

Weather Synopsis –July 2022

Above normal rainfall was reported over most of meteorological stations except stations located along Western and southwestern coastal areas such as Katunayake, Colombo, Ratmalana and Galle as well as Mannar, Ratnapura and Trincomalee where below average rainfall was reported (Fig 4). Maximum percentage was reported from MahaIluppallama (580.8%) while minimum from Colombo station (10.3%) (Table 3). All meteorological stations reported above normal rainy days (Fig.5) except stations located along Western coastal areas such as Katunayake, Colombo, and Ratmalana.

Most of the hydro catchment stations, except Castlereigh, Maussakele, , Canyon, Laksapana, Samanala Wewa, and Maskeliya reported above average rainfall (Fig. 6). Highest cumulative rainfall was 832.9 mm at Watawala . Highest rainfall received during 24hours, was 174.2 mm at Watawala Farm on the 02nd July.

Windy and showery conditions were enhanced over south-western parts 02nd to 04th of July (table 1) with strengthening of southwest monsoon flow across Sri Lanka from low levels and formation of mild cyclonic vortex in the vicinity of Sri Lanka at mid levels (Fig 1). According to the Disaster Management Centre (DMC) strong winds and heavy rainfall affected about 49 families and around 192 people in Kegalle, Ratnapura and Kandy districts.

Strong southwesterly winds due to strengthening of monsoon flow across Sri Lanka and swell waves with wave height (3-4m) and wave period (15-20s) propagating from southern Indian ocean created coastal inundation in southern and western coasts during high tide period on 02nd /03rd July. Fishing and naval operations were suspended from 1st onwards

Table 1 stations received above 100mm rainfall on July 02 and 03

Rain gauge Station	24 hour Rainfall (mm)	Date
2022 July 02		
Watawala	174.2	July 02, 2022
Deniyaya	154.0	July 02, 2022
Canyon	121.5	July 02, 2022
BATUWANAGALA	101.7	July 02, 2022
2022 July 03		
Laksapana	125.0	July 03, 2022
Canyon	104.0	July 03, 2022

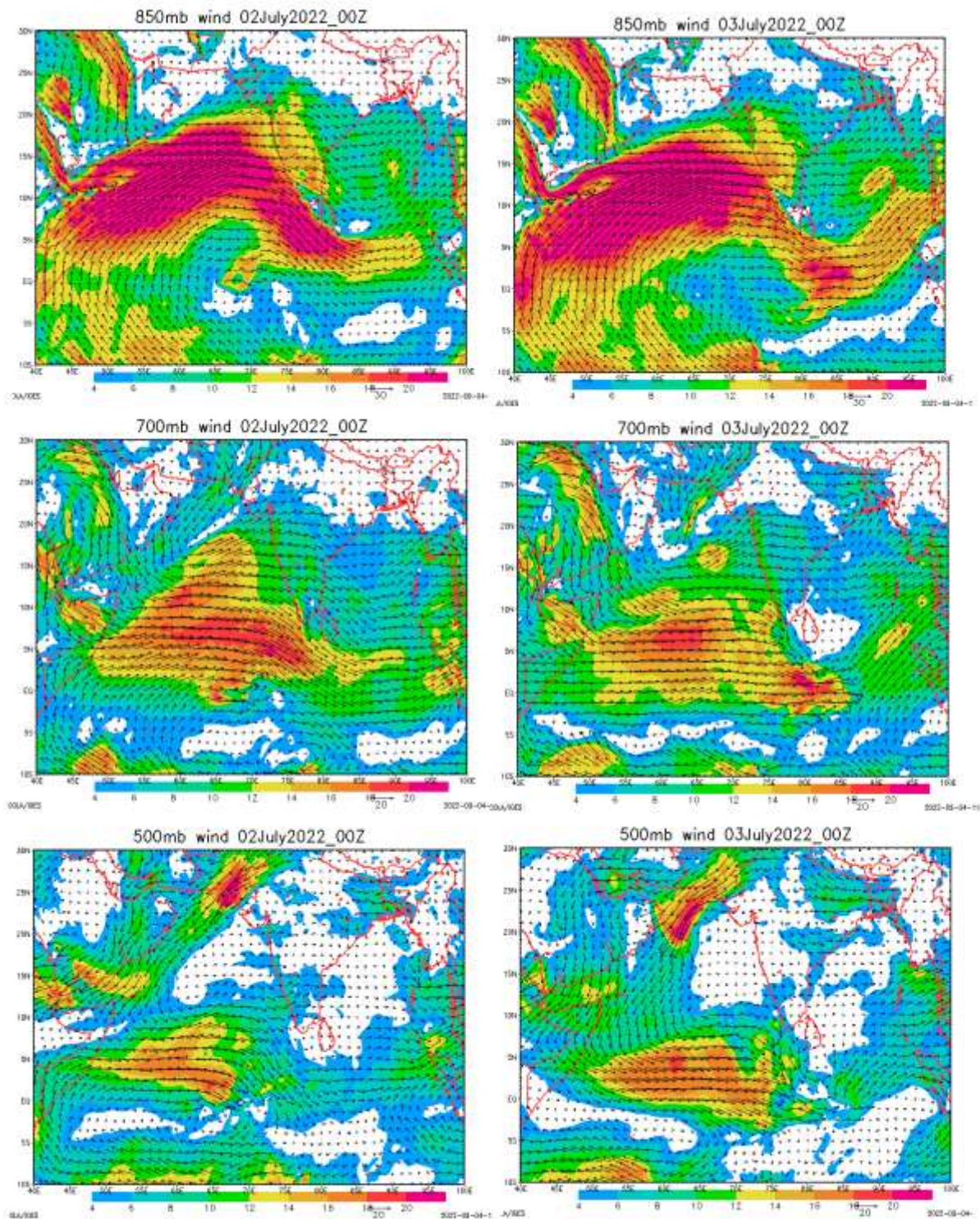


Fig 1: ERA5 wind analysis at 850 mb wind (upper) , 700 mb wind (middle) and 500 mb wind (lower) from 00z 02nd July to 00z 03rd July 2022.

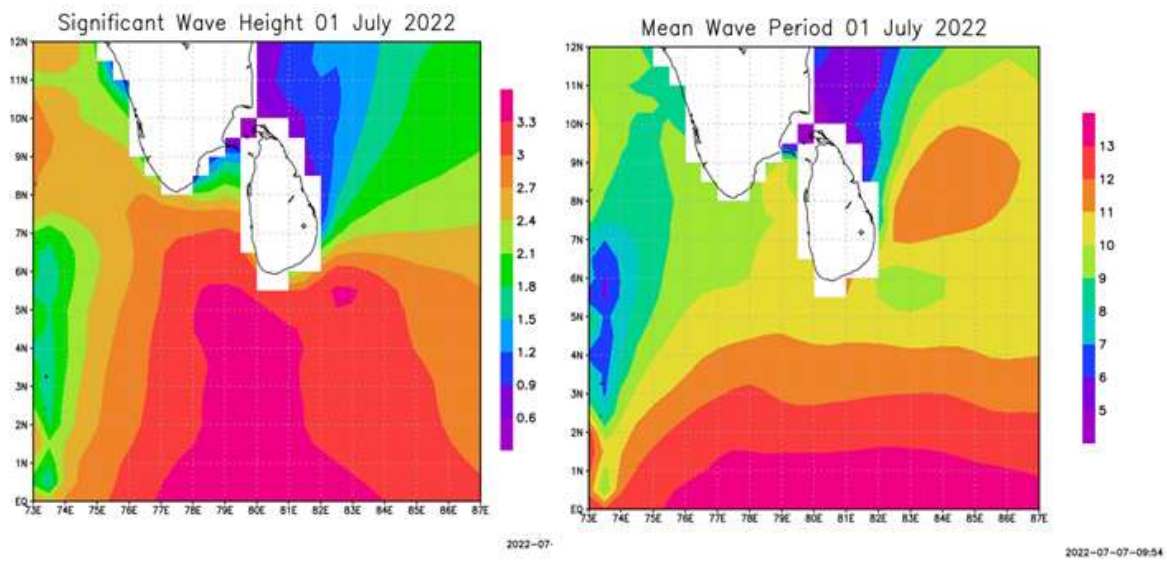


Fig 2: ERA5 Significant wave height (left) and Mean wave period on 01st July 2022.



Figure 7 depicted lightning flash density map for July 2022. High lightning density was reported from Maritimé pattu Vavunya North, Welioya, Galenbindunuwewa, Ehetuwewa, Dimbulagala, Mahaoya, Ratnapura, Kuruwita, Elapatha, Katharagama, Buththala, Madula, and Bibile.

Mostly above normal day temperature and night temperatures were experienced during the month of July 2022. Highest recorded maximum temperature was 37.4 °C at Batticaloa on 13rd July 2022, while the lowest recorded minimum temperature was 12.1 °C at Nuwara Eliya on 19th July 2022.

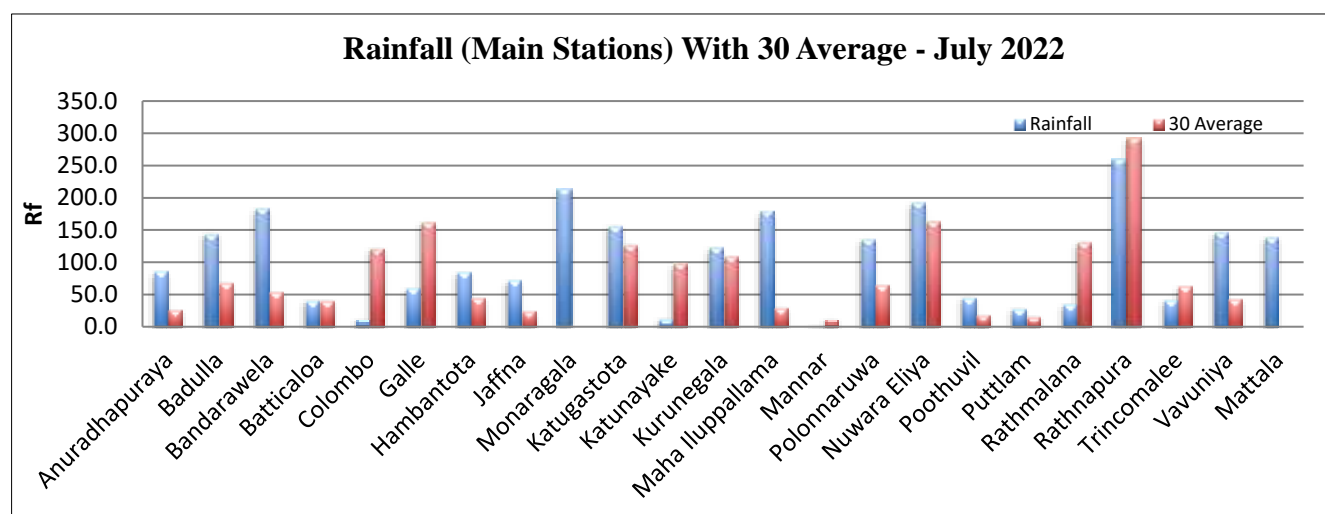


Fig 4: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Main Meteorological stations areas during July 2022

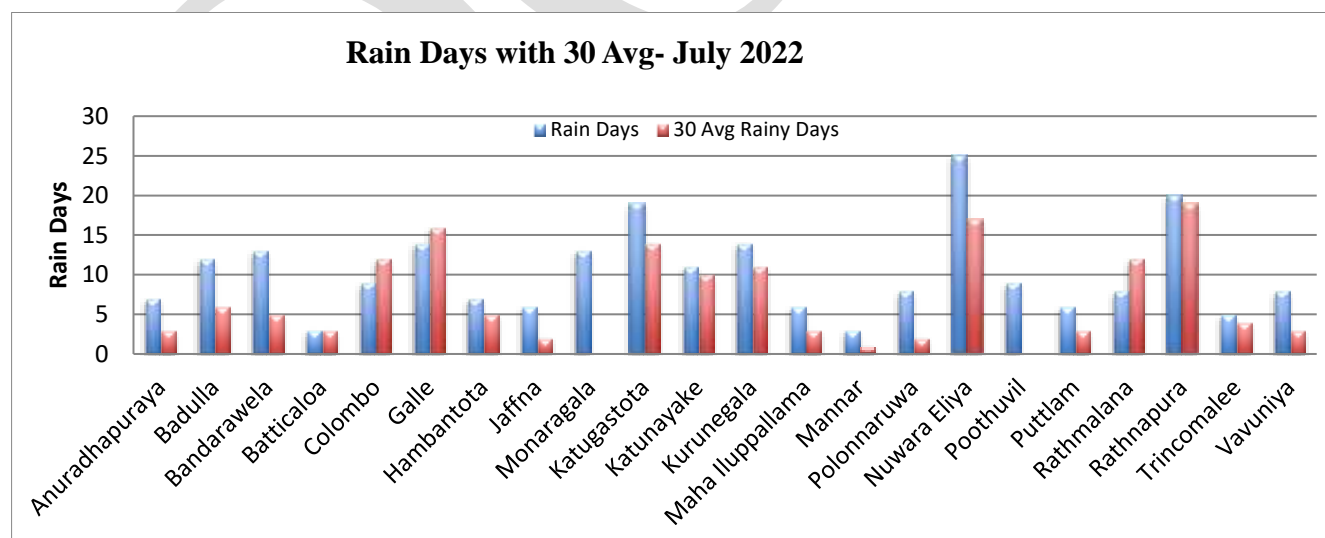


Fig 5: monthly total no of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during July 2022

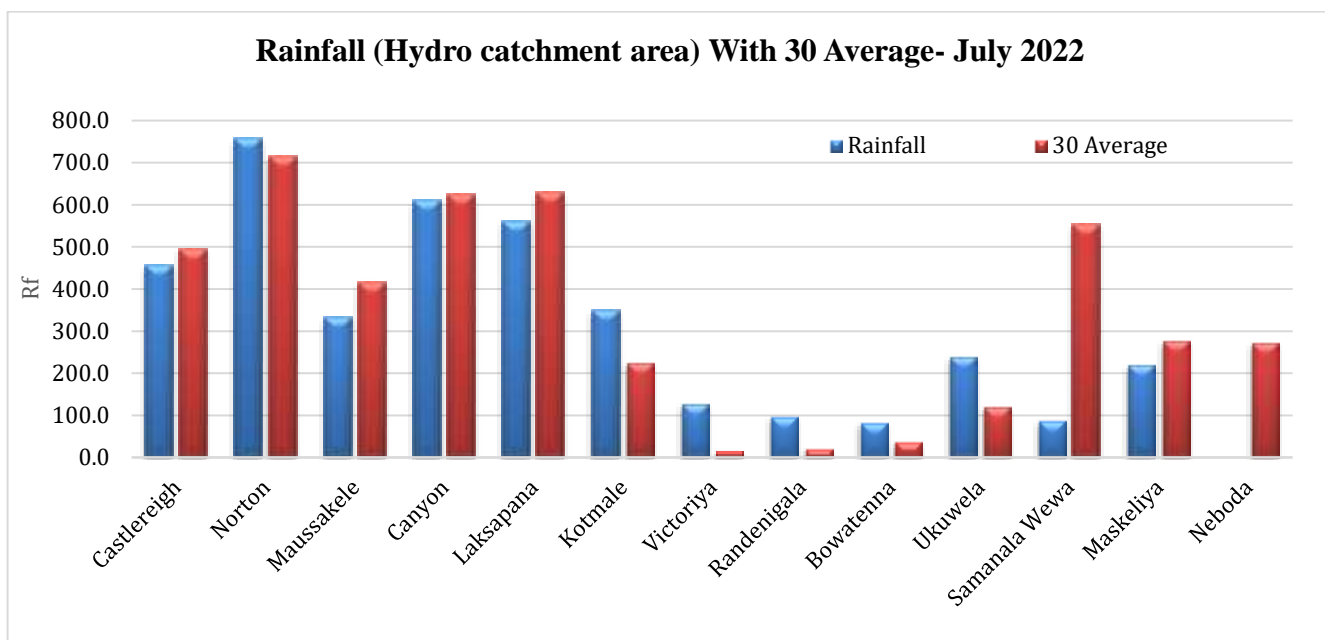


Fig 6: Monthly Total Rainfall (mm) with 30 years (1961-1990) of their averages at Hydro catchment areas during July 2022

La Nina conditions were observed during Month of July 2022. Ocean Nino Index is **-0.9** and **-0.8** during May to July (MJJ) and June to August (JJA) respectively (NOAA Climate prediction Center). Slightly negative IOD was observed during July 2022 (BoM, Australia).

Sea surface waters in Bay of Bengal are warmer than average (Fig. 11)

Strong Madden-Julian Oscillation (MJO) was at 3 on 01st July, then propagated to phase 4 from 02nd to 06th, then to phase 5 from 07th to 08th. It was weaken from 09th and 20th and strengthen again at phase 1 on 21st, stagnated in phase 1 till 26th and weaken during remaining days of July 2022 (Fig.12).

The average position of the shear line was laid between 01⁰N and Equator from 40⁰E to 60⁰E, about Equator from 60⁰E to 100⁰E, between Equator and 05N and from 100⁰E to 120⁰E (Fig 10). It was fluctuated about 02-03⁰ north and south of average position.

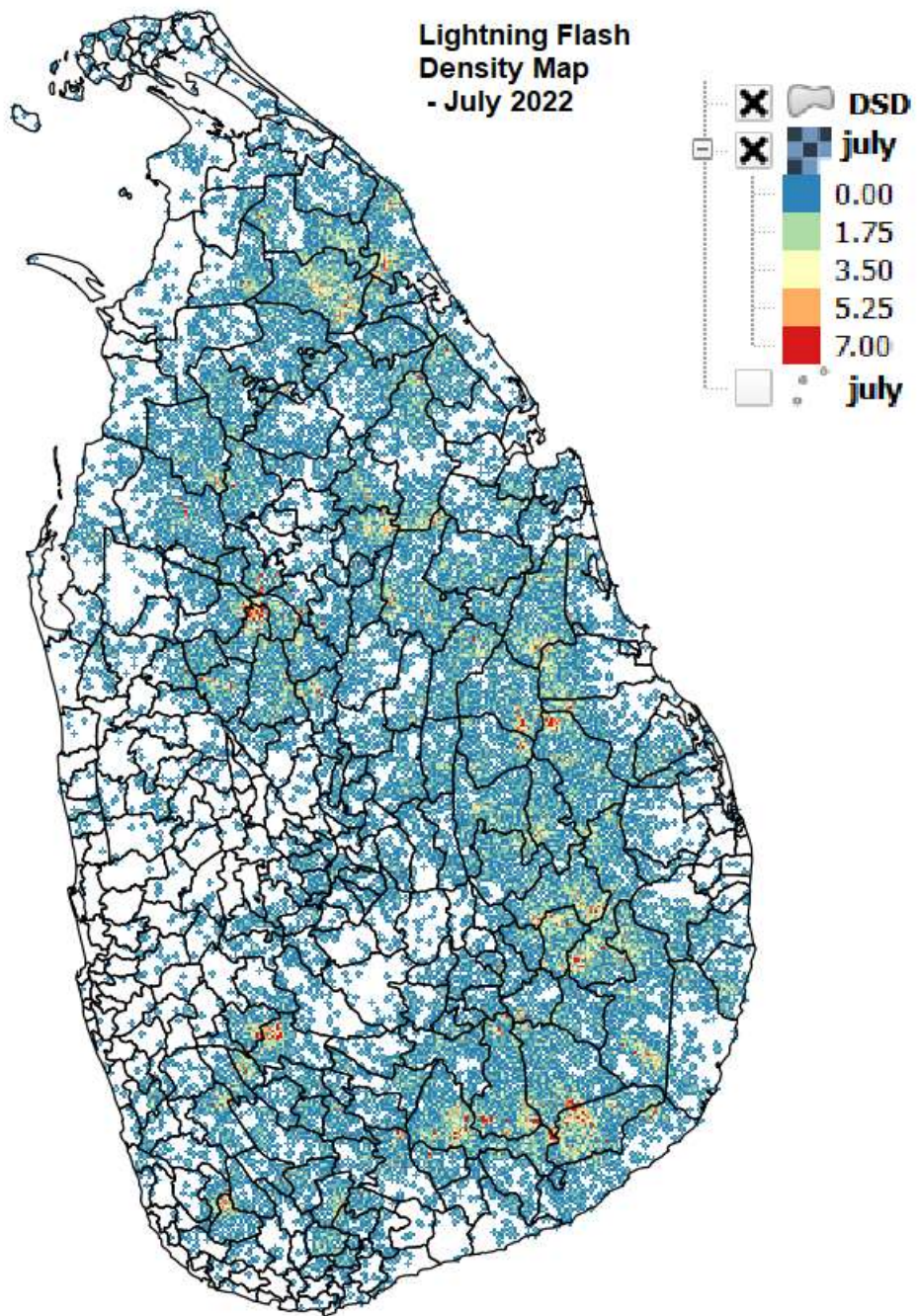


Fig 7 : Lightning flash density map for July 2022

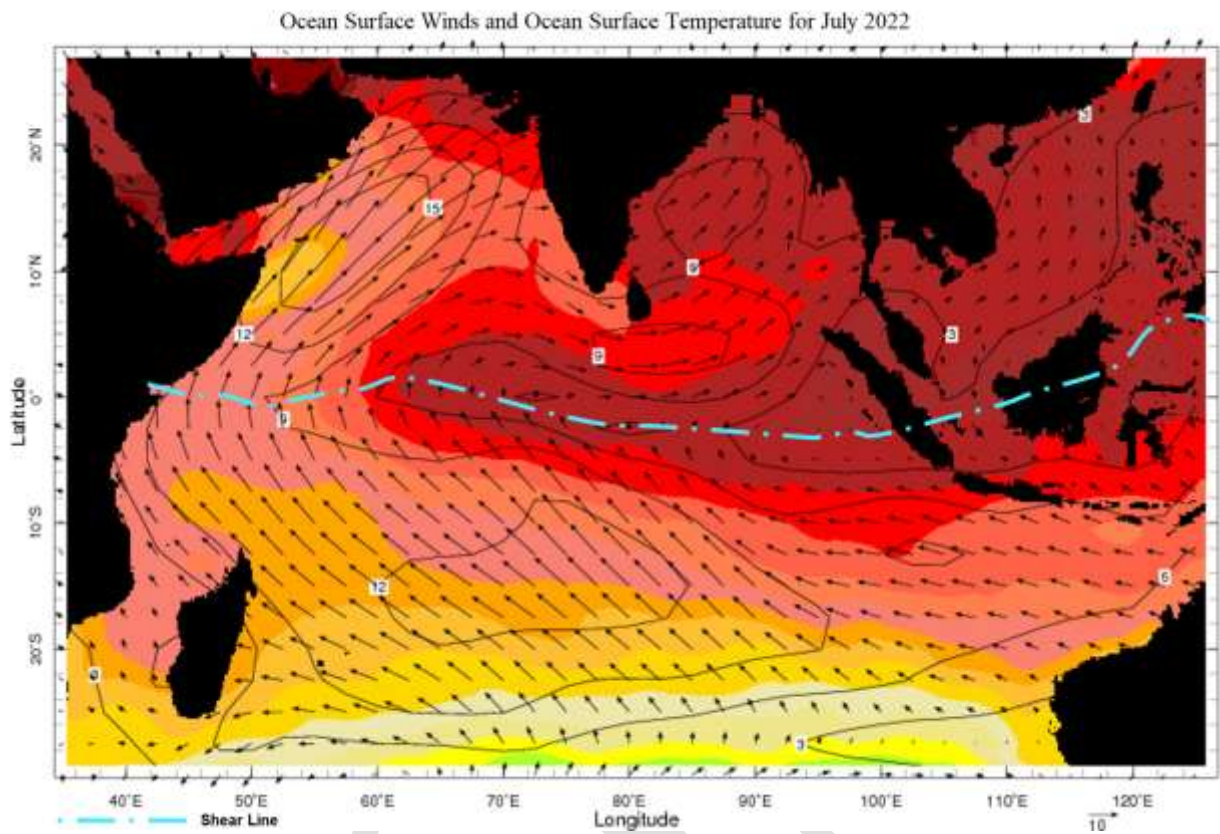


Fig 8: Ocean Surface Winds and Ocean Surface Temperature for July 2022

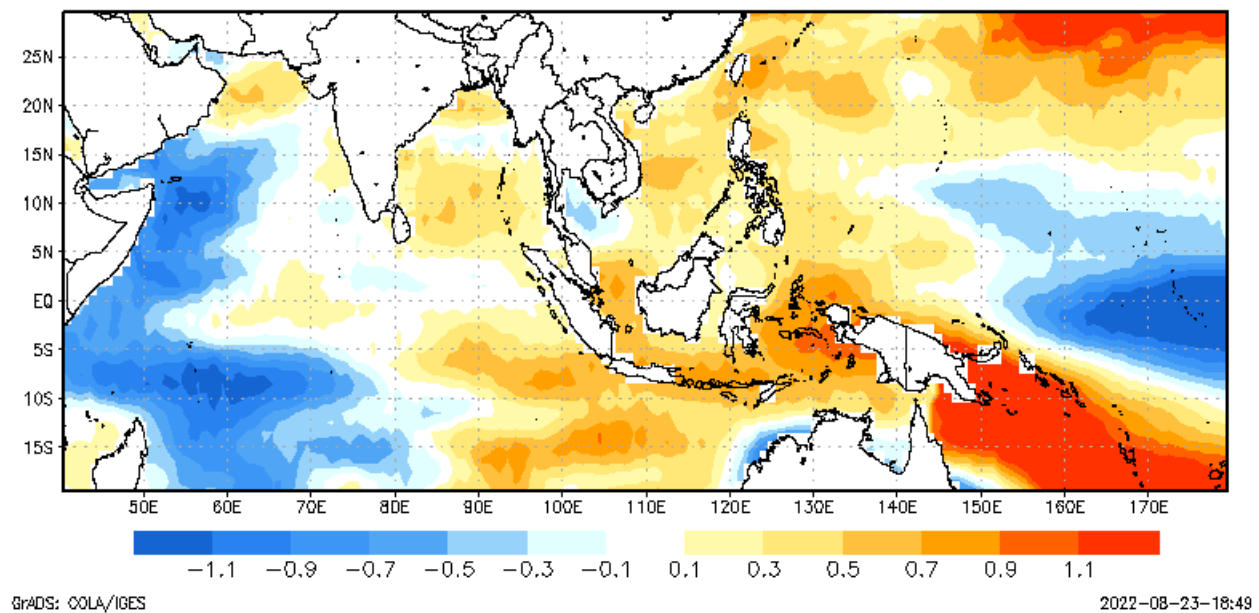
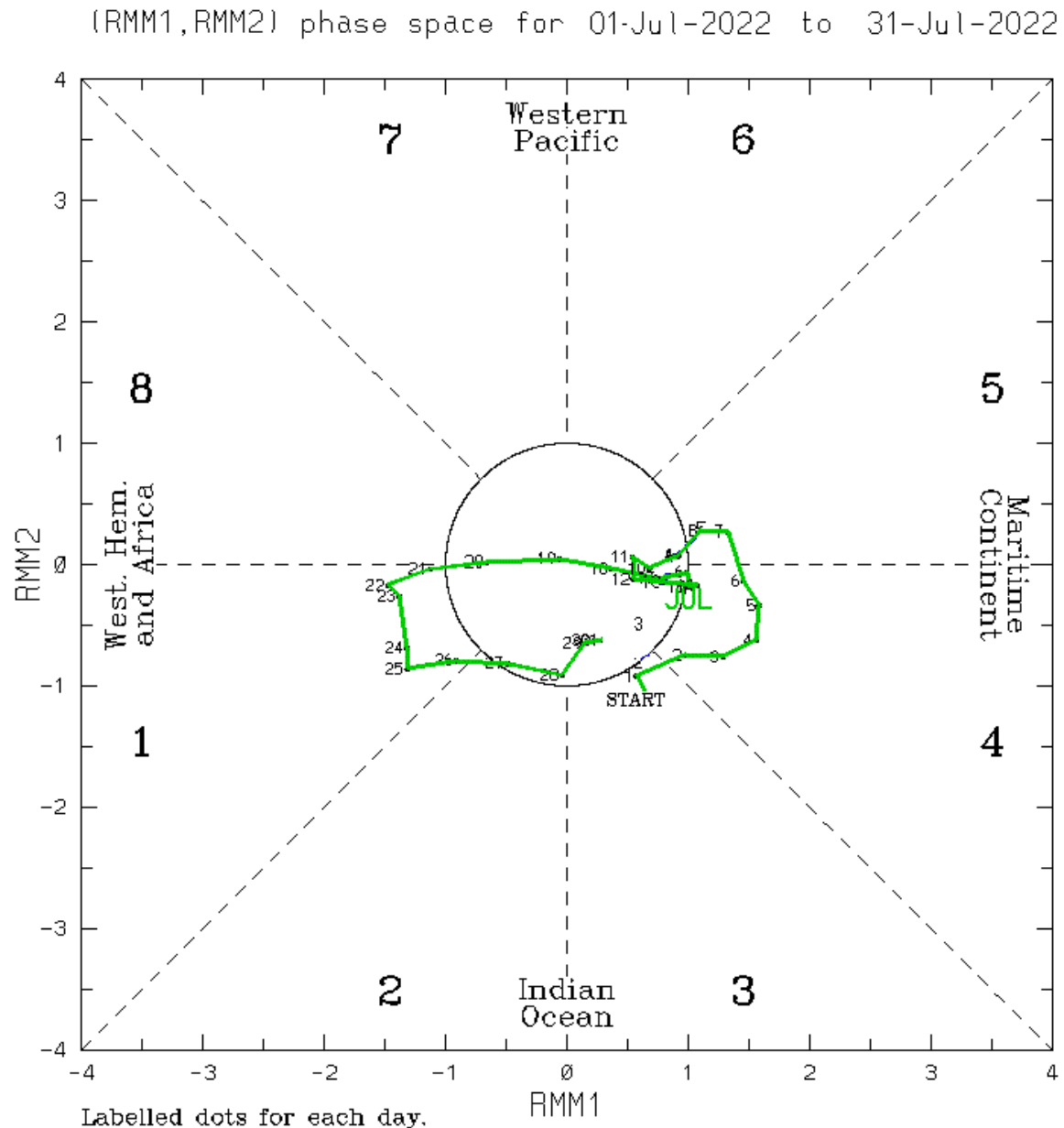


Fig 09: Sea Surface Temperature anomalies for July 2022



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2022

Fig 10: Phase diagram of MJO Index

Surface pressure and winds: The surface pressure was below average except on 07th, , and from 11th to 12th when it was above average till 25th July. The surface pressure below average over western coast while above average northeastern and eastern coast from 26th to 30th when even or fairly even pressure distribution is observed. Southwesterly pressure gradient was mild on 02nd, from 20th to 21st, from 24th to 25th and on 31st, ; moderate on 01st, from 03rd to 04th, on 06th, on 08th, on 12th, from 15th to 18th, and from 22nd to 23rd; steep on 05th, on 07th, from 09th to 11th, and from 13th to 14th.

The surface wind was from westerly to Southwesterly direction and speed varied within 05-15kts.

Upper winds:

At 850hPa, Westerly wind flow is dominated over the island. Anomalous north-easterly flow indicate weakening of monsoon flow at 850 mb. (Fig 11).

At 700 hPa, Westerly wind flow is dominated over the island. Anomalous north-easterly flow indicate weakening of monsoon flow at 700 mb. (Fig 12)

At 500 hPa, Westerly wind flow is dominated over the island. Anomalous east-west oriented trough axis across Sri Lanka at 500mb level suggest favourable conditions to formation of evening thundershowers over the leeside (Fig 13) .

The 200 hpa the upper tropospheric ridge was laid from 32°N40°E to 33°N100°E . Tropical easterly jet was appeared in the vicinity of Sri Lanka.

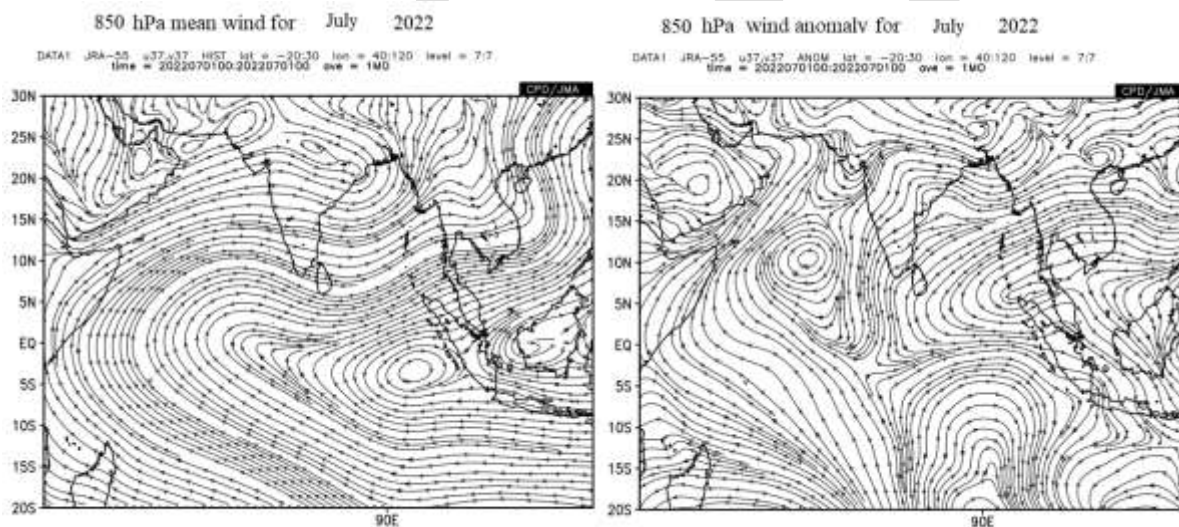


Fig. 11 Monthly average wind pattern at 850hpa level during the month of July 2022 (JRA55)

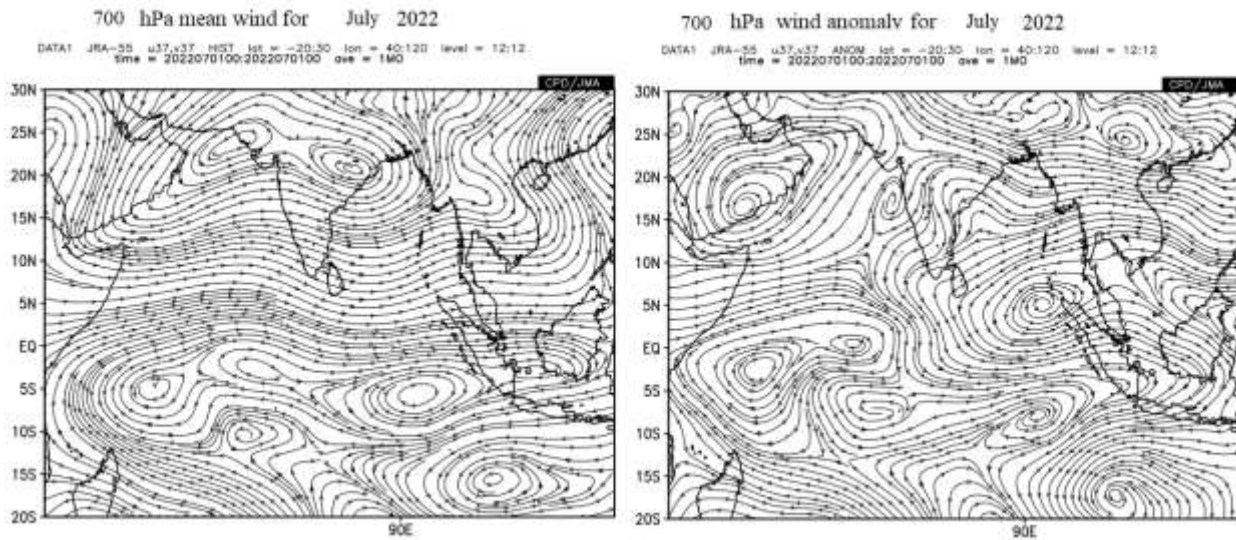


Fig. 12 Monthly average wind pattern at 700hpa level during the month of July 2022 (JRA55)

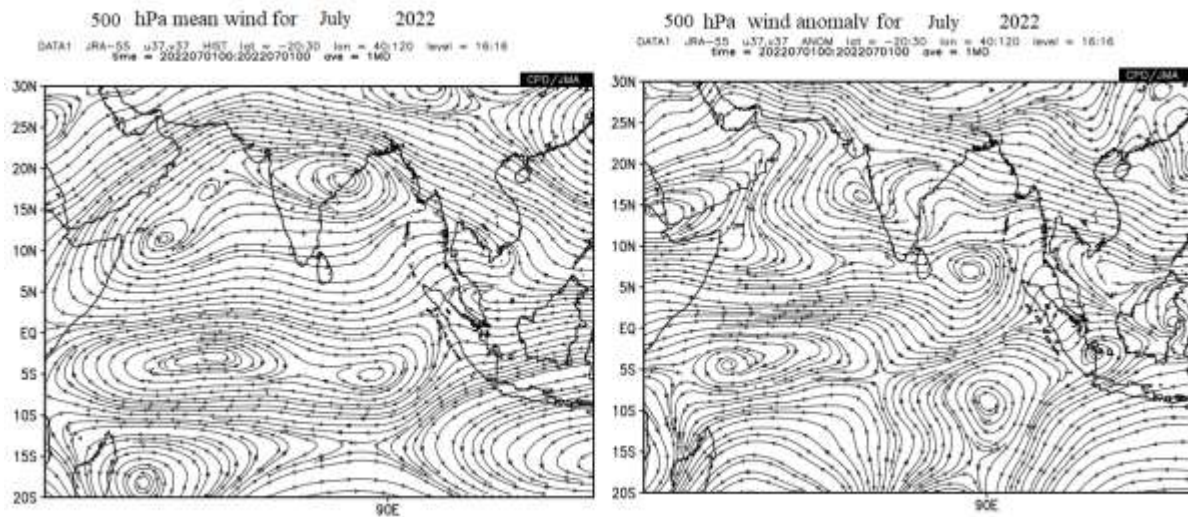


Fig. 13 Monthly average wind pattern at 500hpa level during the month of July 2022 (JRA55)

Temperature Field:

The maximum temperatures in the day were mostly above normal in most places during the month of July 2022. Day temperatures were exceptionally above normal at Hambantota during first two weeks of the month. Below average maximum temperatures were reported at some stations during last week of the month (Fig.14).

Highest recorded maximum temperature for the month of July 2022 was 37.4°C at Batticaloa on 13th (Table 4a).

Night minimum temperatures over most parts were above normal during the month (Fig 15). Below average minimum temperatures were reported at some stations during last week of the month. Lowest recorded minimum temperature for the month of July 2022 was 12.1⁰C at NuwaraEliya on 19th (Table 4b).

Maximum and Minimum departures from normal day/night temperature were shown in table 4.

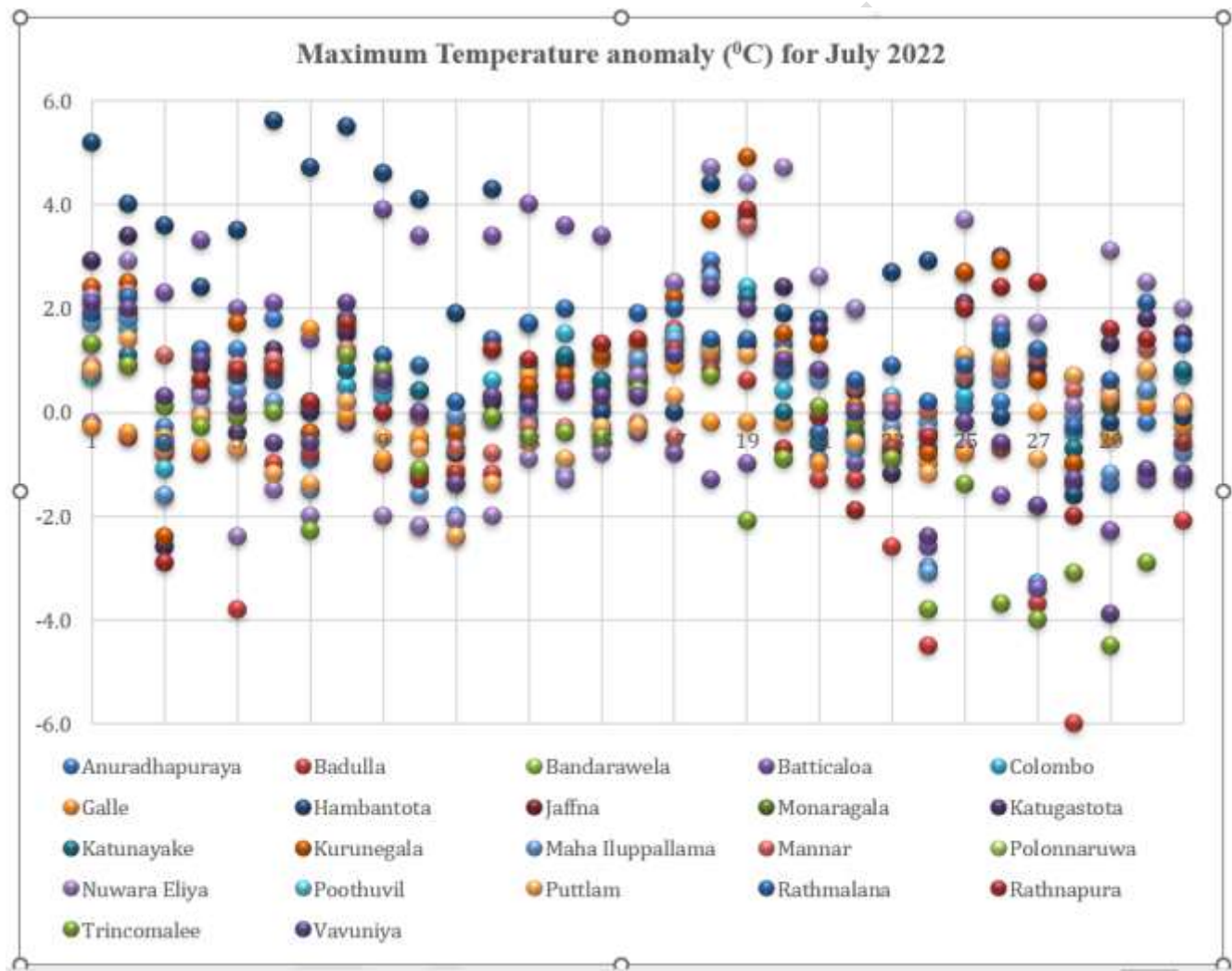


Fig 16 Maximum Temperature anomaly (°C) for July 2022

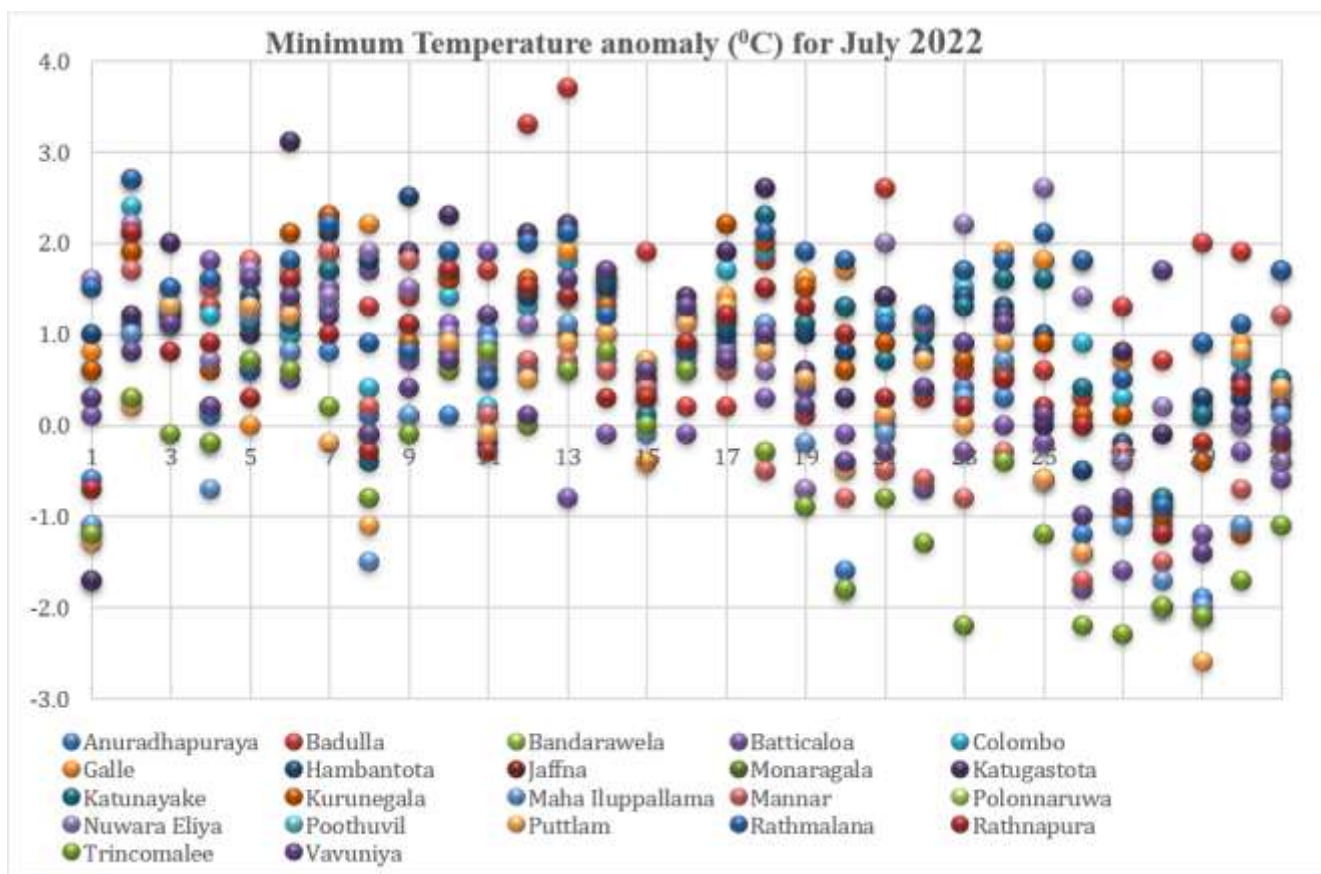


Fig 17 Minimum Temperature anomaly ($^{\circ}\text{C}$) for July 2022

Above normal rainfall was reported over most of meteorological stations except stations located along Western and southwestern coastal areas such as Katunayake, Colombo, Ratmalana and Galle as well as Mannar, Ratnapura and Trincomalee where below average rainfall was reported (Fig 4). Maximum percentage was reported from MahaIluppallama (580.8%) while minimum from Colombo station (10.3%)(Table 3). All meteorological stations reported above normal rainy days (Fig.5) except stations located along Western coastal areas such as Katunayake, Colombo, and Ratmalana.

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The monthly total rainfall and the number of rain days at the principal meteorological stations, total rainfall at hydro catchment areas, are shown in tables 2 and 3.

Table-02-Monthly Total Rainfall (mm) with 30 years (1961-1990) of their averages at Hydro catchment areas

Hydro Catchment	July 2022	Average	% (percentage of average)
Castlereigh	457.6	495.1	92.4%
Norton	757.6	714.0	106.1%
Maussakele	331.8	415.2	79.9%
Canyon	610.4	623.9	97.8%
Laksapana	561.2	629.3	89.2%
Kotmale	349.2	225.2	155.1%
Victoriya	127.2	15.5	820.6%
Randenigala	98.1	21.1	465.7%
Bowatenna	83.1	38.2	217.5%
Ukuwela	240.7	120.5	199.8%
Samanala Wewa	89.0	554.1	16.1%
Maskeliya	220.6	277.1	79.6%
Neboda		272.6	

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

Table-03- total rainfall and the number of rain days at the principal meteorological stations recorded in the month against the respective averages (1961-1990).

Meteorological station	Monthly Total rainfall(mm)			Monthly Total No of rainy Days		
	2022-July	Average	%	2022-July	Average	%
Anuradhapuraya	87.1	27.1	321.5%	7	3	233.3%
Badulla	145.3	69.3	209.7%	12	6	200.0%
Bandarawela	185.4	54.7	338.9%	13	5	260.0%
Batticaloa	41.8	41.4	101.0%	3	3	100.0%
Colombo	12.6	121.9	10.3%	9	12	75.0%
Galle	61.5	163.2	37.7%	14	16	87.5%
Hambantota	85.5	45.5	187.9%	7	5	140.0%
Jaffna	73.1	25.1	291.4%	6	2	300.0%
Monaragala	213.0			13		
Katugastota	157.5	128.1	123.0%	19	14	135.7%
Katunayake	13.6	99.2	13.7%	11	10	110.0%
Kurunegala	124.7	111.2	112.2%	14	11	127.3%
Maha Iluppallama	180.0	31.0	580.8%	6	3	200.0%
Mannar	3.3	12.4	26.7%	3	1	300.0%
Polonnaruwa	137.4	65.6	209.5%	8	2	400.0%
Nuwara Eliya	193.8	164.9	117.5%	25	17	147.1%
Poothuvil	46.2	18.9	244.2%	9	na	!
Puttlam	29.1	16.8	173.3%	6	3	200.0%
Rathmalana	35.8	132.7	26.9%	8	12	66.7%
Rathnapura	260.0	292.8	88.8%	20	19	105.3%
Trincomalee	42.7	63.8	67.0%	5	4	125.0%
Vavuniya	148.1	43.5	340.5%	8	3	266.7%
Mattala	139.3			7		

Table 4(a) - Extremes of Maximum Temperatures				July	2022
	Maximum			Highest Std.Div	
	Value	Offsets			
		(-)	(+)		
Value	37.4 ⁰ C	6	5.6	2.26	
Station	Batticaloa	Badulla	Hambantota	NuwaraEliya	
Date	13/07/2022	28/07/2022	06/07/2022		
Table 4(b) -Extremes of Minimum Temperature May2022					
	Minimum			Highest Std.Div	
	Value	Offsets			
		(-)	(+)		
Value	12.1 ⁰ C	2.6	3.7	1.65	
Station	NuwaraEliya	Puttalam	Badulla	Polonnaruwa	
Date	19/07/2022	29/07/2022	13/07/2022		

Prepared by National Meteorological Centre (NMC)
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