

# Weather Synopsis –September 2022.

Below normal rainfall was reported at the principal meteorological stations except Katugastota, Kurunegala and Pottuvil (Fig 5). Number of rainy days was below normal over all the principal meteorological stations.

Hydro catchment stations reported below normal rainfall except Bowatenna and Ukuwela where above normal rainfall reported (Fig 6).

Highest cumulative rainfall was **464.1mm** at Maliboda . Highest rainfall received during 24hours, was 240.0 mm at Wewelthalawa on 05<sup>th</sup> September. High lightning density was reported from Oddusudan, Puthukudiirippu, Madu, Mahavilachchiya, Vengalacheddikulam, and Rattota (Fig 1)

Showers were reported from southwest quarter during first week of the month. Southwest monsoon flow strengthens at 850mb level across Sri Lanka with mid level cyclonic circulation appeared in the vicinity of Sri Lanka (Fig. 4) from 03<sup>rd</sup> to 05<sup>th</sup> bringing very heavy falls exceeding 150 in NuwaraEliya, Kandy, Kurunegala and Kegalle district on 05<sup>th</sup> (Table 1 and Fig 3). According to Disaster Management Centre, one death was reported while 2273 Families, and 10056 People were affected. 3 houses were fully damaged , 3 houses were partly damaged 632 and 8 small and medium enterprises were affected by this heavy rain event (Fig 2).

Mainly fair weather prevail over most parts of the island from 08<sup>th</sup> to 24<sup>th</sup> .

Generally above normal maximum temperatures were reported from most of the stations after 1<sup>st</sup> week of the month. Above normal minimum temperatures were reported from majority of stations. However well below normal night temperatures were reported from Nuwaraeliya during 3<sup>rd</sup> week of the month. Reported maximum temperature was 37.7<sup>0</sup>C at Mattala on 25<sup>th</sup> and reported minimum temperature was 9.0<sup>0</sup>C at NuwaraEliya on 18<sup>th</sup>.

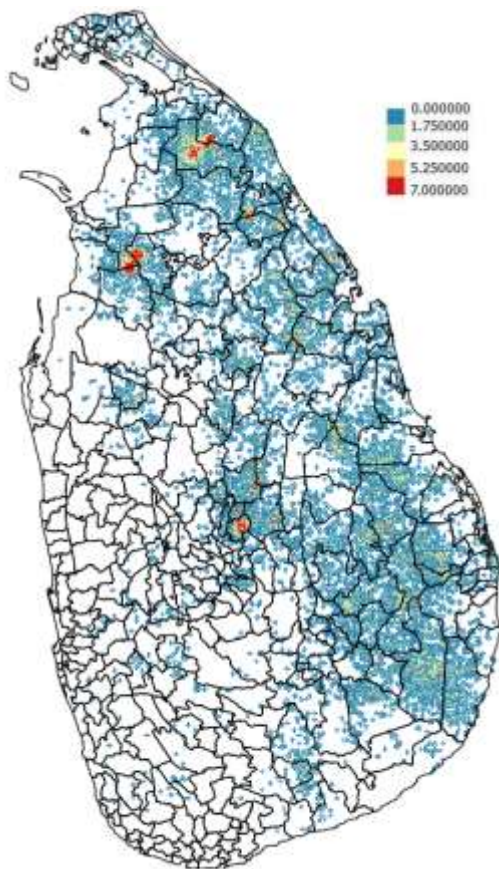


Fig 1: Lightning density map for September 2022

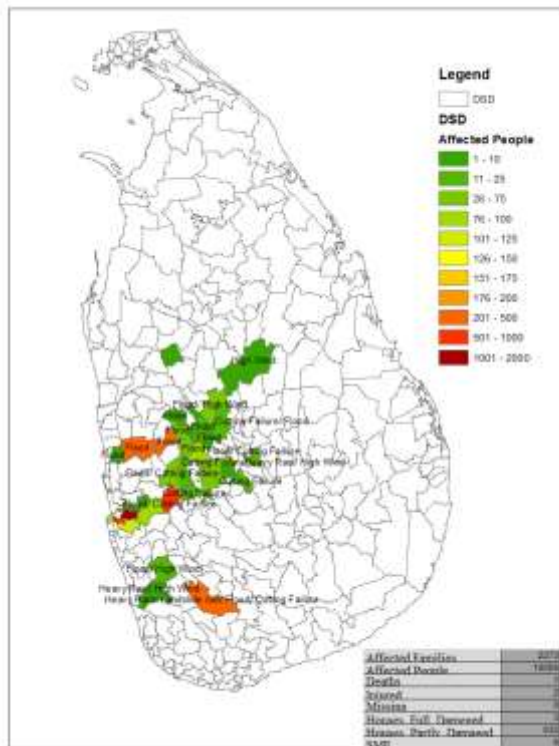


Fig 2 : Affected people from the extreme rainfall event from 03<sup>rd</sup> to 05<sup>th</sup> September 2023

Table 1 stations received above 100mm rainfall during September 2022

Date	Station	24 hour Rainfall (mm)
03 <sup>rd</sup> September 2022	Hanwella	<b>167.0</b>
04 <sup>th</sup> September 2022	Colombo Fort	<b>111.5</b>
04 <sup>th</sup> September 2022	Kirindiwela	<b>128.9</b>
04 <sup>th</sup> September 2022	Moralioya	<b>174.7</b>
05 <sup>th</sup> September 2022	Weweltalawa	<b>240.0</b>
05 <sup>th</sup> September 2022	<b>Laksapana</b>	<b>207.4</b>
05 <sup>th</sup> September 2022	Undugoda	<b>194.2</b>
05 <sup>th</sup> September 2022	<b>Kurunagala</b>	<b>161.7</b>
05 <sup>th</sup> September 2022	Handessa	<b>154.4</b>
05 <sup>th</sup> September 2022	Guruluwana	<b>148.8</b>
05 <sup>th</sup> September 2022	Maliboda	<b>145.0</b>
05 <sup>th</sup> September 2022	Dodangaslanda	<b>141.7</b>
05 <sup>th</sup> September 2022	Wagolla	<b>139.0</b>
05 <sup>th</sup> September 2022	<b>Kukuleganga</b>	<b>128.0</b>
05 <sup>th</sup> September 2022	<b>Katugasthota</b>	<b>118.6</b>
05 <sup>th</sup> September 2022	Peradeniya	<b>118.6</b>
05 <sup>th</sup> September 2022	<b>Ukuwela</b>	<b>118.0</b>
05 <sup>th</sup> September 2022	<b>Norton</b>	<b>116.0</b>
05 <sup>th</sup> September 2022	Tampana	<b>110.5</b>
05 <sup>th</sup> September 2022	Watawala	<b>109.3</b>
05 <sup>th</sup> September 2022	Sogama	<b>101.5</b>
05 <sup>th</sup> September 2022	Madulkale	<b>101.5</b>
05 <sup>th</sup> September 2022	<b>Kotmalee</b>	<b>101.0</b>
05 <sup>th</sup> September 2022	Batalagoda	<b>100.6</b>
25 <sup>th</sup> September 2022	Bakamuna	<b>142.0</b>
25 <sup>th</sup> September 2022	Elahara	<b>119.0</b>

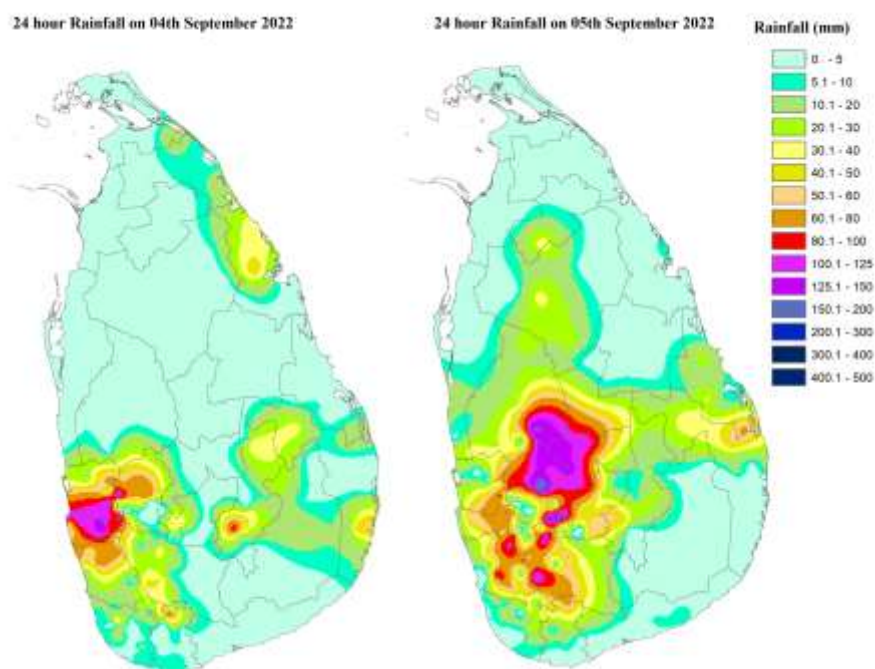


Fig 3 : 24 hour rainfall (mm) on 04<sup>th</sup> (left) and 05<sup>th</sup> (right) September 2023



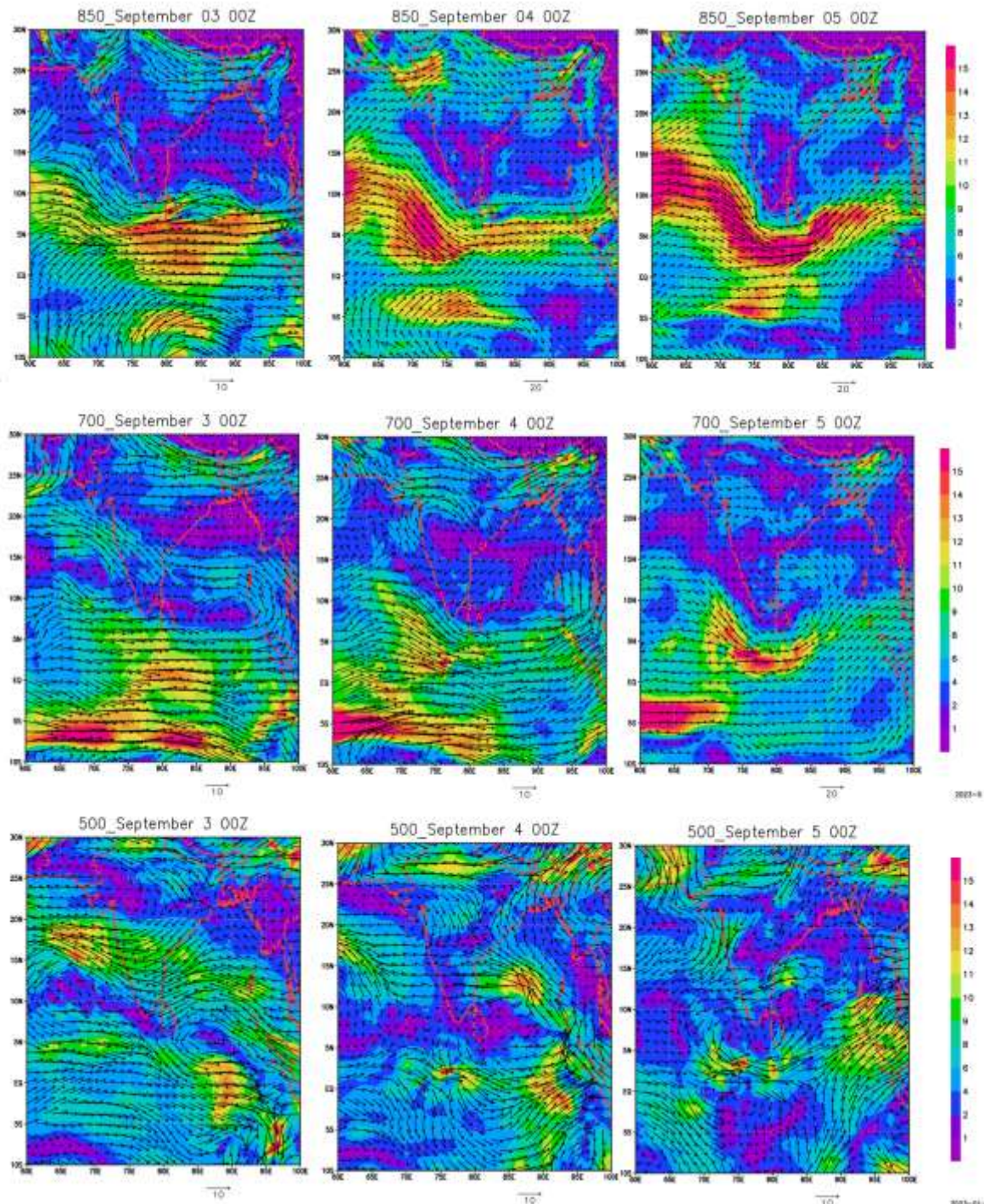


Fig 4: ERA5 850 mb wind , 700 mb wind and 500 mb wind from 00z 03<sup>rd</sup> to 05<sup>th</sup> September 2022.

La Nina conditions were observed during Month of September 2022. Ocean Nino Index was -.9 during July August and September (JAS) and 1.0 during August, September and October (ASO) and 1.0 during

September, October and November (SON) (NOAA Climate prediction Center). Negative IOD condition was observed during September 2022 (BoM, Australia). Sea surface waters in North, Northeast and Southeast Bay of Bengal were warmer than average. Slightly cooler sea surface waters were apparent over west of Sri Lanka (Fig. 9)

The average position of the shear line was laid about Equator from 40<sup>0</sup>E to 65<sup>0</sup>E, about 01<sup>0</sup>S to 03<sup>0</sup>S from 70<sup>0</sup>E to 100<sup>0</sup>E, and laid about Equator from 100<sup>0</sup>E to 120<sup>0</sup>E, (Fig 8). ). It was fluctuated about 02-03<sup>0</sup> north and south of average position.

Madden-Julian Oscillation (MJO) was weak during the month of September (Fig.10).

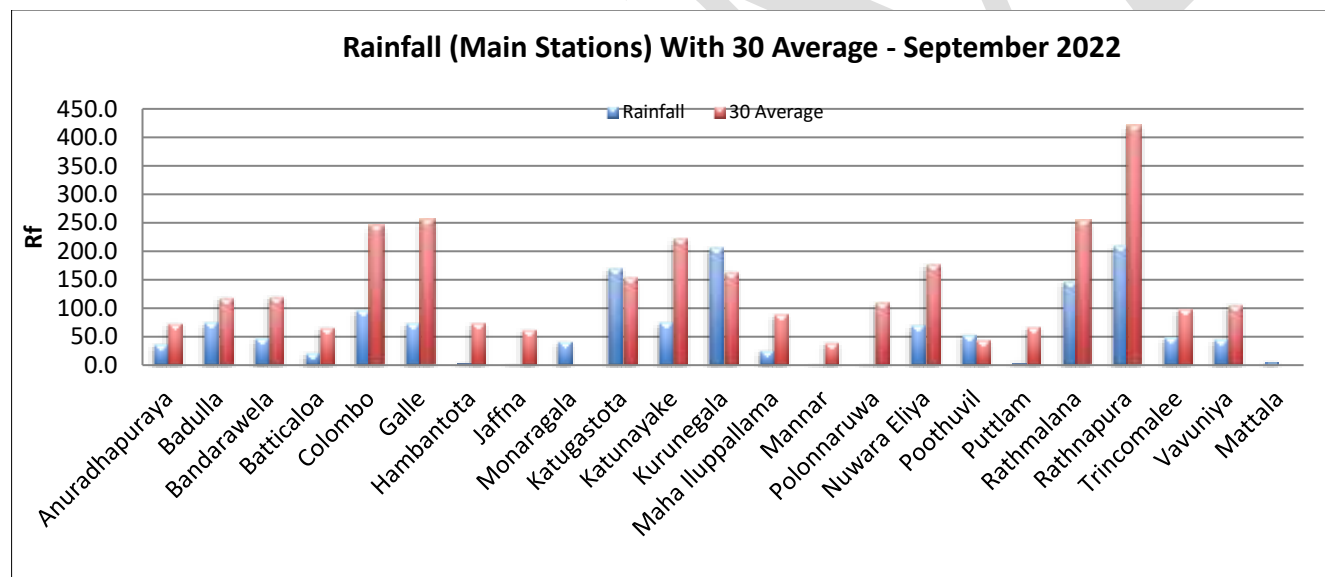


Fig 5: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Main Meteorological stations areas during September 2022

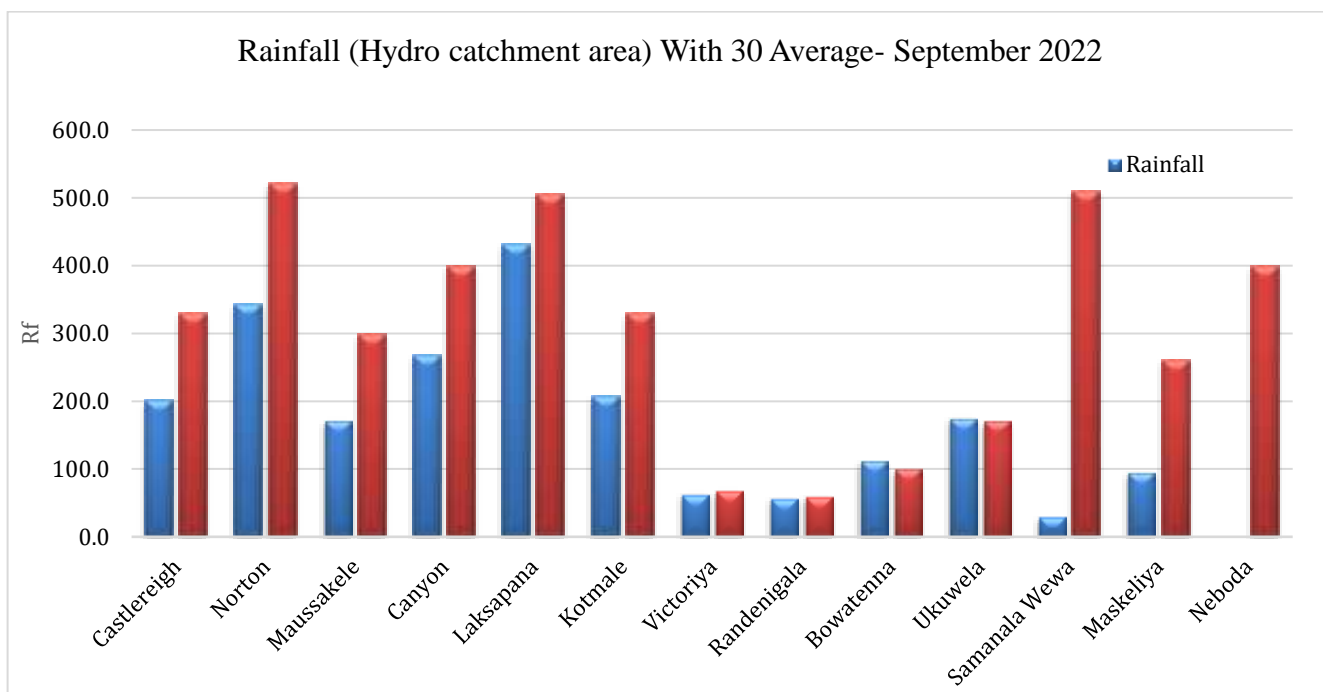


Fig 6: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Hydro catchment areas during September 2022

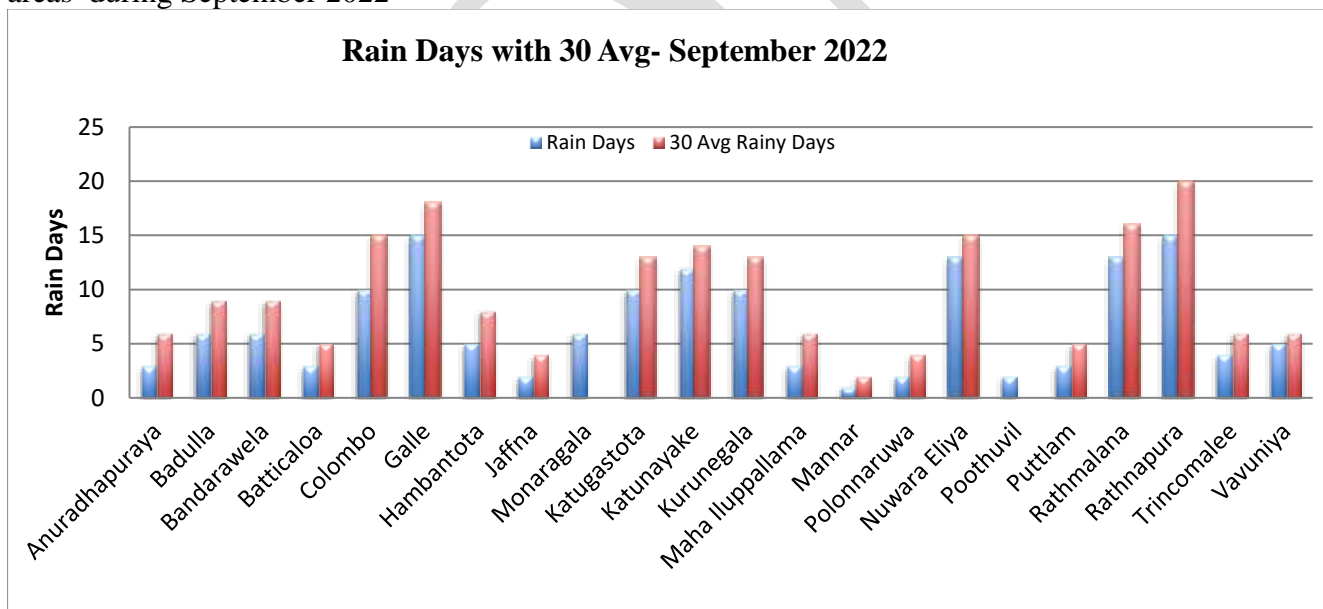


Fig 7: monthly total no of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during September 2022



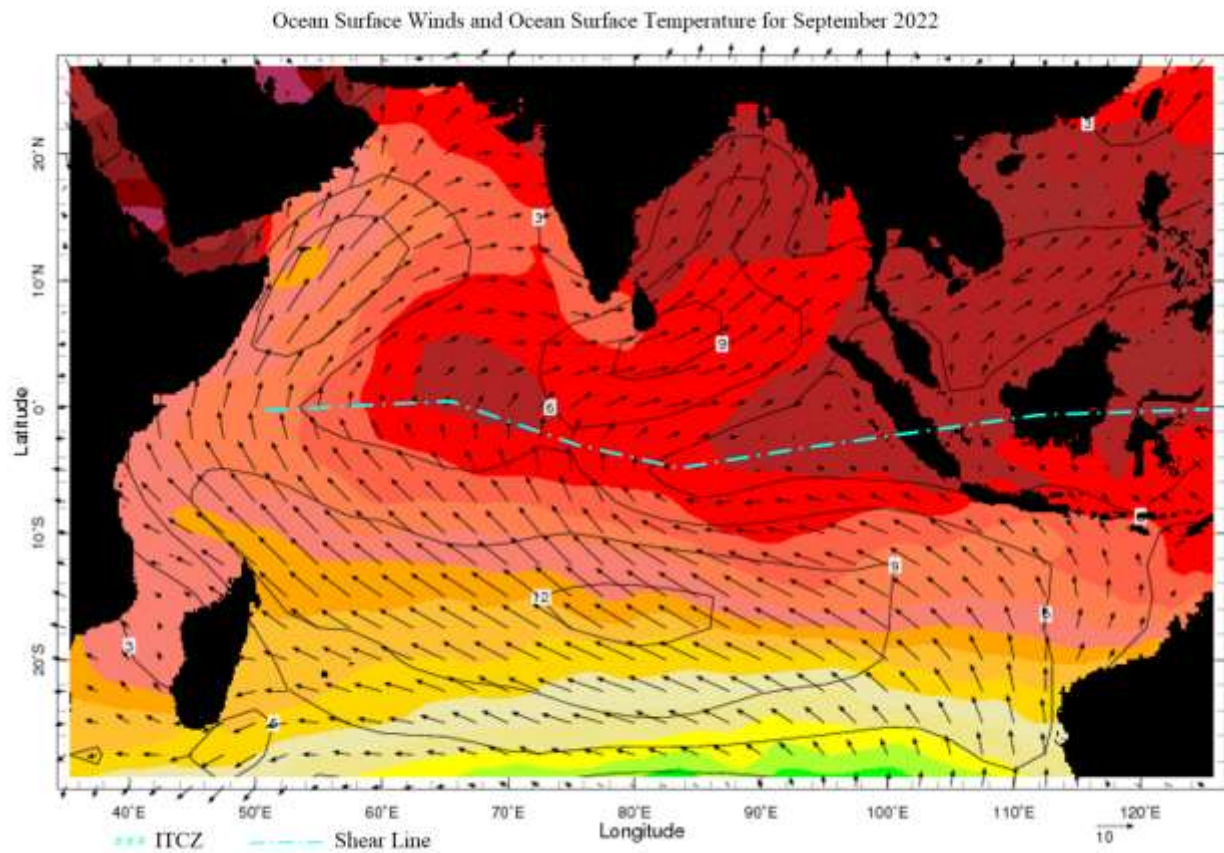


Fig 8: Ocean Surface Winds and Ocean Surface Temperature for September 2022

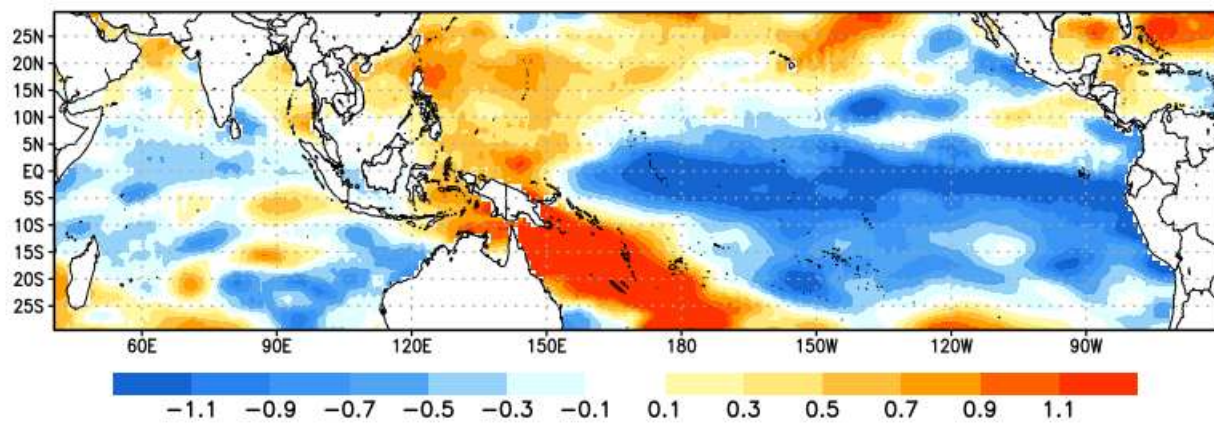
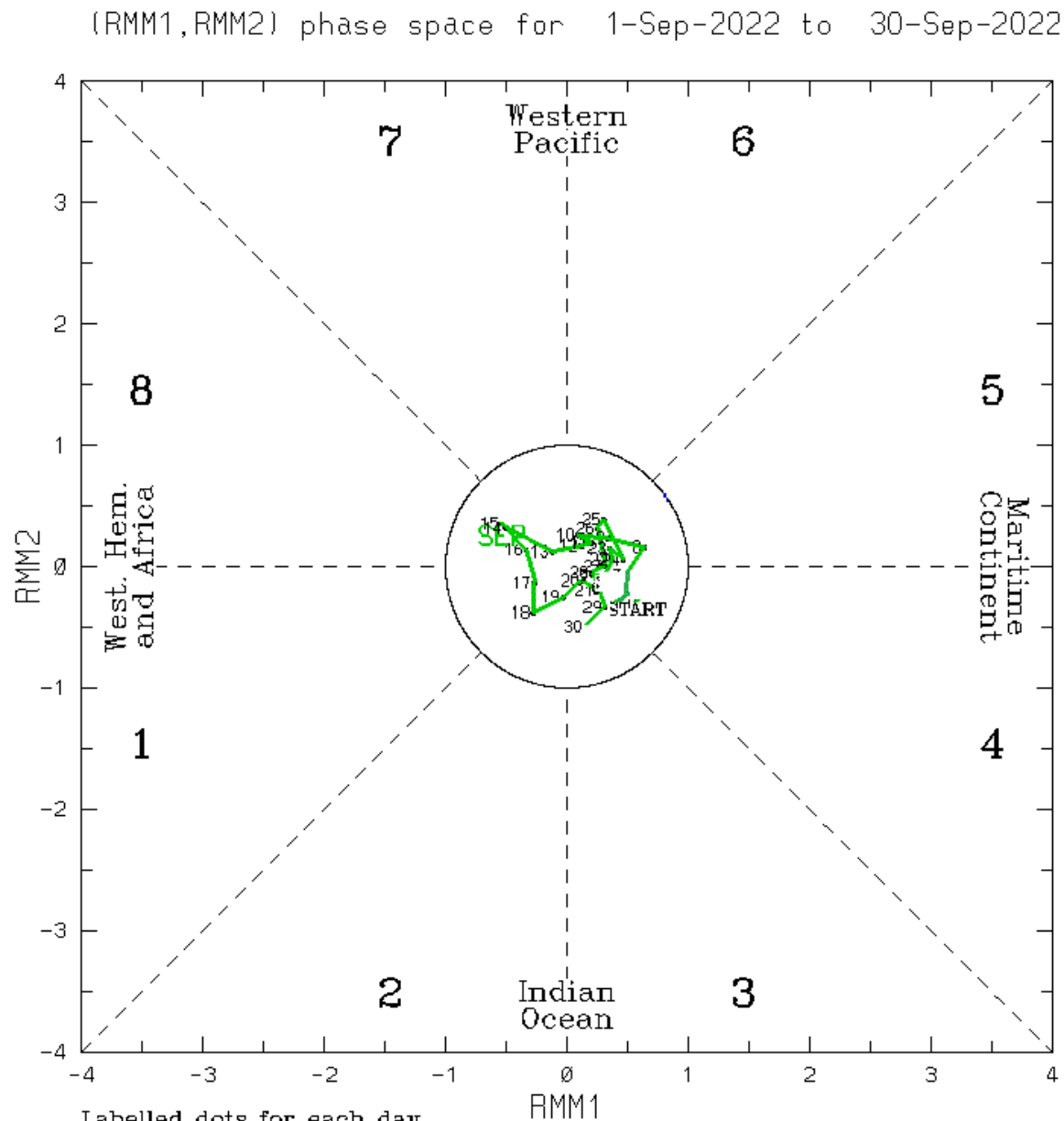


Fig 9: Sea Surface Temperature anomalies for September 2022



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2022

Fig 10: Phase diagram of MJO Index

**Surface pressure and winds:** The surface pressure was above average except on 01<sup>st</sup>, on 04<sup>th</sup>, on 12<sup>th</sup>, and from 25<sup>th</sup> to 26<sup>th</sup> when it was below average. South-westerly pressure gradient was mild on 02<sup>nd</sup>, on 05<sup>th</sup>, on 09<sup>th</sup>, from 14<sup>th</sup> to 15<sup>th</sup>, from 25<sup>th</sup> to 27<sup>th</sup>. Moderate south westerly pressure gradient was observed during remaining days except 07<sup>th</sup> to 09<sup>th</sup> and on 11<sup>th</sup> when South-westerly pressure gradient was steep.



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. (Fig 11).

**At 700 hPa,** Westerly wind flow is dominated over the island (Fig 12).

**At 500 hPa,** Southwesterly wind flow is dominated over the island . Anomalous anti-cyclonic circulation and associated ridge axis laid across Sri Lanka suppressed the rainfall activity over Sri Lanka (Fig. 13).

**The 200 hpa** the upper tropospheric ridge was laid from 24<sup>0</sup>N40<sup>0</sup>E, 25<sup>0</sup>N 90<sup>0</sup>E and 25<sup>0</sup>N 100<sup>0</sup>E .

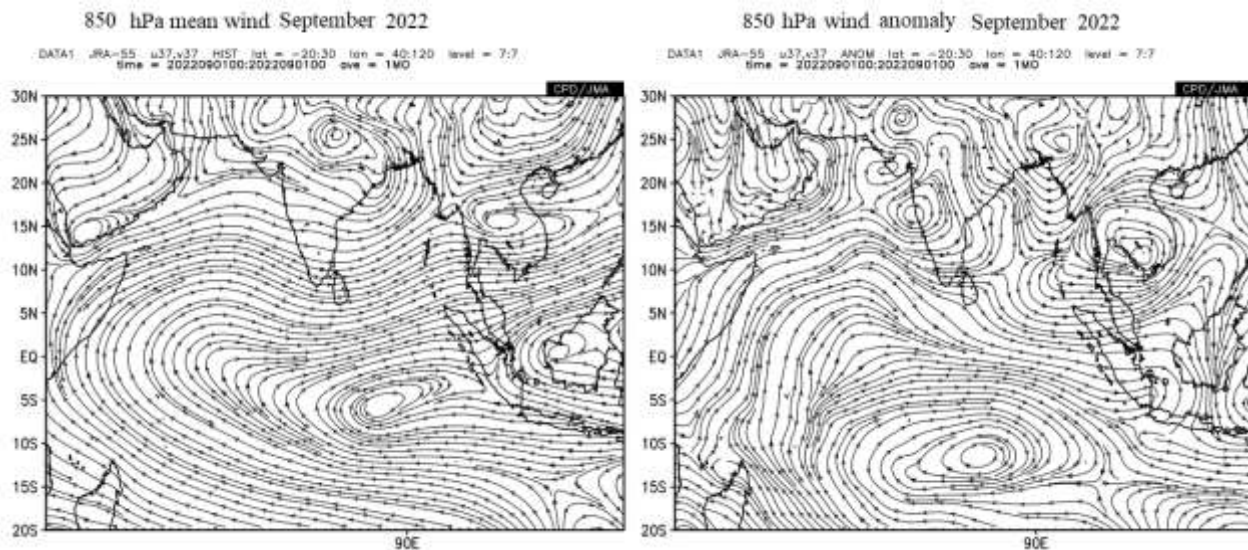


Fig. 11 : Monthly average wind pattern at 850hpa level during the month of September 2022 (JRA55)

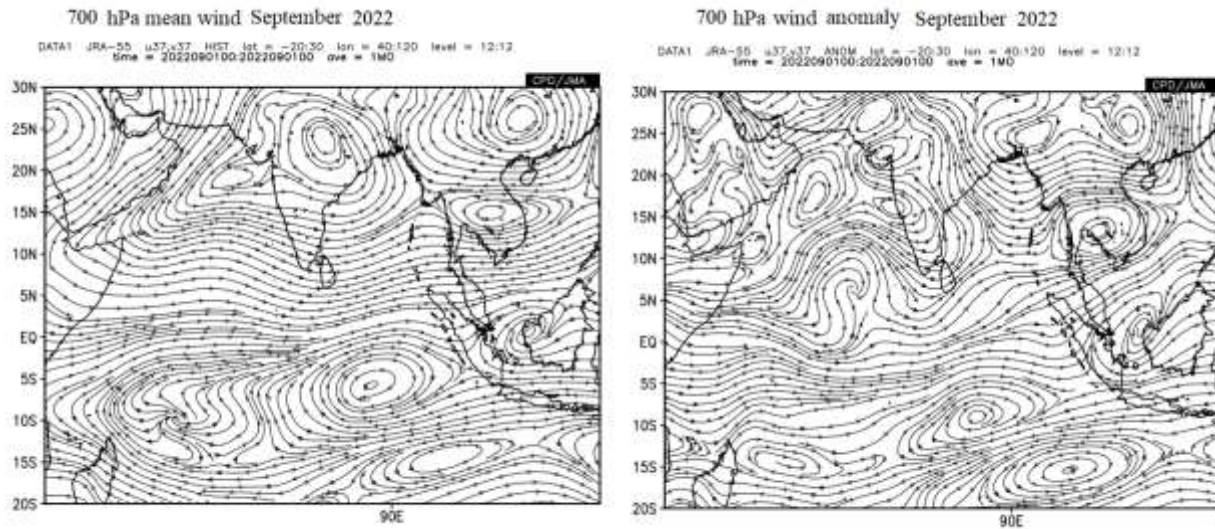


Fig. 12: Monthly average wind pattern at 700hpa level during the month of September 2022 (JRA55)

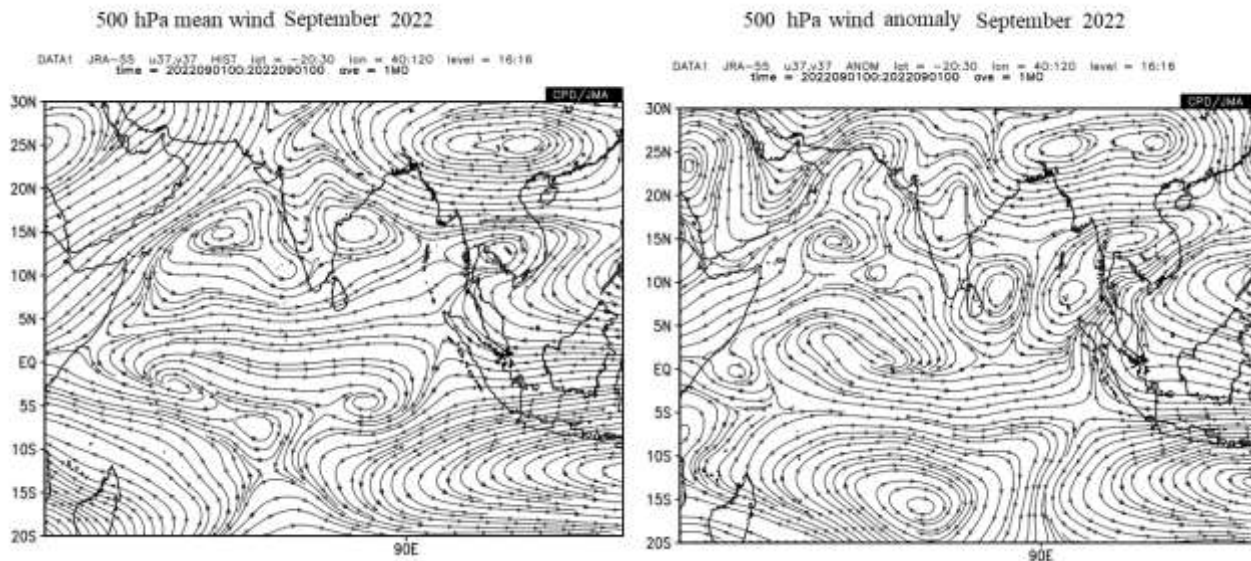


Fig. 13: Monthly average wind pattern at 500hPa level during the month of September 2022 (JRA55)

### Temperature Field:

Above normal maximum temperatures were reported from majority of station during most of the days. However below normal maximum temperatures were reported from majority of station from 01<sup>st</sup> to 03<sup>rd</sup> (Fig.14). Highest recorded maximum temperature for the month of September 2022 was 37.7<sup>0</sup>C at **Mattala** on 25<sup>th</sup> (Table 3a).

Night minimum temperatures over most parts were above normal (Fig 15). However below normal night temperatures were reported from Badulla and Batticaloa during most of the days. Lowest recorded minimum temperature for the month of September 2022 was 9.0°C at NuwaraEliya on 18<sup>th</sup> (Table 3b). Maximum and Minimum departures from normal day/night temperature were shown in table 3.

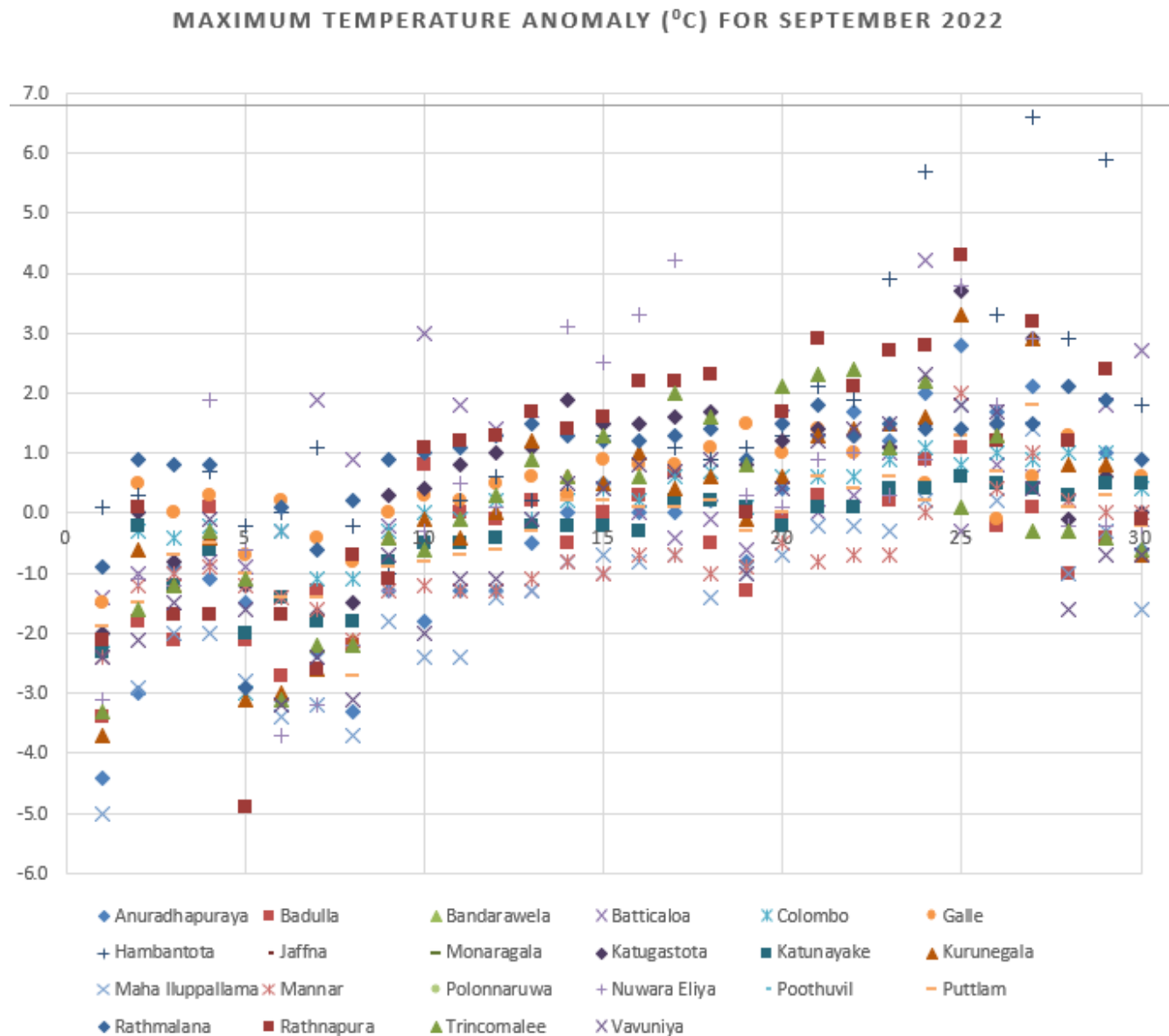


Fig 14: Maximum Temperature anomaly (°C) for September 2022

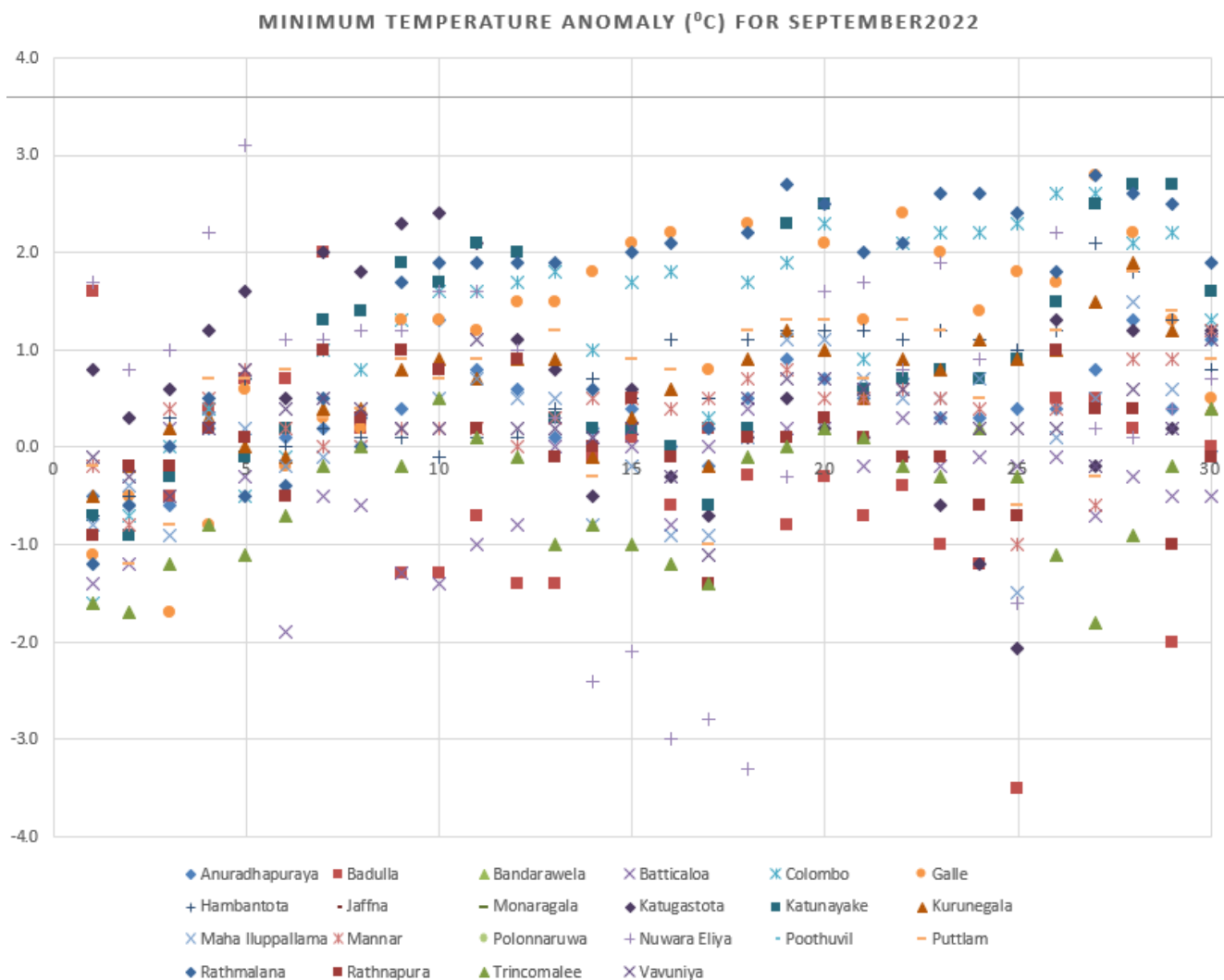


Fig 15: Minimum Temperature anomaly ( $^{\circ}\text{C}$ ) for September 2022

Below normal rainfall was reported at the principal meteorological stations except Katugastota, Kurunegala and Pothuvil (Fig 5). Number of rainy days was below normal over all the principal meteorological stations. Maximum percentage was reported from Kurunegala (126.0%) while minimum from Polonnaruwa station (2.3%) (Table 2).

Highest cumulative rainfall was **464.1mm** at Maliboda . Highest rainfall received during 24hours, was 240.0 mm at Wewelthalawa on 05<sup>th</sup> September.

Hydro catchment stations reported below normal rainfall except Bowatenna and Ukuwela where above normal rainfall reported.



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 1 and 2.

Table-01-Monthly Total Rainfall (mm) with 30 years (1961-1990) of their averages at Hydro catchment areas

Hydro Catchment	September 2022	Average	% (percentage of average)
Castlereigh	201.6	330.5	61.0%
Norton	342.6	521.3	65.7%
Maussakele	172.1	298.0	57.7%
Canyon	267.0	399.6	66.8%
Laksapana	431.9	505.8	85.4%
Kotmale	207.1	329.7	62.8%
Victoriya	62.9	68.4	91.9%
Randenigala	57.6	60.5	95.2%
Bowatenna	112.1	101.2	110.8%
Ukuwela	175.7	171.5	102.4%
Samanala Wewa	30.5	509.9	6.0%
Maskeliya	95.4	260.9	36.6%
Neboda		399.0	

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

Table-02- 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-Sept	Average	%	2022-Sept	Average	%
Anuradhapuraya	38.3	74.0	51.8%	3	6	50.0%
Badulla	76.9	119.8	64.2%	6	9	66.7%
Bandarawela	48.6	121.8	39.9%	6	9	66.7%
Batticaloa	22.8	67.0	34.0%	3	5	60.0%
Colombo	98.7	245.4	40.2%	10	15	66.7%
Galle	74.6	255.8	29.2%	15	18	83.3%
Hambantota	5.5	75.2	7.3%	5	8	62.5%
Jaffna	2.8	63.3	4.4%	2	4	50.0%
Monaragala	42.5			6		
Katugastota	171.9	155.2	110.8%	10	13	76.9%
Katunayake	76.7	224.1	34.2%	12	14	85.7%
Kurunegala	208.3	165.3	126.0%	10	13	76.9%
Maha Iluppallama	26.1	90.7	28.8%	3	6	50.0%
Mannar	1.9	40.6	4.7%	1	2	50.0%
Polonnaruwa	2.6	112.0	2.3%	2	4	50.0%
Nuwara Eliya	71.0	178.8	39.7%	13	15	86.7%
Poothuvil	54.9	44.8	122.6%	2	na	
Puttlam	6.2	67.8	9.2%	3	5	60.0%
Rathmalana	149.8	254.9	58.8%	13	16	81.3%
Rathnapura	212.3	421.4	50.4%	15	20	75.0%
Trincomalee	50.0	99.6	50.2%	4	6	66.7%
Vavuniya	46.0	107.3	42.9%	5	6	83.3%
Mattala	8.3			3		

Table 3(a) - Extremes of Maximum Temperatures			September	2022
	Maximum			Highest Std.Div
	Value	Offsets		
		(-)	(+)	
Value	37.7 <sup>0</sup> C	5.5	6.6	2.06
Station	<b>Mattala</b>	MahaIluppallama	Hambantota	Ratnapura
Date	25/09	01/09	27/09	

Table 4(b) -Extremes of Minimum Temperature   September 2022				
	Minimum			Highest Std. Div
	Value	Offsets		
		(-)	(+)	
Value	9.0	3.5	3.1	1.68
Station	NuwaraEliya	Badulla	NuwaraEliya	NuwaraEliya
Date	18/09	25/09	05/09	

Prepared by National Meteorological Centre (NMC)

Department of Meteorology