

Weather Synopsis –April 2023

Most of the principal meteorological stations except Anuradhapura, Batticaloa, Colombo, Katunayake, Ratmalana, and Kurunegala received below average rainfall. (Fig 1). Most of the hydro catchment stations, except Carsereigh, Canyon, and reported about or below average rainfall (Fig 2).

(Fig 2). Highest monthly rainfall was reported from Moraliya and it was 961.5 mm. The recorded maximum daily rainfall during month of March was 159mm at Gampaha (Bot-Garden) on 08th.

Isolated thunderstorms were reported till 03rd, from 05th to 08th, 14th. Scattered thunderstorm were reported on 04th. Significant reduction of rain was observed during 2nd and 3rd weeks of the month. Fairly heavy showers with thunder were reported from Western half of the country on 16th, 18th, and over inland areas 15th, 21st and 22nd, 24th. Convective activity was enhanced from 22nd onwards.

Figure 4 depicted lightning flash density map for April 2023. Lightning flashes were reported from most parts of the island except northeastern, eastern and southeastern coastal belt. High lightning density was reported from Karachchi, Oddusudan, Vavuniya North, Welioya, Padawiya, Gomarankadawala, Madhu, Mahavilachchiya, Nuwaragampalatha, Nochchiyagama, Madavachchiya, Nachchaduwa, Thambuththegama, Thirappane, Kekirawa, Ipalogama, Kahatagasdigiliya, Galenbindunuwewa, Ehetuwawa, Polpithigama, Maho, Maspotha, Kurunegala, Madampe, Alawwa, Rambukkana, Mirigama, Attanagalla, Warakapola, Galigamuwa, Kegalle, Bulathkohupitiya, Ruwanwella, Dehiowita, Deraniyagala, Hanwella, Biyagama, Kuruwita, Ratnapura, Ayagama, Palinda Nuwara, Bulathsinghala, Siyabalanduwa, Badalkumbura, Balangoda, Hingurakgoda, and Monaragala.

Hot and humid weather conditions prevailed during 2nd and 3rd weeks of the month. The combination of high temperatures and significant moisture in the air increase the heat index, the temperature felt on human body up to 'Caution' level at some places. Department of Meteorology issued heat alerts from 13th April to 24th April.

During April 2023, sea surface temperatures (SSTs) were above-average in the central equatorial Pacific and the eastern equatorial Pacific reflecting warm neutral conditions in April. Ocean Nino Index is 0.2

and 0.5 during March, April, and May (MAM) and April, May and June (AMJ) respectively (NOAA Climate prediction Center). Neutral IOD was observed during April 2023 (BoM, Australia). Sea surface waters in tropical north Indian Ocean are warmer than average (Fig. 5)

The Madden-Julian Oscillation (MJO) was strong at phase 5 during first week, at the phase 6 during 2nd week, at the phases 7 and 8 during 3rd week providing unfavourable conditions for convective activity over Sri Lanka. MJO was propagated to the phase 1 on 22nd, then stagnated at the phase 2 from 25th to 28th and was at phase 3 thereafter. (Fig 6).

During the month, the Inter Tropical Convergence Zone (ITCZ) laid around 06°N 50°E, 02°N 60°E, Equator 80°E and Equator 110°E (Fig7). ITCZ was shifted to the south of average position during the first half and then to the north of the average position during the second half.

Table 1: Significant Rainfall amounts (24 hour) received in April 2023

Date	Rain gauge Station	24 Rainfall (mm)
04 April 2023	Kurunagala	145.4
07 April 2023	Kirindiwela	111.1
07 April 2023	Rathmalana	105.7
08 April 2023	Gampaha (Bot-Garden)	159.0
22 April 2023	Tambuttegama	156.5
24 April 2023	Monaragala	142.0
26 April 2023	Kalatuwawa	128.7
26 April 2023	Labugama	124.6
30 April 2023	Mediyawa	103.2
30 April 2023	Nikaweratiya	101.8
30 April 2023	Handapanagala	100.4

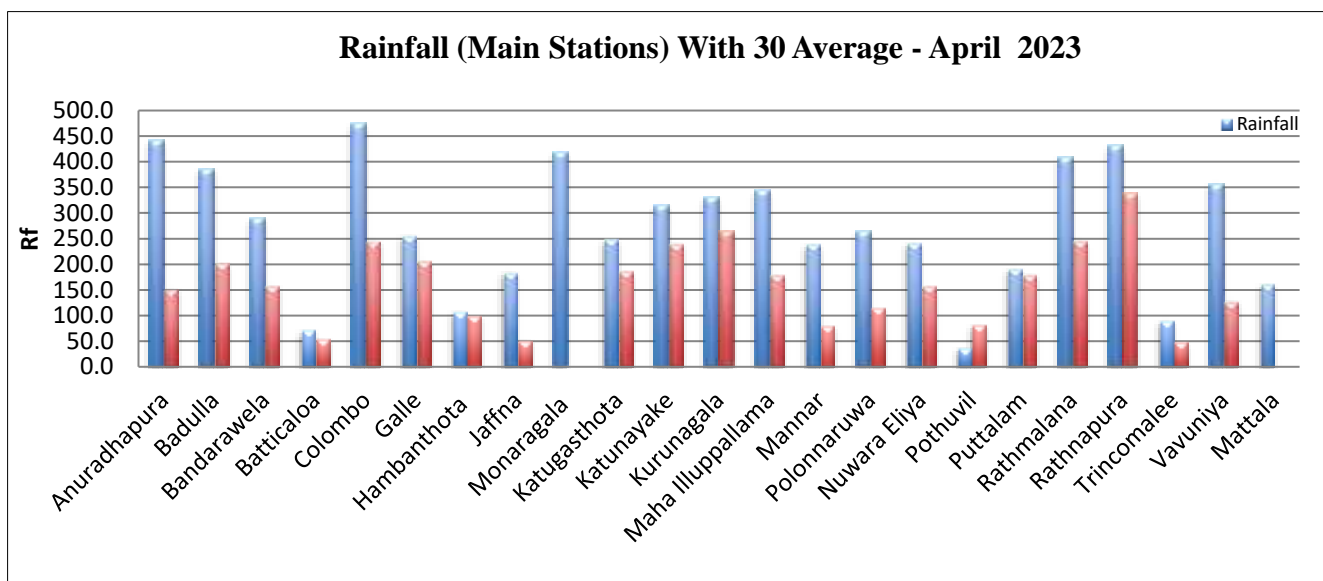


Fig 1 : Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Main Meteorological stations during April 2023

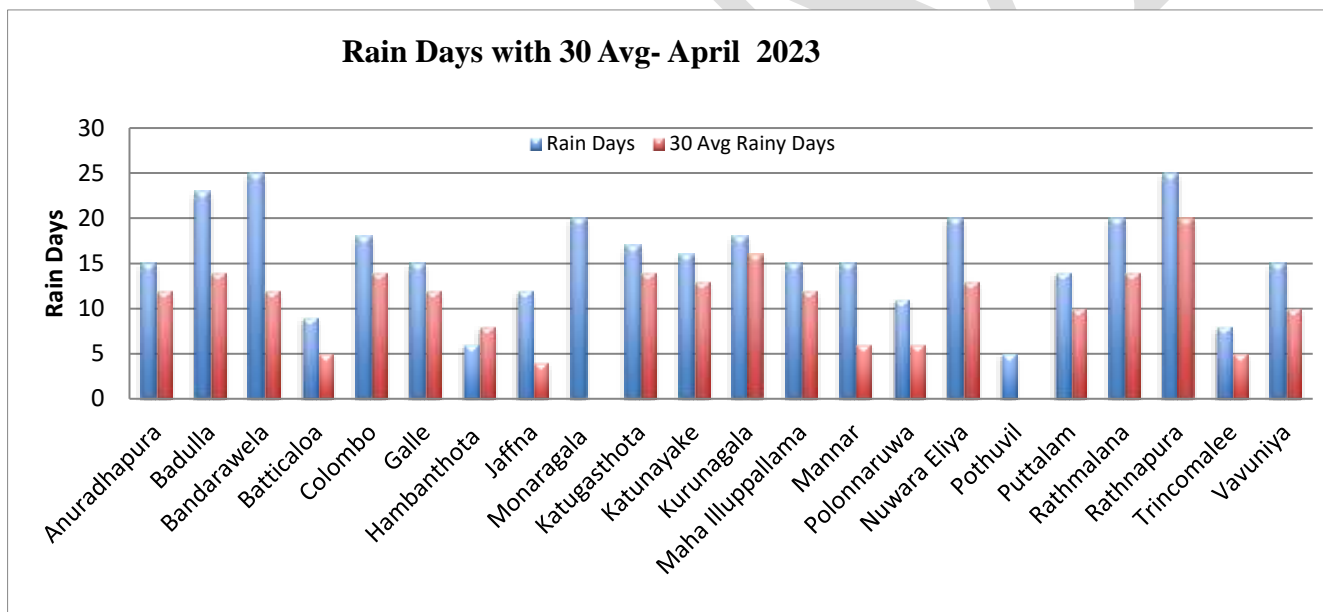


Fig 2: Monthly total no of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during April 2023

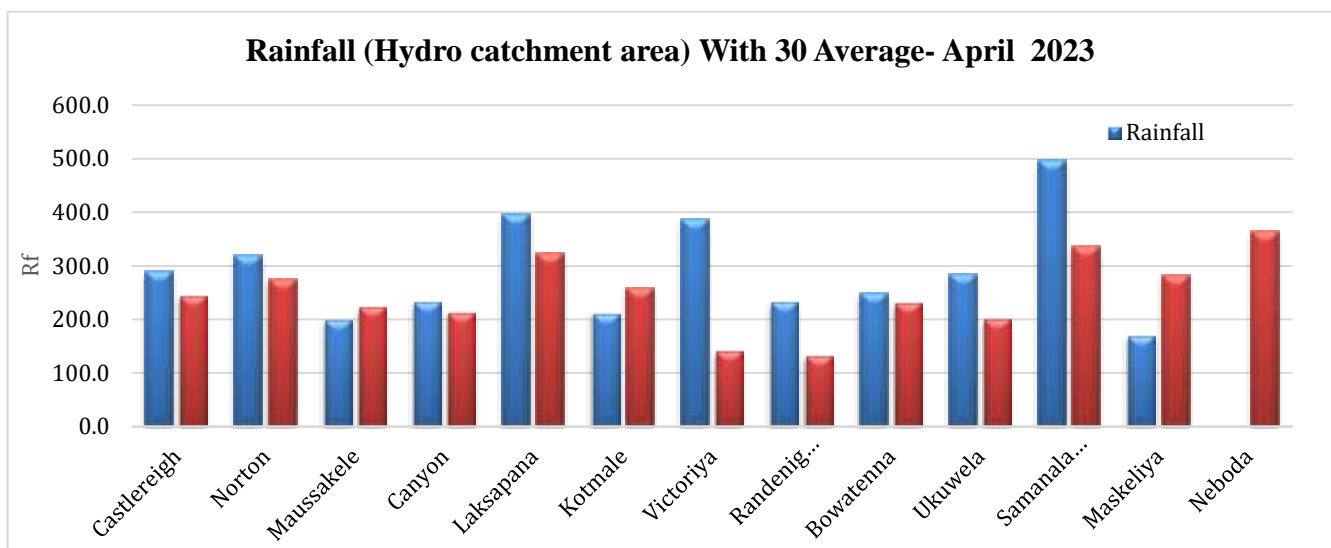


Fig 3 Monthly Total Rainfall (mm) with 30 years (1961-1990) of their averages at Hydro catchment areas during April 2023

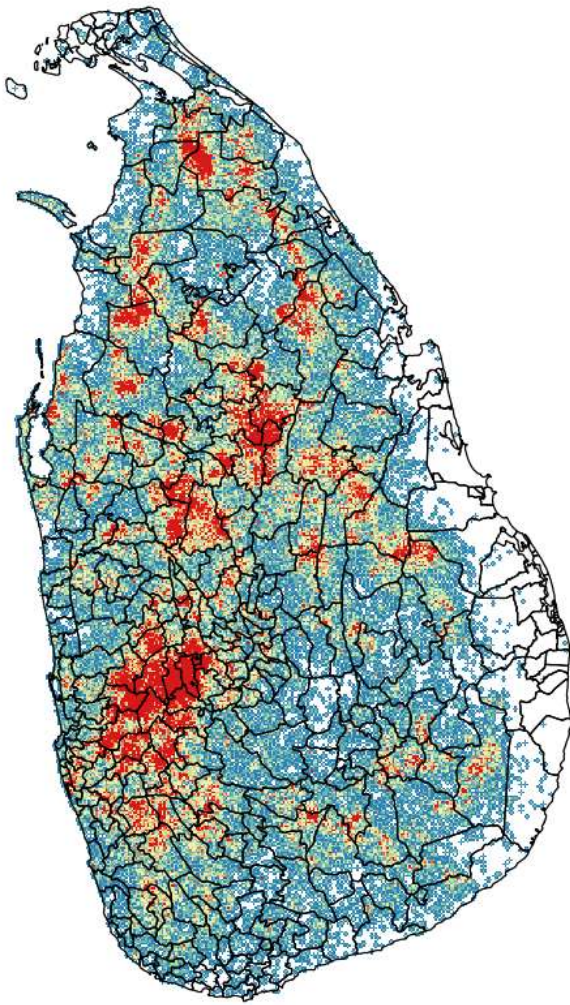


Fig 4 : Lightning flash density map for April 2023

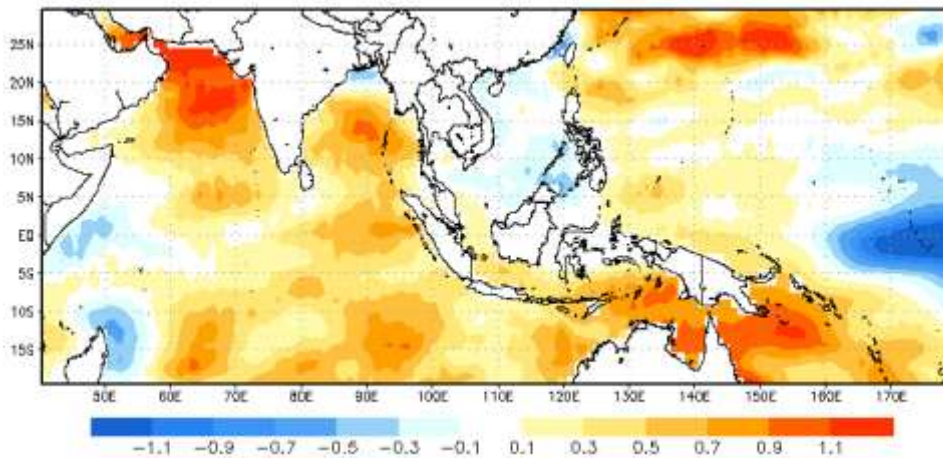


Fig 5 : SST anomaly map for April 2023

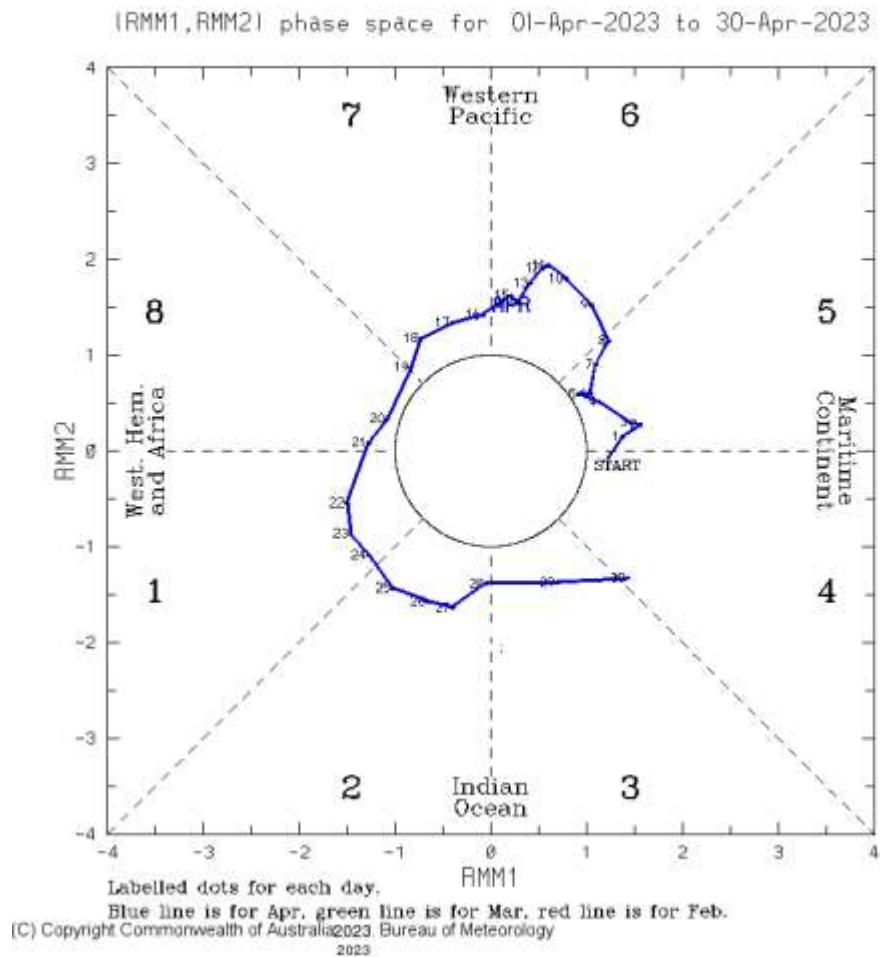


Fig 6 Phase diagram of MJO Index

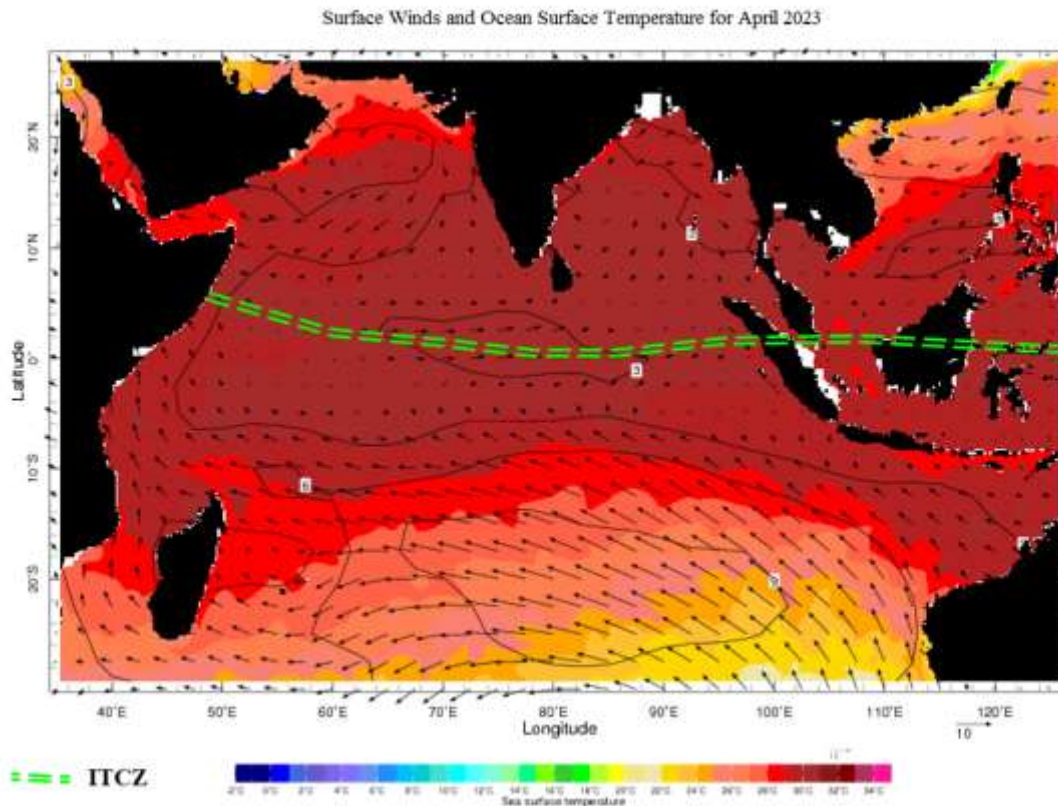


Fig 7 : Ocean Surface Winds and Ocean Surface Temperature for April 2023

Surface pressure and winds: The surface pressure was about or below average except on 02nd , 04th from, 07th to 15th on 18th and 28th April, when above average surface pressure values observed. Pressure distribution was fairly even or even during most of the days. However mild pressure gradient was observed on 09th , and 21st April.

The surface wind was predominantly calm/05kts and variable in direction .

Upper winds:

At 850hPa, Easterly wind flow dominated across the island. Anomalous easterly flow indicate the strengthening of easterly flow compared to the climatological average.

At 700 hPa, Easterly wind flow is apparent across the island .Anomalous northeasterly southwesterly trough appeared across Sri Lanka provided favourable conditions for suppressed convective activity in Sri Lanka

At 500 hPa, Easterly wind flow with anomalous south-easterly to southerly winds were apparent across the island. Northeast southwest oriented trough is appeared over Sri Lanka.

Temperature Field:

The maximum temperatures in the day were mostly above normal (Fig 12). Reported maximum temperature was 36.9°C at Polonnaruwa on 20th and 21st April. Reported minimum temperature was 9.1°C on 01st at NuwaraEliya.

Night minimum temperatures over most parts were above normal during the month..Lowest recorded minimum temperature for the month of April 2023 was 9.1°C on 01st at (Fig 13).

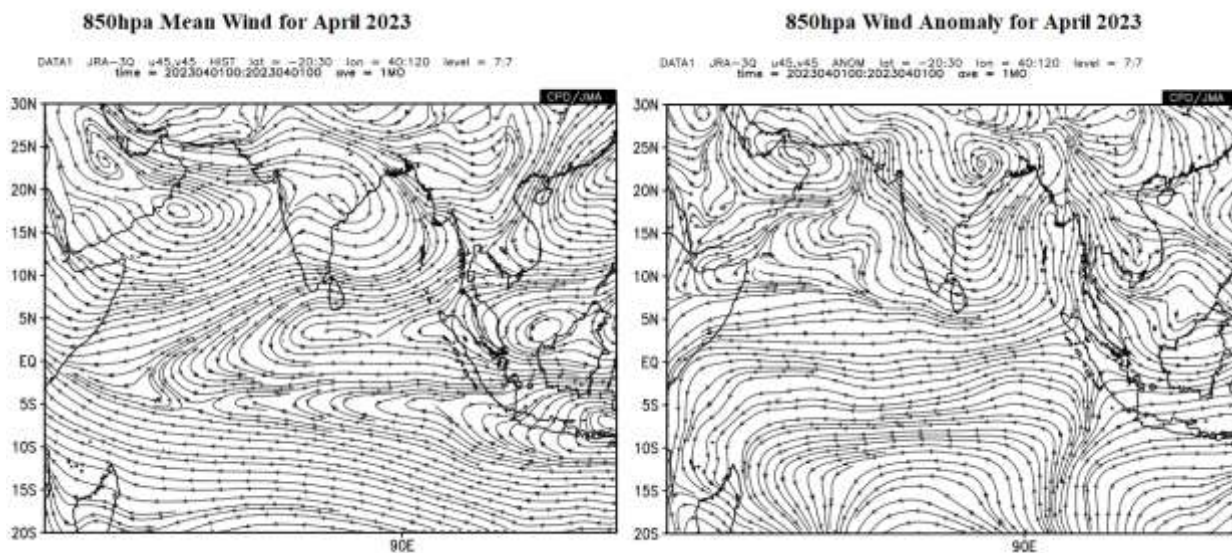


Fig 8 Monthly average wind pattern at 850hpa level during the month of April2023 (JRA 55)

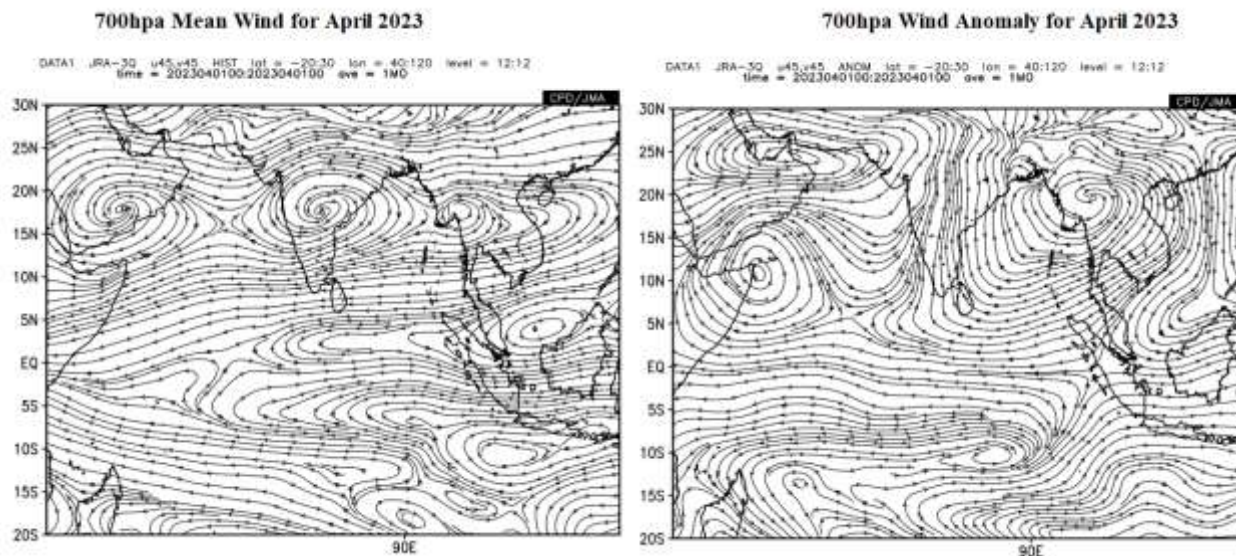


Fig 9: Monthly average wind pattern at 700hpa level during the month of April2023 (JRA 55)

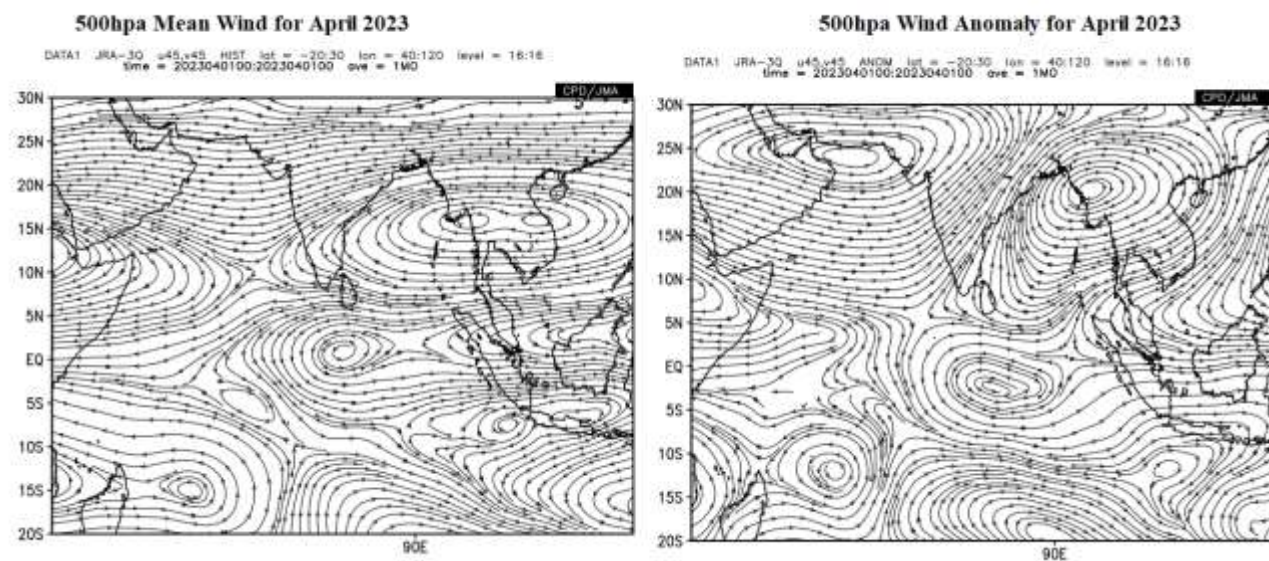


Fig. 10.Monthly average wind pattern at 500hpa level during the month of April2023 (JRA 55)

Maximum Temperature Anomaly for April 2023

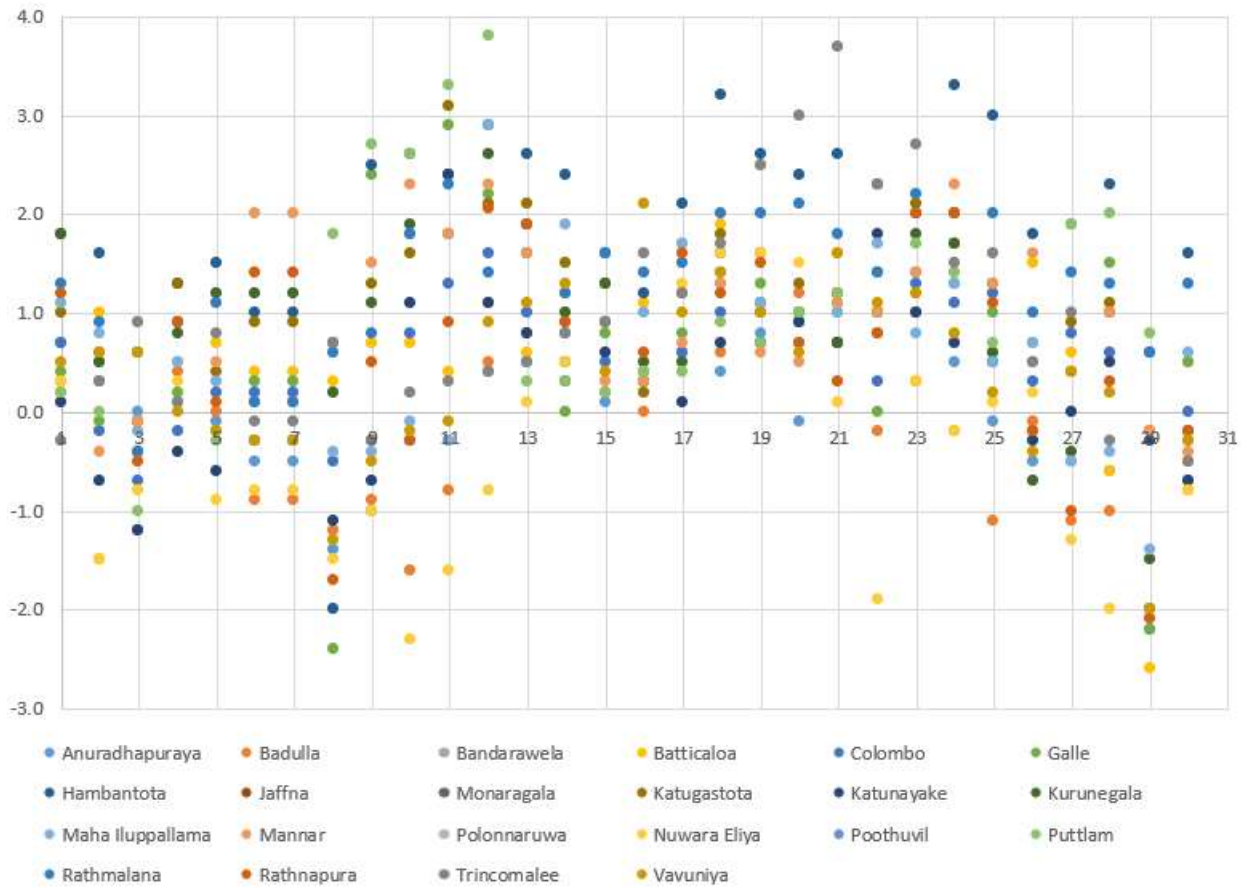


Fig 11 Maximum Temperature anomaly ($^{\circ}\text{C}$) for April 2023

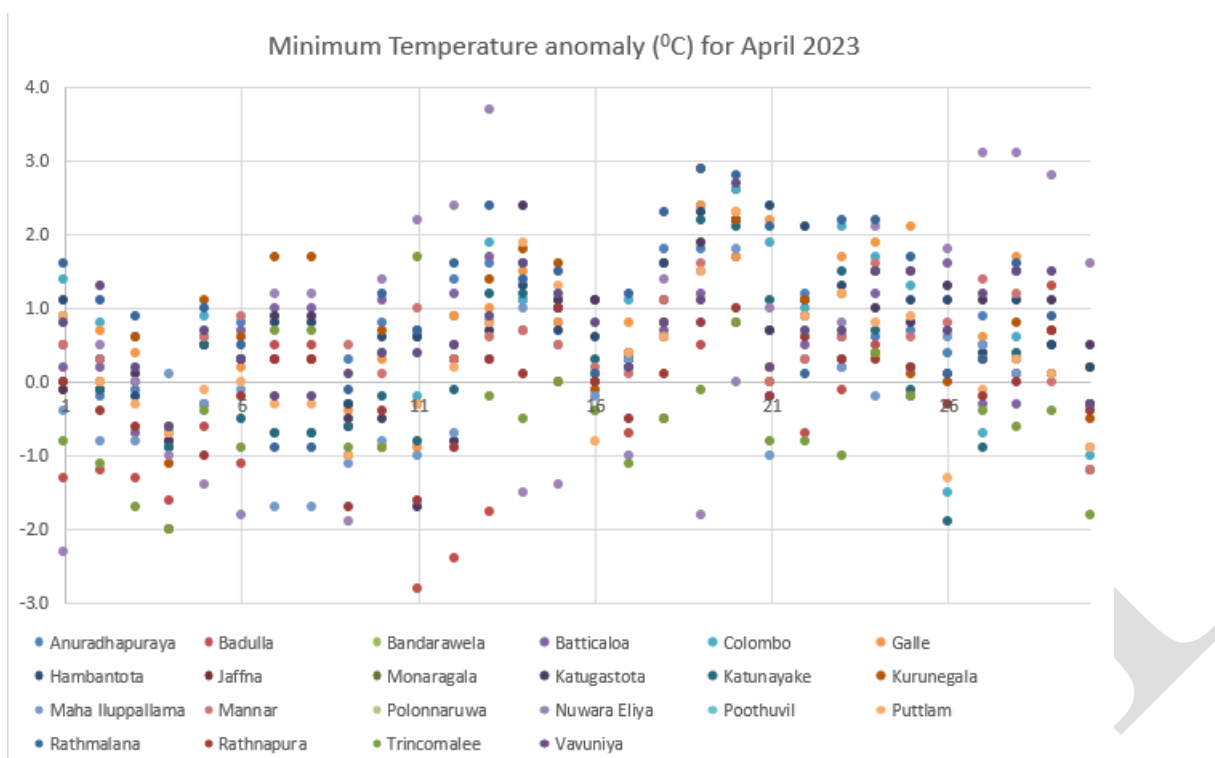


Fig 12 Minimum Temperature anomaly ($^{\circ}\text{C}$) for April 2023

Maximum and Minimum departures from normal day/night temperature were shown in table 3.

Rainfall: Most of the principal meteorological stations except Anuradhapura, Batticaloa, Colombo, Katunayake, Ratmalana, and Kurunegala received below average rainfall. (Fig 1). Maximum percentage were reported from Anuradhapura (181.1%) while minimum from Jaffna station (11.7%).

Most of the hydro catchment stations, except Carsereigh, Canyon, and reported about or below average rainfall (Fig 2).

Highest monthly rainfall was reported from Moraliya and it was 961.5 mm. The recorded maximum daily rainfall during month of March was 159mm at Gampaha (Bot-Garden) on 08th.

The total rainfall and the number of rain days at the principal meteorological stations recorded in the month against the respective average and rain-days are shown in the table 1, and 2, and in the figures 2, and 4.

Table-01-Monthly Total Rainfall(mm) and monthly total number of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during April 2023

Meteorological station	Monthly Total rainfall(mm)			Monthly Total No of rainy Days		
	2023-Apr	Average	%	2023-Apr	Average	%
Anuradhapura	274.5	151.6	181.1%	11	12	91.7%
Badulla	132.3	203.5	65.0%	12	14	85.7%
Bandarawela	157.7	158.3	99.6%	13	12	108.3%
Batticaloa	94.1	55.0	171.1%	4	5	80.0%
Colombo	261.7	245.6	106.6%	17	14	121.4%
Galle	134.2	206.8	64.9%	14	12	116.7%
Hambanthota	40.4	99.6	40.6%	7	8	87.5%
Jaffna	6.1	52.3	11.7%	5	4	125.0%
Monaragala	328.9			13		
Katugasthota	149.9	187.7	79.9%	14	14	100.0%
Katunayake	243.0	241.4	100.7%	15	13	115.4%
Kurunagala	389.8	264.3	147.5%	18	16	112.5%
Maha Illuppallama	107.3	179.5	59.8%	13	12	108.3%
Mannar	61.3	81.4	75.3%	5	6	83.3%
Polonnaruwa	70.3	116.4	60.4%	7	6	116.7%
Nuwara Eliya	112.3	158.4	70.9%	13	13	100.0%
Pothuvil	75.9	81.9	92.7%	7	na	#VALUE!
Puttalam	112.0	181.5	61.7%	9	10	90.0%
Rathmalana	271.2	246.5	110.0%	15	14	107.1%
Rathnapura	314.0	338.9	92.6%	20	20	100.0%
Trincomalee	45.2	49.2	91.9%	7	5	140.0%
Vavuniya	80.9	128.5	63.0%	5	10	50.0%
Mattala	199.5			11		

Table-03-Monthly Total Rainfall(mm) with 30 years(1961-1990) of their averages at Hydro catchment areas during April 2023

Hydro Catchment	April2023	Average	% (percentage of average)
Castlereigh	304.3	244.8	124.3%
Norton	359.8	275.8	130.5%
Maussakele	235.6	224.5	104.9%
Canyon	288.5	214.3	134.6%
Laksapana	313.3	324.3	96.6%
Kotmale	247.9	258.9	95.7%
Victoriya	131.5	141.8	92.7%
Randenigala	88.3	132.1	66.8%
Bowatenna	159.7	232.3	68.8%
Ukuwela	189.9	202.4	93.8%
Samanala Wewa	305.0	335.7	90.9%
Maskeliya		282.3	
Neboda		363.9	

Note that the meteorological day in this text is reckoned as the 24hr period from 08.30hrs to 08.30hrs following day

Table 3(a) - Extremes of Maximum Temperatures April 2023				
	Maximum			Highest Std.Div
	Value	Offsets		
		(-)	(+)	
Value	36.9	- 2.6	3.8	1.47
Station	Polonnaruwa	Batticaloa	Puttlam	Monaragala
Date	20& 21/04/2023	29/04/2023	12/04/2023	
Table 3(b) -Extremes of Minimum Temperature April 2023				
	Minimum			Highest Std.Div
	Value	Offsets		
		(-)	(+)	
Value	9.1	- 2.8	3.7	1.37
Station	NuwaraEliya	Badulla	NuwaraEliya	Mannar
Date	1/04/2023	11/04/2023	13/04/2023	

Prepared by National Meteorological Centre(NMC)
Department of Meteorology