



**Government of India**  
**Ministry of Earth Sciences**  
**India Meteorological Department**  
**Regional Weather Forecasting Centre**  
**RMC New Delhi**

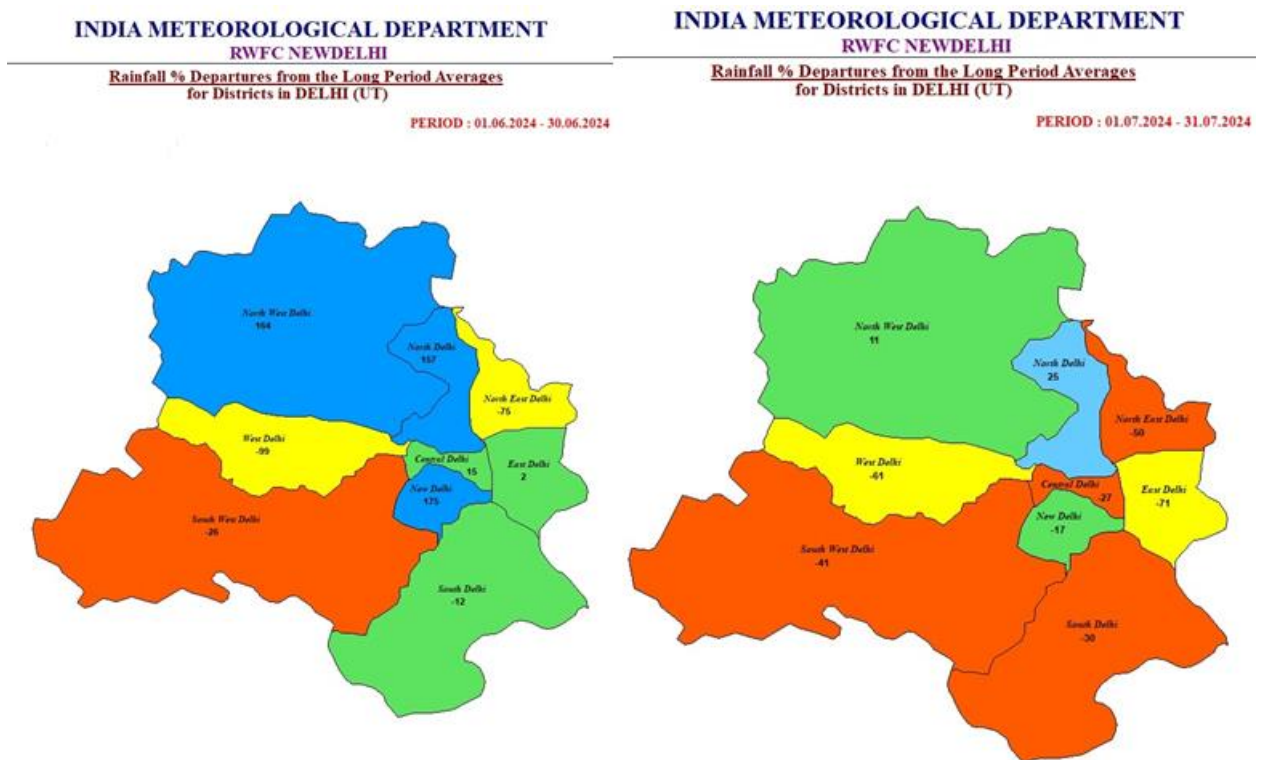
**Southwest Monsoon Report 2024**

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**Mentored by:** Dr M Mohapatra, Director General Meteorology, IMD

**Main Seasonal Features:**

- Monsoon Withdrew from Delhi on 02<sup>nd</sup> October 2024 against its normal date of withdrawal 25<sup>th</sup> September (1971-2019). (Table 12 & Figure 14)
- In the year 2024, the southwest monsoon (SWM) made its onset over Delhi on **28<sup>th</sup> June, 2024** against its **normal onset date of 27<sup>th</sup> June** (1961-2019). In last 124 years, the earliest onset of southwest monsoon was in 2008 when it arrived in Delhi on 15<sup>th</sup> June and most delayed onset was in 1987 when it arrived on 26<sup>th</sup> July. (Table 12 & Figure 13)
- In Delhi, seasonal rainfall (June to September) in the monsoon 2024 was in the category of Large excess (departure of **61%**) with actual rainfall **1029.9 mm** against its normal value (1971-2020) of **640.4 mm**. (Figure 8)
- Districtwise Delhi Map depicting Monthly and Seasonal Departures are shown in Figure 1, 2 & 3.
- Weekly rainfall time series for SWM 2024 over Delhi (UT) is given in Figure 3a, 3b.
- This year, Delhi received 7<sup>th</sup> highest seasonal rainfall in the monsoon season since 1901. (Table 1)
- This season recorded **1 Extremely heavy (>204.4mm)**, **6 Heavy (64.5 to 115.5mm)** and **28 Moderate (15.6 to 64.4mm)** rainfall days over Delhi.
- In this monsoon season, June month recorded **1 Extremely heavy** rainfall day; July recorded **1 heavy** and **9 moderate** rainfall days; August recorded **3 heavy** and **11 Moderate** rainfall days and September recorded **2 heavy & 8 moderate** rainfall days.
- Daily and Weekly rainfall time series for SWM 2024 over Delhi (Safdarjung & Palam) is given in Figure 4, 5, 6 & 7.



**Figure 1:** District wise Delhi Map depicting Monthly (June & July 2024) Rainfall Departures



Figure 2: District wise Delhi Map depicting Monthly (August & September 2024) Rainfall Departures

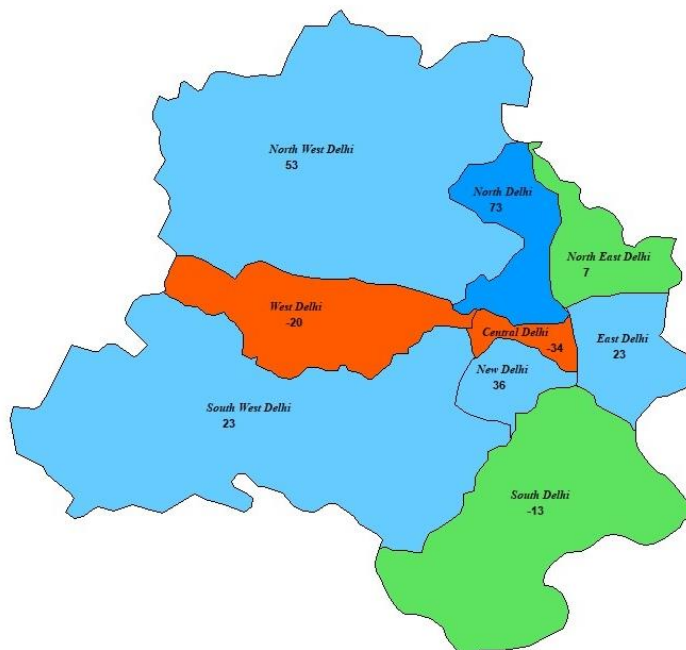
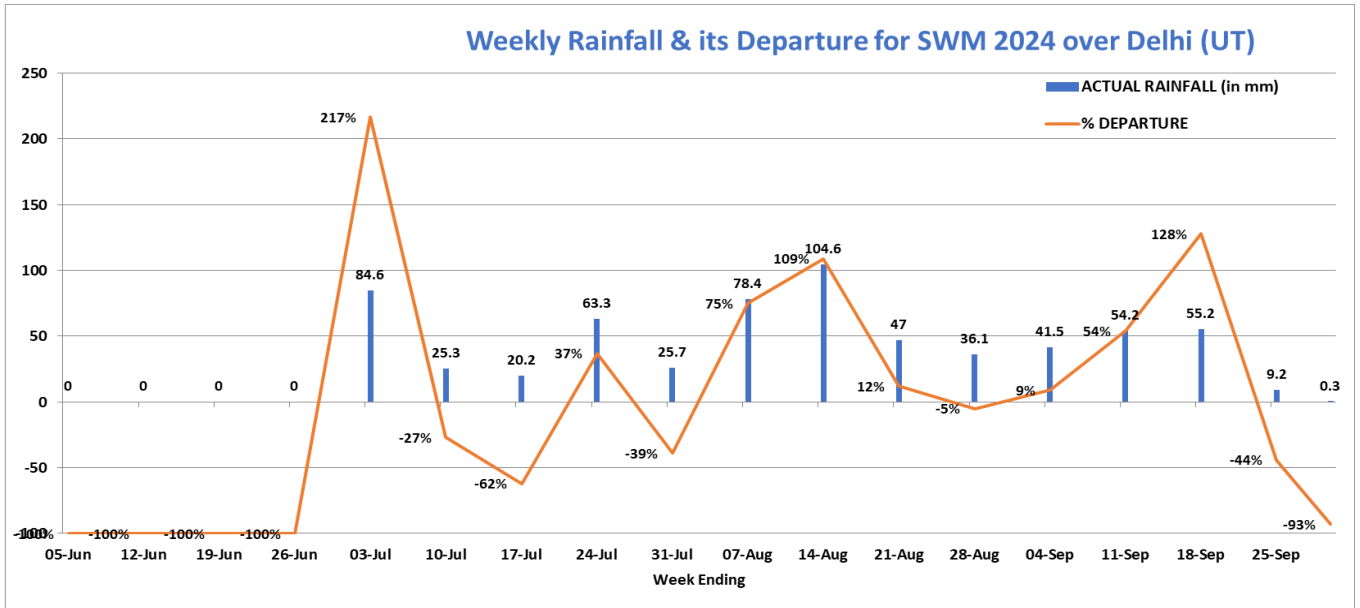
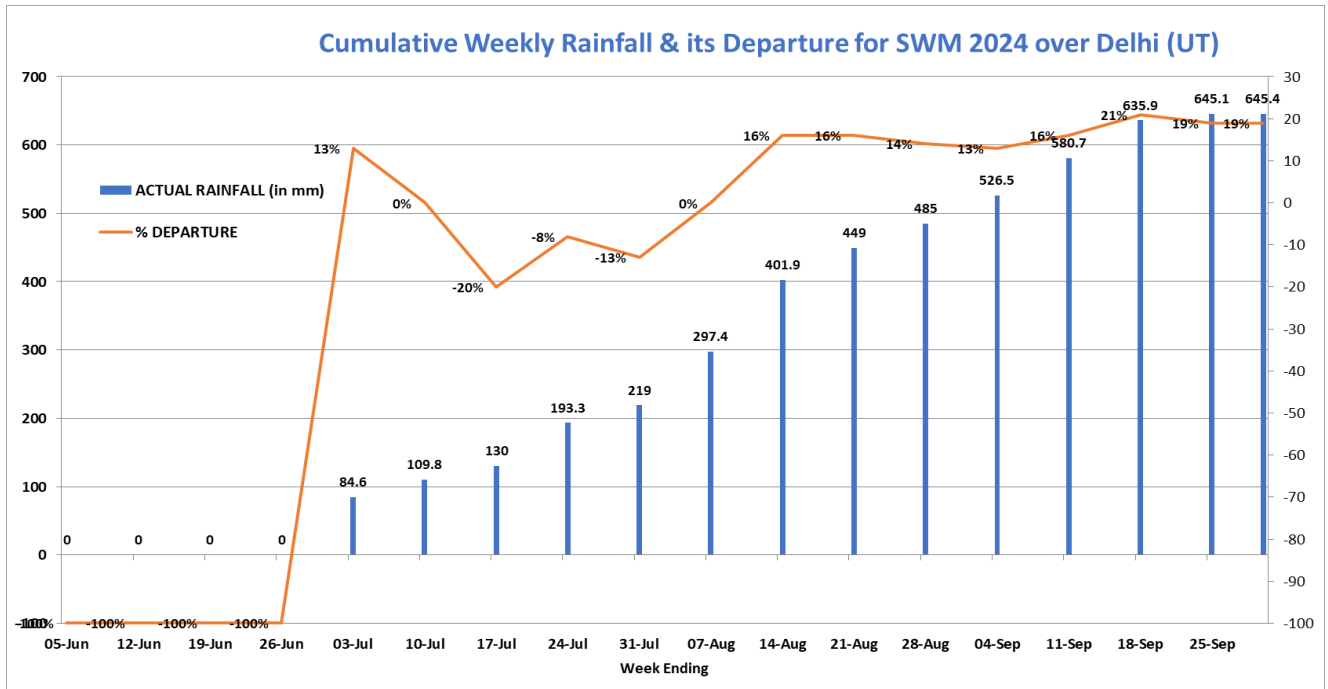


Figure 3: District wise Delhi Map depicting Monsoon 2024 Rainfall Departures



**Figure 3a: Weekly Rainfall & its Departure for SWM 2024 over Delhi (UT)**



**Figure 3b: Cumulative Weekly Rainfall & its Departure for SWM 2024 over Delhi (UT)**

### SWM 2024 DAILY ACTUAL & NORMAL RAINFALL OVER DELHI (SAFDARJUNG)

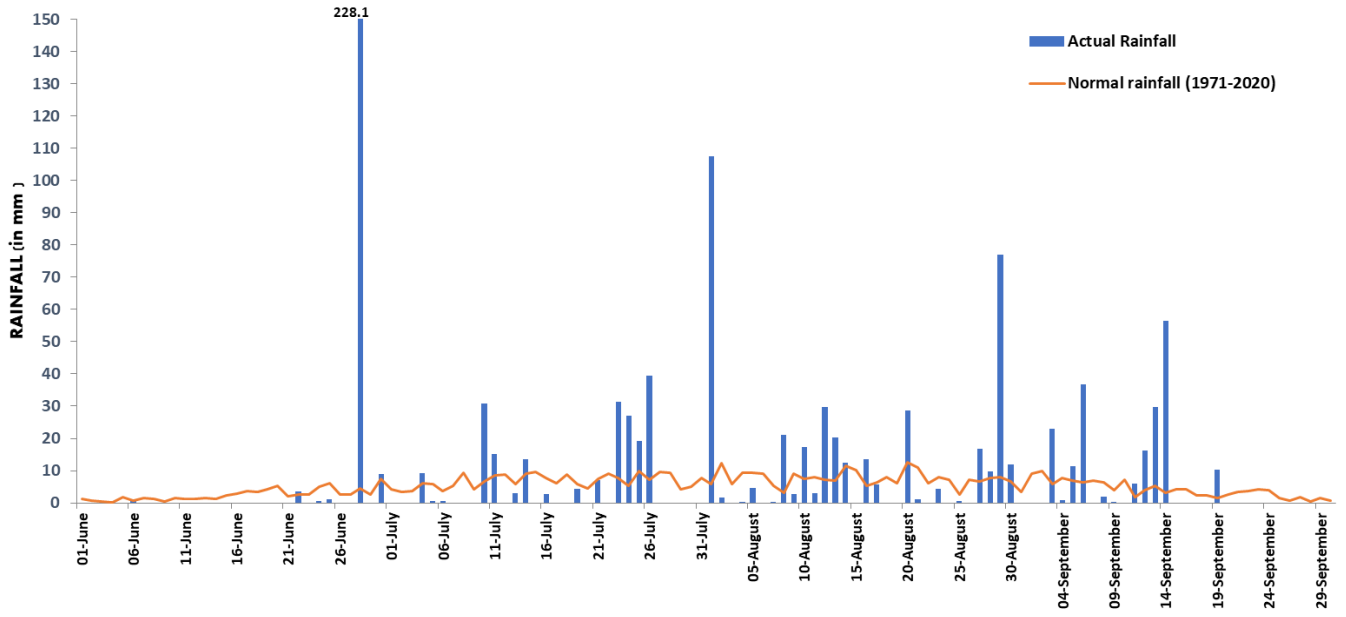


Figure 4: SWM 2024 daily actual & normal rainfall over Delhi (Safdarjung)

### SWM 2024 DAILY ACTUAL & NORMAL RAINFALL OVER DELHI (PALAM)

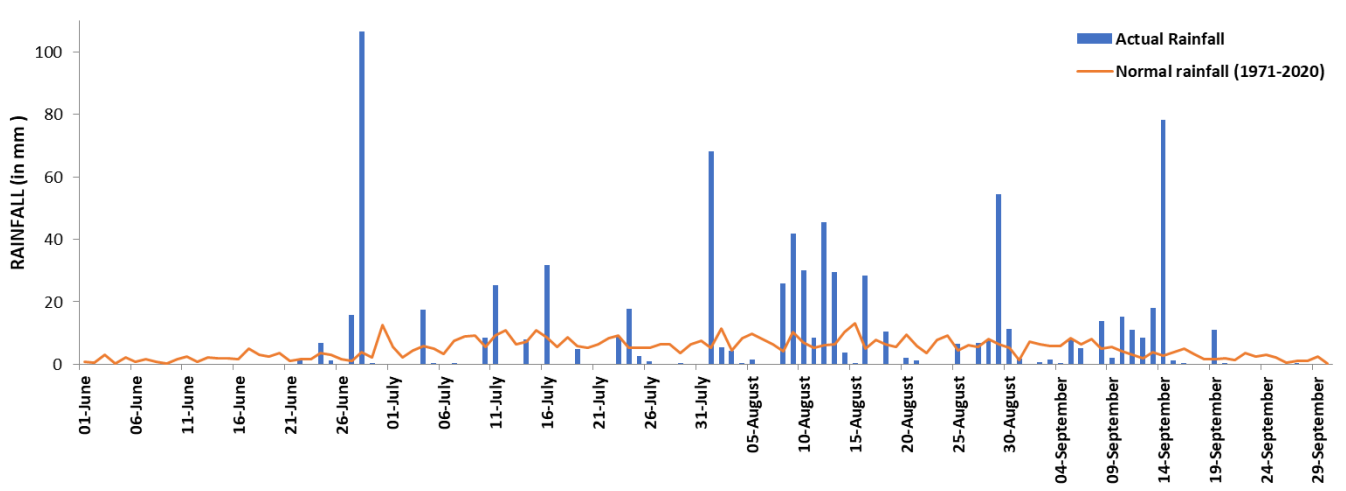


Figure 5: SWM 2024 daily actual & normal rainfall over Delhi (Palam)

Table 1: Highest Seasonal Rainfall (mm) Over Delhi

S.No.	YEAR	SEASONAL RAINFALL (in mm)
1	1933	1421.6
2	1964	1190.9
3	2021	1169.7
4	1975	1155.6
5	2003	1052.8
6	2010	1031.5
7	2024	1029.9

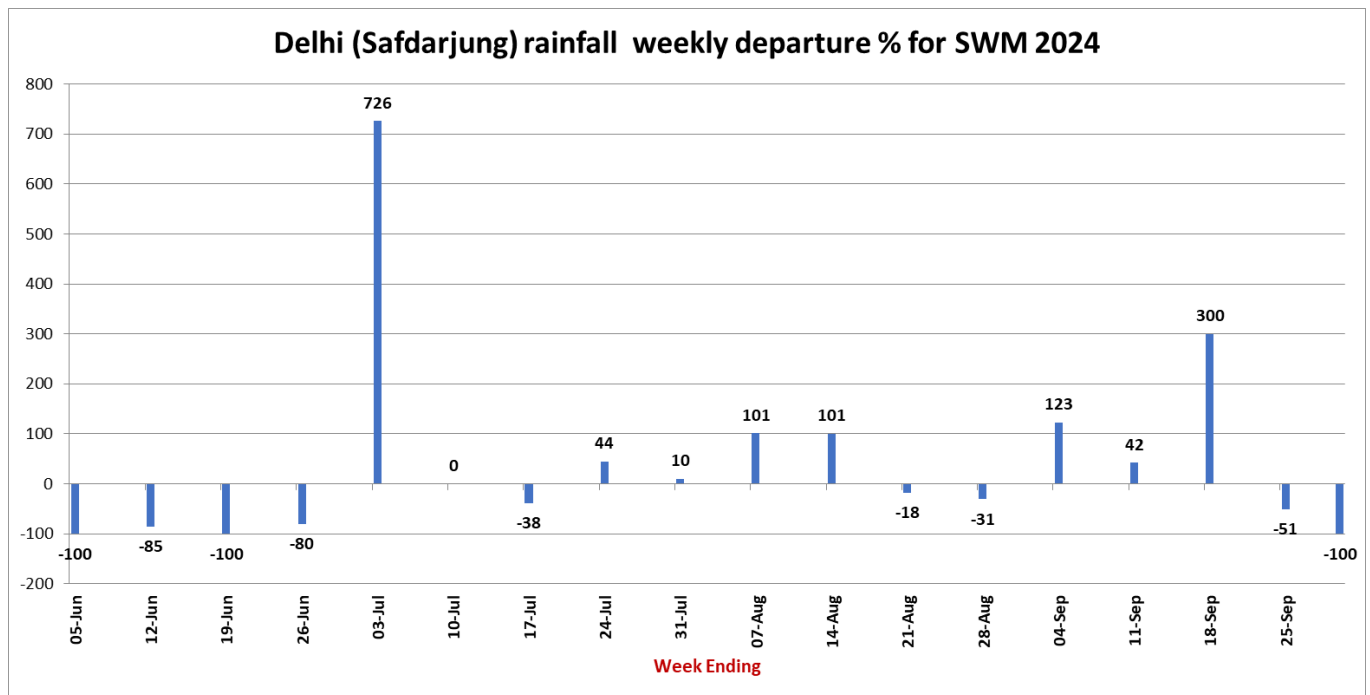


Figure 6: Delhi (Safdarjung) rainfall weekly departure % for SWM 2024

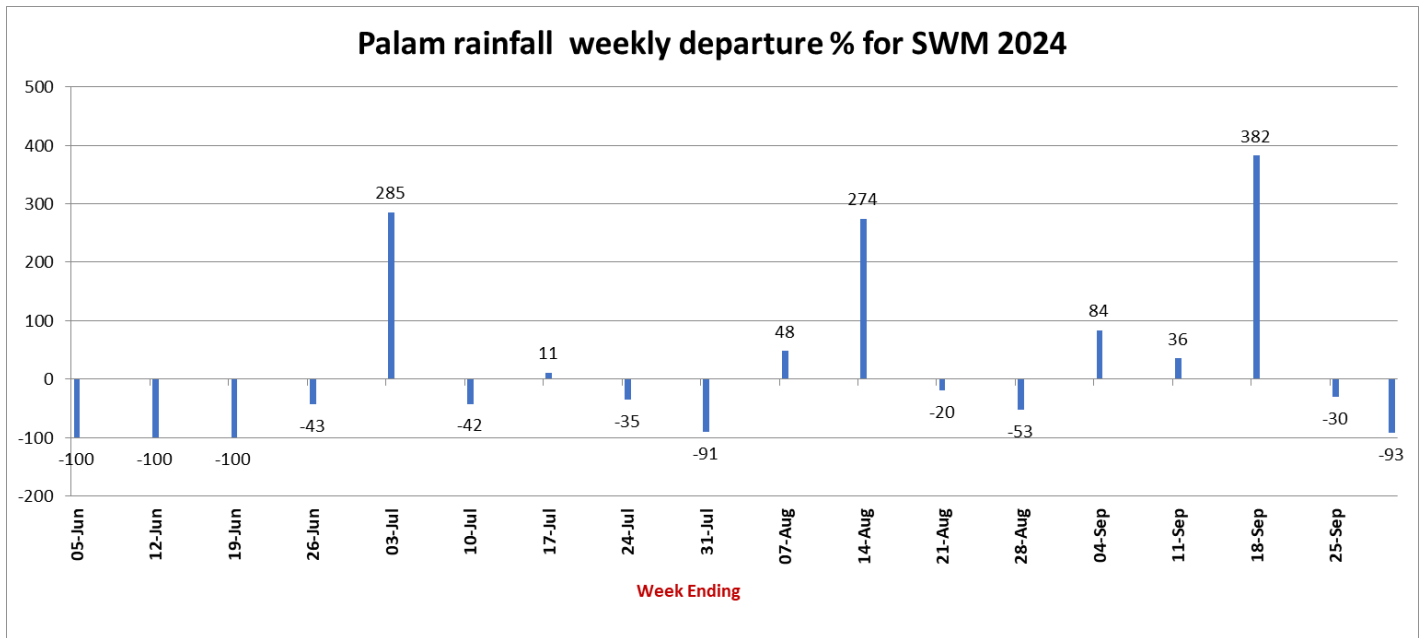


Figure 7: Delhi (Palam) rainfall weekly departure % for SWM 2024

Table 2: MONSOON SEASON 2024 (JUNE TO SEPTEMBER) RAINFALL

MONSOON SEASON 2024 (JUNE TO SEPTEMBER) RAINFALL						
OBSERVATORY	AMOUNT RAINFALL RECORDED MONSOON SEASON 2024 (in mm)	OF IN	NORMAL RAINFALL (1971-2020) (in mm)	DEPARTURE (%)	NUMBER OF RAINY DAYS (RAINFALL >2.4 mm)	OF DAYS
Safdarjung	1029.9		640.4	61	40	
Palam	830.3		598.2	39	38	
Lodi road	953.6		640.4	49	37	
Ridge	948.3		560.1	69	42	
Ayanagar	813.6		549.8	48	37	

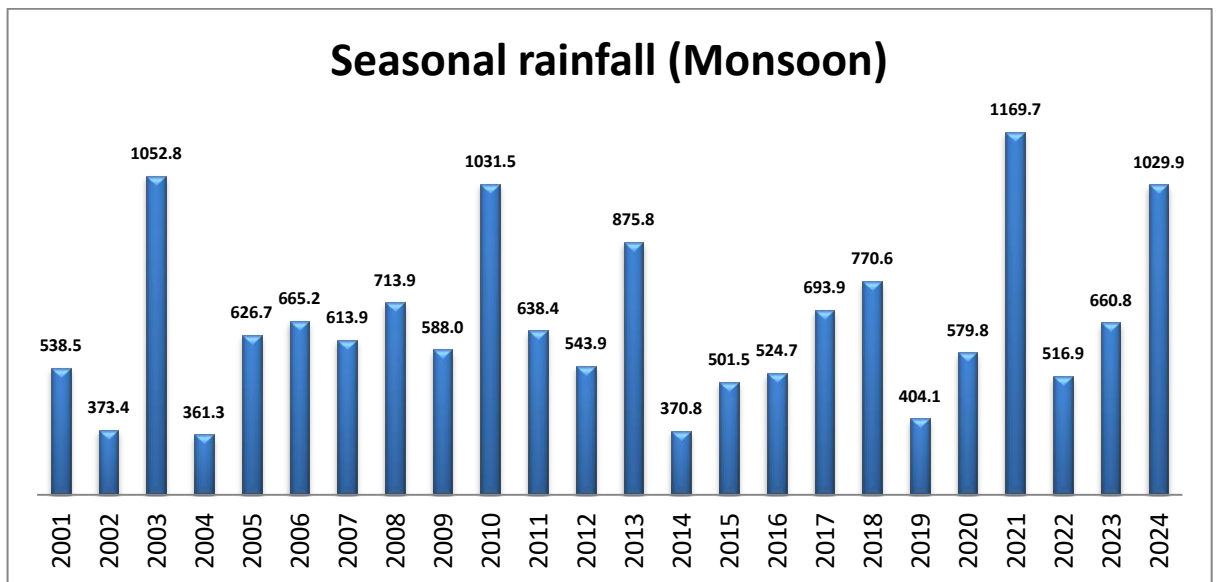


Figure 8: Monsoon season (June to September) rainfall over Delhi (Safdarjung) since 2001

Table 3: Monsoon season rainfall and its departure over Delhi (Safdarjung) since 2011

YEAR	SEASONAL RAINFALL	NORMAL RAINFALL	DEPARTURE (%)
2011	638.4	631.8	1
2012	543.9	631.8	-14
2013	875.8	631.8	39
2014	370.8	631.8	-41
2015	501.5	631.8	-21
2016	524.7	631.8	-17
2017	693.9	631.8	10
2018	770.6	631.8	22
2019	404.1	631.8	-36
2020	579.8	631.8	-8
2021	1169.7	640.4	83
2022	516.9	640.4	-19
2023	660.8	640.4	3
2024	1029.9	640.4	61



## Monthwise Progress of Southwest Monsoon:

### JUNE

- In the month of June 2024, Delhi received **243.4 mm** of rainfall against the June month normal (1971-2020) **rainfall of 74.1mm**. The actual rainfall was **228% above** normal. (Table 5)
- The monthly rainfall in June 2024 was the third highest recorded for that month since 1901. (Table 4)

Table 4: Highest June month rainfall since 1901

Year	Rainfall recorded in the month of June (in mm)
1936	414.8
1933	398.0
2024	243.4

- Extremely heavy Rainfall of **228.1 mm** was recorded at Safdarjung Observatory at 0830 hrs IST of **28<sup>th</sup> June 2024**. It is the **second highest** 24 hour rainfall in the month of June since 1901. The record of highest rainfall in June since 1901 is of 235.5 mm recorded on 28<sup>th</sup> June 1936.
- Total Rainfall recorded in June 2024 at Manual observatories of Delhi :

Table 5: June 2024 rainfall and its departure over Delhi (Safdarjung)

JUNE 2024					
OBSERVATORY	AMOUNT RAINFALL RECORDED JUNE 2024 (in mm)	OF IN	NORMAL MONTHLY RAINFALL (1971-2020)	DEPARTURE	NUMBER OF RAINY DAYS (RAINFALL >2.4 mm)
Safdarjung	243.4		74.1	228%	3
Palam	132.2		68.8	92%	3
Lodi road	212.0		74.1	186%	3
Ridge	157.8		60.7	160%	2
Ayanagar	73.6		69.9	5%	2

- At Manual observatories of Delhi, Heavy/ Very Heavy/ Extremely heavy Rainfall was recorded only on a single day in June 2024:

Table 6: June 2024 Heavy rainfall

DATE	OBSERVATORY	AMOUNT RAINFALL (in mm)	OF
28.06.2024	Safdarjung	228.1	
	Palam	106.6	
	Lodi road	192.8	
	Ridge	150.4	
	Ayanagar	66.3	

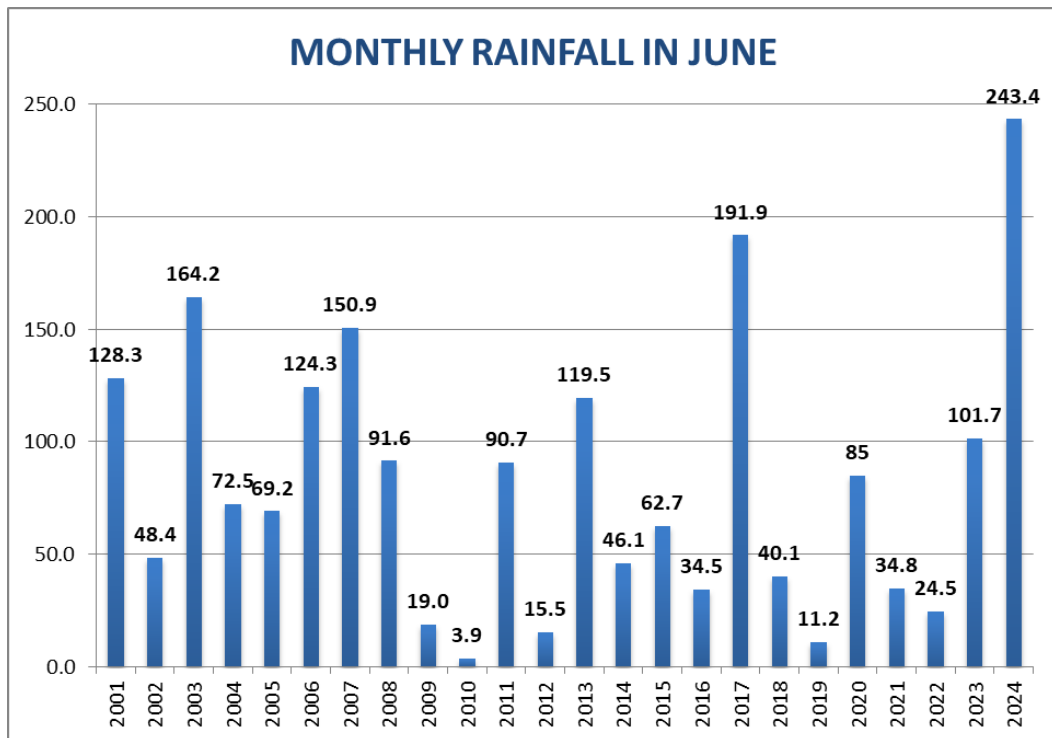


Figure 9: June Month rainfall over Delhi (Safdarjung) since 2001

## JULY

- In July 2024, Delhi received **203.7 mm** of rainfall against the normal rainfall (1971-2020) of **209.7 mm**. The actual rainfall was **3% below** normal. (Table 7)

Total Rainfall recorded in July 2024 at Manual observatories of Delhi is as below:

Table 7: July 2024 rainfall and its departure over Delhi (Safdarjung)

JULY 2024				
OBSERVATORY	AMOUNT OF RAINFALL RECORDED IN JULY 2024 (in mm)	NORMAL MONTHLY RAINFALL (1971-2020) (in mm)	DEPARTURE (%)	NUMBER OF RAINY DAYS (RAINFALL >2.4 mm)
Safdarjung	203.7	209.7	-3%	12
Palam	126.5	205.7	-39%	09
Lodi road	178.5	209.7	-15%	10
Ridge	229.0	190.1	20%	09
Ayanagar	192.5	182.2	06%	12

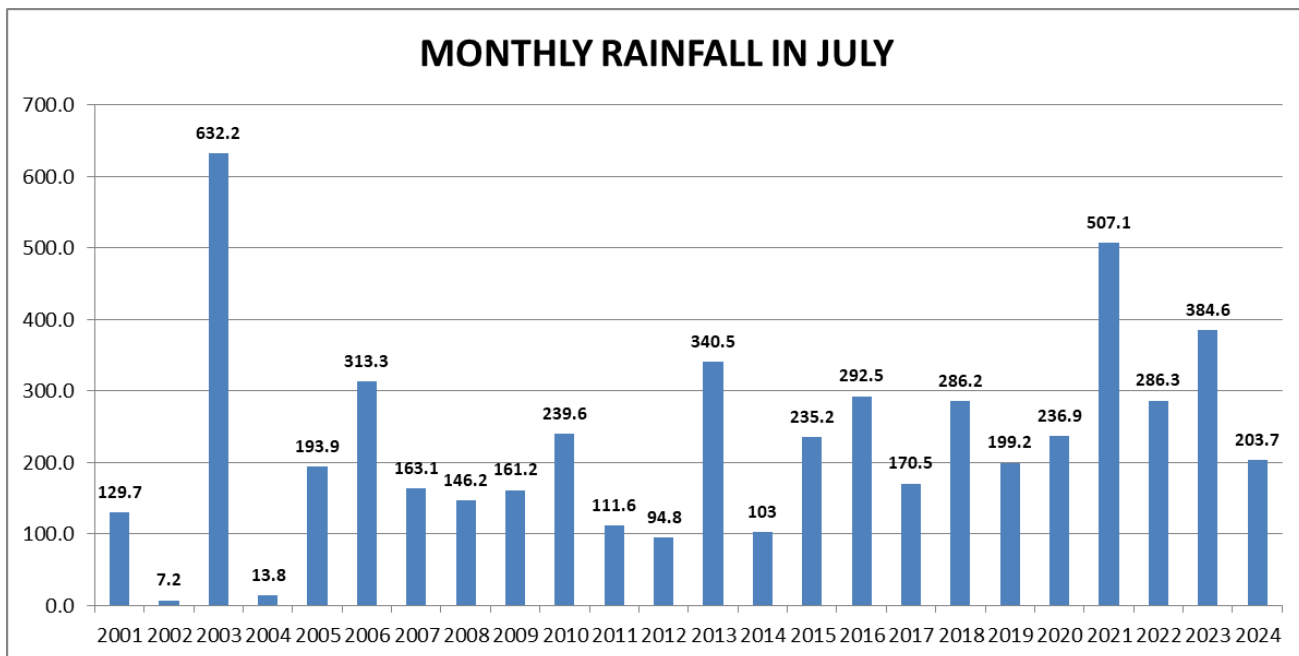


Figure 10: July Month rainfall over Delhi (Safdarjung) since 2001

## AUGUST

- In August 2024, Delhi received **390.3 mm** of rainfall against the normal rainfall of **233.1 mm**. The actual rainfall was **67% above** normal. (Table 8)

Total Rainfall recorded in August 2024 at Manual observatories of Delhi:

Table 8: August 2024 rainfall and its departure over Delhi (Safdarjung)

AUGUST 2024						
OBSERVATORY	AMOUNT RAINFALL RECORDED AUGUST 2024 (in mm)	OF IN	NORMAL MONTHLY RAINFALL (1971-2020) (in mm)	DEPARTURE (%)	NUMBER OF RAINY DAYS (RAINFALL >2.4 mm)	OF DAYS
Safdarjung	390.3		233.1	67%	17	
Palam	396.2		214.2	85%	17	
Lodi road	407.4		233.1	75%	16	
Ridge	422.5		190.2	122%	21	
Ayanagar	335.3		188.5	78%	15	

- Heavy Rainfall recorded in August 2024 at Manual observatories of Delhi is as follows :

Table 9: August 2024 heavy rainfall over Delhi

Rainfall recorded at 0830 IST of Date	OBSERVATORY	AMOUNT RAINFALL (in mm)	OF
<b>01.08.2024</b>	Safdarjung	107.6	
	Palam	68.3	
	Lodi road	106.0	
	Ridge	113.0	
	Ayanagar	71.4	
<b>20.08.2024</b>	Ridge	72.4	
<b>29.08.2024</b>	Safdarjung	77.1	
	Lodi road	92.2	

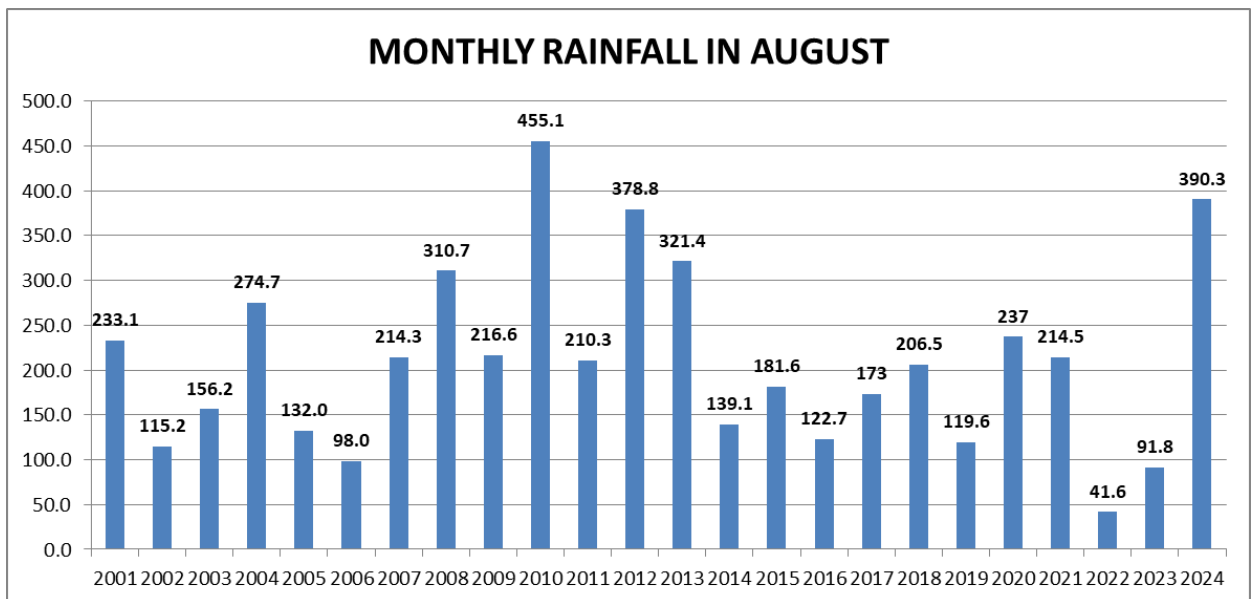


Figure 11: August Month rainfall over Delhi (Safdarjung) since 2001

## SEPTEMBER

- In September 2024, Delhi received **192.5 mm** of **rainfall** against the normal rainfall of **123.5 mm**. The actual rainfall was **56% above** normal. (Table 10)

Total Rainfall recorded in September 2024 at Manual observatories of Delhi:

Table 10: September 2024 rainfall and its departure over Delhi (Safdarjung)

SEPTEMBER 2024				
OBSERVATORY	AMOUNT OF RAINFALL RECORDED IN SEPTEMBER 2024 (in mm)	OF NORMAL MONTHLY RAINFALL (1971-2020) (in mm)	DEPARTURE (%)	NUMBER OF RAINY DAYS (RAINFALL >2.4 mm)
Safdarjung	192.5	123.5	56%	08
Palam	175.4	109.5	60%	09
Lodi road	156.9	123.5	27%	08
Ridge	156.1	119.1	31%	10
Ayanagar	212.4	109.3	94%	10

- Heavy Rainfall recorded in September 2024 at Manual observatories of Delhi :

Table 11: September 2024 heavy rainfall over Delhi

DATE	OBSERVATORY	AMOUNT OF RAINFALL (in mm)
13.09.2024	Ridge	69.4
14.09.2024	Palam	78.2
	Ayanagar	70.8

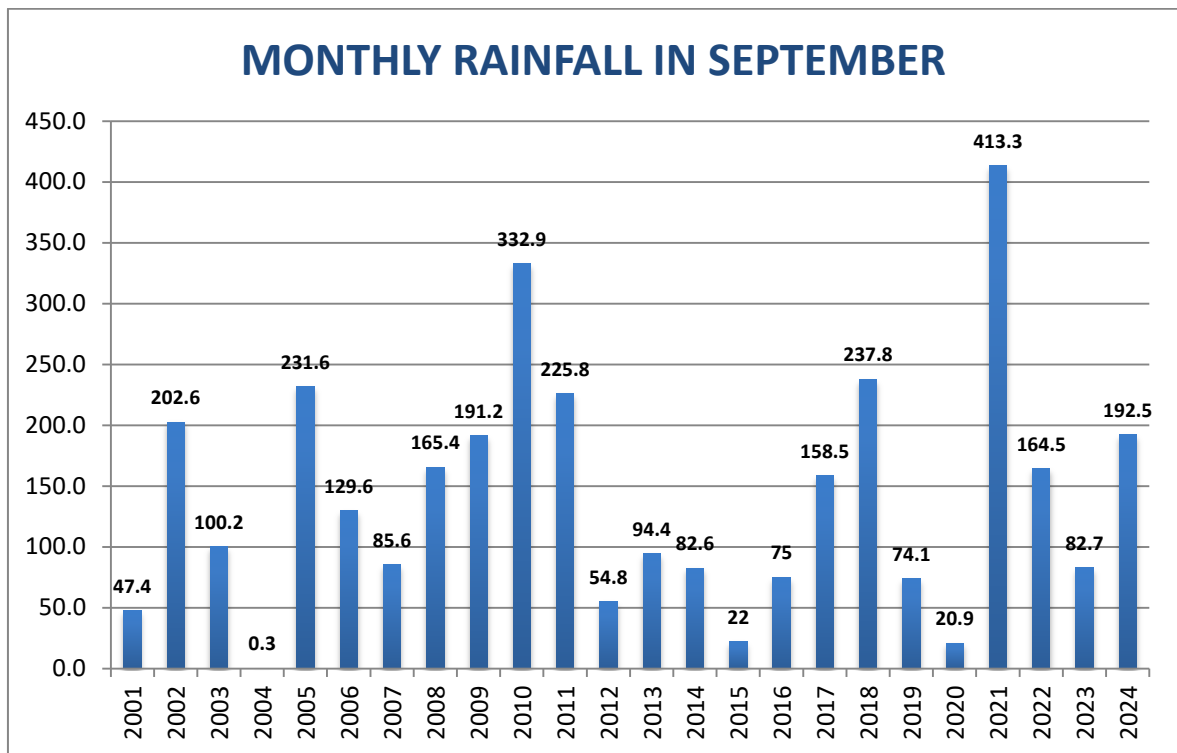


Figure 12: September Month rainfall over Delhi (Safdarjung) since 2001

Table 12: Onset and Withdrawal of Monsoon from Delhi since 2001

<b>YEAR</b>	<b>ONSET</b>	<b>WITHDRAWAL</b>
2001	24 June	18 September
2002	19 July	20 September
2003	05 July	27 September
2004	05 July	27-September
2005	05 July	29-September
2006	09 July	25-September
2007	28 June	2-October
2008	15 June	29 September
2009	30 June	28 September
2010	05 July	29 September
2011	26 June	26 September
2012	07 July	25 September
2013	16 June	17 October
2014	03 July	28 September
2015	25 June	29 September
2016	02 July	8 October
2017	02 July	30 September
2018	28 June	1-October
2019	05 July	10-October
2020	25 June	25 September
2021	13 July	8 October
2022	30 Jun	29 September
2023	25 June	30 September
2024	28 June	02 October



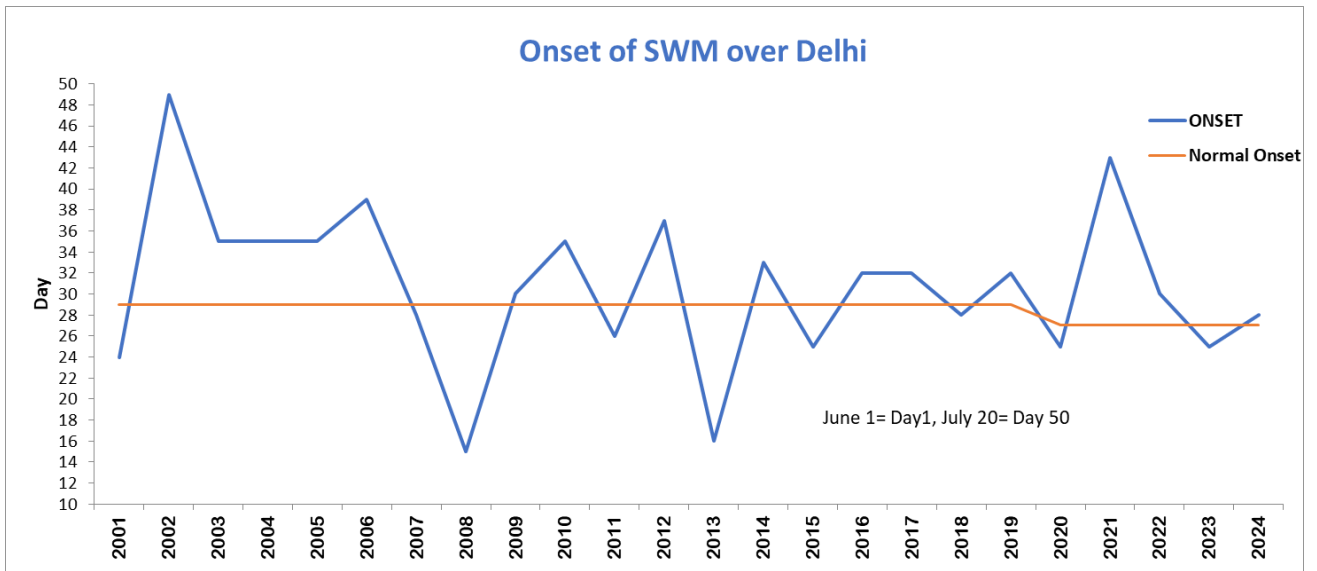


Figure 13: Onset of SWM over Delhi

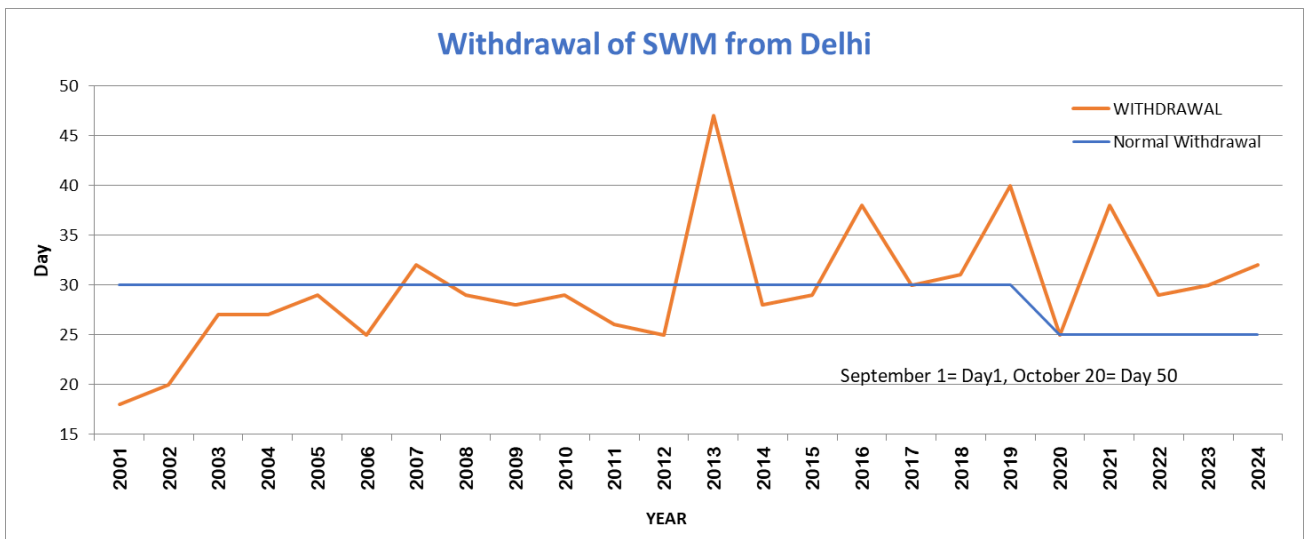


Figure 14: Withdrawal of SWM from Delhi

**End of Report**