

**GHANA METEOROLOGICAL AGENCY**

Research and Applied Meteorology

*FLOOD AND DROUGHT  
BULLETIN*

2023



Monthly hydromet  
analysis of  
Standardized  
Precipitation Index

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## INTRODUCTION

In recent decades, the world has experienced a notable uptick in natural disasters, many of which stem from extreme weather and climate events, driven by fluctuations and alterations in climatic parameters, particularly rainfall patterns. For instance, each year, over half of the Earth's surface faces the threat of drought, while floods emerge as one of the deadliest and costliest disasters worldwide.

In Ghana, the lingering impacts of the flood disaster on June 3, 2015, persist, with thousands still displaced and vital socio-economic sectors such as education, transportation, and healthcare systems disrupted. This alarming situation emphasizes the ongoing necessity for enhanced Applied Meteorological Information Service products provided by the Ghana Meteorological Agency (GMet).

The Drought and Flood Monitoring Bulletin developed through the analysis of the Standardized Precipitation Index (SPI), is a pivotal product within GMet's Research and Applied Meteorology (R&AM). It furnishes invaluable information on rainfall patterns, serving as a basis for detecting early warning signal of both flood and drought occurrences.

The current publication compiles the monthly bulletins for all twelve (12) months of the year 2023, offering an overview of the overarching pattern revealed by the SPI analyses and the corresponding potential for droughts and floods across the country.

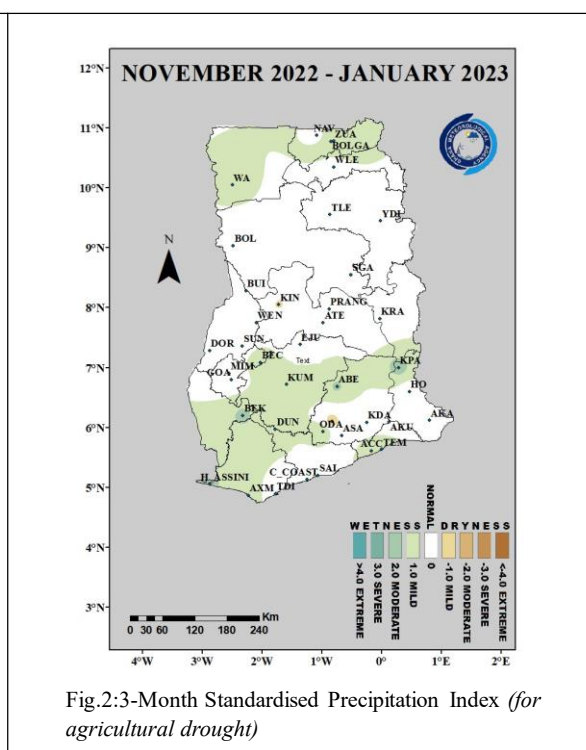
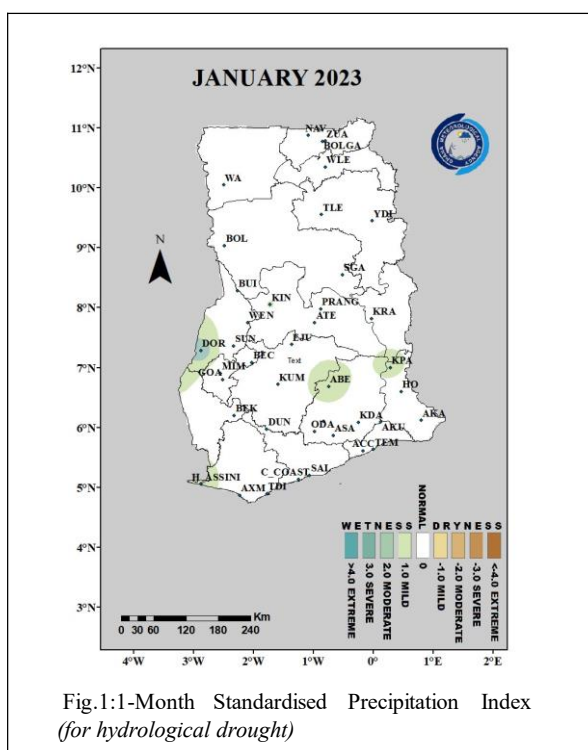
Aligned with the Global Framework for Climate Services (GFCS) established by the World Meteorological Organization (WMO), which promotes enhanced collaboration between climate service providers like GMet and its users. GMet has fostered increased interactions with stakeholders in hydro-allied sectors. This proactive engagement aims to ensure the Bulletin's effective application, thereby advancing long-term success in weather pattern management.

We highly encourage ongoing feedback from these end-user sectors. Please direct any correspondence to the Ghana Meteorological Agency, specifically to the Research and Applied Meteorology department.

## January 2023

### Introduction

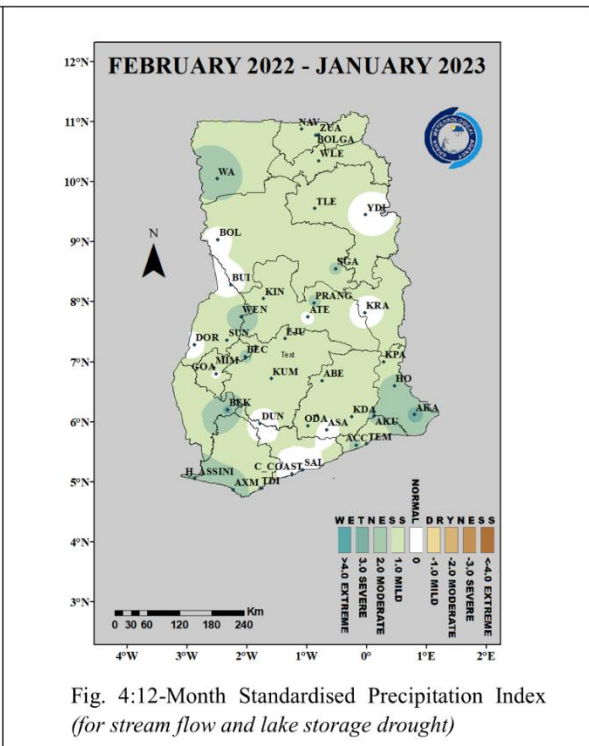
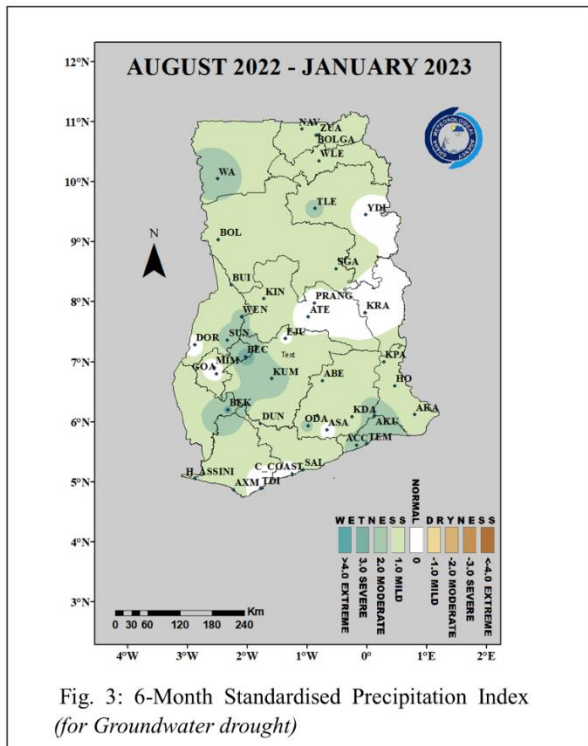
The Drought and Flood Monitoring Bulletin for January 2023 has been prepared using the WMO-recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1 month (January 2023), 3 months (December 2022– January 2023), 6 months (August 2022 – January 2023) and 12 months (February 2022 - January 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



### OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for January is shown in Fig. 1. Normal condition is seen in most parts of the country, whereas mild to moderate wet conditions can be seen in areas around Kpandu, Abetifi, Half Assini, and Dormaa.

The 3-month SPI reveals mild wetness over some parts of the northern and the forest belt. Pockets of moderate wetness is seen around Sefwi Bekwai, Abetifi, and Kpandu. The rest of the country is dominated by normal condition. However, mild dryness can be spotted over areas around Kintampo and Kade.



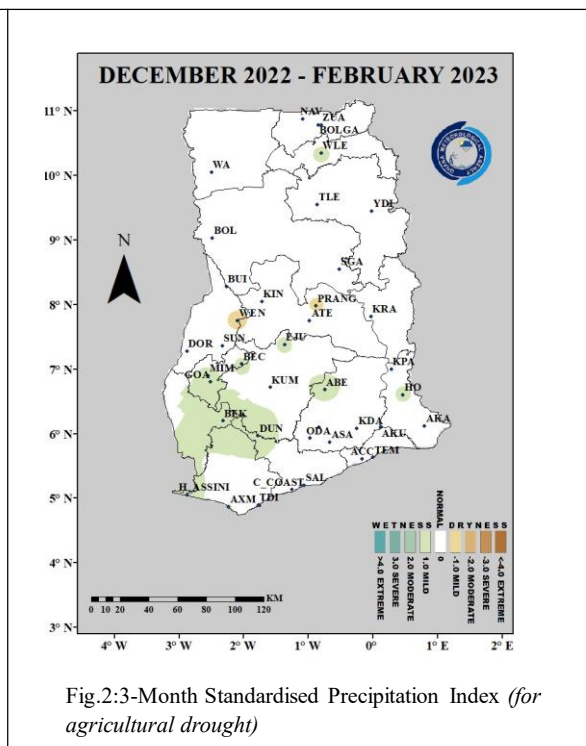
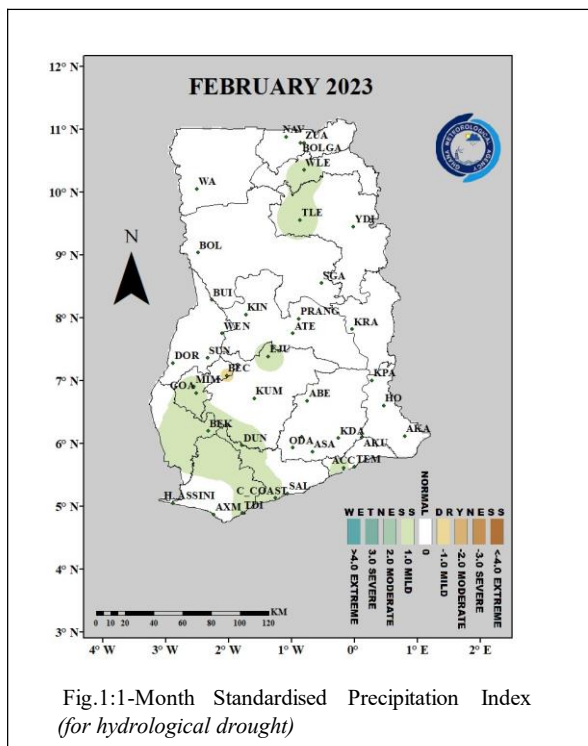
The 6-Month SPI (Fig. 3) used for groundwater monitoring has revealed mild wet condition with pockets of moderate wetness over most part of the country. Severe wetness can be seen in areas around Bechem and Sefwi Bekwai. Normal condition is seen over regions around Prang, Yendi, Dormaa, Cape Coast, and Takoradi.

The 12-Month SPI (Fig. 4) for monitoring streamflow and lake storage indicates mild wetness over most parts of the country. Pockets of moderate wetness are seen in Wa, Prang, Salaga, Axim, Accra, Wenchi, and Ho whereas severe wet condition can be seen around Akatsi and Sefwi Bekwai. Areas around Yendi, Kete Krachi, Asamankese, Saltpond, Bui, Dormaa, and Dunkwa depicted a normal condition.

## February 2023

### INTRODUCTION

The Drought and Flood Monitoring Bulletin for February, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (February, 2023), 3-month (December 2022 – February 2023), 6-month (September 2022 – February, 2023) and 12-month (March 2022 – February, 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



### OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for February, 2023 is shown in Fig. 1. Normal conditions are seen almost all over the country. Mild wetness can be seen in regions around Takoradi, Cape Coast, Accra, Sefwi Bekwai, Dunkwa, Goaso, Ejura, Tamale and Walewale. Mild dryness is also seen in Bechem.

The 3-month SPI reveals normal conditions dominating most parts of the country. Pockets of mild wetness is seen in places such as Half Assini, Dunkwa, Abetifi and Walewale. Prang and Wenchi experienced mild dryness.

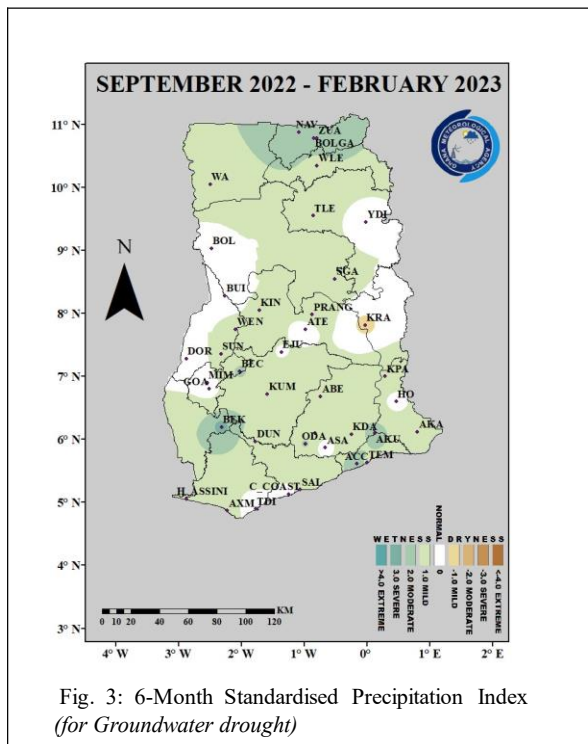


Fig. 3: 6-Month Standardised Precipitation Index (for Groundwater drought)

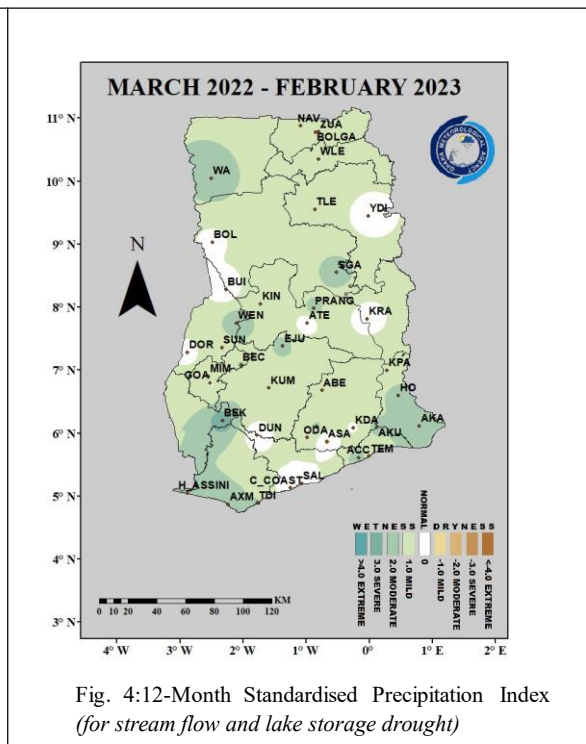


Fig. 4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

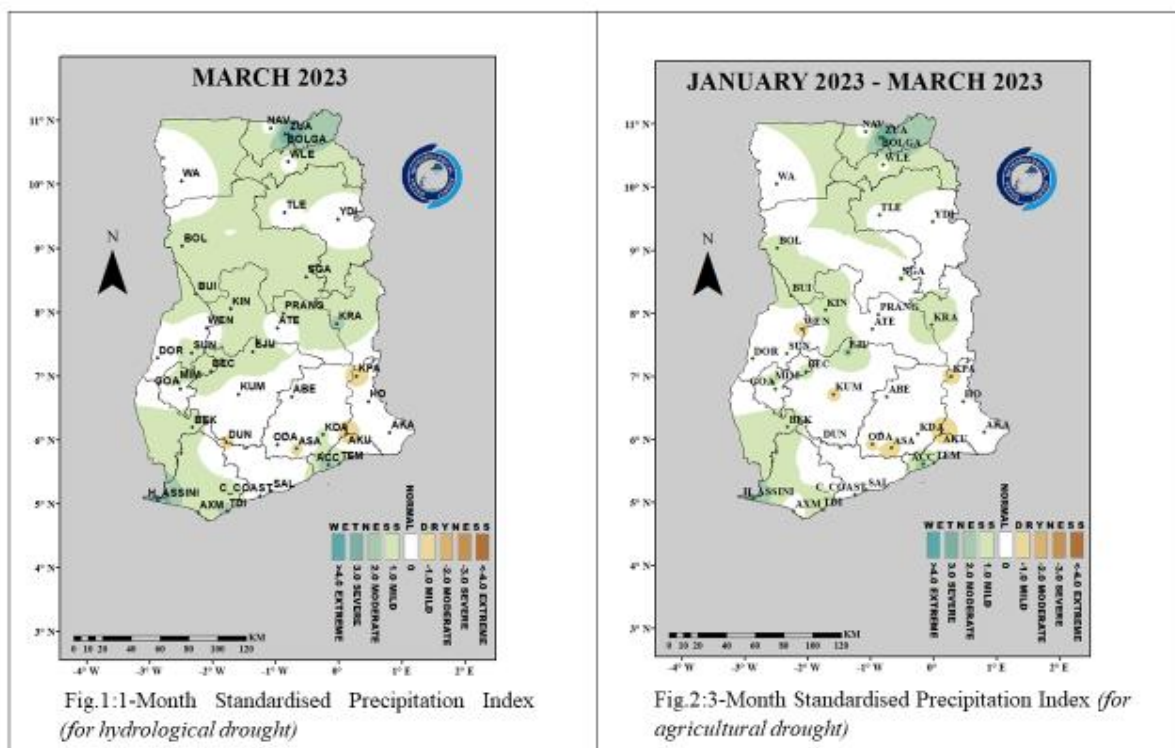
The 6-Month SPI (Fig. 3) used for groundwater monitoring reveals mild wet conditions over most parts of the country with pockets of moderate and severe wetness over areas such as Sefwi Bekwai, Accra, Akuse and Bolgatanga environs. Bole, Bui, Yendi, Atebubu, Dormaa, Goaso, Ejisu, Ho, Asamakese, Takoradi, and Cape Coast depicted normal condition with mild dry condition seen over Kete Krachi.

The 12-Month SPI (Fig. 4) for monitoring stream flow and lake storage indicates mild wetness dominating most parts of the country with moderate to severe wetness over areas such as Sefwi Bekwai, Wenchi, Wa, Salaga, Ejura and Akatsi environs. Asamakese showed mild dryness whereas places such as Bole, Yendi, Atebubu, Dormaa, Goaso, Kete Krachi, Koforidua, Dunkwa and Cape Coast showing normal conditions.

### March 2023

#### INTRODUCTION

The Drought and Flood Monitoring Bulletin for March, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (March 2023), 3-month (January 2023 - March 2023), 6-month (October 2022 – March 2023) and 12-month (April 2022 - March 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



#### OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for March is shown in Fig. 1. Mild to moderate wet conditions are seen in most parts of the transition zone, northern and western portions of the country. Severe to extreme wetness is also seen around Half Assini, Bolga, Zuarungu and Navrongo with pockets of mild dry conditions seen in Kpandu, Asamankese, Dunkwa and Akuse.

The 3-month SPI reveals normal conditions dominating the country with mild wetness seen over some parts of the northern, transition and western portions. Patches of moderate to extreme wetness can be seen around Half Assini, Zuarungu, and Bolgatanga. Mild dry condition is also seen around Wenchi, Kumasi, Akim Oda, Asamankese, Kpandu and Akuse.

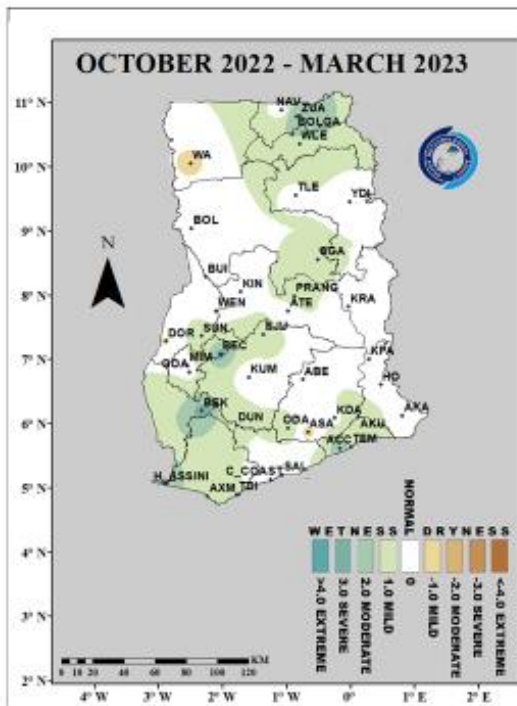


Fig. 3: 6-Month Standardised Precipitation Index (for Groundwater drought)

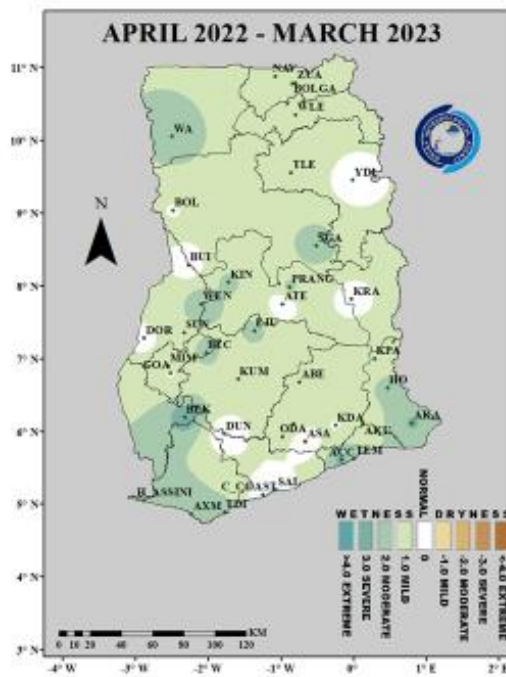


Fig. 4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

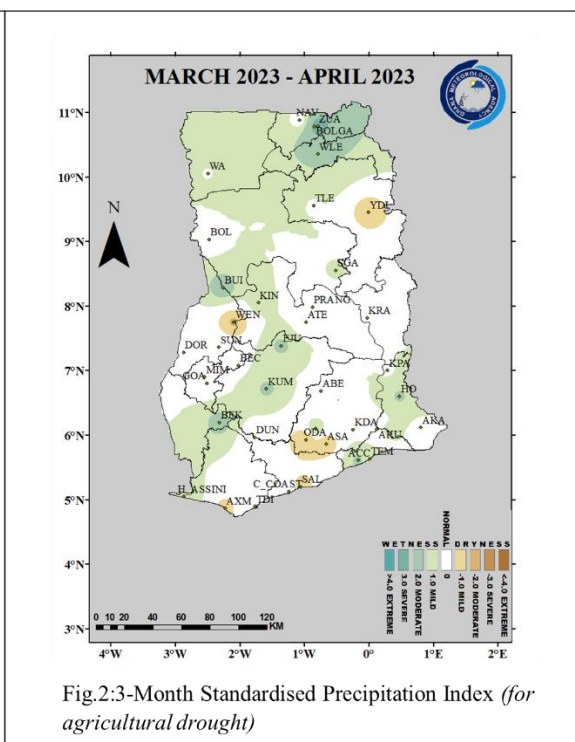
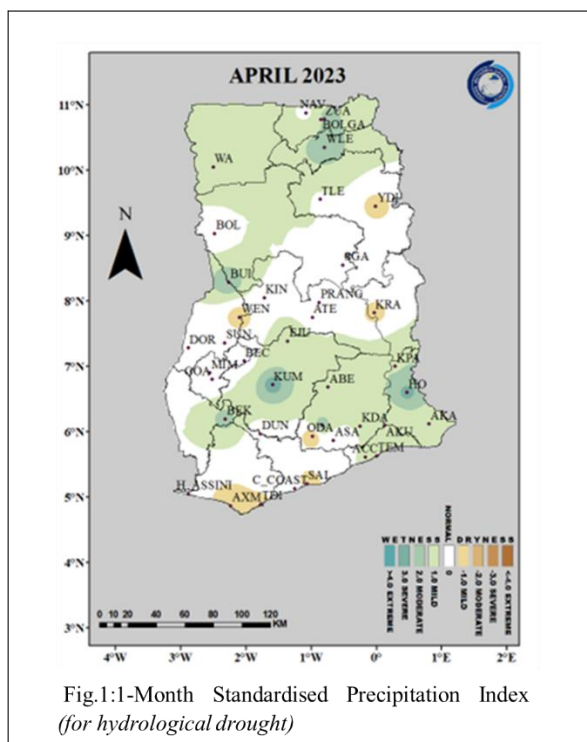
The 6-Month SPI (Fig. 3) used for groundwater monitoring reveals normal to mild wet conditions dominating the country. Severe to extreme wetness can be seen in areas around Accra, Half Assini, Sefwi Bekwai, Bechem and Bolgatanga environs. Wa and Asamankese showed mild dry condition.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake storage depicts mild to moderate wetness over most parts of the country. Severe to extreme are also seen around Salaga, Sefwi Bekwai, Accra and Akatsi. Asamankese was the only place that showed mild dry condition over the period under review.

April 2023

INTRODUCTION

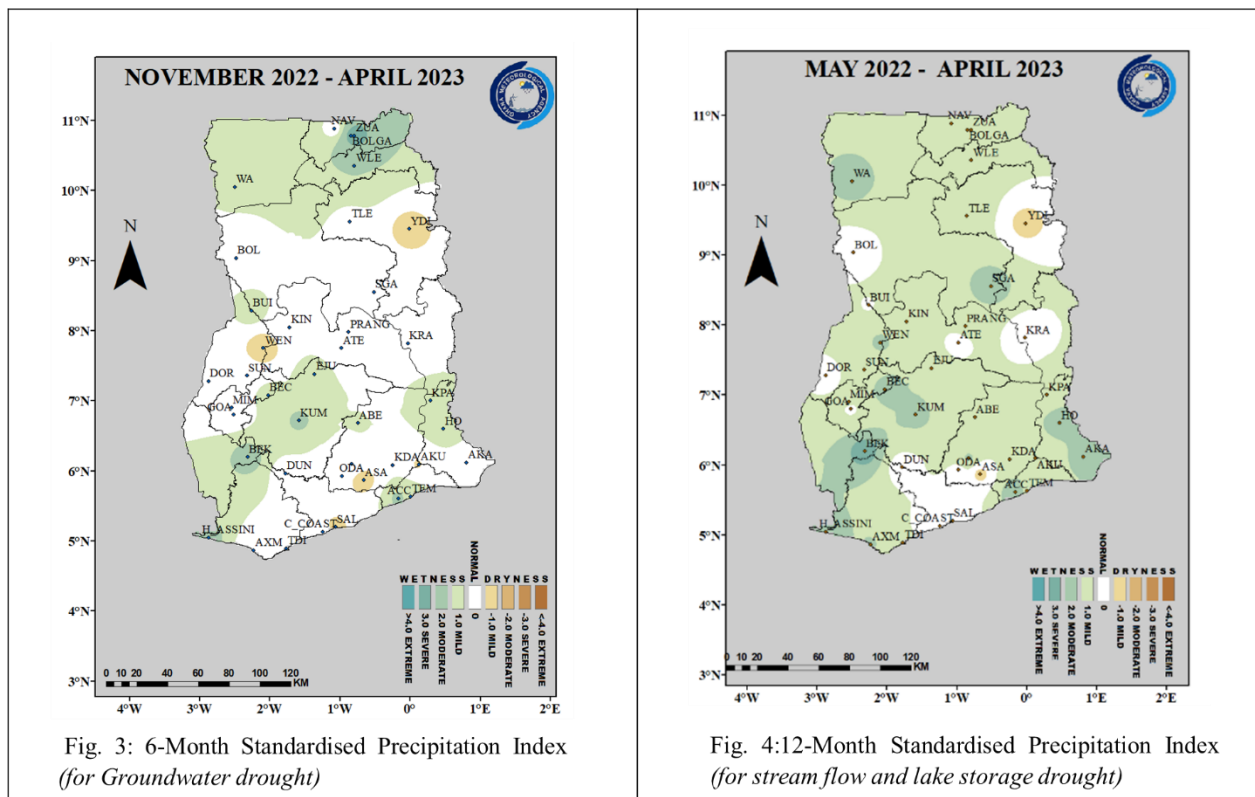
The Drought and Flood Monitoring Bulletin for April, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (April 2023), 3-month (February 2023 – April 2023), 6-month (November 2022 – April 2023) and 12-month (May 2022 – April 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



OBSERVATIONS & ANALYSIS

The 1-Month Standardised Precipitation Index (SPI) for April is shown in Fig. 1. A normal condition to mild wet is seen in most parts of the country. Patches of moderate to severe wet conditions are shown in areas including Walewale, Bui, Kumasi, Sefwi Bekwai and Ho. Mild dryness can be seen over areas such as Yendi, Wenchi, Kete Krachi, Akim Oda, Axim and Saltpond.

The 3-month SPI reveals normal to mild wet conditions over most parts of the country with pockets moderate to severe wetness observed in Zuarungu, Bui, Ejura, Kumasi, Sefwi Bekwai, Ho and Accra. Mild dryness is depicted in areas such as Asamankese, Saltpond, Axim and Yendi with Wenchi showing a moderate dry condition.



The 6-Month SPI (Fig. 3) used for groundwater monitoring reveals mild dryness over Yendi, Wenchi, Asamankese and Saltpond with normal to mild wet conditions observed in most parts of the country. Moderate wetness can be seen in Half Assini, Sefwi Bekwai, Kumasi, Accra and Walewale with severe condition of wetness also seen around Zuarungu and Bolga.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake storage indicated a mild condition of wetness in most parts of the country with moderate wet condition observed in areas such as Wa, Salaga, Wenchi, Kumasi, Bechem, Half Assini, Axim, Accra, Ho and Akatsi. Sefwi Bekwai recorded a severe wet condition. Patches of normal condition around Bole, Kete Krachi, Atebubu, Dunkwa, Cape Coast and Dormaa. A mild dryness is seen in Asamankese and Yendi.

May 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for May 2023 has been prepared using the WMO-recommended Standardised Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1 month (May 2023), 3 months (March 2023 – May 2023), 6 months (December 2022 – May 2023), and 12 months (June 2022 – May 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.

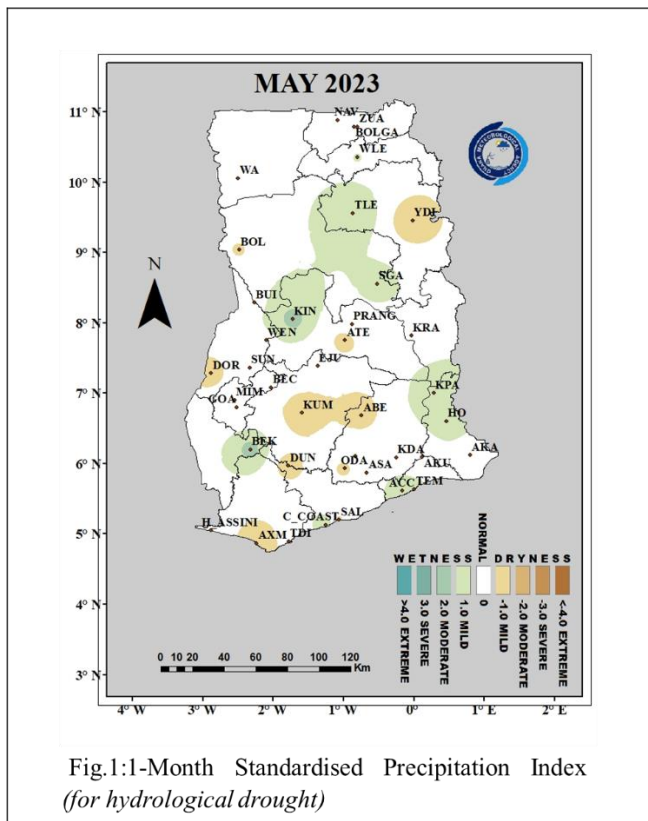


Fig.1:1-Month Standardised Precipitation Index (for hydrological drought)

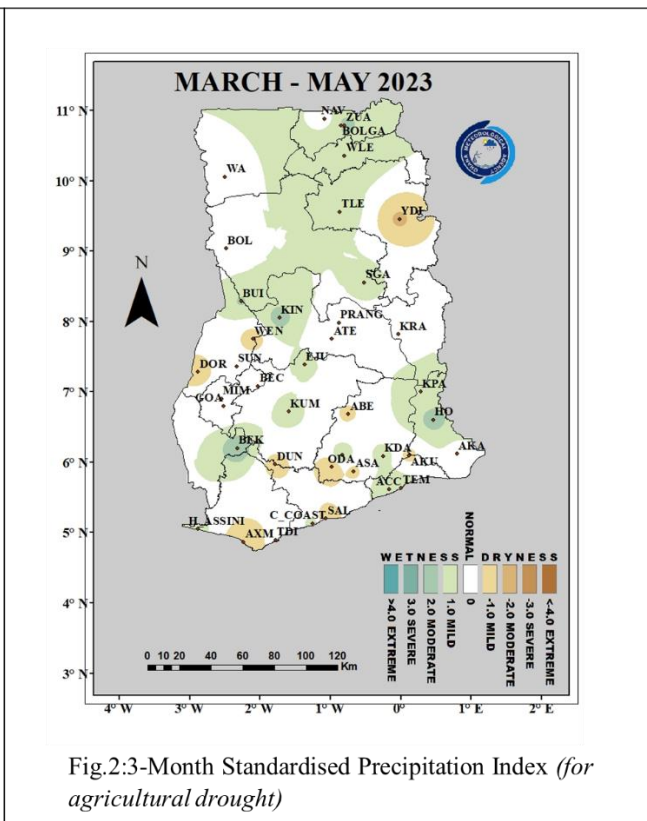
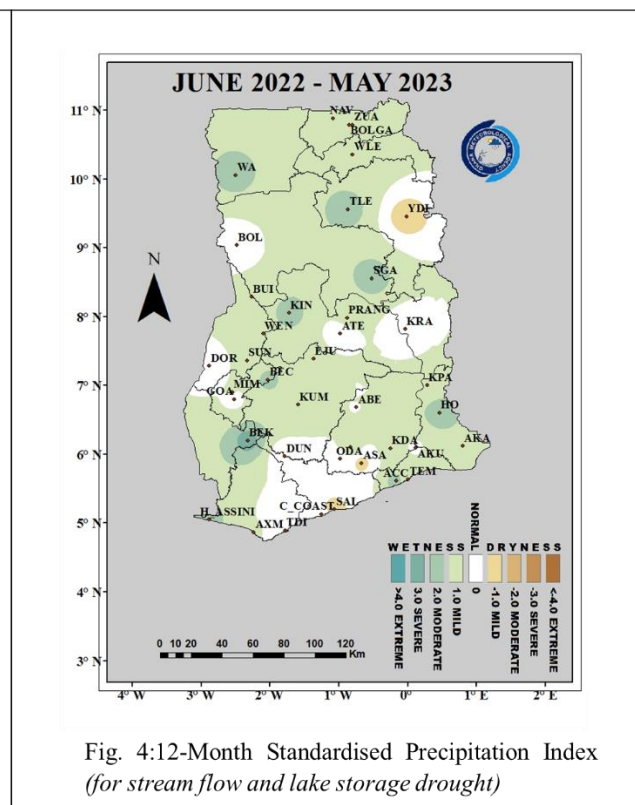
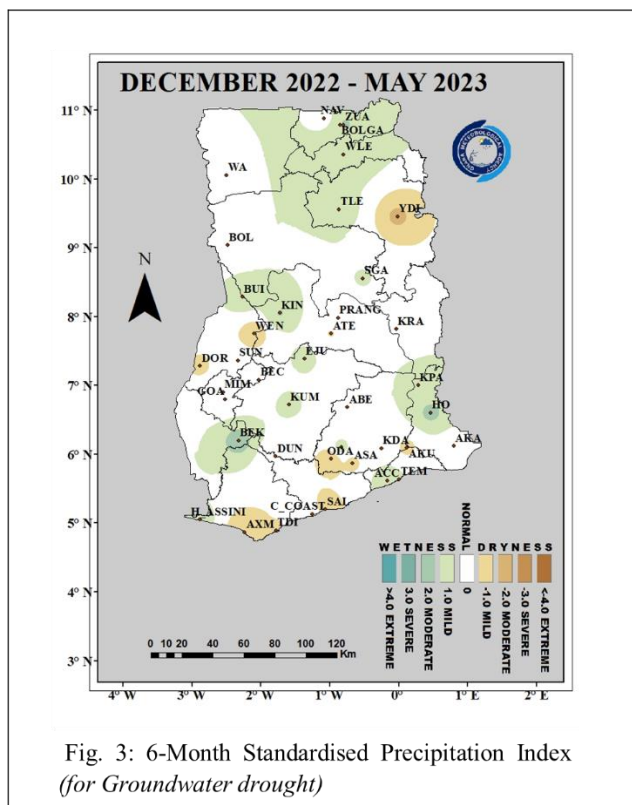


Fig.2:3-Month Standardised Precipitation Index (for agricultural drought)

OBSERVATIONS & ANALYSIS

Fig. 1 depicts the 1-Month Standardized Precipitation Index (SPI) for May. Most parts of the country experienced normal condition with patches of mild wetness over areas such as Tamale, Salaga, Ho, Accra, and Cape Coast. Moderate wet condition is also seen in Kintampo and Sefwi Bekwai. On the contrary, mild dry condition is observed in regions including Bole, Yendi, Atebubu, Dormaa, Kumasi, Abetifi, Dunkwa, Akim Oda and Axim.

The 3-month SPI for May indicates that normal condition prevailed in most parts of the country. However, areas including Zuarungu, Tamale, Bui, Kintampo, Ejura, Kumasi, Sefwi Bekwai, Ho and Accra exhibited mild to moderate wet conditions, whereas patches of mild dry condition is seen in places such as Axim, Saltpond, Akim Oda, Akuse, Dunkwa, Dorma, Wenchi with Yendi showing moderate dryness.



The groundwater monitoring, utilizing the 6-Month Standardized Precipitation Index (SPI) as depicted in Fig. 3, indicates normal condition dominating the country. Notably, areas around Zuarungu, Tamale, Kintampo, Sefwi Bekwai, Kumasi, Ho, Accra, and Cape Coast exhibited mild to moderate wet conditions. Conversely, pockets of dry conditions were observed in areas including Axim, Saltpond, Akuse, Akim Oda, Dormaa, Wenchi with Yendi still showing moderate dryness.

The 12-month SPI (Fig. 4) for monitoring stream flow and lake storage indicates mild wet condition over most parts of the country. Areas around Wa, Tamale, Kintampo, Salaga, Bechem Ho, Accra and Sefwi Bekwai depicting moderate to severe wetness. Patches of normal condition is seen in areas such as Axim, Dormaa, Atebubu, Kete Krachi and Bole whereas dry conditions were also seen in Yendi, Asamankese and Saltpond.

June 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for June, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (June 2023), 3-month (April 2023 – June 2023), 6-month (January 2023– June 2023) and 12-month (July 2022- June 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.

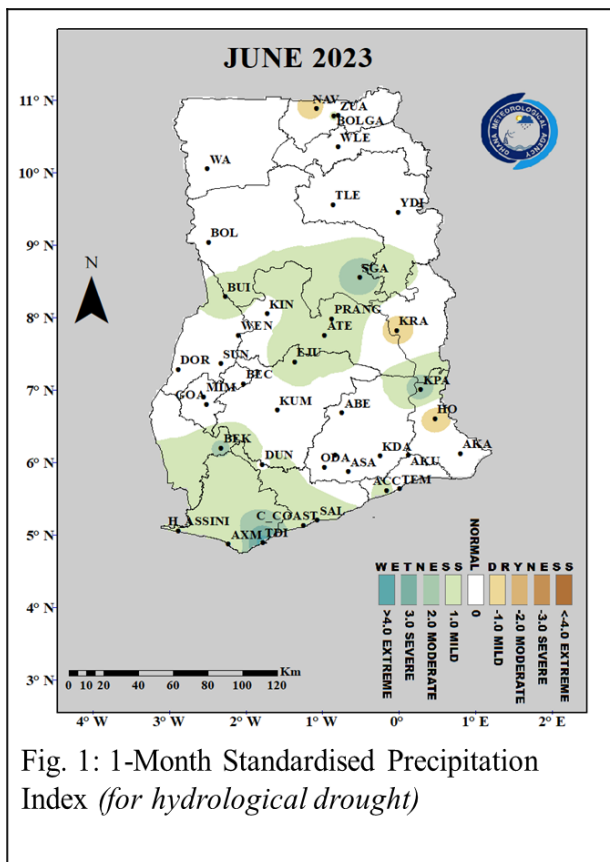


Fig. 1: 1-Month Standardised Precipitation Index (for hydrological drought)

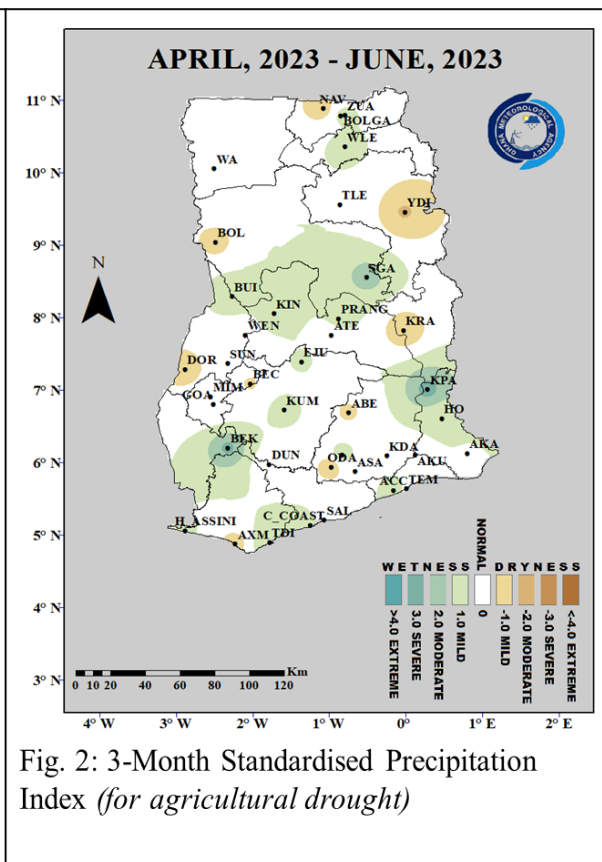


Fig. 2: 3-Month Standardised Precipitation Index (for agricultural drought)

OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for June 2023, shown in Figure 1 shows normal to mild wet conditions dominating the country with moderate to severe wetness seen in places such as Salaga, Sefwi Bekwai, Kpandu and Takoradi. Pockets of mild dryness is visible at Ho, Kete-Krachi, and Navrongo.

The 3-month SPI reveals normal condition over most parts of the country with patches of mild wet condition in areas such as Walewale, Bui, Kumasi, Cape Coast and Accra. Moderate to severe wetness is observed in regions such as Sefwi Bekwai, Kpandu and Salaga. Conversely, pockets of

mild dryness is seen in places including Dormaa, Bole, Navrongo, Kete Krachi, Abetifi, Akim Oda, and Axim with Yendi showing moderate dryness.

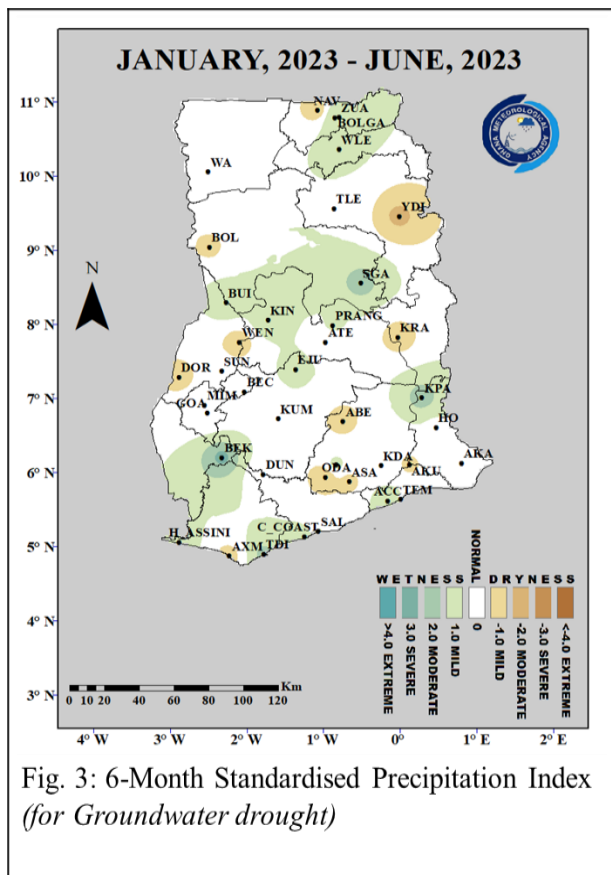


Fig. 3: 6-Month Standardised Precipitation Index (for Groundwater drought)

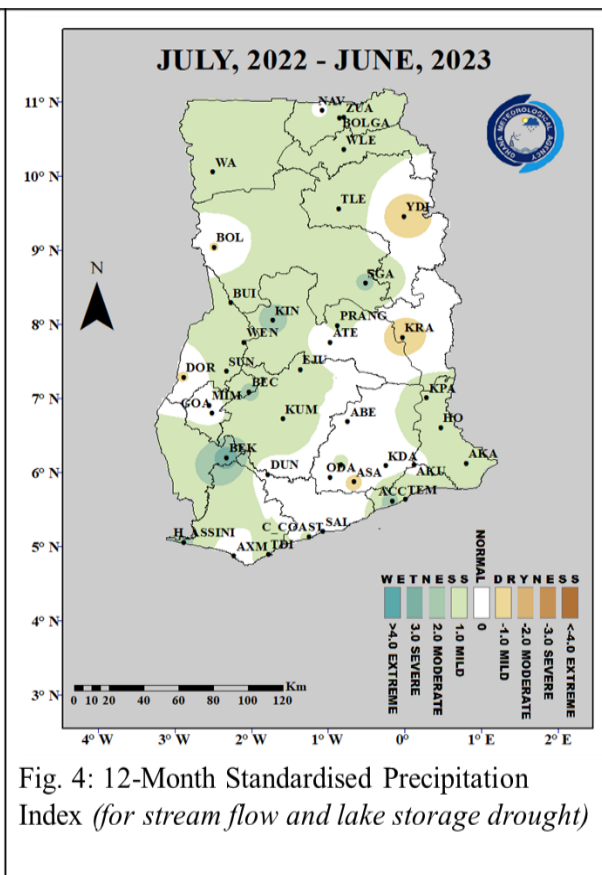


Fig. 4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

The 6-Month SPI (Fig. 3) used for groundwater monitoring reveals normal wet condition over most parts of the country with patches of mild wet conditions in areas including Walewale, Kintampo and Accra. Moderate to severe wetness is seen over areas such as Salaga, Kpandu, Takoradi and Sefwi Bekwai. Mild dry condition is seen over regions such as Axim, Dormaa, Wenchi, Bole, Navrongo, Kete Krachi, Abetifi, Akuse and Akim Oda with Yendi depicting moderate dry condition.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake storage indicates normal to mild wet conditions dominating the country Kintampo, Salaga, Bechem, Accra and Sefwi Bekwai recording moderate to severe wetness. On the contrary, mild dryness is seen in areas around Asamankese, Dormaa, Bole, Yendi and Kete Krachi.

July 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for July, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (July 2023), 3-month (May 2023 – July 2023), 6-month (February 2023– July 2023) and 12-month (August 2022- July 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.

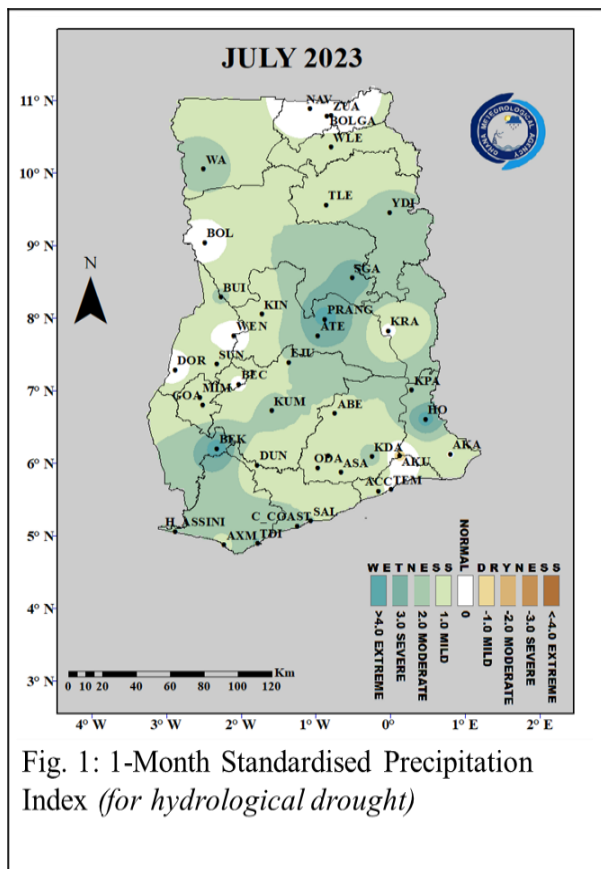


Fig. 1: 1-Month Standardised Precipitation Index (for hydrological drought)

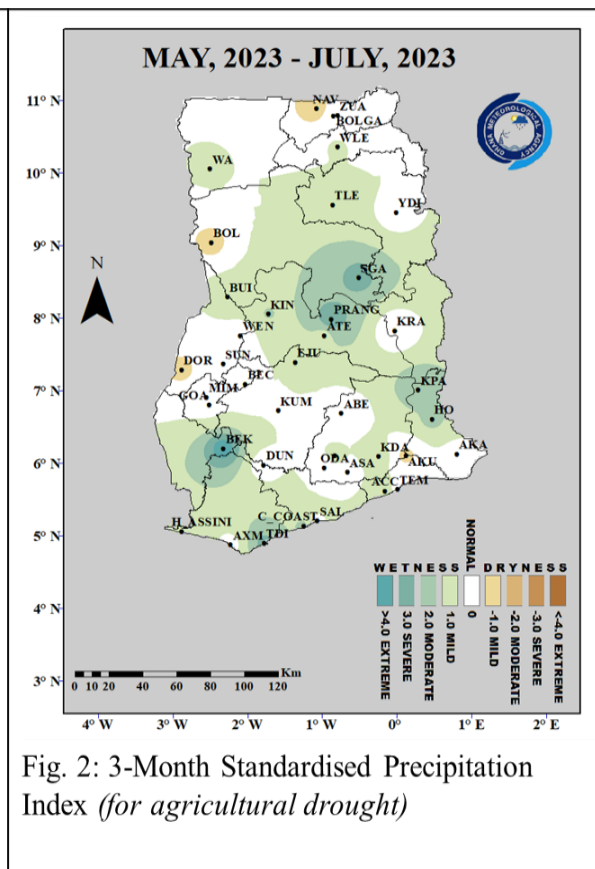


Fig. 2: 3-Month Standardised Precipitation Index (for agricultural drought)

OBSERVATIONS & ANALYSIS

The 1-Month Standardised Precipitation Index (SPI) for July 2023 is shown in Fig. 1. A mild to moderate wet conditions is seen over most parts of the country with Salaga, Ho, Prang and Sefwi Bekwai experiencing severe to extreme wet conditions. Patches of normal condition is seen around Tema, Dormaa, Wenchi, Bole, Zuarungu and Bolgatanga with mild dry condition seen over Akuse.

The 3-month SPI used for agricultural drought shows normal and mild wet conditions dominating the country. Moderate to extreme wet conditions are seen in areas such as Sefwi Bekwai, Salaga,

Prang and Kpandu environs. Conversely, mild dry condition is observed over areas such as Akuse, Dormaa, Bole and Navrongo.

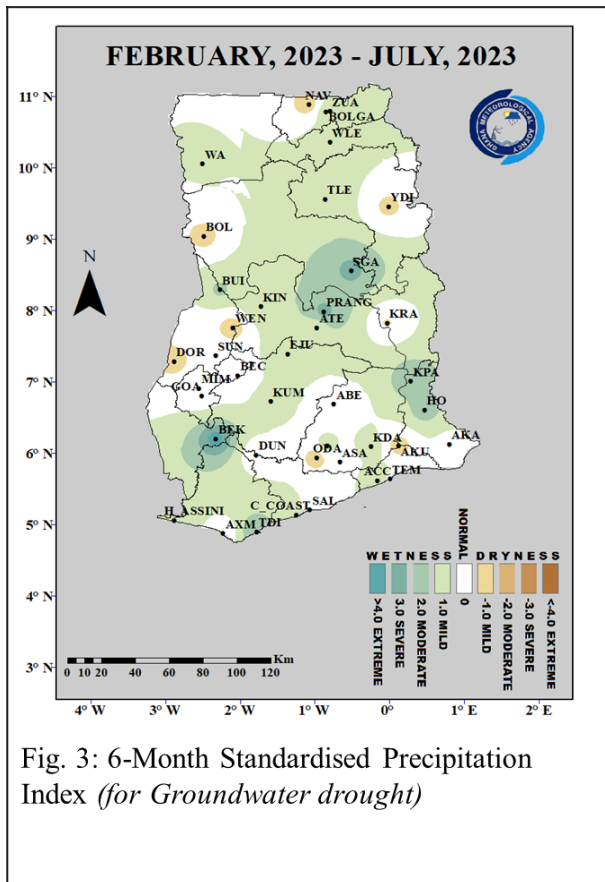


Fig. 3: 6-Month Standardised Precipitation Index (for Groundwater drought)

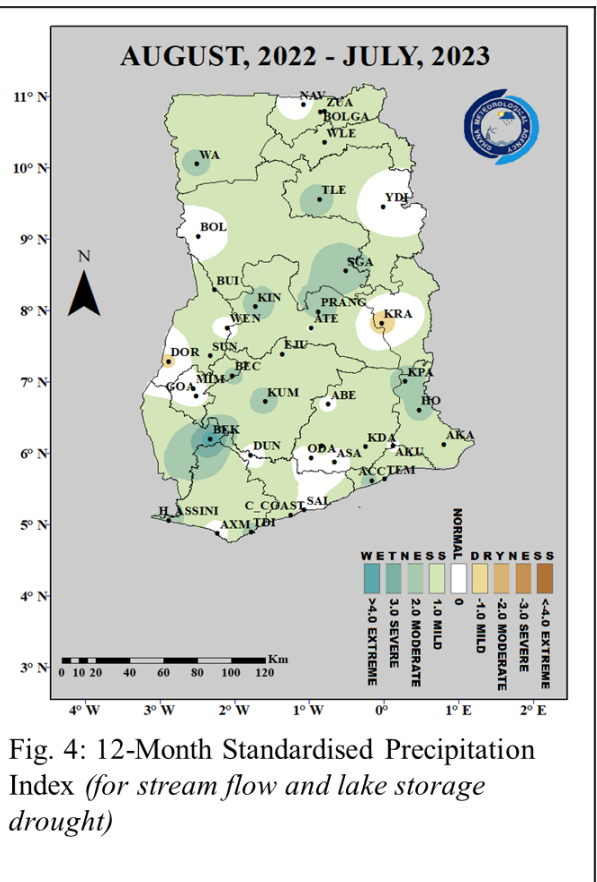


Fig. 4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

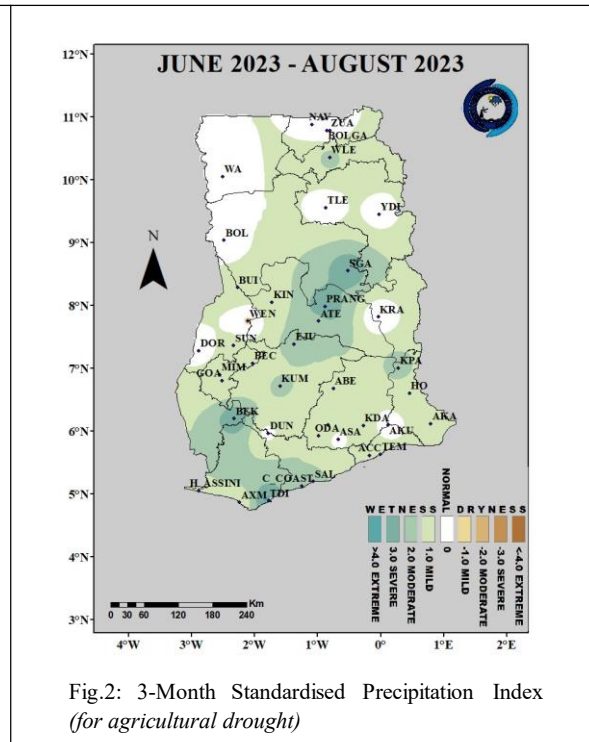
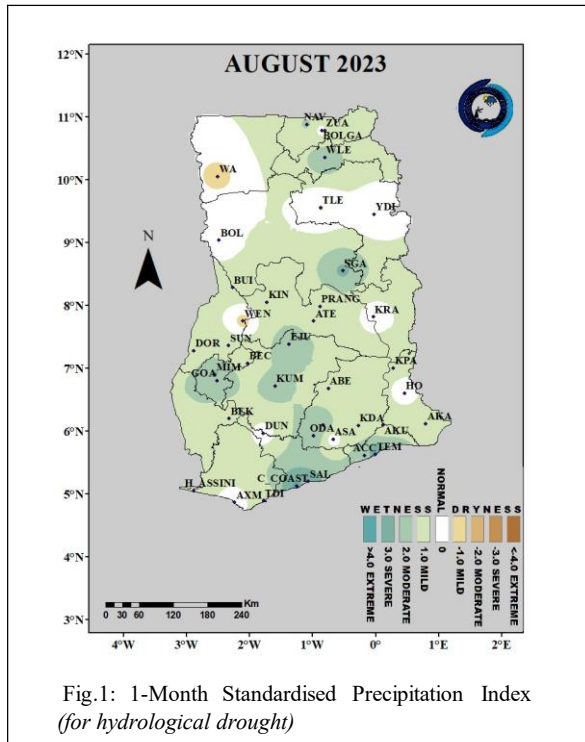
The 6-Month SPI (Fig. 3) used for groundwater monitoring reveals mild wetness over most areas in the country with severe to extreme wetness around Prang, Salaga and Sefwi Bekwai. Patches of normal to mild dry conditions are seen in areas around Dormaa, Wenchi, Bole, Navrongo, Yendi, Akim Oda and Akuse.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake storage shows mild wet conditions dominating the country with moderate to severe wetness around Wa, Tamale, Kintampo, Salaga, Kumasi and Kpandu. Extreme wetness is seen in Sefwi Bekwai. However, Mild dry condition is seen around Dormaa and Kete Krachi with patches of normal condition around Navrongo, Bole, Yendi, Goaso, Wenchi, Asamankese, Axim and Saltpond.

August 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for August, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (August 2023), 3-month (June 2023 – August 2023), 6-month (March 2023 – August 2023) and 12-month (September 2022 – August 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for August 2023 is shown in Fig. 1. A mild wet condition is seen in most parts of the country with areas including Accra, Saltpond, Goaso Kumasi, Ejura and Walewale depicting moderate to severe wetness. Extreme wet condition can be seen in Tema and Cape Coast. Normal condition is shown in Axim, Dunkwa, Ho, Kete Krachi, Tamale, Yendi and Bole. However, mild dry condition is seen in Wenchi and Wa.

The 3-month SPI reveals only normal to mild wet conditions over most parts of the country. Moderate to severe wetness is seen in regions around Takoradi, Sefwi Bekwai, Kumasi, Walewale, Atebubu and Salaga.

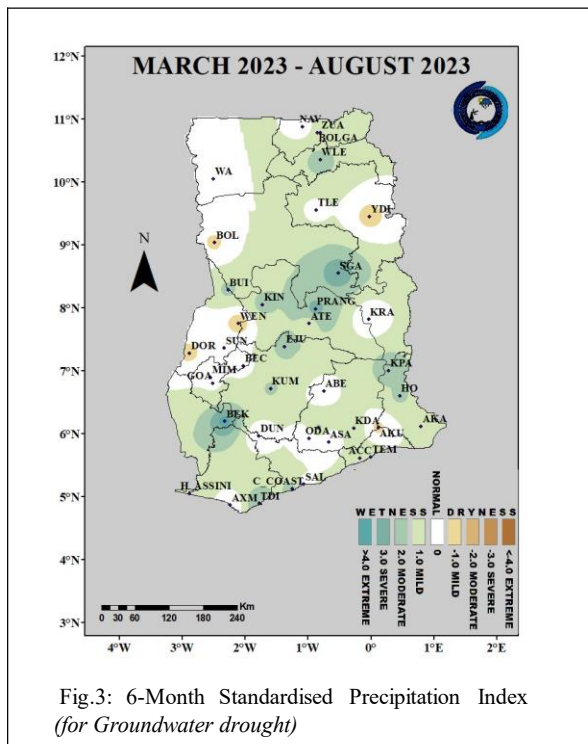


Fig.3: 6-Month Standardised Precipitation Index (for Groundwater drought)

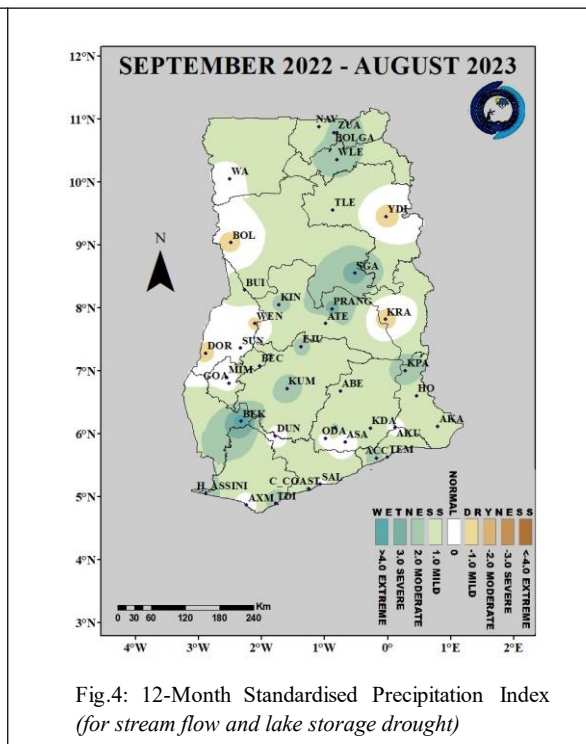


Fig.4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

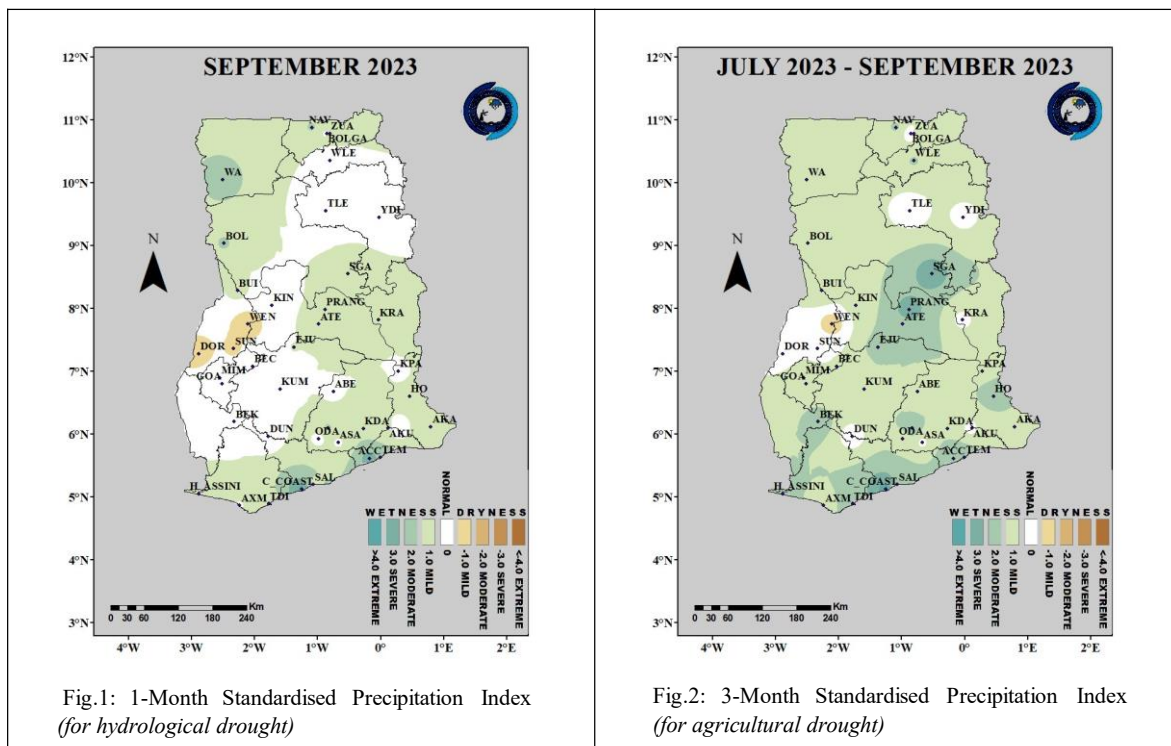
The 6-Month SPI (Fig. 3) used for groundwater monitoring shows mild to moderate wetness over most parts of the country including areas such as Walewale, Salaga, Prang, Kintampo, Kpando, Kumasi and Takoradi. Severe wetness is seen in Sefwi Bekwai. Pockets of normal condition is shown in areas such as Akim Oda, Axim, Dunkwa, Goaso, Abetifi, Kete Krachi, Tamale, Navrongo and Wa. Mild dry condition is seen in Bole, Yendi, Dormaa and Wenchi.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake also shows mild to moderate conditions over most parts of the country. Areas such as Axim, Dunkwa, Asamankese, Akuse, Goaso and Wa experienced normal condition whereas mild dry condition can be seen in Dormaa, Kete Krachi, Wenchi, Bole and Yendi.

September 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for September, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (September, 2023), 3-month (July 2023 – September 2023), 6-month (April 2023 – September 2023) and 12-month (October 2022 – September 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for September 2023 is shown in Fig. 1. A mild dry condition is seen in areas around Dormaa, Sunyani and Wenchi with most parts of the country experiencing normal to mild wet conditions. Areas including Accra, Cape Coast, Navrongo and Wa recorded moderate wet condition.

The 3-month SPI reveals mild wetness over most parts of the country with regions around Accra, Cape Coast, Ho, Sefwi Bekwai, Salaga experiencing moderate to severe wetness. Pockets of normal condition is seen around Tamale, Yendi, Dormaa and Sunyani. However, a mild dry condition is seen over Wenchi.

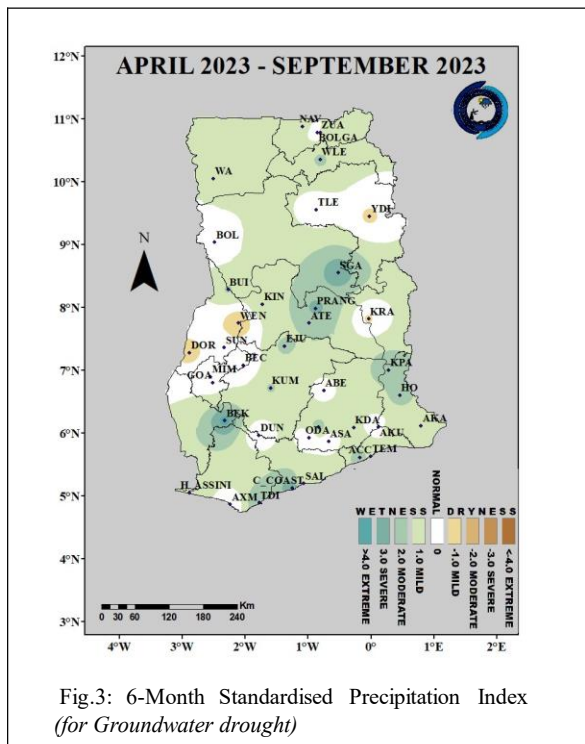


Fig.3: 6-Month Standardised Precipitation Index (for Groundwater drought)

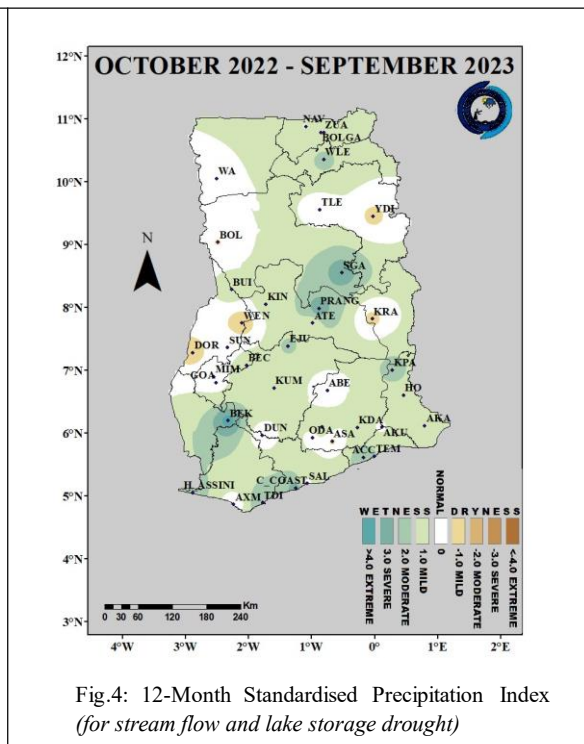


Fig.4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

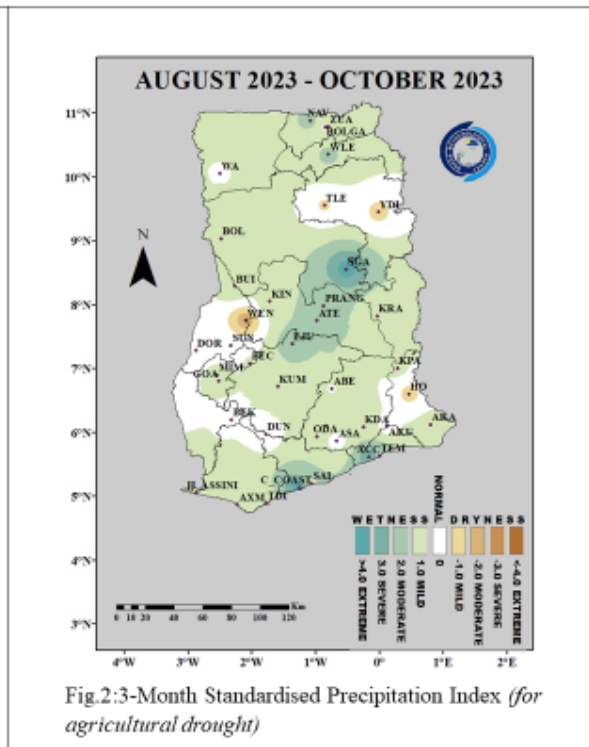
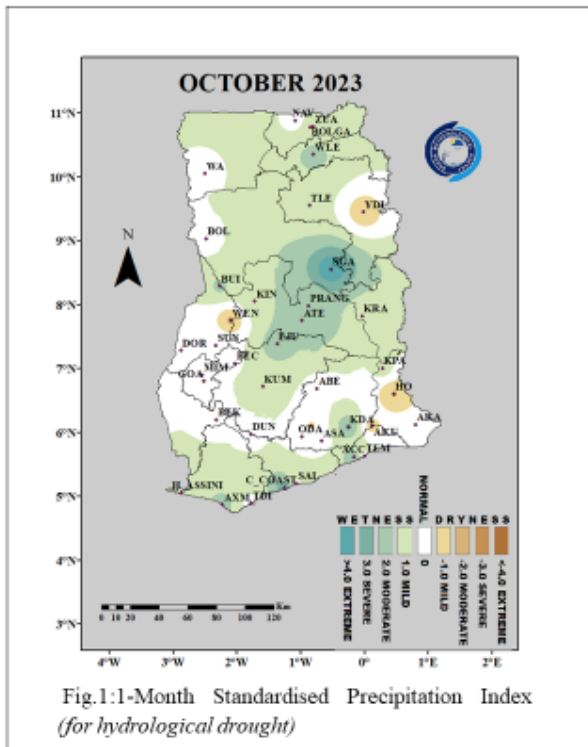
The 6-Month SPI (Fig. 3) used for groundwater monitoring shows mild to moderate wetness over most parts of the country with severe wetness in areas including Salaga, Prang, Sefwi Bekwai and Cape Coast. Pockets of normal condition can be seen in areas such as Akim Oda, Dunkwa, Tamale, Kete Krachi, Bole and Sunyani environs. On the contrary, mild dry condition is seen in Yendi, Dormaa and Wenchi.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake shows a similar condition as the 6-Month SPI with mild to moderate wetness dominating most parts of the country. Severe wetness can be seen in areas including Salaga, Prang, Sefwi Bekwai and Cape Coast. Pockets of normal conditions can be seen in areas such as Akim Oda, Abetifi, Dunkwa, Tamale, Bole Wa and Sunyani environs. However, mild dryness is seen in Yendi, Dormaa, Wenchi and Kete Krachi.

October 2023

INTRODUCTION

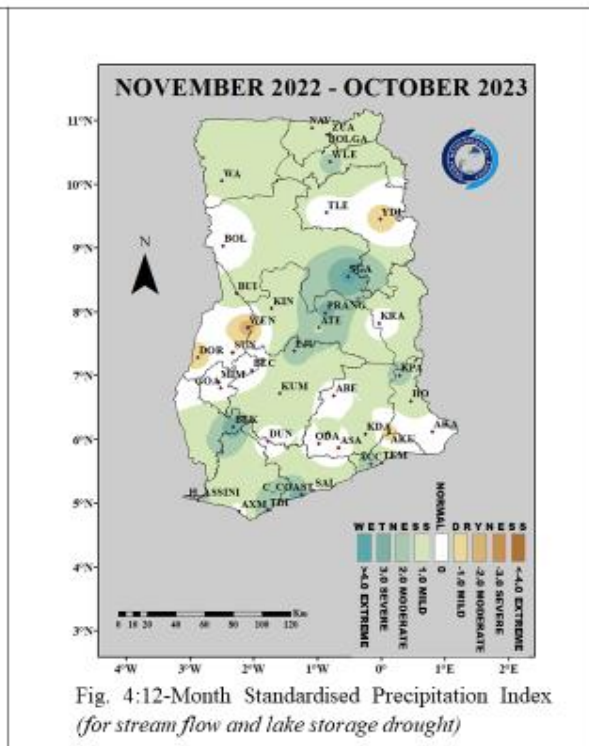
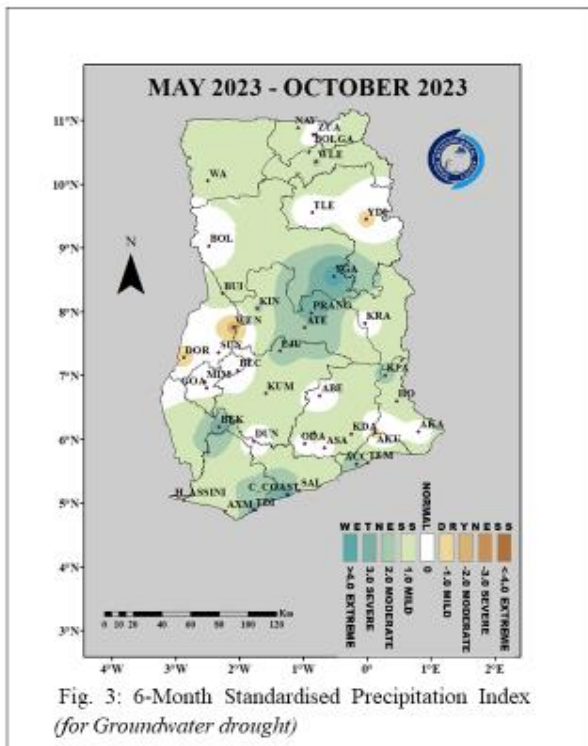
The Drought and Flood Monitoring Bulletin for October, 2023 has been carefully prepared using the WMO’s recommended Standardised Precipitation Index (SPI) format. Rainfall has been analysed in multiple time scales of 1-month (October 2023), 3-month (August 2023 – October 2023), 6-month (May 2023 – October 2023) and 12-month (November 2022 – October 2023) respectively. The generated maps vividly give a clear depiction of the severity, whether positive or negative, of the observed rainfall anomalies.



OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for October, as illustrated in Fig. 1, indicates mild dry conditions in areas such as Wenchi, Yendi, Ho, and Akuse. However, most parts of the country exhibit normal to wet conditions, except for Salaga, which experienced extreme wetness.

The 3-month (August, 2023 – October, 2023) SPI highlights mild to moderate dryness persisting over Wenchi, Yendi, Ho, and Temale. Salaga continues to experience extreme wetness, while the rest of the region is experienced predominantly normal to mild wet conditions.



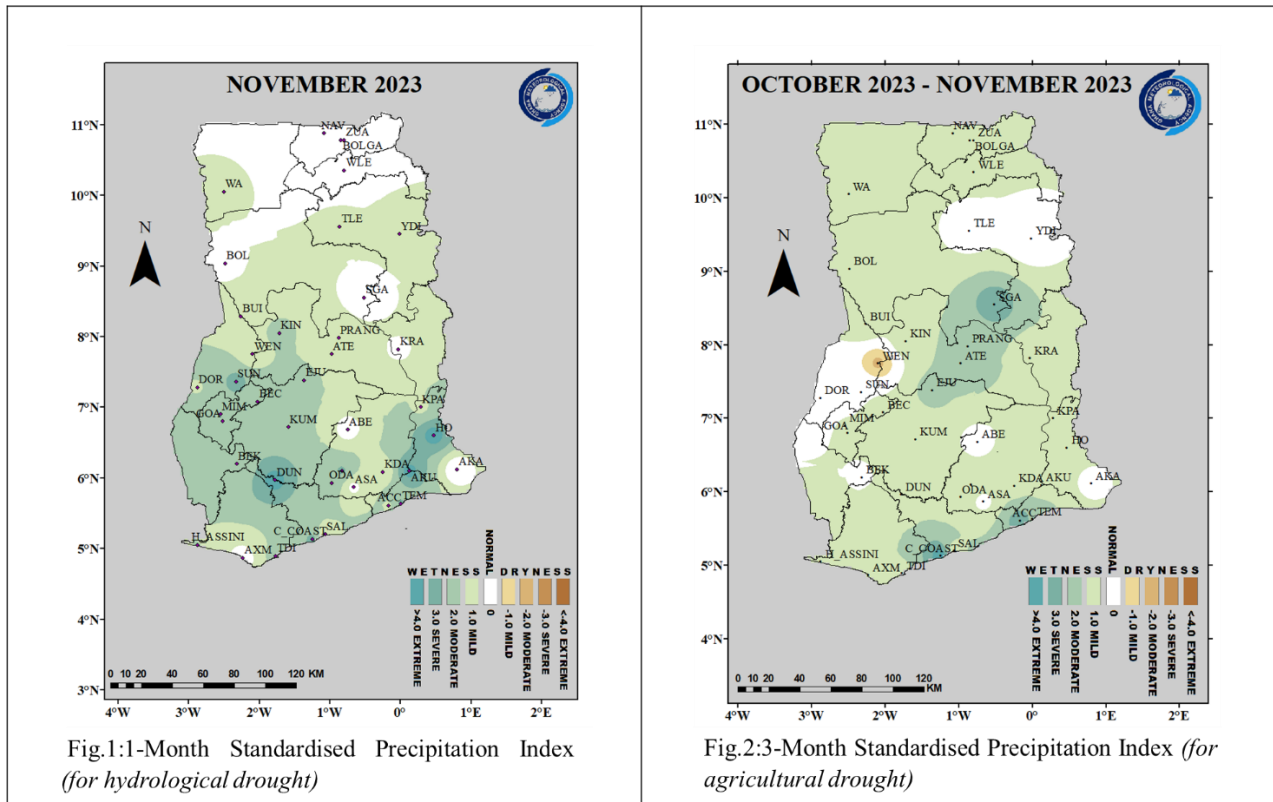
The 6-month SPI (Fig. 3) used for groundwater monitoring indicates mild to moderate wetness in most regions in the country. However, areas such as Salaga, Prang, Cape Coast, and Sefwi Bekwai show extreme wetness. Conversely, Yendi, Wenchi, Dormaa, and Akuse experience varying degrees of dryness, ranging from mild to severe, while the remaining patches of areas demonstrated normal conditions.

The 12-month SPI (Fig. 4) used for monitoring stream-flow and lake storage reveals mild to moderate dryness specifically in Wenchi, Yendi, Dormaa, and Akuse. Conversely, most of the regions display normal to moderate wet conditions, except for Salaga, Sefwi Bekwai, and Prang, which exhibited extreme wetness.

November 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for November, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (November 2023), 3-month (September 2023 – November 2023), 6-month (June 2023 – November 2023) and 12-month (December 2022 – November 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for November is shown in Fig. 1. Mild to moderate wet conditions are seen over most parts of the country with Dunkwa and Ho recording severe wet condition. Normal condition is also observed around areas such as Akatsi, Abetifi, Kete-Krachi, Salaga, Bole, Bolgatanga and Navrongo.

The 3-month SPI reveals mild wetness over most parts of the country with patches of moderate to severe wet conditions seen around Accra, Cape-Coast, Ejura, Atebubu, Prang and Salaga. Normal condition is observed around Dormaa, Sefwi Bekwai, Abetifi, Akatsi, Tamale and Yendi whereas Wenchi recorded a moderate dry condition.

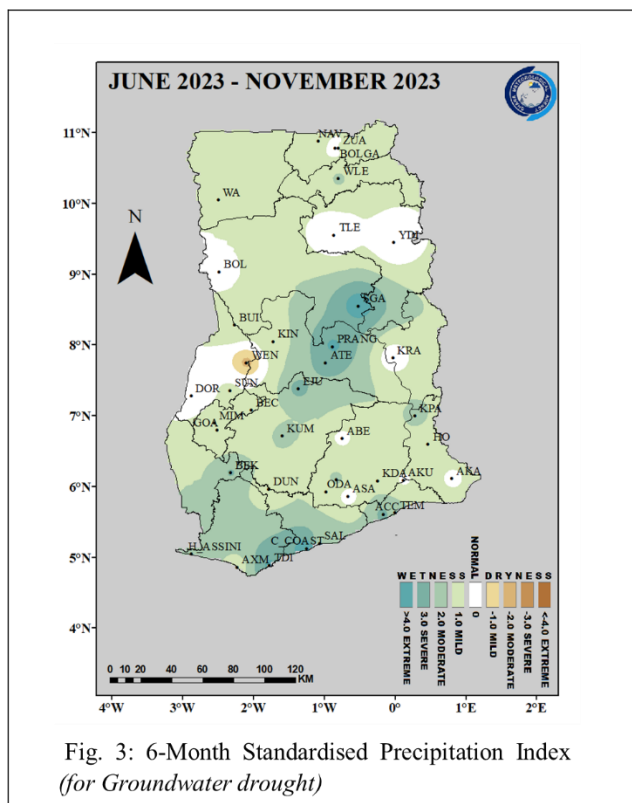


Fig. 3: 6-Month Standardised Precipitation Index (for Groundwater drought)

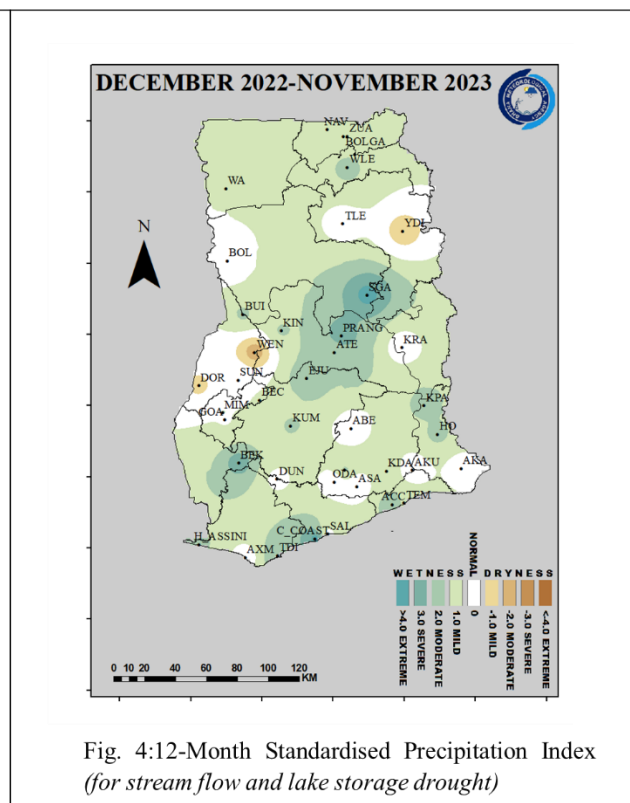


Fig. 4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

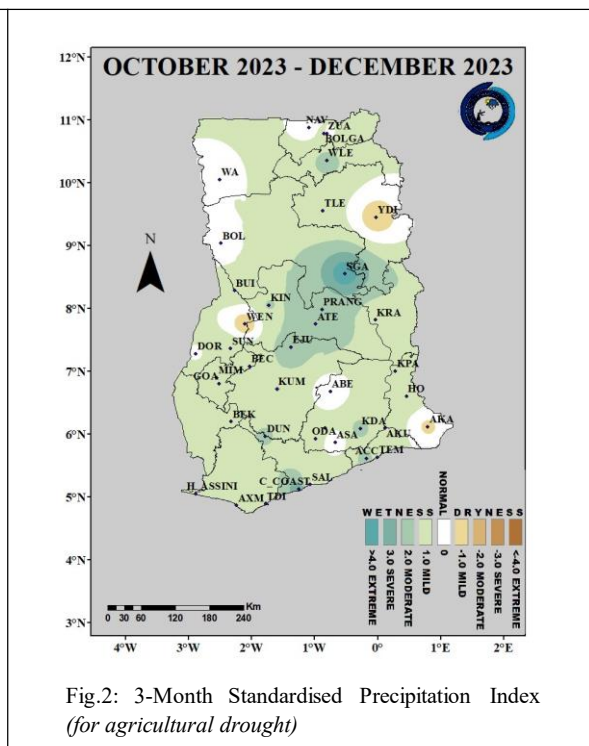
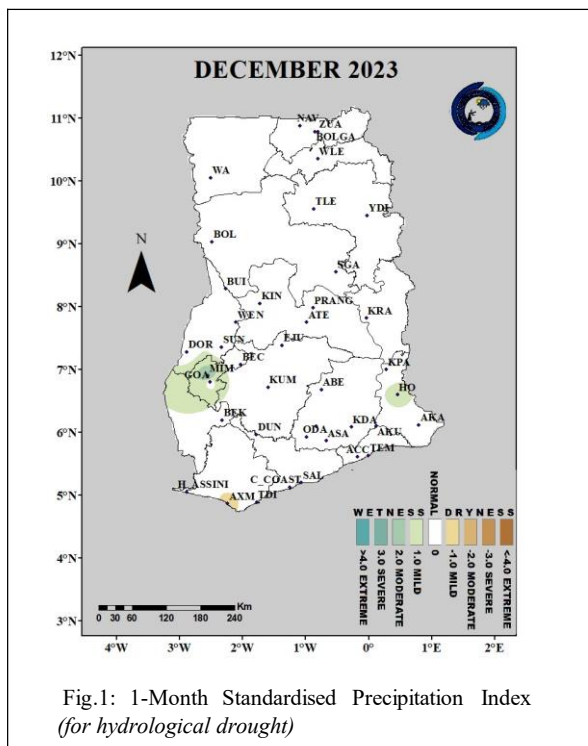
The 6-Month SPI (Fig. 3) used for groundwater monitoring reveals moderate wetness dominating the country with moderate to severe wet conditions over areas around Accra, Saltpond, Half Assini, Sefwi Bekwai and Kumasi. Pockets of extremely wet condition is also seen in Cape Coast, Takoradi, Prang and Salaga. However, a mild dry condition is depicted in Wenchi.

The 12-Month SPI (Fig. 4) used for monitoring stream-flow and lake storage indicates mild wet condition dominating the country with patches of moderate to severe wetness over areas such as Accra, Kpandu, Cape Coast, Sefwi Bekwai, Ejura and Walewale. Salaga recorded extreme wet condition. Patches of normal condition is seen in places such as Akatsi, Akuse, Asamankese, Dunkwa, Bole and Tamale. On the contrary mild dry condition is seen over Yendi, Dormaa while Wenchi showed moderate dryness.

December 2023

INTRODUCTION

The Drought and Flood Monitoring Bulletin for December, 2023 has been prepared using the WMO recommended Standardized Precipitation Index (SPI) format. Rainfall has been analyzed in multiple time scales of 1-month (December, 2023), 3-month (October 2023 – December 2023), 6-month (July 2023 – December 2023) and 12-month (January 2023 – December 2023). The generated maps depict the severity (positive or negative) of rainfall anomalies under review.



OBSERVATIONS & ANALYSIS

The 1-Month Standardized Precipitation Index (SPI) for December 2023 as shown in Fig. 1 depicts mostly normal conditions over most parts of country. Areas such as Ho and Goaso environs had mild wetness whereas Axim experienced mild dryness.

The 3-month SPI reveals mild wetness dominating the country with regions around Accra, Cape Coast, Dunkwa, Ejura, Atebubu, Prang and Walewale. Extreme wet condition is also seen in Salaga. Pockets of normal condition can be seen around Navrongo, Wa, Bole, Dormaa, Abetifi and Asamankese. However, areas such as Akatsi, Yendi and Wenchi had mild dry condition.

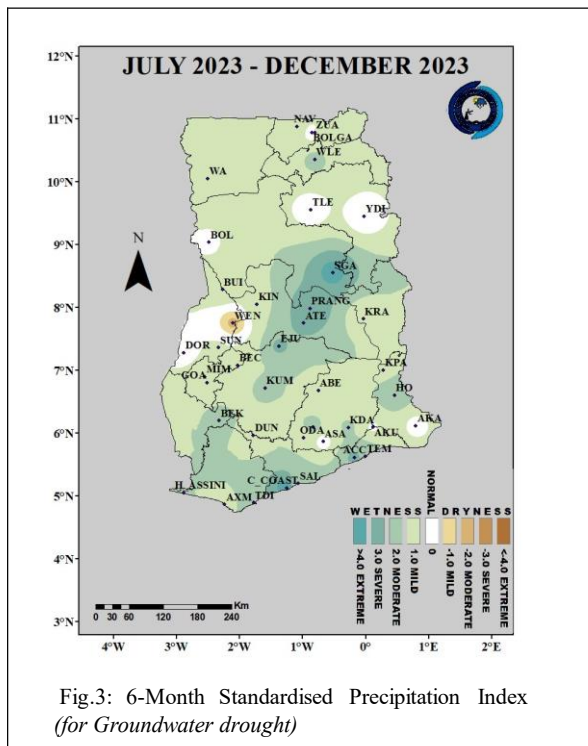


Fig.3: 6-Month Standardised Precipitation Index (for Groundwater drought)

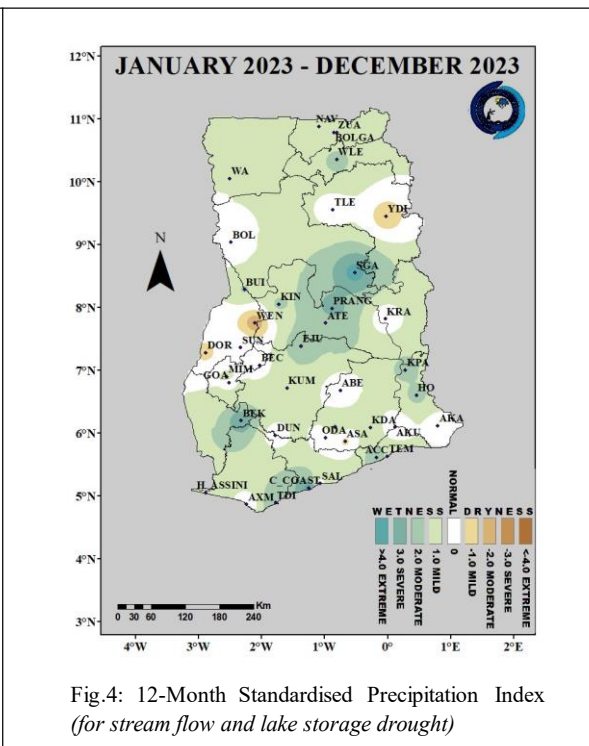


Fig.4: 12-Month Standardised Precipitation Index (for stream flow and lake storage drought)

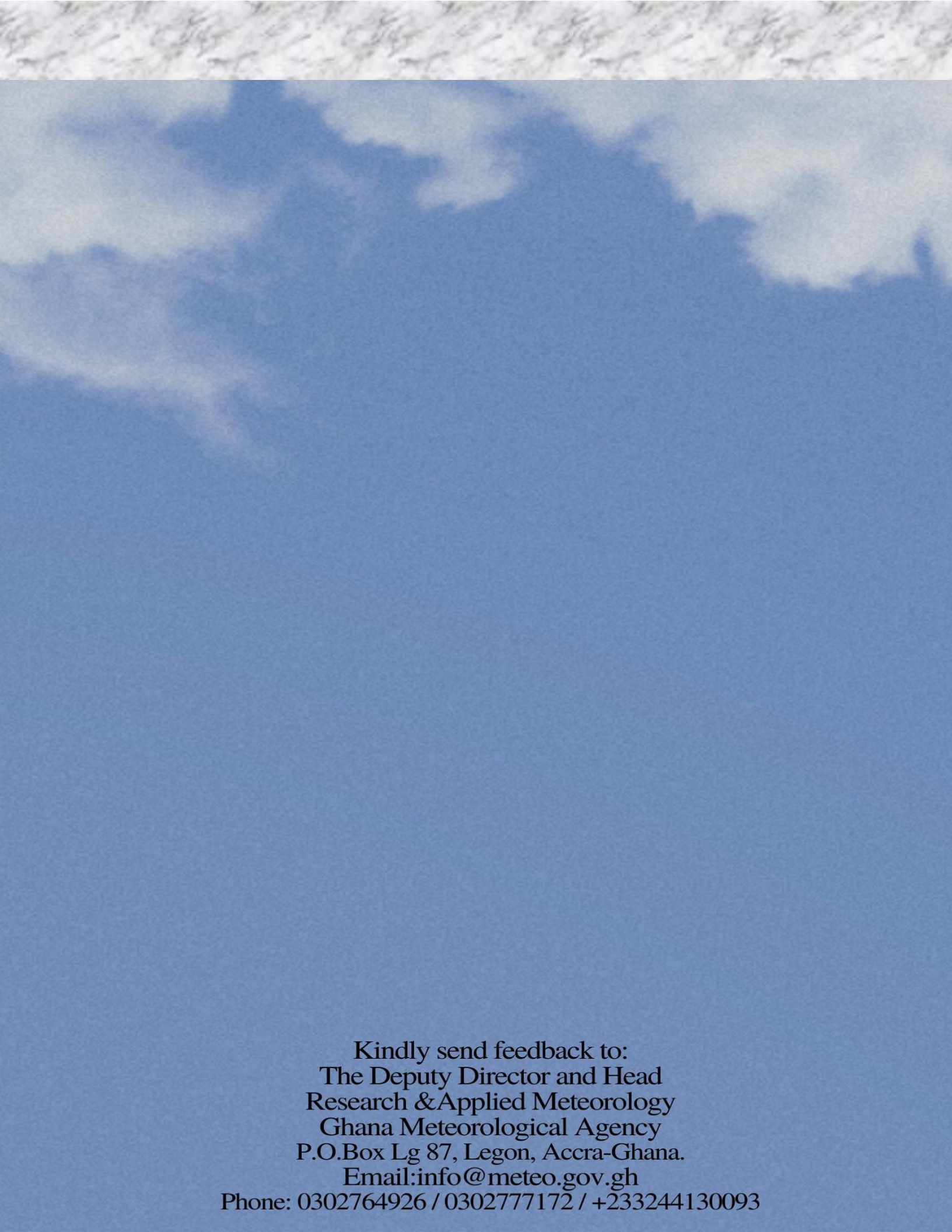
The 6-Month SPI (Fig. 3) used for groundwater monitoring shows mild to moderate wetness over most parts of the country with extreme wetness in Salaga and Cape Coast. Patches of normal condition can be seen in areas such as Bolgatanga, Tamale, Bole, Dormaa, Asamankese and Akatsi. However, moderate dryness is seen in Wenchi.

The 12-Month SPI (Fig. 4) for monitoring stream-flow and lake reveals mild wetness in most parts of the country. Moderate to severe wetness can be seen in areas such as Cape Coast, Sefwi Bekwai, Accra, Ho, Ejura, Atebubu, Prang and Tamale with extreme wetness recorded in Salaga. Areas such as Axim, Dunkwa, Akatsi, Abetifi, Sunyani, Bole, Tamale and Kete Krachi had normal condition. On the contrary, moderate dryness is shown in Wenchi while Yendi and Dormaa recorded mild dryness.

Station	Abbreviation	Station	Abbreviation	Station	Abbreviation
Abetifi	ABE	Ho	HO	Tema	TEM
Accra	ACC	Kade	KADE	Wa	WA
Akatsi	AKA	Kete Krachi	KRA	Walewale	WLE
Akim Oda	ODA	Kintampo	KIN	Wenchi	WEN
Akuse	AKU	Koforidua	KDA	Yendi	YDI
Asamankese	ASA	Kpandu	KPA	Zuarungu	ZUA
Atebubu	ATE	Kumasi	KUM		
Axim	AXM	Mim	MIM		
Bechem	BEC	Navrongo	NAV		
Bole	BOL	Prang	PRANG		
Bolga	BOLGA	Salaga	SGA		
Bui	BUI	Saltpond	SAL		
C_Coast	C_COAST	Sefwi Bekwai	BEK		
Dunkwa	DUN	Sunyani	SUN		
Goaso	GOA	Takoradi	TDI		
Half Assini	H_ASSINI	Tamele	TLE		

## STATIONS





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