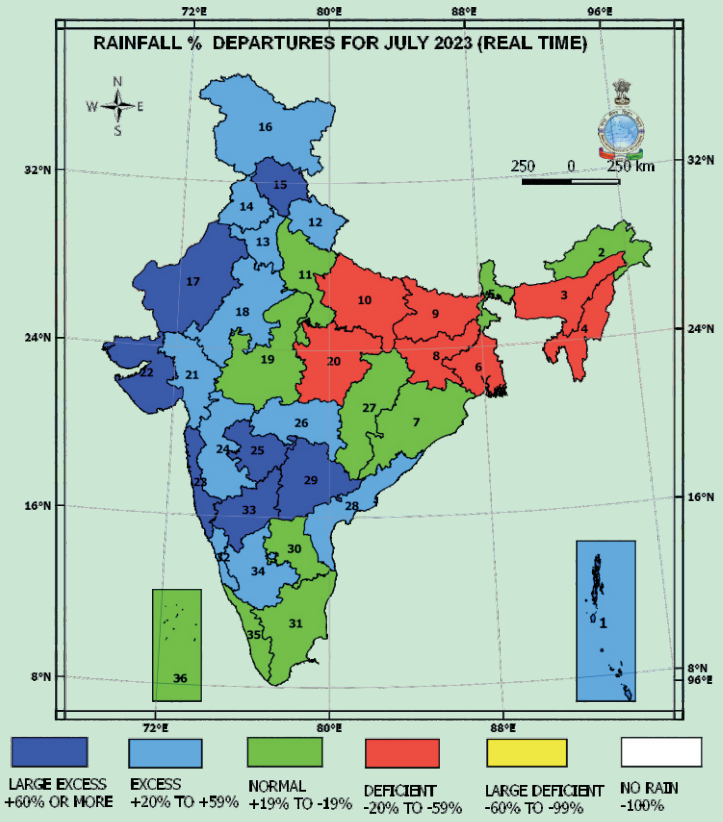
भारत सरकार / GOVERNMENT OF INDIA
पृथ्वी विज्ञान मंत्रालय / MINISTRY OF EARTH SCIENCES
पृथ्वी प्रणाली विज्ञान संगठन / EARTH SYSTEM SCIENCE ORGANIZATION
भारत मौसम विज्ञान विभाग / INDIA METEOROLOGICAL DEPARTMENT

भारत का जलवायु नैदानिक बुलेटीन
CLIMATE DIAGNOSTICS BULLETIN OF INDIA

जूलाई 2023
JULY 2023

वास्तविक समय के आंकडो पर आधारित विश्लेषण
NEAR REAL - TIME ANALYSES



द्वारा जारी : जलवायु निगरानी एवं प्रागुक्ती समूह
ISSUED BY : Climate Monitoring & Prediction Group

जुलाई 2023 (सारांश)
माह की मुख्य विशेषताएं

प्रमुख बिंदुः

2 जुलाई को दक्षिणी-पश्चिमी मानसून ने पुरा भारत व्याप्त कर लिया । पुरे भारत का माध्य तापमान (28.4°से) 1901 से सातवा सबसे अधिक रहा । पूर्व और उत्तर-पूर्व भारत का माध्य तापमान (29.38°से) 1901 से दुसरा सबसे अधिक रहा । पूर्व और उत्तर-पूर्व भारत का अधिकतम तापमान (33.23°से) 1901 से दुसरा सबसे अधिक रहा । पूर्व और उत्तर-पूर्व भारत का न्युनतम तापमान (25.53°से) 1901 से सबसे अधिक रहा । पूर्व और उत्तर-पूर्व भारत की वर्षा (286.8 मि. मी.)1901से चौथी सबसे कम रही । दक्षिणी प्रायद्विप की वर्षा (295.5 मि. मी.)1901से आठवी सबसे अधिक रही ।

दक्षिणी-पश्चिमी मानसून की प्रगतिः

दक्षिणी-पश्चिमी मानसून की प्रगति आकृती 1 में दर्शायी गयी है । 2 जुलाई को दक्षिणी-पश्चिमी मानसून ने पुरा भारत व्याप्त कर लिया ।

वर्षा की विशेषताएंः

36 मौसम उप मंडलों में से 7 में सामान्य से अधिक, 12 में अधिक, 10 में सामान्य, 7 में सामान्य से कम वर्षा हुई (आकृती 2 ए) । तालिका 1 में, जुलाई 2023 के उप मंडल-वार वर्षा के आँकडे (मि. मी.) में दर्शाए गए है । आकृती 2 (बी) में जून और जुलाई माह के संचित उप मंडल-वार वर्षा दर्शायी गयी है ।

आकृती 3(ए) में माह के दौरान देश के विभिन्न भाग में हुई वर्षा (मि. मी.) दर्शायी गयी है । आकृती 3 (बी) में माह के दौरान देश के विभिन्न भाग में हुई वर्षा विसंगति (मि. मी.) दर्शायी गयी है । आकृती 4 में जुलाई के पाच सप्ताहों का वास्तविक, दीर्घावधी औसत (एल.पी.ए.) और उसका प्रतिशत विचलन का स्थानिक रुप दर्शाया गया है ।

आकृती 5 महीने के दौरान पुरे भारत और चार समरुप क्षेत्रों मे दैनिक वर्षा भिन्नता दर्शाता है । पूरे देश में, माह के दीर्घावधी औसत मान का 113% वर्षा हुई । आकृती 6 में वर्ष 1951 से अब तक के सम्पूर्ण भारत की और चार समरुपी क्षेत्रों की क्षेत्र भारित वर्षा श्रृंखला दर्शाई गयी है ।

माह की वर्षा भारत के दक्षिण प्रायद्विप में (एल.पी.ए. का 145%), पूर्व और उत्तर-पूर्व भारत में (एल.पी.ए. का 68%), मध्य भारत में (एल.पी.ए. का 122%) तथा उत्तर-पश्चिम भारत में (एल.पी.ए. का 125%) रही । तालिका 2 में माह के दौरान 24 घंटों में हुई अति भारी (115.6 से 204.4 मि. मी. तक), या अत्यधिक भारी (ε 204.5 मि. मी. या अधिक) वर्षा वाले स्टेशनों की सूची दर्शाई गई है । आकृती 7 मे भारी, अति भारी वर्षा और अत्यधिक भारी वाले स्टेशन दर्शाए गए है ।

मानकीकृत वर्षण सूचकांक (एस.पी.आई.):

मानकीकृत वर्षण सूचकांक अनावृष्टि मापने का एक सूचकांक है जो केवल वर्षा पर आधारित होता है । यह सूचकांक शुष्क स्थिति में ऋणात्मक और आर्द्र स्थिति में धनात्मक होता है । जब शुष्क या आर्द्र मौसम की स्थिति अधिक भीषण होती है, तब सूचकांक अधिक ऋणात्मक या धनात्मक होता है । आकृती 8 (ए, बी, सी) में जुलाई 2023, जून - जुलाई 2023 (2 माह के संचित) तथा जनवरी 2023 - जुलाई 2023 (7 माह के संचित) के मानकीकृत वर्षण सूचकांक दर्शाए गए हैं ।

जुलाई माह के दौरान नागालँड मणिपुर मिझोराम, त्रिपुरा, पश्चिम उत्तर प्रदेश, उत्तराखंड, हरयाणा, चंदिगड, दिल्ली, पंजाब, हिमाचल प्रदेश, जम्मु कश्मीर और लदाख, पूर्वी राजस्थान, गुजरात राज्य, कोंकण और

गोवा, मराठवाडा, विदर्भ, छत्तीसगढ, तटीय आंध्र प्रदेश और यानम, तेलंगणा, तामिलनाडु पुदुचेरी और करायकल और कर्नाटक राज्य में चरम आर्द्र / प्रचंड आर्द्र स्थितियाँ रहीं, जबकि अरुणाचल प्रदेश, आसाम और मेघालय, नागालँड, मणिपुर, मिझोराम, त्रिपुरा, गांगीय पश्चिम बंगाल, झारखंड, बिहार, पूर्वी उत्तर प्रदेश, छत्तीसगढ, तामिलनाडु पुदुचेरी और करायकल में चरम शुष्क / प्रचंड शुष्क स्थितियाँ रहीं ।

दाबः आकृती 9(ए) तथा 9(बी) क्रमशः माध्य समुद्र तल दाब तथा इसकी विसंगति दर्शाते है । अधोरेखा द्वारा ऋणात्मक मान दर्शाए गए हैं ।

पवनः आकृती 10(ए) तथा 10(बी), 11(ए) तथा 11(बी), 12(ए) तथा 12(बी) में क्रमशः पवन का 850, 500 और 250 एच.पी.ए. स्तरों पर माध्य परिसंचरण स्वरुप तथा इसकी विसंगति को दर्शाता है ।

वेग विभव तथा धारा कृत्य (वेलोसिटी पोटेन्शियल और स्ट्रीम फंक्शन):

आकृती 13(ए) तथा 13(बी) में 250 एच.पी.ए. स्तर पर माध्य वेग विभव तथा इसकी विसंगति को दर्शाया गया है । इसी प्रकार आकृती 14(ए) तथा 14(बी) में माध्य धारा कृत्य तथा इसकी विसंगति को दर्शाते हैं। अधोरेखा द्वारा ऋणात्मक मान दर्शाये गए हैं ।

बहिर्गामी दीर्घतरंग विकिरण (ओ.एल.आर.):

भारत के क्षेत्रों तथा आसपास की बहिर्गामी दीर्घतरंग विकिरण (वॉट/मी^{2}) आकृती 15 में दर्शाई गई हैं ।

तापमानः

माध्य मासिक अधिकतम तथा न्यूनतम तापमान विसंगति आकृती 16(ए) तथा 16(बी) में दर्शाई गई हैं ।

उष्ण दिनों / शीत रात्रियों का प्रतिशतः

आकृती 17(ए) तथा 17(बी) में अधिकतम (न्यूनतम) तापमान जब 90वें (10वें) पर्सेंटाइल से अधिक(कम) वाले दिनों का प्रतिशत दर्शाया गया हैं । आकृती 18 में पूरे देश में जुलाई माह में 1971 से अब तक के औसत तापमान दर्शाये गए हैं । 5 वर्ष के चल औसत भी दर्शाये गए हैं । इस वर्ष के जुलाई माह का औसत तापमान 28.4^{0}से. रहा, जो 1901 से सातवां सबसे अधिक रहा । आकृती 19(ए) तथा 19(बी) में चारों समरुपी क्षेत्रों के वर्ष 1971 से अब तक के जुलाई माह के दौरान रहे अधिकतम और न्यूनतम तापमानों की श्रृंखला दर्शाई गई हैं ।

आकृती 20(ए) तथा 20(बी) में महीने के दौरान पुरे भारत मे दैनिक अधिकतम और न्युनतम तापमानों विसंगती की श्रृंखला दर्शाई है । तालिका 3 मे माह के दौरान की तापमान विसंगति दर्शाइ गयी है।

निम्न दाब प्रणालियाँः

इस माह एक अवदाब और चार निम्न दाब **क्षेत्र** बने । चार निम्न दाब **क्षेत्र** मे से एक निम्न दाब जमीन पर बना और बाकी तीन बंगाल की खाडी में बने। तीन मे से एक सुस्पष्ट चिन्हांकीत निम्न दाब क्षेत्र बना । एक अवदाब बंगाल की खाडी में बना । आकृती 21 में अवदाब का मार्ग दर्शाया गया है ।

हिन्द एवं प्रशान्त महासागरों पर समुद्री सतह तापमान विसंगतिः

आकृती 22 उष्ण कटिबंधीय हिन्द एवं प्रशांत महासागरों पर समुद्री सतह तापमान विसंगति दर्शाता है।

दक्षिणी दोलन सूचकांक तथा प्रशांत समुद्री सतह तापमान सुचकांकः

दक्षिणी दोलन सूचकांक (तालिका 4) इस माह के दौरान ऋणात्मक (-0.4) रहा ।

एन्सो पूर्वानुमानः आकृती 23 आने वाले ऋतुओं के लिये एम.एम.सी.एफ.एस. एन्सो पूर्वानुमान दर्शाता है ।

आपत्कालीन मौसम घटनाएः आकृती 24 आपत्कालीन मौसम घटनाए दर्शाता है ।

JULY - 2023

MAIN FEATURES OF THE MONTH

Highlights:

The southwest Monsoon covered the entire country on 2nd July 2023. In July, over the country the mean temperature was 28.40°C with an anomaly of 0.43°C and the 7th highest since 1901. Among the four homogeneous regions, over East & Northeast India the mean temperature was the second highest (29.38ºC with an anomaly of 1.45ºC) after the year 2022 (29.45ºC with an anomaly of 1.52ºC) since 1901. Over East & Northeast India the maximum temperature was the 2nd highest (33.23ºC with an anomaly of 1.78ºC) after the year 2022 (33.59ºC with an anomaly of 2.14ºC) and the minimum temperature was the highest (25.53ºC with an anomaly of 1.13ºC) since 1901.

Rainfall over homogeneous region of East & northeast India (286.8 mm) was 4th lowest since 1901. Prior lowest rainfall years are 2022 (234.8 mm),1903 (249.5 mm) and 1973 (284.3 mm). Rainfall over homogeneous region of South peninsular India (295.5 mm) was 8th highest since 1901 after the years 1961 (344 mm), 2022 (327.5 mm),1959 (322.1 mm),1988 (305.7 mm),1989 (301.8 mm),1924 (301 mm) and 1903 (300.4 mm).

Advance of Southwest Monsoon:

Southwest Monsoon which had covered most parts of the country except over some parts of north Rajasthan and adjoining areas of southwest Haryana and Punjab by 28th June. The southwest Monsoon gradually advanced thereafter and it covered the entire country on 2nd July 2023, against the normal date of 8th July. Fig. 1 depicts the advance of southwest monsoon 2023.

Rainfall Features:

Except Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Jharakhand, Bihar, Gangetic West Bengal, East Uttar Pradesh and East Madhya Pradesh remaining subdivisions received large excess/excess/normal rainfall. Out of 36 meteorological subdivisions, 7 received large excess rainfall, 12 received excess rainfall, 10 received normal rainfall, 7 subdivisions received deficient rainfall (Fig. 2a). Table 1 shows the subdivision wise rainfall statistics (mm) for July 2023.

Fig. 2(b) shows the meteorological subdivision wise cumulative rainfall percentage departures for the season from 1st June to 31st July. Cumulative rainfall was large excess over West Rajasthan, and Saurashtra & Kutch, excess over 10 sub divisions, normal over 18 and deficient over 6 meteorological sub divisions.

Fig. 3(a) shows the spatial pattern of rainfall (mm) received during the July 2023. Parts of Arunachal Pradesh, Assam & Meghalaya, Sub Himalayan West Bengal & Sikkim, West Uttar Pradesh, Uttarakhand, Gujarat Region, Telangana, Chhatisgarh, Vidarbha, West Madhya Pradesh, entire west coast and Andaman & Nicobar islands received more than 500 mm of rainfall. Parts of Arunachal Pradesh, Assam & Meghalaya, Sub Himalayan West Bengal & Sikkim, West Uttar Pradesh, Uttarakhand, Gujarat Region, Telangana, Chhatisgarh, Vidarbha, entire west coast except Kerala and Andaman & Nicobar Islands received more than 700 mm of rainfall.

Fig. 3(b) shows the spatial pattern of rainfall anomaly (mm) during the July 2023. Positive rainfall anomaly more than 150 mm was observed over parts of Andaman & Nicobar islands, Arunachal Pradesh, Himachal Pradesh, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, West& East Rajasthan, Saurashtra & Kutch , Konkan & Goa, Madhya Maharashtra, Vidarbha, Coastal Karnataka, Coastal Andhra Pradesh, Telangana, South Interior Karnataka, West Madhya Pradesh and Chhatisgarh. Magnitude of negative rainfall anomaly was more than 150 mm over parts of Assam

& Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Jharakhand, Bihar, Chhatisgarh, East Madhya Pradesh and Kerala & Mahe

Fig. 4 shows the spatial pattern of actual, Long Period Average (LPA) rainfall and its percentage departure during the five weeks of July. Fig. 5 shows daily variation of the rainfall over the country as a whole and four homogeneous regions during the month.

Fig. 6 shows area weight averaged rainfall series for July over all India and four homogeneous regions since 1951. Rainfall realized over the country as a whole was 113% of its LPA during the month**.**

The realized rainfall for the month of July this year was 125% of its LPA over northwest India, 122% of its LPA over central India, 68% of its LPA over east & northeast India and 145% of its LPA over south peninsula. Rainfall over homogeneous region of East & northeast India (286.8 mm) was 4th lowest since 1901. Prior lowest rainfall years are 2022 (234.8 mm), 1903 (249.5 mm) and 1973 (284.3 mm). Rainfall over homogeneous region of South peninsular India (295.5 mm) was 8th highest since 1901 after the years 1961 (344 mm), 2022 (327.5 mm), 1959 (322.1 mm), 1988(305.7 mm), 1989(301.8 mm), 1924 (301 mm) and 1903 (300.4 mm).

Table 2 gives the list of stations which received very heavy (115.6 to 204.4 mm) or extremely heavy (≥ 204.5 mm) rainfall in 24 hours during the month. Fig. 7 depicts stations which received heavy (64.5 to 115.5 mm), very heavy (115.6 to 204.4 mm) or extremely heavy (≥ 204.5 mm) rainfall.

Some stations received highest 24-hour record rainfall. A list of stations is given below with their previous record and date.

STATION	24 HOUR RECORD RAINFALL IN July 2023(mm)#	DATE	PREVIOUS RAINFALL RECORD(mm)	DATE	STATE
AMBALA	224.1	9	211.7	16-7-2001	Haryana
DELHI RIDGE	134.5	9	124	11-7-2003	Haryana
CHANDIGARH	302.2	9	262	18-7-2000	Chandigarh
BILASPUR SADAR	130	9	103.2	26-7-2012	Himachal Pradesh
MANALI	131.3	9	100	13-7-1993	Himachal Pradesh
PAHALGAM	73.3	8	71.2	27-7-1987	Jammu Kashmir
LEH	17.6	9	17.4	14-7-1980	Jammu Kashmir
KATRA	315.4	19	292.4	31-7-2019	Jammu Kashmir
MAHUVA	302	28	167.9	15-7-1957	Gujarat
VERAVAL	520.2	19	503.8	16-7-2009	Gujarat
YEOTMAL	236.2	22	196.4	28-7-2005	Maharashtra
HANAMKONDA	242.2	27	227.8	13-7-1903	Telangana

*Based on real time available data

Standardized Precipitation Index:

The Standardized Precipitation Index (SPI) is an index used for monitoring drought and is based only on precipitation. This index is negative for dry, and positive for wet conditions. As the dry or wet conditions become more severe, the index becomes more negative or positive. Fig 8 (a, b, and c) gives the SPI values for the month of July 2023, June-July 2023 (2 months cumulative) and January 2023 - July 2023 (7 months cumulative) respectively.

During July, extremely wet/severely wet conditions were observed over parts of Nagaland, Manipur, Mizoram & Tripura, West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, Himachal Pradesh, Jammu & Kashmir, East Rajasthan, Gujarat state, Konkan & Goa, Marathawada, Vidarbha, Chattisgarh, Coastal Andhra Pradesh, Telangana, Tamil Nadu and Karnataka state while, extremely dry/severely dry conditions were observed over parts of Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Jharkhand, Bihar, East Uttar Pradesh, Chattisgarh and Tamil Nadu.

Cumulative past two months SPI values indicate, extremely wet/severely wet conditions over parts of Nagaland, Manipur, Mizoram & Tripura, Uttar Pradesh state, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, Himachal Pradesh, Jammu & Kashmir, Rajasthan state, West Madhya Pradesh, Gujarat state, Konkan & Goa, Marathawada, Coastal Andhra Pradesh, Telangana and Tamil Nadu while, extremely dry/severely dry conditions were observed over parts of Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Odisha, Jharkhand, Bihar, East Uttar Pradesh, Madhya Maharashtra, Chattisgarh, Tamil Nadu, Kerala and Lakshadweep.

Cumulative SPI values of the seven months indicate, extremely wet/severely wet conditions over parts of Nagaland, Manipur, Mizoram & Tripura, Odisha, Uttar Pradesh state, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, Himachal Pradesh, Rajasthan state, Madhya Pradesh state, Gujarat state, Konkan & Goa, Marathawada, Vidarbha, Coastal Andhra Pradesh, Telangana, Tamil Nadu and North Interior Karnataka while, extremely dry/severely dry conditions were observed over parts of Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal, Jharkhand, Bihar, East Uttar Pradesh, Madhya Maharashtra, Chattisgarh and Kerala.

Pressure & Wind:

Figs. 9(a) and 9(b) show the mean sea level pressure & its anomaly respectively. The pressure anomaly was positive over most parts of the country, except over parts of central parts of south peninsula. It was more than 1.5 hPa over northern and northeastern parts.

Figs. 10(a) & 10(b), 11(a) & 11(b) and 12(a) & 12(b) show the mean circulation pattern and its anomaly at 850, 500 & 250 hPa levels respectively. An anomalous trough was observed over south peninsula and adjoining Bay of Bengal at 850,500 and 250 hPa levels.

Velocity Potential & Stream Function:

Figs. 13(a) and 13(b) show the 250 hPa mean Velocity Potential & its anomaly for the month of June 2023. Similarly, Figs. 14(a) and 14(b) show the mean stream function & its anomaly at 850 hPa level. Anomaly in the velocity potential at 250 hPa level was negative throughout the country and anomaly in the stream function at 850 hPa level was negative over south peninsula and positive over remaining parts.

Outgoing Longwave Radiation (OLR):

OLR anomaly (W/m^2) over the Indian region and neighbourhood is shown in Fig 15. OLR anomaly was negative over most parts of the country, except east and northeastern parts. OLR anomaly was within ±10 W/m^2 over most of the parts. Negative OLR anomaly less than -20 W/m^2 was observed over some part of east central India and eastern parts of peninsula.

Temperature:

Mean monthly maximum and minimum temperature anomaly is shown in Figs. 16(a) and 16(b) respectively. Maximum temperature was above normal over most parts of the country, except some parts of northwest India, westcentral India and South Peninsular India. Maximum temperature anomaly was more than 2°C over parts of Bihar, Sub Himalayan West Bengal, Assam & Meghalaya, Arunachal Pradesh, Mizoram, Tripura, Kerala & Mahe and South Interior Karnataka. Maximum temperature anomaly was less than -2°C over parts of Punjab and west Rajasthan.

Minimum temperature was above normal over most parts of the country, except some parts of northwest India, northeast India, western parts of central India and South Peninsular India. Minimum temperature anomaly was more than 2°C over parts of West Bengal state, Sikkim state, Jharkhand, and east Madhya Pradesh.

Percentage of Warm Days /Cold Nights:

Fig 17(a) and 17(b) show the percentage of days when maximum (minimum) temperature was more (less) than 90th (10th) percentile. Over parts of Bihar, Nagaland, Manipur, Mizoram & Tripura and South Interior Karnataka maximum temperature was greater than 90th percentile for more than 50 % of the days of the month. Over parts of South Interior Karnataka and Marathawada minimum temperature was less than 10th percentile for more than 50% of the days of the month.

Fig.18 shows the mean temperature time series for the country as a whole for July since 1971. Five year moving average values are also shown. The mean temperature for the month this year over the country as a whole was 28.40°C with an anomaly of 0.43°C and the 7th highest since 1901. Over East & Northeast India the mean temperature was the 2nd highest (29.38ºC with an anomaly of 1.45ºC) after the year 2022(29.45ºC with an anomaly of 1.52ºC) since 1901. Over South Peninsular India the mean temperature was the 9th highest (28.31ºC with an anomaly of 0.44ºC) since 1901.

Fig. 19(a) and 19(b) show the maximum and minimum temperature series respectively for the country as a whole and the four homogeneous regions during July 2023 since 1971. Both the maximum and minimum temperature were above normal over all the homogeneous regions except Northwest India, where the maximum temperature was below normal. Over East & Northeast India the maximum temperature was the 2nd highest (33.23ºC with an anomaly of 1.78ºC) after the year 2022(33.59ºC with an anomaly of 2.14ºC) and the minimum temperature was the highest (25.53ºC with an anomaly of 1.13ºC) since 1901. Among the four homogeneous regions, over South Peninsular India the minimum temperature was the 7th highest (25.06ºC with an anomaly of 0.52ºC) since 1901.

Over the country as a whole the maximum temperature was the 16th highest (31.91ºC with an anomaly of 0.29ºC) and the minimum temperature was the 2nd highest (24.90ºC with an anomaly of 0.57ºC) since 1901.

Table 3 shows temperature anomalies for the month over all India and all the four homogeneous regions.

Fig. 20(a) and 20(b) shows daily variation of maximum and minimum temperature anomaly over the country and four homogeneous regions during July 2023.

Low Pressure Systems:

During July 2023 one depression and four low pressure areas formed. Out of these four low pressure areas one low pressure area formed over Land during 10 - 11 Jul, three low pressure areas over Bay [2 low pressure areas (during 16 - 17 Jul, 20 - 22 Jul) and 1 well marked low pressure area during 25 - 28 Jul]. The last low pressure area that formed over Bay on 29th July intensified into deep depression on 1st August which became less marked on 3rd August. Track of the system is given in the following table. Fig. 21 shows track of the system.

Date/time	Intensity	(Long.° E/Lat. °N)	Area	Past Movement
		92.1/19		
1/8,00Z	D	91.5/20.5	Northeast Bay of Bengal	north-northwestward
1/8,03Z	DD	91.2/21.2	Northeast Bay of Bengal	west-northwestward
1/8,12Z	DD	89.5/22.5	coastal Bangladesh and neighbourhood	west-northwestward
2/8,03Z	DD	87.1/23.2	Gangetic West Bengal	westward
2/8,12Z	D	85.1/23.3	Jharkhand	west-northwestward
3/8,03Z	D	83.1/23.5	North Chhattisgarh and neighbourhood	west-northwestward
	WML	82/23.5		

DD: Deep Depression, D: Depression, WML: Well marked Low

SST anomaly over the Indian & Pacific Ocean:

Fig. 22 shows the anomaly in sea surface temperature over the tropical Indian and Pacific Oceans. During July 2023, positive SSTs were observed over most of the equatorial Pacific Ocean Positive SST anomalies were observed over the Indian Ocean, especially over north Arabian Sea. In the south Indian Ocean, positive SST anomalies are observed over the western part whereas negative SST anomalies are observed over the eastern part.

SOI and Pacific SST Index:

SOI (Table 4) was negative (-0.4) during the month. Sea surface temperature anomalies were above normal by about 1º Cover all the NINO regions.

Fig. 23 shows the Monsoon Mission Coupled Forecast System (MMCFS) model output forecast for ENSO conditions for the coming seasons. Currently, El Niño conditions are prevailing over equatorial Pacific and the sea surface temperatures (SSTs) are above average over most of the equatorial Pacific Ocean. The latest MMCFS forecast indicates El Niño conditions are likely to continue up to the first quarter of next year.

Significant Weather events during July 2023:

Fig. 24 shows significant weather events during the month of July (based on real time media reports). During July, total 420 persons reportedly claimed dead, more than 95 persons injured, more than 55 persons missing & more than 40 livestock perished due to various weather events. The details of causalities given below, which are based on real time media reports.

Lightning:

As per the media report and situation report from disaster management authority about 170 persons reportedly claimed dead, 46 persons injured & more than 20 livestock perished, during July, because of Lightning. The details of the area affected by the events are summarized and given in the table below;

DATE	DEATH	INJURED	LIVESTOCK	DISTRICT (STATE) AFFECTED
4, 11, 12, 14 July	56			Araria, Arwal, Aurangabad, Banka, Bhagalpur, Buxar, EastChamparan, Gaya, Gopalganj, Jamui, Jehanabad, Kaimur, Katihar, Khagaria, Kishanganj, Madhepura, Muzaffarpur, Nalanda, Patna, Purnia, Rohtas, Saran, Siwan, Vaishali (Bihar)
2, 4, 6, 9, 10, 15 July	48	12		Agra, Amethi, Azamgarh, Badaun, Baghpat, Ballia, Banda, Etah, Etawah, Ghazipur, Jalaun, Kanpur Dehat, Kannauj, Kaushambi, Lalitpur, Mahoba, Mainpuri, Rae Bareli, Sambhal, Unnao (Uttar Pradesh)
6, 7, 8, 20, 22 July	22	8		Bhind, Chhatarpur, Gwalior, Panna, Sheopur, Shivpuri, Raisen, Tikamgarh (Madhya Pradesh)
18,19,21,25, 27 July	24	23	20	Amravati, Bhandara, Chandrapur, Gadchiroli, Gondia, Nagpur, Wardha (Maharashtra)
10, 30, 31 July	13	2		Angul, Balasore, Bhadrak, Keonjhar, Khordha, Koraput, Puri (Odisha)
2,29 July	4	1	many	Gumla, Koderma (Jharkhand)
9 July	2			Chittorgarh (Rajasthan)
10 July	1			Dindigul (Tamil Nadu)

Heavy Rains, Floods & Landslide:

Total 250 persons reportedly claimed dead, more than 50 persons injured, more than 55 persons missing & more than 20 livestock perished during July, because of heavy rains, floods & Landslide. The details of the area affected by the events are summarized and given in the table below;

DATE	DEATH	INJURED	MISSING	LIVESTOCK	DISTRICT (STATE/UT) AFFECTED
16, 18 July	2			1	Lakhimpur, Sivasagar (Assam)
4 July	1	2			Munger (Bihar)
21 July	2				Dadar and Nagar Haveli (Dadar and Nagar Haveli)- near Silvassa
9 July	2	10			North Delhi, North East Delhi, West Delhi (Delhi)
21 to 23 July	1			few	Navsari (Gujarat)
8 to 11 July	7				Ambala, Panchkula & Parts of Harayana

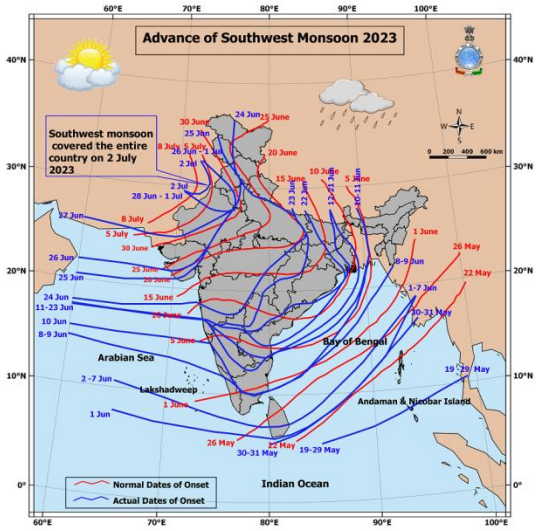
DATE	DEATH	INJURED	MISSING	LIVESTOCK	DISTRICT (STATE/UT) AFFECTED
6, 9 to 11,16,18, 22 July	41	5			Chamba, Kullu, Shimla, Sirmaur, & Parts of Himachal Pradesh
9, 18, 19 July	8	6	1		Kathua, Poonch, Udhampur (Jammu & Kashmir)
5, 23, 25 July	7	1			Dakshina Kannada, Bijapur, Udupi (Karnataka)
3 to 7, 10, 23 July	24				Alappuzha, Kannur, Kottayam, Kozhikode, Malappuram, Pathanamthitta, Thrissur, Wayanad (Kerala)
9 July	5				Ladakh
12, 19, 20, 21, 22, 26, 27 July	55	5	57	19	Akola, Amravati, Buldhana, Gadchiroli, Kolhapur, Mumbai Suburban, Nagpur, Nanded, Raigad, Ratnagiri, Sindhudurg, Thane, Wardha, Washim, Yavatmal (Maharashtra)
5 to 11 July	8				Fatehgarh Sahib, Mohali, Patiala, Rupnagar & Parts of Punjab
9, 7, 10 July	10				Ajmer, Jaipur, Nagaur, Sawai Madhopur, Pratapgarh, Tonk (Rajasthan)
22 to 29 July	29		few		Bhadrari Kothagudem, Hanamkonda / Warangal Urban, Jayashankar Bhupalapally, Khammam, Mahabubabad, Mahabubnagar, Mulugu, Warangal Rural (Telangana)
7 to 10, 15 July	24	2			Badaun, Bareilly, Gautam Buddh Nagar, Mathura, Rampur, Raibareilly, Sant Kabir Nagar & Parts of Uttar Pradesh
9, 10, 11, 16, 17 July	22	22			Chamoli, Dehradun, ithoragarh, Rudraprayag, Udham Singh Nagar, Uttarkashi (Uttarakhand)
13 July	2				Alipurduar (West Bengal)

While,

a. Bajali, Barpeta, Biswanath, Bongaigaon, Chirang, Darrang, Dhemaji, Dibrugarh, Golaghat, Jorhat, Kamrup, Kamrup (M), Majuli, Morigaon, Nagaon, Nalbari, Sonitpur districts of Assam also affected on 5th, 16th & 18th July.
b. Ahmedabad, Bharuch, Bhawnagar, Dwarka, Gir Somnath, Junagadh, Rajkot, Surat districts of Gujarat affected on 18th, 19th & 21st to 23rd July.
c. Solan & Una districts of Himachal Pradesh affected on 6th & 9th to 11th July.
d. Ramban district of Jammu & Kashmir also affected on 19th July.
e. Chikkamagaluru, Kodagu, Uttara Kannada districts of Karnataka also affected on 5th July.
f. Chandrapur, Gondia, Mumbai City, Palghar districts of Maharashtra also affected on 18th & 23rd July.

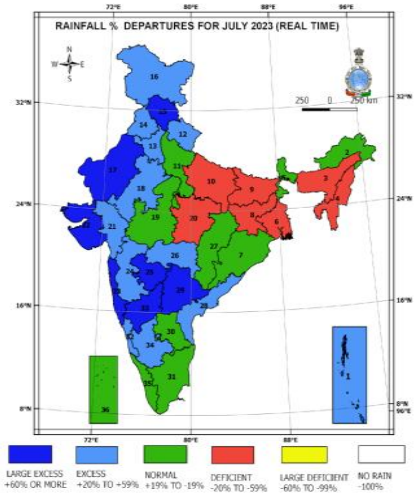
Gale:

Damage to building & vehicles reported from Dakshina Kannada district of Karnataka on 5th July.



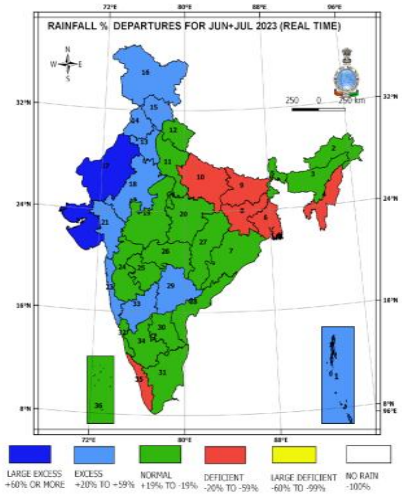
आकृती १: जुलाई २०२३ के दौरान दक्षिण-पश्चिम मानसून का आगमन और प्रगति

FIG. 1: ADVANCE OF SOUTHWEST MONSOON



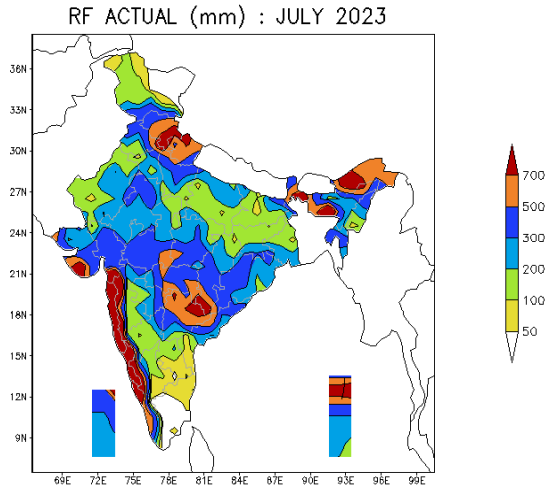
आकृती २: जुलाई २०२३ के लिए वर्षा प्रतिशत विचलन

FIG. 2(a): SUBDIVISIONWISE RAINFALL PERCENTAGE DEPARTURE JULY 2023



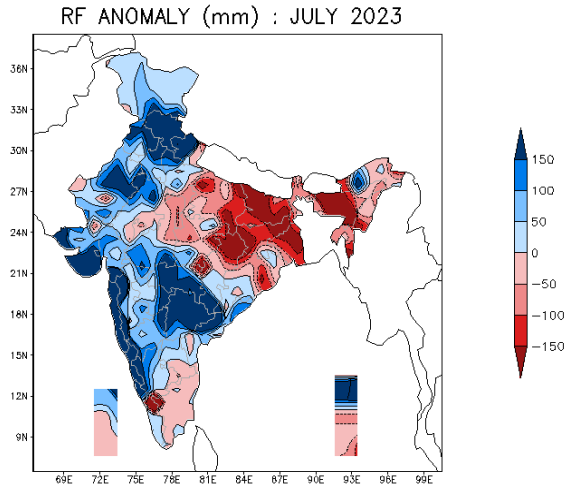
आकृती २: जून+जुलाई २०२३ के लिए वर्षा प्रतिशत विचलन

FIG. 2 (b): SUBDIVISIONWISE RAINFALL PERCENTAGE DEPARTURE JUNE + JULY 2023



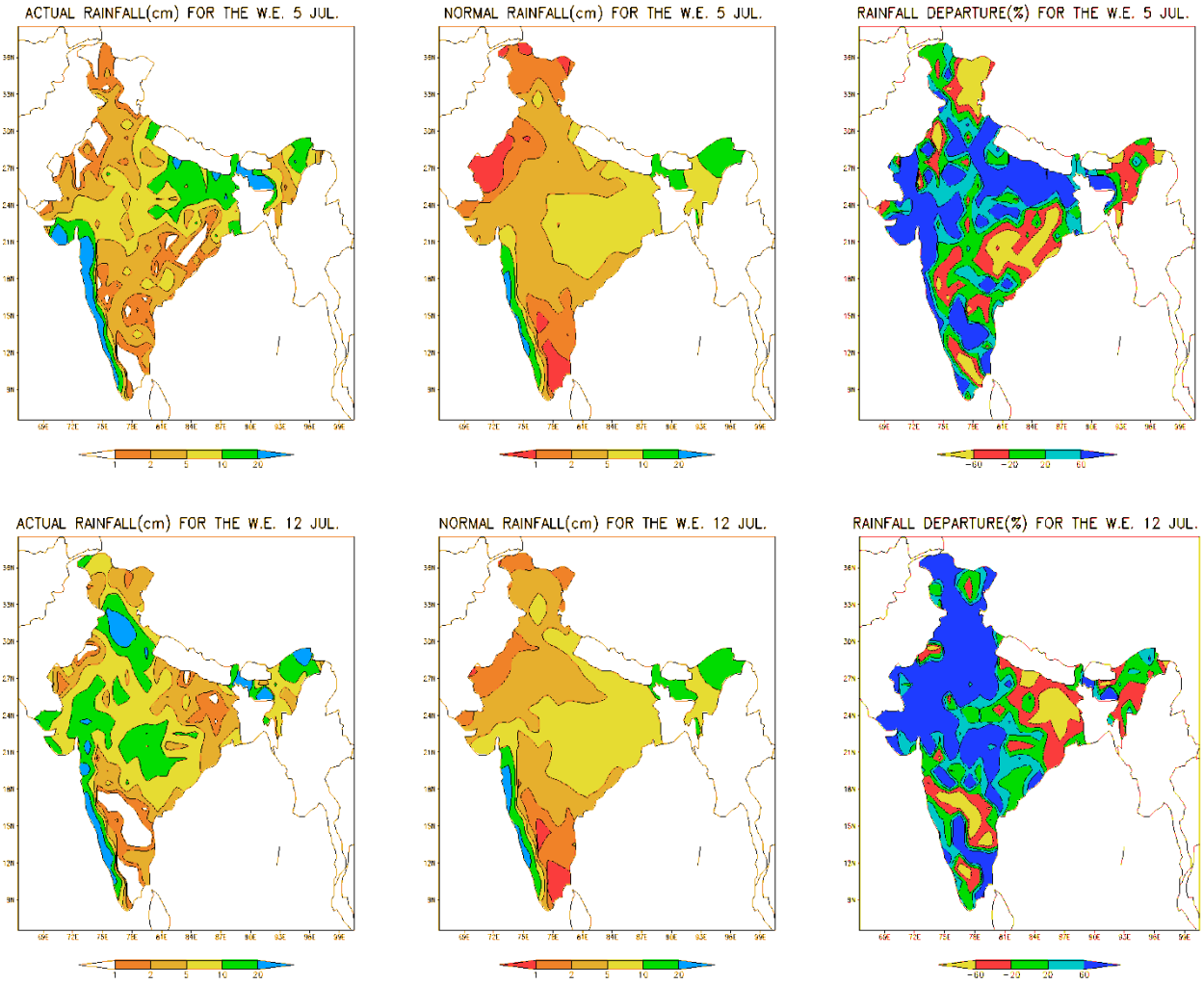
आकृती 3(ए): मासिक वर्षा (मिमी)

FIG. 3(a): MONTHLY RAINFALL (mm)



आकृती ३(बी): मासिक वर्षा विसंगति (मिमी)

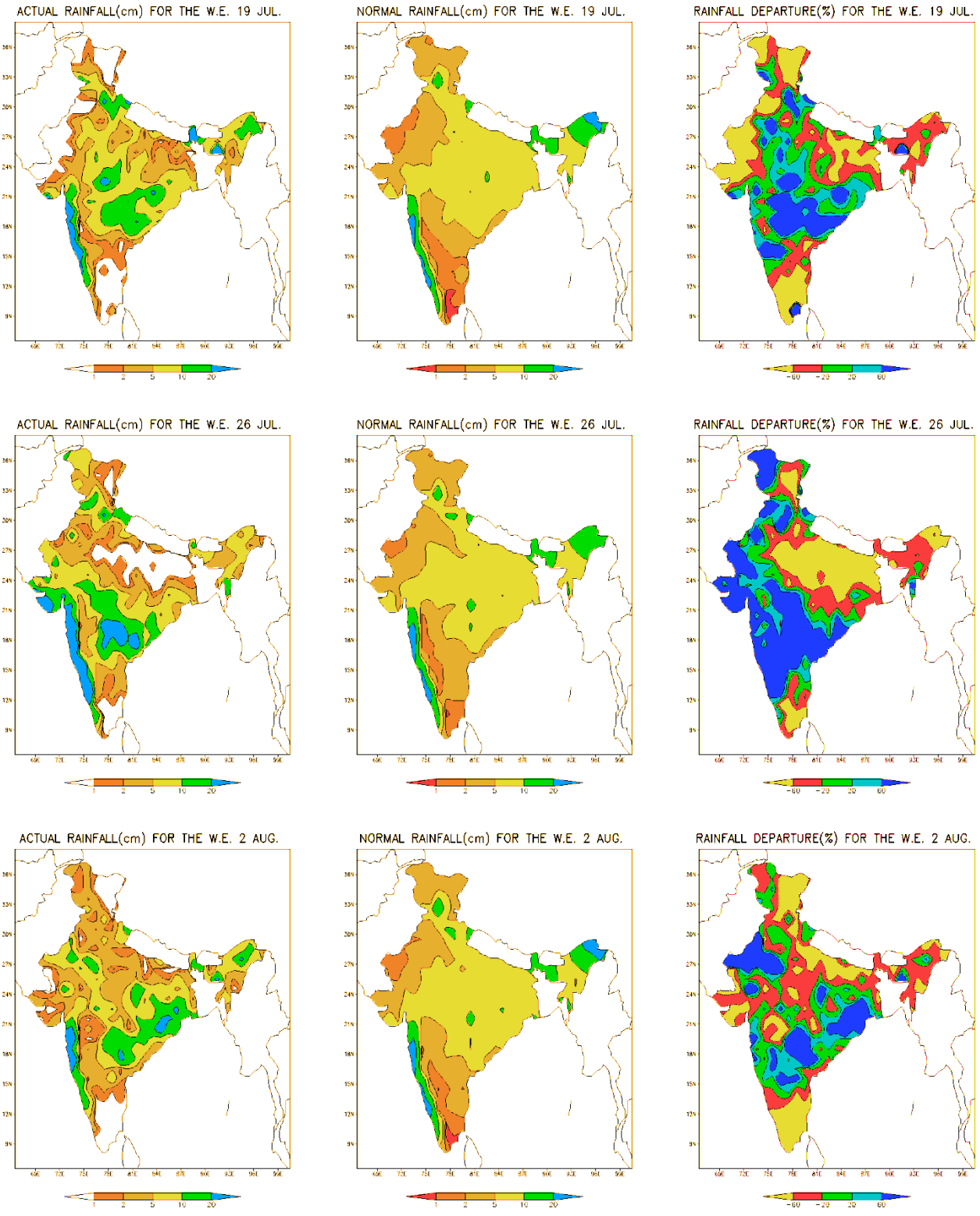
FIG. 3(b): MONTHLY RAINFALL ANOMALY (mm)



आकृती ४: जुलाई २०२३ के महीने के दौरान वर्षा के वास्तविक (बाएं), लंबी अवधि के औसत (मध्य) और प्रतिशत विचलन (दाएं) सप्ताह के अनुसार (एलपीए १९७१-२०२० की अवधि के आंकड़ों पर आधारित है)

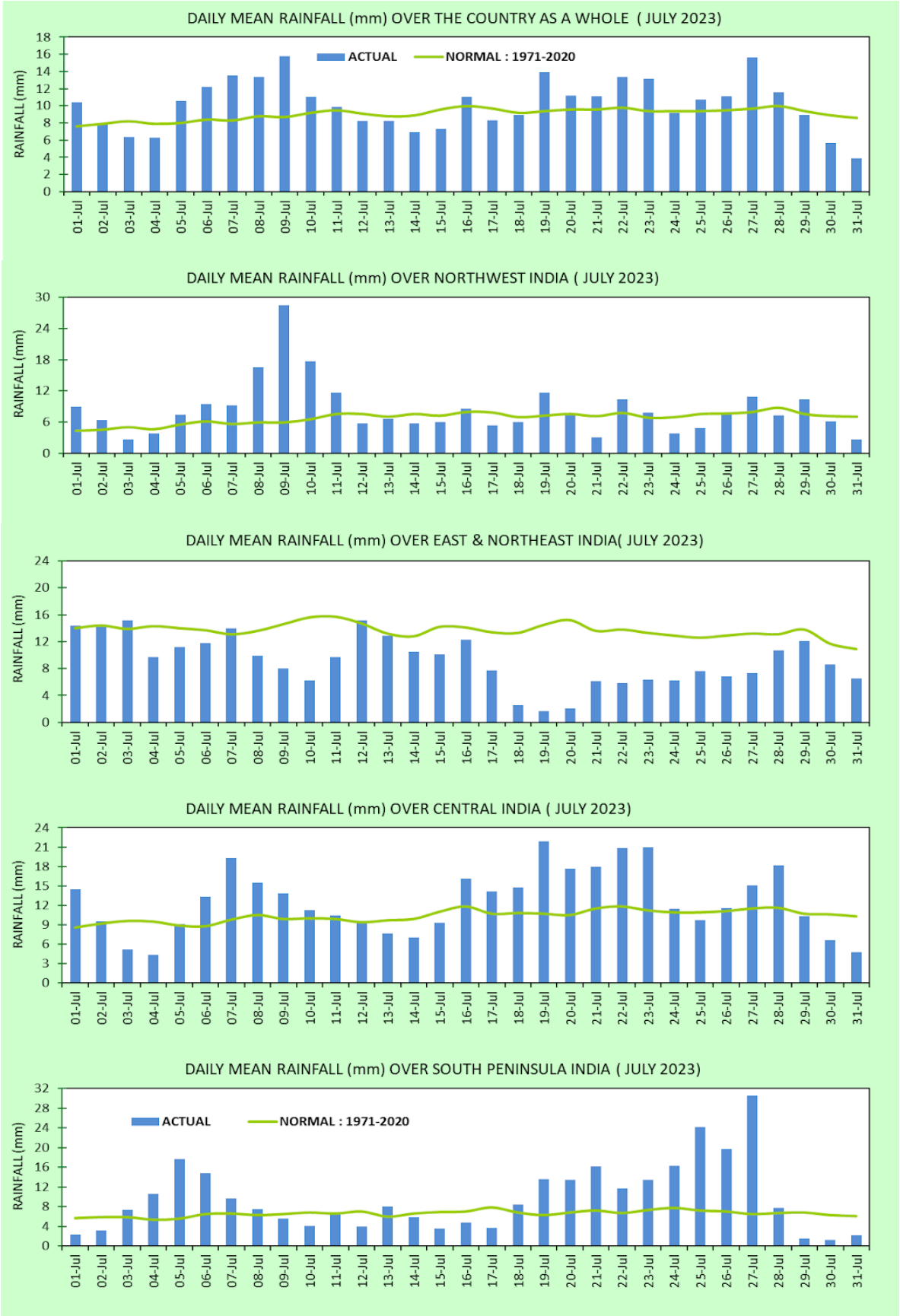
FIG. 4: WEEK WISE ACTUAL (LEFT), LONG PERIOD AVERAGE (CENTRE) AND PERCENTAGE DEPARTURE (RIGHT) OF RAINFALL DURING THE MONTH OF JULY 2023 (LPA IS BASED ON THE DATA FOR THE PERIOD 1971-2020)

FIG. 4: Contd...



आकृती ४ : जुलाई २०२३ के महीने के दौरान वर्षा के वास्तविक (बाएं), लंबी अवधि के औसत (मध्य) और प्रतिशत विचलन (दाएं) सप्ताह के अनुसार (एलपीए १९७१-२०२० की अवधि के आंकड़ों पर आधारित है)

FIG. 4: WEEK WISE ACTUAL (LEFT) LONG PERIOD AVERAGE (CENTRE) AND PERCENTAGE DEPARTURE (RIGHT) OF RAINFALLDURING THE MONTH OF JULY 2023 (LPA IS BASED ON THE DATA FOR THE PERIOD 1971-2020)

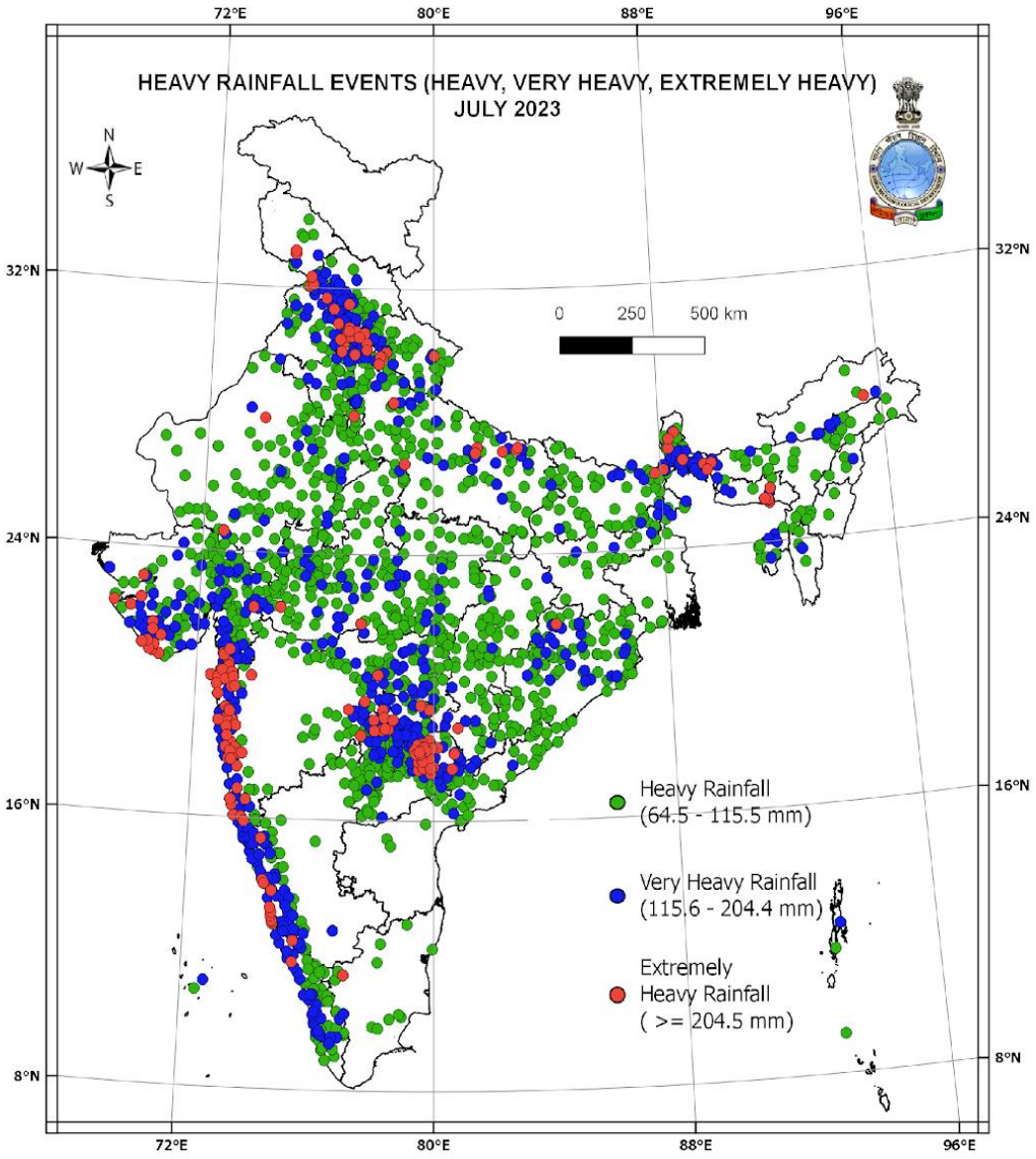


आकृती ५: जुलाई २०२३ के दौरान अखिल भारतीय और चार सजातीय क्षेत्रों में वर्षा की दैनिक भिन्नता

FIG. 5: DAILY VARIATION OF RAINFALL OVER ALL INDIA AND FOUR HOMOGENEOUS REGIONS DURING JULY 2023

आकृती ६: १९५१-२०२३ की अवधि के दौरान जुलाई माह के लिए पुरे भारत और चार समरूप क्षेत्रों में क्षेत्र भारित वर्षा की समय श्रृंखला

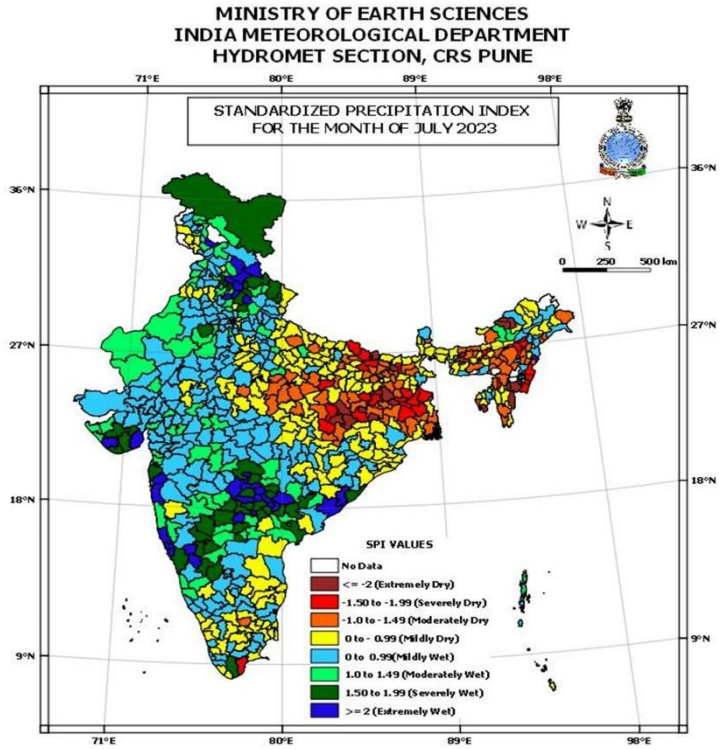
FIG. 6: TIME SERIES OF AREA WEIGHTED RAINFALL OVER ALL INDIA AND FOUR HOMOGENEOUS REGIONS FOR JULY (1951 - 2023)



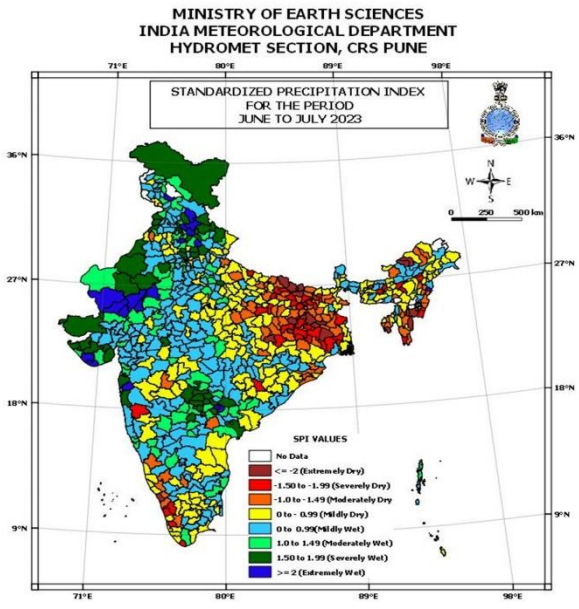
आकृती ७: जुलाई २०२३ के दौरान भारी और बहुत भारी, अत्यधिक भारी वर्षा प्राप्त करने वाले स्टेशन

FIG. 7: STATIONS WHICH RECEIVED HEAVY, VERY HEAVY, AND EXTREMELY RAINFALL DURINGTHE MONTH OF JULY 2023

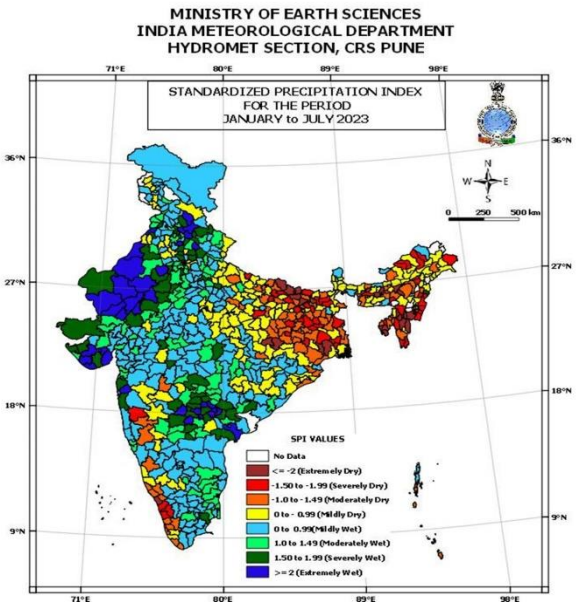
(a) JULY - 2023



(b) JUNE – JULY 2023



(c) JANUARY – JULY 2023

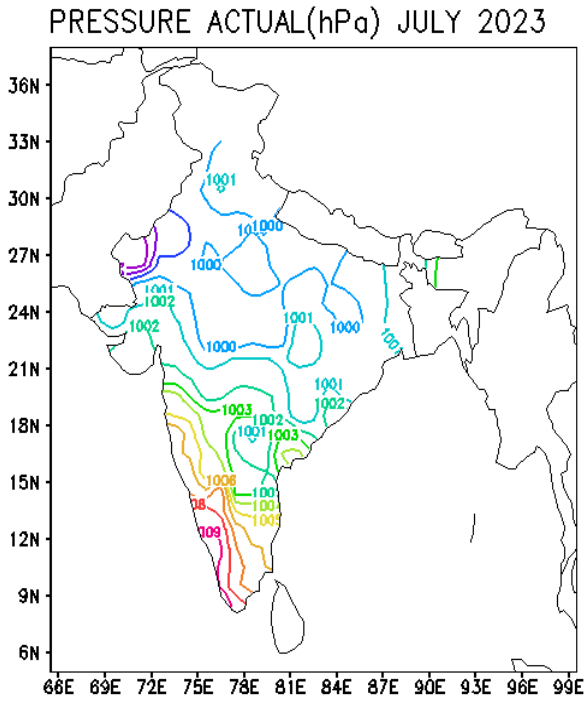


आकृती ८: मानकीकृत वर्षण सूचकांक (एसपीआई)

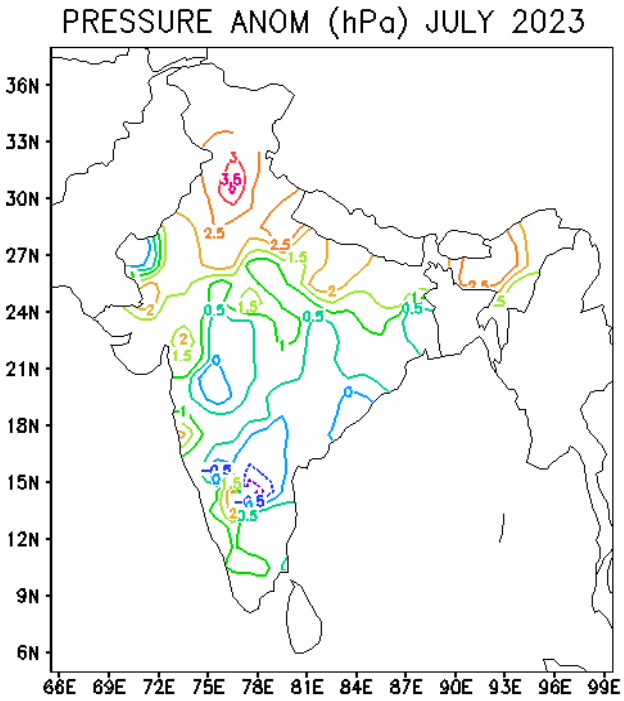
(ए) जुलाई (एक महीना) (बी) जून से जुलाई (दो महीने) (सी) जनवरी से जुलाई (सात महीने)

FIG. 8*:* STANDARDIZED PRECIPITATION INDEX (SPI) FOR
(a) ONE MONTH (b) TWO MONTHS (c) SEVEN MONTHS

(a) MEAN SEA LEVEL PRESSURE (MSLP)



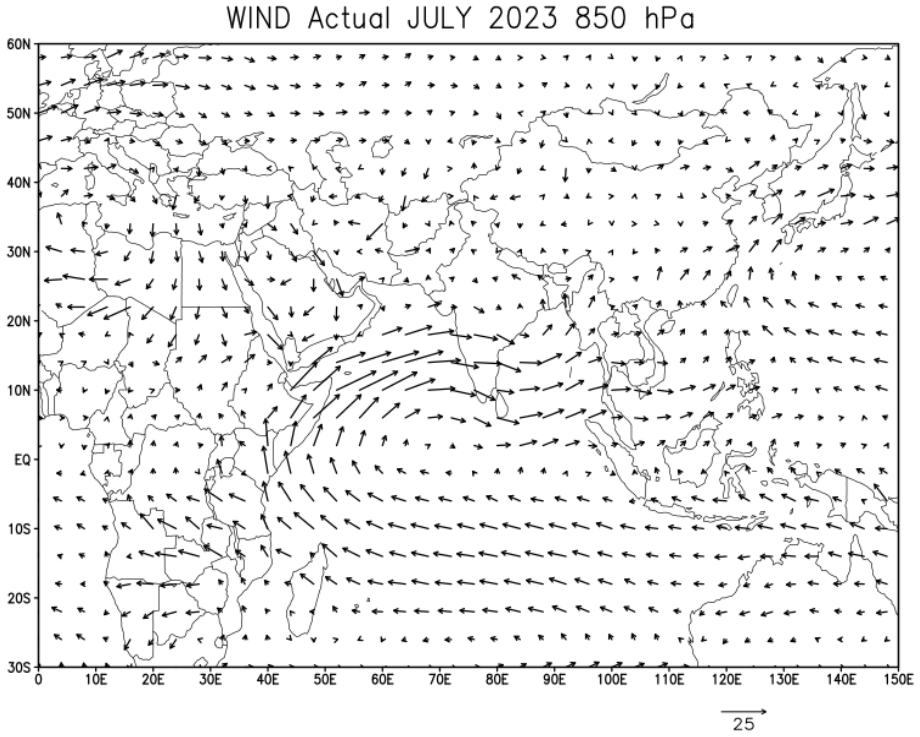
(b) MSLP Anomaly



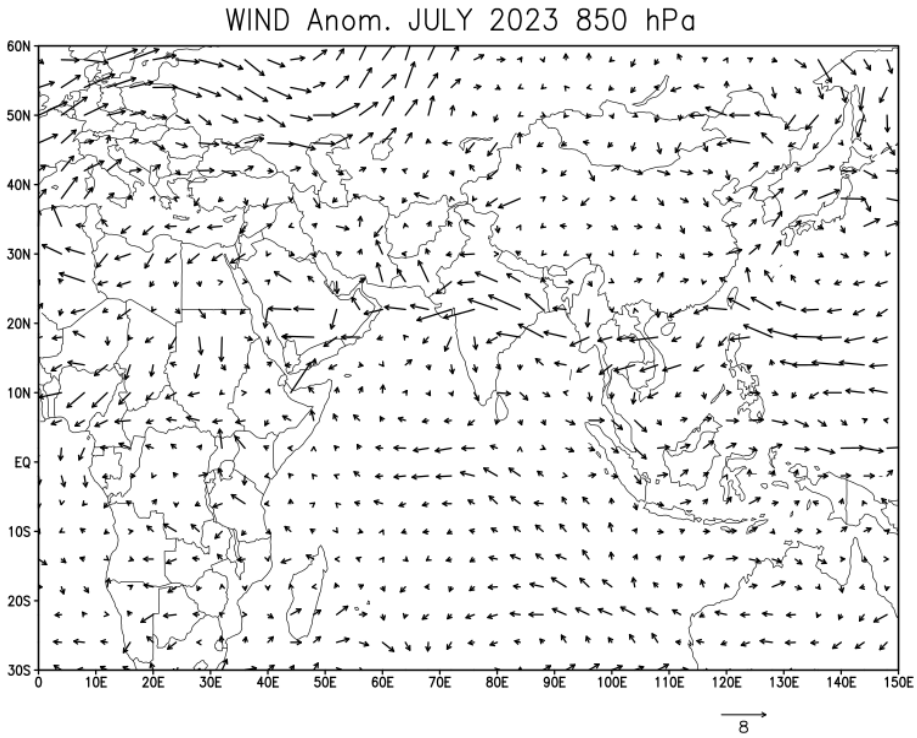
आकृती ९: जुलाई २०२३ के लिए मासिक औसत समुद्र स्तर दबाव (एचपीए)
(ए) माध्य (बी) विसंगति (१९८१-२०१० सामान्य पर आधारित)

FIG. 9: MONTHLY MEAN SEA LEVEL PRESSURE (hPa) FOR JULY 2023
(a) MEAN (b) ANOMALY
(BASED ON 1981 - 2010 NORMALS)

(a) MEAN WIND: 850 hPa



(b) WIND ANOMALY: 850 hPa



आकृती १०: जुलाई २०२३ के लिए मासिक पवन (मि /से)

(ए) माध्य (बी) विसंगति ८५० एचपीए स्तरपर

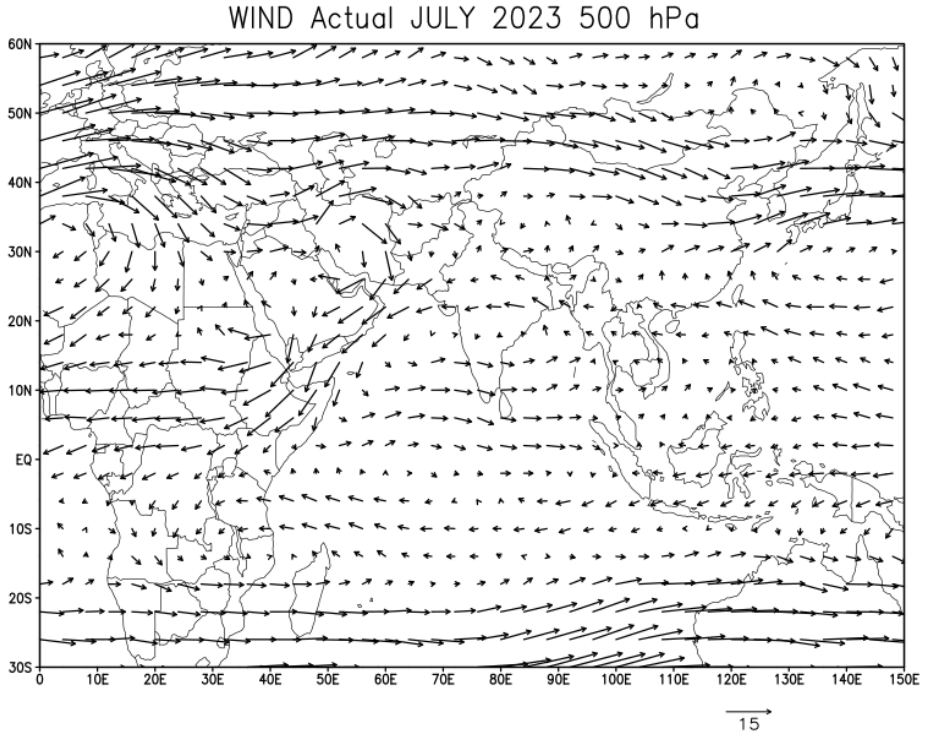
FIG. 10: MONTHLY WIND (m/s) FOR JULY 2023

(a) MEAN (b) ANOMALY AT 850 hPa

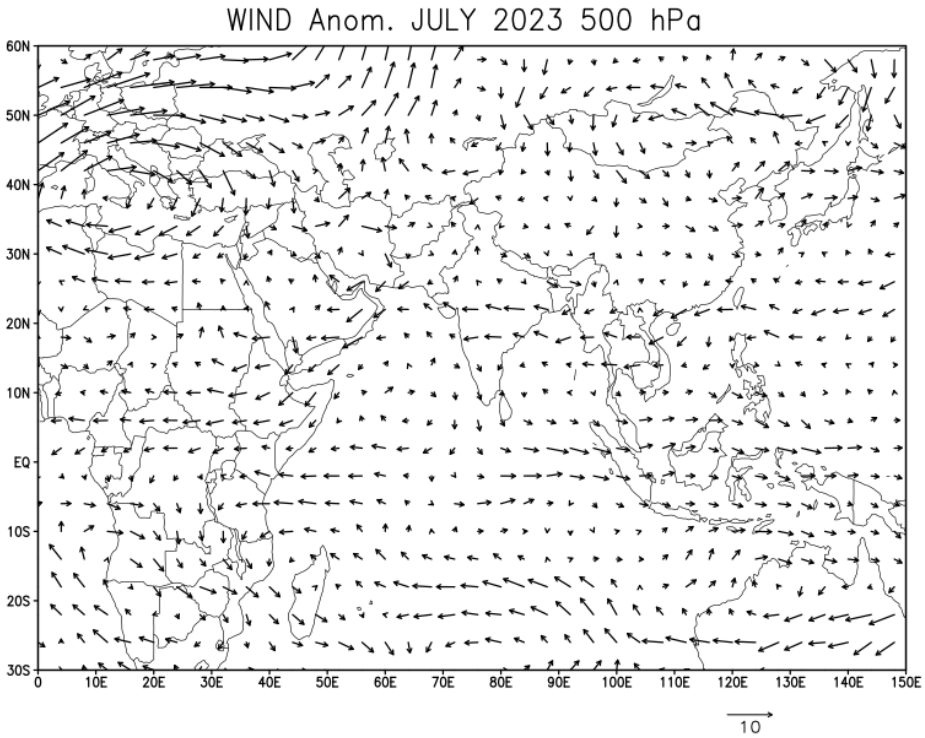
(OPERATIONAL NWP ANALYSIS OF IMD GFS T-574)

(ANOMALY IS BASED ON 2000-2018 Climatology, Source: NCMRWF)

(a) MEAN WIND: 500 hPa



(b) WIND ANOMALY: 500 hPa



आकृती ११: जुलाई २०२३ के लिए मासिक पवन (मि /से)

(ए) माध्य (बी) विसंगति ५०० एचपीए स्तरपर

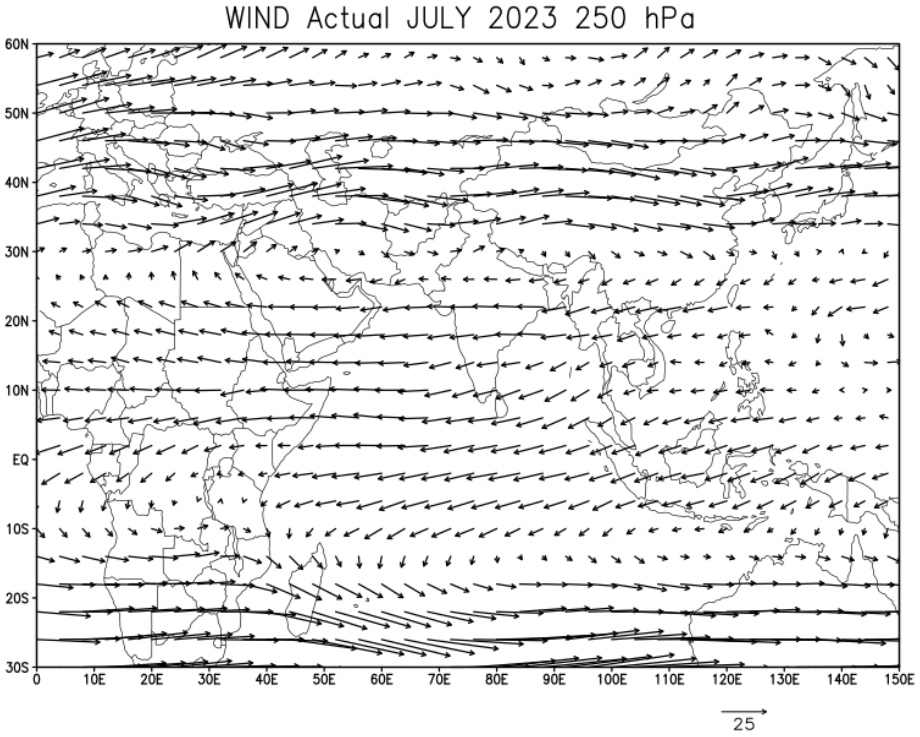
FIG. 11: MONTHLY WIND (m/s) FOR JULY 2023

(a) MEAN (b) ANOMALY AT 500 hPa

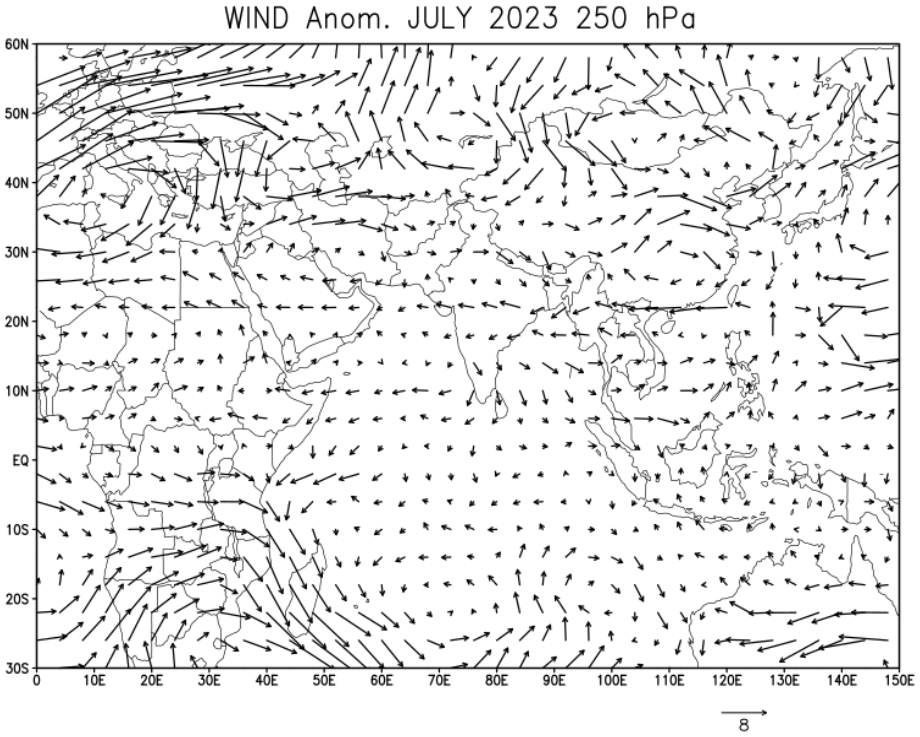
(OPERATIONAL NWP ANALYSIS OF IMD GFS T-574)

(ANOMALY IS BASED ON 2000-2018 Climatology, Source: NCMRWF)

(a) MEAN WIND: 250 hPa



(b) WIND ANOMALY: 250 hPa



आकृती १२ : जुलाई २०२३ के लिए मासिक पवन (मि /से)

(ए) माध्य (बी) विसंगति २५० एचपीए स्तरपर

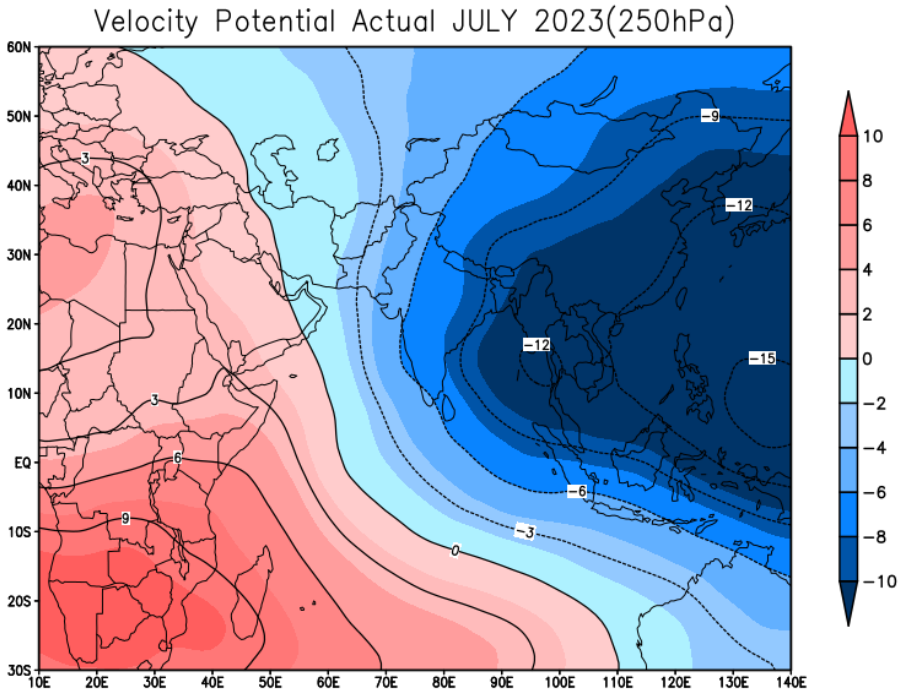
FIG. 12: MONTHLY WIND (m/s) FOR JULY 2023

(a) MEAN (b) ANOMALY AT 250 hPa

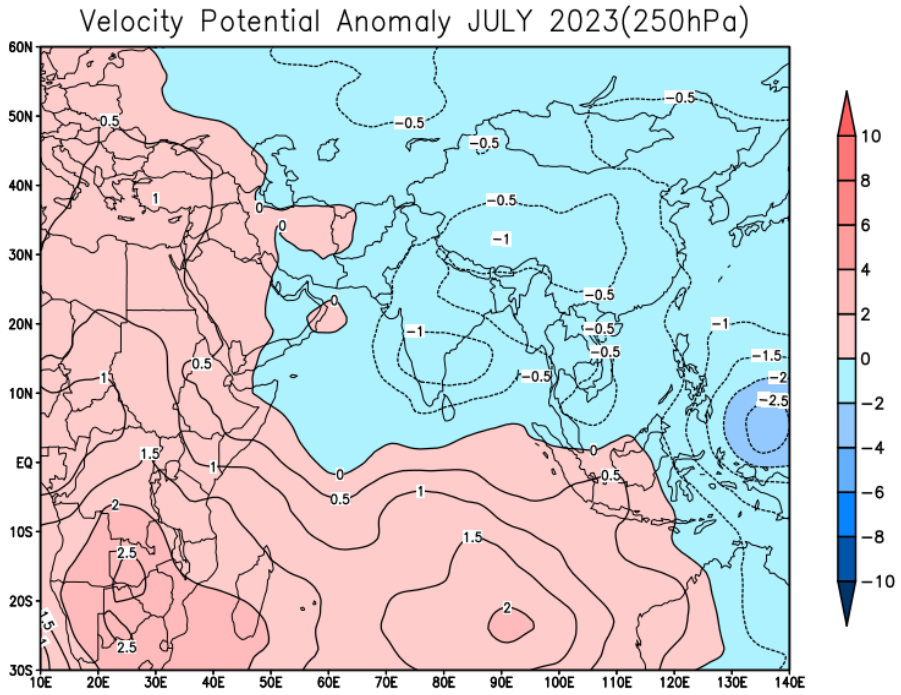
(OPERATIONAL NWP ANALYSIS OF IMD GFS T-574)

(ANOMALY IS BASED ON 2000-2018 Climatology, Source: NCMRWF)

(a) VELOCITY POTENTIAL: 250 hPa



(b) VELOCITY POTENTIAL ANOMALY: 250 hPa



आकृती १३: जुलाई २०२३ के लिए वेग विभव (10 ^{6}मीटर^{2}/सेकेंड)

(ए) माध्य (बी) विसंगति २५० एचपीए स्तरपर

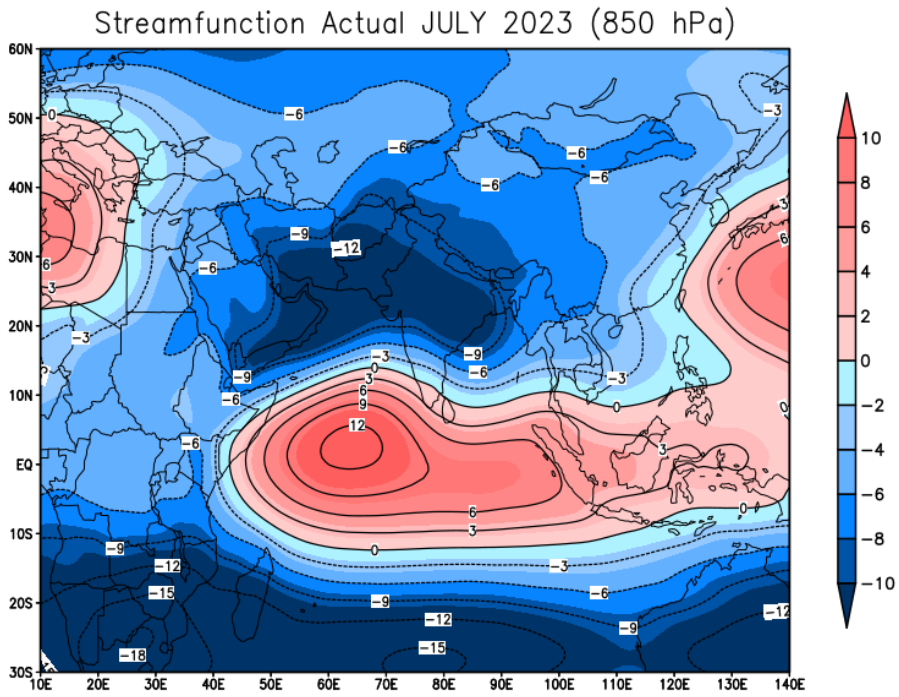
FIG. 13: VELOCITY POTENTIAL (10^{6}m^{2}/s) FOR JULY 2023

(a) MEAN (b) ANOMALY AT 250 hPa

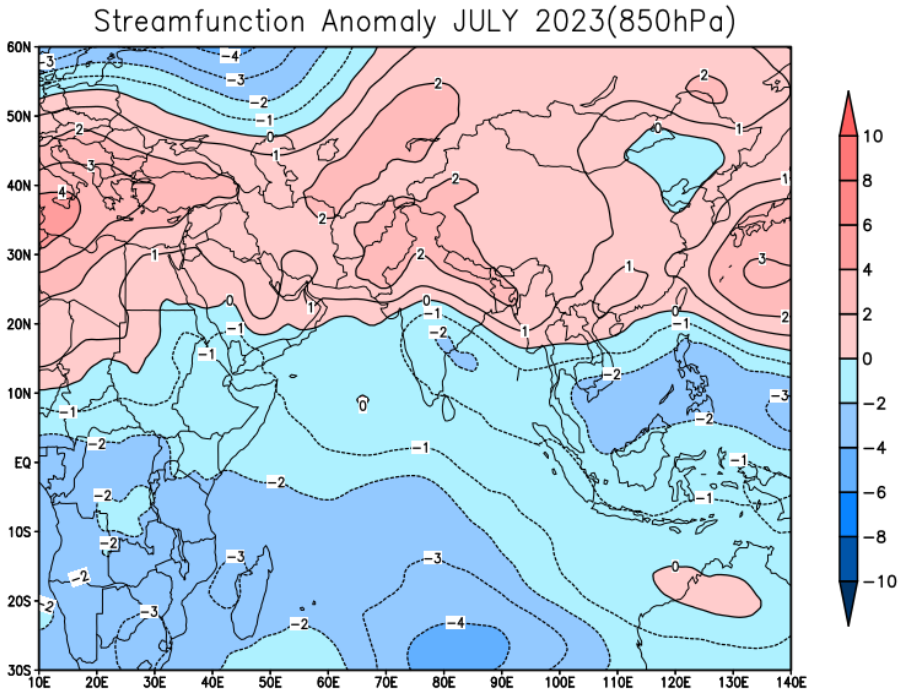
(OPERATIONAL NWP ANALYSIS OF IMD GFS T-574)

(ANOMALY IS BASED ON 2000-2018Climatology, Source: NCMRWF)

(a) STREAM FUNCTION: 850 hPa



(b) STREAM FUNCTION ANOMALY: 850 hPa



आकृती १४: जुलाई २०२३ के लिए धारा कृत्य (10 ^{6}मीटर^{2}/सेकेंड)

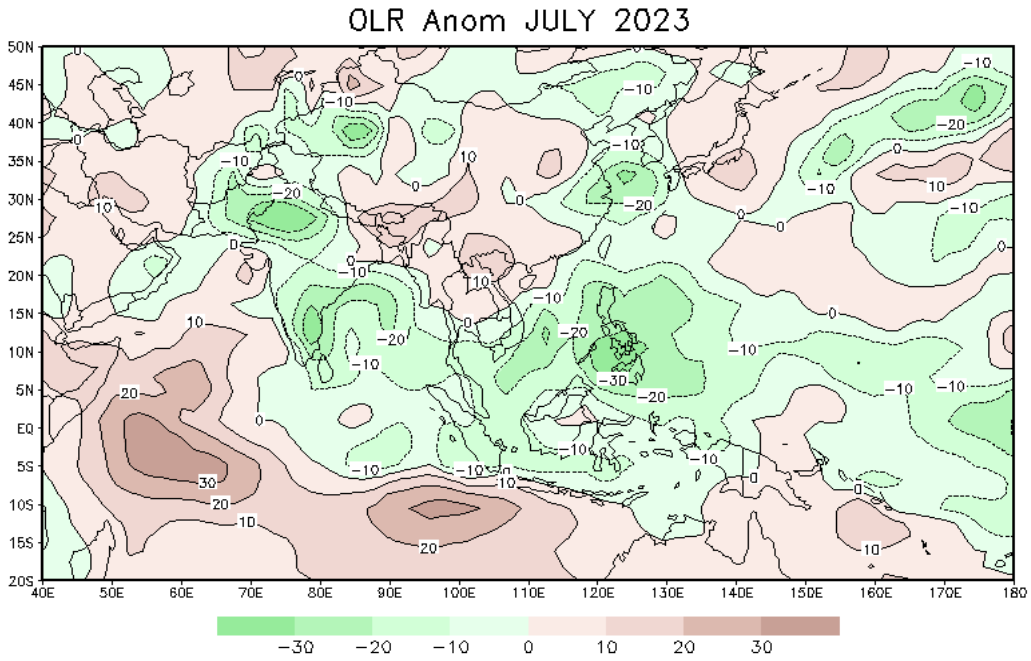
(ए) माध्य (बी) विसंगति ८५० एचपीए स्तरपर

FIG. 14: STREAM FUNCTION (10^{6}m^{2}/s) FOR JULY 2023

(a) MEAN (b) ANOMALY AT 850 hPa

(OPERATIONAL NWP ANALYSIS OF IMD GFS T-574)

(ANOMALY IS BASED ON 2000-2018Climatology, Source: NCMRWF)



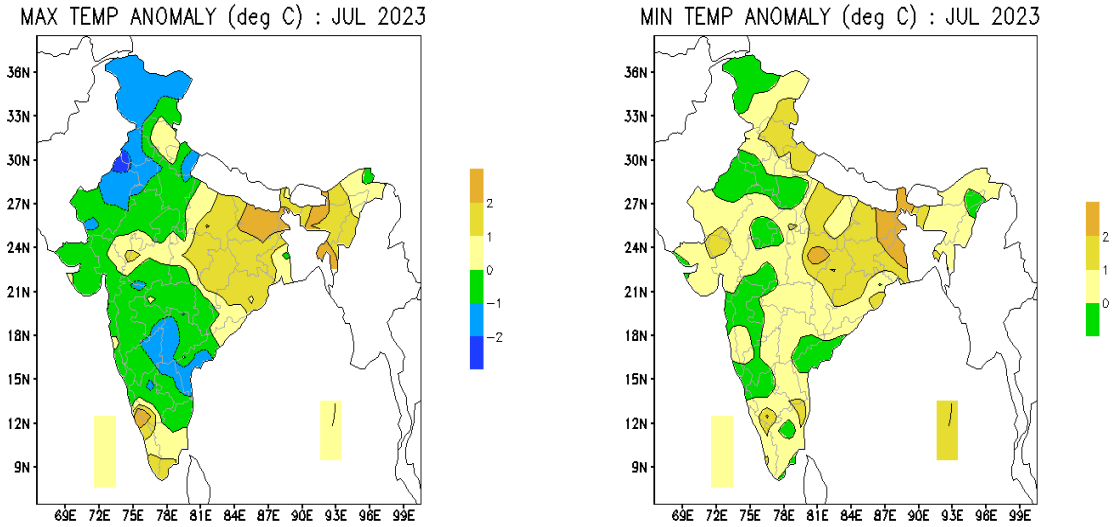
आकृती १५: जुलाई २०२३ के लिए ओ एल आर विसंगति (वॅट / मी ^{2})

FIG. 15: OLR ANOMALY (W/m2) FOR JULY 2023

(DATA SOURCE: CDC / NOAA, USA)

(BASED ON 1991 - 2020 CLIMATOLOGY)

(a) MAXIMUM TEMPERATURE ANOMALY **(b) MINIMUM TEMPERATURE ANOMALY**



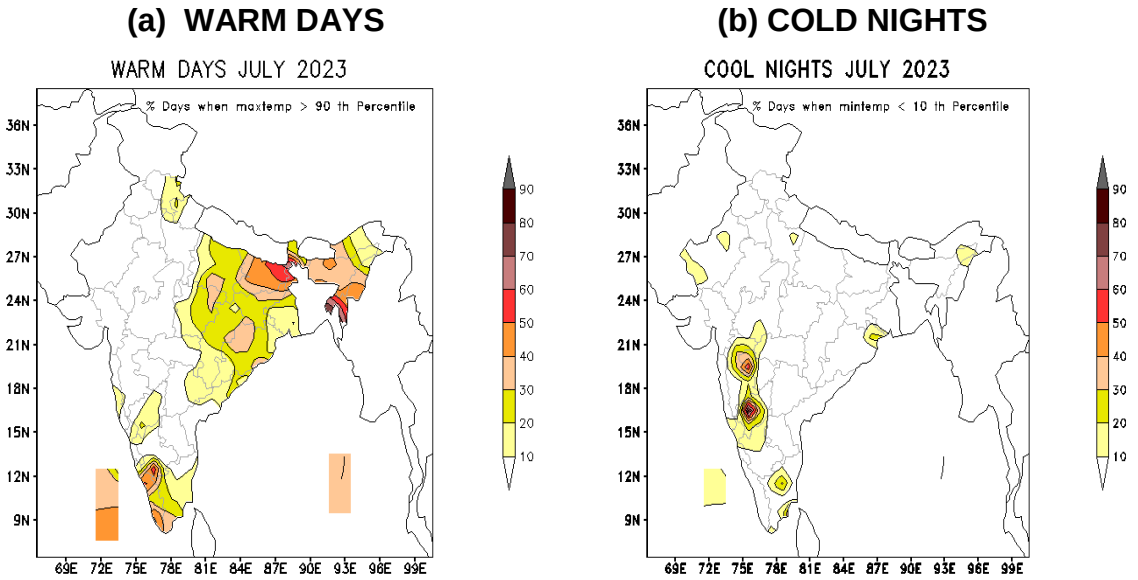
आकृती १६: जुलाई २०२३ के लिए औसत मासिक तापमान विसंगतियां (डिग्री सेल्सियस)

(ए) अधिकतम (बी) न्यूनतम

FIG. 16: MEAN MONTHLY TEMPERATURE ANOMALIES (°C) FOR JULY 2023

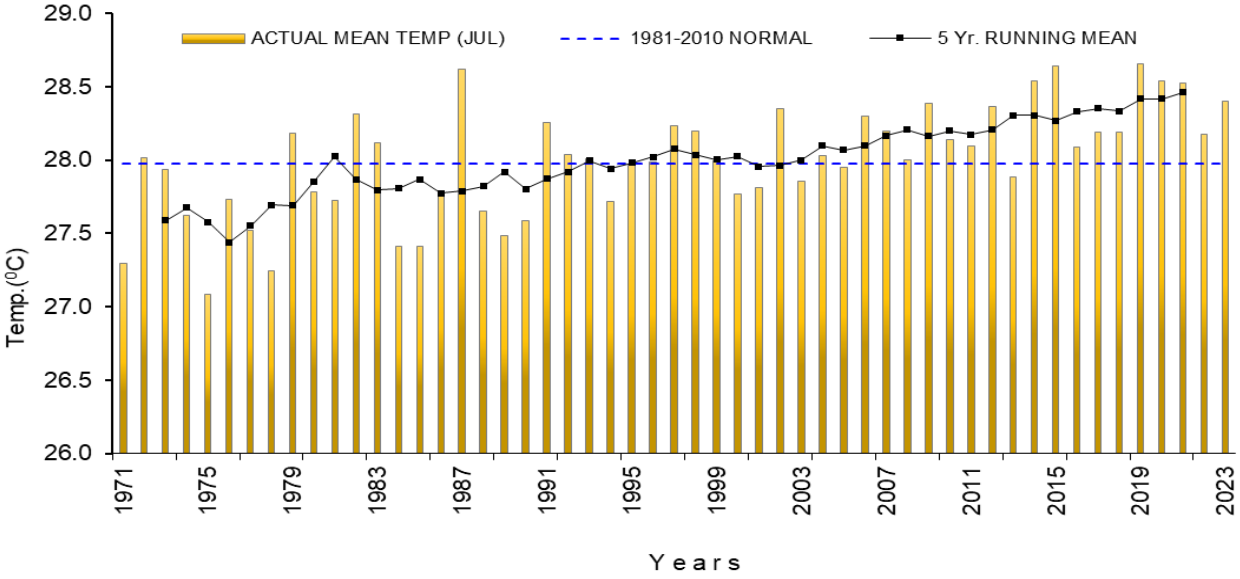
(a) MAXIMUM (b) MINIMUM

(BASED ON 1981-2010 NORMALS)



आकृती १७: (a) उन दिनों का प्रतिशत जब अधिकतम तापमान > 90 वें प्रतिशत
(b) उन दिनों का प्रतिशत जब न्यूनतम तापमान < 10 वें प्रतिशत

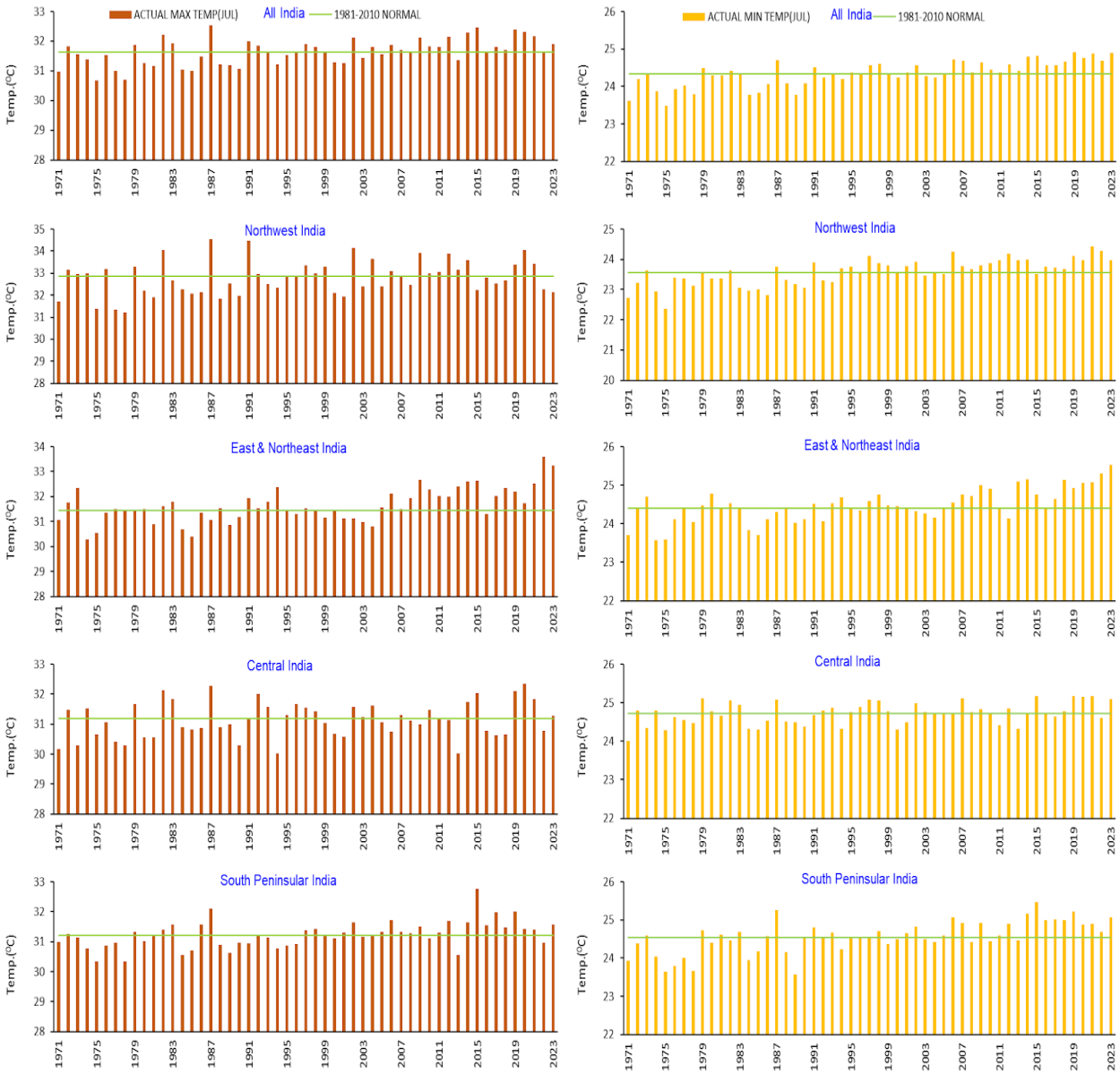
FIG. 17: (a)PERCENTAGE OF DAYS WHEN MAXIMUM TEMPERATURE > 90TH PERCENTILE
(b)PERCENTAGE OF DAYS WHEN MINIMUM TEMPERATURE <10TH PERCENTILE



आकृती १८: जुलाई १९७१-२०२३ की अवधि के दौरान भारत में औसत तापमान की समय श्रृंखला और महीने के लिए पांच साल चलने वाला औसत तापमान

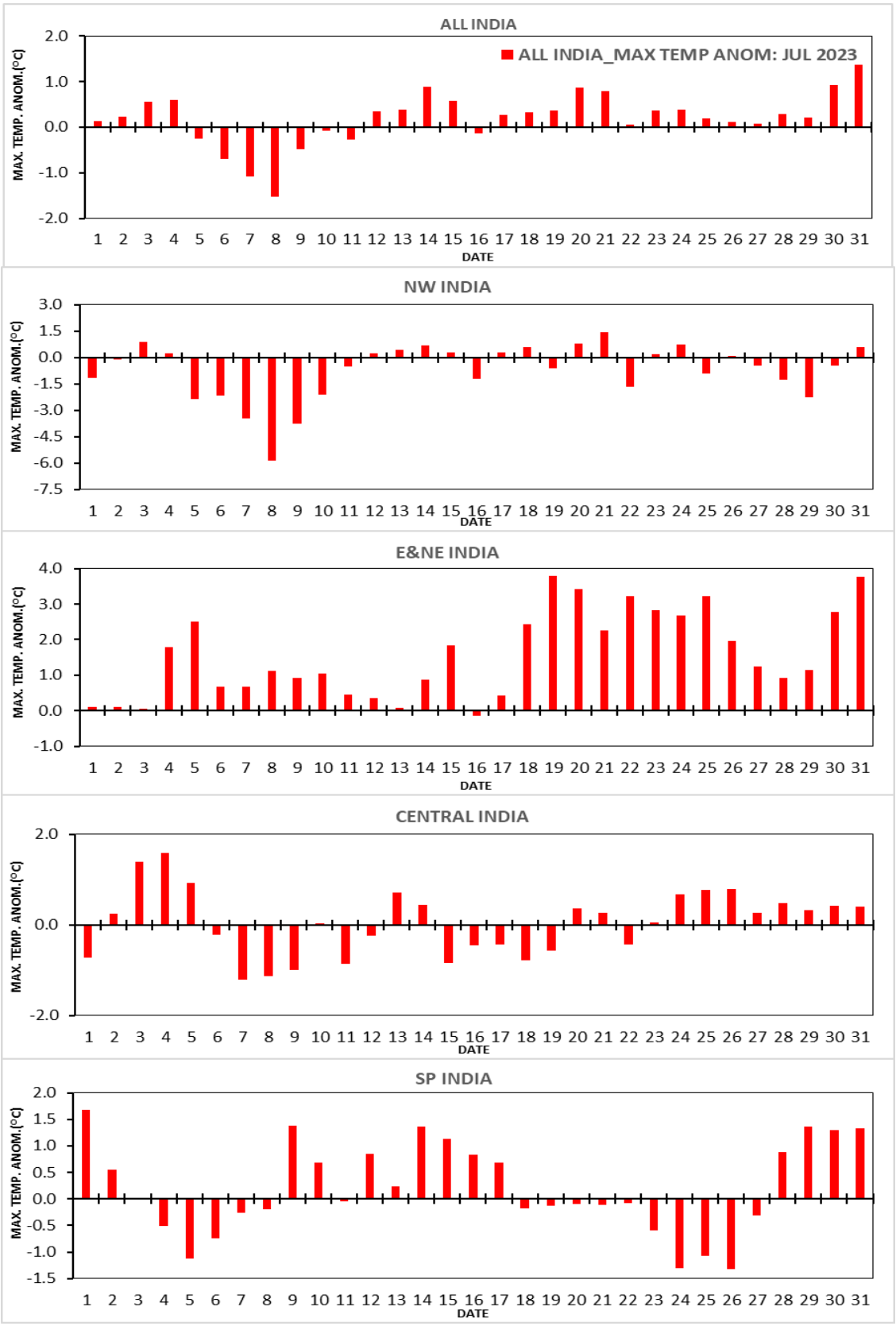
FIG. 18: TIME SERIES OF MEAN TEMPERATURE AVERAGED OVER INDIA (VERTICAL BARS AND FIVE-YEAR RUNNING MEAN (CONTINOUS LINE) FOR THE MONTH OF JULY DURING THE PERIOD 1971-2023.

(a) MAXIMUM **(b) MINIMUM**



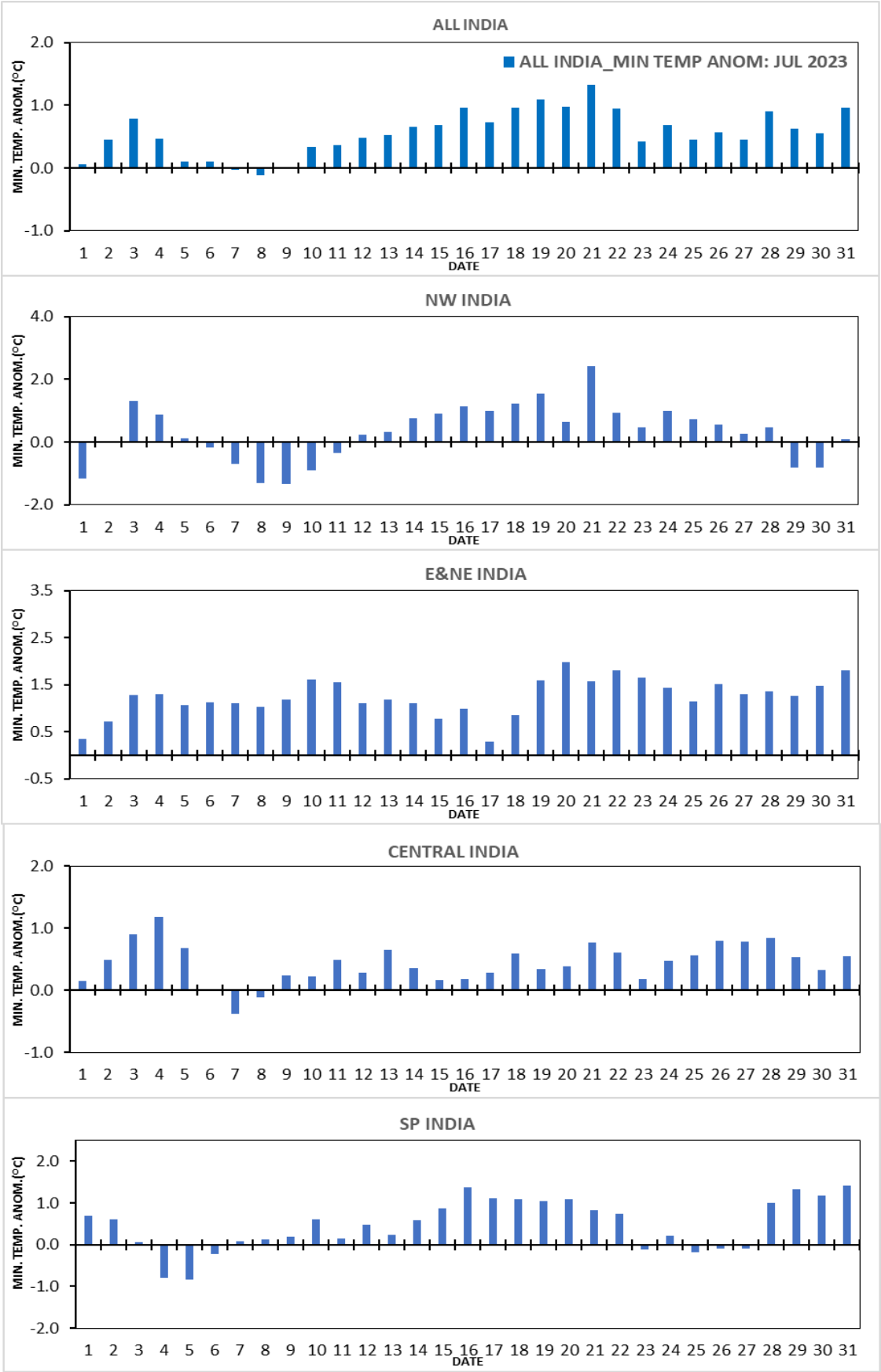
आकृती १९: जुलाई महीने के लिए १९७१-२०२३ अवधि के दौरान (ए) अधिकतम (बी) न्यूनतम तापमान की समय श्रृंखला पूरे देश और चार सजातीय क्षेत्र के लिए

FIG. 19: TIME SERIES OF TEMPERATURE FOR THE COUNTRY AS A WHOLE AND THE FOUR HOMOGENEOUS REGIONS FOR THE MONTH OF JULY DURING THE PERIOD 1971 - 2023 (a) MAXIMUM (b) MINIMUM



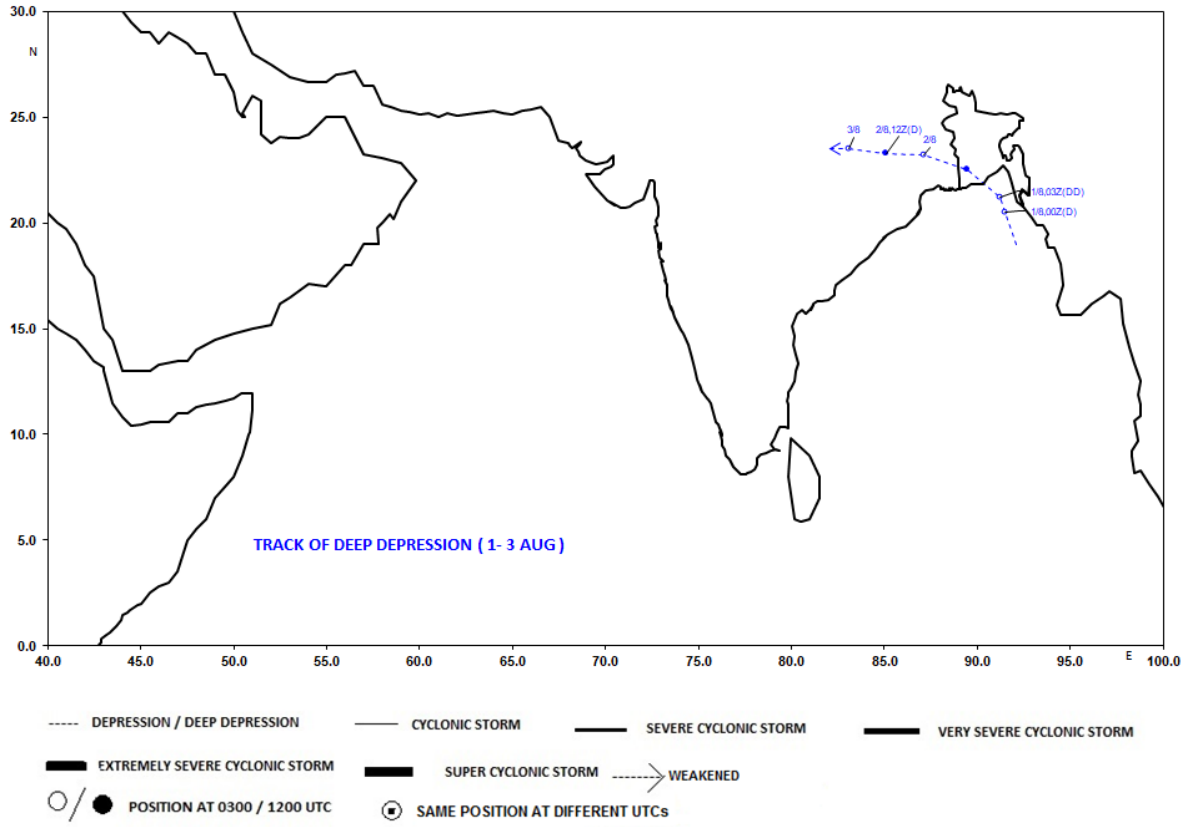
आकृती २०(ए): जुलाई २०२३ के दौरान सभी भारत और चार सजातीय क्षेत्रों में अधिकतम तापमान विसंगतियाँ की दैनिक भिन्नता

FIG. 20(a): DAILY VARIATION OF MAXIMUM TEMPERATURE ANOMALY OVER ALL INDIA AND FOUR HOMOGENEOUS REGIONS DURING JULY 2023



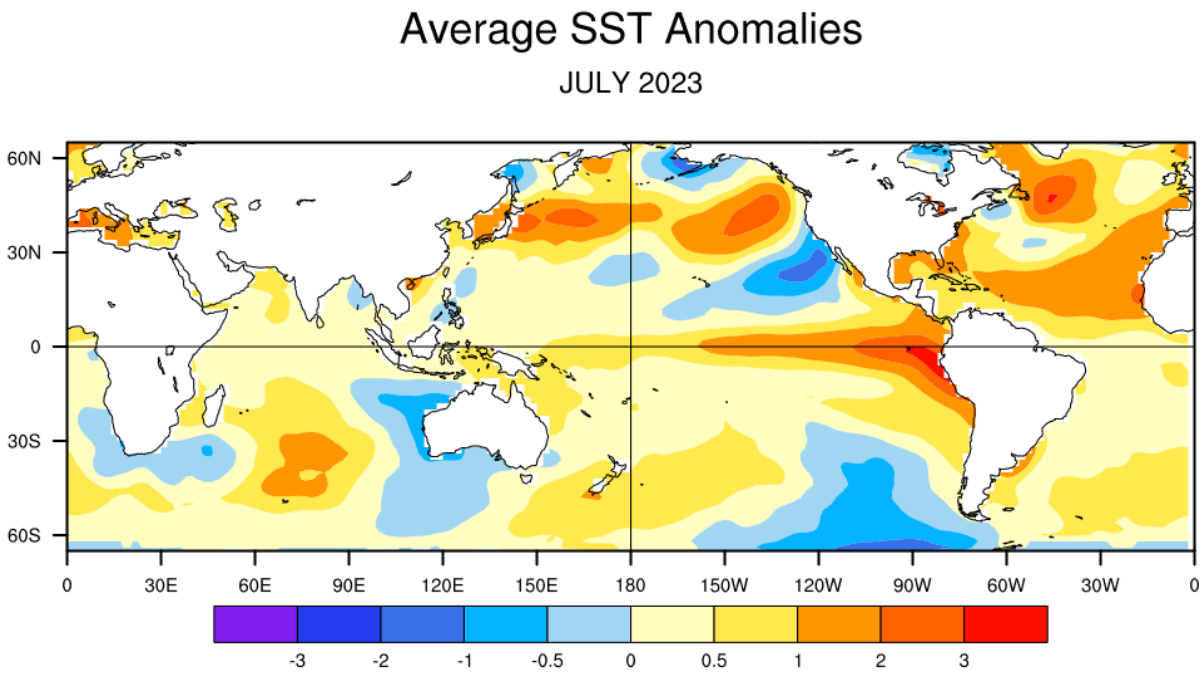
आकृती २०(बी): जुलाई २०२३ के दौरान सभी भारत और चार सजातीय क्षेत्रों में न्यूनतम तापमान विसंगतियाँ की दैनिक भिन्नता

FIG. 20(b): DAILY VARIATION OF MINIMUM TEMPERATURE ANOMALY OVER ALL INDIA AND FOUR HOMOGENEOUS REGIONS DURING JULY 2023



आकृती २१: जुलाई २०२३ के दौरान गठित तीव्र निम्न दबाव प्रणाली का ट्रैक

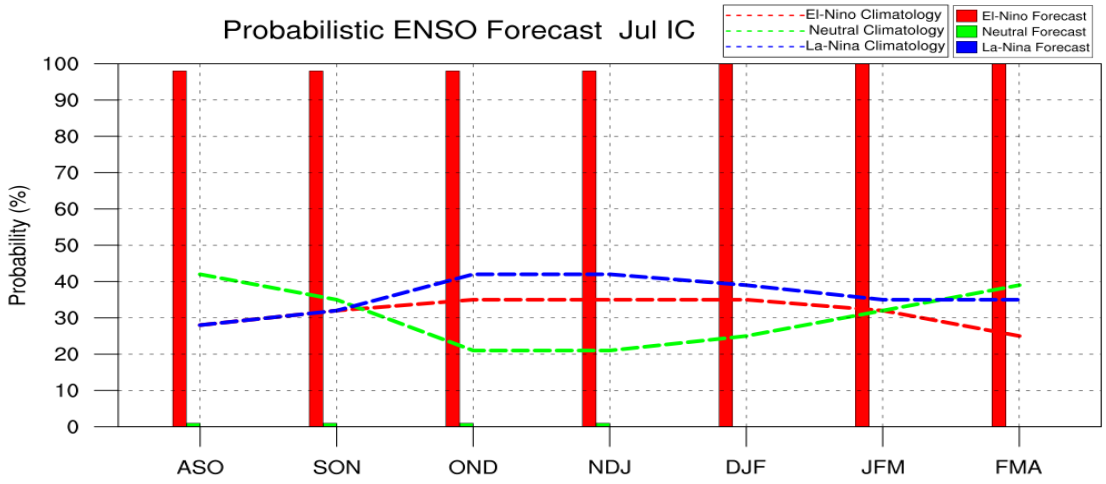
FIG. 21: TRACK OF INTENSE LOW PRESSURE SYSTEMS FORMED DURING JULY 2023



आकृती २२: समुद्री सतह तापमान विसंगति (°C)

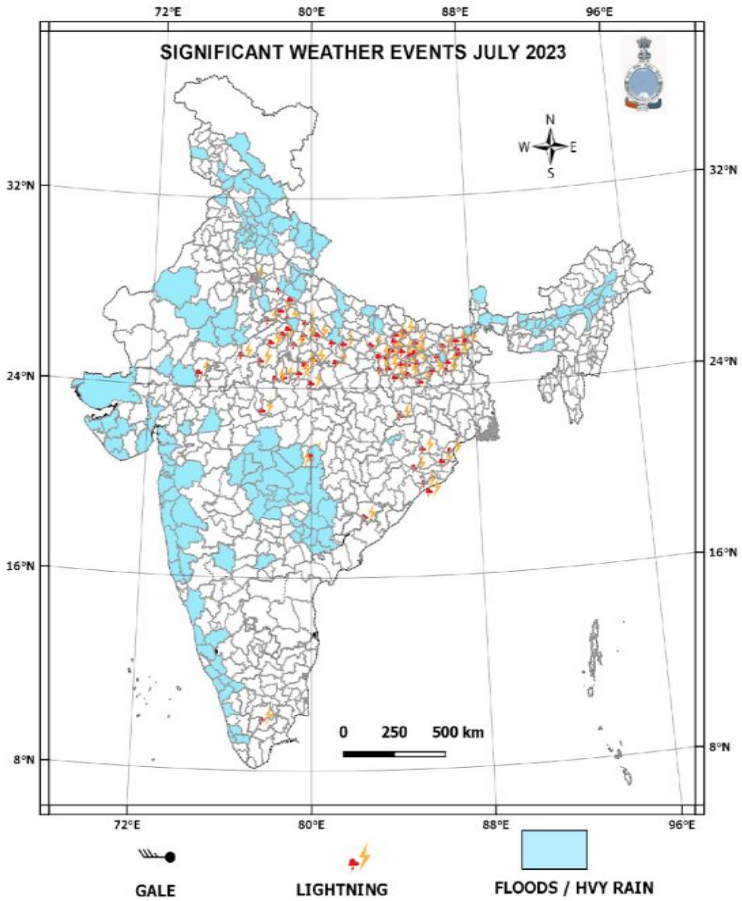
FIG. 22: SEA SURFACE TEMPERATURE ANOMALY (°C) IN JULY 2023

(Data Source - ERSST V5, NoAA)



आकृती २३: नीनो 3.4 सूचकांक की जलवायु संबंधी संभावनाओं के साथ संभाव्यता पूर्वानुमान

FIG. 23: Probability forecast along with climatological probabilities of Niño 3.4 Index from high resolution Monsoon Mission Coupled Forecast System (MMCFS).
Data source for Climatology probabilities: NOAA Extended Reconstructed SST V5.
Criteria used for Probabilistic ENSO Forecast:
I.e.-0.5 La Nina, in between +0.5 & -0.5 neutral, g.e.0.5 El Nino.



आकृती २४: जुलाई २०२३ के दौरान महत्वपूर्ण मौसम की घटनाएं
(वास्तविक समय मीडिया रिपोर्ट के आधार पर)

Fig. 24: SIGNIFICANT WEATHER EVENTS DURING JULY 2023
(BASED ON REAL TIME MEDIA REPORT)

तालिका - १ / TABLE - 1

जुलाई २०२३ के महीने के लिए उपमंडल वार वर्षा के आकडे

METEOROLOGICAL SUBDIVISION WISE RAINFALL STATISTICS FOR THE MONTH OF JULY 2023 BASED ON OPERATIONAL DATA

MET. SUBDIVISION		ACTUAL (mm)	NORMAL (mm)	% DEP
1	A & N ISLAND	492.5	387.1	27
2	ARUNACHAL PRADESH	484.1	529.2	-9
3	ASSAM & MEGHALAYA	345.8	552.3	-37
4	N M M T	233.6	354.2	-34
5	SHWB & SIKKIM	564.6	586.3	-4
6	GANGETIC WEST BENGAL	180.1	344.8	-48
7	ODISHA	319.7	341.4	-6
8	JHARKHAND	168.2	318.7	-47
9	BIHAR	178.2	340.5	-48
10	EAST U.P.	189.3	276.9	-31.6
11	WEST U.P.	266.8	240.3	11
12	UTTARAKHAND	552.7	417.8	32
13	HAR. CHD & DELHI	238.1	150.5	58
14	PUNJAB	231.7	161.4	44
15	HIMACHAL PRADESH	437.5	255.9	71
16	JAMMU & KASHMIR & LADAKH	259.6	192.6	35
17	WEST RAJASTHAN	191.5	107.8	78
18	EAST RAJASTHAN	274.8	228.6	20
19	WEST MADHYA PRADESH	353.3	297.7	19
20	EAST MADHYA PRADESH	257.5	342.7	-25
21	GUJARAT REGION	449.8	340.3	32
22	SAURASHTRA & KUTCH	407.5	196.3	108
23	KONKAN & GOA	1823.6	1053.5	73
24	MADHYA MAHARASHTRA	304.2	229.5	33
25	MARATHWADA	290.9	170.4	71
26	VIDARBHA	441.9	309.3	43
27	CHHATTISGARH	331.5	369.0	-10
28	COASTAL A. P.& YANAM	236.3	158.6	49
29	TELANGANA	481.3	218.5	120
30	RAYALASEEMA	87.8	92.1	-5
31	TAMIL., PUDU. & KARAIKAL	65.1	69.0	-6
32	COASTAL KARNATAKA	1609.1	1088.9	48
33	N. I. KARNATAKA	220.9	116.5	90
34	S. I. KARNATAKA	261.7	200.6	30
35	KERALA & MAHE	591.5	653.5	-9
36	LAKSHADWEEP	291.9	289.3	1

तालिका - २ / TABLE - 2

जुलाई २०२३ के दौरान २४ घंटो में हुई, बहुत भारी या अत्यधिक भारी वर्षा वाले स्टेशन
STATIONS WHICH RECEIVED VERY HEAVY (115.6 to 204.4 mm) OR EXTREMELY HEAVY (g.e.204.5 mm) RAINFALL IN 24 HOURS DURING JULY 2023

(Only the stations which received the highest rainfall in the subdivision on the given date are mentioned in the table)

DATE	STATION NAME	NAME OF SUBDIVISION	RAINFALL (mm)
1	CHERRAPUNJI	ASSAM & MEGHALAYA	220
	BAMONGOLA	SHWB & SIKKIM	156.6
	NARSINGHPUR	ORISSA	130
	FORBESGANJ	BIHAR	143.2
	CHANDERDEEPGHAT	EAST UTTAR PRADESH	253
	BANBASA	UTTARAKHAND	172
	KAPRADA	GUJARAT REGION	247
	VISAVADAR	SAURASHTRA & KUTCH	398
	MANDANGAD	KONKAN & GOA	190
	LONAVALA_AGRI	MADHYA MAHARASHTRA	150.4
2	MAWSYNRAM	ASSAM & MEGHALAYA	303.8
	CHEPAN	SHWB & SIKKIM	240.4
	RAJMAHAL	JHARKHAND	198
	JHANJHARPUR	BIHAR	183
	DHARAMPUR	GUJARAT REGION	234
	VISAVADAR	SAURASHTRA & KUTCH	165
	PEN	KONKAN & GOA	130
3	CHERRAPUNJI(RKM)	ASSAM & MEGHALAYA	292.6
	HASIMARA	SHWB & SIKKIM	156.4
	AMRAPARA	JHARKHAND	166.2
	MENDARDA	SAURASHTRA & KUTCH	120
	QUEPEM	KONKAN & GOA	170
	KUDULU	KERALA	117.8
4	DHUBRI_IMD	ASSAM & MEGHALAYA	120.8
	BAHERI	WEST UTTAR PRADESH	126
	HARNAI IMD OBSY	KONKAN & GOA	144.4
	TENALI	COASTAL ANDHRA PRADESH	118.6
	CHINNAKALAR	TAMIL NADU & PUDUCHERRY	127
	MULKI	COASTAL KARNATAKA	173
	CHERTHALA	KERALA	151.4
5	KVK DHALAI	N M M T	162.6
	PHULPARAS	BIHAR	148.2
	PAWAYAN	WEST UTTAR PRADESH	131.3
	TIBRI	PUNJAB	119
	KHAKNAR	WEST MADHYA PRADESH	120
	RAMESHWAR_AGRI	KONKAN & GOA	238
	KUSMI	CHHATTISGARH	125
	KONDAPAK	TELANGANA	130.8
	AVALANCHE	TAMIL NADU & PUDUCHERRY	184
	KARWAR OBSY	COASTAL KARNATAKA	177.6
	PEERMADE TO	KERALA	192
6	NAHARLAGUN	ARUNACHALPRADESH	163.4
	N.LAKHIMPUR/LILABARI	ASSAM & MEGHALAYA	172.6
	BARKOTE	ORISSA	127.6
	MILAK	WEST UTTAR PRADESH	190
	LAKSAR	UTTARAKHAND	130
	AURPHAMBRA ROAD ARG	PUNJAB	131
	JATTON BARRAGE	HIMACHAL PRADESH	120.4
	TIKAMGARH-AWS	EAST MADHYA PRADESH	132
	KHAMBHAT	GUJARAT REGION	124
	VAIBHAVWADI	KONKAN & GOA	180
	GAGANBAWADA	MADHYA MAHARASHTRA	116
	AVALANCHE	TAMIL NADU & PUDUCHERRY	204
	MULKI	COASTAL KARNATAKA	326
	BHAGAMANDALA	S. I. KARNATAKA	120
	TELLICHERY	KERALA	215

DATE	STATION NAME	NAME OF SUBDIVISION	RAINFALL (mm)
7	MAWSYNRAM	ASSAM & MEGHALAYA	161.6
	MURTI	SHWB & SIKKIM	141.2
	MIRGANJ	WEST UTTAR PRADESH	120.5
	MANDANGAD	KONKAN & GOA	140
	UMARI	MARATHWADA	132
	AVALANCHE	TAMIL NADU & PUDUCHERRY	144
	UDUPI	COASTAL KARNATAKA	178.3
	BHAGAMANDALA	S. I. KARNATAKA	227.6
8	BHALUKPONG	ARUNACHALPRADESH	130.6
	MAWSYNRAM	ASSAM & MEGHALAYA	137.2
	BUXADUAR	SHWB & SIKKIM	150.2
	BAHERI	WEST UTTAR PRADESH	147
	GANGAPUR	EAST RAJASTHAN	172
	SUVASARA	WEST MADHYA PRADESH	120
	VENKATNAGAR	EAST MADHYA PRADESH	119.3
	DHANDHUKA	GUJARAT REGION	122
	PORBANDAR	SAURASHTRA & KUTCH	181.2
	DAPOLI_AGRI	KONKAN & GOA	189
	MAHABALESHWAR-IMD OBSY	MADHYA MAHARASHTRA	138.6
	KOLLUR	COASTAL KARNATAKA	150.2
	AMINI	LAKSHADWEEP	153.3
9	MATHABHANGA	SHWB & SIKKIM	142.6
	NAKUR	WEST UTTAR PRADESH	148
	CHANDIGARH	HAR CHD & DLH	302.2
	NANGAL	PUNJAB	282.5
	UNA RAMPUR AWS	HIMACHAL PRADESH	228.5
	KATHUA	JAMMU & KASHMIR	221.8
	SANGARIA SR	WEST RAJASTHAN	152
	UDAIPUR-WATI	EAST RAJASTHAN	124
	BHAINSDEHI	WEST MADHYA PRADESH	152
	BARGHAT	EAST MADHYA PRADESH	160
	NALIYA	SAURASHTRA & KUTCH	135.2
	MULKI	COASTAL KARNATAKA	148.4
10	SAHARANPUR	WEST UTTAR PRADESH	148
	ISMAILABAD	HAR CHD & DLH	242
	ROPAR	PUNJAB	350
	PACHHAD	HIMACHAL PRADESH	220.3
	MOUNNTABU TEHSIL SR	EAST RAJASTHAN	231
	BIJADANDI	EAST MADHYA PRADESH	142
	SANTALPUR	GUJARAT REGION	164
	KOTDASANGANI	SAURASHTRA & KUTCH	150
	ULHASNAGAR	KONKAN & GOA	125
11	MAWSYNRAM	ASSAM & MEGHALAYA	409.8
	FALAKATA	SHWB & SIKKIM	154.4
	BEHAT	WEST UTTAR PRADESH	210
	RISHIKESH	UTTARAKHAND	306.2
	CHANDIGARH IAF	HAR CHD & DLH	206.6
	FATEHGARH SAHIB	PUNJAB	141
	NAHAN	HIMACHAL PRADESH	250
	SHEOGANJ	EAST RAJASTHAN	128
	IDAR	GUJARAT REGION	146
	UPLETA	SAURASHTRA & KUTCH	118
	JAINOOR	TELANGANA	126.2
12	ROING	ARUNACHALPRADESH	116.7
	MAWSYNRAM	ASSAM & MEGHALAYA	414.6
	ALIPURDUAR(STATE)	SHWB & SIKKIM	202.8
	THAKURGANJ	BIHAR	205.4
	ELGIN BRIDGE	EAST UTTAR PRADESH	257
	RISHIKESH	UTTARAKHAND	165
	DADUPUR	HAR CHD & DLH	126
	BAGH	WEST MADHYA PRADESH	208
	SHIHOR	SAURASHTRA & KUTCH	128
	PAUNI	VIDARBHA	120.6

DATE	STATION NAME	NAME OF SUBDIVSION	RAINFALL (mm)
13	ROING	ARUNACHALPRADESH	126.8
	MAWSYNRAM	ASSAM & MEGHALAYA	539.8
	CHENGMARI/DIANA	SHWB & SIKKIM	289.4
	KAPTIPADA	ORISSA	118
	GALGALIA	BIHAR	120.4
	SAFIPUR	EAST UTTAR PRADESH	120
	SAMBHAL	WEST UTTAR PRADESH	212
	LAKSAR	UTTARAKHAND	220
	TAJEWALA	HAR CHD & DLH	117
	JATTON BARRAGE	HIMACHAL PRADESH	127
	BHIMPUR	WEST MADHYA PRADESH	215
	CHIKHLI	GUJARAT REGION	116
	AMRELI	SAURASHTRA & KUTCH	145.8
	KOLLUR	COASTAL KARNATAKA	177.8
14	CHERRAPUNJI	ASSAM & MEGHALAYA	200.4
	BAGRAKOTE	SHWB & SIKKIM	145.8
	BAHADURGANJ	BIHAR	215.4
	TIRWA	EAST UTTAR PRADESH	132
	BILARI	WEST UTTAR PRADESH	185
	KOTDWARA	UTTARAKHAND	182
	SALONI	HIMACHAL PRADESH	124
	ANTA SR	EAST RAJASTHAN	155
	RAMESHWAR_AGRI	KONKAN & GOA	152
	NAVIPET	TELANGANA	119.2
	MANKI	COASTAL KARNATAKA	144.8
15	DINHATA	SHWB & SIKKIM	144.2
	SAHASWAN	WEST UTTAR PRADESH	124
	SAMA	UTTARAKHAND	116
	DHARMSALA	HIMACHAL PRADESH	131.3
	BARGHAT	EAST MADHYA PRADESH	154
	KESHOD	SAURASHTRA & KUTCH	127.2
	BHIWANDI	KONKAN & GOA	120
	BANSWADA	TELANGANA	122
16	CHAULDHOWAGHAT	ASSAM & MEGHALAYA	117.2
	TUENSANG	N M M T	131
	KIRMIRA	ORISSA	215
	PALAMPUR	HIMACHAL PRADESH	151
	DEORI	WEST MADHYA PRADESH	118
	WARASEONI	EAST MADHYA PRADESH	128.2
	CHHOTA UDEPUR	GUJARAT REGION	122
	MAHUVA(B)	SAURASHTRA & KUTCH	123
	SAOLI	VIDARBHA	143.5
17	BINIKA	ORISSA	165.2
	LOHARKHET	UTTARAKHAND	119
	CHOMU	EAST RAJASTHAN	144
	BHANDARA	VIDARBHA	154
	ARANG	CHHATTISGARH	142.1
18	KARLAMUNDA	ORISSA	184
	SAMA	UTTARAKHAND	217
	JATTON BARRAGE	HIMACHAL PRADESH	120
	SANGOD	EAST RAJASTHAN	124
	GOHARGANJ	WEST MADHYA PRADESH	146
	MANGAON	KONKAN & GOA	254
	LONAVALA_AGRI	MADHYA MAHARASHTRA	208.5
	MULCHERA	VIDARBHA	117.2
	PAKHANJUR	CHHATTISGARH	142.8
	CASTLE ROCK	COASTAL KARNATAKA	118.2
19	MALKANGIRI	ORISSA	183.2
	RISHIKESH	UTTARAKHAND	130
	DHARMSALA	HIMACHAL PRADESH	126.4
	KATRA	JAMMU & KASHMIR	315.4
	DAMAN	GUJARAT REGION	234.8
	SUTRAPADA	SAURASHTRA & KUTCH	541
	MATHERAN	KONKAN & GOA	342.6
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	275.6
	CHANDRAPUR	VIDARBHA	199.1
	GIDAM	CHHATTISGARH	172
	MANUGURU	TELANGANA	143.6
	CASTLE ROCK	COASTAL KARNATAKA	236.4
	LONDA	N. I. KARNATAKA	152.4
20	UMERGAM	GUJARAT REGION	305
	MANGROL(J)	SAURASHTRA & KUTCH	341
	MATHERAN	KONKAN & GOA	398
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	314.8
	BIJAPUR	CHHATTISGARH	129
	BEJJUR	TELANGANA	257.4
	CASTLE ROCK	COASTAL KARNATAKA	170.8
21	NAYAGARH	ORISSA	139
	PALAMPUR	HIMACHAL PRADESH	147
	NEW HARSUD	WEST MADHYA PRADESH	150
	DWARKA	SAURASHTRA & KUTCH	237
	MULDE_AGRI	KONKAN & GOA	220.4
	GAGANBAWADA	MADHYA MAHARASHTRA	122
	DEGLOOR - FMO	MARATHWADA	207.6
	MUL	VIDARBHA	138.2
	GANGADHARA	TELANGANA	172.8
	CASTLE ROCK	COASTAL KARNATAKA	225.8
	LINGANAMAKKI HMS	S. I. KARNATAKA	117.2

DATE	STATION NAME	NAME OF SUBDIVSION	RAINFALL (mm)
22	HARIPUR	UTTARAKHAND	126.8
	RENUKA / DADHAU	HIMACHAL PRADESH	195
	KOLAYAT MAGRA	WEST RAJASTHAN	118
	TONKHURD	WEST MADHYA PRADESH	123
	KAPRADA	GUJARAT REGION	257
	KHAMBHALIA	SAURASHTRA & KUTCH	217
	SANTACRUZ - IMD OBSY	KONKAN & GOA	203.7
	GAGANBAWADA	MADHYA MAHARASHTRA	174
	UMARI	MARATHWADA	184
	YEOTMAL	VIDARBHA	236.2
	SIRPURU	TELANGANA	222.4
	CASTLE ROCK	COASTAL KARNATAKA	277.2
23	KAPURTHALA	PUNJAB	137
	NALAGARH	HIMACHAL PRADESH	140
	BARWAHA	WEST MADHYA PRADESH	174
	NAVSARI	GUJARAT REGION	306
	JUNAGADH	SAURASHTRA & KUTCH	241
	MATHERAN	KONKAN & GOA	156.6
	GAGANBAWADA	MADHYA MAHARASHTRA	210
	AVALANCHE	TAMIL NADU & PUDUCHERRY	144
	CASTLE ROCK	COASTAL KARNATAKA	281.6
	BHAGAMANDALA	S. I. KARNATAKA	238
	KUDULU	KERALA	115.8
24	AIZWAL	N M M T	125
	LOHARKHET	UTTARAKHAND	129
	BHAVNAGAR	SAURASHTRA & KUTCH	118
	MATHERAN	KONKAN & GOA	164
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	178.6
	CHINTUR	COASTAL ANDHRA PRADESH	178.6
	LUXETTIPET	TELANGANA	118.4
	SIDDAPUR	COASTAL KARNATAKA	202.4
	BHAGAMANDALA	S. I. KARNATAKA	197.4
25	CHHAMONU	N M M T	134
	MATHERAN	KONKAN & GOA	153.2
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	169.3
	VELPUR	TELANGANA	398.4
	AVALANCHE	TAMIL NADU & PUDUCHERRY	382
	CASTLE ROCK	COASTAL KARNATAKA	171.6
	BHAGAMANDALA	S. I. KARNATAKA	193.6
26	LONG ISLAND	A & N ISLAND	204.3
	KAPKOT	UTTARAKHAND	160
	SAMALKHA	HAR CHD & DLH	168
	JATTON BARRAGE	HIMACHAL PRADESH	156
	GANJBASODA	WEST MADHYA PRADESH	145.2
	WAKWALI_AGRI	KONKAN & GOA	205
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	183.8
	BHOPALPATNAM	CHHATTISGARH	130
	NARSIPATNAM	COASTAL ANDHRA PRADESH	117.4
	VENKATAPURAM	TELANGANA	193.6
	CASTLE ROCK	COASTAL KARNATAKA	206.4
27	ETAWAH (CWC)	WEST UTTAR PRADESH	220.8
	DUNGARGARH	WEST RAJASTHAN	208
	BHIND-AWS	WEST MADHYA PRADESH	120
	NANIPALSON	GUJARAT REGION	290.2
	PEN	KONKAN & GOA	303
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	179.6
	NAGPUR AERODROME	VIDARBHA	164
	BIJAPUR	CHHATTISGARH	205
	KUNAVARAM	COASTAL ANDHRA PRADESH	121.8
	PARKAL	TELANGANA	459.6
	CASTLE ROCK	COASTAL KARNATAKA	172.6
28	MAWSYNRAM	ASSAM & MEGHALAYA	128.6
	FALAKATA	SHWB & SIKKIM	156.6
	RAJKISHORENAGAR	ORISSA	156.4
	BHORANJ	HIMACHAL PRADESH	127.2
	MOUNNTABU TEHSIL SR	EAST RAJASTHAN	142
	ALIRAJPUR	WEST MADHYA PRADESH	119.4
	KESLI	EAST MADHYA PRADESH	118.4
	NANIPALSON	GUJARAT REGION	311.8
	BHAVNAGAR	SAURASHTRA & KUTCH	148.8
	JAWHAR	KONKAN & GOA	315
	OZHARKHEDA - FMO	MADHYA MAHARASHTRA	260.2
	VASMAT	MARATHWADA	225
	KHANPUR	TELANGANA	275.4
	SUBRAMANYA	COASTAL KARNATAKA	196.8

DATE	STATION NAME	NAME OF SUBDIVISION	RAINFALL (mm)
29	PASIGHAT_ AERO	ARUNACHALPRADESH	213.2
	RANGANANDI NT XING	ASSAM & MEGHALAYA	120.3
	HARABHANGA	ORISSA	162
	ARARIA	BIHAR	133
	BIRDGHAT	EAST UTTAR PRADESH	170.4
	SAMA	UTTARAKHAND	175
	JAIPUR TEHSIL SR	EAST RAJASTHAN	158
	KATHIWADA	WEST MADHYA PRADESH	193
	BAJAG	EAST MADHYA PRADESH	182
	JETPUR PAVI	GUJARAT REGION	209
	AMBERNATH	KONKAN & GOA	165
	MAHABALESHWAR- IMD OBSY	MADHYA MAHARASHTRA	128.6
	PENDRA ROAD	CHHATTISGARH	154.4
30	MATHABHANGA	SHWB & SIKKIM	137
	BALIGUDA	ORISSA	135
	SHILAICHAK	JHARKHAND	118
	AURANGABAD	BIHAR	158
	DANTA RAMGARH	EAST RAJASTHAN	170

Extremely heavy rainfall

तालिका 3 / TABLE 3

जुलाई २०२३ माह के दौरान की तापमान विसंगति

TEMP. ANOMALIES OVER INDIA AND FOUR HOMOGENEOUS REGIONS DURING JULY 2023

JUL 2023		Max Temp (^{o}C)	Min Temp (^{o}C)	Mean Temp (^{o}C)
ALL INDIA	**ACTUAL**	**31.91**	**24.90**	**28.40**
	NORMAL	31.62	24.33	27.98
	ANOMALY	0.29	0.57	0.43
NORTHWEST INDIA	**ACTUAL**	**32.13**	**23.98**	**28.06**
	NORMAL	32.85	23.56	28.20
	ANOMALY	-0.72	0.42	-0.15
EAST & NORTHEAST INDIA	**ACTUAL**	**33.23**	**25.53**	**29.38**
	NORMAL	31.45	24.41	27.93
	ANOMALY	1.78	1.13	1.45
CENTRAL INDIA	**ACTUAL**	**31.28**	**25.09**	**28.19**
	NORMAL	31.19	24.72	27.96
	ANOMALY	0.09	0.37	0.23
SOUTH PENNINSULAR INDIA	**ACTUAL**	**31.56**	**25.06**	**28.31**
	NORMAL	31.20	24.54	27.87
	ANOMALY	0.36	0.52	0.44

Note: Values are rounded off to nearest two decimal

तालिका - ४ / TABLE – 4

ATMOSPHERIC AND SST INDEX VALUES FOR THE RECENT 12 MONTHS. ATMOSPHERIC INDICES ARE STANDARDIZED BY MEAN ANNUAL STANDARD DEVIATION EXCEPT FOR THE TAHITI AND DARWIN SLP ANOMALIES WHICH ARE IN hPa. SST INDICES (ANOMALIES AND MEAN) ARE IN DEGREE CELSIUS

SLP ANOMALIES			Tahiti SLP minus Darwin SLP	PACIFIC SST							
				NINO 1+2 0^{0} - 10^{0}S 90^{0}W - 80^{0}W		NINO 3 5^{0}N - 5^{0}S 150^{0}W - 90^{0}W		NINO 3.4 5^{0}N - 5^{0}S 170^{0}W - 120^{0}W		NINO 4 5^{0}N - 5^{0}S 160^{0}E - 150^{0}W	
Month	Tahiti	Darwin	SOI	Anomaly	Mean	Anomaly	Mean	Anomaly	Mean	Anomaly	Mean
JUL 23	0.20	0.70	-0.40	2.90	24.86	1.57	27.37	1.01	28.30	0.67	29.57
JUN 23	0.30	-0.10	0.40	2.44	25.57	1.23	27.85	0.81	28.54	0.54	29.51
MAY 23	-0.30	1.60	-1.70	2.23	26.64	0.78	28.03	0.4	28.33	0.25	29.17
APR 23	-0.30	-0.80	0.40	2.66	28.19	0.43	28.01	0.09	27.91	0.08	28.71
MAR 23	0.40	0.10	0.30	1.40	27.89	0.25	27.46	-0.16	27.13	-0.32	28.00
FEB 23	1.00	-1.50	2.30	0.27	26.37	-0.22	26.19	-0.56	26.19	-0.62	27.58
JAN 23	1.90	-0.70	2.30	-0.58	23.98	-0.62	25.04	-0.75	25.80	-0.67	27.65
DEC 22	2.20	-1.80	3.50	-0.52	22.29	-0.87	24.36	-0.89	25.71	-0.87	27.67
NOV 22	0.30	-0.30	0.50	-1.24	20.41	-0.97	24.13	-0.91	25.80	-1.00	27.70
OCT 22	1.60	-1.50	2.80	-1.81	19.21	-1.13	23.85	-1.03	25.69	-1.14	27.62
SEP 22	2.10	-0.90	2.70	-1.02	19.70	-0.97	23.94	-1.09	25.62	-1.18	27.58
AUG 22	0.70	-1.20	1.70	-0.49	20.52	-0.65	24.47	-0.96	25.89	-1.09	27.70

(Data Source: CPC/NCEP, USA)

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भारत का जलवायु नैदानिक बुलेटीन

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Climate Monitoring & Prediction Group

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