

## **Weather Synopsis –October 2022.**

About or above normal rainfall was reported at principal meteorological stations except Anuradhapuraya, Maha Iluppallama, Vavuniya, Polonnaruwa, Badulla, Batticaloa, Hambantota where below normal rainfall was reported for month of October (Fig 4). Above normal rainy days were reported at all meteorological stations. Inter-monsoonal conditions established after 29<sup>th</sup> October 2022.

Hydro catchment stations reported above normal rainfall except Randenigala, Bowatenna, Ukuwela, and Samanala Wewa (Fig 5)

Highest cumulative rainfall was 1697.4 mm at Wewalthalawa . Highest rainfall received during 24hours, was 264mm at Mathugama on 13<sup>th</sup> October.

High lightning density was reported from Vavuniya, Kebithigollawa, Madu, Mahavilachchiya, Puthukudiirippu, Gomarankadawala, Moraweve, Welikanda, Koralai Pattu North, Galigamuwa, Kotawehera, Chillaw, Mahaweve, Vennappuwa, Negombo, Katana, Mahaoya, Madulla, Monaragala, Siyabalanduwa, Haldumulla, Welioya, Yatiyantota, Dehiowita, and Dodangoda (Fig 1)

Fairly widespread showers with isolated heavy falls over southwestern quarter were reported from 01<sup>st</sup> to 03<sup>rd</sup> , 05<sup>th</sup> , 10<sup>th</sup> and after 20<sup>th</sup> October. Afternoon thunderstorm activity over northeastern and southeastern parts enhanced from 08<sup>th</sup> to 10<sup>th</sup>. Rainfall enhancement over most parts of the island with isolated heavy to very heavy falls exceeding 150mm was evident from 12<sup>th</sup> to 25<sup>th</sup> (Table 1) due to presence of Inter-Tropical convergence zone (Fig 7) embedding mild low level disturbances in the vicinity of Sri Lanka. Convective showers were enhanced with isolated very heavy falls exceeding 150mm on 30<sup>th</sup> and 31<sup>st</sup> due to the formation of low level disturbance in the vicinity of Sri Lanka . According to Disaster Management Centre, 07 deaths and one missing person were reported while 1936 Families, and 7699 people were affected during month of October. 8 houses were fully damaged , 457 houses were partly damaged and 11 small and medium enterprises were affected by various weather events occurred during October 2022 (Fig 2).

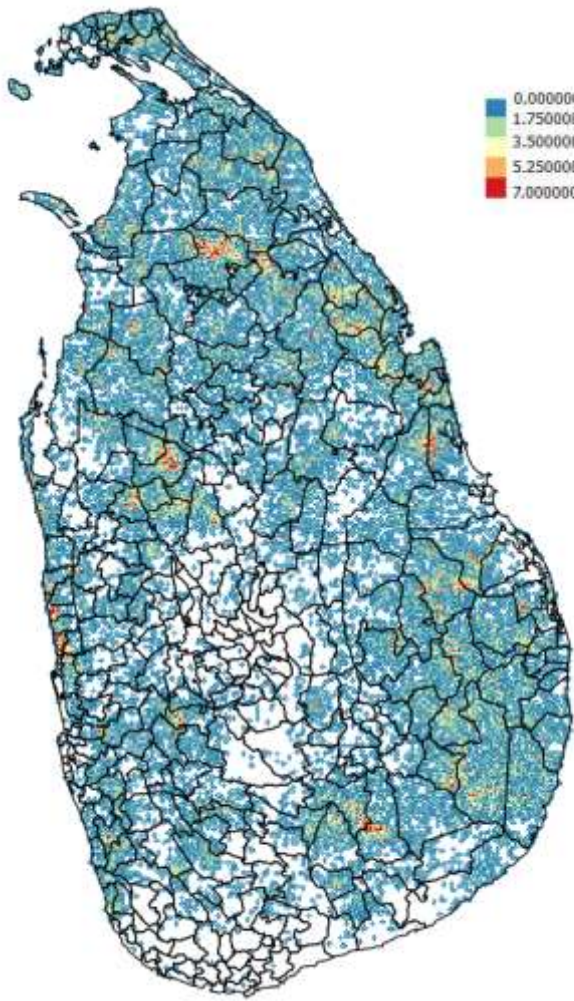


Fig 1: Lightning density map for October 2022

Table 1 stations received above 100mm rainfall during October 2022

Date	Station	24 hour Rainfall (mm)
01 <sup>st</sup> October 2022	Weweltalawa	<b>180.2</b>
01 <sup>st</sup> October 2022	<b>Castlereigh</b>	<b>110.0</b>
02 <sup>nd</sup> October 2022	Weweltalawa	<b>150.0</b>
02 <sup>nd</sup> October 2022	<b>Castlereigh</b>	<b>137.0</b>
02 <sup>nd</sup> October 2022	<b>Norton</b>	<b>125.0</b>
02 <sup>nd</sup> October 2022	<b>Canyon</b>	<b>124.6</b>
02 <sup>nd</sup> October 2022	Watawala	<b>114.3</b>
03 <sup>rd</sup> October 2022	<b>Canyon</b>	<b>152.8</b>
09 <sup>th</sup> October 2022	Mabadowa	103
10 <sup>th</sup> October 2022	Rathmalgahewewa	<b>121.1</b>
10 <sup>th</sup> October 2022	Rambava	<b>119.0</b>

12 <sup>th</sup> October 2022	Monrovia	137.6
12 <sup>th</sup> October 2022	Kirindiwela	135.9
12 <sup>th</sup> October 2022	Elston	128.6
12 <sup>th</sup> October 2022	Kalatuwawa	125.8
12 <sup>th</sup> October 2022	Vincit Estate	125.0
12 <sup>th</sup> October 2022	Weweltalawa	120.7
12 <sup>th</sup> October 2022	KETENDOLA	119.0
12 <sup>th</sup> October 2022	<b>Galle</b>	117.8
12 <sup>th</sup> October 2022	Andigama	117.0
12 <sup>th</sup> October 2022	Awissawella	112.4
12 <sup>th</sup> October 2022	Hiniduma	111.5
12 <sup>th</sup> October 2022	<b>Kukuleganga</b>	105.0
13 <sup>th</sup> October 2022	Mathugama	264.0
13 <sup>th</sup> October 2022	Vogan Estate	212.5
13 <sup>th</sup> October 2022	Norochochulai	180.0
13 <sup>th</sup> October 2022	Hanwella	175.9
13 <sup>th</sup> October 2022	<b>Katunayake</b>	168.6
13 <sup>th</sup> October 2022	Bentotawatte	148.2
13 <sup>th</sup> October 2022	Awissawella	132.9
13 <sup>th</sup> October 2022	Bandaragama	132.0
13 <sup>th</sup> October 2022	Palugaswewa Estate	130.6
13 <sup>th</sup> October 2022	Angoda	125.7
13 <sup>th</sup> October 2022	Kirindiwela	124.0
13 <sup>th</sup> October 2022	Dummalasooriya	115.5
13 <sup>th</sup> October 2022	KETENDOLA	113.5
13 <sup>th</sup> October 2022	Ports Authority	110.8
13 <sup>th</sup> October 2022	Weweltalawa	100.8
13 <sup>th</sup> October 2022	<b>Upper kotmalee</b>	100.2
14 <sup>th</sup> October 2022	Elston	187.0
14 <sup>th</sup> October 2022	Awissawella	173.5
14 <sup>th</sup> October 2022	Mathugama	171.5
14 <sup>th</sup> October 2022	Maliboda	170.0
14 <sup>th</sup> October 2022	Karagala	166.0
14 <sup>th</sup> October 2022	Kalatuwawa	165.0
14 <sup>th</sup> October 2022	Hiniduma	160.5
14 <sup>th</sup> October 2022	Padukka Estate	144.5
14 <sup>th</sup> October 2022	Kirindiwela	138.9
14 <sup>th</sup> October 2022	Labugama	133.2
14 <sup>th</sup> October 2022	Moralioya	131.6
14 <sup>th</sup> October 2022	BATUWANAGALA	128.6
14 <sup>th</sup> October 2022	Vincit Estate	126.0
14 <sup>th</sup> October 2022	<b>Laksapana</b>	124.0
14 <sup>th</sup> October 2022	Nittambuwa	123.9
14 <sup>th</sup> October 2022	Hanwella	120.2
14 <sup>th</sup> October 2022	Huruliveva	113.9
14 <sup>th</sup> October 2022	<b>Rathnapura</b>	111.6
14 <sup>th</sup> October 2022	<b>Kukuleganga</b>	110.0
14 <sup>th</sup> October 2022	Vogan Estate	108.2
14 <sup>th</sup> October 2022	Guruluwana	105.5
14 <sup>th</sup> October 2022	PODDIWELA FARM	105.0
14 <sup>th</sup> October 2022	Chavakachcheri	102.0

14 <sup>th</sup> October 2022	<b>Norton</b>	<b>101.5</b>
14 <sup>th</sup> October 2022	Ilubuluwa Estate	<b>100.0</b>
15 <sup>th</sup> October 2022	Holmwood	<b>100.0</b>
17 <sup>th</sup> October 2022	Nawakiriaru Tank	<b>162.0</b>
18 <sup>th</sup> October 2022	Moralioya	<b>106.8</b>
20 <sup>th</sup> October 2022	Horagasgara	<b>214.0</b>
20 <sup>th</sup> October 2022	Watawala	<b>148.6</b>
20 <sup>th</sup> October 2022	Kotagala Rosita	<b>148.0</b>
20 <sup>th</sup> October 2022	Tampana	<b>138.5</b>
20 <sup>th</sup> October 2022	<b>Kurunagala</b>	<b>107.1</b>
20 <sup>th</sup> October 2022	<b>Canyon</b>	<b>105.3</b>
20 <sup>th</sup> October 2022	<b>Norton</b>	<b>103.6</b>
20 <sup>th</sup> October 2022	Weweltalawa	<b>100.1</b>
21 <sup>st</sup> October 2022	Mathugama	<b>127.8</b>
22 <sup>nd</sup> October 2022	Monrovia	<b>201.7</b>
22 <sup>nd</sup> October 2022	Mathugama	<b>182.1</b>
22 <sup>nd</sup> October 2022	<b>Galle</b>	<b>169.7</b>
22 <sup>nd</sup> October 2022	Norochochulai	<b>125.0</b>
22 <sup>nd</sup> October 2022	<b>KILNOCHCHI</b>	<b>103.6</b>
23 <sup>rd</sup> October 2022	Mathugama	<b>141.5</b>
23 <sup>rd</sup> October 2022	Watawala	<b>104.3</b>
23 <sup>rd</sup> October 2022	<b>Laksapana</b>	<b>103.4</b>
24 <sup>th</sup> October 2022	Water Resource Board	<b>138.2</b>
24 <sup>th</sup> October 2022	<b>Jaffna</b>	<b>113.5</b>
25 <sup>th</sup> October 2022	<b>Jaffna</b>	<b>113.5</b>
25 <sup>th</sup> October 2022	Liyangastota	<b>117.5</b>
30 <sup>th</sup> October 2022	Weweltalawa	<b>200.6</b>
30 <sup>th</sup> October 2022	Karagala	<b>166.0</b>
30 <sup>th</sup> October 2022	Maliboda	<b>140.0</b>
30 <sup>th</sup> October 2022	<b>WELLIPUNAM</b>	<b>130.0</b>
30 <sup>th</sup> October 2022	<b>ALAMPIL</b>	<b>129.3</b>
30 <sup>th</sup> October 2022	Kurunduoya	<b>113.0</b>
31 <sup>st</sup> October 2022	Weweltalawa	<b>150.0</b>
31 <sup>st</sup> October 2022	<b>ACHCHIWELI</b>	<b>145.1</b>
31 <sup>st</sup> October 2022	Norochochulai	<b>145.0</b>
31 <sup>st</sup> October 2022	<b>WATER RESOURCE BOARD</b>	<b>138.2</b>

31 <sup>st</sup>	October 2022	Handapanagala	<b>130.0</b>
31 <sup>st</sup>	October 2022	Jaffna irrigation	<b>126.0</b>
31 <sup>st</sup>	October 2022	AYAGAMA	<b>125.3</b>
31 <sup>st</sup>	October 2022	<b>Jaffna</b>	<b>117.6</b>
31 <sup>st</sup>	October 2022	Hiniduma	<b>100.0</b>

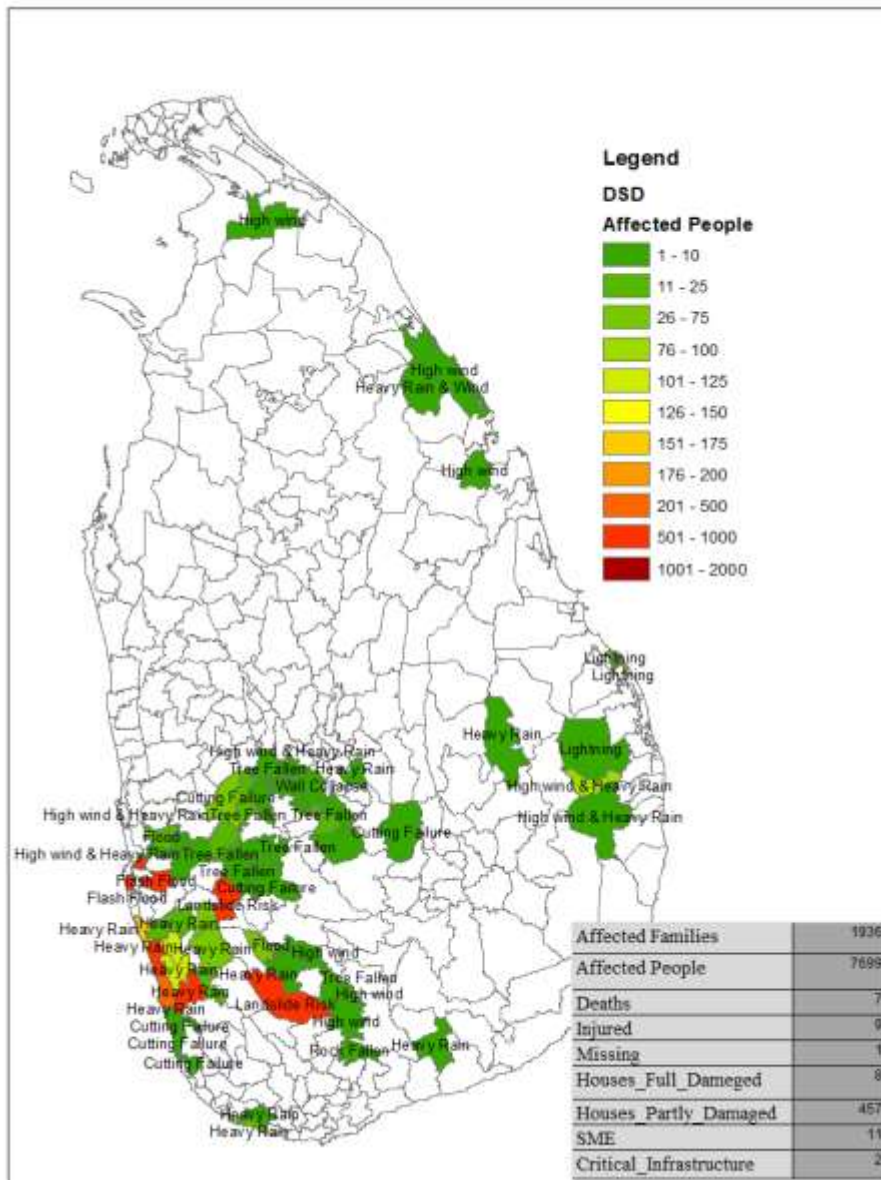


Fig 2 : Affected people and hazards caused from the extreme rainfall event during October 2023

Above average day and night temperatures were experienced during the month. Reported maximum temperature was 36.6<sup>0</sup>C at Batticaloa on 14<sup>th</sup> and reported minimum temperature was 11.4<sup>0</sup>C at Nuwara Eliya on 02<sup>nd</sup>

La Nina conditions were observed during Month of October 2022. Ocean Nino Index is -1.0, -1.0, and -0.9 during August-September-October, September-October-November and October-November-December (NOAA Climate prediction Center). Negative IOD was observed during October 2022 (BoM, Australia). Cooler Sea surface waters can be seen over Western and Southern sea areas off Sri Lanka coast (Fig. 8)

The average position of the of the Inter-Tropical Convergence zone (ITCZ) was laid between Equator 07<sup>0</sup>N50<sup>0</sup>E, 07<sup>0</sup>N 60<sup>0</sup>E, 06<sup>0</sup>N70<sup>0</sup>E , 06<sup>0</sup>N80<sup>0</sup>E, 04<sup>0</sup>N100<sup>0</sup>E and 01<sup>0</sup>N120<sup>0</sup>E while the average position of the shear line was laid between 03<sup>0</sup>N50<sup>0</sup>E, EQ60<sup>0</sup>E , 06<sup>0</sup>S80<sup>0</sup>E, 03<sup>0</sup>S100<sup>0</sup>E, and 02<sup>0</sup>S120<sup>0</sup>E (Fig 7).

Strong Madden-Julian Oscillation (MJO) was weak during first week and strengthen at phase 6 during second week, then propagated to phase 7 during last two weeks (Fig. 9).

## **Weather Systems**

### **Cyclonic storm “SITRANG” over the Bay of Bengal (22nd -25th October, 2022)**

A low pressure area formed over North Andaman Sea and adjoining areas of Southeast Bay of Bengal (BoB) in the early morning of 20th October, 2022. It lay as a well marked low pressure area over north Andaman Sea and adjoining southeast BoB in the evening of 21st October. Under favorable environmental conditions, it has intensified into a depression over southeast and adjoining Eastcentral BoB on 22nd October, 2022. It moved northwestwards and intensified into a deep depression over Westcentral BoB in the early morning of 23rd October. Thereafter, it moved nearly northwards and intensified into the cyclonic storm (CS) “SITRANG” in the evening of 23rd October (Fig 3) . It then gradually recurved north-northeastwards and crossed Bangladesh coast near 22.15<sup>0</sup>N/90.35<sup>0</sup>E in the night of 24th October with maximum sustained wind speed of 80-90 kmph gusting to 100 kmph (Source : India Meteorological Department) .



Fig 3 : Observed track of cyclonic storm "SITRANG" over Bay of Bengal

### Rainfall (Main Stations) With 30 Average - October 2022

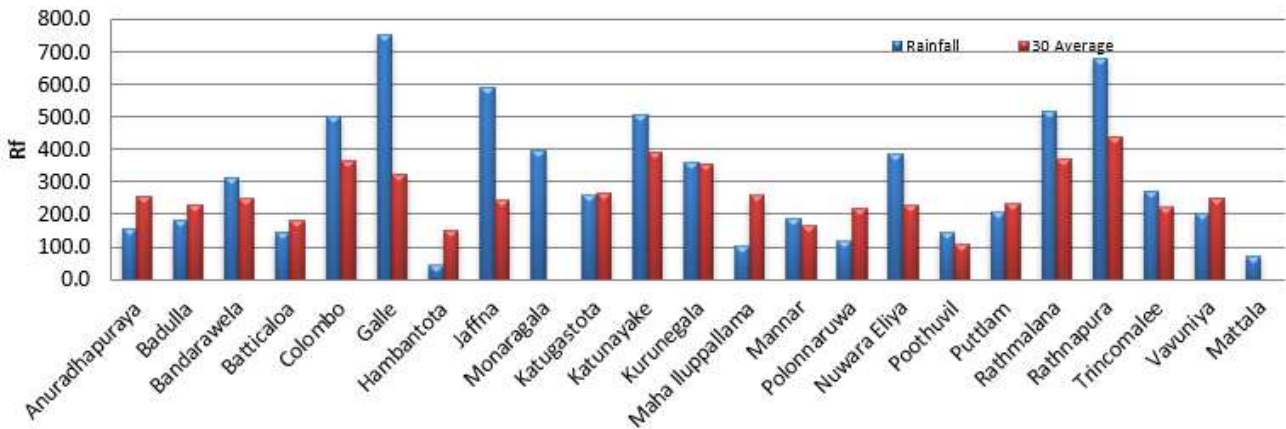


Fig 4: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Main Meteorological stations areas during October 2022.



**Rainfall (Hydro catchment area) With 30 Average- October 2022**

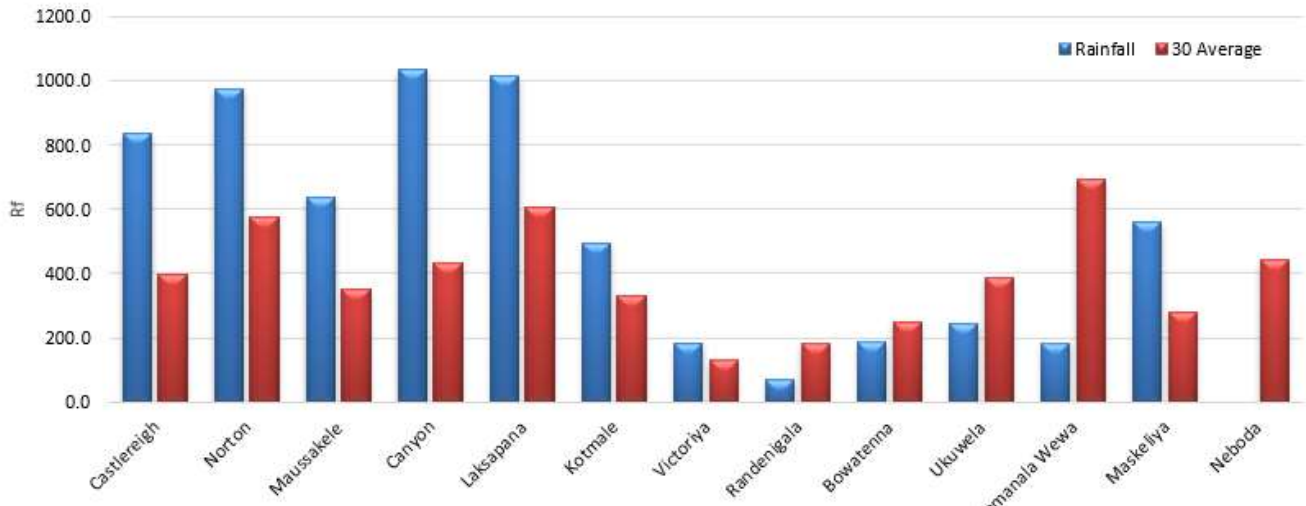


Fig 5: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Hydro catchment areas during October 2022

**Rain Days with 30 Avg- October 2022**

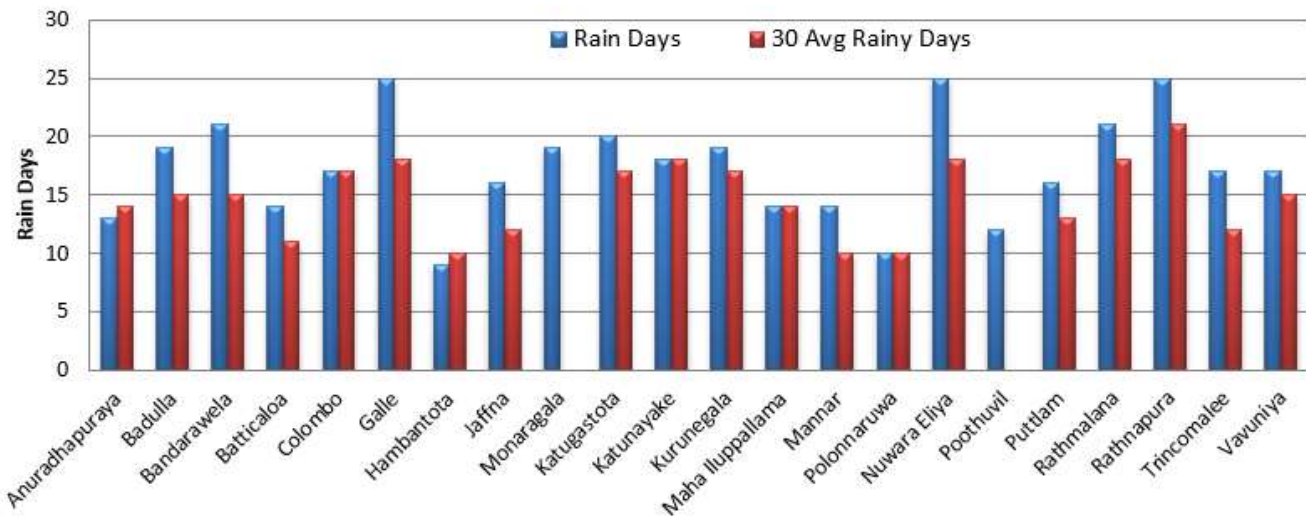


Fig 6: monthly total no of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during October 2022



Ocean Surface Winds and Ocean Surface Temperature for October 2022

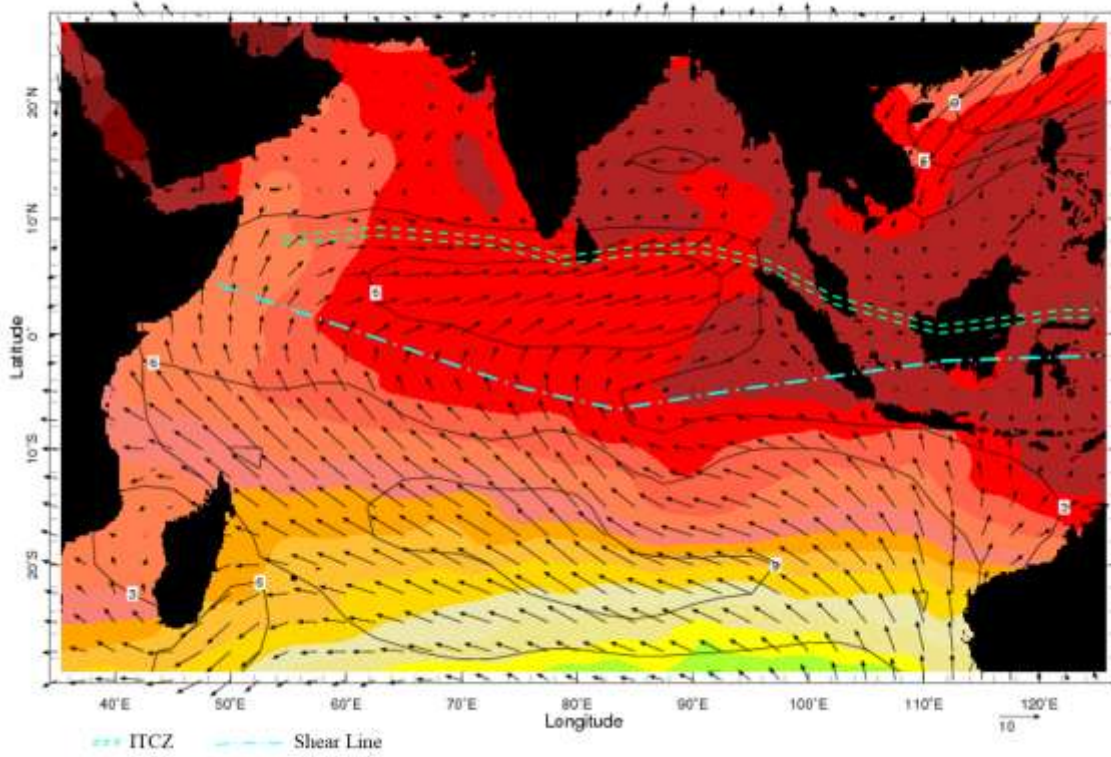


Fig 7: Ocean Surface Winds and Ocean Surface Temperature for October 2022

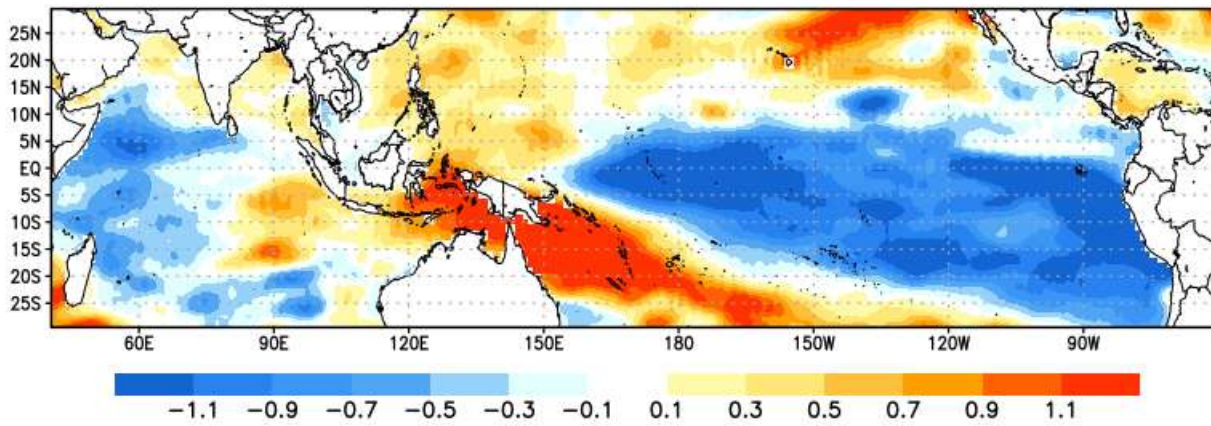
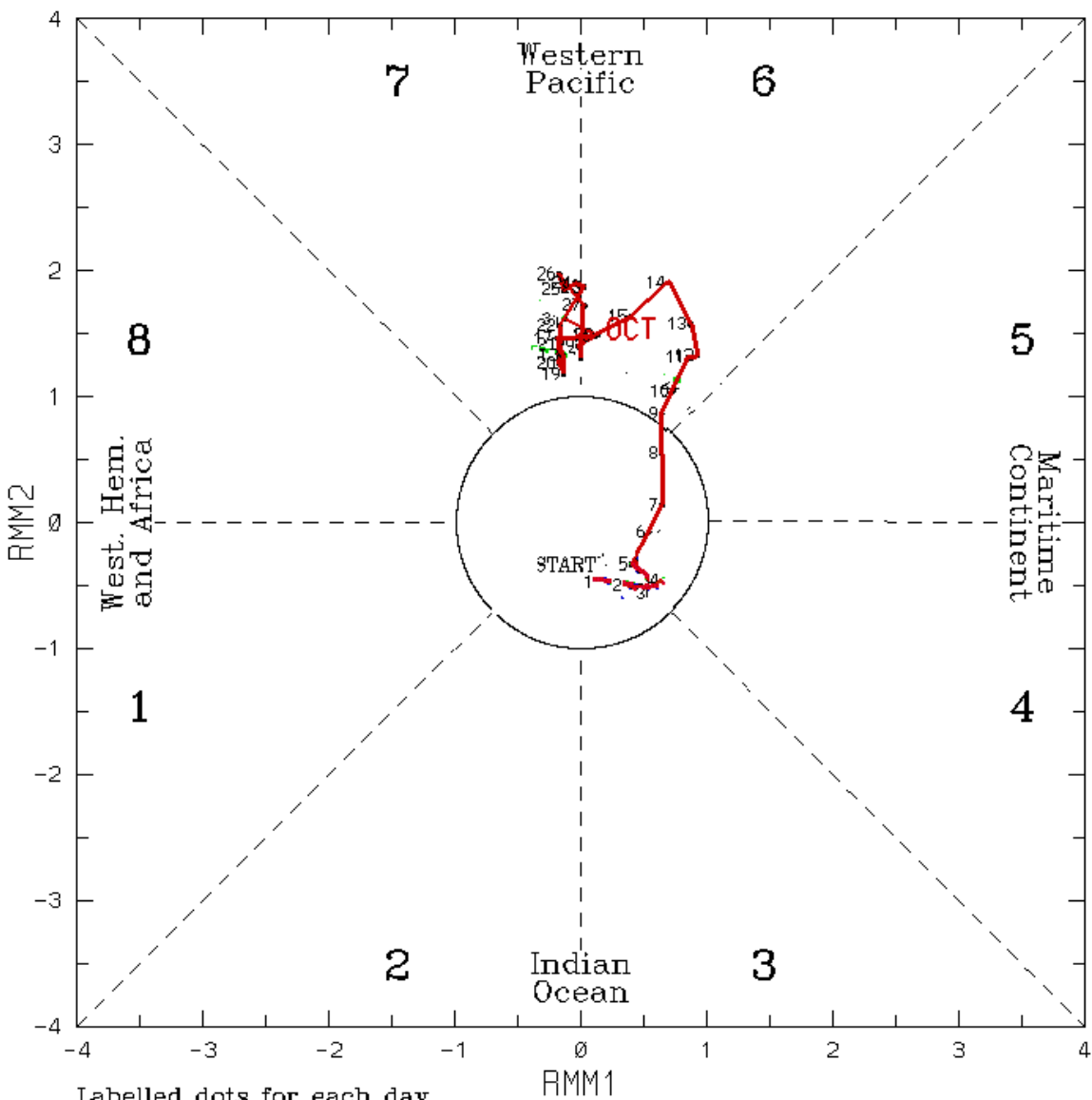


Fig 8: Sea Surface Temperature anomalies for October 2022

(RMM1,RMM2) phase space for 1-Oct-2022 to 31-Oct-2022



Labelled dots for each day.  
red line is for Oct.

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2022

Fig 9: Phase diagram of MJO Index

Madden-Julian Oscillation (MJO) was weakened during the first week, became strong at phase 6 during the second week and propagated to phase 7 during the last two weeks (Fig.9).

**Surface pressure and winds:** The surface pressure was below average from 01st to 09th, 14th to 15th and again from 28th to 31st. It was above average during the remaining days. South-westerly pressure gradient

was steep from 01<sup>st</sup> to 03<sup>rd</sup> and on 05<sup>th</sup>. It was moderate on 04<sup>th</sup>, 06<sup>th</sup> and 18<sup>th</sup> and mild from 07<sup>th</sup> to 09<sup>th</sup>, from 13<sup>th</sup> to 17<sup>th</sup>, and from 19 to 25<sup>th</sup>. Fairly even or even pressure distribution was observed from 10<sup>th</sup> to 12<sup>th</sup> and after 26<sup>th</sup>.

The surface wind was from westerly to southwesterly direction and speed varied within 05-10kts till 26<sup>th</sup>. The surface wind was calm and variable in direction from 27<sup>th</sup> to 31<sup>st</sup>.

### Upper winds:

**At 850hPa,** Westerly wind flow is dominated over the island. Cyclonic circulation appeared to the northeast of Sri Lanka at 850mb level (Fig 10).

**At 700 hPa,** Westerly wind flow is dominated over the island. Cyclonic circulation appeared to the northeast of Sri Lanka at 700mb level (Fig 11).

**At 500 hPa,** East-west oriented trough axis over the central part island providing favorable conditions for cloud formation (Fig 12).

**The 200 hpa** the upper tropospheric ridge was laid about 20<sup>o</sup>N40<sup>o</sup>E, 20<sup>o</sup>N 60<sup>o</sup>E, 22<sup>o</sup>N100<sup>o</sup>E, and 24<sup>o</sup>N120<sup>o</sup>E .

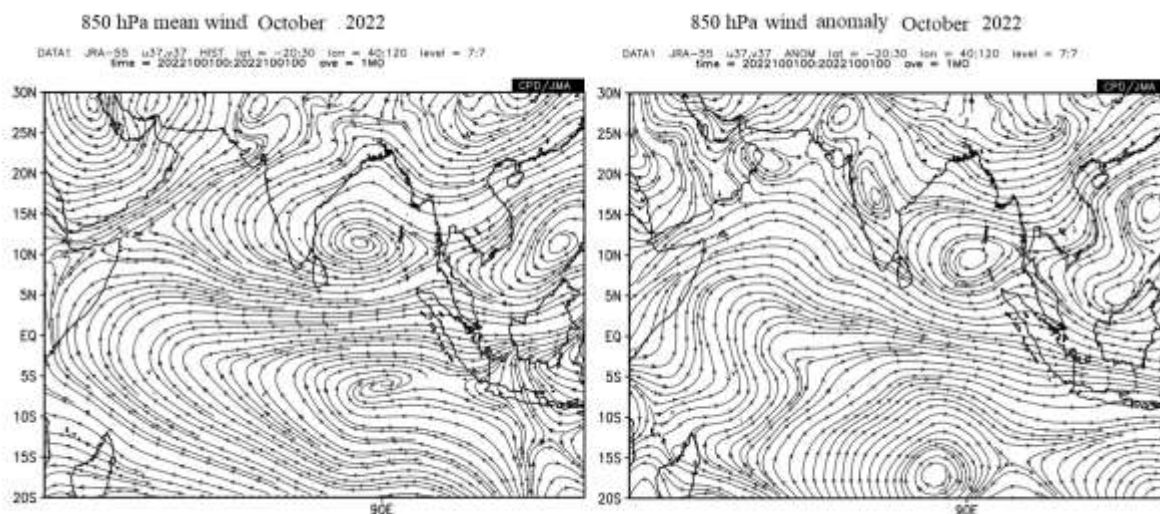


Fig. 10. Monthly average wind pattern at 850hpa level during the month of October2022 (JRA55)



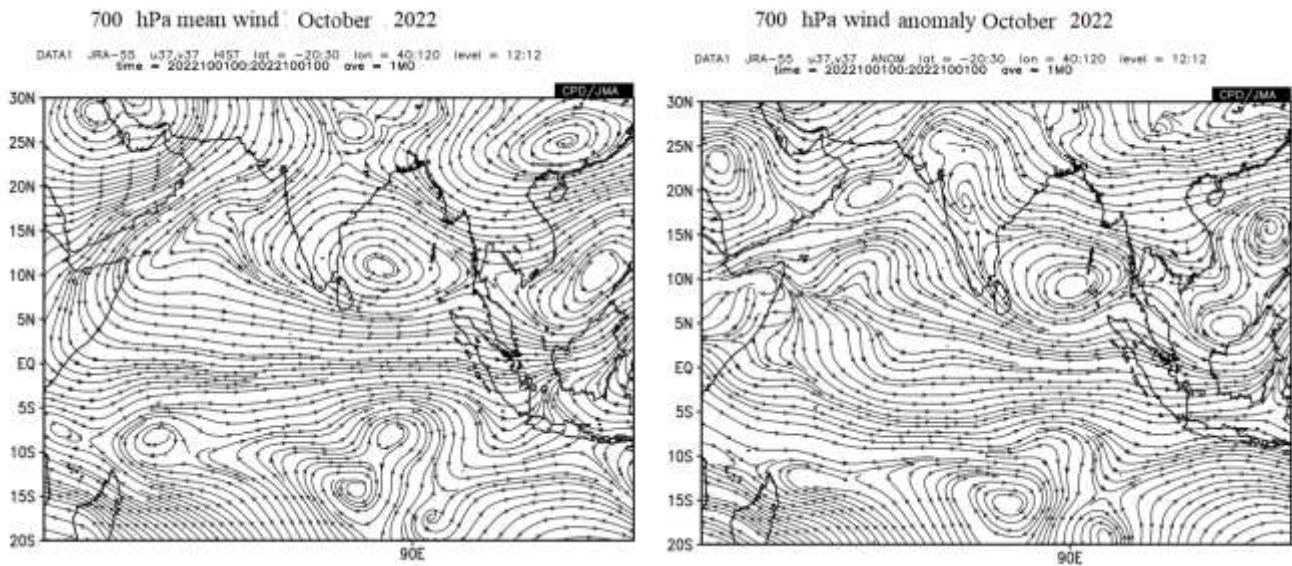


Fig. 11: Monthly average wind pattern at 700hpa level during the month of October2022 (JRA55)

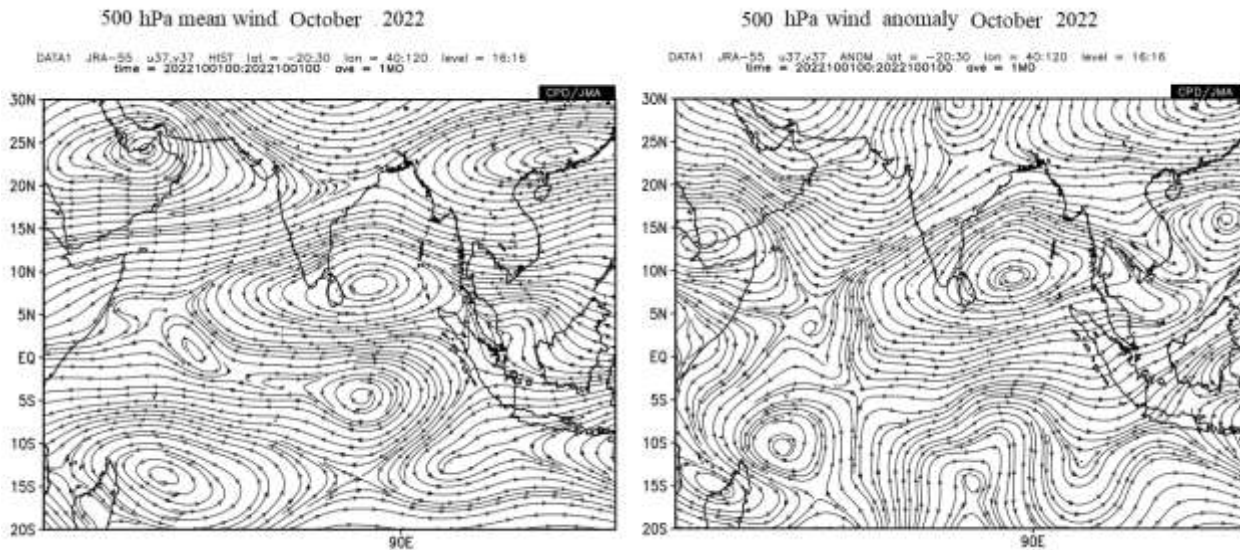


Fig. 12: Monthly average wind pattern at 500hpa level during the month of October 2022 (JRA55)

### Temperature Field:

The maximum temperatures in the day were mostly above normal in most places except from 12<sup>th</sup> to 25<sup>th</sup> when below normal temperatures were experienced over several stations. Day temperatures were appreciably above normal at Hambantota from 18<sup>th</sup> to 20<sup>th</sup> . Day temperatures were exceptionally below normal at Trincomalee, and Maha Iluppallama; considerably below normal at Anuradhapuraya, Vavuniya, Badulla, Batticaloa, and Nuwara Eliya appreciably below normal Kurunegala, and

Katugastota on 21<sup>st</sup>. Highest recorded maximum temperature for the month of October 2022 was 36.7°C at Batticaloa on 02<sup>nd</sup>

Night minimum temperatures over most parts were above normal during the month of October 2022 except from 27<sup>th</sup> to 29<sup>th</sup> when below normal night temperatures were experienced over several stations (Fig 14). Lowest recorded minimum temperature for the month of October 2022 was 11.4°C at Nuwara Eliya on 02<sup>nd</sup> (Table 4b).

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

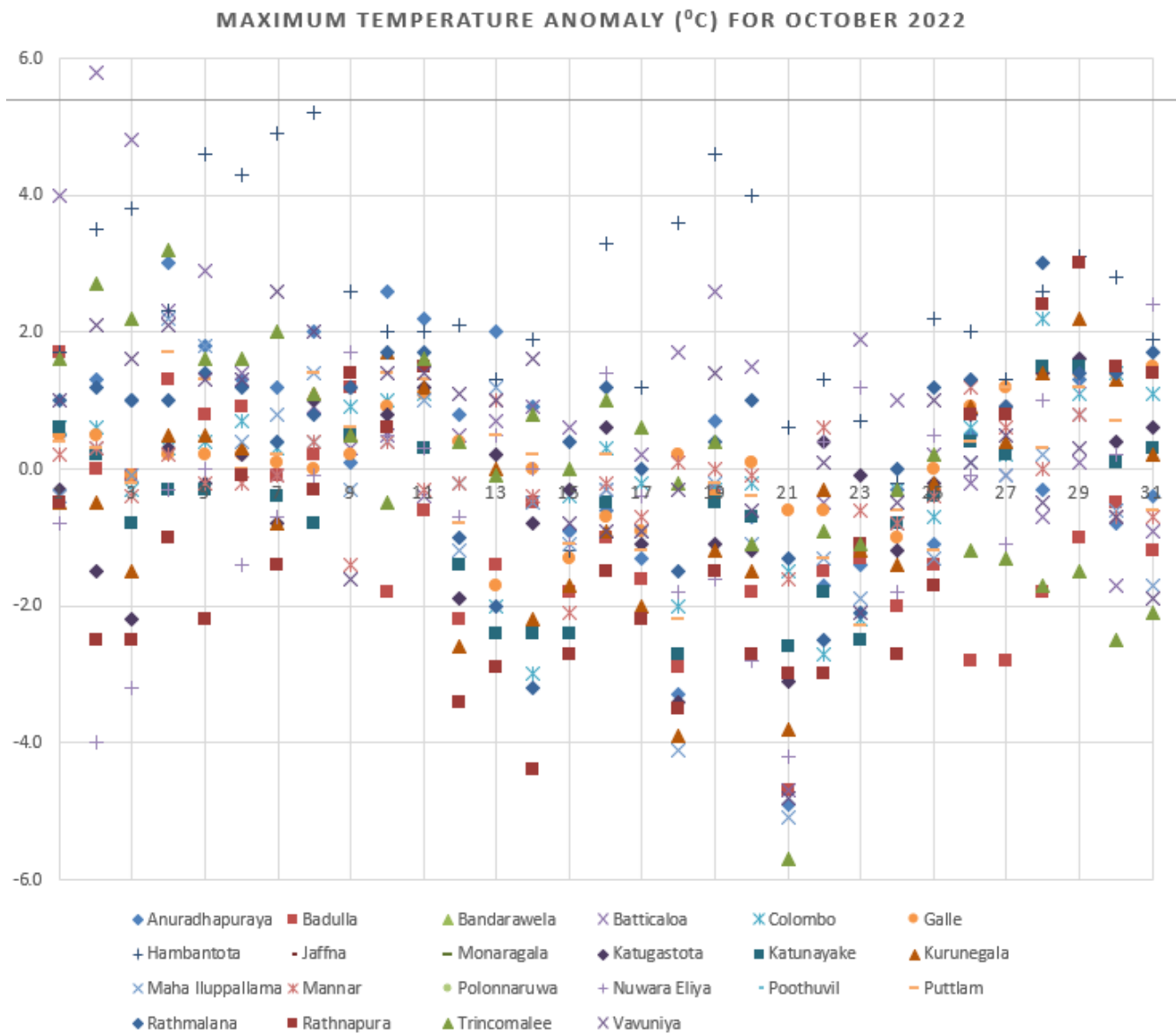


Fig 13. Maximum Temperature anomaly (°C) for October 2022

### MINIMUM TEMPERATURE ANOMALY (°C) FOR OCTOBER 2022

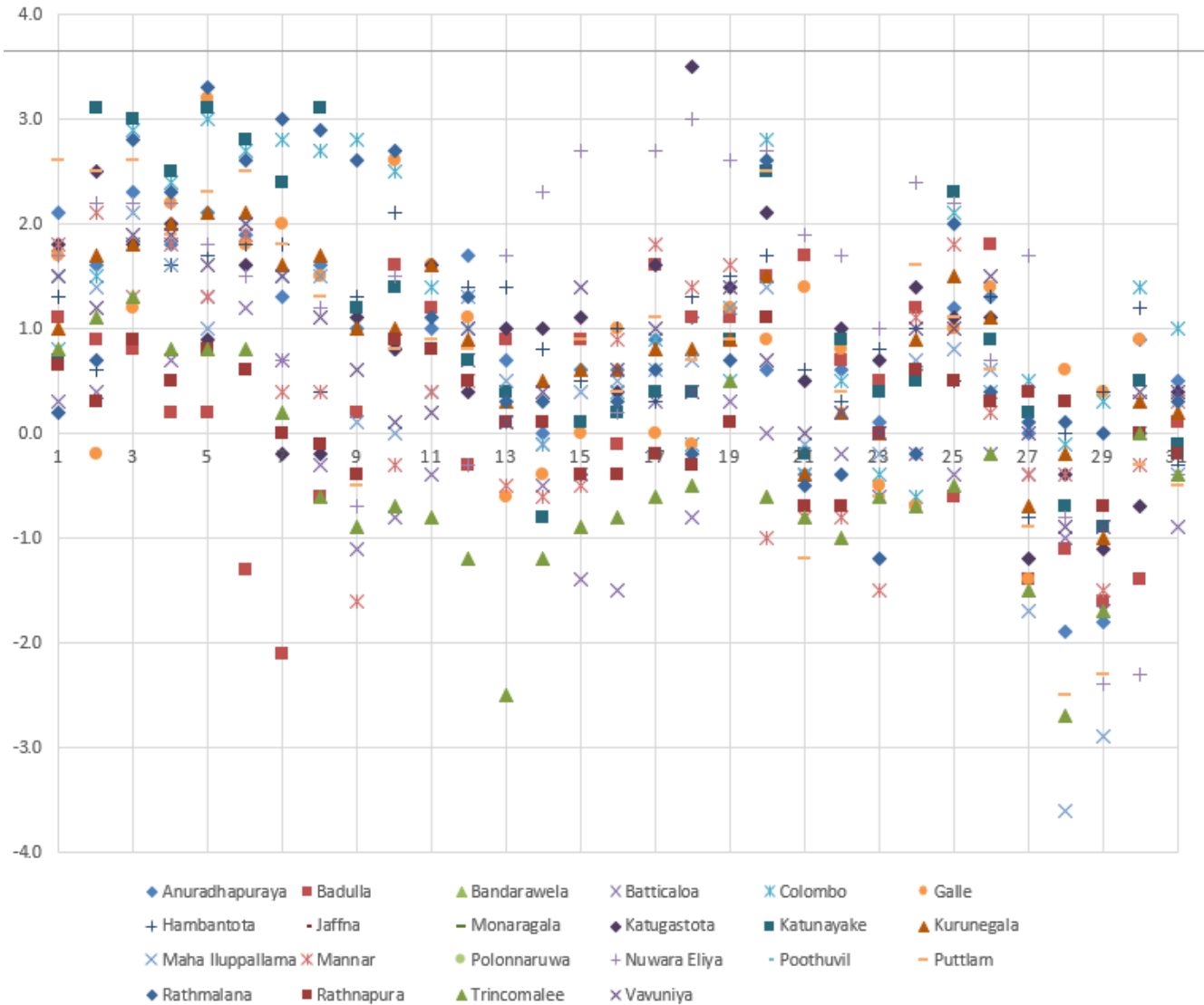


Fig 14: Minimum Temperature anomaly (°C) for October 2022

About or above normal rainfall was reported at principal meteorological stations except Anuradhapuraya, Maha Iluppallama, Vavuniya, Polonnaruwa, Badulla, Batticaloa, Hambantota where below normal rainfall was reported for month of October (Fig 4). Maximum percentage was reported from Jaffna (244.0%) while minimum from Hambantota station (29.4%) (Table 2).

Above normal rainy days were reported at all meteorological stations. Inter-monsoonal conditions established after 29<sup>th</sup> October 2022.



Hydro catchment stations reported above normal rainfall except Randenigala, Bowatenna, Ukuwela, and Samanala Wewa (Fig 5)

Highest cumulative rainfall was 1697.4 mm at Wewalthalawa . Highest rainfall received during 24hours, was 264mm at Mathugama on 13<sup>th</sup> October.

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-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-Oct	Average	%	2022-Oct	Average	%
Anuradhapuraya	157.4	254.5	61.9%	13	14	92.9%
Badulla	183.1	230.4	79.5%	19	15	126.7%
Bandarawela	310.2	247.3	125.4%	21	15	140.0%
Batticaloa	146.8	180.0	81.6%	14	11	127.3%
Colombo	501.0	365.4	137.1%	17	17	100.0%
Galle	753.0	322.7	233.3%	25	18	138.9%
Hambantota	44.7	152.2	29.4%	9	10	90.0%
Jaffna	592.4	242.8	244.0%	16	12	133.3%
Monaragala	394.7			19		
Katugastota	257.8	263.7	97.8%	20	17	117.6%
Katunayake	506.8	389.7	130.1%	18	18	100.0%
Kurunegala	361.1	354.4	101.9%	19	17	111.8%
Maha Iluppallama	103.6	258.1	40.1%	14	14	100.0%
Mannar	189.0	166.2	113.7%	14	10	140.0%
Polonnaruwa	120.0	220.4	54.5%	10	10	100.0%
Nuwara Eliya	387.6	226.8	170.9%	25	18	138.9%
Poothuvil	143.8	109.6	131.2%	12	na	
Puttlam	207.2	232.1	89.3%	16	13	123.1%
Rathmalana	517.8	371.4	139.4%	21	18	116.7%
Rathnapura	680.0	436.8	155.7%	25	21	119.0%
Trincomalee	272.4	222.1	122.6%	17	12	141.7%
Vavuniya	202.6	248.4	81.6%	17	15	113.3%
Mattala	71.3			8		

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

<b>Castlereigh</b>	<b>834.8</b>	<b>396.9</b>	<b>210.3%</b>
<b>Norton</b>	<b>976.4</b>	<b>575.4</b>	<b>169.7%</b>
<b>Maussakele</b>	<b>638.2</b>	<b>351.1</b>	<b>181.8%</b>
<b>Canyon</b>	<b>1034.6</b>	<b>433.0</b>	<b>238.9%</b>
<b>Laksapana</b>	<b>1014.4</b>	<b>608.0</b>	<b>166.8%</b>
<b>Kotmale</b>	<b>496.2</b>	<b>330.6</b>	<b>150.1%</b>
<b>Victoriya</b>	<b>183.6</b>	<b>129.3</b>	<b>142.0%</b>
<b>Randenigala</b>	<b>70.6</b>	<b>179.5</b>	<b>39.3%</b>
<b>Bowatenna</b>	<b>186.2</b>	<b>250.8</b>	<b>74.3%</b>
<b>Ukuwela</b>	<b>245.6</b>	<b>387.3</b>	<b>63.4%</b>
<b>Samanala Wewa</b>	<b>182.5</b>	<b>692.4</b>	<b>26.4%</b>
<b>Maskeliya</b>	<b>558.2</b>	<b>280.6</b>	<b>198.9%</b>
<b>Neboda</b>		<b>442.7</b>	
<b>Castlereigh</b>	<b>834.8</b>	<b>396.9</b>	<b>210.3%</b>

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

Table 4(a) - Extremes of Maximum Temperatures				October	2022
	Maximum			Highest Std.Div	
	Value	Offsets			
		(-)	(+)		
Value	36.7C	5.7	5.8	2.37	
Station	Batticaloa	Trincomalee	Batticaloa	Mattala	
Date	02/10	21/10	02/10		
Table 4(b) -Extremes of Minimum Temperature October 2022					
	Minimum			Highest Std.Div	
	Value	Offsets			
		(-)	(+)		
Value	9.4C	3.6	3.5	1.61	
Station	NuwaraEliya	MahaIluppallama	Katugastota	Jaffna	
Date	29/10	28/10	18/10		

(Table 4a).

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Department of Meteorology