

Weather Synopsis – February 2024

1.0 Rainfall distribution over month of February 2024:

Northeast monsoon conditions were prevailed during the month of February. Below normal rainfall was reported at almost all of the principal meteorological stations except only in the Rathnapura where normal rainfall was reported (Fig 1, 2). Maximum percentage was reported from Rathnapura (**100%**) while minimum from Katunayake station (0.2 %) (Table 1).

Below normal rainfall was reported from most of the hydro catchment stations except Randenigala where near normal rainfall was reported (Fig 3, Table 2).

Highest cumulative rainfall was **287.0 mm** at Kukuleganga. More than 100 mm rainfall (24hr) were reported from only two rainfall stations (Table 3) and highest rainfall was 117.0 mm at Kukuleganga on 23rd February. Mainly dry weather was reported from 6th to 11th and from 18th to 21st of the February. Rainfall activity enhanced over the island on 1st, 4th and 5th, from 13th to 16th and 22nd and 23rd days of the month. The number of rainy days was below normal at most of the principal meteorological stations, except in Galle, Monaragala, and Rathnapura, where slightly above normal was reported (Fig 4, Table 1).

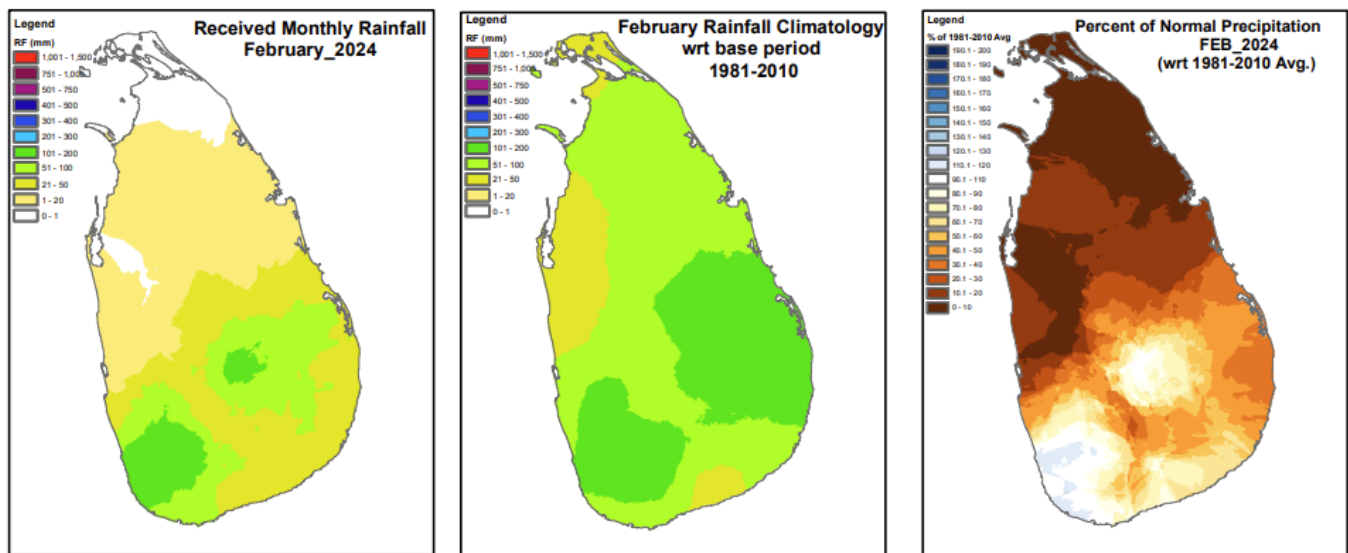


Fig 1: Observed rainfall, 30-year climatology and percent of normal (%) rainfall with respect to the (1981-2010) base period for February 2024:

Table 01: total rainfall and the number of rain days at the principal meteorological stations recorded in the month against the respective averages (1991-2020). Note that the meteorological day in this text is reckoned as the 24 hr period from 08.30 hrs to 08.30 hrs following day

Meteorological station	Monthly Total rainfall(mm)			Monthly Total No of rainy Days		
	2024-Feb	Average	%	2024-Feb	Average	%
Anuradhapuraya	34.5	60.1	57.4%	2	5	37%
Badulla	32.6	102.3	31.9%	9	10	91%
Bandarawela	7.4	96.4	7.7%	6	12	49%
Batticaloa	46.3	148.5	31.2%	7	8	88%
Colombo	7.4	77.4	9.6%	2	6	34%
Galle	30.7	71.1	43.2%	8	7	112%
Hambantota	8.1	47.4	17.1%	5	5	96%
Jaffna	0.2	27.3	0.7%	0	3	0%
Monaragala	17.7			9	8	115%
Katugastota	56.4	78.1	72.2%	7	7	102%
Katunayake	0.1	56.4	0.2%	0	5	0%
Kurunegala	7.9	56.7	13.9%	2	5	42%
Maha Iluppallama	5.1	82.4	6.2%	2	5	37%
Mannar	0.3	29.3	1.0%	1	3	29%
Polonnaruwa	19.1	158.6	12.0%	7	8	84%
Nuwara Eliya	15.8	72.7	21.7%	5	8	59%
Poothuvil	54.1	147.3	36.7%	8	8.8	91%
Puttlam	0.9	42.1	2.1%	1	5	20%
Rathmalana	47.4	70.3	67.4%	6	7	90%
Rathnapura	137.1	137.0	100.0%	12	10	121%
Trincomalee	5.8	96.1	6.0%	3	6	53%
Vavuniya	0.5	78.9	0.6%	1	5	20%
Mattala	18.3			7	5	132%

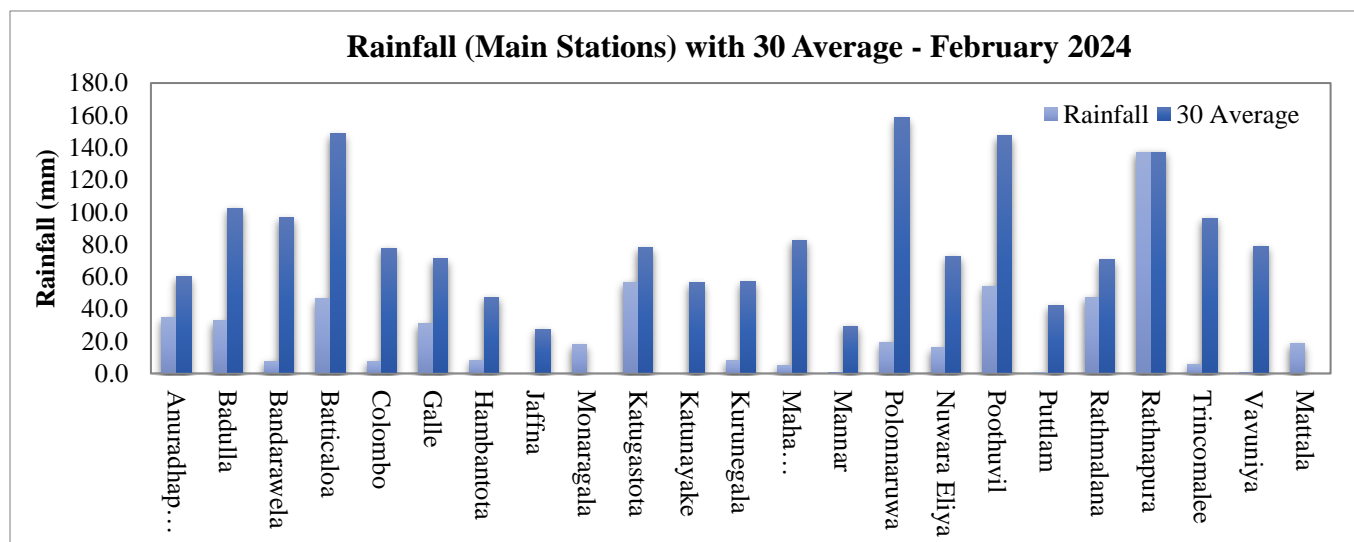
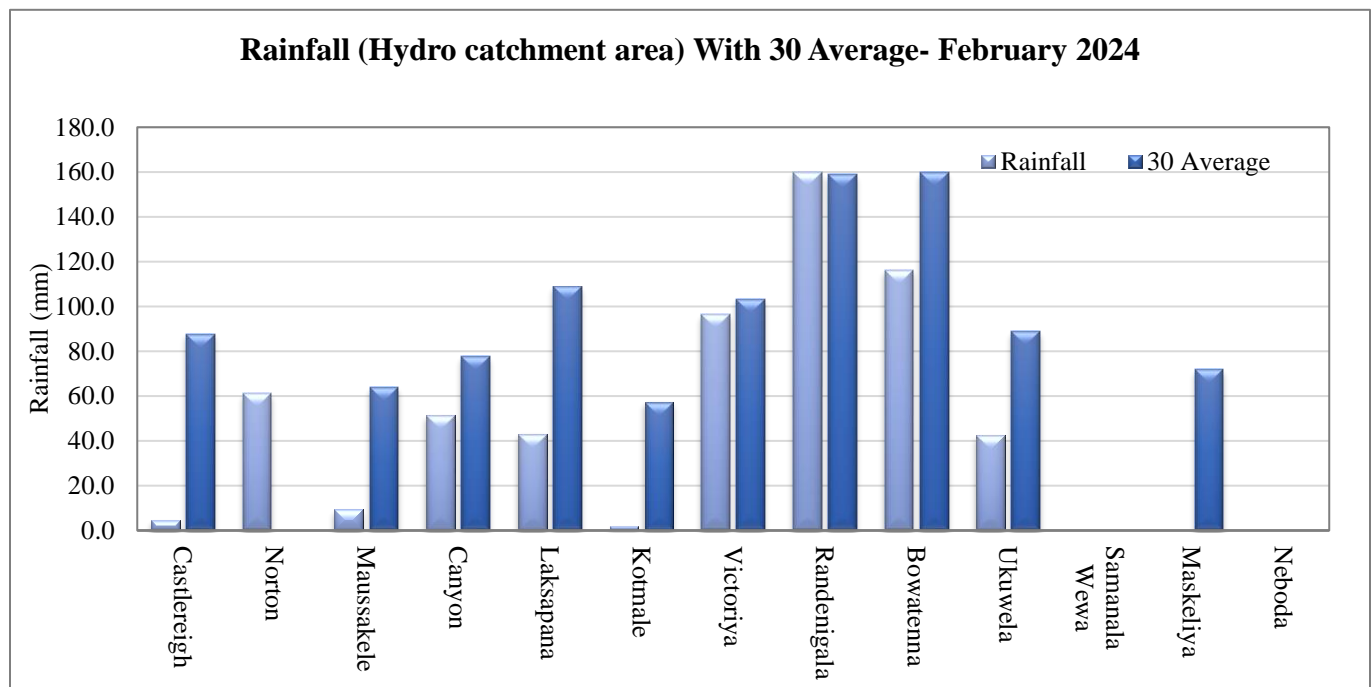


Fig 2: Monthly Total Rainfall (mm) with 30 years (1991-2020) of their averages at Main Meteorological Stations February 2024

Table 02: Monthly Total Rainfall (mm) with 30 years (1991-2020) of their averages at Hydro catchment areas:

Hydro Catchment	Feb 2024	Average	% (percentage of average)
Castlereigh	4.5	87.7	5.1%
Norton	61.3	NA	NA
Maussakele	9.3	63.8	14.6%
Canyon	51.3	77.6	66.1%
Laksapana	43.0	108.8	39.5%
Kotmale	1.6	57.4	2.8%
Victoriya	96.3	103.3	93.2%
Randenigala	160.0	159.1	100.6%
Bowatenna	116.3	159.7	72.8%
Ukuwela	42.3	88.7	47.7%

**Fig 3:** Monthly Total Rainfall (mm) with 30 years (1991-2020) of their averages at Hydro catchment areas during February 2023:**Table 3:** Stations received above 100 mm per day rainfall during February 2024

Date	Station	24-hour Rainfall (mm)
04-February 2024	Weweltalawa	108
23-February 2024	Kukuleganga	117

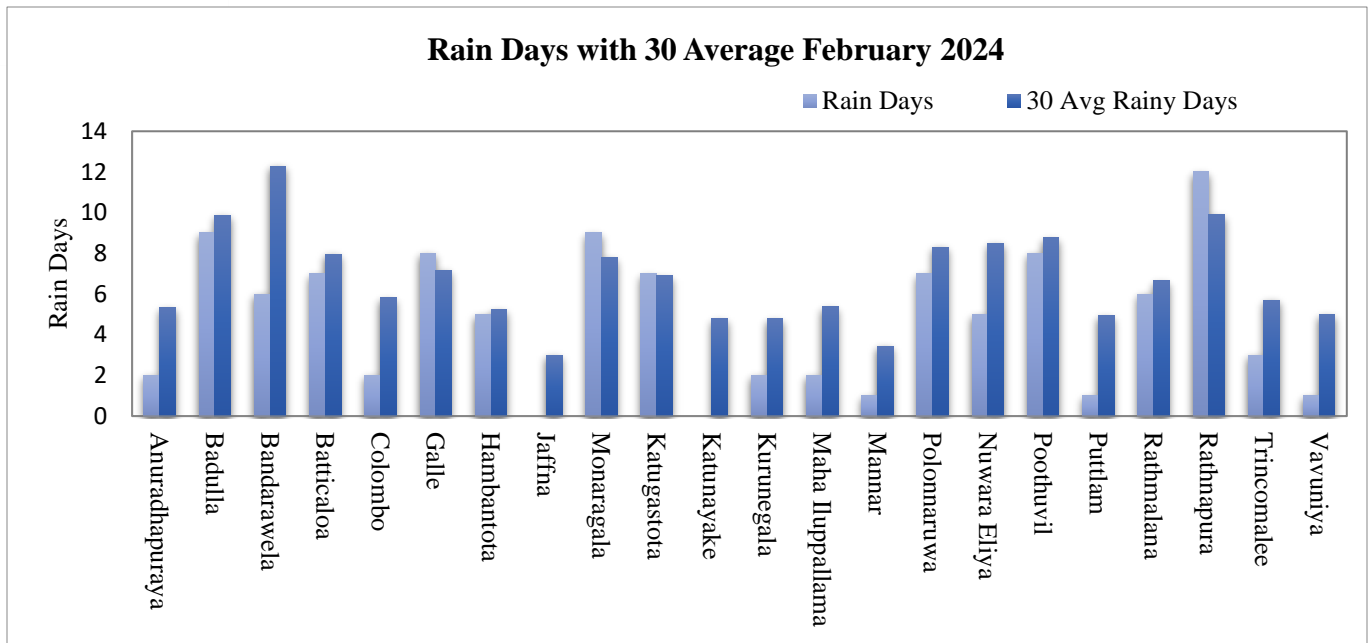


Fig 4: monthly total no of rainy days with 30 years (1991-2020) of their averages at main Meteorological stations during February 2024

2.0 Lightning:

Higher Lightning density was reported in Awissawella, Eheliyagoda, Ayagama, Elapatha, Bulathsinhala, Kalavana, Neluwa, Thawalama, and Tanamalwila areas during month of January (Fig 5).

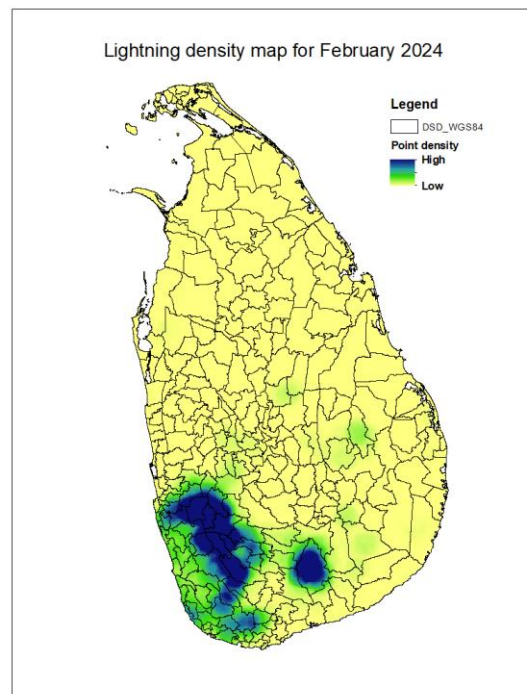


Fig 5: Lightning density map for February 2024

3.0 Synoptic Situation:

3.1 Surface pressure and winds

The surface pressure was above average until the 23rd of February, and below normal for the rest of the days. The surface winds over the island was northeasterly with a speed of 5-10 knots from the 13th to the 16th and from the 27th to the 29th. It was northeasterly or variable with a speed of 0-15 knots from the 4th to the 6th and from the 25th to the 26th. Surface wind was variable in direction with a speed of 0-10 knots on the other days of the month.

3.2 Upper winds:

At 850hPa, Northeasterly wind flow is dominated over the island. (Fig 6). Anomalous easterly winds across Sri Lanka indicate strengthening of easterly flow at 850 mb level.

At 700 hPa, Northeasterly wind flow is dominated over the island and cyclonic circulation can be observed in the southern Indian Ocean to the southwest of the island. Anomalous easterly to southwesterly winds across Sri Lanka can observed in the at 700mb level (Fig 7).

At 500 hPa Easterly wind flow is dominated over the island. Anomalous easterly winds across Sri Lanka indicate strengthening of easterly flow at 500mb level (Fig 8).

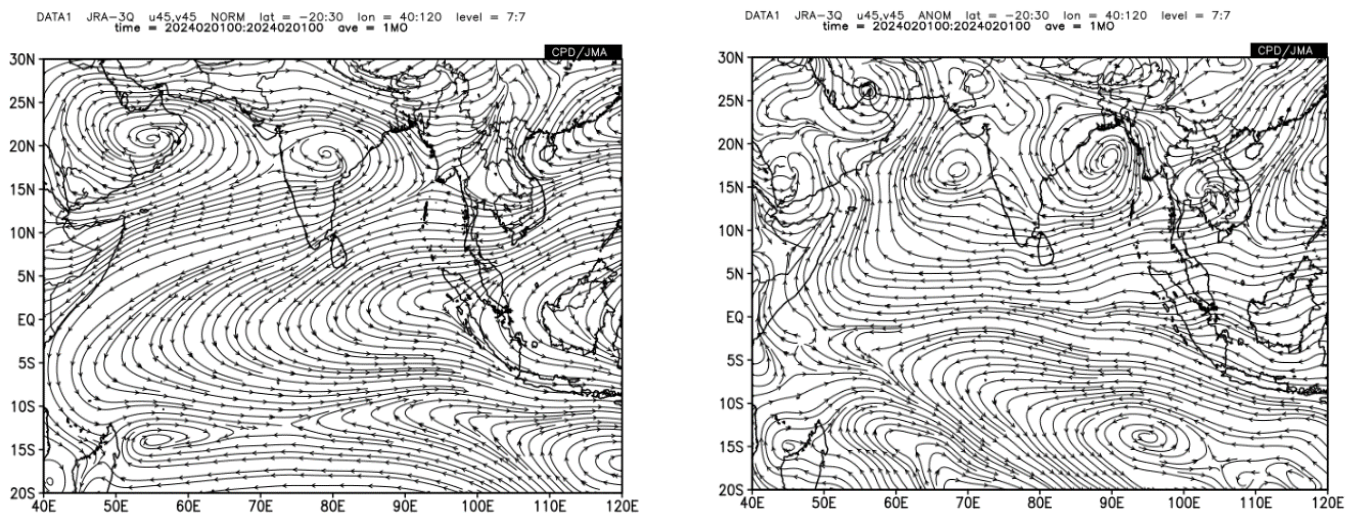


Fig 6: Monthly average wind pattern at 850 hPa level during the month of February2024 (JRA3Q)

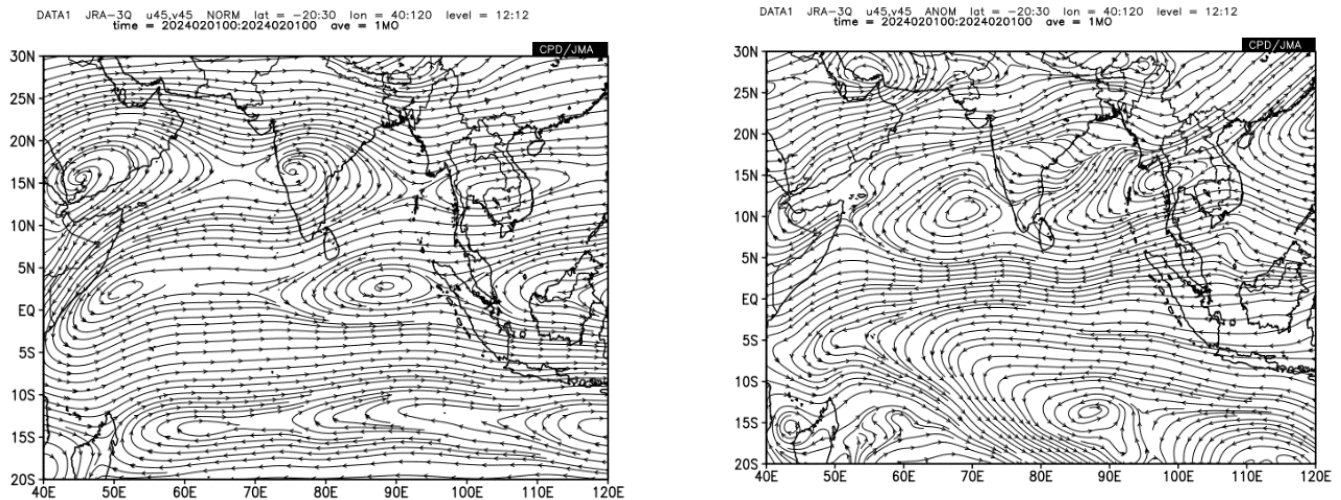


Fig 7: Monthly average wind pattern at 700hPa level during the month of February 2023 (JRA3Q)

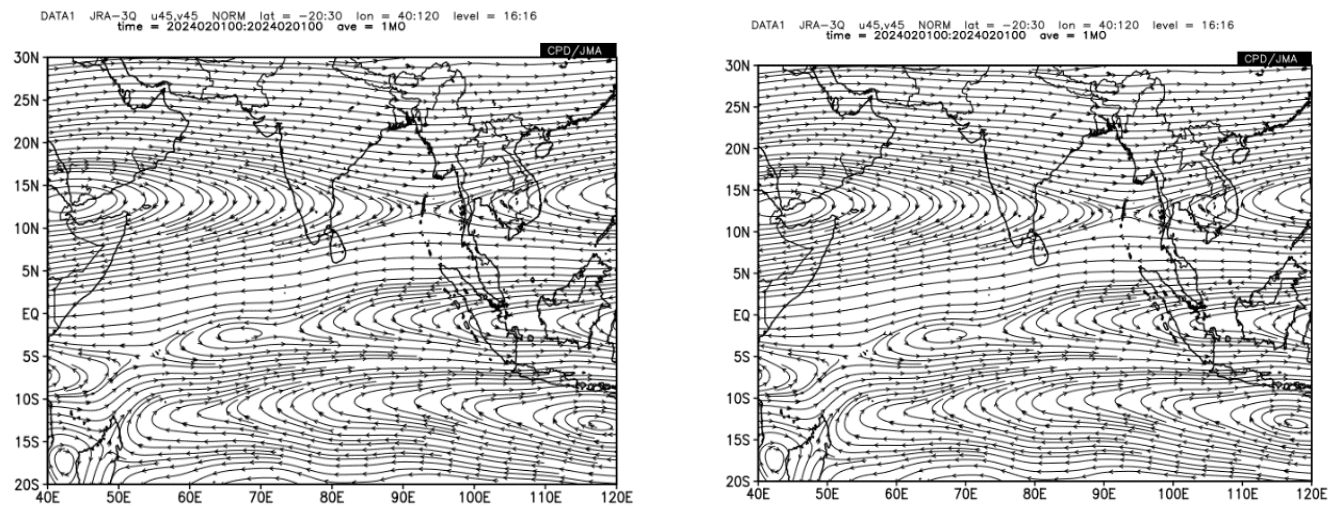


Fig 8: Monthly average wind pattern at 500hPa level during the month of February 2024 (JRA3Q)

4.0 Temperature Field

4.1 Maximum Temperature

The highest recorded maximum temperature for the month of February 2024 was 37.5°C in Rathnapura on the 23rd. Maximum temperatures during the day were more than +1°C above normal in most of the principal meteorological stations from the 16th of February onwards. Exceptionally high temperatures were reported in Colombo on the 27th and 28th. Considerably high temperatures were reported in Katunayake on the 17th, 18th, 26th, 27th, and 29th; in Colombo on the 26th; and in Galle on the 27th. Rathmalana also reported Considerably high temperatures on the 28th. All principal stations reported maximum temperatures more than +1°C above normal on the 20th, 21st, and 23rd. Appreciably below-normal maximum temperatures were reported in Badulla, Katugastota, and Nuwara Eliya on the 16th (Fig 9).

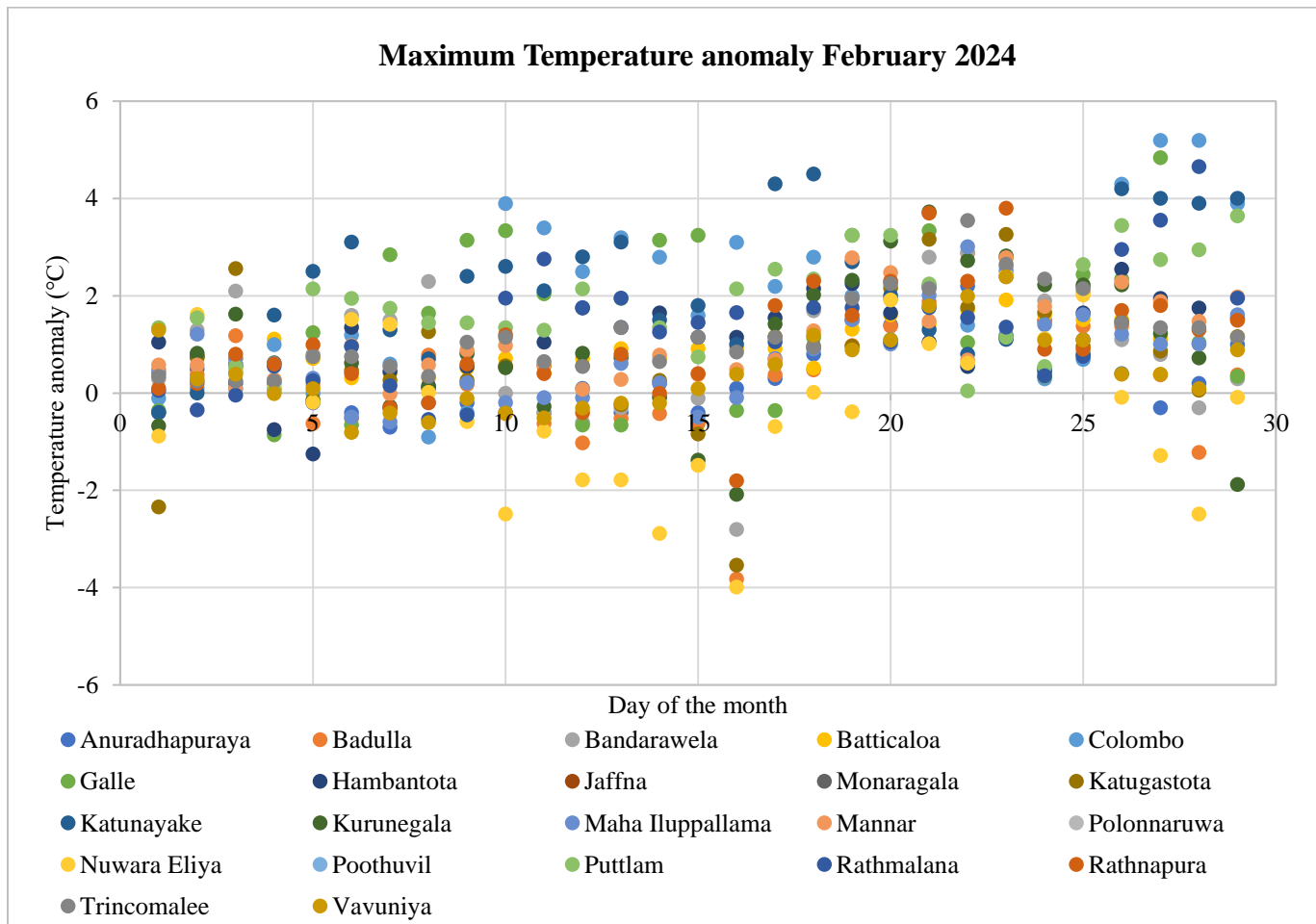


Fig 9: Maximum Temperature anomaly (°C) for February 2024

4.1 Minimum Temperature

The lowest recorded minimum temperature for February 2024 was 8.8 °C, observed in Nuwara Eliya on the 20th. Most principal stations experienced minimum temperatures exceeding +1°C above normal levels throughout the month, except on the 7th, 8th, and 9th. Exceptionally above-normal minimum temperatures were recorded in Nuwara Eliya on the 5th, while considerably above-normal readings were noted in Nuwara Eliya on the 7th, 8th, 15th, 17th, 21st, and 28th; in Katugastota on the 15th, 24th, and from the 26th to the 28th; in Bandarawela on the 5th; in Kurunegala on the 15th, 27th, and 28th; and in Pottuvil on the 27th and 28th (Fig 10).

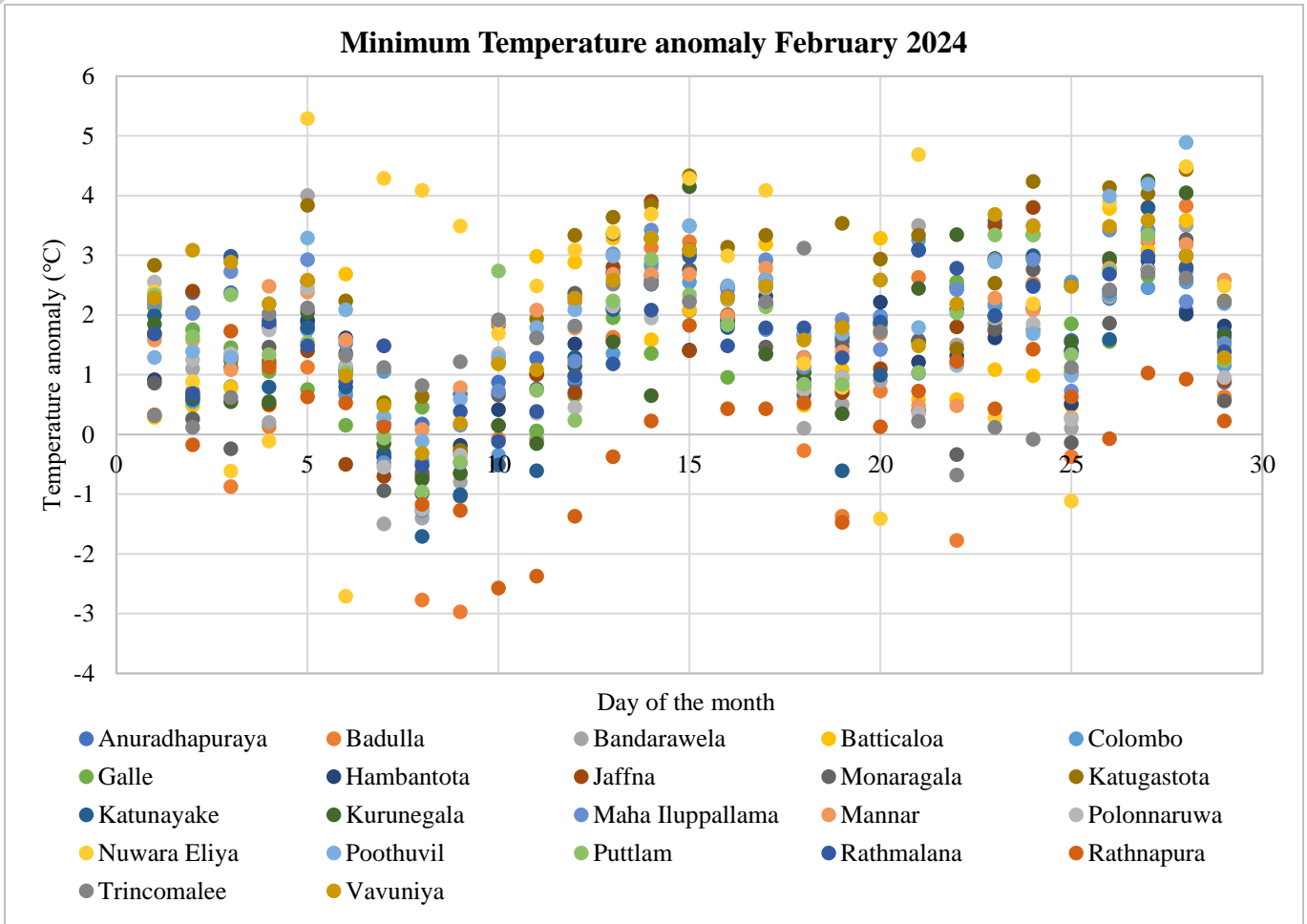


Fig 10: Minimum Temperature anomaly ($^{\circ}\text{C}$) for February 2024

Table 4(a): Extremes of Maximum Temperatures of February 2024

	Max Temperature	Min offset (-)	Max offset (+)	Highest Std. Div.
Value	37.5 $^{\circ}\text{C}$	4.0 $^{\circ}\text{C}$	5.2 $^{\circ}\text{C}$	1.68
Station	Ratnapura	Nuwara Eliya	Colombo	Colombo
Date	23/02	16/02	27/02 and 28 /02	

Table 4(b): Extremes of Maximum Temperatures of February 2024

	Min Temperature	Min offset (-)	Max offset (+)	Highest Std. Div.
Value	8.8 $^{\circ}\text{C}$	3.0 $^{\circ}\text{C}$	5.3 $^{\circ}\text{C}$	2.05
Station	Nuwara Eliya	Badulla	Nuwara Eliya	Nuwara-Eliya
Date	20/02	09/02	05/02	

4.3 Heat Index

The Heat Index is calculated by using relative humidity and maximum temperature and this is the condition that is felt on human body. Month of February the heat index was exceed 39 °C in 90% of the days at Rathnapura; 86% of days from Mattla and Puttalam; 79% of days from Katunayake, 76% of days from Rathmalana; 66% of days from Colombo and 55% of days from Anuradhapura. It was less than 55% in the other principal stations. The number of days exceed 39 °C of heat index limit was zero in the central hilly areas particularly, Badulla, Bandarawela and NuwaraEliya. Heat index values exceeded 52°C at the following locations and dates: Hambantota on the 17th, Kurunegala on the 18th, Rathmalana on the 19th, Monaragala on the 23rd, and Puttalam on the 28th (Table 5, Fig 11). (Note: Heat index limits: 27-38 °C is Normal level, 39- 45 °C is Caution level, 46-52 °C is Extreme caution level, and over 52°C is Danger level)

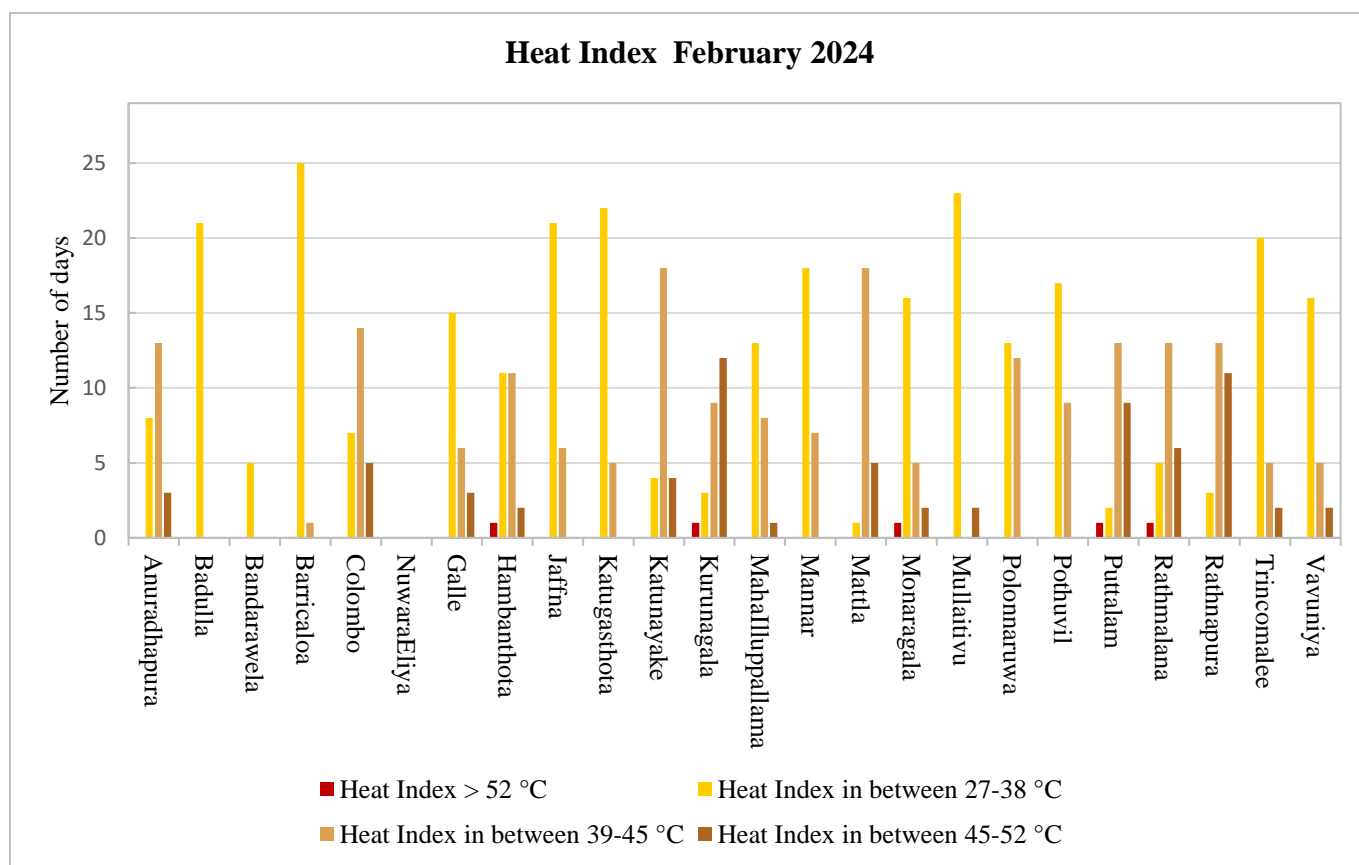


Fig 11: Heat index in the principal stations February 2024

Table 05: Heat Index at the main Meteorological stations and the percentage of number of days which Heat Index greater than 39 °C in the month of February 2024

Meteorological station	Heat Index > 39 °C	% (percentage of number of days which HI > 39°C)
Anuradhapura	16	55%
Badulla	0	0%
Bandarawela	0	0%
Barricaloa	1	3%
Colombo	19	66%
NuwaraEliya	0	0%
Galle	10	34%
Hambanthota	16	55%
Jaffna	7	24%
Katugasthota	5	17%
Katunayake	23	79%
Kurunagala	24	83%
MahaIlluppallama	11	38%
Mannar	8	28%
Mattla	25	86%
Monaragala	10	34%
Mullaitivu	4	14%
Polonnaruwa	13	45%
Pothuvil	9	31%
Puttalam	25	86%
Rathmalana	22	76%
Rathnapura	26	90%
Trincomalee	7	24%
Vavuniya	9	31%

5.0 Global condition

Above-normal temperatures were observed in many areas worldwide in February 2024. This marked the warmest February on record in history, with the global surface temperature reaching 1.40°C above the 20th-century average of 12.1°C for this month (NOAA, Climate Prediction Center). The sea surface temperature (SST) in the NINO.3 region decreased, measuring +2.2°C smaller than its January value. Nevertheless, it remained above normal, with a deviation of +1.8°C from the climatological value. Above-normal SST was observed in the equatorial Pacific, from near the dateline to the eastern part. Easterly winds in the lower troposphere over the central equatorial Pacific were weaker than normal. El Niño conditions in the equatorial Pacific have already peaked and are now gradually weakening. The area-averaged SST in the tropical western Pacific (NINO.WEST) region was below normal in February (Tokyo Climate Center). The Indian Ocean Dipole (IOD) condition was in a neutral phase (BoM, Australia). Sea surface waters in the tropical Indian Ocean were warmer than average (Fig. 12)

The average position of the shear line was situated between 05°S 60°E, 03°S 80°E, and 02°N 100°E. The average position of the Inter-Tropical Convergence Zone (ITCZ) was located between 13°S 50°E, 12°S 80°E, and 09°S 100°E (Fig. 13). A strong Madden-Julian Oscillation (MJO) was in phase 7 from the 1st to the 17th of February, then weakened significantly until the 26th of February, before propagating to phase 3 on the 28th and 29th of the month (Fig. 14).

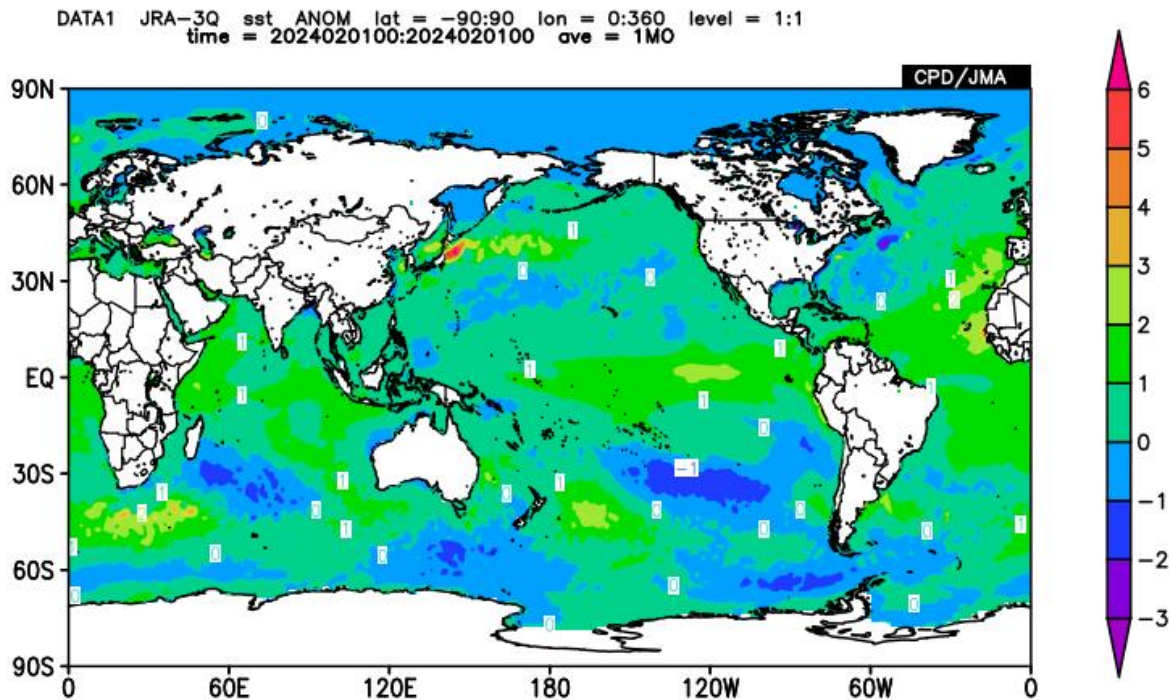


Fig 12: Sea Surface Temperature anomalies for February 2024 (JMA)

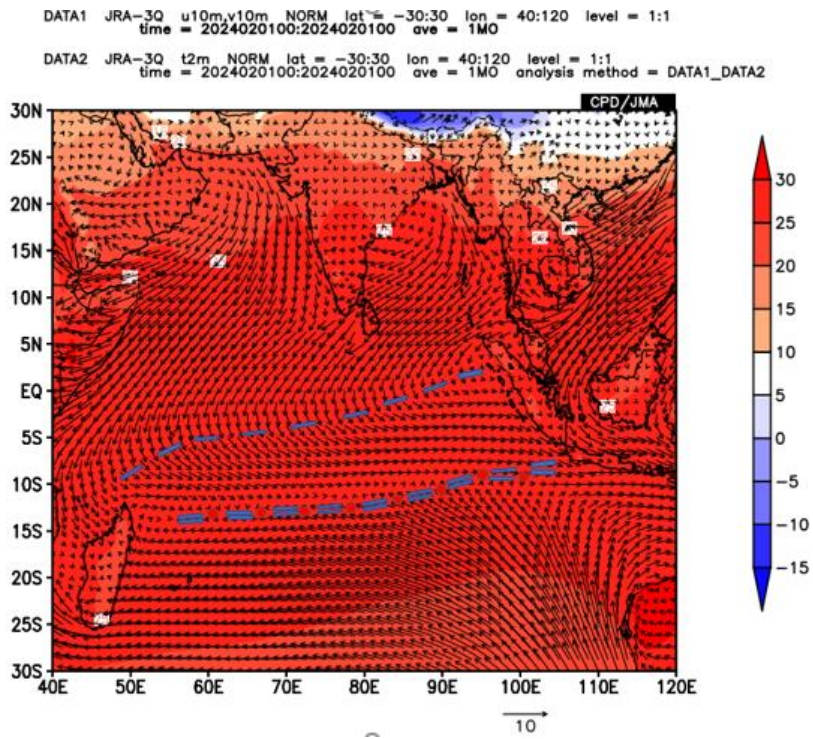


Fig 13: Ocean Surface Winds and Ocean Surface Temperature for February 2024

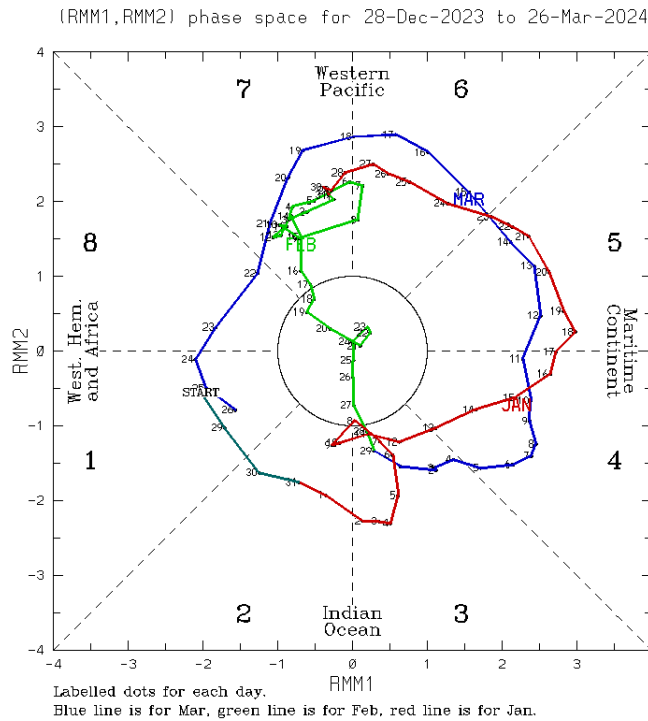


Fig 14: Phase diagram of MJO, Green line for February (BOM)

Weather Systems

In this month, three cyclonic events were recorded in the South Indian Ocean, whereas no cyclonic systems were reported in the North Indian Ocean. These events included the very intense Tropical Cyclone Djoungou (February 15-20), Tropical Storm Eleanor (February 19-24), and an unnamed tropical storm (January 31 - February 02), as depicted in Figure 15.

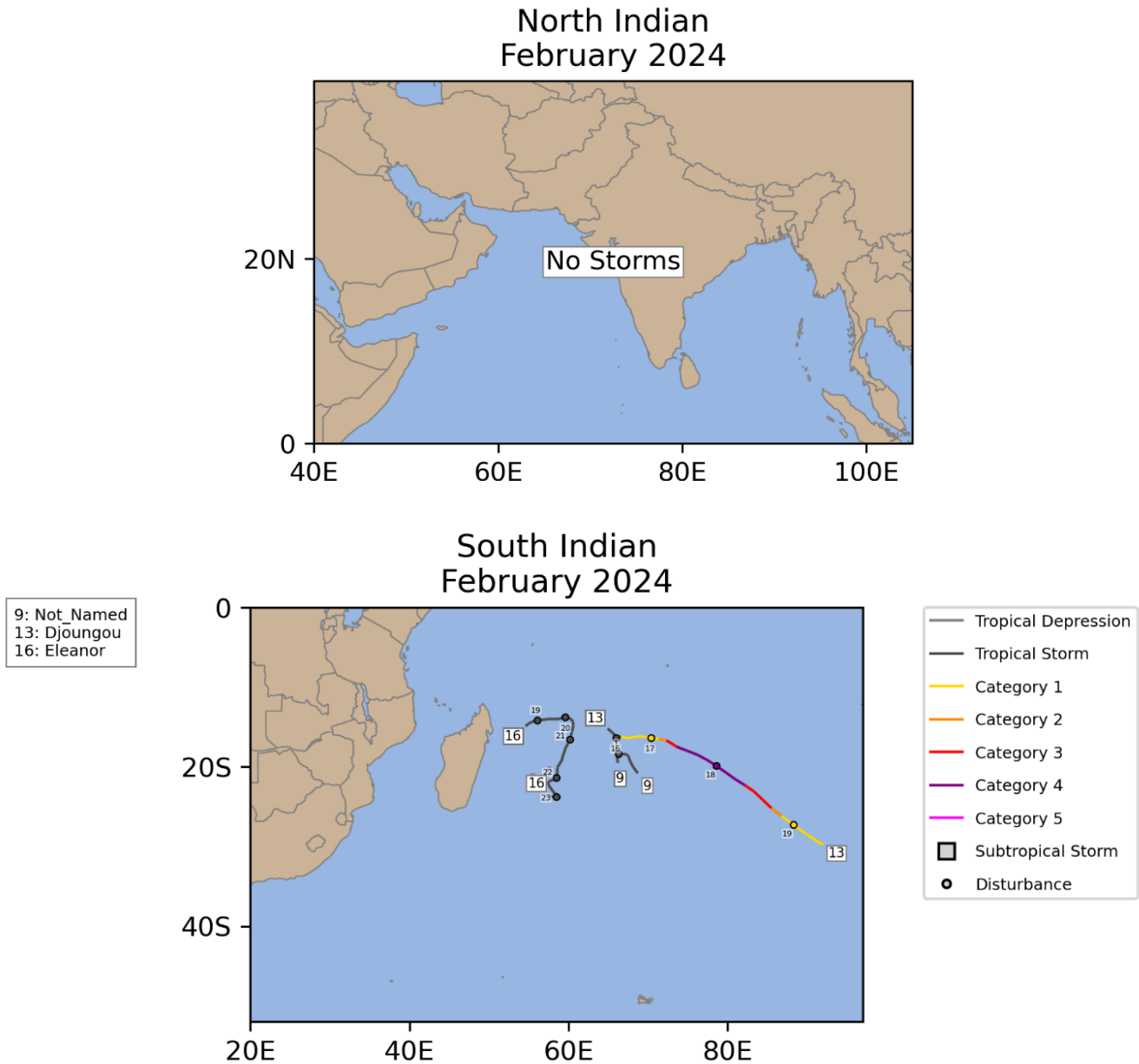


Fig 15: Track of Tropical cyclone systems reported in February 2024 (NOAA)