Monthly hydromet analysis of Standardized precipitation Index

DROUGHT AND FLOOD MONITOR BULLETIN

Volume 2 © 2012

Published by:

Nigerian Meteorological Agency (NIMET)

Providing Weather, Climate and Water Information for Sustainable Development and Safety

Issue No 2 © Dec 2012

Introduction

Recent decades have witnessed a significant number of natural disasters in many parts of the world, with a greater proportion originating from extreme weather and climate as a result of high variability and changes in climatic parameters, notably Rainfall. For example, over half of the Earth is susceptible to drought every year while flood constitutes one of the deadliest and costliest disasters worldwide, as it accounts for about 40% of fatalities arising from natural disasters.

In Nigeria, aftermaths of the havocs wrecked by the 2012 flood disaster are very much with us as thousands are still homeless with dislocations in vital socio-economic activities such as the school, transport and health systems. This worrisome trend informed the continual quest for more effective Applied Meteorological Information Services (AMIS)' products by the Nigerian Meteorological Agency (NIMET).

The Drought and Flood Monitor Bulletin, which was developed using the Standardized Precipitation Index (SPI) analyses has emerged as one of such key AMIS products of NIMET as it provides very useful information on rainfall patterns that can constitute early warning signals on flood and drought. For example, in the June 2012 edition of the Bulletin, significantly wetter than normal conditions were observed over some regions, which were later susceptible to flood during the year. Such observations enabled NIMET to issue early warnings on the 2012 flooding that happened at the peak of the rainy season.

The present publication, which is a compilation of the monthly bulletins for the 12 months in year 2012, gives an overview of the general pattern of the SPI analyses and the associated drought and flood potentials over the country. It also includes summary of the 2013 SRP for the different agro-economical zones in the Country.

Also in the spirit of the Global Framework for Climate Services (GFCS) of the World Meteorological Organization (WMO), which aims at increasing and improving interactions between climate services providers like NIMET and users of such services, more interactions were established between NIMET and several stakeholders in the hydro-allied sectors. This is to ensure effective application of the Bulletin towards achieving success of Mr. President's Transformation Agenda in the respective rainfall-sensitive sectors of the economy.

Regular feedbacks from these end-user sectors are therefore highly encouraged. Such correspondences should be addressed to: The Director-General/CEO (NIMET), National Weather Forecasting & Climate Research Centre, Nnamdi Azikiwe International Airport, Abuja.

EDITORIAL

Drought and Flood Monitor Bulletin is released monthly by Nigerian Meteorological Agency (NIMET).
This publication gives a compilation of the bulletin for the year 2012

Publisher:
Dr. Anthony C. Anuforom
Director-General/CEO
Nigerian Meteorological Agency (NIMET)

Chief Editor
Mrs. Julie E. Ukeje
Director, Applied Meteorological Services

Deputy Chief Editor
Mr. Godwin O. Ajaezi
General Manager, Agromet

Editorial Team
Mr. J. E. Alozie
Mr. J. N. Okpara
Mr. K. A. Alao
Mr. J. Adamu
Mr. P. Ugba

Editorial Assistant
Mr. J. U. Kemakolam
Deputy General Manager, Agromet

Associate Editor
Mr. K. A. Alao
Principal Meteorologist, Hydromet

Commercial
Mr. R. G. Jigah
Director, Finance and Account

All Other Enquires to:

The Director-General / CEO,
Nigerian Meteorological Agency (NIMET)
National Weather Forecasting and
Climate Research Centre,
Nnamdi Azikiwe International Airport,
Abuja, Nigeria.
email: nimetdrought2009@gmail.com.
Tel:+2348074358025, +2348038620950
website: www.nimetng.org/nimet

TABLE OF CONTENTS

1 Standardized Precipitation Index (SPI) Analysis for January

PREAMBLE

Continued dominance of normal condition over almost the entire country particularly in the North is still an indication of current dry season usually characterized by widespread of rainfall shortage and hazy weather. Nonetheless, few places in the South such as Benin, Ikom and Enugu experienced mild to moderate wetness during the period under review.

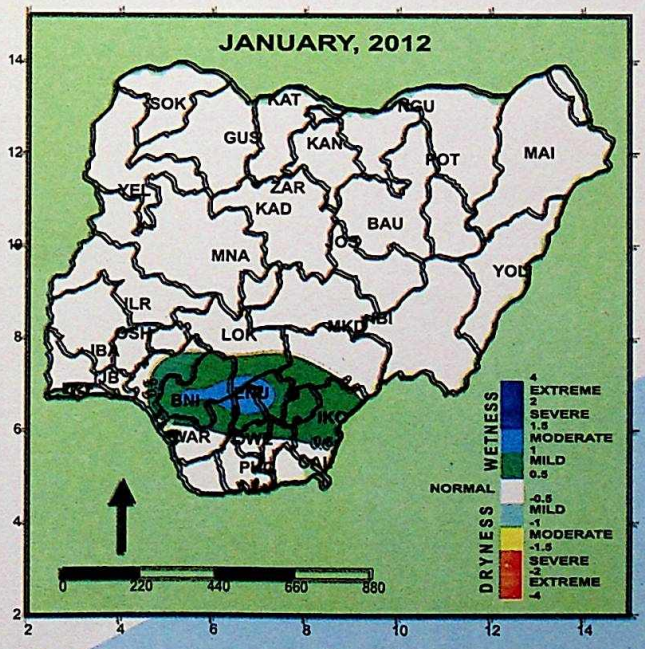

Fig. 1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

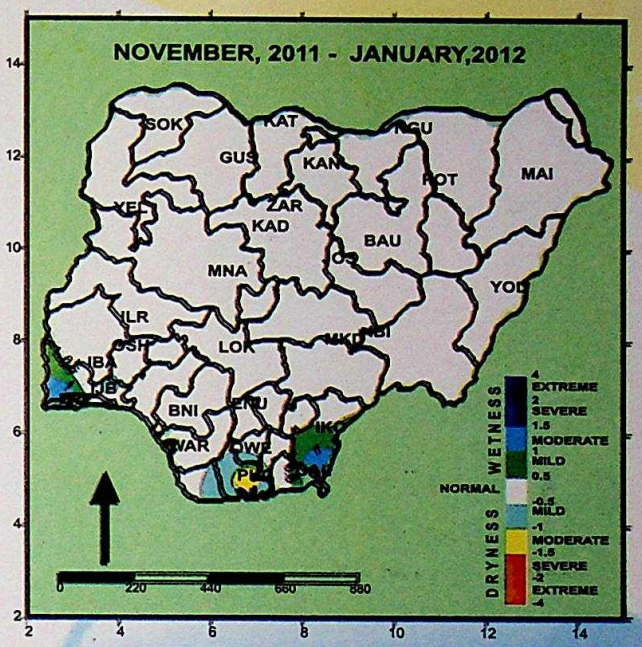

Fig.2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

Fig.1 of the 1-month Standardized Precipitation Index (SPI) analysis of the country reveals continued widespread of normal condition particularly over the North. However, places like Benin, Ikom and Enugu in the South experienced mild to moderate wet condition. Similar trend also occurred in the 3-month SPI analysis, places like parts of Ikeja, Ikom and Calabar in the Southern part that experienced relatively mild to moderate wet conditions. This is due to cumulative effect of the previous three months in 2011 rainfall amount. Stations in the Niger Delta area also experienced mild to moderate dry conditions ***(Fig. 2)***.

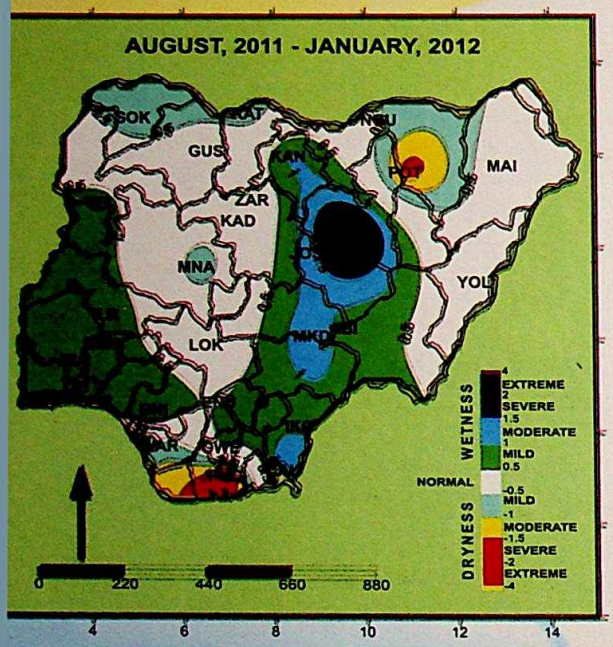

Fig. 3 : 6-Months Standardized Precipitation Index *(for Groundwater drought)*

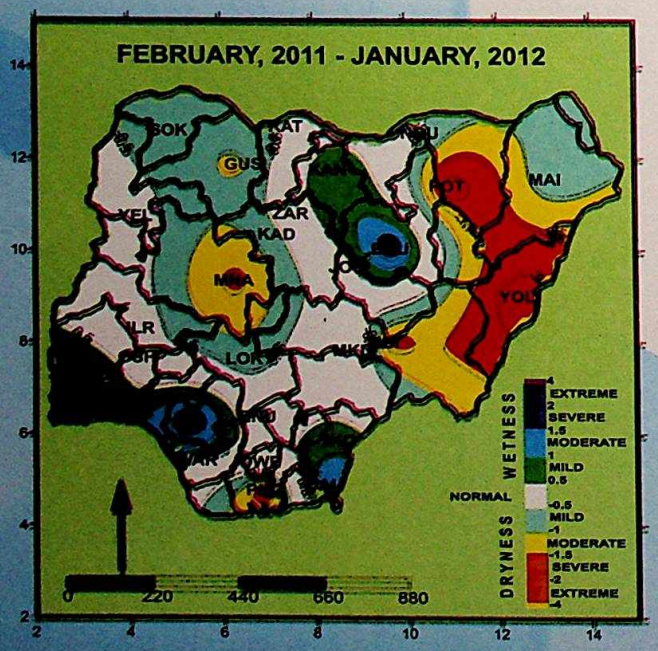

Fig.4 : 12-Months Standardized Precipitation Index *(for stream-flow and lake storage drought)*

The analysis of the cumulative 6-month SPI which reveals a near to threatened groundwater aquifers in some Northern parts of the country may remain, particularly over Potiskum, Sokoto and parts of Minna, Gusau and Katsina. This is due to mild to severe dry conditions over these areas except for places around Kano, Jos, Makurdi and Bauchi that were characterized with mild to extreme wetter condition. It is therefore advisable for residents of these areas to tap the available resource with caution in order to forestall its possible depletion. Normal to moderate wet conditions prevailed in the South except for places like Warri and Port Harcourt areas that experienced mild to severe dry conditions. ***See Fig. 3***.

Fig.4 of the cumulative 12-month SPI analysis for stream-flow and lake storage monitoring indicates significant spread of dry conditions over the North particularly the Northeastern flank comprising Yola, Potiskum, Maiduguri and Ibi, which extended to Minna, Kaduna, Gusau and Sokoto. Also worth mentioning are places like Kano and Bauchi over the North with Calabar, Ikom, Benin, Ijebu-Ode, Ikeja and Ibadan in the South that experienced mild to severe wetness. This was as a result of the cumulative effect of February, 2011 to January, 2012 rainfall on the stream-flow and lake storage in the country.

CLIMATE OUTLOOK FOR FEBRUARY, 2012

Isolated cases of hazy condition are expected to continue in the month of February with reduced visibility in extreme Northern part of the country. Low flows in rivers and streams with the possibility of some getting dried off due to rainfall shortages are expected across the country thereby impacting negatively on maritime and hydropower generating activities.

2 Standardized Precipitation Index (SPI) Analysis for February

PREAMBLE

The month of February witnessed gradual return of rainfall in some parts of the country particularly in the South, while normal condition continued to dominate the rest of the country especially over the North. Noteworthy is the degree of wetness in the South, which ranged between mild and extreme condition.

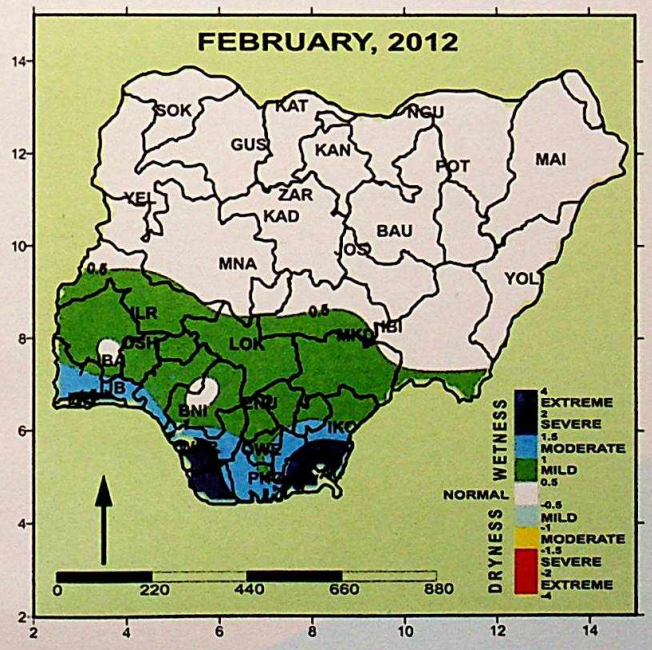

Fig. 1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

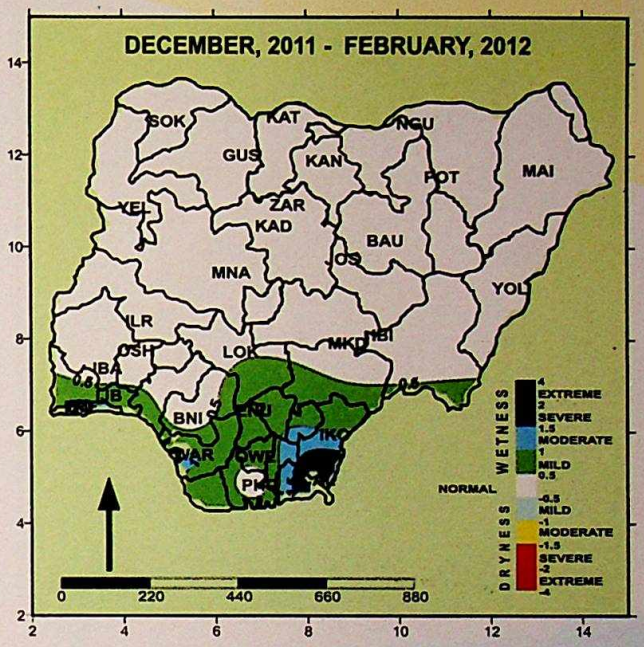

Fig.2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

Fig.1 of the 1-month Standardized Precipitation Index (SPI) analysis for the country reveals continued widespread of normal condition particularly over the North. However, almost every part of the South including Ilorin, Lokoja and parts of Makurdi experienced wetness ranging between mild to severe conditions. The trend was almost the same for the 3-month SPI analysis, but for places like Ikeja, Ibadan, Warri, Enugu, Owerri, Ikom and Calabar in the Southern part that experienced mild to extreme wet conditions. This is due to cumulative effect of previous three months of rainfall amount ***(Fig. 2)***.

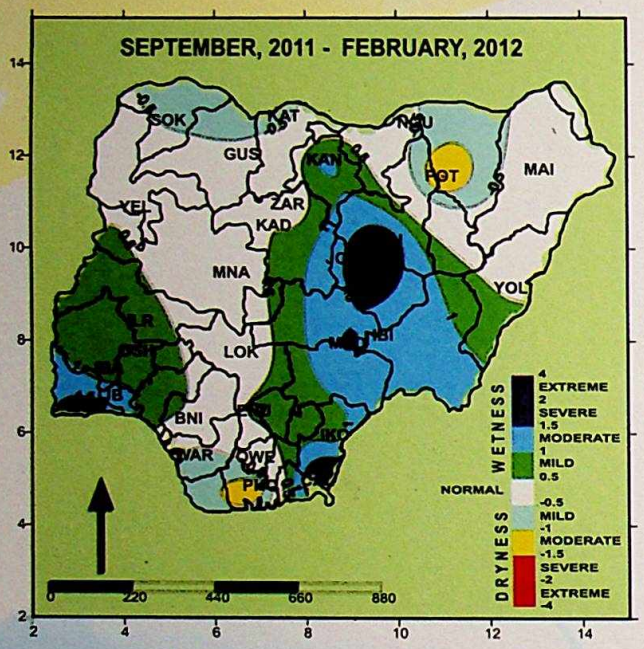

Fig. 3 : 6-Months Standardized Precipitation Index
(for Groundwater drought)

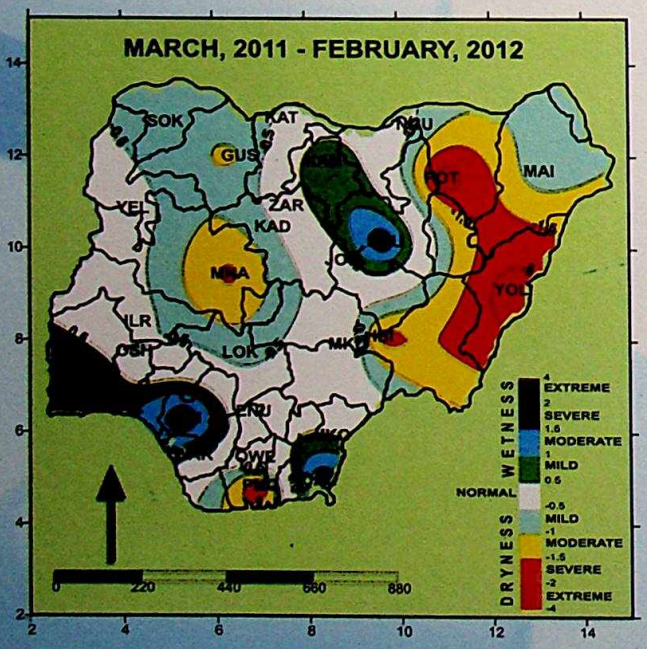

Fig.4 : 12-Months Standardized Precipitation Index
(for stream-flow and lake storage drought)

As in January, the analysis of the cumulative 6-month SPI also shows minimal threat to groundwater aquifers in some Northern parts of the country particularly over Potiskum, Sokoto and parts of Gusau and Katsina. This is due to mild to moderate dry conditions over these areas except for places around Kano, Jos, Makurdi, Ibi, Yola and Bauchi that were characterized with mild to wetter conditions. As such, residents of these areas are advised to tap the available resource with caution in order to forestall its possible depletion. Normal to extreme wet conditions prevailed in the South except for places like Warri and Port Harcourt that experienced mild to moderate dry conditions ***(Fig. 3)***.

Fig.4 of the cumulative 12-month SPI analysis for stream-flow and lake storage monitoring indicates continued dry conditions over the North especially at the Northeastern flank comprising Yola, Potiskum, Maiduguri and Ibi, which extended to Minna, Kaduna, Gusau and Sokoto. Also worth mentioning are places like Kano and Bauchi over the North with Calabar, Ikom, Benin, Ijebu-Ode, Ikeja and Ibadan in the South that experienced mild to severe wetness. This was as a result of the cumulative effect of March, 2011 to February, 2012 rainfall on the stream-flow and lake storage in the country.

CLIMATE OUTLOOK FOR MARCH, 2012

Hazy and dry condition is expected to continue in the month of March with reduced visibility particularly in the extreme North. Lower flows in rivers and streams are expected across the country with possibility of some of the rivers getting dried off particularly in the extreme North as a result of rainfall shortages thereby impacting negatively on maritime and hydropower generating activities

3 Standardized Precipitation Index (SPI) Analysis for March

PREAMBLE

The substantial rainfall witnessed in February at some parts of the country particularly in the South turned out to be a false start of rains as the intensity significantly dropped. Normal condition continued to dominate the rest of the country especially over the North while mild to severe dry conditions persisted over the Southern part of the country.

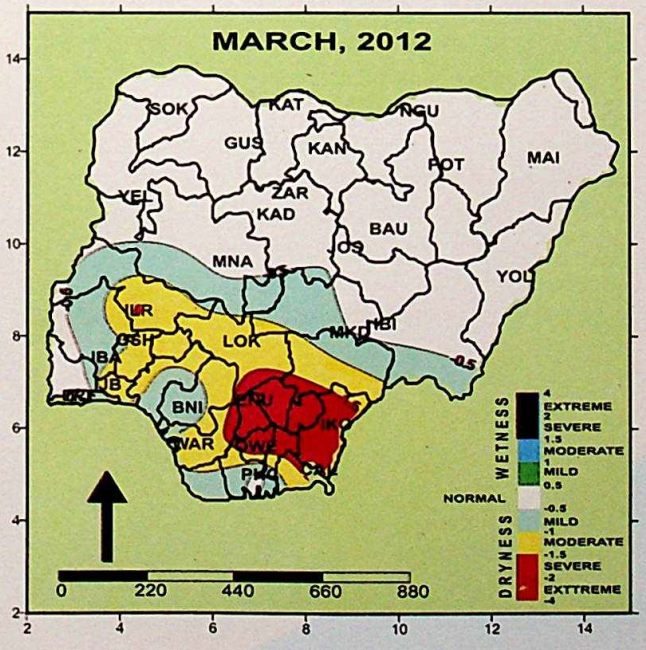

Fig. 1: 1-Month Standardized Precipitation Index
(for meteorological and agricultural drought)

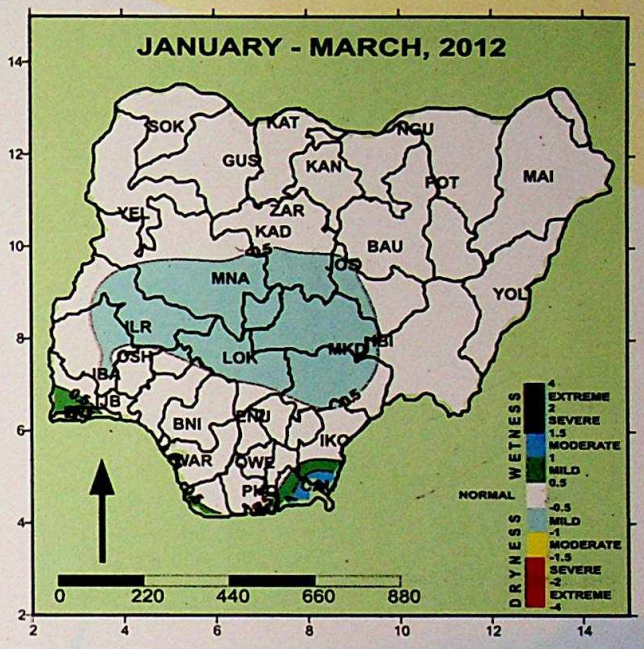

Fig.2 : 3-Months Standardized Precipitation Index
(for meteorological and agricultural drought)

OBSERVED CLIMATIC FEATURES

Fig.1 of the 1-month Standardized Precipitation Index (SPI) analysis over the country reveals continued widespread of normal condition particularly over the North. However, contrary to February, almost the entire Southern parts of the country including Ilorin, Lokoja and parts of Makurdi experienced dryness ranging between mild and severe dry conditions. For the 3-month SPI analysis, normal condition dominated except for some places like Minna, Ilorin, Lokoja, Makurdi and Jos that witnessed mild dryness. Nevertheless, places like Ikeja and parts of Portharcourt and Calabar in the Southern part experienced mild to moderate wet conditions. This is due to cumulative effect of previous three months of rainfall amount ***(Fig. 2)***.

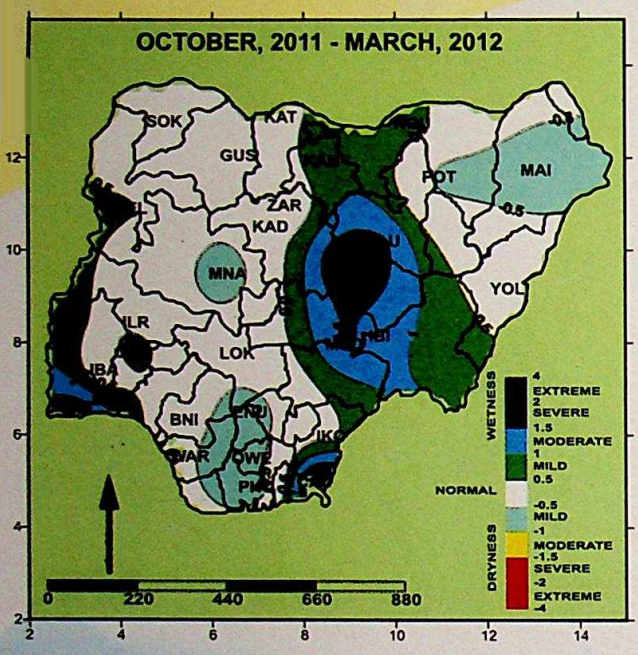

Fig. 3 : 6-Months Standardized Precipitation Index
(for Groundwater drought)

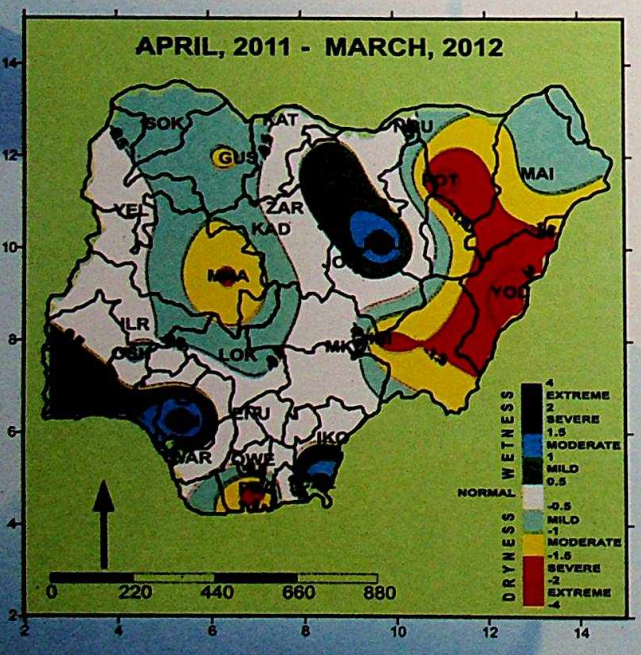

Fig.4 : 12-Months Standardized Precipitation Index
(for stream-flow and lake storage drought)

The analysis of the cumulative 6-month SPI shows little threat to groundwater aquifers in some Northern parts of the country particularly over Minna, Maiduguri and parts of Potiskum. This is due to mild dry condition over these areas except for places like Kano, Nguru, Makurdi, Ibi, parts of Yola and Bauchi that were characterized with mild to severe wetter conditions. Notwithstanding, residents of these wetter areas are still advised to tap the available resource with caution in order to forestall its possible depletion. Normal to severe wet conditions prevailed in the South except for places like Enugu, Owerri, Port Harcourt and parts of Warri that experienced mild dry condition (Fig. 3).

Fig.4 showing the cumulative 12-month SPI analysis for stream-flow and lake storage monitoring indicates continued mild to extreme dry conditions over the North especially at the Northeastern flank comprising Yola, Potiskum, Maiduguri and Ibi, extending to parts of Lokoja, Minna, Kaduna, Gusau and Sokoto. Meanwhile, places like Kano and Bauchi over the North with Calabar, Ikom, Benin, Ijebu-Ode, Ikeja and Ibadan in the South experienced mild to severe wetness. This was as a result of the cumulative effect of April, 2011 to March, 2012 rainfall on the stream-flow and lake storage in the country. However, it is important to note that mild to severe dryness witnessed at some parts of the country in February persisted in the month under review.

CLIMATE OUTLOOK FOR APRIL, 2012

Wetter condition is expected to gradually set in during the month of April as onset of rains manifest particularly in the South during the month. As a result of the gradual return of the rains, flow in rivers and streams are expected to start picking up across the country thereby making positive impact on maritime and hydropower related activities.

4 Standardized Precipitation Index (SPI) Analysis for April

PREAMBLE

During the month under review, most parts of the country were under normal condition except Yelwa, Ilorin, Makurdi and Ibi in the North with only Port Harcourt in the South that was mildly wet. However, places like Potiskum, Yola, Bauchi and parts of Maiduguri in the North and Warri and Calabar in the South experienced mild to moderately dry condition compared to normal.

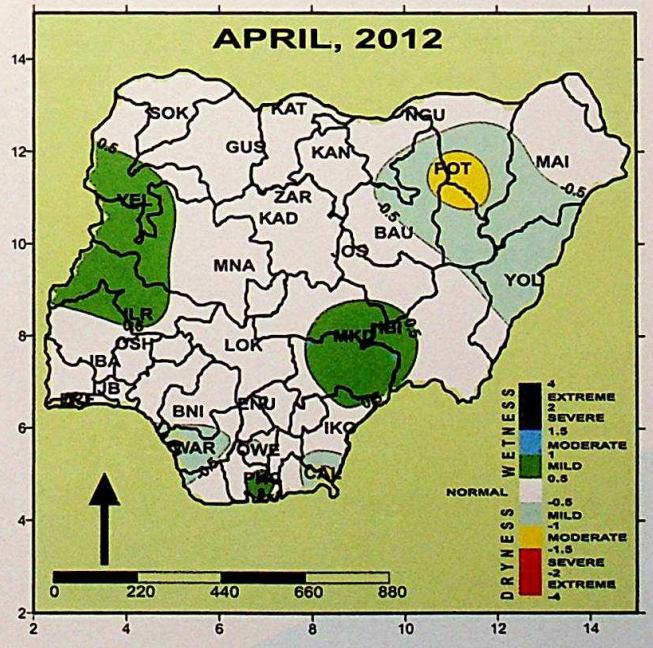

Fig. 1: 1-Month Standardized Precipitation Index
(for meteorological and agricultural drought)

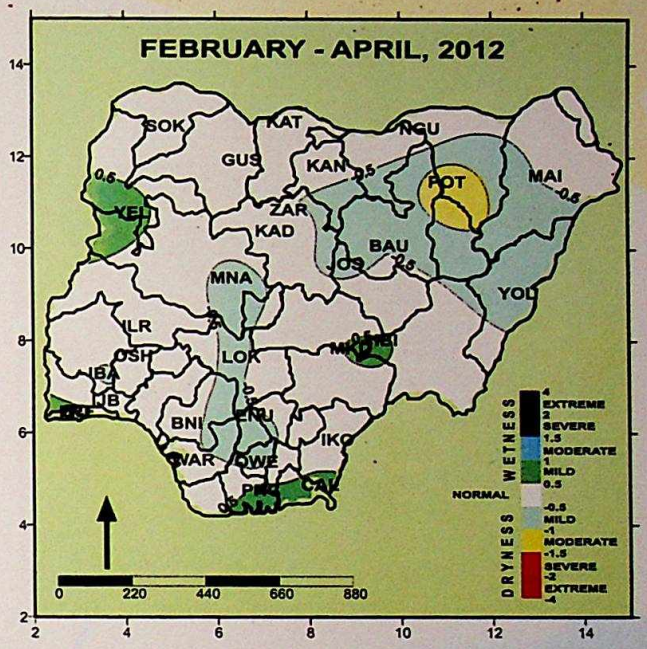

Fig.2 : 3-Months Standardized Precipitation Index
(for meteorological and agricultural drought)

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) analysis over the country reveals most parts of the country to be under normal condition. However, notable is the mild wetness over Yelwa, Ilorin, Makrudi and Ibi in the North with parts of Ibadan and Port Harcourt in the South while places like Potiskum, Yola, parts of Maiduguri and Bauchi in the North with Warri and Calabar in the South experienced dryness ranging between mild and severe ***(Fig.1)***. In the 3-month SPI analysis, normal condition also prevailed except for some places like Potiskum, Yola, Bauchi, Jos Minna, Lokoja, Enugu and Owerri that witnessed mild to severe dryness. Meanwhile, places like Yelwa, Makurdi, Ibi, Ikeja and parts of Port Harcourt and Calabar experienced mild wet condition. This is due to cumulative effect of previous three months of rainfall amount ***(Fig. 2)***.

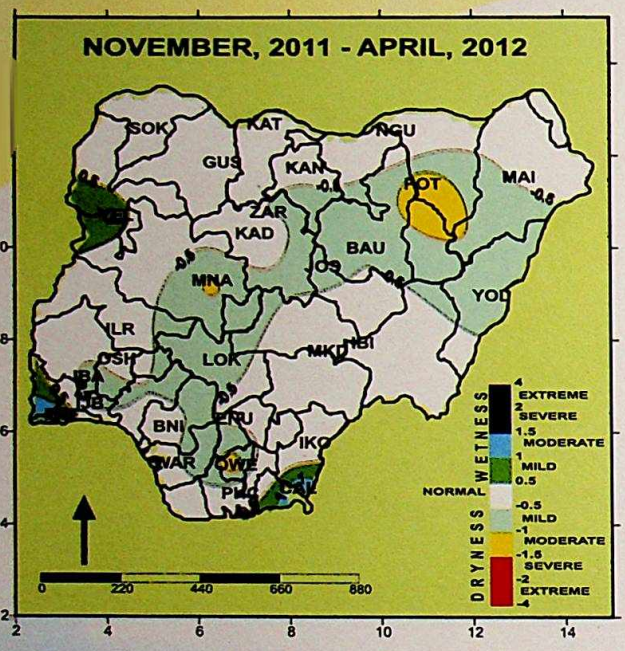

Fig. 3 : 6-Months Standardized Precipitation Index
(for Groundwater drought)

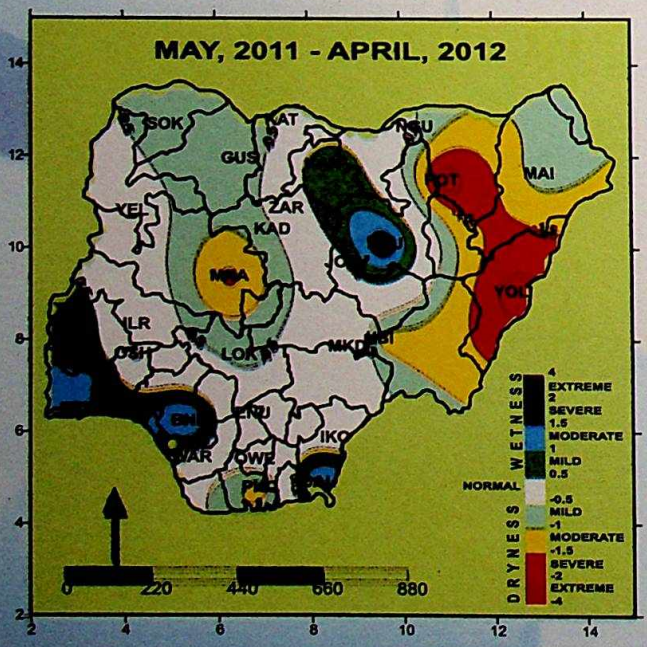

Fig.4 : 12-Months Standardized Precipitation Index
(for stream-flow and lake storage drought)

The 6-month SPI cumulative analysis reveals certain degree of threat to groundwater aquifers in some Northern parts of the country particularly over Potiskum, Maiduguri, Yola, Bauchi, Jos, Minna, Parts of Kaduna and Zaria. This is due to mild to moderately dry condition over these areas except for Yelwa that was characterized with mild wetter condition. Notwithstanding, residents of these wetter areas are still advised to tap the available resource with caution in order to forestall its possible depletion. Normal to moderately dry conditions prevailed in the South except for places like Ikeja, parts of Ijebu-Ode and Calabar that experienced mild to moderately wet conditions ***(Fig. 3)***.

Fig.4 which shows the cumulative 12-month SPI analysis for stream-flow and lake storage monitoring and indicates persisting mild to extreme dry conditions over the North especially at the Northeastern flank comprising Yola, Potiskum, Maiduguri and Ibi, extending to parts of Lokoja, Minna, Kaduna, Gusau and Sokoto. Meanwhile, places like Kano and Bauchi over the North with Calabar, Ikom, Benin, Ijebu-Ode, Ikeja and Ibadan in the South experienced mild to severe wetness. This was as a result of the cumulative effect of May, 2011 to April, 2012 rainfall on the stream-flow and lake storage in the country.

CLIMATE OUTLOOK FOR MAY, 2012

Wetter condition is expected during the month of May particularly in the South hence, return of gradual increase flow in rivers and streams which in turn is expected to improve maritime and hydropower related activities in the country.

5 Standardized Precipitation Index (SPI) Analysis for May

PREAMBLE

Widespread of wetter than normal to normal condition experienced during the month of May in almost every part of the country is an indication of onset of rainfall season particularly over the Northern region. Noticeable is the severe to extreme wetness over Jos and parts of Bauchi, Kaduna and Zaria in the North with only Benin in the South. Nonetheless, Lagos and Ikeja stations in the South experienced mild dryness during the month under review.

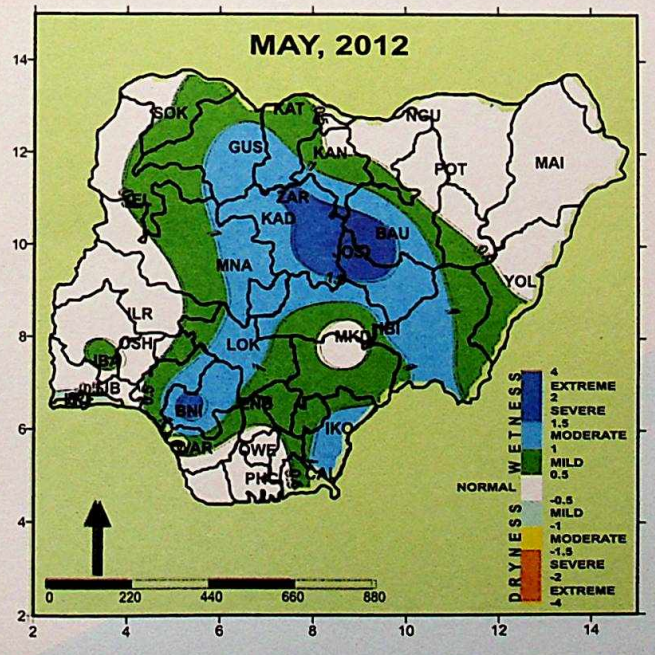

Fig. 1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

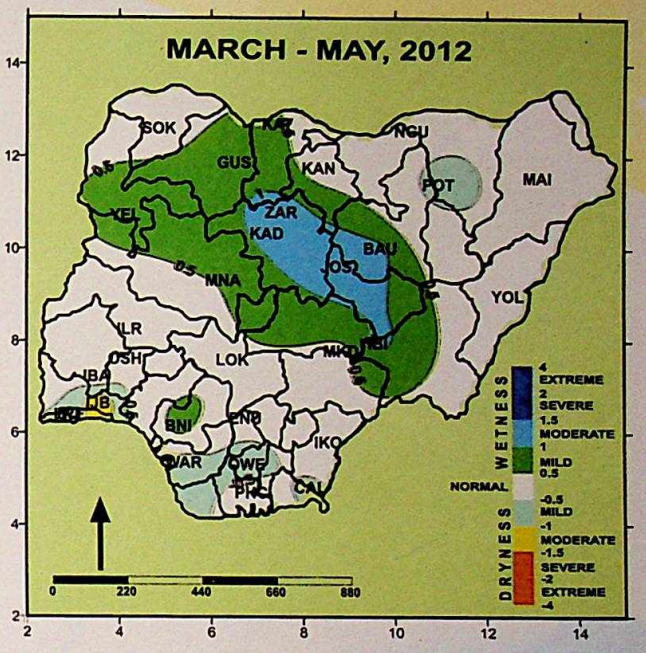

Fig.2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) analysis over the country reveals widespread of wetter than normal to normal condition in most parts of the country. However, notable is the severe to extreme wetness over Jos and parts of Bauchi, Kaduna and Zaria in the North with only Benin in the South while places like Lagos and Ikeja, also in the South experienced mild dryness ***(Fig.1)***. In the 3-month SPI analysis, normal to wetter condition prevailed except for places like Potiskum, Calabar, Owerri, Warri, Lagos and Ikeja that witnessed mild to moderate dryness. Also, worth mentioning was the moderate wetness over Jos and parts of Bauchi, Kaduna and Zaria. This could be attributed to cumulative effect of previous three months of rainfall amount over the area ***(Fig. 2)***.

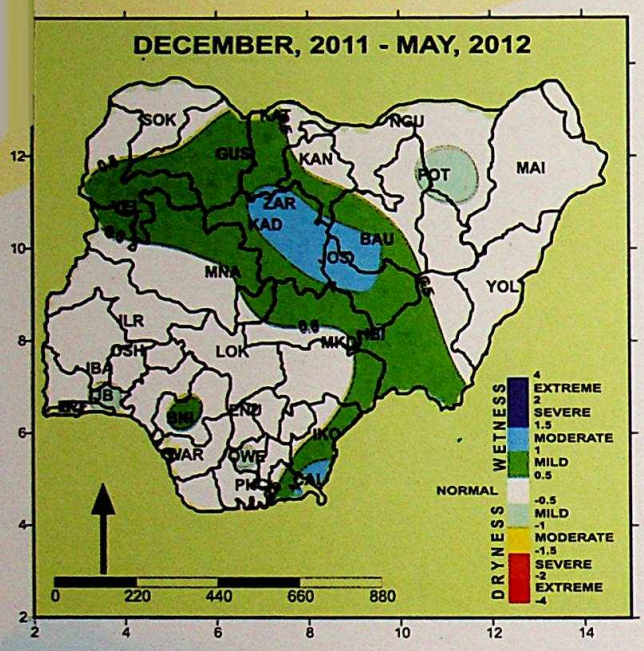

Fig. 3 : 6-Months Standardized Precipitation Index
(for Groundwater drought)

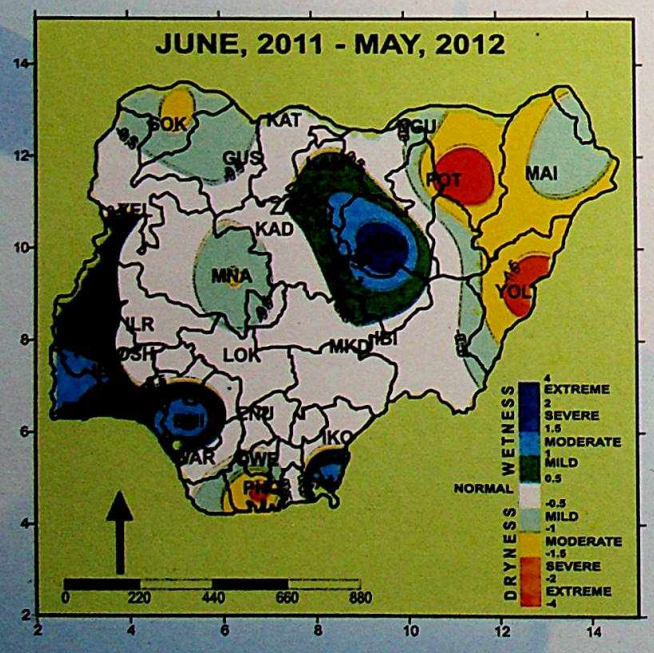

Fig.4 : 12-Months Standardized Precipitation Index
(for stream-flow and lake storage drought)

The 6-month SPI cumulative analysis reveals normal and significant level of wetness with little or no threat to groundwater aquifers particularly in the North except over Potiskum that experienced mildly dry condition. Notwithstanding, residents of these wetter areas are still advised to tap the available resource with caution in order to forestall its possible depletion. Normal condition prevailed in the South except for places like Owerri and Ijebu-Ode that experienced mild dry conditions (Fig. 3).

The cumulative 12-month SPI analysis for stream-flow and lake storage monitoring indicates a bit relaxed mild to extreme dry conditions over the North especially at the Northeastern flank comprising Yola, Potiskum, Maiduguri and parts of Nguru, Minna, Gusau and Sokoto. Meanwhile, places like Bauchi and parts of Kano, Jos over the North with Calabar, Benin, Ijebu-Ode and Ibadan in the South experienced mild to extreme wetness. This was as a result of the cumulative effect of June, 2011 to May, 2012 rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR JUNE, 2012

Wetter condition is expected during the month of June and will spread across the Northern part of the country. A development that will increase flow in rivers and streams, which in turn is expected to improve maritime and hydropower related activities in the country. Flood events may not be ruled out going by the degree of wetness in some areas like Bauchi that recorded extreme wet condition couple with other factors like soil type and condition.

6

Standardized Precipitation Index (SPI) Analysis for June

PREAMBLE

Significant wetter condition experienced during the month of June in almost every part of the country is a clear indication of establishment of rainfall season particularly over the Northern region. Noticeable is the moderate to extreme wetness over Kano, Nguru and parts of Katsina in the North with Benin, Ikom, Warri and Ikeja in the South. Meanwhile, stations like Yelwa and others in the Northwestern flank of the country were characterized with mild to severe dryness.

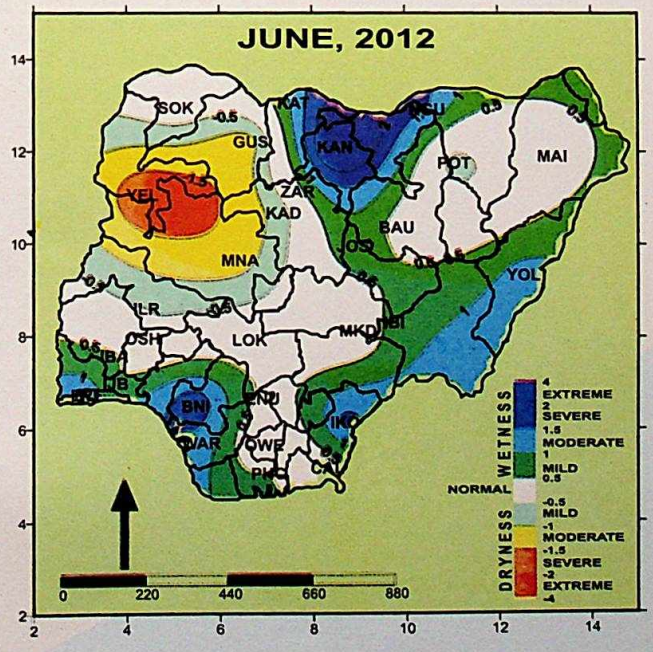

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

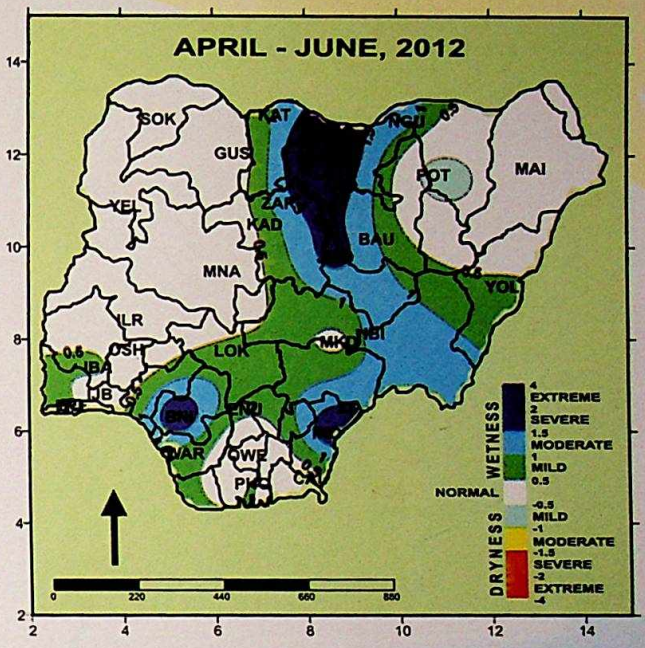

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) analysis over the country reveals continued wetter than normal to normal condition in almost the entire country. Notable is the severe to extreme wetness over Kano, Nguru and parts of Katsina in the North with Benin, Ikom, Warri and Ikeja in the South. Meanwhile, stations in the Northwestern flank of the country were characterized with mild to severe dryness ***(Fig.1)***. In the 3-month SPI analysis, normal to wetter condition continued its dominance except Potiskum with moderate dryness. Worth mentioning as well is the severe to extreme wetness over Jos, Kano and parts of Bauchi, Kaduna, Zaria, Katsina and Nguru. This could be attributed to the effect of previous three months of cumulative rainfall amount over the area ***(Fig. 2)***.

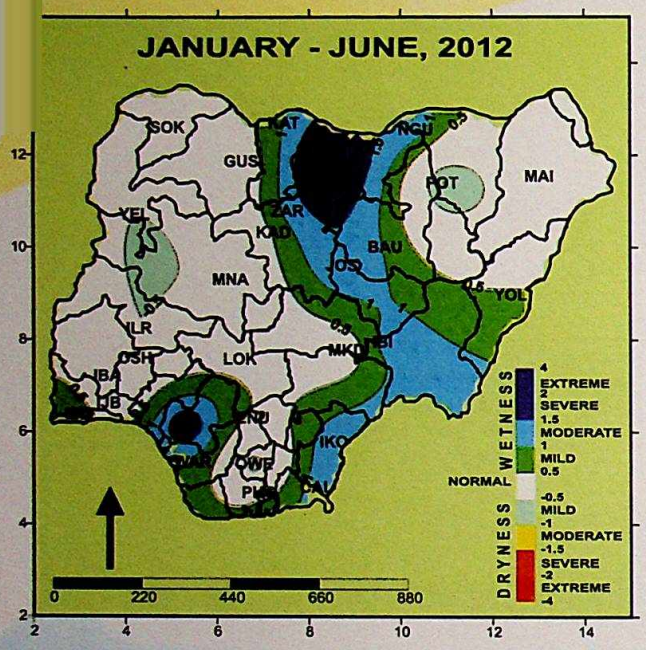

Fig. 3 : 6-Months Standardized Precipitation Index *(for Groundwater drought)*

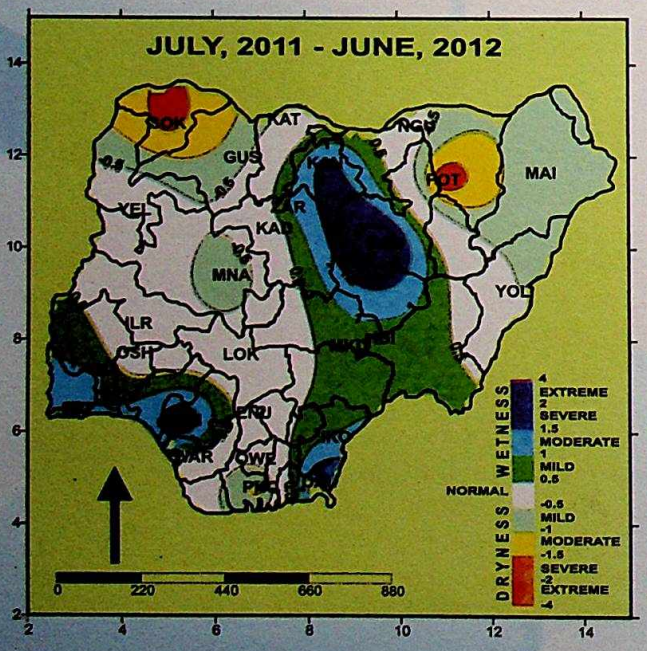

Fig. 4 : 12-Months Standardized Precipitation Index *(for stream-flow and lake storage drought)*

The 6-month SPI cumulative analysis reveals appreciable degree of normal to wetter condition with little or no threat to groundwater aquifers particularly in the North except over Potiskum and parts of Yelwa, Minna and Ilorin that experienced mildly dry condition. Meanwhile, residents of these areas are advised to tap the available resource with caution in order to forestall its possible depletion. Normal to severe wetter condition prevailed in the South. However, Owerri and its environment experienced mild dry condition ***(Fig. 3)***.

The cumulative 12-month SPI analysis for stream-flow and lake storage monitoring indicates a further relaxed mild to extreme dry conditions over the North especially the extremes of Northeastern flank (Potiskum, Maiduguri and parts of Yola) and Northwestern flank (Sokoto, Gusau, Minna and parts of Yelwa). Meanwhile, places like Bauchi and parts of Kano, Jos over the North with Calabar, Benin, Ikeja, Ibadan and parts of Ijebu-Ode in the South experienced mild to severe wetness. This was as a result of the effect of July, 2011 to June, 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR JULY, 2012

Continued wetter conditions are expected during the month of July across the country. This development in effect, will increase flow in rivers and streams which in turn is expected to significantly improve maritime and hydropower related activities in the country. Flood events are likely to be experienced in areas like Bauchi in the North due to soil type and condition as well as Benin, Ibadan and Lagos in the South due to inadequate channelization structures in particular.

7

Standardized Precipitation Index (SPI) Analysis for July

PREAMBLE

The month of July is significantly wetter than June, as the entire country dwells under normal to extreme wetter conditions. The North down to the central parts of the country in this regard was of great interest in terms of degree of wetness particularly over Bauchi, Jos, Makurdi, Ibi and parts of Maiduguri compared to the South. This may be due to the effect of the little dry season which occurred in the third decade of July.

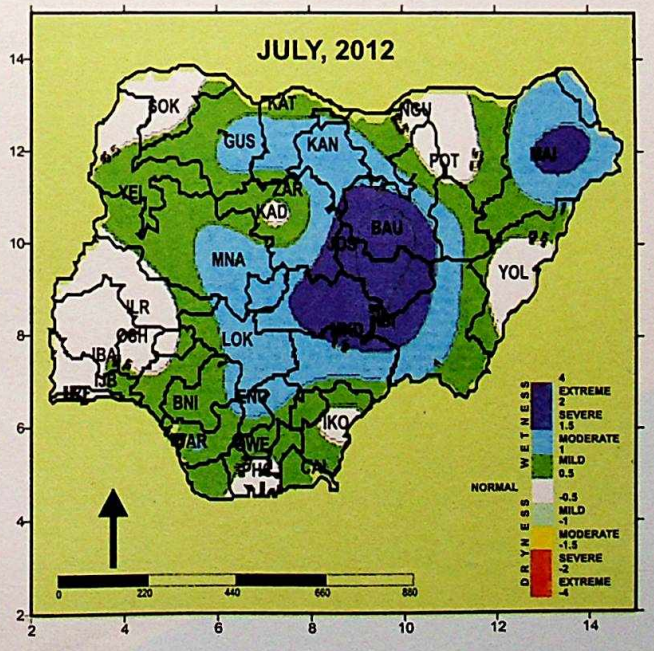

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

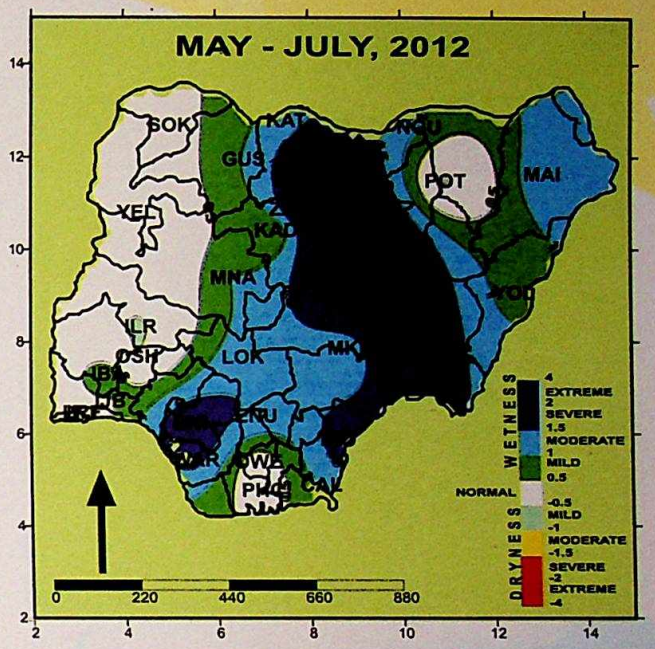

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) analysis over the country reveals continued spread of wetter than normal to normal condition almost over the entire country. Notable is the severe to extreme wetness over Bauchi, Jos, Ibi and parts of Maiduguri and Makurdi in the North. Meanwhile, the southern part of the country that had her share of the wetter condition ranged between normal to moderate conditions ***(Fig.1)***. In the 3-month SPI analysis, normal to wetter conditions continued its persistence except Ilorin in the South with mild dryness. Interestingly, severe to extreme wetness over Kano, Bauchi, Jos, Benin and parts of Ibi, Zaria, Makurdi and Ikom became more pronounced compared to June situation. This could be attributed to the effect of the previous three months of cumulative rainfall amount over the area ***(Fig. 2)***.

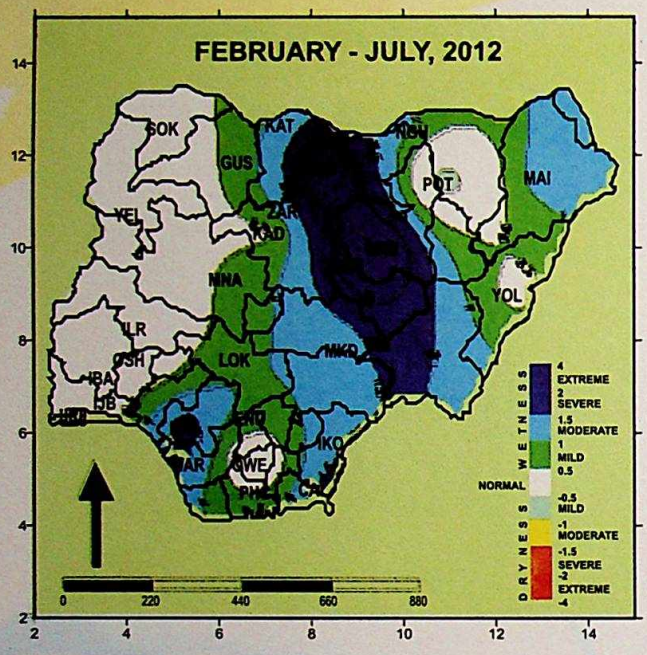

Fig. 3 : 6-Months Standardized Precipitation Index *(for Groundwater drought)*

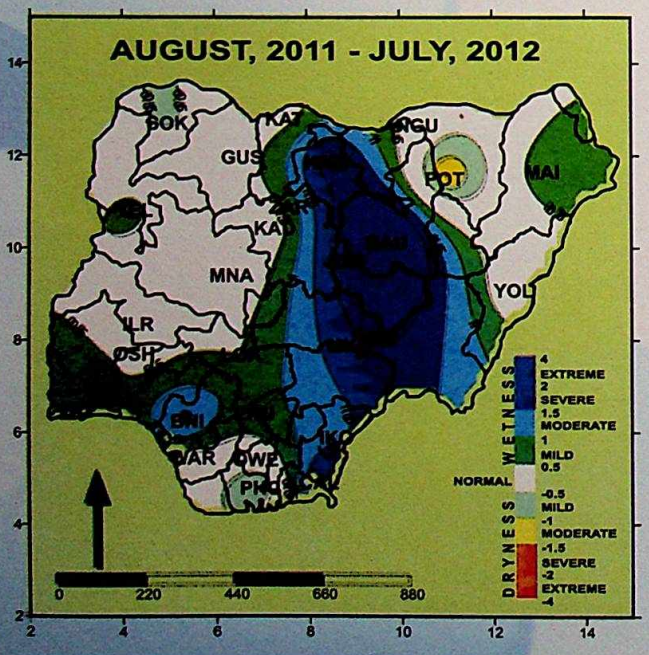

Fig. 4 : 12-Months Standardized Precipitation Index *(for stream-flow and lake storage drought)*

The 6-month SPI cumulative analysis reveals significant spread of normal to wetter condition which in effect might constitute no threat to groundwater aquifers particularly in most parts of the North except some parts of Potiskum that experienced mildly dry condition. Nonetheless, residents of these areas could still be advised to tap the available resource with caution for conservation purpose. Normal to severe wetter condition prevailed in the South generally. ***(Fig. 3)***.

The cumulative 12-month SPI analysis for stream-flow and lake storage monitoring reveals that few stations such as parts of Sokoto, Potiskum in the North and Port-Harcourt in the South experienced mild to moderately dry conditions. Meanwhile, mild to extreme wetness was experienced in most parts of the southern states, North-central states and Maiduguri in the Northeast. This was as a result of the effect of August, 2011 to July, 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR AUGUST, 2012

Obvious wetter than normal conditions are expected during the month of August across the country, a development which will ultimately increase flow in rivers and streams. This in turn is expected to significantly impact positively on maritime and hydropower related activities in the country. Serious flood events are likely to be experienced in areas like Bauchi, Kano and Jos in the North due to soil types and condition. Also, places like Benin, Ibadan, Lagos, Ikom and Calabar in the South might not be an exception due to aftermath effect of the little dry season and inadequate channelization structures in particular.

8 Standardized Precipitation Index (SPI) Analysis for August

PREAMBLE

The month of August in contrast to July shows a widespread normal rainfall condition in most parts of the country, even though mild to extreme wetter than normal condition was observed over places like Minna, Kaduna, Zaria, Kano, Nguru and parts of Bauchi, Potiskum, Maiduguri and Katsina. Mild to dry conditions was the case over Sokoto, Gusau, Yelwa, Ibi, Bauchi, Warri, Benin and Lagos. Notable is the severe to extreme dry condititon recorded over Jos compared to the extreme wetter than normal condition recorded in June and July.

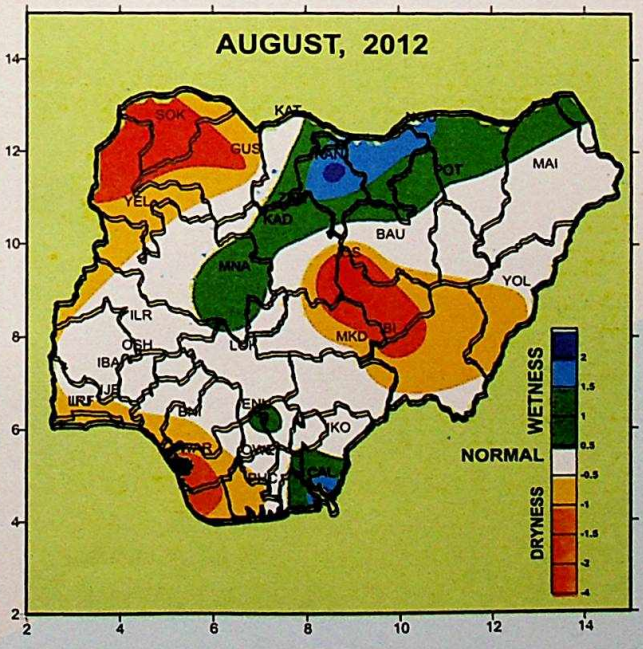

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

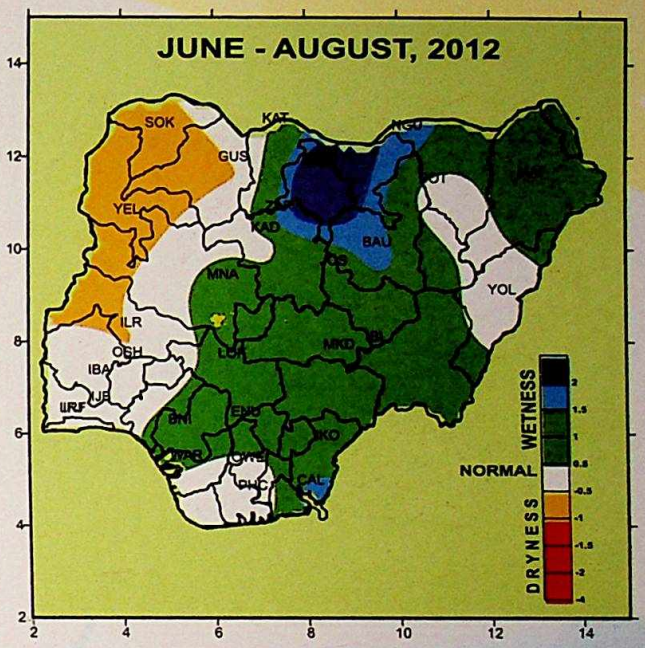

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) analysis over the country showed widespread normal rainfall condition almost over the entire country. Notable over the North is the severe to extreme dryness over Jos, Ibi and parts of Bauchi while Kano and Nguru showed severe to extreme wetness. Meanwhile, in the Southern part of the country Ijebu-ode, Benin and Warri shows mild to moderate dryness while extreme wetness was observed over Calabar and its environ ***(Fig.1)***. The 3-month SPI analysis shows dominance of wetter conditions over the country with continued extreme wetness .over Kano extending to Nguru. However, places like Sokoto, Yelwa, Ilorin and parts of Gusau shows mild dryness ***(Fig. 2)***.

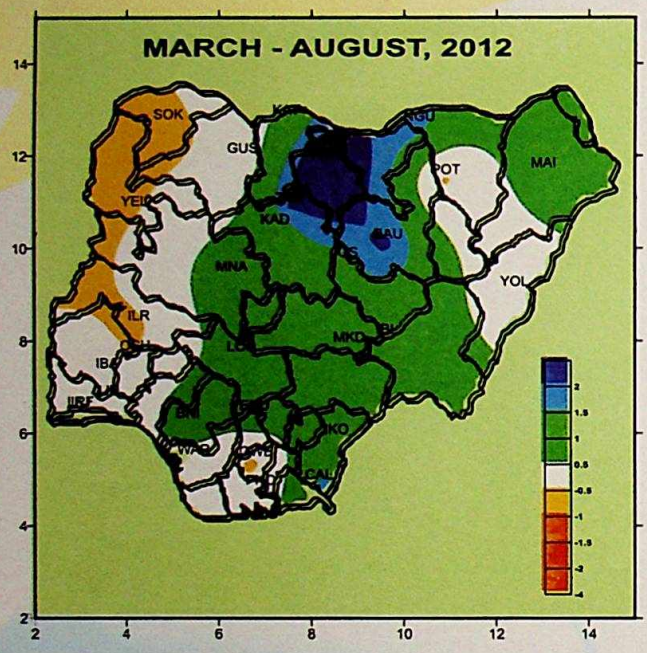

Fig. 3 : 6-Months Standardized Precipitation Index *(for Groundwater drought)*

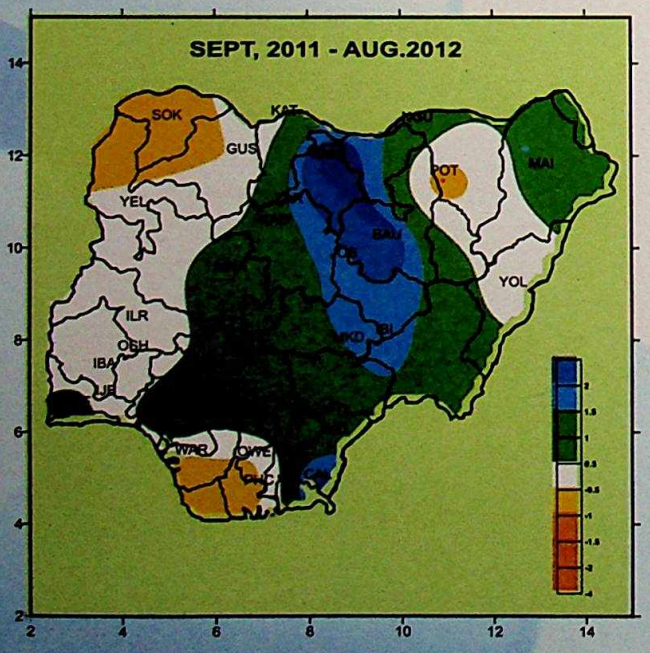

Fig. 4 : 12-Months Standardized Precipitation Index *(for stream-flow and lake storage drought)*

The 6-month SPI cumulative analysis reveals continued dominance of spread of normal to wetter condition which in effect might not be of any threat to groundwater aquifers particularly in most parts of the North except for some parts of Sokoto, Yelwa and Ilorin that experienced mildly dry condition. Nonetheless, there is need for conservation by tapping this resource with caution by residents of these areas. Generally, normal to severe wetter condition prevailed in the South ***(Fig. 3)***.

The cumulative 12-month SPI analysis for stream-flow and lake storage monitoring reveals that few stations such as Sokoto, Potiskum and parts of Yelwa and Gusau in the North with Port-Harcourt and parts of Warri in the South experienced moderately dry condition. Mild to severe wetness prevailed in most parts of the country particularly over North-central and North-east. This was as a result of the effect of September, 2011 to August, 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR SEPTEMBER, 2012

Wetter than normal conditions are expected during the month of September across the country especially over the extreme North where rainfall peak is expected in the month. This in effect may lead to ultimate flow increase in rivers and streams with expected positive impact on maritime and hydropower related activities in the country. Flood events may not be ruled out especially over flood prone areas.

9 Standardized Precipitation Index (SPI) Analysis for September

PREAMBLE

As expected, the month of September was wetter than August. Normal rainfall condition prevailed over greater parts of the country particularly in the North-western area. Mild to moderately wet conditions were observed over places like Minna, Kaduna, Zaria, Nguru, Maiduguri and Yola extending to northern part of Makurdi, Oshogbo, Benin, Enugu, Owerri, Calabar and parts of Port Harcourt in the South. Bauchi experienced extreme wetness. However, pockets of mild to moderate dryness were observed at Gusau, Potiskum, Lokoja, Warri and Ikom.

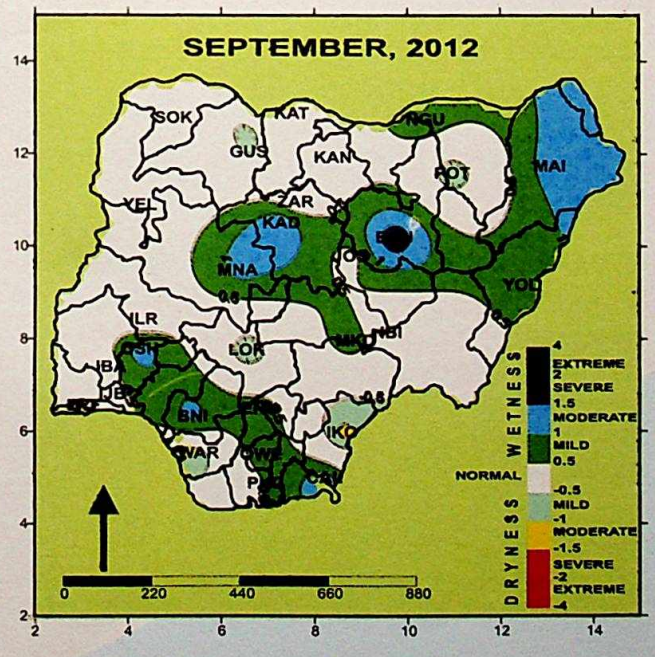

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

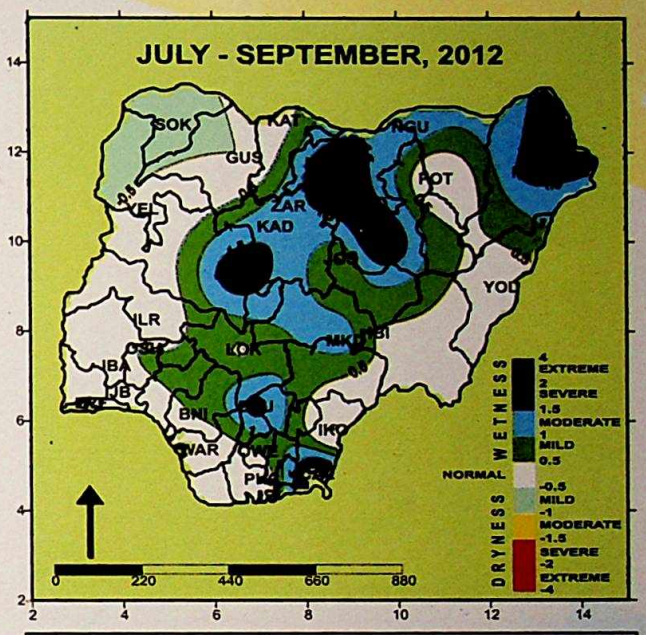

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

Result of the analyzed 1-month Standardized Precipitation Index (SPI) over the country shows prevalence of normal to wetter than normal rainfall conditions in most parts of the country. Bauchi in particular witnessed extreme wetness while several other stations in the country also experienced wetness ranging between mild and severe wetness. Mild dryness was observed over Gusau, Potiskum, Lokoja, Warri and Ikom ***(Fig.1)***.

The 3-month SPI analysis shows continued widespread of normal rainfall condition with good spread of wetness over the northern and southern parts of the country. Extreme wetness was observed over Bauchi while other places like Minna, Kaduna, Zaria, Nguru, Maiduguri and Yola had mild to severe degree of wetness. Also in the South, places like Oshogbo, Benin, Enugu, Owerri, Calabar and parts of Port Harcourt witnessed mild to severe wetness though with few places like Warri and Ikom recording mild to moderate dryness. Worth mentioning as well is the mild dryness over Sokoto, parts of Yelwa and Gusau ***(Fig.2)***.

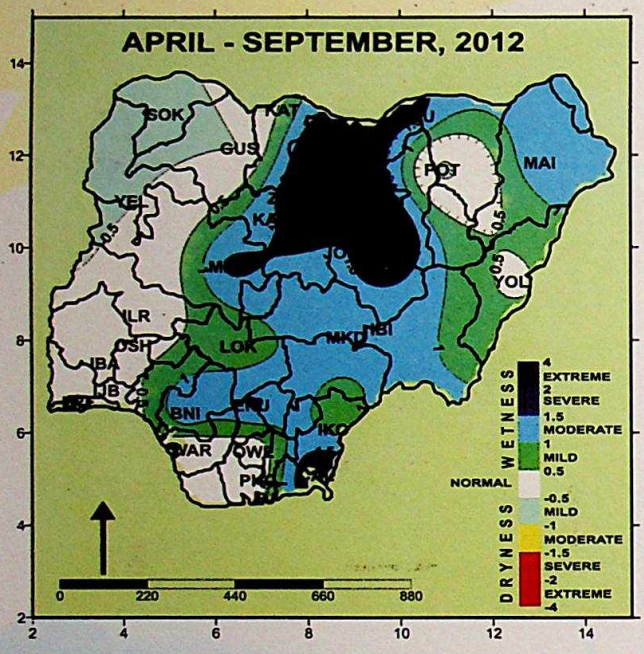

Fig. 3 : 6-Months Standardized Precipitation Index *(for Groundwater drought)*

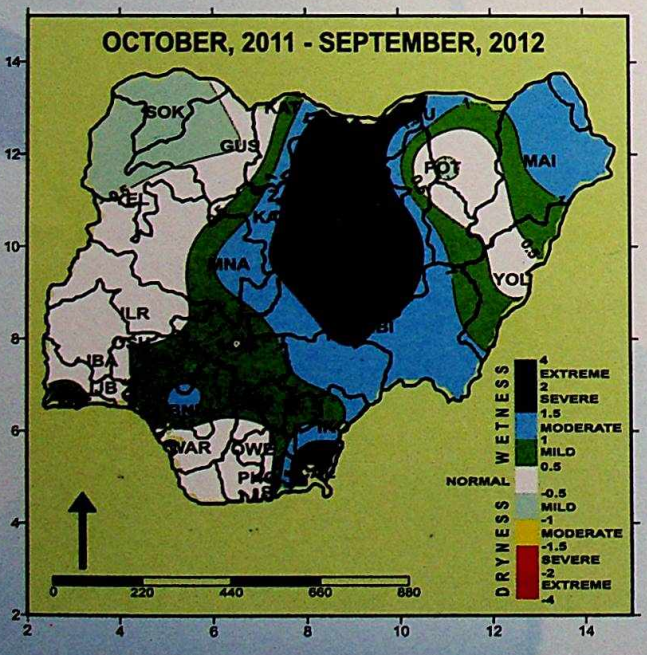

Fig. 4 : 12-Months Standardized Precipitation Index *(for stream-flow and lake storage drought)*

The 6-month SPI cumulative analysis still reveals the mild dry condition over Sokoto and environ. It also shows continued deepening of extreme wet condition over Bauchi and Kano, a situation that favoured groundwater aquifers particularly in most parts of the North except Potiskum, Sokoto, parts of Yelwa and Gusau that experienced mildly dry condition. Nevertheless, residents of these environments are still advised to tap the resource with caution in order to forestall its possible depletion. Generally, normal to severe wetter conditions prevailed in the South particularly over Calabar with severe wetness. ***(Fig. 3)***.

The cumulative 12-month SPI analysis for stream-flow and lake storage monitoring reveals intensified wetness over some stations in the North like Bauchi, Jos and Kano while Potiskum, Sokoto and its environs experienced mild dryness. In the same vein, most southern parts of the country also witnessed normal to extreme wet condition especially over Calabar. This was as a result of the effect of October, 2011 to September, 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR OCTOBER, 2012

Reduced rainfall is expected in the month of October especially over the extreme North, indicating the approaching end of the rainy season due to southward movement of the ITD. Meanwhile, central and the southern states may continue to experience normal rainfall with considerable reduced intensity rate. The expected increased river and stream flows will favour marine and hydropower related activities particularly over the coastal regions of the country. Few cases of flash flood may not be ruled out particularly in flood prone areas.

10 Standardized Precipitation Index (SPI) Analysis for October

PREAMBLE

The month of October witnessed mildly wetter than normal conditions compared to September which is a clear indication of the end of rainy season over the country. Though normal condition prevailed, appreciable degree of wetness especially over Sokoto axis of the extreme North was recorded. Mild to moderately wet conditions were recorded over places like Zaria, Kaduna, Minna Lokoja, Makurdi, Ibi in the North and few places in the South such as Calabar and parts of Enugu, Benin and Oshogbo. However, places like Potiskum, parts of Bauchi and Port Harcourt witnessed mild to moderate dryness.

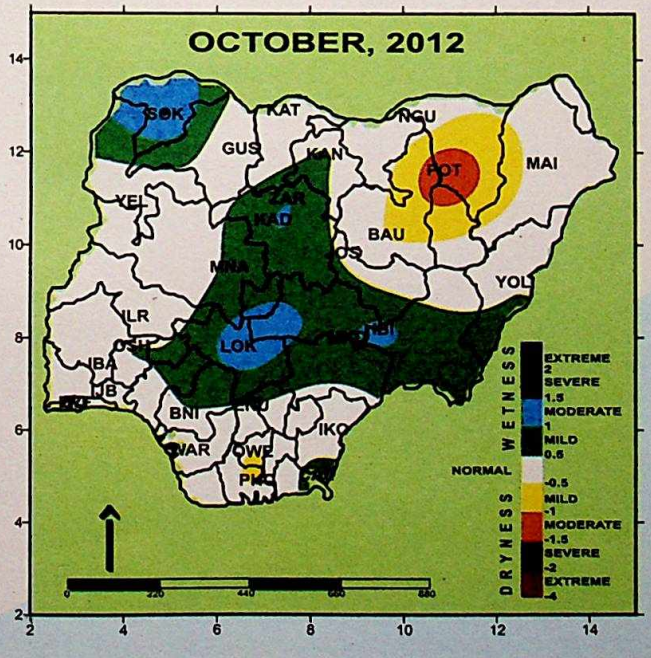

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

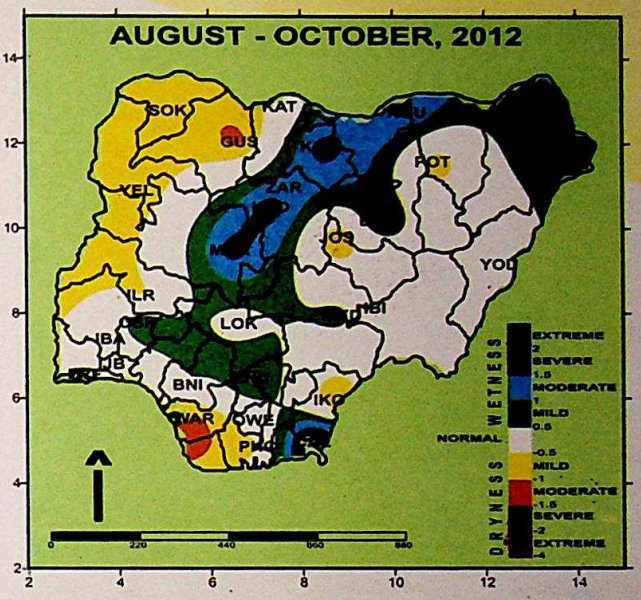

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) over the country reveals significant spread of normal conditions across the country. Noteworthy is the moderately wetter condition recorded over Sokoto compared to September situation. Few places like Zaria, Kaduna, Minna, Lokoja, Makurdi, Ibi in the North and places like Calabar, parts of Enugu, Benin and Oshogbo in the South, witnessed wetter conditions. However, places like Potiskum, parts of Bauchi and Port Harcourt experienced mild to moderate dryness ***(Fig. 1)***.

Analyzed 3-month SPI also shows significant spread of normal conditions with patches of severe wetness over Nguru, Kano, Kaduna and Minna in the North and only Calabar in the southern part of the country. Mild to moderately wet conditions were observed over places like Maiduguri, Bauchi, Makurdi and parts of Lokoja, Oshogbo, Benin and Enugu. Worthy of mention is the mild to moderately dry conditions over Gusau, Sokoto, Yelwa, Potiskum, Jos in the North and Warri, Ikom and parts of Port Harcourt in the South ***(Fig. 2)***.

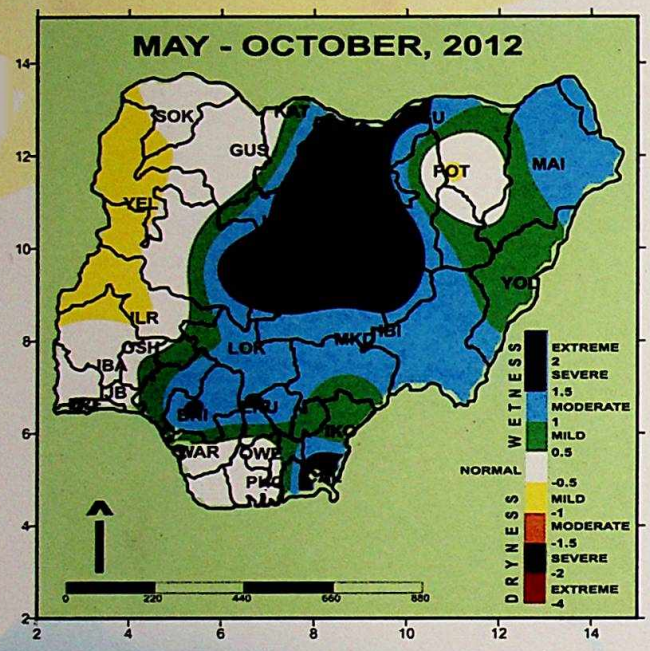

Fig. 3 : 6-Months Standardized Precipitation Index
(for Groundwater drought)

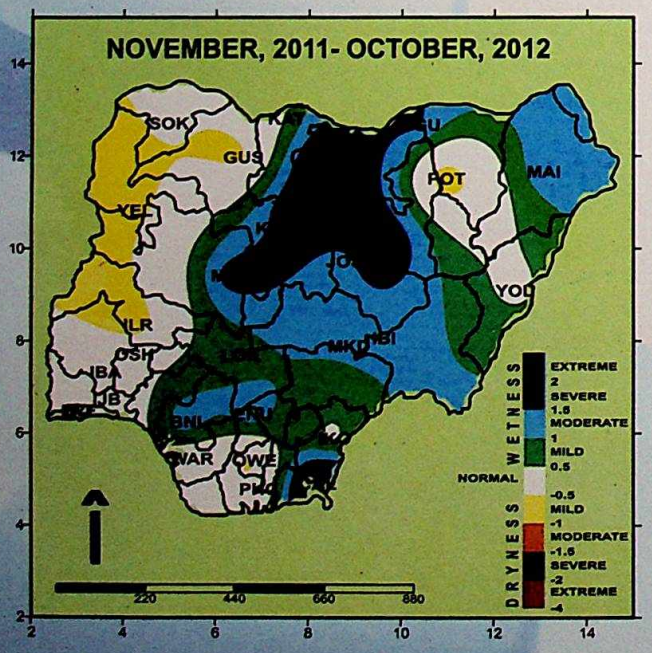

Fig. 4 : 12-Months Standardized Precipitation Index
(for stream-flow and lake storage drought)

The cumulative 6-month SPI analysis for the country reveals continued mild to extremely wet conditions over most parts of the country especially over Bauchi and Kano. This condition actually revealed well recharged aquifers particularly in most parts of the North except over Potiskum, Yelwa, parts of Sokoto and Ilorin that experienced mildly dry condition. Nevertheless, communities and government are still advised to tap the resource with caution. Normal to moderately wet conditions prevailed in the South except for Calabar that experienced extreme wetness. ***(Fig. 3)***.

The 12-month cumulative SPI analysis for stream-flow and lake storage monitoring over the country reveals significant wetness particularly stations like Bauchi and Kano in the North that had extreme wetness condition. Meanwhile stations like Potiskum, Yelwa, parts of Sokoto, Ilorin and Gusau experienced mild dryness. Most southern parts of the country also witnessed normal to extreme wet conditions especially over Calabar. This was as a result of the effect of November, 2011 to October, 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR NOVEMBER, 2012

Continued southward retreat of ITD is expected with the rains winding-up in the month of November across the country. This development, may give way to gradual loss of soil moisture which might not support rain fed Agriculture. Hence, the need for irrigation practices. Decline in river and stream flows may affect marine and hydropower related activities negatively while dry and dusty conditions may likely occur in some areas particularly in the North.

11 Standardized Precipitation Index (SPI) Analysis for November

PREAMBLE

Dominance of normal condition over the country clearly indicates the end of the rainy season as well as setting in of the dry season with recent hazy conditions over most central and northern states. Though, certain degree of wetness (severe to mild) was recorded particularly in the South, lessons must be learnt from the devastating flood episodes of this year in order to prevent future occurrences. Relevant stakeholders especially in the water resources sector therefore need to avail themselves with this product for use in order to reduce the extreme hydro meteorological disasters.

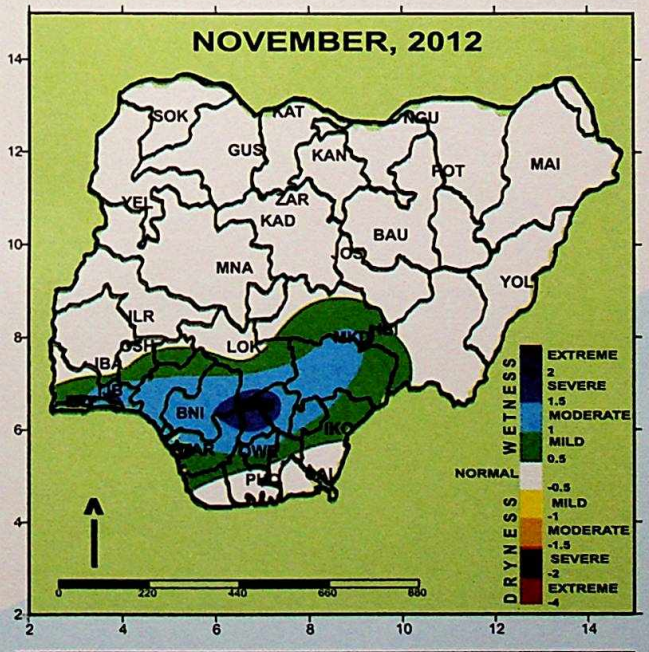

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

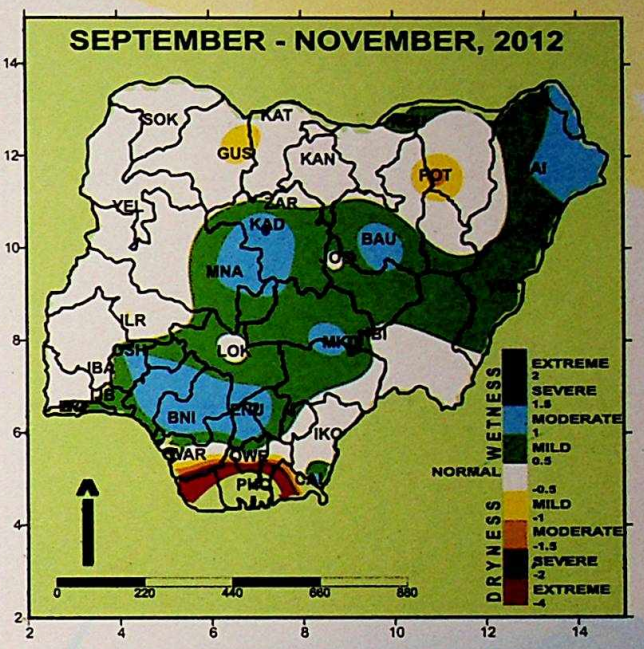

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) over the country reveals widespread normal conditions across the country except for some places in the South. Noticeable is the severe wetter condition recorded over Enugu and Ijebu Ode with few other places experiencing wetness between mild and moderate. ***(Fig.1)***.

In the 3-month SPI analysis, significant spread of normal to wetter conditions were observed across the country especially in the northeastern flank, with patches of dryness ranging from mild to extreme due to cumulative effect of September and October rainfall. This in essence showed the relatively moist condition of soil in most parts of the country and by implication, favoured late farming in some of these areas. Also worth mentioning is the extreme dry condition recorded over parts of Warri, Owerri, Port Harcourt and Calabar ***(Fig. 2)***.

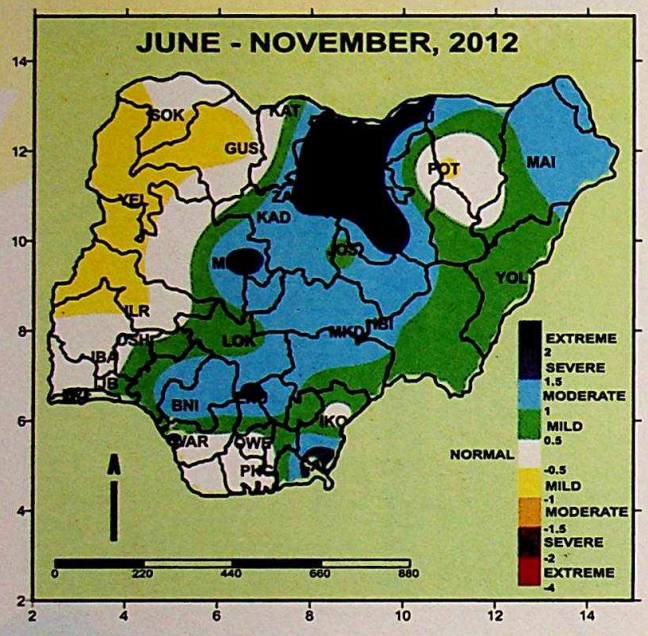

Fig. 3 : 6-Months Standardized Precipitation Index
(for Groundwater drought)

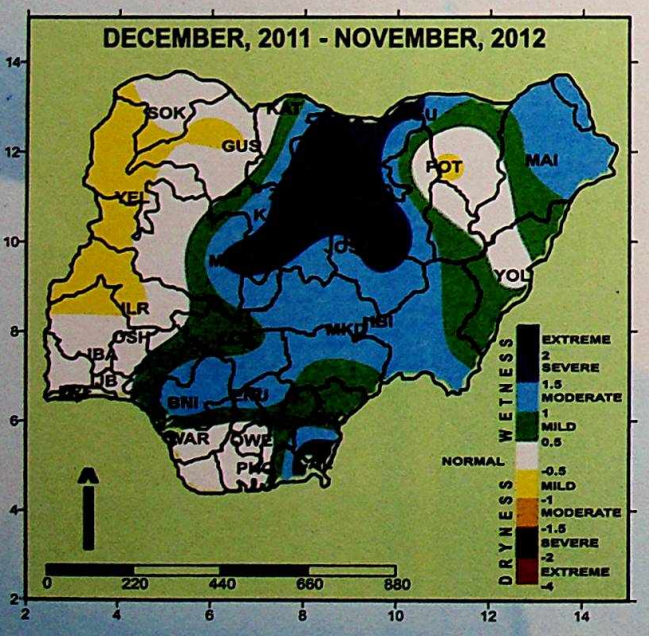

Fig. 4 : 12-Months Standardized Precipitation Index
(for stream-flow and lake storage drought)

The cumulative 6-month SPI analysis for the country reveals persisting mildly to extremely wet conditions over most parts of the country particularly over Kano and Bauchi. This condition actually indicated stable recharged condition of aquifers especially in most parts of the North with lesser threat to groundwater except over Potiskum, Gusau, Sokoto, Yelwa and Ilorin that experienced mildly dry condition. It is still advisable that communities and government use the resource with caution in order to forestall its possible depletion. Normal to severe wetter conditions prevailed in the South ***(Fig. 3)***.

The 12-month cumulative SPI analysis for stream-flow and lake storage monitoring over the country reveals persistent extreme wetness condition over Bauchi and Kano in the North. Stations like Potiskum, Yelwa, parts of Sokoto, Ilorin and Gusau experienced mild dryness. Greater parts of the South witnessed normal to extreme wetter conditions with Calabar being more significant. This was as a result of the effect of December, 2011 to November, 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR DECEMBER, 2012

Present hazy conditions are expected to continue in the month of January with reduced visibility in most northern parts of the country. Expected Low flows in rivers and streams due to rainfall shortages across the country may impact negatively on maritime and hydropower generating activities.

12 Standardized Precipitation Index (SPI) Analysis
December

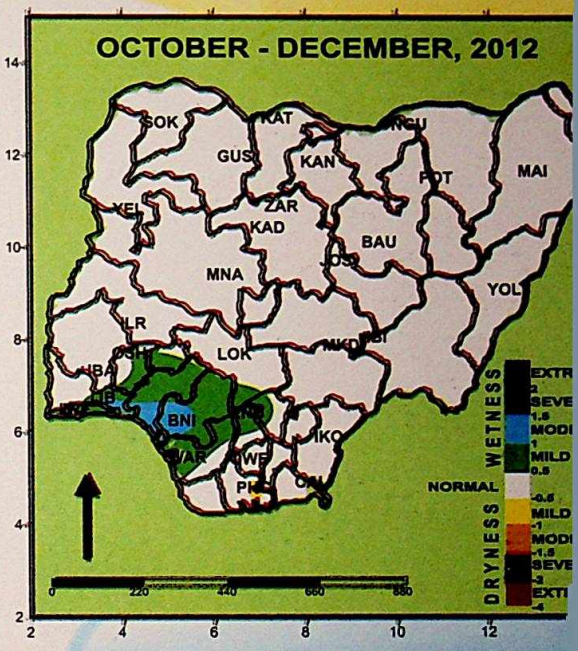

Fig. 2 : 3-Months Standardized Precipitation Index *(for meteorological and agricultural drought)*

PREAMBLE

Dry and slightly hazy weather conditions prevailed over the entire country particularly in the northern part following cessation of rainfall during the period under consideration. However, Ijebu-Ode, Warri, parts of Benin, Ondo, Oshogbo, Ibadan and Ikeja experienced mild to moderate wetness, which apparently was due to coastal effects, although few other coastal areas like Port Harcourt recorded mildly dry condition.

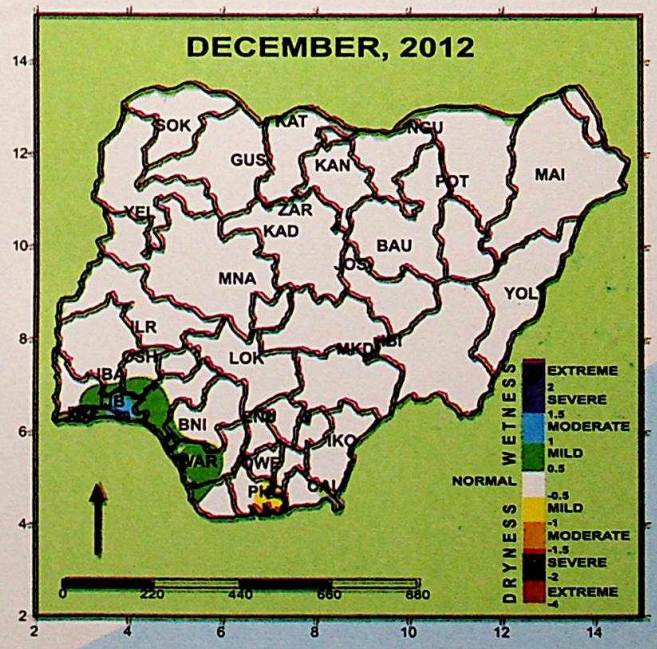

Fig.1: 1-Month Standardized Precipitation Index *(for meteorological and agricultural drought)*

OBSERVED CLIMATIC FEATURES

The 1-month Standardized Precipitation Index (SPI) reveals clear dominance of normal conditions across the entire country especially in the North, except for few places in the South that recorded mildly to moderate wetter conditions. Affected areas include; Ijebu-Ode, Warri, parts of Benin, Ondo, Oshogbo, Ibadan and Ikeja (Fig.1)

It is evident from the 3-month SPI analysis that normal condition was also dominant in the country. However, the analysis indicates wet conditions over few places like Ijebu-Ode, Warri, parts of Benin, Ondo, Oshogbo, Ibadan and Ikeja in the South. This was due to cumulative effect of earlier rainfall in October and November (Fig.2).

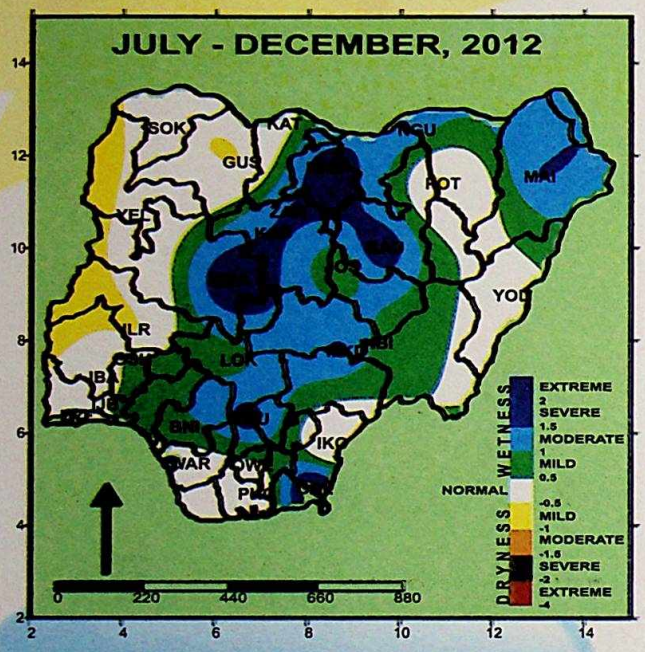

Fig. 3 : 6-Months Standardized Precipitation Index *(for Groundwater drought)*

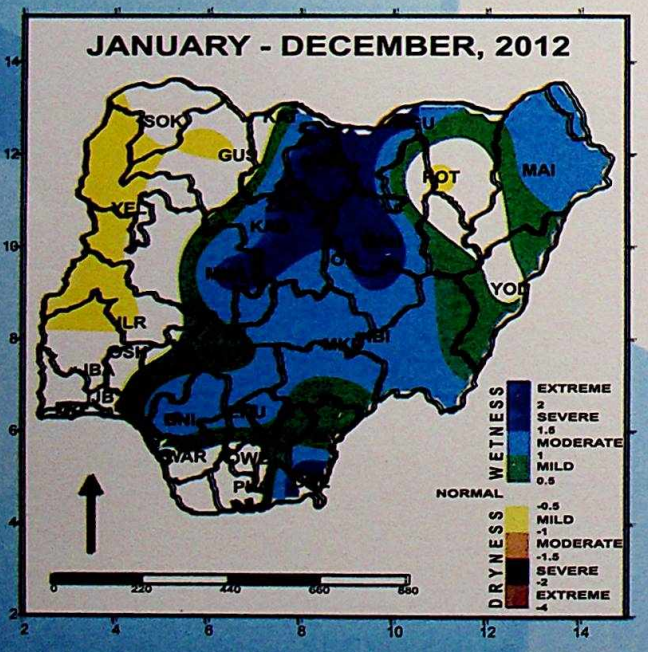

Fig. 4 : 12-Months Standardized Precipitation Index *(for stream-flow and lake storage drought)*

The 6-month cumulative SPI analysis over the country shows significant level of mild to severe wet conditions over most parts of the country especially over Kano, Bauchi, Zaria and parts of Maiduguri. These conditions in effect, revealed a near reliable recharged condition of aquifers especially in most parts of the North with little or no threat to groundwater except over Potiskum, Gusau and parts of Sokoto, Yelwa and Ilorin that experienced mildly dry condition. It is advisable to tap the resource with caution because of its possible depletion. The South in general, experienced normal to severe wetter conditions ***(Fig. 3)***.

The 12-month cumulative SPI analysis for stream-flow and lake storage monitoring over the country shows significant storage level particularly at stations like Bauchi and Kano in the North due to their persistent extreme wet conditions while stations like Potiskum, Gusau and parts of Sokoto and Yelwa had mild dryness. Greater parts of the South also witnessed normal to extreme wetter conditions especially over Calabar. This was as a result of the effect of January - December 2012 cumulative rainfall on the stream-flow and lake storage in the country ***(Fig.4)***.

CLIMATE OUTLOOK FOR JANUARY, 2013

The slight hazy condition is expected to continue in the month of January 2013, but with increased intensity in most northern parts of the country, impairing visibility. Low flows in rivers and streams as a result of shortage of rainfall across the country are expected to impact on activities of marine and hydropower generation.

THE SUMMARY OF THE 2013 SEASONAL RAINFALL PREDICTION (SRP) IN TERMS OF AGRO-ECOLOGICAL ZONES IN NIGERIA

AGRO ECOLOGICAL ZONES	PLACES COVERED	ONSET DATES	CESSATION DATES	LENGTH OF GROWING SEASON (Days)	SEASONAL RAINFALL AMOUNT (mm)
Swamp Forest	Brass, Eket, Bonny, P/ Harcourt, Warri, Yenagoa, Ikot Ekpene, Calabar, Sapele, Uyo, Lagos, Asaba, Ogoja, Badagry, etc.	26 Feb. - 21 Apr.	10 Nov. - 17 Dec.	204 – 294	1714 – 2986
Topical Rain Forest	Ondo, Owerri, Benin, Ikom, Auchi, Akure, Ijebu – Ode, Oshogbo, Owo, Onitsha, Okigwe, Ilesa, etc.	9 Mar. - 6 Apr.	15 Nov. - 7 Dec.	222 – 271	1123 – 2386
Guinea Savannah	Shaki, Nsukka, Enugu, Afikpo, Ilorin, Abakaliki, Otukpo, FCT (Abuja), Lokoja, Makurdi, Ibi, etc.	26 Mar. - 2 May	4 - 22 Nov.	187 – 247	859 – 1839
Sudan Savannah	Jos, Minna, Bida, Kafanchan, Gombe, Kaduna, Zaria, Yola, Bauchi, Kano, etc.	24 Apr. - 28 May	16 Oct. - 14 Nov.	142 – 216	679 – 1244
Sahel Savannah	Gusau, Funtua, Dutse, Damaturu, Sokoto, Katsina, Dawa, Potiskum, Maiduguri, Gashua, Nguru, etc.	18 May - 24 Jun.	5 - 23 Oct.	109 – 156	421 – 884

ALIFIG
INTERNATIONAL LIMITED

Alifig International Limited is the leading meteorological instruments / systems distributor in West Africa. Alifig partners with leading global players in meteorology equipments manufacturing, which includes: Graw Radiosondes, Kipp & Zonen B.V, Sagim S.A, Envirtech, Totex, LSI Lastem, Munro, others.

Our services profile covers the following:
Aviation, Agriculture, Industrial, Highway
Hydrology, Micro Meteorology and Marine Meteorology.
We also deliver software solutions for weather forecasting services.

We supply, install, and maintain meteorological equipments such as:

- **Automatic Weather Observation System (AWOS)**
- **Upper Air Systems**
- **Marine Weather Buoy/ Buoy Networks**
- **Air Quality Systems / Networks**
- **Solar Radiation Instruments**
- **Rainfall Equipments**
- **Wind Observation Systems**

Registered Address:
11 Ekukinam Crescent,
Utako, Abuja

Telephone:
09-8746531,
08069171988

ibl software engineering | Kipp & Zonen | sagim | LSI | GRAW RADIOSONDES

Flooded Neighbourhood
in Nigeria - July 2012

For Comments, Please write to

The Director General/CEO
Nigerian Meteorological Agency (NIMET)
Headquarters,
National Weather Forecasting
and Climate Research Centre
Nnamdi Azikiwe International Airport,
Abuja, Nigeria

mail: nimetdrought2009@gmail.com.
Tel: +2348074358025, +2348038620950

or you may also visit our website:
www.nimetng.org/nimet

Artlinks Digital Press.
08036794302, 08033330231