

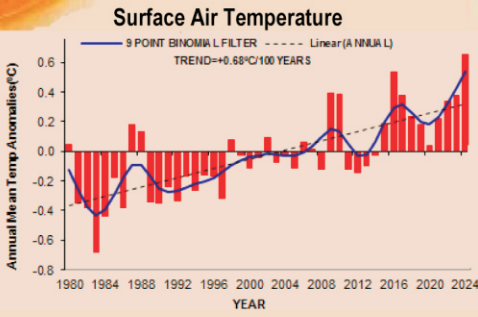
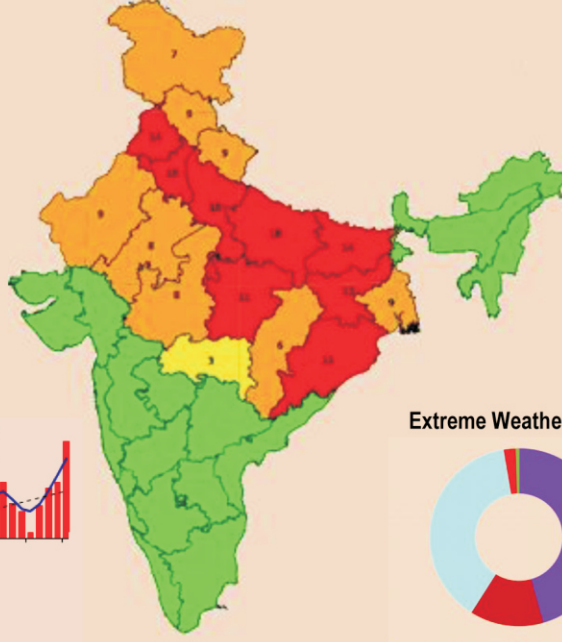


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पृथ्वी विज्ञान मंत्रालय / MINISTRY OF EARTH SCIENCES  
पृथ्वी प्रणाली विज्ञान संगठन / EARTH SYSTEM SCIENCE ORGANIZATION  
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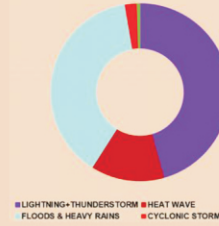


MOES / IMD / CRS / ANNUAL CLIMATE SUMMARY - 2024/01(2025)30

# वार्षिक जलवायु सारांश – २०२४ ANNUAL CLIMATE SUMMARY - 2024



Extreme Weather Events



द्वारा जारी / ISSUED BY

जलवायु निगरानी एवं प्रागुक्ति समूह  
CLIMATE MONITORING & PREDICTION GROUP

जलवायु अनुसंधान एवं सेवाएँ  
CLIMATE RESEARCH & SERVICES

भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT

## COVER PHOTOS

### ① **Snow Fall :**

More than 80 people were rescued from two snowed-under places in J-K, while an "exceptionally" heavy snowfall in Sikkim cut off a strategic road and threw general life out of gear. (Photo | PTI)

(<https://media.assettype.com/newindianexpress%2F2024-02%2Fe929d4db-9cb5-4d01-93eb-5d71cbd6306e%2Fsnowfall.jpg?w=1200&auto=format%2Ccompress&fit=max>)

### ② **Cyclone :**

Rains And Strong Winds Ahead Of The Landfall Of Cyclone 'Remal',In South 24 Parganas District, Sunday, May 26,2024.

([https://bsmedia.business-standard.com/media/bs/img/article/2024-05/27/full/1716789787-4968.jpg?im=FeatureCrop.size=\(826,465\)](https://bsmedia.business-standard.com/media/bs/img/article/2024-05/27/full/1716789787-4968.jpg?im=FeatureCrop.size=(826,465)))

### ③ **Heavy Rainfall / Land Slides :**

Aerial view of Chooralmala in Kerala's Wayanad district where a landslide wreaked havoc. (Photo | S Senbagapandiyan, EPS)

([https://media.assettype.com/newindianexpress%2F2024-07-31%2F73qfxwp1%2FNew%20Project%20\(40\).jpg?rect=0%2C117%2C1200%2C675&w=1024&auto=format%2Ccompress&fit=max](https://media.assettype.com/newindianexpress%2F2024-07-31%2F73qfxwp1%2FNew%20Project%20(40).jpg?rect=0%2C117%2C1200%2C675&w=1024&auto=format%2Ccompress&fit=max))

### ④ **Heavy Rainfall & Floods :**

A portion of the roof at Delhi's IGI Airport Terminal 1 collapsed amid heavy rains. (HT)

([https://www.hindustantimes.com/ht-img/img/2024/06/28/550x309/4e1e7331-c647-49b9-a696-4297935a552b\\_1719545911845\\_1719545929972.jpg](https://www.hindustantimes.com/ht-img/img/2024/06/28/550x309/4e1e7331-c647-49b9-a696-4297935a552b_1719545911845_1719545929972.jpg))

### ⑤ **Thunderstorm :**

Houses are damaged and electric poles fell after a heavy storm that left at least five people dead, in Jalpaiguri, West Bengal, Sunday, March 31, 2024. (Photo: PTI)

([https://akm-img-a-in.tosshub.com/indiatoday/images/story/202404/west-bengal-jalpaiguri-thunderstorm-cyclone-hailstorm-015117311-16x9\\_0.jpg?VersionId=Q5qWqGBhXz5wbLFnpWM14kIX90ejbNDD&size=690:388](https://akm-img-a-in.tosshub.com/indiatoday/images/story/202404/west-bengal-jalpaiguri-thunderstorm-cyclone-hailstorm-015117311-16x9_0.jpg?VersionId=Q5qWqGBhXz5wbLFnpWM14kIX90ejbNDD&size=690:388))

### ⑥ **Cyclone / Landslide :**

Rescue underway after a stone quarry collapsed following heavy rain at Aizawl in Mizoram on Tuesday. PTI

([https://englishtribuneimages.blob.core.windows.net/gallery-content/2024/5/2024\\_5\\$largeimg\\_678362571.webp](https://englishtribuneimages.blob.core.windows.net/gallery-content/2024/5/2024_5$largeimg_678362571.webp))



**वार्षिक जलवायु सारांश - २०२४**  
**ANNUAL CLIMATE SUMMARY – 2024**

## Executive Summary

### Annual Climate Summary 2024

1	Document Title	<b>Annual Climate Summary 2024</b>
2	Document Type	Meteorological Monograph
3	Issue No	<b>ESSO Document No.: “MOES/IMD/CRS/ ANNUAL CLIMATE SUMMARY–2024/01(2025)30”</b>
4	Issue Date	15.01/2025
5	Security Classification	Unclassified
6	Control status	Unclassified
7	Document Type	Scientific Report
8	No. of Pages	44 Pages
9	No. of Figures	24 Figures / 6 Tables
10	No. of References	Nil
11	Distribution	Unrestricted
12	Language	English
13	Editors	Sreejith O. P., Arti Bandgar, Ananya Karmakar , Sangita Kulkarni, Priya Mahajani, Mangal Kolpe, Chandrashekhar Shaligarm, Bushan Patkar, Sanjay Sonparote, Preetha A. Menon, Sabeerali C. T., Rohini P., Kripan Ghosh, M. Mohapatra
14	Originating Division / Group	Climate Monitoring and Prediction Group, Office of Climate Research and Services, India Meteorological Department, Pune
15	Reviewing and Approving Authority	Director General of Meteorology, India Meteorological Department, New Delhi
16	End Users	Government Officials, Operational Forecasters and Researchers, etc.
17	Abstract	<p>The report discusses the climate conditions in the Indian region during the year 2024. Notably, global temperatures soared to exceptionally high levels during this period. The annual mean land surface air temperature averaged over India during 2024 was +0.65°C above the long-term average (1991-2020 period). This marked the warmest year since nationwide records began in 1901, surpassing the previous highest temperature observed in 2016, which had an anomaly of +0.54°C. The all-India mean temperature was above normal, with anomalies of +0.37°C, +0.56°C, +0.71°C, and +0.83°C during the winter (January to February), pre-monsoon (March to May), southwest monsoon (June to September), and post-monsoon (October to December) seasons, respectively.</p> <p>Heatwave conditions were observed over most parts of the east coast in April, most parts of northwest India in May, and most parts of Northern and central India in the month of June.</p> <p>The 2024 annual rainfall over the country as a whole was 104% of its Long Period Average (LPA) value for the period 1971-2020. The monsoon season rainfall over the country as a whole was 108% of its LPA. The seasonal rainfall during the Northeast monsoon season (October – December) over the NE Monsoon core region of the south peninsula was 122% of its LPA. In 2024, four cyclonic storms formed over the North Indian Ocean. Of these, two were severe cyclonic storms (REMAL and DANA), and two were cyclonic storms. Three of these cyclones formed over the Arabian Sea (as remnants from the Bay of Bengal). Among these systems, REMAL formed during the pre-monsoon season (May 24-28), ASNA during the monsoon season (August 25 to September 2), and DANA (October 22-26) and FENGEL (November 25 to December 2) formed during the post-monsoon season. In addition to these cyclones, extreme weather events such as extremely heavy rainfall, floods, landslides, lightning, thunderstorms, droughts, and others were also experienced in various parts of the country.</p>
18	Key Words	Southwest Monsoon, SPI, Temperature, Rainfall, Extreme Weather Events and Cyclone.

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# वार्षिक जलवायु सारांश - २०२४

## विशेषताएं :

वर्ष 2024 के दौरान भारत में औसत वार्षिक भूमि सतह वायु तापमान दिर्घकालिक औसत (1991-2020 अवधि) से  $+0.65^{\circ}\text{C}$  अधिक था। यह वर्ष 1901 में राष्ट्रव्यापी रिकॉर्ड शुरू होने के बाद से सबसे गर्म वर्ष था, जिसने 2016 में देखे गए पिछले उच्चतम तापमान को पार कर लिया, जिसमें  $+0.54^{\circ}\text{C}$  की विसंगति थी।

सर्दियों (जनवरी से फरवरी), प्री-मानसून (मार्च से मई), दक्षिण-पश्चिम मानसून (जून से सितंबर) और पोस्ट-मानसून (अक्टूबर से दिसंबर) ऋतुओं के दौरान क्रमशः  $+0.37^{\circ}\text{C}$ ,  $+0.56^{\circ}\text{C}$ ,  $+0.71^{\circ}\text{C}$  और  $+0.83^{\circ}\text{C}$  की विसंगतियों के साथ अखिल भारतीय औसत तापमान सामान्य से अधिक था। अब तक का 5 सबसे बड़ा साल रहा : 2024 ( $+0.65^{\circ}\text{C}$ ), 2016 ( $+0.54^{\circ}\text{C}$ ), 2009 ( $+0.40^{\circ}\text{C}$ ), 2010 ( $+0.39^{\circ}\text{C}$ ) और 2017 ( $+0.38^{\circ}\text{C}$ ) हैं |

दक्षिणी पश्चिमी मानसून (जून-सितंबर, जो देश की वर्षा का प्रमुख काल माना जाता है) में देशभर में व्यापक रूप से सामान्य से अधिक रही (दिर्घ कालावधि औसत के 108%)। हालांकि सामायिक रूप से वर्षा अस्थाई थी लेकिन फिर भी देशभर में वर्षा का वितरण काफी अच्छा रह।

अप्रैल माह में पूर्व तट के भाग, मई माह में उत्तर - पश्चिम भारत के भाग और जून माह में उत्तर - पश्चिम भारत के अधिकांश हिस्सों में ऊष्ण लहर की स्थिति देखी गई ।

दक्षिण प्रायद्वीप (जिसमें 5 प्रभाग आते हैं, और जो उत्तर-पूर्व वर्षा का मुख्य क्षेत्र है, नामतः तटीय आन्ध्रप्रदेश और यनाम, रायलसीमा, तमिलनाडु, पुडुचेरी और करायकल, दक्षिणी आंतरिक कर्नाटक, केरल और माहे) में अक्टूबर से दिसंबर तक पडने वाली उत्तर-पूर्व मानसून वर्षा, सामान्य से अधिक थी (दिर्घ कालावधि औसत के 122%)।

## **वर्षा:**

2024 में देश भर में वार्षिक वर्षा सामान्य से अधिक थी। वर्षा का परिमाण दीर्घ कालावधि औसत के 104% रह। देश के 36 प्रभाग में से 10 प्रभागों में अधिक, 21 प्रभागों में वर्षा सामान्य रही और 5 प्रभागों में वर्षा कम रही।

## **तापमान :**

देश के अधिकतर भागों में अधिकतम, न्यूनतम और औसत तापमान की विसंगति  $-1.0$  डि.सें. से  $+ 1.0$  डि.सें. की श्रेणी में रही।

## **चक्रवाती तूफान :**

2024 में, उत्तरी हिंद महासागर के ऊपर चार चक्रवाती तूफान बने। इनमें से दो गंभीर चक्रवाती तूफान (रिमल/REMAL और दाना/DANA) थे और दो चक्रवाती तूफान (असना/ASNA

और फेंगल/FENGAL) थे। इनमें से तीन चक्रवात- REMAL, DANA और FENGAL- बंगाल की खाड़ी के ऊपर बने, जबकि ASNA अरब सागर (बंगाल की खाड़ी के अवशेष के रूप में) के ऊपर बना।

इन प्रणालियों में, प्री-मानसून सीज़न (24-28 मई) के दौरान REMAL, मानसून सीज़न (25 अगस्त से 2 सितंबर) के दौरान ASNA और पोस्ट-मानसून सीज़न के दौरान DANA (22 - 26 अक्टूबर) और FENGAL (25 नवंबर से 2 दिसंबर) का गठन हुआ। इन सभी कम दबाव की प्रणालियों की वजह से संबन्धित स्थानों में अच्छी वर्षा हुई।

### **महत्वपूर्ण मौसम संबंधी घटनाएं :**

देश के विभिन्न हिस्सों ने अत्यधिक भारी वर्षा, बाढ़, भूस्खलन, बिजली, गरज, गर्मी की लहर, शीत लहर, ओलावृष्टि आदि जैसी चरम मौसम की घटनाओं का भी अनुभव किया, जिसके कारण लगभग 2400 मौतें हुईं, जिनमें से 1280 से अधिक बिजली गिरने और आंधी के कारण हुईं।

# Annual Climate Summary 2024

## HIGHLIGHTS :

The annual mean land surface air temperature averaged over India during 2024 was  $+0.65^{\circ}\text{C}$  above the long-term average (Period 1991-2020). This marked the warmest year since nationwide records began in 1901, surpassing the highest temperature observed in 2016, which had an anomaly of  $+0.54^{\circ}\text{C}$ .

The all-India mean temperature was above normal, with anomalies of  $+0.37^{\circ}\text{C}$ ,  $+0.56^{\circ}\text{C}$ ,  $+0.71^{\circ}\text{C}$ , and  $+0.83^{\circ}\text{C}$  during the winter (January to February), pre-monsoon (March to May), southwest monsoon (June to September), and post-monsoon (October to December) seasons, respectively.

Heatwave conditions were observed over most parts of the east coast in April, most parts of northwest India in May, and most parts of Northern and central India in June.

The 2024 annual rainfall over the country as a whole was 104% of its Long Period Average (LPA) value for the period 1971-2020. The monsoon season rainfall over the country as a whole was 108% of its LPA. The seasonal rainfall during the Northeast monsoon season (October – December) over the NE Monsoon core region of the south peninsula was 122% of its LPA.

In 2024, four cyclonic storms formed over the North Indian Ocean. Of these, two were severe cyclonic storms (REMAL and DANA), and two were cyclonic storms (ASNA and FENGAL). Three of these cyclones—REMAL, DANA, and FENGAL—formed over the Bay of Bengal, while ASNA formed over the Arabian Sea (as remnants from the Bay of Bengal).

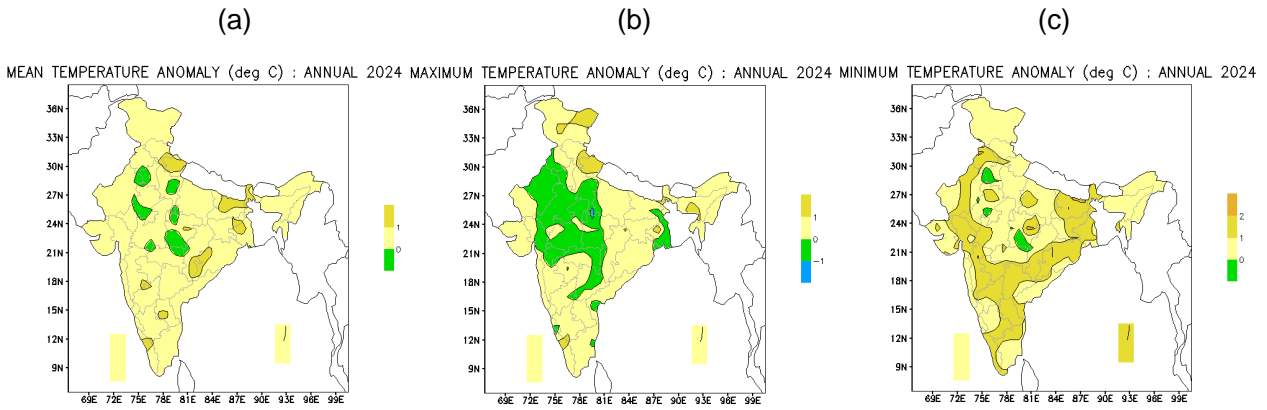
Various parts of the country also experienced extreme weather events like extremely heavy rainfall, floods, landslides, lightning, thunderstorms, heat waves, cold waves, hailstorms, etc., which caused about 2400 deaths, out of which more than 1280 were due to lightning and thunderstorm.

## A) TEMPERATURE

### Annual Temperature:

The spatial pattern of annual mean, maximum, and minimum temperature anomalies for 2024 are shown in (Fig. 1). During 2024, mean, minimum, and maximum temperature anomalies over many parts of the country were generally above normal or near normal. Mean temperature over parts of Himachal Pradesh, Uttarakhand, East Madhya Pradesh, West Bengal state, Sikkim state, Jharkhand, Chattisgarh, South Interior Karnataka, North Interior Karnataka, Madhya Maharashtra, Odisha, Bihar, Rayalaseema and Kerala & Mahe was above normal by about  $1^{\circ}\text{C}$ . Maximum temperature over parts of Jammu, Kashmir & Ladakh, Himachal Pradesh, Uttarakhand, West Bengal state, Assam & Meghalaya, South Interior Karnataka and Kerala & Mahe was above normal by about  $1^{\circ}\text{C}$ . However, the maximum temperature over parts of East Uttar Pradesh and East Madhya Pradesh was below normal by about  $1^{\circ}\text{C}$ . The minimum temperature over parts of Punjab, Bihar, and East Madhya Pradesh was above normal by about  $2^{\circ}\text{C}$ .





**चित्र १: २०२४ के लिए वार्षिक तापमान विसंगतियाँ (डिग्री सेल्सियस) (ए) औसत (बी) अधिकतम (सी) न्यूनतम तापमान १९९१-२०२० के औसत के आधार पर**  
**Fig. 1: Annual temperature anomalies (°C) for 2024 (a) Mean temperature, (b) Maximum temperature, and (c) Minimum temperature. (Based on 1991-2020 Average)**

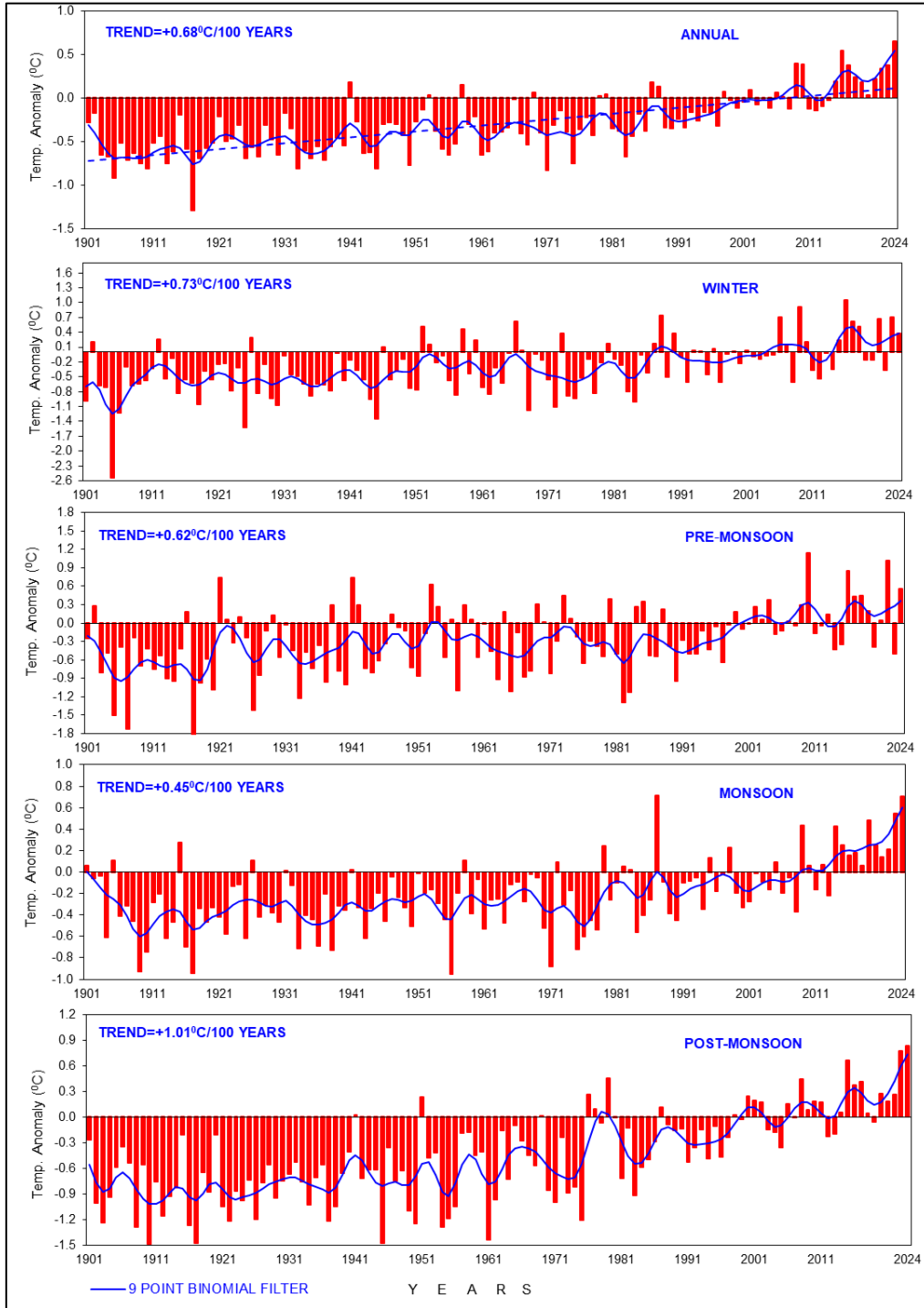
The country's annual mean land surface air temperature during the year 2024 was  $+0.65^{\circ}\text{C}$  above the 1991-2020 average. Thus, making the year 2024 the warmest year on record since 1901 (Fig. 2). The five warmest years on record, in descending order, are 2024 ( $+0.65^{\circ}\text{C}$ ), 2016 ( $+0.54^{\circ}\text{C}$ ), 2009 ( $+0.40^{\circ}\text{C}$ ), 2010 ( $+0.39^{\circ}\text{C}$ ) and 2017 ( $+0.38^{\circ}\text{C}$ ). 10 out of the 15 warmest years were observed in the recent fifteen years (2010-2024). The past decade (2015-2024) was also the warmest decade on record, with the decadal averaged annual mean temperature anomaly (Actual-LPA) of  $0.31^{\circ}\text{C}$ . The country averaged annual mean temperature during 1901-2024 showed a significant increasing trend of  $0.68^{\circ}\text{C}/100$  years (Fig.2). During the same period, significant increasing trends were observed in maximum ( $0.89^{\circ}\text{C}/100$  years) and minimum ( $0.46^{\circ}\text{C}/100$  years) temperatures.

The all India averaged seasonal mean temperature was above normal for all the seasons during the year 2024: the winter season (January - February, with an anomaly of  $+0.37^{\circ}\text{C}$ ), pre-monsoon season (March-May, with an anomaly of  $+0.56^{\circ}\text{C}$ ), southwest monsoon (June - September,  $+0.71^{\circ}\text{C}$ ) season and post-monsoon season (October- December, with an anomaly of  $+0.83^{\circ}\text{C}$ ).

The monthly mean temperatures averaged over the country during 2024 were above normal for all the months of the year except March (close to normal with an anomaly of  $+0.22^{\circ}\text{C}$ ). The mean monthly temperatures averaged over the country during October was the highest recorded (with an anomaly of  $+1.23^{\circ}\text{C}$ ) and the 2nd highest during July & September (with anomalies of  $+0.70^{\circ}\text{C}$  and  $+0.76^{\circ}\text{C}$  respectively) since 1901. In addition, the mean temperature during November was the 3rd highest (with an anomaly of  $+0.84^{\circ}\text{C}$ ), and May & August were the 4th highest (with anomalies of  $+0.69^{\circ}\text{C}$  and  $+0.45^{\circ}\text{C}$  respectively) since 1901.

In 2024, the monthly maximum temperature averaged over the country was the 2nd highest (with an anomaly of  $+0.62^{\circ}\text{C}$ ) since 1901 for November.

In 2024, the monthly minimum temperatures averaged over the country were the highest during July, August, September, and October with anomalies of  $+0.89^{\circ}\text{C}$ ,  $+0.59^{\circ}\text{C}$ ,  $+0.99^{\circ}\text{C}$  and  $+1.78^{\circ}\text{C}$  respectively, since 1901 and the 2nd highest ever recorded (with an anomaly of  $+0.79^{\circ}\text{C}$ ) for February since 1901.

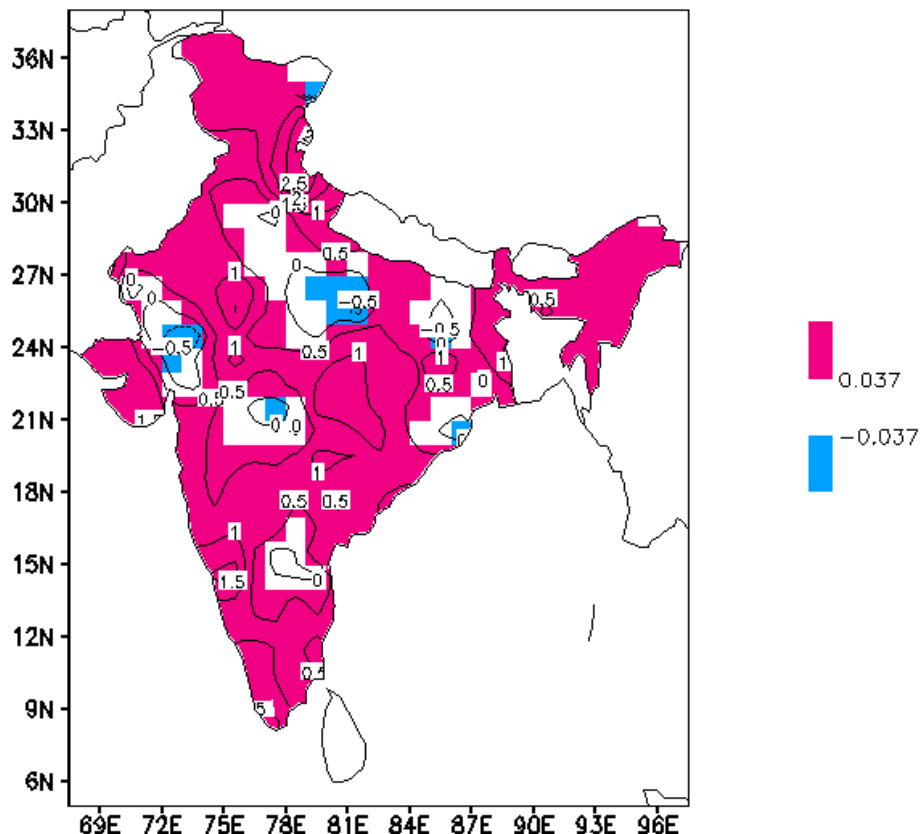


चित्र. २: पुरे भारत की औसत तापमान विसंगतियाँ (ए) वार्षिक (बी) शीतकालीन (सी) प्री-मानसून (डी) मानसून (ई) पोस्ट मानसून १९०१ - २०२४ की अवधि के लिए ऊर्ध्वाधर सलाखों के रूप में दिखाया गया है। ठोस नीले वक्र में द्विपद फ़िल्टर) १९९१ - २०२० के औसत से विचलन के साथ उप-दशकीय समय पैमाने में बदलाव थे।

Fig. 2: All India mean temperature anomalies (a) Annual (b) Winter (c) Pre-monsoon (d) SW-monsoon (e) Post-monsoon for the period 1901 - 2024 shown as vertical bars. The solid blue curve exhibits sub-decadal time scale variations that have been smoothed with a Binomial Filter (Departures from the 1991 - 2020 average)

The spatial pattern of trend in mean annual temperature anomalies based on the data for the period 1901-2024 (Fig. 3) suggests a significant positive (increasing) trend over most parts of the country, except for some parts of Ladakh, Uttar Pradesh state, Odisha, Jharkhand, East Madhya Pradesh, Vidarbha and Gujarat region, where significant negative (decreasing) trend was observed.

### ANNUAL MEAN TEMP ANOM TREND(1901–2024)



चित्र .3: वार्षिक औसत तापमान विसंगति रुझान) डिग्री सेल्सियस / १०० वर्ष (को समोच्च रेखाओं के रूप में दिखाया गया है। ९५% स्तर पर महत्वपूर्ण रुझान रंगों के साथ छायांकित हैं। सकारात्मक रुझान लाल रंग में दिखाए जाते हैं जबकि नकारात्मक रुझान नीले रंग में दिखाए जाते हैं। विश्लेषण की अवधि :१९०१-२०२४

Fig. 3: Annual mean temperature anomaly trends ( $^{\circ}\text{C} / 100$  years) are shown as contour lines. The trends significant at the 95% level are shaded with colours. Positive trends are shown in red, while the negative trends are shown in blue. Period of analysis: 1901 -2024

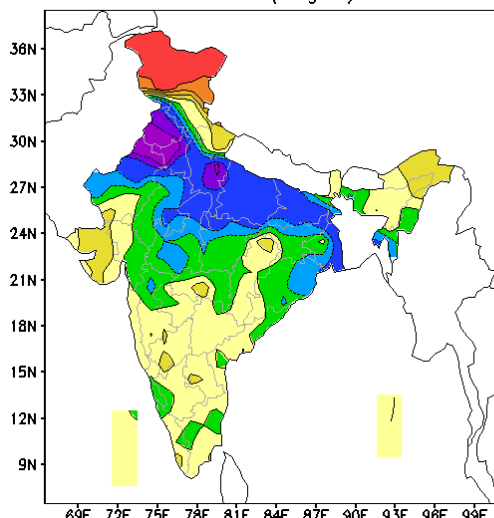
The spatial pattern of monthly maximum and minimum temperature anomalies during each month of the season are discussed below (Figures 4(a) to 4(l)).

#### January - February (Winter Season):

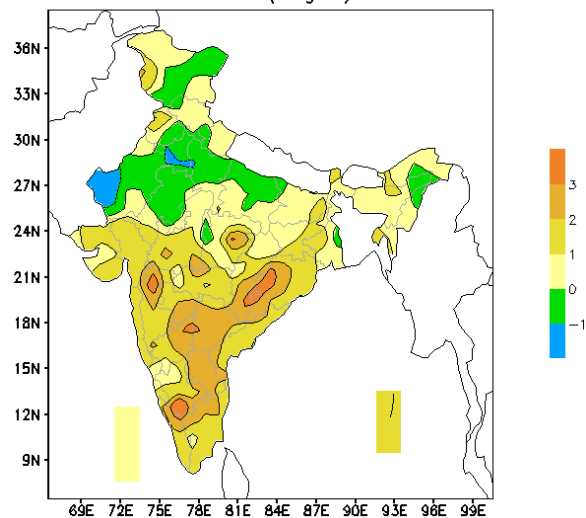
During January, the maximum temperature anomaly was more than  $2^{\circ}\text{C}$  over parts of Jammu, Kashmir & Ladakh. Maximum temperature anomaly was less than  $-5^{\circ}\text{C}$  over parts of Punjab, West Rajasthan, Haryana, Chandigarh & Delhi and West Uttar Pradesh.

The minimum temperature anomaly was over  $3^{\circ}\text{C}$  over parts of Chhattisgarh, Odisha, Telangana, Madhya Maharashtra, North Interior Karnataka, South Interior Karnataka, and Kerala & Mahe. The minimum temperature anomaly was less than  $-1^{\circ}\text{C}$  over parts of West Rajasthan, West Uttar Pradesh and Haryana, Chandigarh & Delhi.

MAX TEMP ANOMALY (deg C) : JAN 2024



MIN TEMP ANOMALY (deg C) : JAN 2024



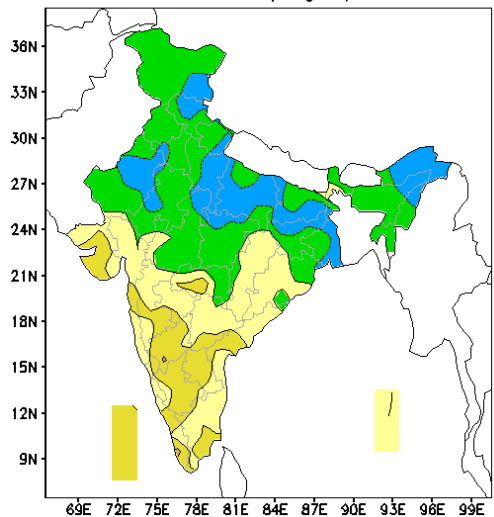
चित्र ४(ए): जनवरी २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख

Fig. 4(a): Maximum and Minimum temperature anomalies (°C) spatial plots for January 2024

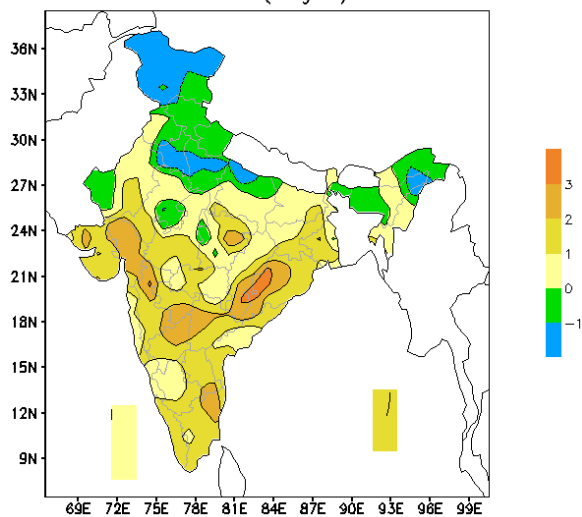
During February, the maximum temperature anomaly was more than 2°C over parts of Kerala & Mahe and North Interior Karnataka. Maximum temperature anomaly was less than -1°C over parts of Ladakh state, Himachal Pradesh, Uttarakhand, Haryana state, Rajasthan state, Uttar Pradesh state, northern parts of Madhya Pradesh state, Bihar, Arunachal Pradesh, Assam state, Nagaland state, West Bengal state and Jharkhand.

The minimum temperature anomaly was over 3°C over parts of Chhattisgarh, Odisha, and north Madhya Maharashtra. The minimum temperature anomaly was less than -1°C over parts of Jammu, Kashmir & Ladakh, Punjab, West Rajasthan, Uttar Pradesh state, Haryana, Chandigarh & Delhi, Arunachal Pradesh, Assam state, and Nagaland state.

MAX TEMP ANOMALY (deg C) : FEB 2024



MIN TEMP ANOMALY (deg C) : FEB 2024



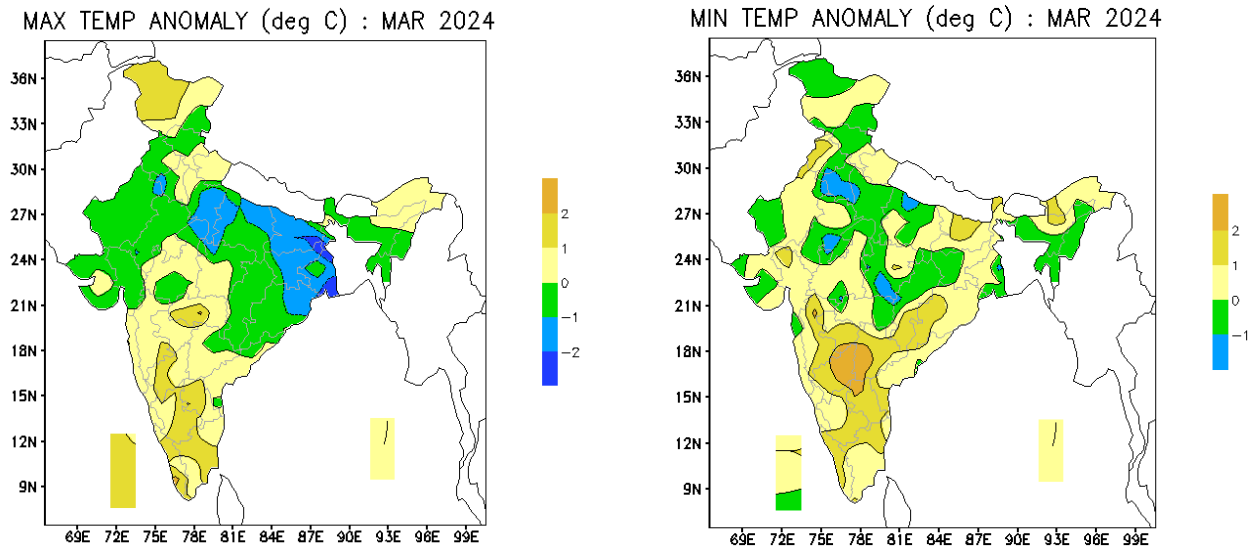
चित्र ४(बी): फरवरी २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख

Fig. 4(b): Maximum and Minimum temperature anomalies (°C) spatial plots for February 2024

### March-May (Pre-Monsoon Season):

During March, the maximum temperature anomaly was more than 2°C over parts of Kerala & Mahe. Maximum temperature anomaly was more than 1°C over parts of Jammu & Kashmir state, Maharashtra state (except Konkan & Goa subdivision), South Interior Karnataka, North Interior Karnataka, Rayalaseema, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe and Lakshadweep islands. Maximum temperature anomaly was less than -2°C over parts of Bihar, Jharkhand, and West Bengal state.

The minimum temperature anomaly was more than 2°C over parts of Telangana, Rayalaseema, North Interior Karnataka, Marathwada, and Madhya Maharashtra. The minimum temperature anomaly was less than -1°C over parts of East Madhya Pradesh, Rajasthan state, Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh state, and Gangatic West Bengal.

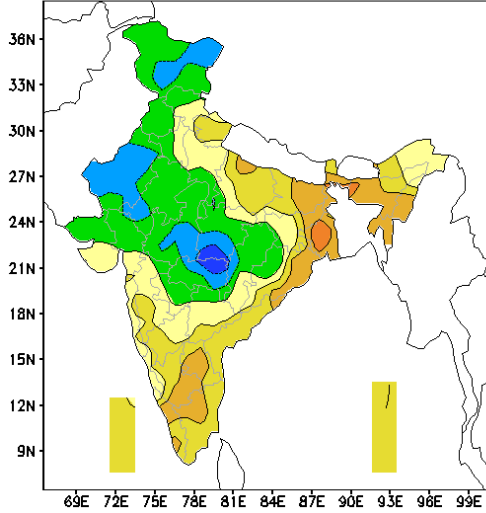


चित्र ४(सी): मार्च २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
Fig. 4(c): Maximum and Minimum temperature anomalies (°C) spatial plots for March 2024

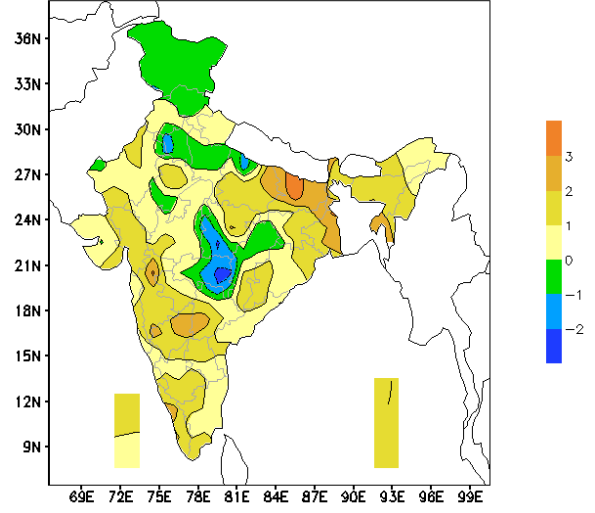
During April, the maximum temperature anomaly was more than 3°C over parts of West Bengal and western parts of Assam. Maximum temperature anomaly was more than 2°C over parts of East Uttar Pradesh, Bihar, West Bengal state, Assam & Meghalaya, Nagaland, Manipur, Mizoram, Tripura, Jharkhand, Odisha, Andhra Pradesh state, Tamil Nadu, Puducherry & Karaikal, South Interior Karnataka and Kerala & Mahe. Maximum temperature anomaly was less than -2°C over parts of East Madhya Pradesh and Vidarbha.

The minimum temperature anomaly was more than 2°C over parts of East Uttar Pradesh, Bihar, Jharkhand, West Bengal state, Sikkim state, Mizoram, Tripura, Madhya Maharashtra, North Interior Karnataka, Telangana and Kerala & Mahe. The minimum temperature anomaly was less than -2°C over parts of East Madhya Pradesh and Vidarbha.

MAX TEMP ANOMALY (deg C) : APR 2024



MIN TEMP ANOMALY (deg C) : APR 2024

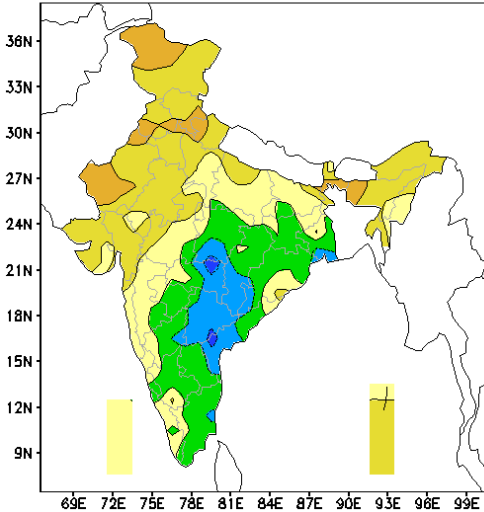


चित्र ४(डी): अप्रैल २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ ( $^{\circ}\text{C}$ ) स्थानिक आलेख  
 Fig. 4(d): Maximum and Minimum temperature anomalies ( $^{\circ}\text{C}$ ) spatial plots for April 2024

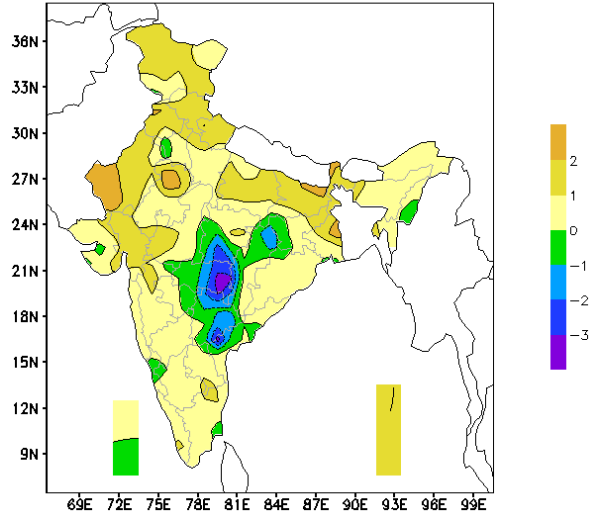
During May, the maximum temperature anomaly was more than  $2^{\circ}\text{C}$  over parts of Jammu & Kashmir state, Himachal Pradesh, Uttarakhand, Punjab, West Rajasthan, Assam & Meghalaya and Sub Himalayan West Bengal & Sikkim. Maximum temperature anomaly was less than  $-2^{\circ}\text{C}$  over parts of East Madhya Pradesh, Vidarbha, Telangana, and Coastal Andhra Pradesh & Yanam.

The minimum temperature anomaly was more than  $2^{\circ}\text{C}$  over parts of Bihar, Sikkim state, Gangatic West Bengal, Rajasthan state, and Punjab. The minimum temperature anomaly was less than  $-3^{\circ}\text{C}$  over parts of Vidarbha. The minimum temperature anomaly was less than  $-2^{\circ}\text{C}$  over parts of East Madhya Pradesh, Vidarbha, Chhattisgarh, Telangana, and Coastal Andhra Pradesh & Yanam.

MAX TEMP ANOMALY (deg C) : MAY 2024



MIN TEMP ANOMALY (deg C) : MAY 2024



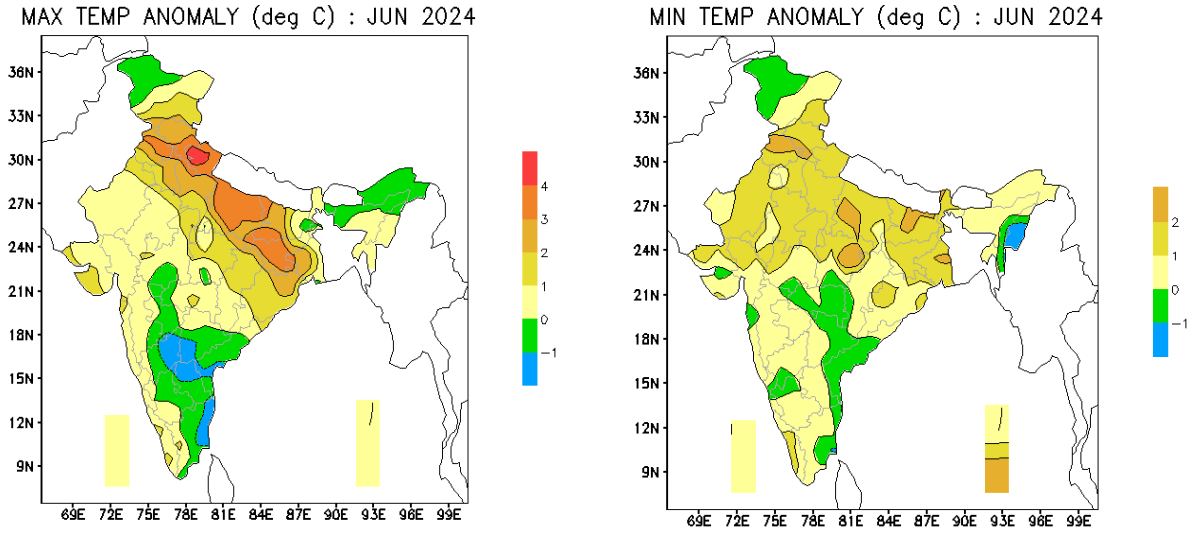
चित्र ४(ई): मई २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ ( $^{\circ}\text{C}$ ) स्थानिक आलेख  
 Fig. 4(e): Maximum and Minimum temperature anomalies ( $^{\circ}\text{C}$ ) spatial plots for May 2024

### June - September (South-west Monsoon Season):

During June, the maximum temperature anomaly was more than  $4^{\circ}\text{C}$  over parts of Uttarakhand. Maximum temperature anomaly was more than  $3^{\circ}\text{C}$  over parts of Uttarakhand, Punjab, Himachal Pradesh, Uttar Pradesh state, Bihar, and Jharkhand. Maximum temperature anomaly was less than  $-1^{\circ}\text{C}$

over parts of Telangana, Coastal Andhra Pradesh & Yanam, Rayalaseema, North Interior Karnataka, extreme northern South Interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

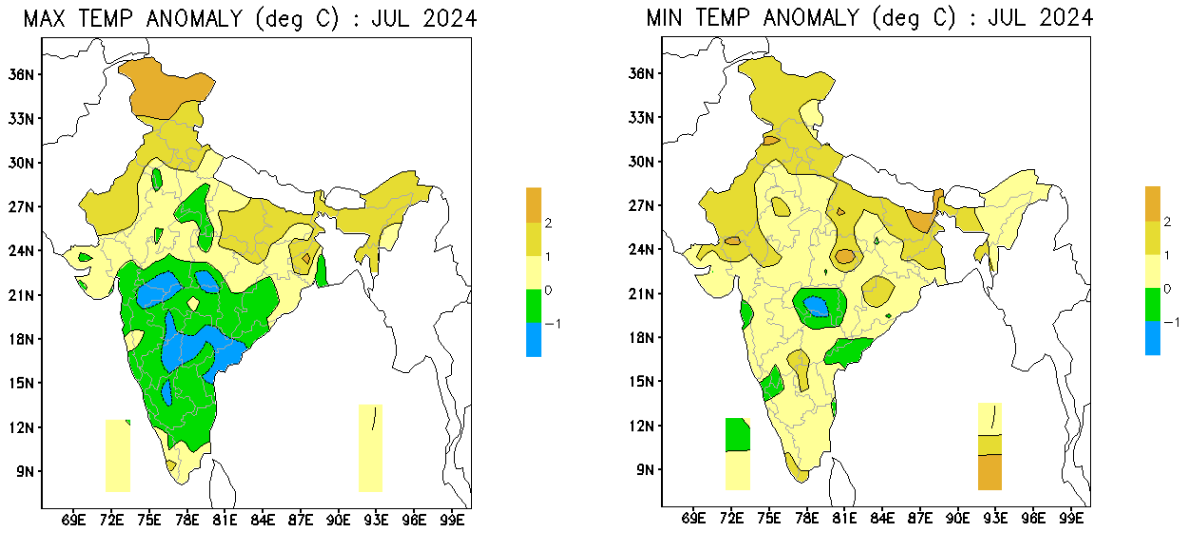
The minimum temperature anomaly was more than 2°C over parts of Punjab, Himachal Pradesh, East Uttar Pradesh, Bihar, Sikkim state, Gangatic West Bengal, and East Madhya Pradesh. The minimum temperature anomaly was less than -1°C over parts of Manipur, Tamil Nadu, Puducherry & Karaikal.



चित्र ४(एफ): जून २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
 Fig. 4(f): Maximum and Minimum temperature anomalies (°C) spatial plots for June 2024

During July, the maximum temperature anomaly was more than 2°C over parts of Jammu, Kashmir & Ladakh, and Gangatic West Bengal. Maximum temperature anomaly was less than -1°C over parts of Madhya Pradesh state, Madhya Maharashtra, Vidarbha, Marathawada, South Interior Karnataka, North Interior Karnataka, Telangana and Coastal Andhra Pradesh & Yanam.

The minimum temperature anomaly anomaly was more than 2°C over parts of Punjab, Gujarat region, East Uttar Pradesh, East Madhya Pradesh, Bihar, Sub-Himalayan West Bengal & Sikkim, and Andaman & Nicobar Islands. The minimum temperature anomaly was less than -1°C over parts of Vidarbha and Telangana.

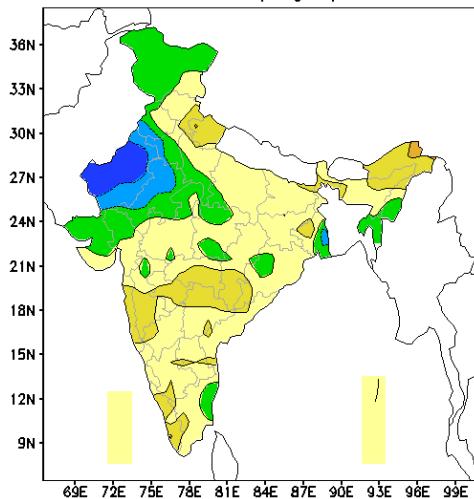


चित्र ४(जी): जुलाई २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
 Fig. 4(g): Maximum and Minimum temperature anomalies (°C) spatial plots for July 2024

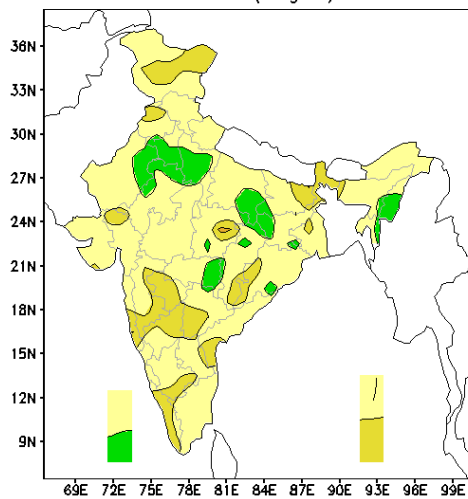
During August, the maximum temperature anomaly was above normal over most parts of the country, except some parts of northwest India, central India, and southern parts of east & northeast India. Maximum temperature anomaly was more than 2°C over parts of Arunachal Pradesh. Maximum temperature anomaly was less than -2°C over parts of West Rajasthan.

The minimum temperature anomaly was more than 2°C over parts of East Madhya Pradesh. Minimum temperature anomaly was more than 1°C over parts of Jammu, Kashmir & Ladakh, Punjab, West Bengal state, northern Gujarat region, Goa state, Maharashtra state, East Madhya Pradesh, Bihar, Odisha, Chhattisgarh, Telangana, Andhra Pradesh state, South Interior Karnataka, North Interior Karnataka, Kerala & Mahe and Andaman & Nicobar Islands.

MAX TEMP ANOMALY (deg C) : AUG 2024



MIN TEMP ANOMALY (deg C) : AUG 2024

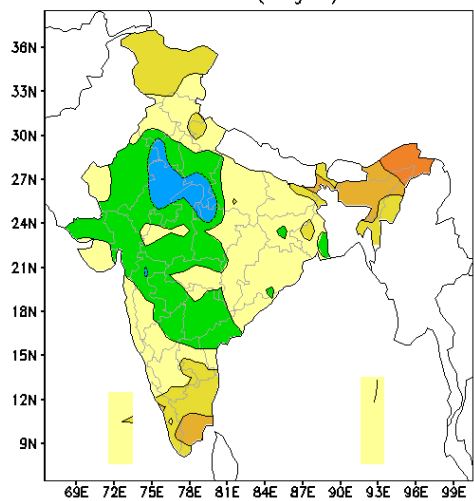


चित्र ४(एच): अगस्त २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
 Fig. 4(h): Maximum and Minimum temperature anomalies (°C) spatial plots for August 2024

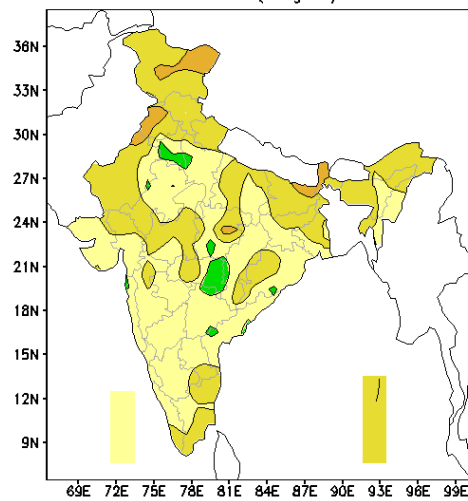
During September, the maximum temperature anomaly was more than 3°C over parts of Arunachal Pradesh and Assam & Meghalaya. Maximum temperature anomaly was less than -1°C over parts of Rajasthan state, Haryana, Chandigarh & Delhi, southern Uttar Pradesh, and northern Madhya Pradesh.

The minimum temperature anomaly was more than 2°C over parts of Jammu, Kashmir & Ladakh, Punjab, extreme northern West Rajasthan, Sub Himalayan West Bengal & Sikkim, Bihar and East Madhya Pradesh.

MAX TEMP ANOMALY (deg C) : SEP 2024



MIN TEMP ANOMALY (deg C) : SEP 2024



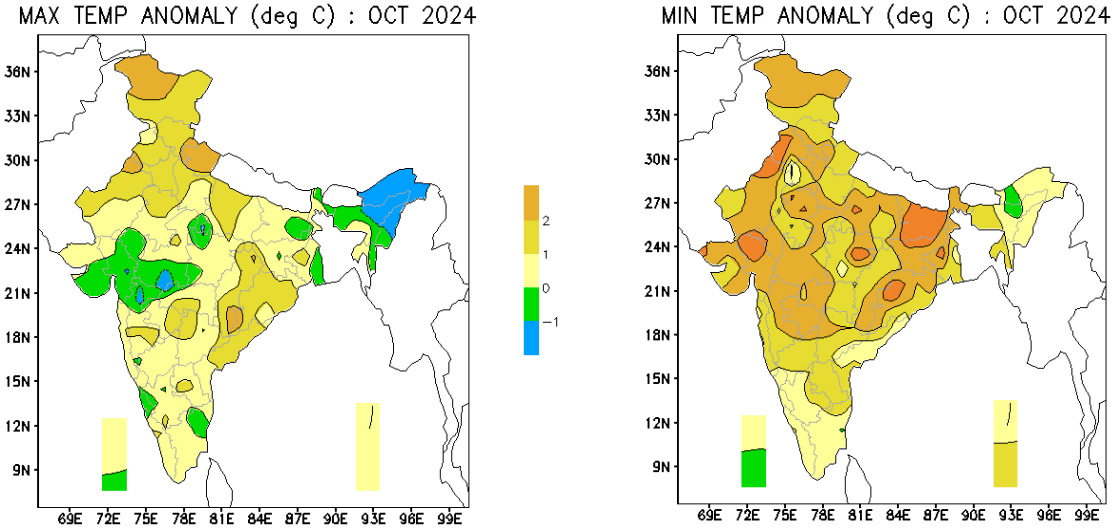
चित्र ४(आय): सितंबर २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
 Fig. (4i): Maximum and Minimum temperature anomalies (°C) spatial plots for September 2024



**October - December (Post-Monsoon Season):**

During October, the maximum temperature anomaly was more than 2°C over parts of Jammu, Kashmir & Ladakh, Himachal Pradesh, Uttarakhand, Punjab, West Rajasthan, Odisha and Chhattisgarh. Maximum temperature anomaly was less than -1°C over parts of Gujarat region, northern Madhya Maharashtra, West Madhya Pradesh, East Uttar Pradesh, Nagaland, Manipur, Assam state and Arunachal Pradesh.

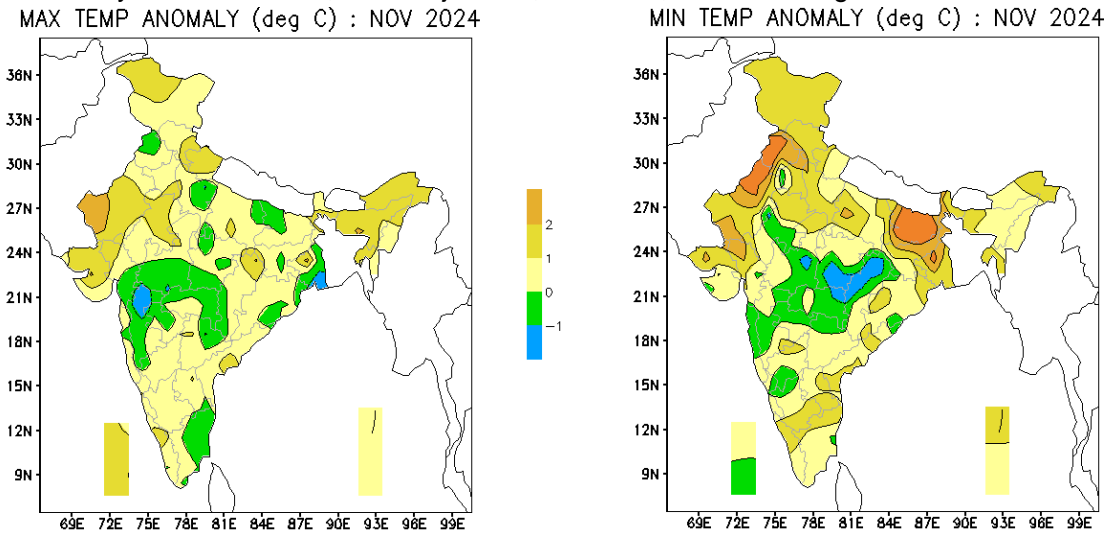
The minimum temperature anomaly was more than 3°C over parts of Punjab, Rajasthan state, East Uttar Pradesh, Bihar, Jharkhand, Gangatic West Bengal, Odisha, Saurashtra & Kutch, Gujarat region and East Madhya Pradesh.



चित्र ४ (जे): अक्टूबर २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
**Fig. 4(j): Maximum and Minimum temperature anomalies (°C) spatial plots for October 2024**

During November, the maximum anomaly was more than 2°C over parts of West Rajasthan and Meghalaya state. Maximum temperature anomaly was less than -1°C over parts of southern Madhya Maharashtra, Marathawada West Madhya Pradesh, and Gangatic West Bengal.

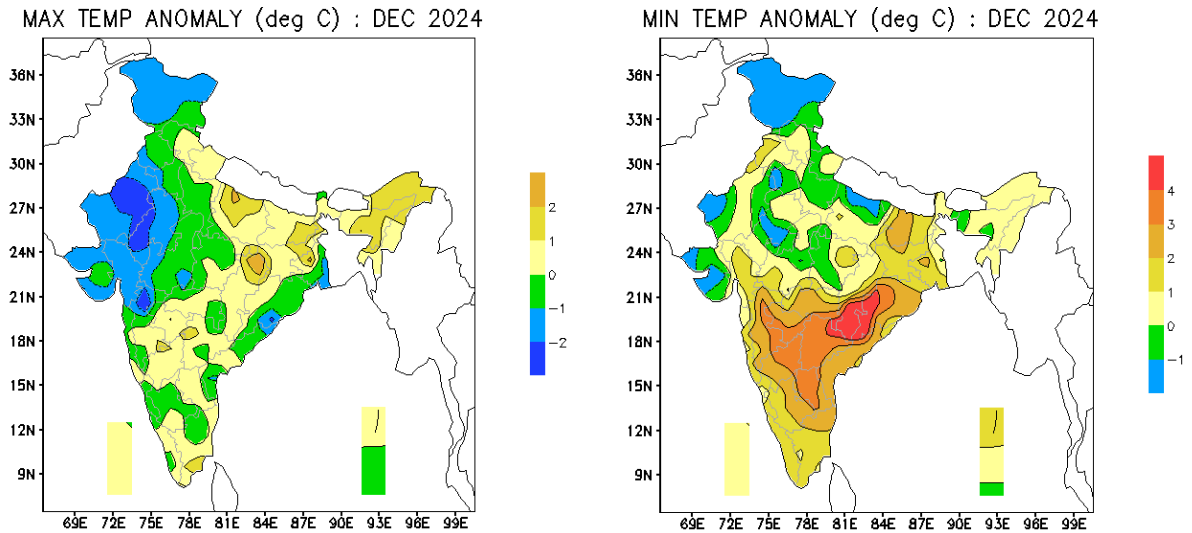
The minimum temperature anomaly was over 3°C over parts of Punjab, West Rajasthan, Bihar, Jharkhand, and Gangatic West Bengal. The minimum temperature anomaly was less than -1°C over parts of Madhya Pradesh state, East Rajasthan, Vidarbha, and Chhattisgarh.



चित्र ४(के): नवंबर २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
**Fig. 4(k): Maximum and Minimum temperature anomalies (°C) spatial plots for November 2024**

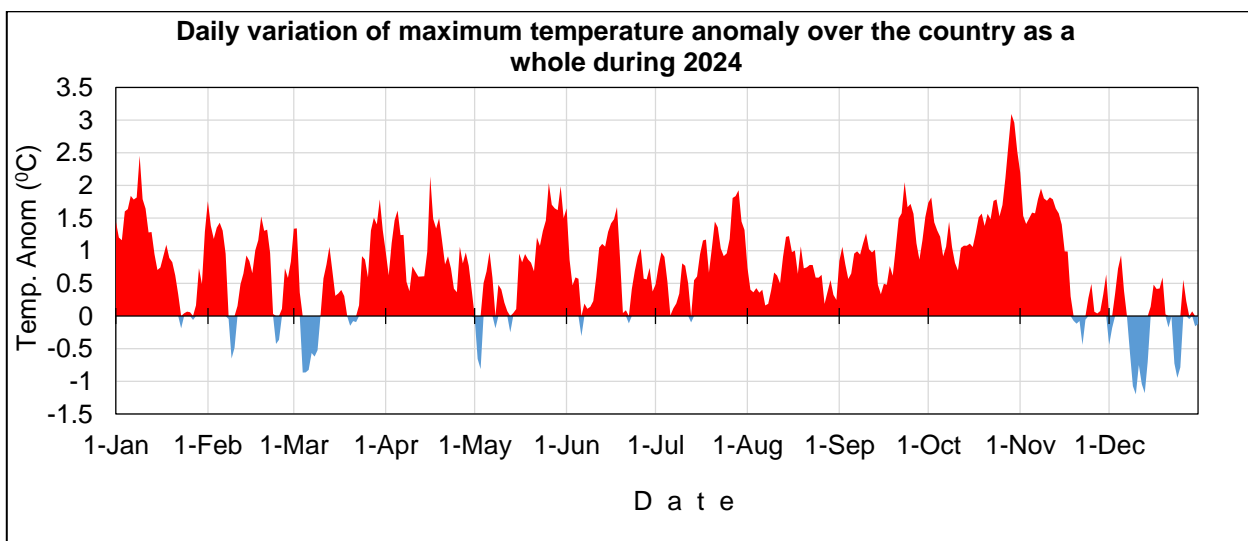
During December, the maximum temperature anomaly was more than 2°C over parts of East Uttar Pradesh, Gangatic West Bengal and Chhattisgarh. Maximum temperature anomaly was less than -2°C over parts of Rajasthan state, northern Madhya Maharashtra and southern Odisha.

The minimum temperature anomaly was more than 4°C over parts of Chhattisgarh, Vidarbha, Telangana and Odisha. Minimum temperature anomaly was more than 3°C over parts of Madhya Maharashtra, Marathwada, Vidarbha, South Interior Karnataka, Rayalaseema, Chhattisgarh, Coastal Andhra Pradesh & Yanam, Telangana and Odisha. Minimum temperature anomaly was less than -1°C over parts of Jammu, Kashmir & Ladakh, Saurashtra & Kutch, Rajasthan state, Haryana, Chandigarh & Delhi and Bihar.

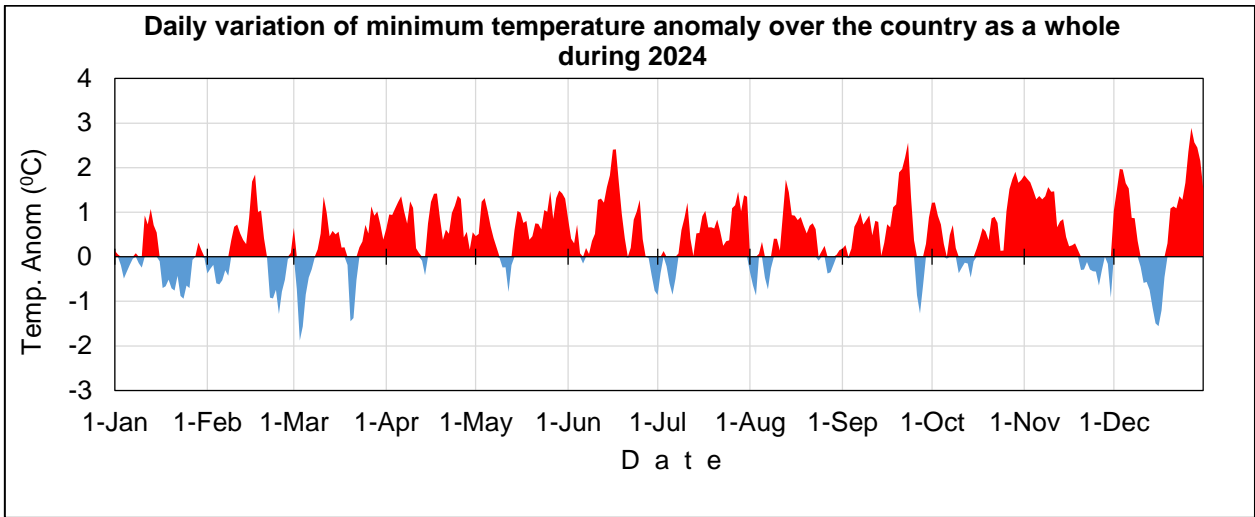


चित्र ४ (एल): दिसंबर २०२४ के लिए अधिकतम और न्यूनतम तापमान विसंगतियाँ (°C) स्थानिक आलेख  
 Fig. 4(l): Maximum and Minimum temperature anomalies (°C) spatial plots for December 2024

Fig. 5 (a & b) shows daily variation of maximum & minimum temperature anomalies during the year 2024, respectively. The anomalies were computed with respect to the base period of 1991-2020. All India was warmer both in respect of maximum & minimum temperature during all the months for this year except February, March and December.

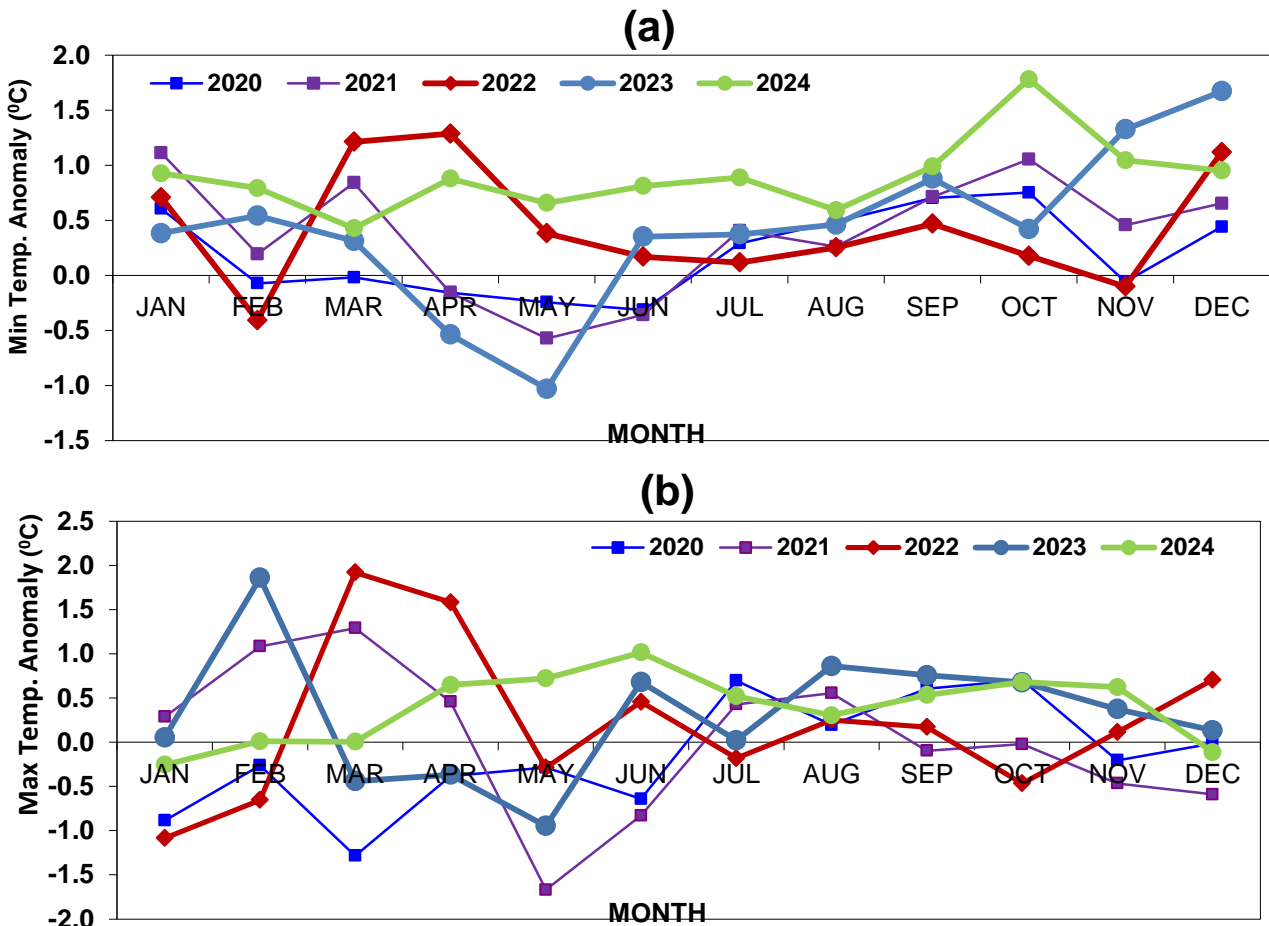


आकृति ५(ए): २०२४ के दौरान भारत में अधिकतम तापमान विसंगतियों की दैनिक भिन्नता  
 Fig. 5(a): Daily variation of maximum temperature anomaly (°C) over the country during 2024



आकृती ५(बी): २०२४ के दौरान भारत में न्यूनतम तापमान विसंगतियों की दैनिक भिन्नता  
**Fig. 5(b): Daily variation of minimum temperature anomaly ( $^{\circ}\text{C}$ ) over the country during 2024**

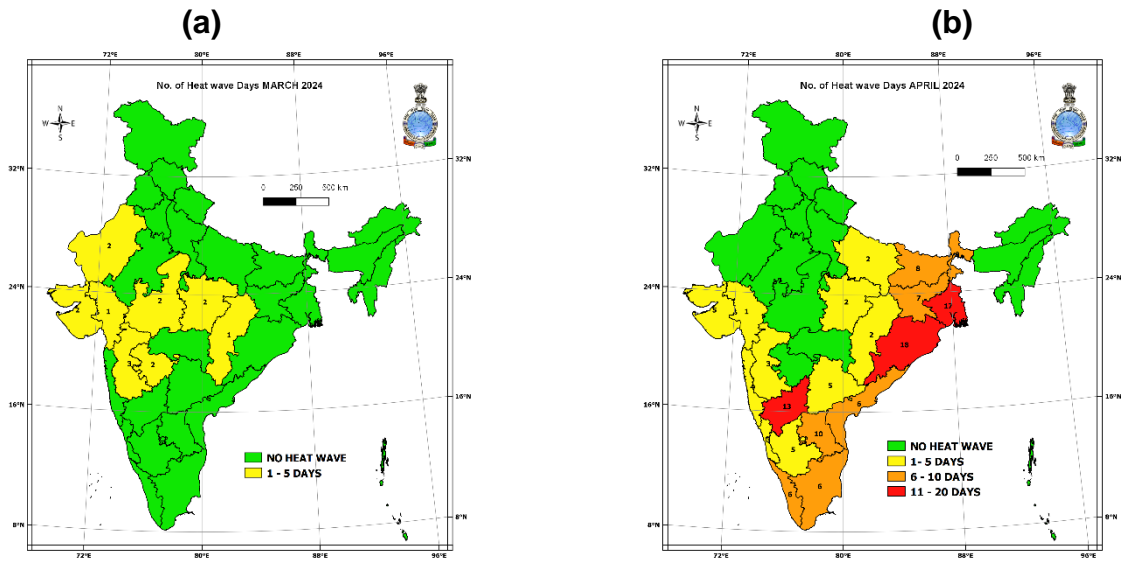
Fig. 6 (a) and (b) respectively show the monthly minimum and maximum temperature anomaly for the country as a whole during the past five years (2020-2024). In respect of minimum temperature, month of February, May to October were warmest in last five years, while May, June and November were warmest in respect of maximum temperature during the last five years.



चित्र ६: औसत मासिक (ए) न्यूनतम (बी) अधिकतम तापमान विसंगतियाँ (२०२० - २०२४)  
**Fig. 6: Mean monthly (a) minimum (b) maximum temperature anomalies (2020-2024)**

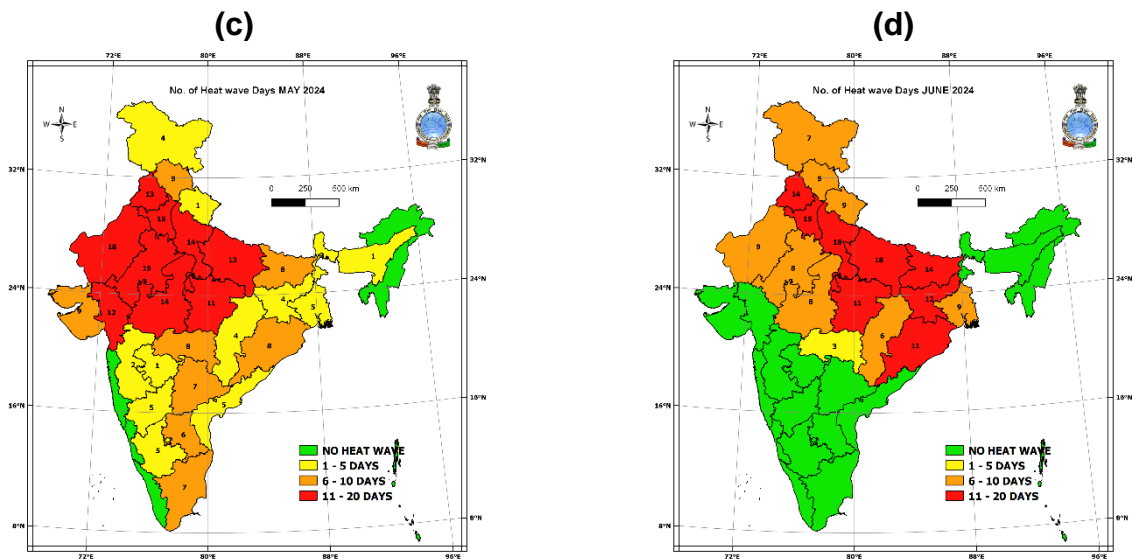
## Heat Wave Conditions:

Monthwise sub divisionwise heat wave days distribution is shown in following fig. 7 (a, b, c, d)



No. of heat wave days during March 2024

No. of heat wave days during April 2024



No. of heat wave days during May 2024

No. of heat wave days during June 2024

चित्र 7 (a, b, c, d): (a) मार्च, (b) अप्रैल, (c) मई और (d) जून के महीने में हीट वेव की संख्या  
 Fig. 7 (a,b,c,d): Number of Heat waves in the month of (a) March, (b) April, (c) May and (d) June

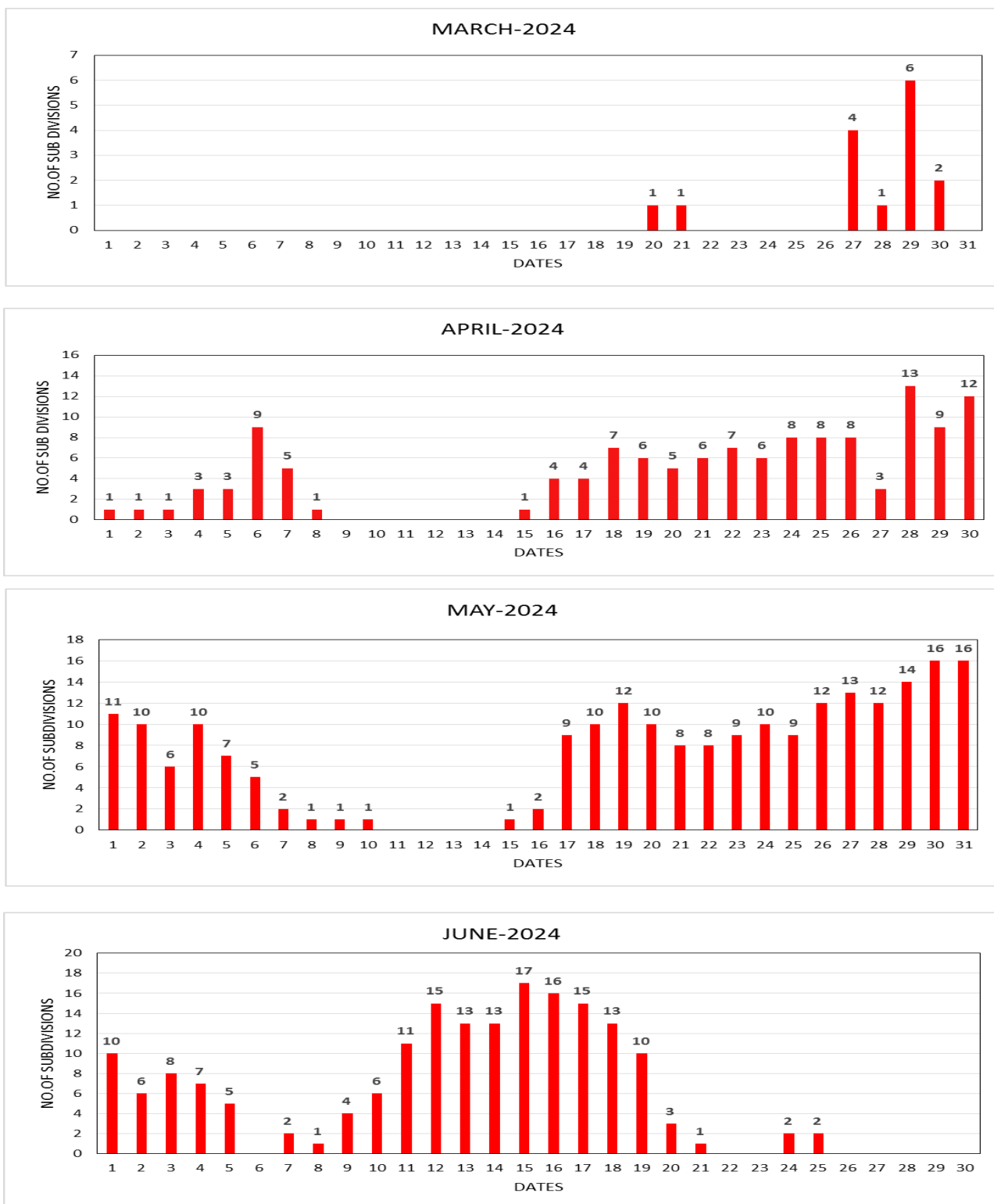
In the month of March, heat wave was observed for 2-3 days over parts of West Rajasthan and some sub-division from central India.

In the month of April, the heat wave/severe heat wave conditions were observed mainly over east coast and South Interior Karnataka.

In the month of May, the heat wave/severe heat wave conditions were observed mainly over Northwest and central India.

In the month of June, the heat wave/severe heatwave conditions were observed mainly over parts of northwest, north, and central India.

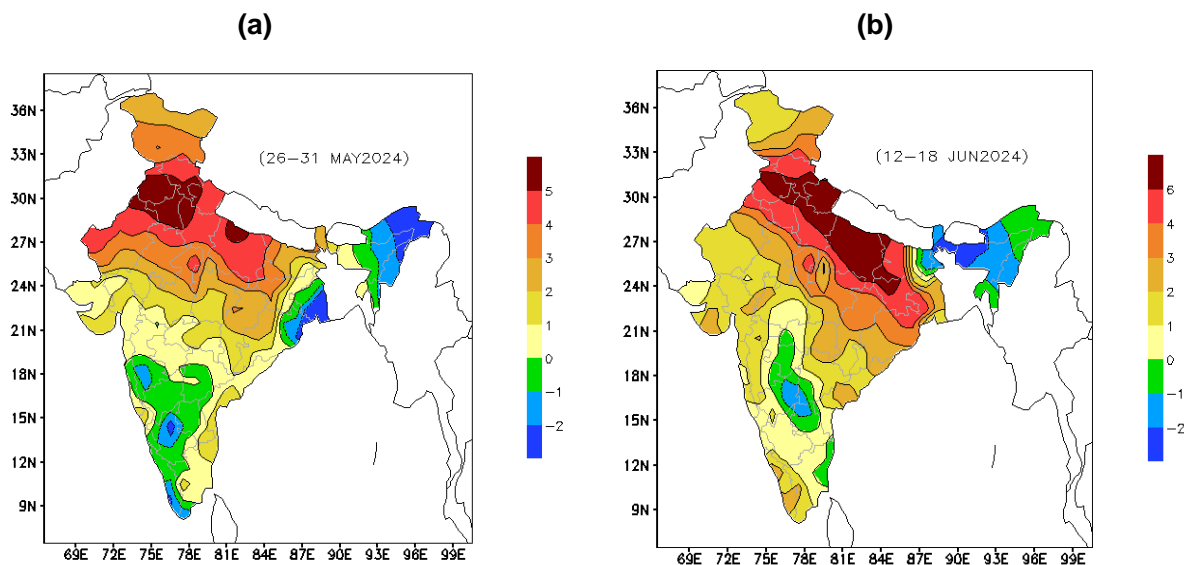
Daily variation of number of subdivisions that reported heat wave / severe heat wave during March, April, May and June 2024 is shown in the fig. 8.



चित्र ८: मार्च २०२४ - जून २०२४ के दौरान उप-प्रभागवार हीट वेव की गिनती

Fig. 8: Daily variation of number of subdivisions that reported heat wave / severe heat wave during March, April, May and June 2024

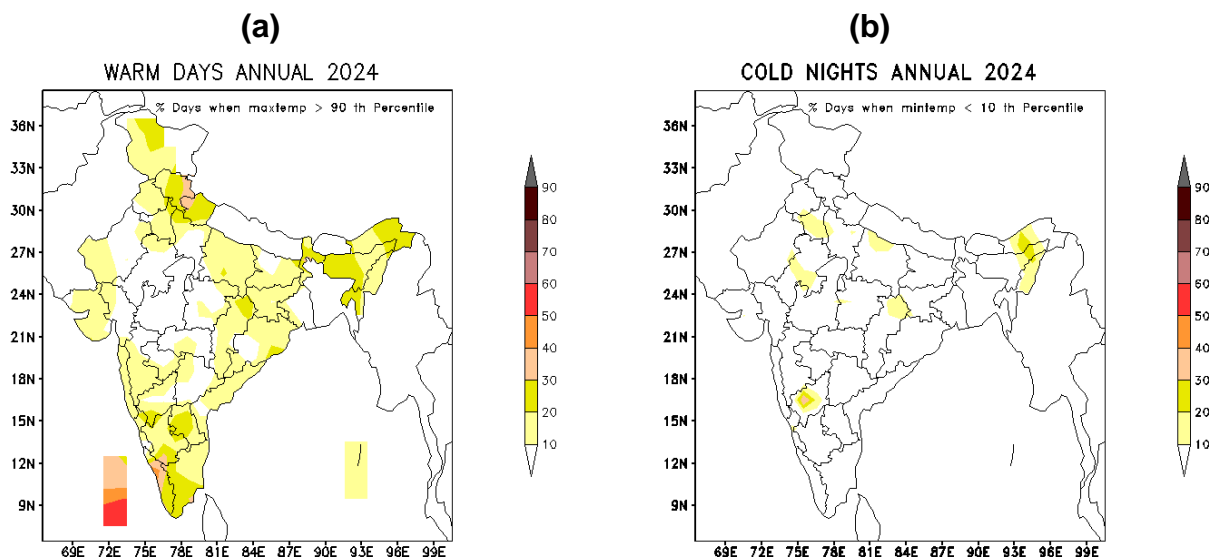
Fig. 9(a,b) shows the maximum temperature anomaly diagram for the duration when heat wave condition was at its peak during 26-31 May 2024 and 12-18 June 2024.



चित्र ९ : हीट वेव अवधि के दौरान अधिकतम तापमान विसंगति ( $^{\circ}\text{C}$ ) (ए) २६-३१ मई २०२४ (बी) १२-१८ जून २०२४  
**Fig. 9: Maximum temperature anomaly ( $^{\circ}\text{C}$ ) during heat wave period  
 (a) 26-31 May 2024 (b) 12-18 June 2024**

### WARM DAYS AND COLD NIGHTS:

Fig. 10(a) and 10(b) show the percentage of days when maximum (minimum) temperature was more (less) than 90<sup>th</sup> (10<sup>th</sup>) percentile. Maximum temperature was more than 90<sup>th</sup> percentile over parts of Uttarakhand, Himachal Pradesh, Lakshadweep, Kerala & Mahe and South Interior Karnataka for more than 30% of the days of the year. For minimum temperature no such significant distribution was observed.



चित्र १०: (ए) उन दिनों का प्रतिशत जब अधिकतम तापमान > 90 वें प्रतिशत  
 (बी) उन दिनों का प्रतिशत जब न्यूनतम तापमान < 10 वें प्रतिशत  
**Fig. 10: (a) PERCENTAGE OF DAYS WHEN MAXIMUM TEMPERATURE > 90TH PERCENTILE  
 (b) PERCENTAGE OF DAYS WHEN MINIMUM TEMPERATURE < 10TH PERCENTILE**

## B) RAINFALL:

Time series of percentage departure of area weighted seasonal and annual rainfall over the country as a whole are shown in Fig. 11. In 2024, annual rainfall over the country as a whole was 104 % of its LPA value.

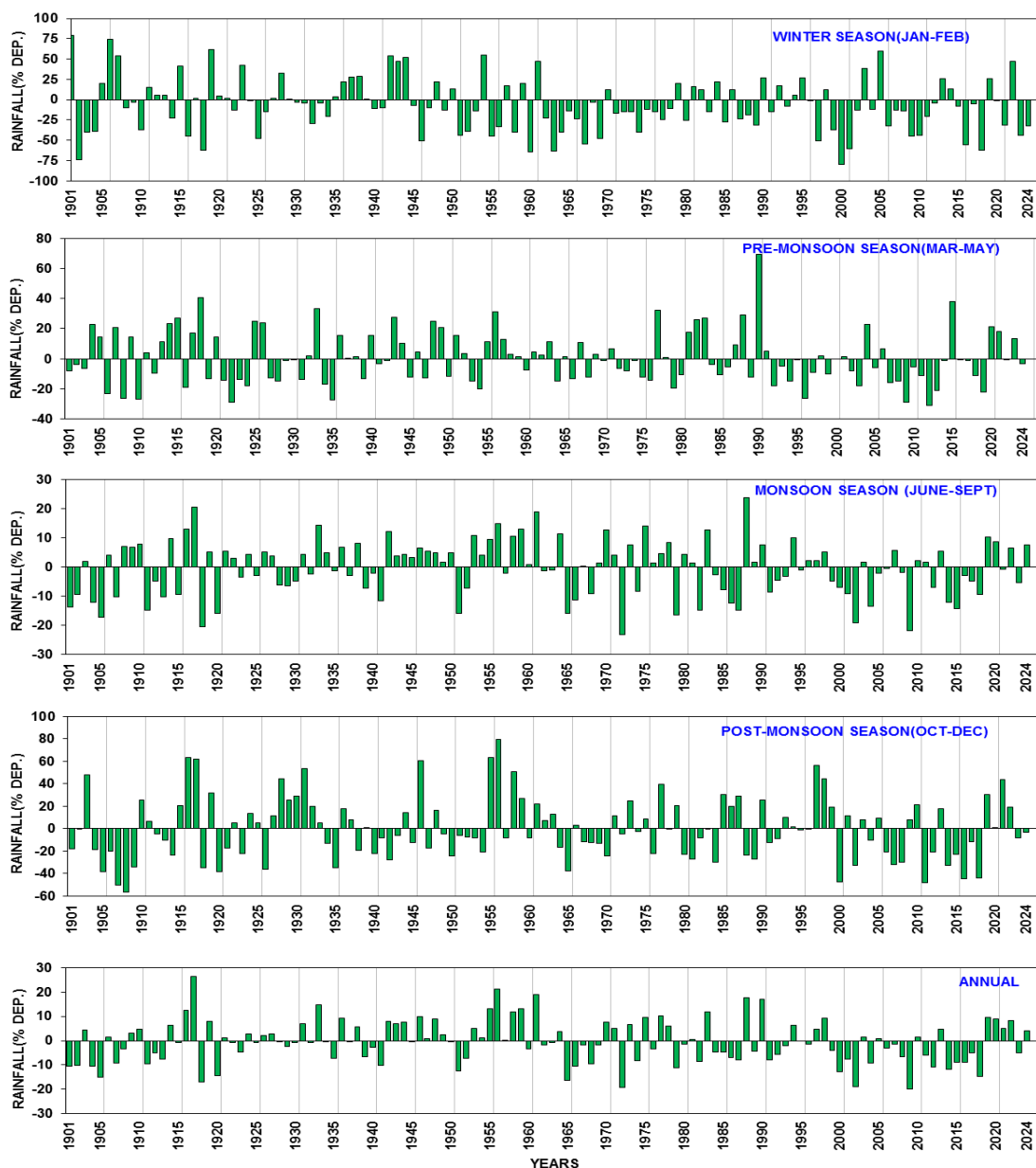
Season wise rainfall distribution over the country as a whole is listed below:

Winter (January to February): **68% of LPA**

Pre-monsoon (March to May): **97% of LPA**

Monsoon (June to September): **108% of LPA**

Post-monsoon (Oct to Dec): **97% of LPA**



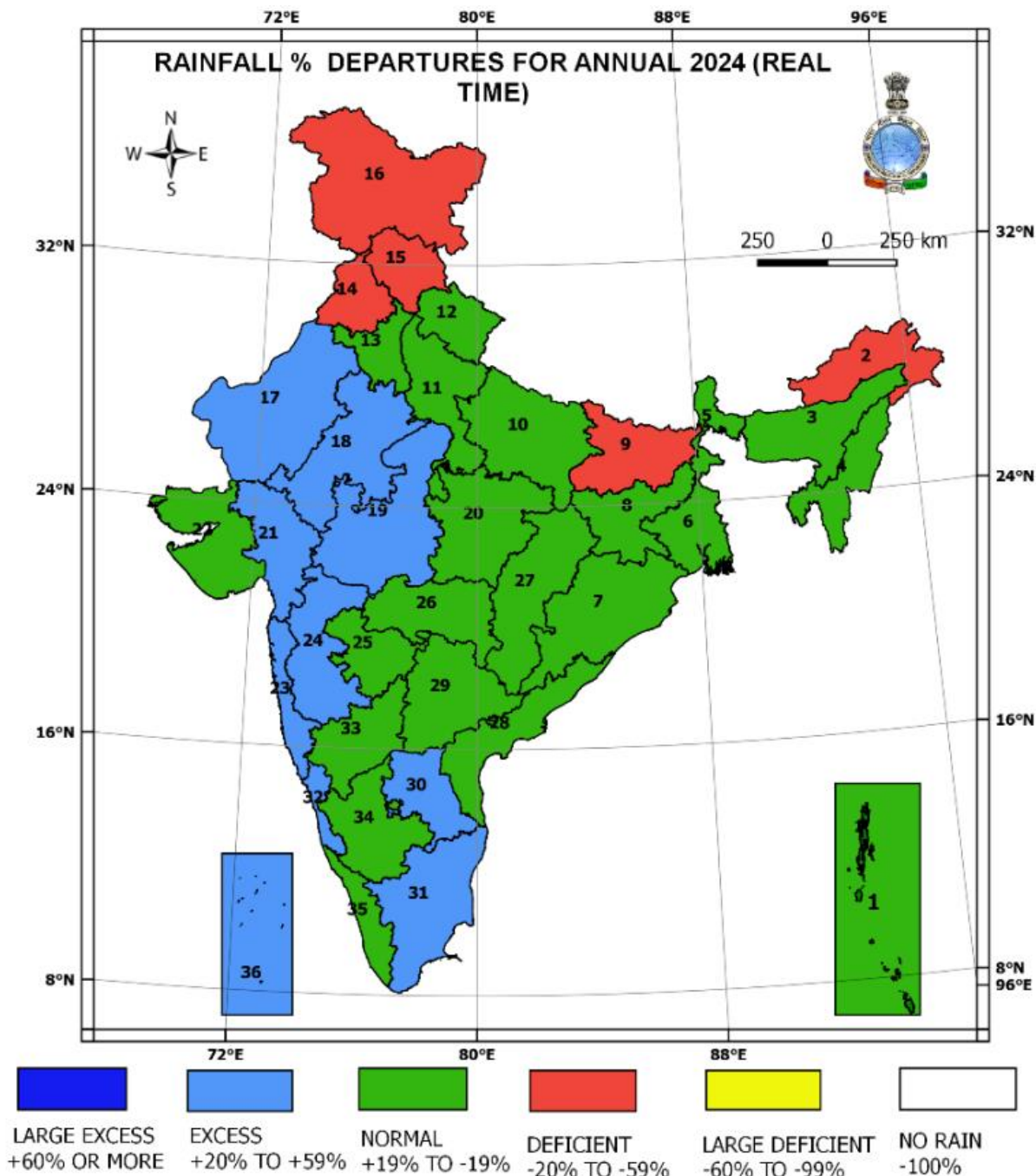
चित्र ११: पूरे देश में क्षेत्र भारित (मौसमी और वार्षिक) वर्षा का प्रतिशत विचलन (१९०१ - २०२४)

Fig. 11: Percentage departure of area weighted (Seasonal and Annual) rainfall over the country as a whole for 1901-2024. (Climatology period 1971-2020)

### Annual Rainfall:

Rainfall activity over the country as a whole was 104% of LPA during the year. Out of 36 meteorological subdivisions, 31 received excess/normal rainfall, and the remaining 5 subdivisions (Arunachal Pradesh, Bihar, Punjab, Himachal Pradesh, Jammu & Kashmir, and Ladakh) received deficient rainfall. Fig. 12 shows the percentage departure for Annual Rainfall 2024.

At the end of the year, out of the four homogeneous regions, South Peninsular India received 115% of its LPA, Central India received 118% of its LPA, Northwest India received 95% of its LPA, while East & Northeast India received 87% of its LPA rainfall.

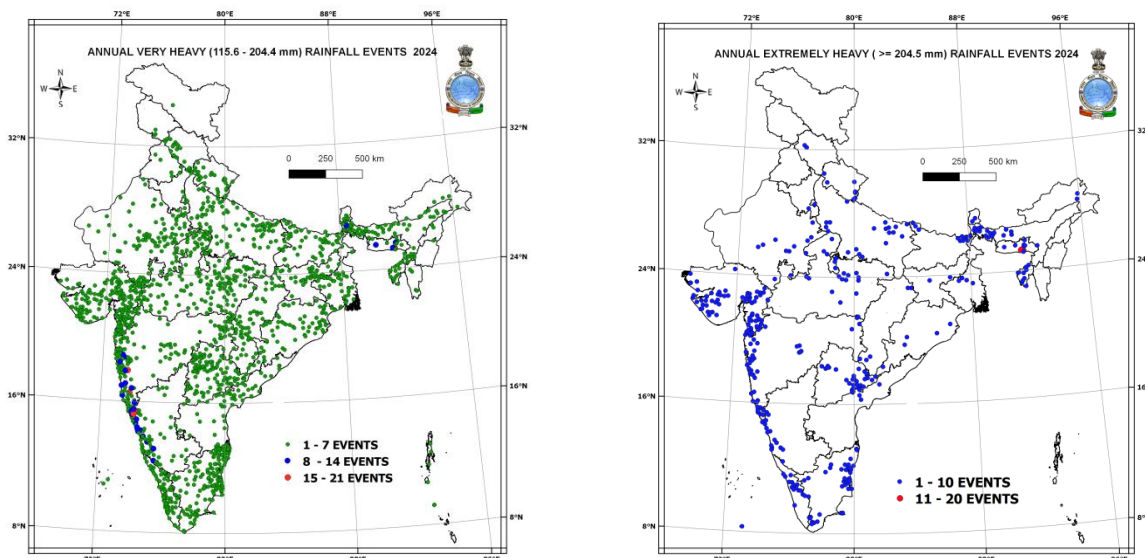


चित्र १२: २०२४ के लिए उप-प्रभागवार वार्षिक वर्षा प्रतिशत विचलन

Fig. 12: Sub-division-wise Annual rainfall percentage departure for 2024



Fig. 13 shows the location and frequency of Very heavy (115.6 - 204.4 mm) & extremely heavy (more than 204.4 mm) rainfall events during 2024



चित्र १३: वार्षिक बहुत भारी और अत्यधिक भारी वर्षा की घटनाएं

Fig. 13: Location and frequency of Very heavy (115.6 - 204.4 mm) & extremely heavy (more than 204.4 mm) rainfall events during 2024.

### Season Wise Rainfall Distribution:

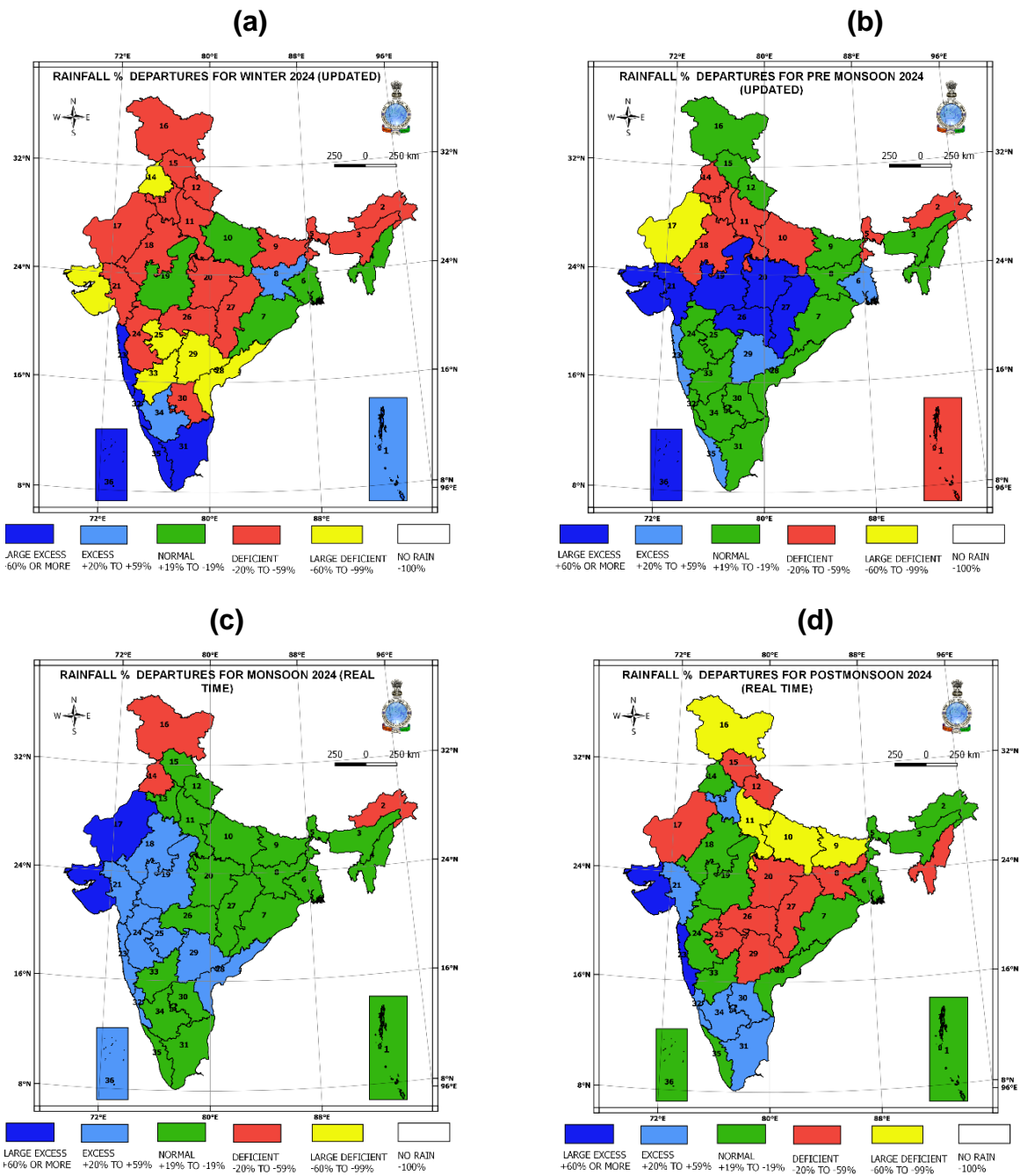
Rainfall realized over India during the winter season was 68% of LPA. It was 42% of LPA during January and it was 87% of LPA during February. During the winter season, out of 36 meteorological subdivisions, 5 received large excess rainfall, 3 received excess rainfall, 5 normal rainfall, 17 received deficient rainfall, and the remaining 6 received largely deficient rainfall. Fig. 14(a) shows the percentage departure for the winter season of 2024.

Rainfall realized during the Pre-monsoon season was 97% of its LPA. It was 96% of its LPA, 82% of its LPA, and 108% of its LPA during March, April, and May, respectively. During the Pre-monsoon season, out of 36 meteorological subdivisions, 7 received large excess rainfall, 4 received excess rainfall, 16 received normal rainfall, 8 received deficient rainfall, and the remaining 1 received largely deficient rainfall. Fig 14(b) shows the percentage departure of rainfall for pre-monsoon season 2024.

Rainfall realized during the Monsoon season was 108% of its LPA. It was 89% of its LPA, 109% of its LPA, 115 % of its LPA, and 112 % of its LPA during June, July, August, and September, respectively. The realized rainfall for the monsoon season this year was 107% of its LPA over northwest India, 119 % of its LPA over central India, 86% of its LPA over east & northeast India, and 114% of its LPA over south peninsula. Most sub-divisions of the country received large excess/excess/normal rainfall except Arunachal Pradesh, Jammu & Kashmir & Ladakh and Punjab. During the season, out of 36 meteorological subdivisions, 2 subdivisions received large excess rainfall, 10 subdivisions received excess rainfall, 21 received normal rainfall, and the remaining 3 subdivisions received deficient rainfall. Fig. 14(c) shows the percentage departure of rainfall for the southwest monsoon season of 2024.

Rainfall realized over the country as a whole during the Post-monsoon season was 97% of its LPA. It was 100% of its LPA, 45% of its LPA, and 174% of its LPA during October, November, and December, respectively. During the season many subdivisions received large excess/excess/normal rainfall except Nagaland, Manipur, Mizoram & Tripura, Jharkhand, Bihar, East & West Uttar Pradesh, Uttarakhand, Himachal Pradesh, Jammu & Kashmir and Ladakh, West Rajasthan, East Madhya

Pradesh, Marathawada, Vidarbha, Chhattisgarh and Telangana. During the season, out of 36 meteorological subdivisions, 2 received large excess rainfall, 6 received excess rainfall, 14 received normal rainfall, 10 received deficient rainfall and 4 subdivisions received large deficient rainfall (Fig. 14(d)).



चित्र १४: (ए) शीतकालीन मौसम (बी) प्री-मानसून सीजन (सी) दक्षिण-पश्चिम मानसून (डी) मानसून पश्चात २०२४ के लिए उप-प्रभागवार वर्षा प्रतिशत विचलन

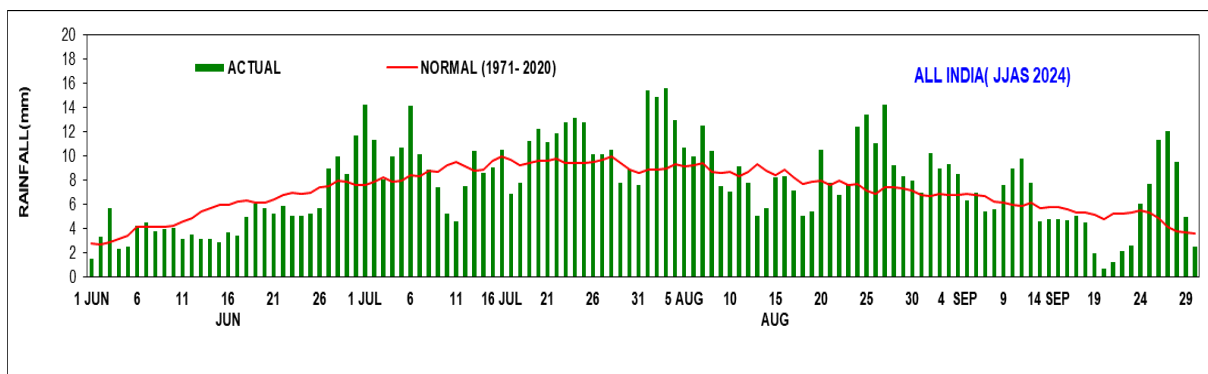
Fig. 14: Sub-division-wise rainfall percentage departure for (a) Winter Season (b) Pre-Monsoon Season (c) South-West Monsoon Season (d) Post-Monsoon Season 2024

### Daily Rainfall Variation during Monsoon Season:

Daily area weight averaged rainfall (mm) over the country as a whole during the monsoon season 2024 (1<sup>st</sup> Jun. to 30<sup>th</sup> Sep.), and its long-term average (1971-2020) values are shown in Fig.

15(a). For the country as a whole, the average rainfall was above or near normal on 9 days during June, 20 days during July, 20 days during August, and 15 days during September.

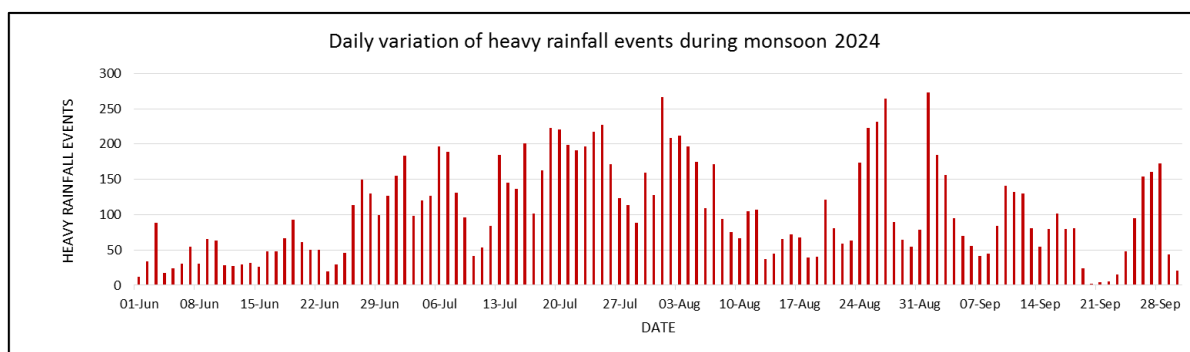
On almost 17 occasions, including the continuous periods of 1 - 3 August, 24 - 27 August, 10 - 11 September, and 26 - 28 September, it was more than or equal to one and a half times its normal value. It was below normal at a stretch on 8 -18 June, 20 - 26 June, 12 - 19 August and 13 - 23 September.



चित्र १५ (ए): पूरे देश में दैनिक क्षेत्र भारित वर्षा (मिमी) और इसका दीर्घकालिन औसत (1971-2020) (निरंतर रेखा) १ जून - ३० सितंबर २०२४

**Fig. 15(a): Daily Area Weight averaged Rainfall (mm) over the country as a whole (vertical bars) and its long-term average (1971-2020) (continuous line) from 1 June to 30 September 2024**

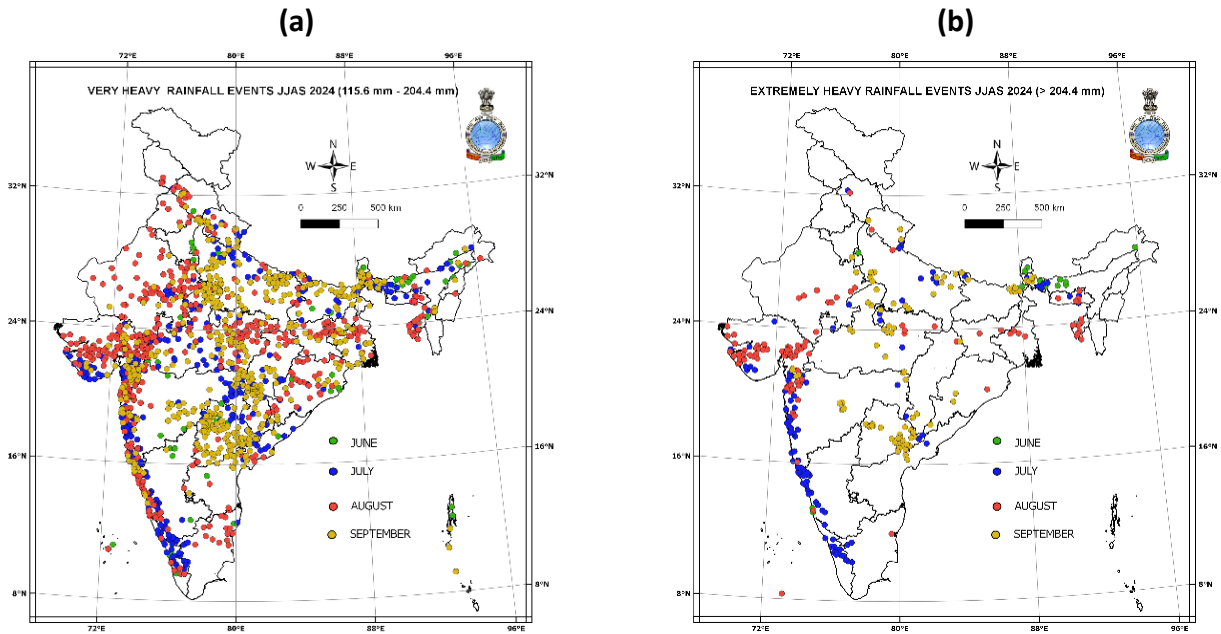
In the months of July and August 2024, the country witnessed more heavy rainfall events (> 64.4 mm), as shown in Figure 15 (b).



चित्र १५ (बी): १ जून - 30 सितंबर २०२४ के दौरान भारी वर्षा की घटनाओं की दैनिक भिन्नता

**Fig. 15(b): Daily variation of heavy rainfall events (>64.4 mm) during 1 June - 30 September 2024**

There were many extreme rainfall events observed during the 2024 southwest monsoon season. The location of heavy and extremely heavy rainfall events during the 2024 southwest monsoon season is given in Fig. 16(a,b). Extremely heavy rainfall events were observed in June, mainly over Assam & Meghalaya and Sub Himalayan West Bengal & Sikkim. During July, extremely heavy rainfall events occurred over Konkan & Goa, coastal Karnataka, Kerala & Mahe, Assam & Meghalaya, and Saurashtra & Kutch. In August, extremely heavy rainfall events occurred in Konkan & Goa, Gujarat Region, Saurashtra & Kutch, Meghalaya, Tripura, West Rajasthan, and West Bengal. During September, extremely heavy rainfall events occurred in Telangana, Madhya Pradesh, Bihar, West Bengal, West Uttar Pradesh, and Uttarakhand.

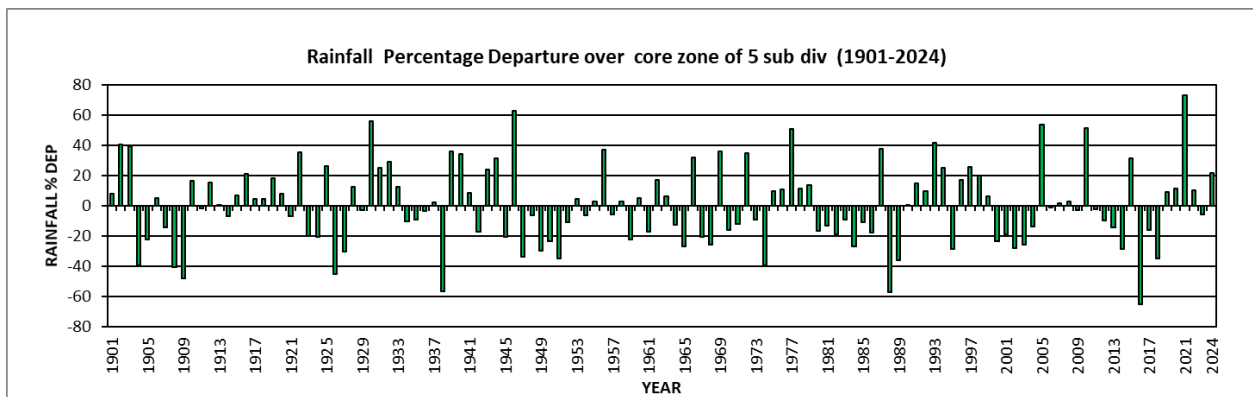


चित्र १६(ए,बी): मानसून के दौरान बहुत भारी और अत्यधिक भारी वर्षा की घटनाएं  
**Fig. 16(a,b): Very heavy (115.5mm-204.4 mm) and extremely heavy rainfall events (>204.4 mm) during Monsoon Season**

### Rainfall during Post-monsoon season:

Rainfall activity over the core region of South Peninsular India (comprising of 5 subdivisions viz. Coastal Andhra Pradesh, Rayalaseema, Tamil Nadu, Puducherry & Karaikal, South Interior Karnataka, and Kerala & Mahe) during the post-monsoon season as a whole was above normal (122% of its LPA).

The time series of post-monsoon seasonal rainfall over the core region of the south peninsula is shown in Fig. 17.



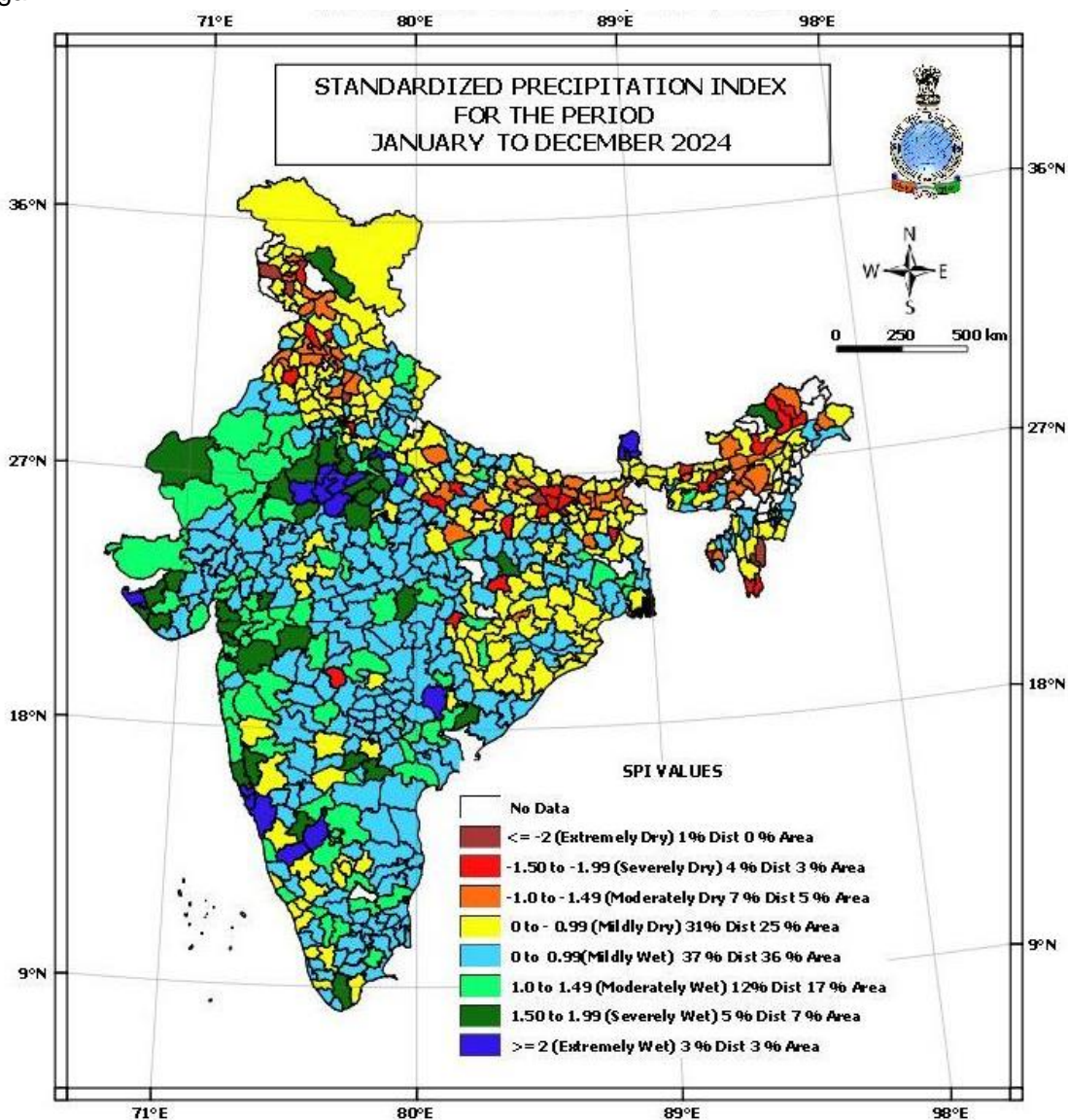
चित्र १७: दक्षिण प्रायद्वीप के कोर जोन ( १९०१-२०२४) पर मानसून के बाद के मौसम (अक्टूबर से दिसंबर) के दौरान वर्षा का प्रतिशत विचलन

**FIG. 17: Percentage departure of rainfall during the Post-monsoon season (October to December) over the core zone of South Peninsula (1901-2024)**

### C) Standardized Precipitation Index

The Standardized Precipitation Index (SPI) is an index used for measuring drought and is based on precipitation. This index is negative for dry and positive for wet conditions. The index becomes more negative or positive as the dry or wet conditions become more severe. Fig.18 gives the district-wise SPI values for the year 2024.

Cumulative SPI values of the past twelve months indicate extremely wet / severely wet conditions over parts of Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Sub Himalayan West Bengal & Sikkim, Odisha, West Uttar Pradesh, Haryana, Chandigarh & Delhi, Jammu & Kashmir and Ladakh, Rajasthan state, Madhya Pradesh state, Gujarat state, Konkan & Goa, Madhya Maharashtra, Chhattisgarh, Telangana, Tamil Nadu, Puducherry & Karaikal, Coastal Karnataka, and South Interior Karnataka, while extremely dry-severely dry conditions were observed over parts of Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Jharkhand, Bihar, Uttar Pradesh state, Punjab, Himachal Pradesh, Jammu & Kashmir and Ladakh, Marathawada and Chhattisgarh.



चित्र १८: जनवरी-दिसंबर २०२४ की अवधि के लिए मानकीकृत वर्षा सूचकांक

Fig. 18: Standardized Precipitation Index for the period January - December 2024

## D) TROPICAL STORMS / DEPRESSIONS IN THE INDIAN SEAS:

In 2024, four cyclonic storms formed over the North Indian Ocean. Of these, two were severe cyclonic storms (REMAL and DANA) and two were cyclonic storms (ASNA and FENGAL). Three of these cyclones—REMAL, DANA, and FENGAL—formed over the Bay of Bengal, while ASNA formed over the Arabian Sea (as remnants from the Bay of Bengal).

Among these systems, REMAL formed during the pre-monsoon season (May 24-28), ASNA during the monsoon season (August 25 to September 2), and DANA (October 22-26) and FENGAL (November 25 to December 2) formed during the post-monsoon season. In addition to these cyclones, extreme weather events such as extremely heavy rainfall, floods, landslides, lightning, thunderstorms, droughts, and others were also experienced in various parts of the country.

During the winter season, no intense low-pressure system formed.

During pre-monsoon season, Severe Cyclonic Storm “REMAL” formed over the Bay of Bengal during the period 24 - 28 May, and a low-pressure area formed over the Arabian Sea.

During the monsoon season, thirteen low-pressure systems (one cyclonic storm, three Deep Depressions, two Depressions, one well-marked low-pressure area, and six low-pressure areas) were formed. The frequency and place of origin of these low-pressure systems formed over the Indian region during the monsoon season are shown in the table below.

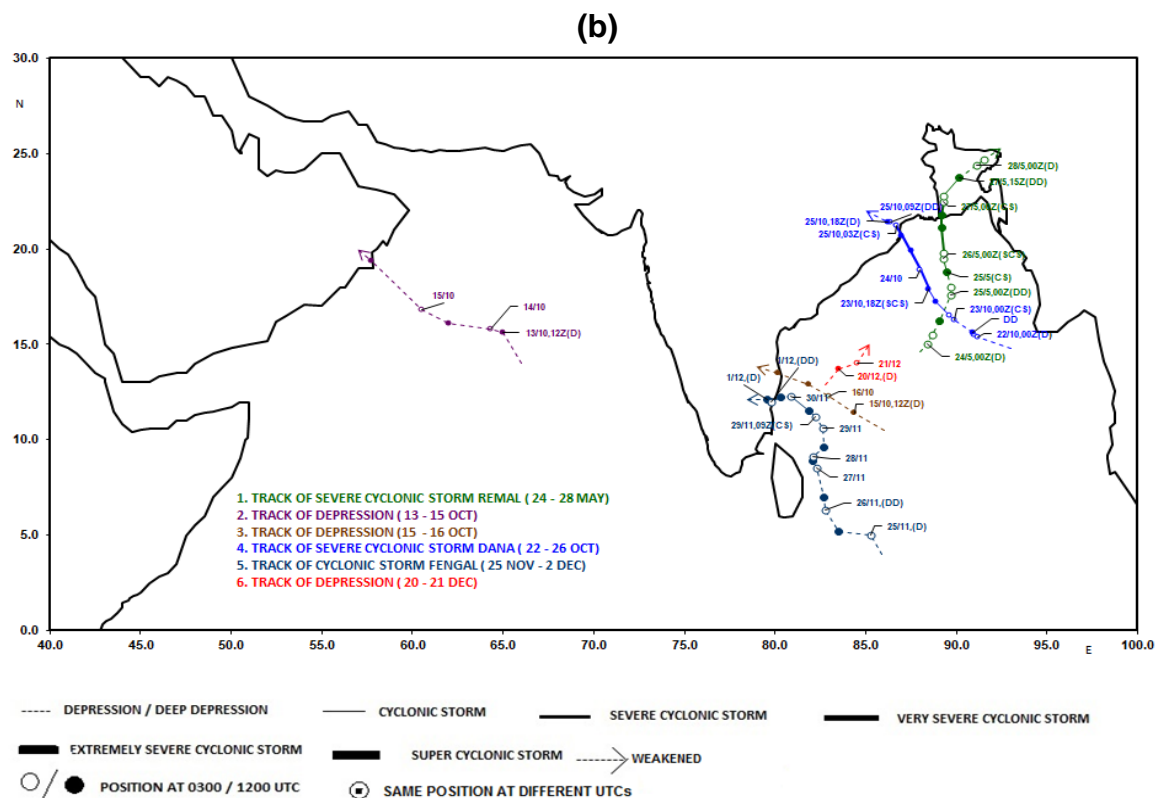
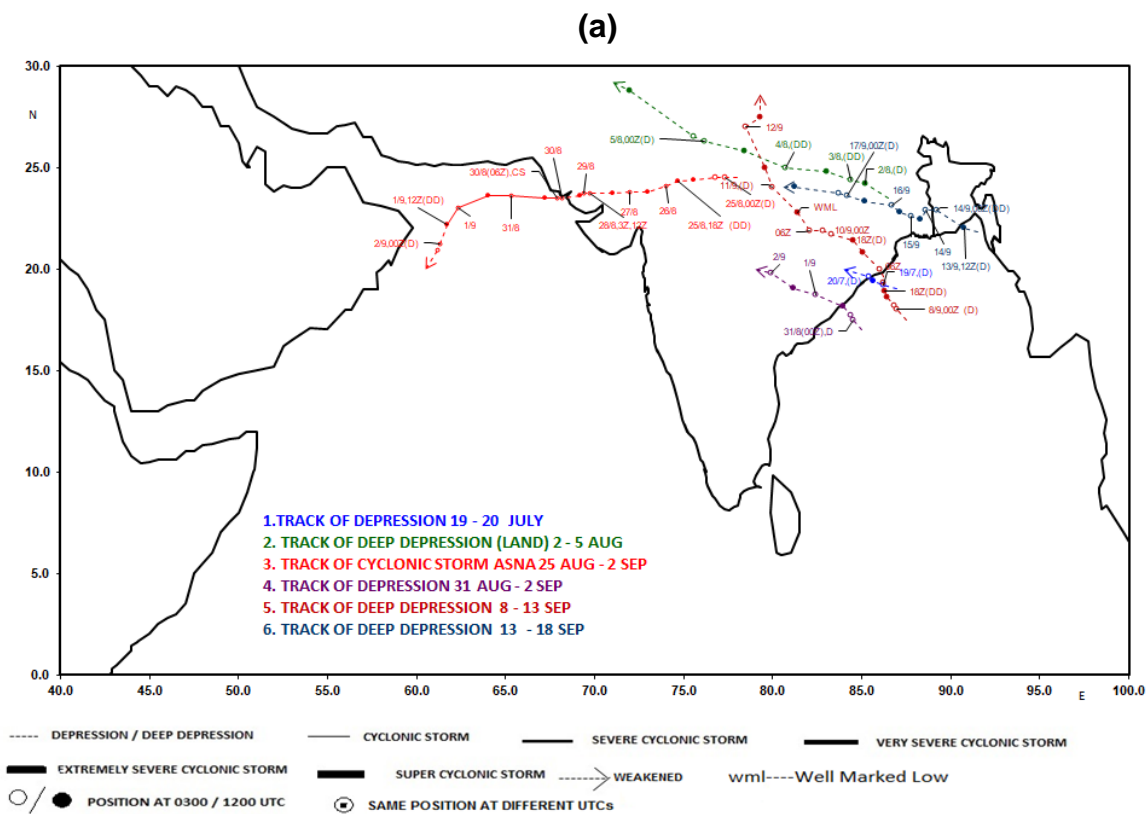
Month / Systems	CS	DD	D	WML	L	Land Low	Total systems
June	0	0	0	0	1	0	1
July	0	0	1	0	2	0	3
August	1	1	1	1	2	0	6
September	0	2	0	0	1	0	3

**CS:** Cyclonic Storm, **DD:** Deep Depression, **D:** Depression, **WML:** Well Marked low, **LPA:** Low-Pressure Area, **Land LPA:** Land low-pressure Area

During the post-monsoon season, nine low-pressure systems (1 SCS, 1 CS, 3 depressions, 2 well-marked low-pressure areas, and 2 low-pressure areas) were formed. The frequency and place of origin of these low-pressure systems formed over the Indian region during the post-monsoon season are shown in the table below.

Month / Systems	CS and above	DD	D	WML	LPA
October	1 (BOB)		1(AS),1(BOB)	1(AS)	1(BOB)
November	1 (BOB)				1(BOB)
December			1(BOB)	1(AS)	
	<b>(AS : Arabian Sea)</b>		<b>(BOB : Bay of Bengal)</b>		

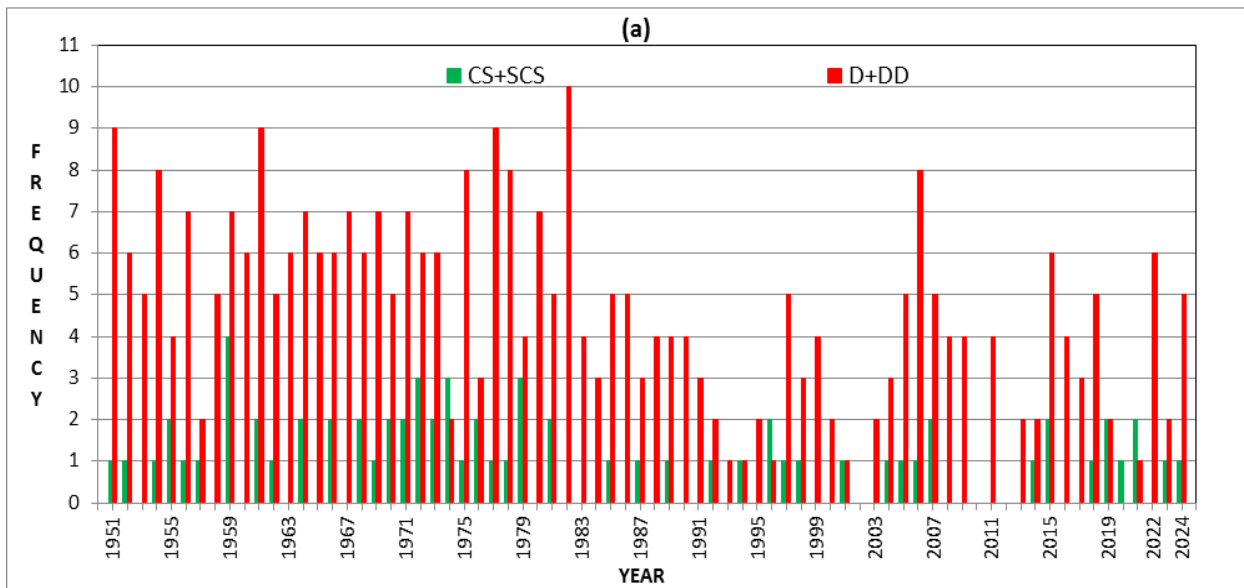
**CS:** Cyclonic Storm, **DD:** Deep Depression, **D:** Depression, **WML:** Well Marked low, **LPA:** Low-Pressure Area  
Fig. 19(a) and 19(b), respectively, show track of these systems formed during the monsoon and other seasons in the year 2024.



चित्र १९: २०२४ के दौरान बने डिप्रेसन और चक्रवाती तूफानों के ट्रैक  
(ए) मानसून मौसम (बी) अन्य मौसम

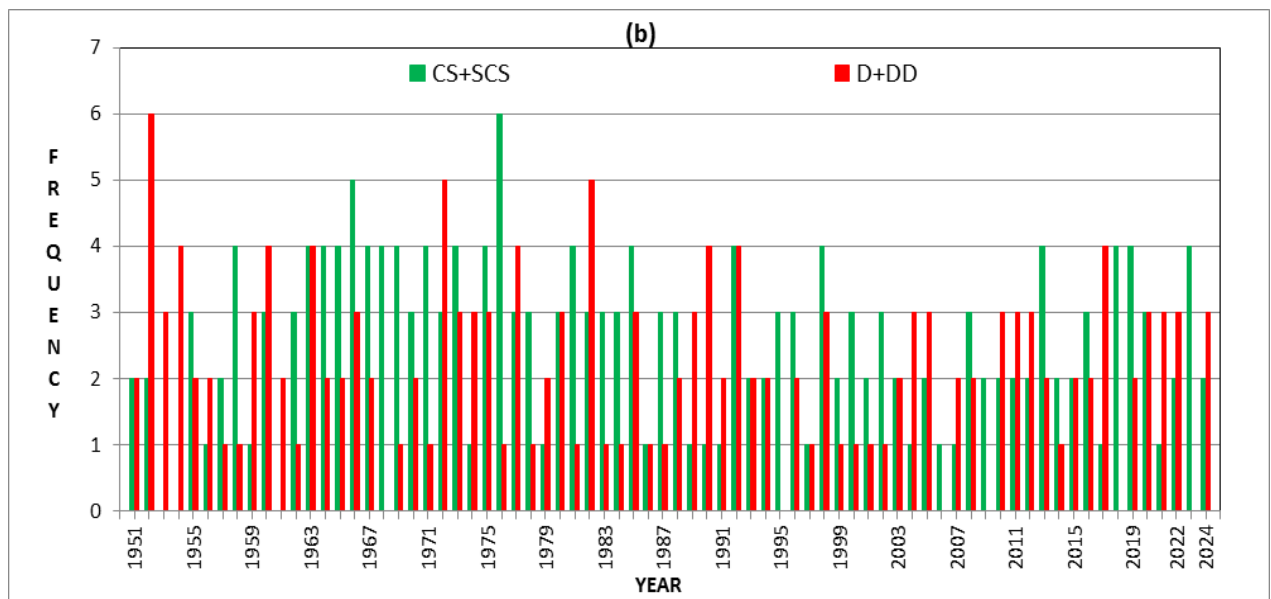
**FIG. 19: TRACKS OF DEPRESSIONS AND CYCLONIC STORMS FORMED DURING 2024  
(a) MONSOON SEASON (b) OTHER SEASONS**

Frequency of depressions and cyclonic storms formed over the north Indian Ocean and Land (1951-2024) during the monsoon and post monsoon is shown in Fig. 20(a) and 20(b) respectively.



चित्र २०(ए): मानसून का मौसम (जून-सितंबर)

Fig. 20(a): MONSOON SEASON (JUNE-SEPTEMBER)



चित्र २०(बी): मानसून के बाद का मौसम (अक्टूबर-दिसंबर)

Fig. 20(b): POST MONSOON SEASON (OCTOBER-DECEMBER)

चित्र २०(ए,बी): उत्तर हिंद महासागर और भूमि पर बने दबाव और चक्रवाती तूफानों की वारंवरीता (१९५१-२०२४)

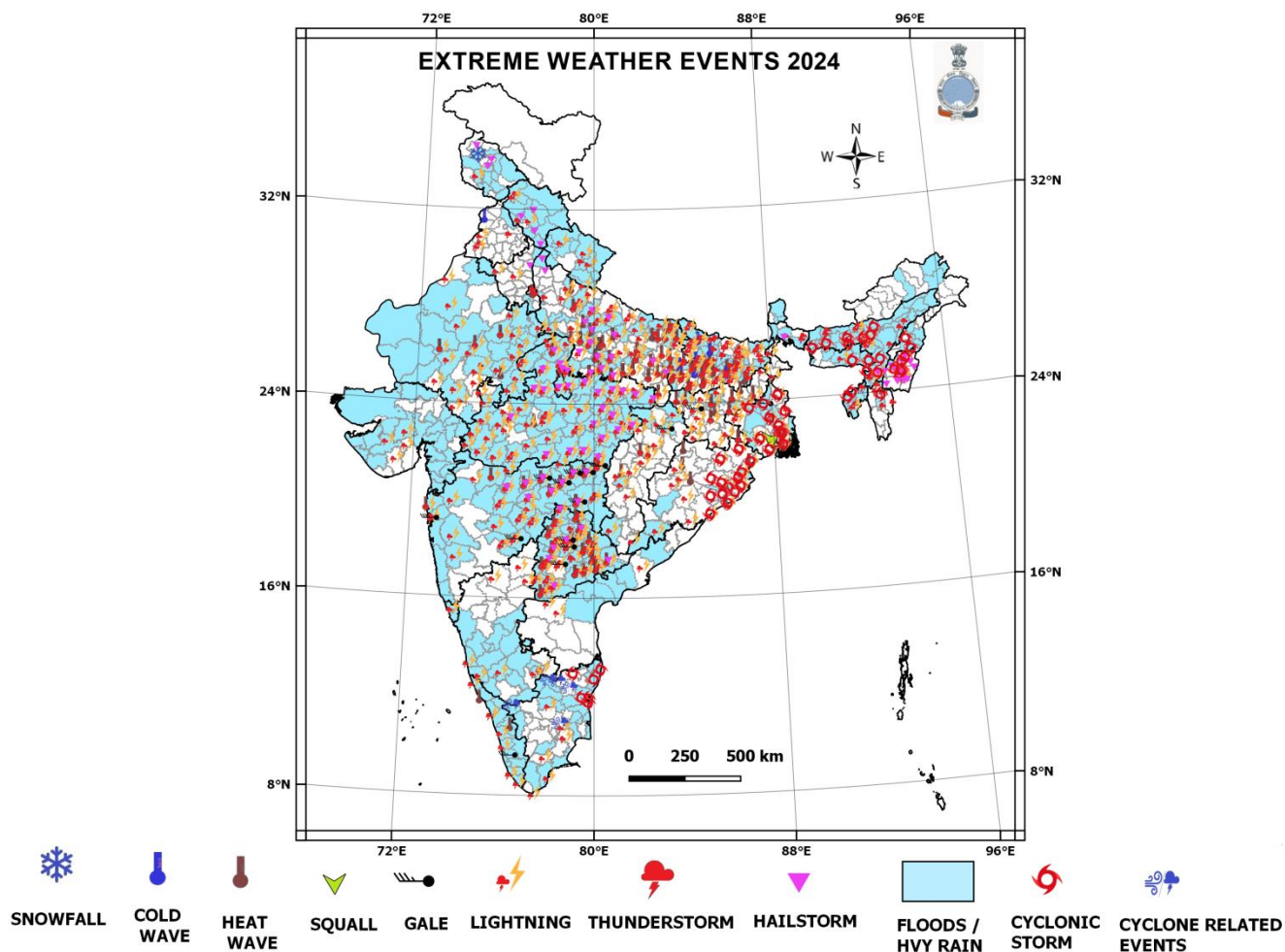
Fig. 20 (a, b): Frequency of depressions and cyclonic storms formed over the North Indian Ocean & land (1951-2024) (Source: Cyclone e-atlas, RSMC New Delhi)



## Impacted Extreme Weather Events during 2024:

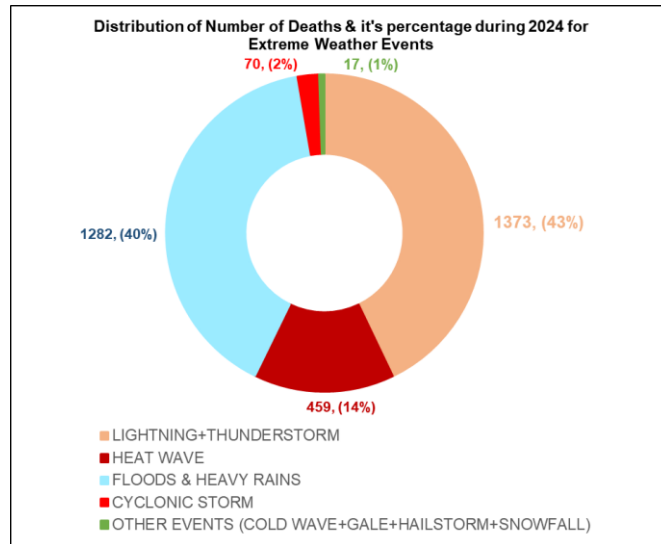
Other than tropical cyclones, various parts of the country also experience extreme weather events like extremely heavy rainfall, floods, landslides, lightning, thunderstorms, heat waves, cold waves, hailstorms, etc. A few of them are listed below and given in Table No. 6. The casualties caused by these extreme events mentioned here are based on the media and government reports from disaster Management Authorities.

Deaths due to Impacted Extreme Weather Events and associated loss of life, Distribution of the Number of Deaths and its percentage, State-wise Distribution of the Number of Deaths, and State-wise Number of Districts affected during 2024 are shown in Fig. 21, respectively.

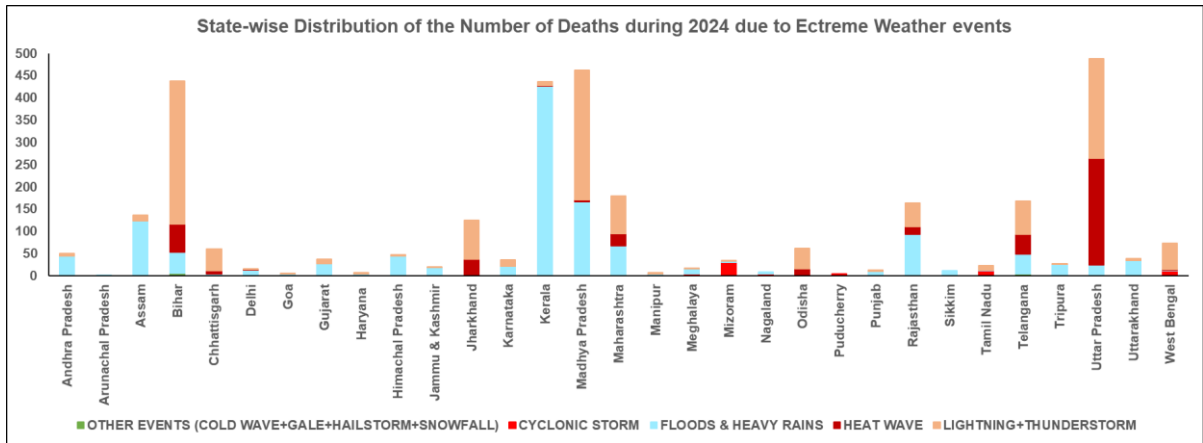


चित्र २१: २०२४ के दौरान प्रभावित चरम मौसम की घटनाओं के कारण हुई मौतें

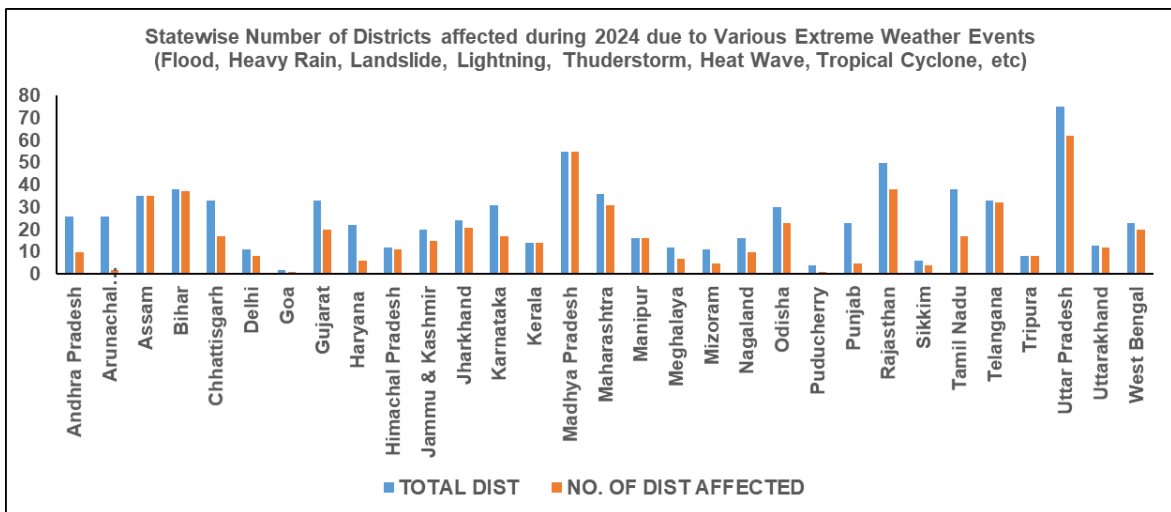
Fig. 21: Deaths due to Impacted Extreme Weather Events occurred during 2024



चित्र २२: प्रभावित चरम मौसम की घटनाओं के कारण २०२४ के दौरान मौतों की संख्या और इसके प्रतिशत का वितरण  
 Fig. 22: Distribution of the Number of Deaths and its percentage during 2024 for Impacted Extreme Weather Events



चित्र २३ : प्रभावित चरम मौसम की घटनाओं के कारण २०२४ के दौरान मौतों की संख्या राज्यवार वितरण  
 Fig. 23: State-wise Distribution of the Number of Deaths during 2024 for Impacted Extreme Weather Events.



चित्र २४ : विभिन्न चरम मौसम की घटनाओं के कारण २०२४ के दौरान प्रभावित जिलों की राज्यवार संख्या  
 Fig. 24: State-wise Number of Districts affected during 2024 due to various Extreme Weather Events

Sub-division wise seasonal and annual rainfall statistic is given in Table 1 and its spatial distribution is shown

तालिका - १ / TABLE - 1

वर्ष २०२४ के लिए मौसम संबंधी उप-प्रभागवार मौसमी और वार्षिक वर्षा के आंकड़े

METEOROLOGICAL SUB-DIVISIONWISE SEASONAL AND ANNUAL RAINFALL STATISTICS FOR THE YEAR 2024

S.NO	SUB-DIVISION	WINTER UPDATED				PREMONSOON UPDATED				MONSOON REAL TIME				POST MONSOON REAL TIME				ANNUAL REAL TIME			
		ACT	NORMAL	%DEP	CAT	ACT	NORMAL	%DEP	CAT	ACT	NORMAL	%DEP	CAT	ACT	NORMAL	%DEP	CAT	ACT	NORMAL	%DEP	CAT
1	A & N ISLANDS	115.1	80.1	43.7	E	322.3	455.9	-29	D	1630.7	1631.7	0	N	726.1	670.5	8	N	2794.2	2838.2	-2	N
2	ARUNACHAL PRADESH	101.9	133.1	-23.4	D	581.5	757.3	-23	D	1200.0	1675.1	-28	D	285.6	241.5	18	N	2169.0	2807.0	-23	D
3	ASSAM & MEGHALAYA	27.9	42.1	-33.7	D	478.5	582.6	-18	N	1483.4	1762.2	-16	N	211.9	190.1	11	N	2201.8	2577.0	-15	N
4	NAG.,MANI.,MIZO.,TRIP	34.8	31.9	9.0	N	409.7	477.0	-14	N	1061.6	1301.7	-18	N	139.0	199.1	-30	D	1645.1	2009.7	-18	N
5	S.H.W.B.&SIKKIM	23.3	43.6	-46.6	D	298.1	438.4	-32	D	2057.4	1889.5	9	N	176.6	168.3	5	N	2555.4	2539.8	1	N
6	GANGATIC W.B.	32.7	29.3	11.6	N	248.1	187.9	32	E	1169.8	1166.8	0	N	208.5	175.0	19	N	1659.0	1559.0	6	N
7	ORISSA	25.5	25.1	1.6	N	136.0	128.6	6	N	1091.9	1150.2	-5	N	119.4	140.8	-15	N	1372.9	1444.7	-5	N
8	JHARKHAND	33.8	25.4	32.9	E	85.7	83.3	3	N	1011.6	1022.9	-1	N	62.9	89.1	-29	D	1194.0	1220.7	-2	N
9	BIHAR	14.0	19.8	-29.1	D	84.2	85.3	-1	N	798.7	992.2	-19	N	19.7	67.1	-71	LD	916.7	1164.4	-21	D
10	EAST U.P.	21.3	25.2	-15.3	N	17.5	33.6	-48	D	746.2	799.2	-7	N	4.7	42.3	-89	LD	789.7	900.3	-12	N
11	WEST U.P.	17.8	30.5	-41.6	D	25.9	32.7	-21	D	743.1	672.0	11	N	11.9	30.1	-60	LD	798.7	765.3	4	N
12	UTTARANCHAL	49.3	101.7	-51.5	D	127.5	158.2	-19	N	1273.4	1162.7	10	N	36.6	55.0	-33	D	1486.7	1477.6	1	N
13	HAR., CHANDI., DELHI	15.6	32.0	-51.2	D	25.4	45.0	-43	D	417.1	430.7	-3	N	26.9	19.4	38	E	485.0	527.1	-8	N
14	PUNJAB	16.6	47.4	-64.9	LD	33.2	54.2	-39	D	314.8	439.8	-28	D	27.1	24.1	13	N	391.7	565.5	-31	D
15	HIMACHAL PRADESH	109.9	187.1	-41.3	D	221.2	240.7	-8	N	594.7	734.4	-19	N	50.0	82.9	-40	D	975.9	1245.1	-22	D
16	JAMMU & KASHMIR	117.1	225.5	-48.1	D	300.5	330.0	-9	N	408.5	549.1	-26	D	44.6	127.7	-65	LD	870.7	1232.3	-29	D
17	WEST RAJASTHAN	5.8	8.5	-31.9	D	10.0	24.7	-60	LD	486.0	283.6	71	LE	7.5	12.1	-38	D	509.4	328.9	55	E
18	EAST RAJASTHAN	5.0	10.9	-54.5	D	11.7	21.2	-45	D	920.0	626.6	47	E	21.9	25.9	-15	N	958.5	684.6	40	E
19	WEST M.P.	13.0	14.0	-6.9	N	29.7	13.5	120	LE	1075.1	877.3	23	E	50.4	46.5	8	N	1168.2	951.3	23	E
20	EAST M.P.	26.3	33.4	-21.4	D	53.1	23.7	124	LE	1181.2	1043.4	13	N	36.9	55.7	-34	D	1297.4	1156.2	12	N
21	GUJARAT REGION	0.9	1.5	-41.7	D	10.62	5.5	93.0	LE	1202.9	927.5	30	E	41.3	32.8	26	E	1255.7	967.3	30	E
22	SAURASHTRA & KUTCH	0.3	0.8	-66.4	LD	14.0	3.1	352	LE	942.7	539.9	75	LE	49.8	28.6	74	LE	1006.8	572.4	76	N
23	KONKAN & GOA	4.9	0.6	717.5	LE	36.7	29.4	25	E	3710.6	2870.8	29	E	241.4	140.7	72	LE	3993.6	3041.5	31	E
24	MADHYA M'RASHTRA	1.9	2.8	-33.3	D	28.5	26.4	8	N	1035.8	747.4	39	E	106.1	103.5	3	N	1172.4	880.1	33	E
25	MARATHAWADA	1.9	6.4	-70.4	LD	29.1	25.6	14	N	772.5	642.8	20	E	73.1	96.7	-24	D	876.6	771.5	14	N
26	VIDARBHA	7.9	16.9	-53.0	D	90.1	27.0	234	LE	1098.5	937.3	17	N	44.3	76.2	-42	D	1240.8	1057.4	17	N
27	CHATTISGARH	11.0	21.9	-49.9	D	82.3	37.0	122	LE	1231.7	1132.2	9	N	37.5	75.5	-50	D	1362.4	1266.6	8	N
28	COASTAL A.P.	0.7	22.2	-96.7	LD	88.1	96.2	-8	N	800.7	601.4	33	E	282.3	322.9	-13	N	1171.9	1042.7	12	N
29	TELANGANA	1.2	16.0	-92.5	LD	81.6	63.8	28	E	948.3	734.8	29	E	82.4	124.1	-34	D	1113.5	938.7	19	N
30	RAYALASEEMA	3.7	8.8	-58.2	D	89.6	79.5	13	N	482.5	408.6	18	N	344.4	236.4	46	E	920.2	733.3	25	E
31	TAMIL NADU	52.5	24.8	111.9	LE	141.9	124.9	14	N	389.1	328.4	18	N	589.9	443.3	33	E	1173.4	921.4	27	E
32	COASTAL KARNATAKA	39.1	3.0	1204.4	LE	182.8	155.2	18	N	3764.8	3093.9	22	E	353.2	264.0	34	E	4339.9	3516.1	23	E
33	N.I.KARNATAKA	1.1	4.4	-76.0	LD	92.3	79.6	16	N	499.7	480.8	4	N	136.4	131.5	4	N	729.5	696.3	5	N
34	S.I.KARNATAKA	8.7	5.7	52.7	E	168.4	142.8	18	N	727.1	678.4	7	N	284.4	199.0	43	E	1188.7	1025.9	16	N
35	KERALA	59.6	21.1	182.6	LE	500.4	359.0	39	E	1748.4	2018.7	-13	N	487.2	491.9	-1	N	2795.6	2890.7	-3	N
36	LAKSHADWEEP	156.8	25.8	507.9	LE	357.2	197.0	81	LE	1304.2	1026.6	27	E	325.9	334.9	-3	N	2144.1	1584.3	35	E

## तालिका - २ / TABLE - 2

**वर्ष २०२४ के लिए स्टेशनवार वार्षिक न्यूनतम, अधिकतम तापमान और वर्षा चरम सीमा**  
**STATIONWISE ANNUAL MINIMUM & MAXIMUM TEMPERATURE AND RAINFALL EXTREMES**  
**FOR THE YEAR 2024**

S.NO.	STATION NAME	MIN	DATE	MAX	DATE	HIGHEST 24 Hr.	DATE
		(°C)	(MONTH_DATE)	(°C)	(MONTH_DATE)	RAINFALL(mm)	(MONTH_DATE)
1	Agartala AP	8.8	01_28	39.2	05_25	233.0	08_22
2	Cherrapunji	4.5	01_18	33.1	09_22	634.0	05_30
3	Dibrugarh AP	7.0	01_08	39.5	09_23	82.4	07_15
4	Guwahati AP	8.6	01_23	40.1	05_25	70.0	06_17
5	Imphal	2.6	01_22	34.6	09_20	91.6	08_06
6	Passighat	10.6	01_13	39.7	07_26	192.2	06_30
7	Shillong	3.0	01_18	29.9	09_22	242.4	05_28
8	Tezpur	10.9	01_20	39.5	05_23	88.6	10_01
9	Baghdogra AP	4.6	01_26	40.4	05_25	174.4	09_28
10	Berhampore	9.6	01_14	42.6	05_01	79.0	07_05
11	Calcutta	11.8	01_23	43.0	04_30	152.7	05_27
12	Cooch Behar	5.1	01_26	40.5	05_25	139.2	06_10
13	Contai	10.0	12_17	41.6	04_30	180.0	09_14
14	Darjeeling*	1.6	01_27, 02_08	28.2	09_21	175.4	10_03
15	Gangtok	3.9	01_27	33.8	06_27	106.6	09_28
16	Jalpaiguri	6.6	01_28	39.5	05_25	166.7	07_07
17	Kalimpong*	7.5	01_25	33.8	06_27	130.0	09_28
18	Krishnanagar	8.8	01_23	44.0	04_30	70.2	08_02
19	Midnapore	10.7	01_15	45.5	04_30	107.8	10_26
20	Panagarh	8.1	01_14	45.6	04_30	186.0	08_02
21	Balasore	11.3	12_16	46.0	04_30	103.5	09_16
22	Bhubaneshwar AP.	10.9	12_16	45.4	04_30	76.8	05_12
23	Chandbali	11.2	12_16	43.6	04_30	167.6	10_26
24	Gopalpur	13.9	12_16	37.8	06_17	98.3	09_24
25	Jharsuguda AP.	6.8	12_15	47.0	05_30	63.9	07_15
26	Puri	14.8	12_16	36.7	10_01	75.3	07_15
27	Sambalpur	11.0	01_26	46.2	05_30	43.8	07_27
28	Daltonganj	4.7	01_16	47.7	05_29	110.6	09_15
29	Gaya AP	4.0	01_20	47.4	05_29	110.4	07_12
30	Jamshedpur AP	7.9	12_16	45.5	04_30	86.8	09_16
31	Patna AP	5.5	01_22	43.5	06_09	89.9	09_06
32	Purnea	6.1	01_28	41.7	04_30	147.7	09_27
33	Ranchi AP	6.4	01_15	42.2	05_29	170.8	08_03
34	Allahabad AP	6.0	01_16	48.8	05_29	65.0	09_18
35	Bahraich	4.4	01_23	45.4	05_30	195.4	07_05
36	Bareilly	4.0	01_23	45.3	05_31	88.2	06_27
37	Dehra Dun	4.0	01_25	43.2	05_31	172.0	08_01
38	Gorakhpur	4.0	01_23	44.0	05_29	152.5	09_28
39	Jhansi	4.1	01_22	49.0	05_28	141.7	09_12
40	Lucknow AP	3.6	01_23	46.0	06_17	75.1	07_07
41	Mukteswar	-3.6	01_06	34.2	06_27	94.6	09_13
42	Varanasi AP	4.6	01_20	47.8	05_30	75.6	07_04
43	Ambala	3.4	01_24	45.4	05_31	140.8	08_01
44	Chandigarh	2.7	01_16	46.0	05_29	129.7	08_12
45	Hissar	0.6	12_16	48.5	05_29	72.6	07_01
46	Karnal	2.8	01_23	44.6	05_28	53.4	09_04

S.NO.	STATION NAME	MIN	DATE	MAX	DATE	HIGHEST 24 Hr.	DATE
		(°C)	(MONTH_DATE)	(°C)	(MONTH_DATE)	RAINFALL(mm)	(MONTH_DATE)
47	N. Delhi	3.3	01_15	46.8	05_29	228.1	06_28
48	Amritsar IAF	1.4	01_12	46.3	05_28	90.2	08_01
49	Patiala	3.1	01_16	46.6	05_28	84.8	09_04
50	Shimla	-0.6	02_02	31.7	05_29	84.3	06_28
51	Banihal	-6.8	02_02	34.2	06_17	90.2	03_03
52	Gulmarg	-12.0	02_02, 03_04	25.7	07_03	62.0	03_02
53	Jammu City	2.3	01_16	44.8	05_29	130.2	08_15
54	Srinagar	-8.5	12_21	36.2	07_28	56.4	07_05
55	Ajmer	4.8	01_05	46.3	05_27	110.6	08_06
56	Barmer	6.0	01_08	49.3	05_27	74.0	07_19
57	Bikaner	2.4	01_19	48.6	05_26	56.2	07_12
58	Ganganagar	4.1	01_12	49.4	05_28	121.6	07_27
59	Jaipur AP	5.2	01_11	46.6	05_28	155.6	08_01
60	Jaisalmer	4.7	01_24	48.7	05_27	95.2	08_06
61	Jodhpur AP	7.2	01_14	47.6	05_24	90.6	09_05
62	Kota AP	5.4	12_15	48.2	05_27	85.9	06_28
63	Udaipur	3.4	12_14	45.4	05_27	94.3	10_13
64	Ambikapur	3.7	12_15	44.2	05_29	117.4	08_22
65	Betul	6.2	01_25, 12_14	42.4	05_24	87.6	10_14
66	Bhopal	3.3	12_16	45.4	05_26	123.4	06_21
67	Guna	3.4	01_19	47.2	05_27	116.8	08_16
68	Gwalior	4.1	01_21	47.6	05_28	198.4	09_12
69	Indore	8.6	12_11	44.5	05_23	146.4	08_24
70	Jabalpur	4.0	12_15	44.5	05_27	190.4	09_11
71	Jagdalpur	8.5	12_16	41.8	04_19	127.8	08_07
72	Khandwa	6.0	12_15	45.5	05_24	92.0	06_05
73	Nowgong	3.0	01_19	47.1	05_28	110.2	09_12
74	Pendra	5.8	12_15	45.0	05_28	95.6	06_30
75	Ratlam	6.8	12_14	46.2	05_24	151.0	07_26
76	Sagar	3.7	01_19	46.7	05_27	142.8	07_23
77	Satna	3.9	01_24	47.1	05_28	109.1	08_04
78	Seoni	8.0	01_25, 12_17	44.2	05_29	185.2	09_11
79	Umaria	2.3	12_15	44.6	05_28	100.2	08_04
80	Ahmedabad	10.6	01_14	46.6	05_23	138.1	08_27
81	Baroda City	10.0	12_14	45.0	05_23	320.2	07_25
82	Bhaunagar	12.2	12_16	44.6	05_19	87.0	09_27
83	Bhuj AP	9.8	12_28	44.3	05_22	95.4	08_29
84	Deesa	8.9	12_15	45.4	05_23	75.6	08_25
85	Dwarka	14.4	12_29	37.7	10_09	418.6	07_20
86	Naliya	4.2	12_28	40.0	04_08	301.2	08_29
87	New Kandala	13.0	12_24	42.5	05_27	78.0	08_27
88	Porbandar AP	10.5	12_18	41.3	04_16	485.8	07_19
89	Rajkot	9.0	12_24	44.5	05_18	318.0	08_27
90	Surat	14.0	01_16	42.1	04_17	186.2	07_22
91	Veraval	13.8	12_29	40.0	04_16	139.4	07_19
92	Akola	9.5	01_25	45.8	05_24	76.9	07_08
93	Ahmednagar	5.5	12_16	42.0	05_06	74.4	08_24
94	Aurangabad AP	8.8	12_15	43.5	05_23	82.9	06_10
95	Buldhana	10.0	01_25	42.0	05_23	66.4	09_03
96	Chandrapur	10.4	12_16	45.6	05_30	135.8	07_21

S.NO.	STATION NAME	MIN	DATE	MAX	DATE	HIGHEST 24 Hr.	DATE
		(°C)	(MONTH_DATE)	(°C)	(MONTH_DATE)	RAINFALL(mm)	(MONTH_DATE)
97	Dahanu	14.1	12_10	37.5	05_15, 06_04	193.0	07_22
98	Harnai	19.4	01_16, 12_18	36.6	06_27	172.4	07_08
99	Jalgaon	7.8	12_16	45.5	05_23	93.0	06_11
100	Kolhapur	14.1	12_16	40.2	04_05	92.6	07_26
101	Mahabaleshwar*	10.5	11_29	35.1	04_30	330.1	07_25
102	Malegaon	9.4	01_25	44.0	04_29	93.3	10_11
103	Mumbai (Colaba)	18.5	01_24	37.6	05_15	169.2	09_26
104	Nagpur AP	7.0	12_15	45.6	05_27	164.0	07_21
105	Panjim (Goa)	18.4	01_24	36.0	05_13	360.8	07_08
106	Parbhani	8.2	12_16	45.2	05_25	127.7	09_02
107	Pune	7.8	12_16	41.8	04_29	133.0	09_26
108	Ratnagiri	15.3	12_17	38.0	02_29	182.3	07_13
109	Solapur	11.5	12_16	44.4	05_05	82.0	09_24
110	Yeotmal	9.0	01_25	46.0	05_26	70.8	07_01
111	Anantpur	13.8	12_17	44.7	04_29, 05_04	77.9	08_17
112	Hyderabad	11.4	12_16	43.6	05_03	68.4	08_16
113	Kakinada	18.4	01_19, 02_15	40.3	04_28	110.4	05_25
114	Kalingapatnam	13.2	12_16	39.3	04_23	101.8	09_27
115	Kurnool	16.4	12_17	45.9	05_03	59.1	06_03
116	Machilipatnam	18.9	01_18	42.4	05_30	184.3	08_31
117	Nellore	21.0	01_30	44.1	05_31	125.2	10_16
118	Nizamabad	11.2	12_16	44.6	05_04	87.4	07_21
119	Ongole	19.6	12_16	45.0	05_31	76.0	10_14
120	Ramagundam	10.5	12_16	44.4	04_30	70.5	09_04
121	Rentachintala	12.5	12_30	46.2	05_01	134.2	09_01
122	Visakhapatnam AP	17.2	02_14	40.8	04_16	87.2	09_09
123	Chennai AP	19.3	01_17	41.9	05_30	121.2	10_16
124	Coimbatore AP	18.0	12_17	40.0	04_22	87.6	10_23
125	Cuddalore	20.0	01_17	40.2	05_01	235.5	12_01
126	Kanyakumari	20.7	10_12	36.9	05_05	129.0	11_03
127	Kodaikanal	5.8	01_27	32.8	06_27	96.2	12_13
128	Madurai AP	19.1	01_17	42.2	05_06	48.2	10_25
129	Nagapattnam	20.5	01_17	40.3	05_04	205.5	01_08
130	Palayamkottai	21.0	12_15	41.5	05_07	261.0	12_13
131	Pamban	21.4	01_17	37.0	04_27	280.0	11_21
132	Salem	17.7	12_16	42.3	04_23	108.5	10_06
133	Tiruchirapalli AP	20.0	01_17	43.1	05_01	132.8	10_12
134	Vellore	18.2	01_17	43.7	05_01	110.6	12_01
135	Bangalore CO	15.5	12_16	38.5	04_28	111.1	06_03
136	Chitradurga	12.4	12_17	39.9	04_30	71.2	10_21
137	Gadag	11.8	11_29	41.2	04_30	65.5	04_21
138	Gulbarga	13.0	12_16	44.7	05_04	83.3	09_01
139	Honavar	16.6	01_24	36.9	11_14	180.3	07_16
140	Karwar	17.0	01_24	38.0	05_29	234.8	07_16
141	Mangalore AP	20.5	12_17	35.6	02_12, 04_11, 05_08	172.5	06_27
142	Mysore	11.1	01_23	38.8	05_08	55.0	05_04
143	Raichur	12.0	12_16	44.4	05_04	96.2	05_13
144	Alapuzha	21.7	10_10	38.3	04_29	155.7	10_12
145	Cochi AP	19.9	12_18	35.4	02_26	136.6	05_23
146	Kozhikode	22.3	07_06	39.0	05_02	155.8	12_03
147	Thiruvanthapuram	19.7	11_06	37.8	05_08	121.5	05_19
148	Car Nicobar	21.6	04_20	36.0	04_12	129.0	08_27
149	Port Blair	20.8	01_23	35.9	04_30	148.3	05_23
150	Amini Divi	20.5	12_03	37.2	05_03	121.8	06_22
151	Minicoy	21.1	03_31	36.2	04_26	218.4	08_14

(\*: Hill Stations)

(#: Based on Real-time data)

**तालिका - ३ / TABLE - 3**  
**पूरे भारत के लिए 2024 के दौरान तापमान (जनवरी से दिसंबर, वार्षिक और मौसमी) 1901**  
**के बाद से अपने शीर्ष रैंक के साथ**  
**Temperatures during 2024(January to December, Annual and seasonal) for all India**  
**with its top ranks since 1901**

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	JF	MAM	JJAS	OND
AI MAX	24.36	27.59	31.71	35.67	37.32	35.62	32.31	31.31	31.96	32.05	29.37	25.70	31.25	25.97	34.90	32.80	29.04
ANOMALY	-0.26	0.01	0.01	0.65	0.72	1.02	0.52	0.30	0.53	0.68	0.62	-0.11	0.40	-0.12	0.46	0.59	0.40
RANK since 1901	64	35	41	11	8	16	10	10	8	7	2	37	4	37	13	5	6
AI MIN	12.39	14.61	18.14	22.45	24.83	25.47	24.99	24.27	23.79	21.79	16.90	13.22	20.24	13.50	21.80	24.63	17.31
ANOMALY	0.93	0.79	0.43	0.88	0.66	0.81	0.89	0.59	0.99	1.78	1.05	0.95	0.90	0.86	0.66	0.82	1.26
RANK since 1901	7	2	15	6	10	6	1	1	1	1	7	5	1	1	7	1	1
AI MEAN	18.37	21.10	24.92	29.06	31.08	30.55	28.65	27.79	27.88	26.92	23.14	19.46	25.74	19.74	28.35	28.72	23.17
ANOMALY	0.34	0.40	0.22	0.76	0.69	0.91	0.70	0.45	0.76	1.23	0.84	0.42	0.65	0.37	0.56	0.71	0.83
RANK since 1901	24	16	26	8	4	8	2	4	2	1	3	6	1	14	7	2	1

**तालिका - ४ / TABLE - 4**  
**2024 के दौरान अब तक का उच्चतम अधिकतम तापमान**  
**Ever recorded Highest Maximum Temperature during 2024**

MONTH	STATION NAME	NEW	DATE	PREVIOUS	DATE
		RECORD. (°C) <sup>#</sup>		RECORD (°C)	
JAN	ANANTHAPUR	36.6	22-01-2024	36.1	31-01-2020
	BANIHAL	23.4	11-01-2024	22.6	18-01-2003
	MATHERAN	31.6	13-01-2024	31.3	30-01-1975
	MINICOY	33.9	02-11-2024	32.9	24-01-2020
	PAHALGAM	14.1	15-01-2024	13.8	15-01-2018
	THIRUVANANTHPURAM	36.2	26-01-2024	35.8	19-01-1987
	TONDI	34.6	24-01-2024	34.4	15-01-2022
FEB	AMRELI	39.8	29-02-2024	39.4	20-02-2023
	ERODE	39.4	23-02-2024	38.4	28-02-2021
	KANYAKUMARI	35.2	24-02-2024	34.7	21-02-2022
	KARAIKAL	34.6	28-02-2024	34.2	22-02-1998
	KOTTAYAM	38.5	27-02-2024	37.3	27-02-2022
	MINICOY	34	20-02-2024	33.8	27-02-2020
	TONDI	35.9	02-02-2024	35.5	20-02-2019
MAR	BULDHANA	41	27-03-2024	40.3	30-03-2022
	MANDLA	41.2	29-03-2024	40	31-03-2022
	PACHMARHI	35.4	28-03-2024	35.3	30-03-1959
	KOTTAYAM	39	12-03-2024	38.6	18-03-2020
	MINICOY	35.2	23-03-2024	34.4	28-03-2020
	RAJNANDGAON	41	30-03-2024	40.2	30-03-1996
APR	ALAPUZHA (ALLEPPEY)	38.3	29-04-2024	38	01-04-1987
	ANANTHAPUR	44.7	29-04-2024	44.3	15-04-2016
	BALASORE	46	30-04-2024	45	20-04-2010
	BARIPADA	46.4	30-04-2024	46.1	21-04-2010
	CANNING	43.6	30-04-2024	42.2	10-04-2010
	DHARAMPURI	41.2	22-04-2024	41.1	01-04-2021
	DIAMOND HARBOUR	42.3	25-04-2024	41.9	13-04-2016
	GADAG	41.2	30-04-2024	41.1	23-04-1941
	HALDIA	41.4	25-04-2024	40.5	24-04-2009
KANYAKUMARI	36.8	29-04-2024	36.8	28-04-2020	

	KOLKATA /DUM DUM(A)	43	30-04-2024	42.8	25-04-1954
	KOTTAYAM	38.5	28-04-2024	38.3	03-04-2020
	KURNOOL	45.2	28-04-2024	45.1	26-04-2016
	MATHERAN	39	16-04-2024	37.4	02-04-1975
	MINICOY	36.1	26-04-2024	35.6	21-04-2020
	SUPAUL	41.6	30-04-2024	41.5	16-04-1973
	THRISSUR	40.3	10-04-2024	39.9	02-04-2020
	UTHAGAMANDALAM	29.4	30-04-2024	28.5	29-04-1986
	VISAKHAPATNAM AP	40.8	16-04-2024	40.6	01-04-2014
	Sagar Island	39.5	22-04-2024	39.4	16-04-1908
MAY	Cherrapunji*	30.9	26-05-2024	30.2	26-05-1962
	Dibrugarh AP	38.8	25-05-2024	37.2	24-05-2009
	North Lakhimpur	39.2	25-05-2024	38.6	01-05-2014
	Passighat	39.6	25-05-2024	37.4	29-05-1961
	Tezpur	39.5	23-05-2024	39.1	02-05-1972
	Cooch Behar AP	40.5	25-05-2024	39.9	09-05-1960
	Gaya AP	47.4	29-05-2024	47.1	14-05-1970
	Jhansi	49	28-05-2024	48.2	20-05-1984
	Varansai	47.8	30-05-2024	46.8	23-05-1998
	Dehar Dun	43.2	31-05-2024	43.1	30-05-2012
	Chandigarh	46	29-05-2024	44.4	15-05-1970
	Churu	50.5	28-05-2024	49.9	26-05-1998
	Ganganagar	49.4	28-05-2024	49.4	30-05-1944
	Ratlam	46.2	24-05-2024	45.5	13-05-1970
	Sagar	46.7	27-05-2024	46.4	21-05-2016
	Anantpur	44.7	04-05-2024	44.4	04-05-2016
	Cuddapah	46.2	03-05-2024	46.1	18-05-1906
	Kurnool	45.9	03-05-2024	45.6	10-05-1921
	Uthagamandalam*	29	01-05-2024	28	05-05-1993
	Karwar	38	29-05-2024	37.4	10-05-2010
	Mysore	38.8	08-05-2024	38.1	02-05-2016
	Alapuzha	38	08-05-2024	37.4	23-05-2019
	Kottayam	37.7	08-05-2024	37.2	04-05-2020
Thiruvananthapuram	37.8	08-05-2024	36.7	06-05-2020	
JUN	ALIBAG	37.8	03-06-2024	37.2	08-06-2003
	BALURGHAT	44.5	03-06-2024	43	07-06-1979
	FURSTGANJ	46.6 @	17-06-2024	46.6	06-06-2014
	MATHERAN	32.6	04-06-2024	32.1	07-06-1977
	NEW DELHI (RIDGE)	46.4	12-06-2024	46.3	07-06-2014
	SULTANPUR	47.0	17-06-2024	46.6	19-06-2005
JUL	BARAPANI	35.3	27-07-2024	33.6	20-07-2018
	BHUNTAR	37.5	20-07-2024	37.2	07-07-2009
	DHUBRI	36.7	27-07-2024	36.6	15-07-2022
	ITANAGAR	39.4	26-07-2024	38.8	19-7-2018
	MINICOY	33.6 @	27-07-2024	33.6	07-07-2019
	PAHALGAM	31.5	21-07-2024	31.5	10-07-1999
	PASSIGHAT	39.7	26-07-2024	38.8	07-07-1986
	QAZIGUND	35.6	28-07-2024	34.5	11-07-1988
	SHILLONG	29.8	27-07-2024	29.7	09-07-2005
AUG	ALIBAG	34.1	22-08-2024	33.6	04-08-2000
	BARAPANI	33.7	30-08-2024	33.7	16-08-2006
	BELGAUM (A)	31.6	13-08-2024	31.6	20-08-2015
	DAHANU	34	22-08-2024	33.6	03-08-2020
	HARNAI	32.6	21-08-2024	32.4	27-08-2021
	KOKERNAG	32.7	14-08-2024	32.5	23-08-2023
	KOLHAPUR	32.6	14-08-2024	32.2	25-08-1950
	LUMDING	39.6	30-08-2024	39	08-08-1979



	MADURAI (A)	40.6	01-08-2024	40.6	23-08-2004
	MUMBAI (SANTACRUZ)	33.7	22-08-2024	33.5	26-08-1969
	THRISSUR (VELLANIKKARA)	34.5	13-08-2024	33.3	19-08-2015
	UDAGAMANDALAM	24.6	19-08-2024	23.6	01-08-2022
	VALSAD	34.6	18-08-2024	33.4	31-08-1979
SEP	ADIRAMAPATTINAM	38.9	17-09-2024	38.7	11-09-1987
	AGARTALA	37.6 @	19-09-2024	37.6	19-09-2015
	AMINIDIVI	34.6	29-09-2024	33.9	26-09-1940
	BALURGHAT	39 @	22-09-2024	39	04-09-2000
	BATOTE	31	23-09-2024	30.3	22-09-2020
	BHUNTAR	35.5	24-09-2024	35.2	01-09-1980
	CHANDIGARH	37.6	23-09-2024	37.5	16-09-1974
	CHAPARMUKH	37.8	19-09-2024	37.5	30-09-2009
	CHENNAI (MEENAMBAKKAM)	39.2 @	17-09-2024	39.2	28-09-2002
	COOCH BEHAR	37.9	21-09-2024	37.8	28-09-2021
	COONOR	26	17-09-2024	25.4	18-09-2015
	DHARAMSHALA	32	24-09-2024	31	20-09-2022
	DHUBRI	36.8	21-09-2024	35.5	06-09-1982
	DIGHA	37.2	20-09-2024	37.1	10-09-2015
	ERODE	39.6	17-09-2024	39	15-09-1999
	FORBESGANJ	39.2	23-09-2024	38.6	11-09-2014
	GUWAHATI	39.3	23-09-2024	37.8	28-09-2009
	HALDIA	36.7	07-09-2024	36.3	17-09-2017
	IMPHAL	34.6 @	20-09-2024	34.6	18-09-2015
	KAILASHAHAR	37.4	20-09-2024	37.2	18-09-2015
	KANGRA (A)	35	24-09-2024	34.4	22-09-2020
	KARAIKAL	38.8	17-09-2024	38	21-09-2015
	KARUR PARAMATHI	39 @	23-09-2024	39	14-09-2009
	KATRA	33.6	24-09-2024	33.4	07-09-1988
	KAVALI	40.1	17-09-2024	39.8	26-09-2009
	KOCHI (CIAL)	34.8	30-09-2024	34.1	30-09-2019
	KODAIKANAL	23.7	25-09-2024	22.8	17-09-1985
	KOKERNAG	31.6	23-09-2024	31.2	07-09-2005
	KOTTAYAM	35.4	29-09-2024	35	01-09-2020
	KOZHIKODE (A)	33.6 @	30-09-2024	33.6	28-09-2018
	LENGPUI	37.4	24-09-2024	35.7	20-09-2018
	LUMDING	40.2	23-09-2024	37.2	01-09-1951
	MADURAI	40.8	25-09-2024	40	18-09-1993
	MADURAI (A)	41.6	25-09-2024	40.4	10-09-2019
	MAZBAT	38.2	23-09-2024	37.4	12-09-1985
	MINICOY	33.4	25-09-2024	33.2	18-09-1987
	MOHANBARI	39.5	23-09-2024	38	19-09-2013
	NARSAPUR	37	19-09-2024	35.6	30-09-2010
	NORTH LAKHIMPUR	39.6	23-09-2024	39.3	15-09-2021
	PARADEEP	36.6	20-09-2024	36.4	18-09-1976
	PASSIGHAT	38.6	23-09-2024	38.1	09-09-1994
	QAZIGUND	33.2	23-09-2024	32.8	13-09-2019
RANGIA	39 @	23-09-2024	39	01-09-1977	
SHILLONG	29.9	23-09-2024	29.2	01-09-2019	
SHIMLA (A)	29.4	23-09-2024	27.5	29-09-2009	
SOHRA (CHERRAPUNJEE)	33.1	22-09-2024	31.1	06-09-1969	
SUNDERNAGAR	35.1	23-09-2024	34.4	12-09-2015	
SUPAUL	37.6	23-09-2024	37.1	15-09-2013	
TADONG	33.1 @	21-09-2024	33.1	18-09-2017	
THRISSUR (VELLANIKKARA)	36.2	30-09-2024	35.3	14-09-2017	
TONDI	39.3	10-09-2024	38.8	26-09-2009	
UNA	38.6 @	24-09-2024	38.6	12-09-2005	

OCT	ANANTAPUR	39.2	01-10-2024	37.8	03-10-2002
	BALASORE	37	01-10-2024	36.7	03-10-2018
	BAPATLA	37.1	05-10-2024	36	11-10-2010
	BENGALURU	32.8	02-10-2024	32.4	04-10-2002
	BENGALURU (KIA)	33.2	02-10-2024	32	15-10-2014
	BHUNTAR	33.6	03-10-2024	33.4	02-10-2020
	DHARMAPURI	35.5	02-10-2024	35.5	01-10-2018
	KAKINADA	38	04-10-2024	37.3	13-10-2015
	KAVALI	39.8	02-10-2024	38.6	12-10-2018
	KOLKATA (DUM DUM)	37	01-10-2024	36.8	31-10-1999
	KOTTAYAM	35	23-10-2024	35	27-10-2020
	KOZHICODE	36.2	31-10-2024	36.2	20-10-2015
	MUKTESHWAR	26	02-10-2024	25.5	07-10-1974
	NARSAPUR	37.5	04-10-2024	36.2	21-10-2009
	NELLORE	40.7	02-10-2024	39.4	10-10-1900
	PALAKKAD	36.3	01-10-2024	36.3	23-10-1986
	PARADEEP	36.7	04-10-2024	36	10-10-2006
	PURI	36.7	01-10-2024	36.1	02-10-1899
	RAIPUR	36.4	03-10-2024	36.2	14-10-2015
	SAGAR ISLAND	35	01-10-2024	34	01-10-1991
SHIMLA (A)	28.4	03-10-2024	28	02-10-2020	
SULTANPUR	36	03-10-2024	35.7	08-10-2006	
TIRUCHIRAPALLI (A)	38.9	04-10-2024	38.9	03-10-1906	
TUNI	38.9	04-10-2024	38.8	03-10-2011	
UNA	36.6	07-10-2024	36.6	08-10-2017	
VISAKHAPATNAM (A)	37.8	04-10-2024	37.2	08-10-1965	
NOV	AMBIKAPUR	33.8	01-11-2024	32.4	04-11-1981
	ASANSOL	34.3	01-11-2024	34	01-11-2020
	BATOTE	27	01-11-2024	26.1	09-11-2008
	BHILWARA	36.2	01-11-2024	36	01-11-1996
	BHUNTAR	30.5	01-11-2024	29.4	03-11-2001
	CHAIBASA	36.4	01-11-2024	35	09-11-2022
	DEESA	38.6	07-11-2024	38.6	03-11-2009
	GANDHINAGAR	37.4	03-11-2024	37.4	16-11-1976
	KANGRA (A)	30.7	01-11-2024	29.2	01-11-2023
	MACHILIPATNAM	35.4	07-11-2024	35.4	16-11-2017
	MINICOY	34.5	04-11-2024	34.5	19-11-2023
	NARSAPUR	34.4	07-11-2024	34.4	01-11-2009
	PATIALA	34.7	01-11-2024	33	03-11-2008
	QAZIGUND	25.4	06-11-2024	24.3	03-11-2007
	RAIPUR	35.2	01-11-2024	34.6	14-11-2009
	RAJKOT	38.4	07-11-2024	38.4	05-11-2022
	RAJNANDGAON	35.5	01-11-2024	33.2	06-11-1981
	THRISSUR (VELLANIKKARA)	34.9	09-11-2024	34.9	19-11-2017
UNA	33.4	02-11-2024	33.4	03-11-2002	
DEC	AMBIKAPUR	30.8	19-12-2024	29.6	04-12-2023
	BENGALURU (KIA)	30.8	08-12-2024	30.6	15-12-2015
	CHAIBASA	33	05-12-2024	32.4	15-12-2022
	KANNUR	37.2	31-12-2024	36.8	29-12-2016
	KHAMMAM	34.6 @	06-12-2024	34.6	04-12-2023
	NANDIGAMA	35.8	06-12-2024	35.3	29-12-2022
	NARSAPUR	35	05-12-2024	33.4	09-12-2012
	RAJNANDGAON	31.7	06-12-2024	31.6	18-12-1985
THOOTHUKUDI NEW PORT	34.2	02-12-2024	33.8	01-12-2000	

“@” Equals Previous Record

“#” BASED ON REAL TIME AVAILABLE DATA

**तालिका - ५ / TABLE -5**  
**2024 के दौरान अब तक की उच्चतम वर्षा**  
**Ever recorded Highest Rainfall during 2024**

MONTH	STATION NAME	NEW	DATE	PREVIOUS	MM/DD/YYYY
		RECORD# in (mm)		RECORD in (mm)	
JAN.	VALPARAI PTO	66.8	05-01-2024	38.4	31-01-2005
	KARAIKAL	139.5	08-01-2024	124.8	12-01-1986
	HONAVAR OBSY	33.8	06-01-2024	32.6	08-01-1995
	KARWAR OBSY	19	04-01-2024	13.2	08-01-1941
	SHIRALI PTO	42.2	06-01-2024	6.2	08-01-1995
	MANGALURU AP OBSY	46	09-01-2024	10.9	10-01-1985
	KOCHI C.I.A.L.	78.7	05-01-2024	38.8	07-01-2021
	KOTTAYAM	42.6	05-01-2024	27.6	05-01-1985
	KOZHICODE	105.9	05-01-2024	104.4	03-01-1909
FEB.	MANALI	73	20-02-2024	66.6	07-02-2011
	JAISALMER	39	20-02-2024	24.8	11-02-2007
MAR.	ITANAGAR	68.8	26-03-2024	53.1	24-03-2010
	DARJEELING	86.2	21-03-2024	72.9	31-03-1951
	FORBESGANJ	49.2	21-03-2024	44.4	08-03-2020
	MUZAFFARPUR	51.8	21-03-2024	31.3	20-03-1969
	ORAI	41	03-03-2024	22.1	26-03-1951
	HISSAR	43.2	03-03-2024	42	20-03-1997
	BHIND-AWS	27	03-03-2024	20	27-03-1974
APR.	MANALI	82	30-04-2024	76.2	18-04-1972
	JAMMU	87.4	16-04-2024	80	14-04-1991
	DAMOH-AWS	24	14-04-2024	17.2	09-04-2011
	RAISEN-AWS	24.2	13-04-2024	8.1	25-04-1978
MAY	SHILLONG C.S.O.	242.4	28-05-2024	227	22-05-1988
	WASHIM	8.1	15-05-2024	7	11-05-2014
	HANAMKONDA	80.1	13-05-2024	75.7	22-05-1940
JUN.	BENGALURU CITY	111.1	03-06-2024	101.6	16-06-1891
	TONDI	87.8	07-06-2024	68	07-06-2022
JUL.	DWARKA	418.6	20-07-2024	355.8	02-07-1998
	KOZHICODE (A)	241.6	30-07-2024	220.6	11-07-1997
	PALAKKAD	162.8	30-07-2024	157.4	04-07-1964
	PANJIM	360.8	08-07-2024	334.7	01-07-1987
	PORBANDAR (A)	485.8	19-07-2024	444.3	16-07-2009
	VADODARA (A)	320.2	25-07-2024	297.4	01-07-2005
	VALPARAI	305.4	30-07-2024	195.6	17-07-2007
	VISAKHAPATNAM	104.6	19-07-2024	94.2	11-07-1992
AUG.	AGATTI	195.6	17-08-2024	123	22-08-2014
	CHURU	124.8	01-08-2024	99	10-08-1964
	GANNAVARAM	122.7	31-08-2024	103.1	09-08-2008
	KARUR PARAMATHI	110.4	15-08-2024	80.2	26-08-2006
	LENGPUI	113.6	17-08-2024	101	25-08-2017
	MINICOY	218.4	14-08-2024	200.7	21-08-1930
	NALIYA	301.2	29-08-2024	294	12-08-1979

	NARSAPUR	140.7	31-08-2024	93.4	22-08-1989
	OKHA	387.4	28-08-2024	381.6	06-08-2007
	PUDUCHERRY	155	10-08-2024	102.2	11-08-2011
	RANCHI	170.8	03-08-2024	122.5	14-08-2012
	SRINIKETAN	191.8	02-08-2024	159.4	27-08-1987
SEP.	DAMOH	215	11-09-2024	146.4	12-09-1992
	FORBESGANJ	310.6	27-09-2024	228.6	02-09-1960
	GONDIA	285.4	10-09-2024	281.4	02-09-1961
	NANDIGAMA	172.6	01-09-2024	171.2	20-09-2005
	PUNE	133	26-09-2024	132.3	21-09-1938
	RAJNANDGAON	184.4	10-09-2024	103	05-09-1994
OCT.	ERODE	73.8	12-10-2024	68.8	26-10-2001
	UDAIPUR (A) (DABOK)	94.3	13-10-2024	49.6	01-10-2019
NOV.	PAMBAN	280	21-11-2024	196	18-11-1969
DEC.	BHAWANIPATNA	64.8	26-12-2024	44	18-12-2018
	DHARMAPURI	162	02-12-2024	131.2	05-12-1993
	KOCHI (CIAL)	146.4	02-12-2024	87	14-12-2017
	KOTTAYAM	183.8	02-12-2024	92	31-12-2011
	KOZHIKODE	155.8	03-12-2024	115.1	08-12-1942
	MANGALORE (BAJPE)(A)	156.2	03-12-2024	142.6	10-12-1965
	MUZZAFFAR NAGAR	49.3	28-12-2024	26.6	23-12-1989
	NASHIK	31.9	05-12-2024	31	16-12-1967
	NEW DELHI (RIDGE)	46.8	28-12-2024	30	16-12-2003
	PUDUCHERRY	483.7	01-12-2024	186.7	13-12-1998
	UMARIA	55.8	29-12-2024	46	11-12-1967

# BASED ON REAL TIME AVAILABLE DATA

तालिका – ६ / TABLE -6

HIGH IMPACTED WEATHER EVENTS OCCURRED DURING 2024 ALONG WITH ASSOCIATED LOSS OF LIFE AND DATES

Event	Number of Casualties	Season	Date	State / Union Territory Affected
Lightning and Thunderstorm	1374	Whole year	3 Jan to 27 Dec.	Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, Uttarakhand, West Bengal, Delhi, Jammu & Kashmir
Floods and Heavy Rain	1287	Winter, Pre Monsoon, Monsoon and Post Monsoon	6 Feb. to 23 Oct.	Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, Uttarakhand, West Bengal, Delhi, Jammu and Kashmir
Heat Wave	459	Pre Monsoon and Monsoon	23 Mar.; 2, 5, 7, 9, 10, 11, 14, 15, 16, 17, 19, 21, 23, 24, 26, 27, 28, 29, 30 Apr.; 1, 2, 4, 5, 6, 8, 12, 24 to 31 May; 1 to 17, 19, 27, 30 Jun.	Bihar, Chhattisgarh, Jharkhand, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Telangana, Uttar Pradesh, Delhi
Snowfall	1	Winter	22 Feb.	Jammu and Kashmir
Gale	7	Pre Monsoon and Monsoon	18, 19, 31 Mar.; 26 May; 14 Sep.	Jharkhand, Maharashtra, Telangana, West Bengal
Cold Wave	7	Winter	7, 24 Jan.	Bihar, Punjab
Hailstorm	2	Pre Monsoon	18 Mar.; 23 Apr.	Maharashtra
Severe Cyclonic Storm REMAL	51	Pre Monsoon	24 to 28 May	Mizoram, West Bengal, Assam, Nagaland, Meghalaya and Manipur
Severe Cyclonic Storm DANA	4	Post Monsoon	22 to 26 Oct.	West Bengal
Cyclonic Storm FENGAL	15	Post Monsoon	25 Nov. to 2 Dec.	Tamil Nadu, Puducherry

While,

- a) Assam, Haryana , Himachal Pradesh, Madhya Pradesh, Maharashtra, Manipur, Telangana, Uttar Pradesh, Jammu & Kashmir State/Union Territory also affected due to Hailstorm during 10, 11, 12, 13, 15, 20, 21 Feb.; 1, 3, 17, 19, 20, 26, 30 Mar.; , 9, 10, 11, 12, 16, 19, 20, 22, 23, 24 Apr.; 74, 5, 6, 12, 14, 18, 20 May; 6, 7, 13 Jun.; 2 Sep.(during Pre Monsoon and Monsoon season)
- b) Chhattisgarh, Kerala also affected due to Gale during 13, 15 Jun. (during Monsoon season)
- c) West Bengal States also affected due to Squall on 27 Aug. (during Monsoon season)
- d) Tripura also affected due to Severe Cyclonic Storm REMAL during 24 to 28 May (Pre Monsoon season)
- e) Odisha also affected due to Severe Cyclonic Storm DANA during 22 to 26 Oct. (Post Monsoon season)
- f) Andhra Pradesh also affected due to Cyclonic Storm FENGAL during 25 Nov. to 2 Dec. (Post Monsoon season)

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Climate Monitoring & Prediction Group

जलवायु अनुसंधान एवं सेवाएँ  
CLIMATE RESEARCH & SERVICES

## वार्षिक जलवायु सारांश - 2024

### ANNUAL CLIMATE SUMMARY - 2024

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पुणे

DESIGNED & PRINTED AT  
PRINTING UNIT,  
OFFICE OF CLIMATE RESEARCH & SERVICES,  
PUNE

Note : This Bulletin is based on operational data and is subject to updating