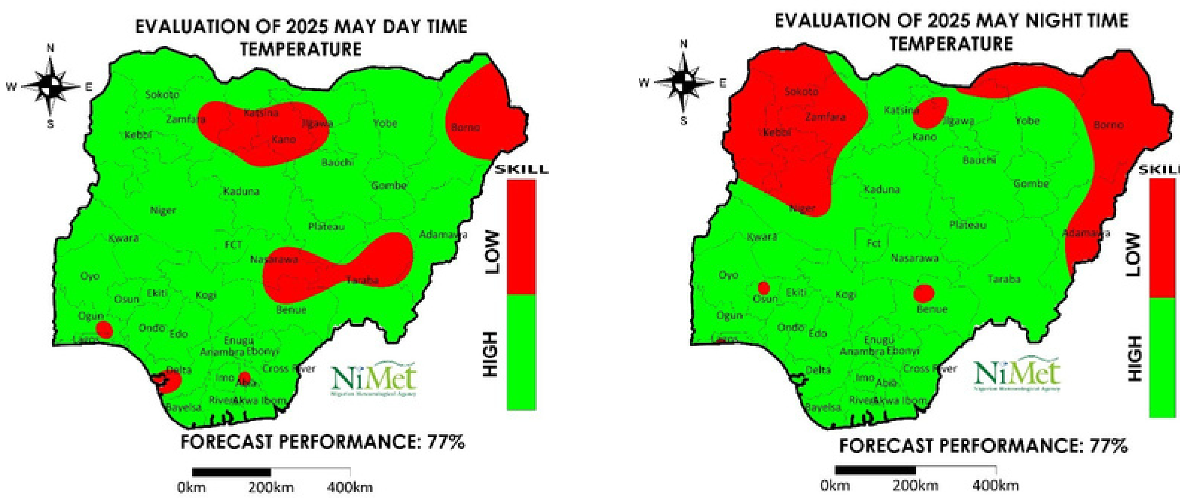


Figure 5.6: Performance skill (Accuracy) of May Daytime and Nighttime Temperatures forecast across Nigeria

The day-time temperature forecast evaluation for May 2025 puts the performance at 77%. However, states like Zamfara, Katsina, Jigawa, Kano, Borno, Nasarawa, Benue, Taraba, Ogun, Abia and Delta recorded unprecedented warmer than predicted temperatures.
In addition, forecast performance of 77% was recorded for the May nighttime temperature. Kebbi, Niger, Katsina, Adamawa, and Lagos states however recorded warmer than predicted temperatures, while Sokoto, Zamfara, Benue, Osun, Kano and Borno states observed cooler nighttime temperatures during this period.

Table 6: Summary of the Forecast performance in 2025

PERFORMANCE OF 2025 TEMPERATURES			
S/N	**Month**	**Daytime Temperature Forecast Performance (%)**	**Nighttime Temperature Forecast Performance (%)**
1	January	23	40
2	February	77	44
3	March	42	67
4	April	70	75
5	May	77	77

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Acronyms

CPC	Climate Prediction Center
CH	Cadre Harmonisé
CT	Continental Trade wind
DTM	Displacement Tracking Matrix
DTR	Diurnal Temperature Range
ERA5	ECMWF Reanalysis v5
ENSO	El-NiñoSouthern Oscillation
ECMWF	European CenterforMedium-Range WeatherForecasting
EWS	Early Warning Systems
FAO	Food and Agriculture Organisation
FMAFS	FederalMinistryofAgricultureandFood Security
GAIN	Global Alliance forImproved Nutrition
HHs	Households
IDPs	InternallyDisplaced Persons
IOM	International Organization for Migration
IPCC	Inter-governmental Panel on Climate Change
ITD	Inter-Tropical Discontinuity
IRI	International Research institute for Climate and Society
LDS	Little DrySeason
LGA	Local Government Area
MSLP	Mean SeaLevel Pressure
NDC	Nationallydetermined contributions
NEMA	National EmergencyManagement Agency
NiMet	Nigerian Meteorological Agency
NIHSA	Nigerian Hydrological Services Agency
NOAA	National Oceanography and Atmospheric Administrator
MT	Maritime Trade wind
UN-OCHA	UnitedNations-OfficefortheCoordination of Humanitarian Affairs
ONI	Ocean Nino3.4 IndexSST
SEMAs	StateEmergencyManagementAgencies
SITREP	Situation Report
SPI	Standardized Precipitation Index
SCP	Seasonal Climate Prediction
SDGs	Sustainable Development Goals
SST	Sea Surface Temperature
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme
UNFCCC	UnitedNationsFrameworkConvention for Climate Change
WASH	Water, Sanitation and Hygiene
WFP	World food programme
WHO	World Health Organisation
WMO	World Meteorological Agency
IOM	International Organization for Migration