

Weather Synopsis –October 2021.

About or above normal rainfall was reported at most of the principal meteorological stations except Batticaloa, Polonnaruwa, Kurunegala and Galle for month of October (Fig 3). Above normal rainy days were reported at all meteorological stations. Inter-monsoonal conditions established after 20th October 2021.

Except Lakshapana, Bowathenna and Samanalaweva, hydro catchment stations reported above normal rainfall (Fig 4)

Highest cumulative rainfall was 1005.1mm at Wewalthalawa. Highest rainfall received during 24 hours, was 240mm at Wewalthalawa on 31st October.

Fairly widespread showers with isolated heavy falls were reported on 01st, 05th, 10th and after 20th October. Except for a few showers in southwestern parts, mainly fair weather was from 06th to 09th, from 13th to 14th and on 18th. Convective showers were enhanced with the formation of low level disturbance in the vicinity of Sri Lanka on 26th. This system developed into a low pressure area on 27th October, 2021. A southward tilt of the axis of low pressure area was apparent with height (Figs 1 and 2). It moved westwards, crossed Sri Lanka on 31st and emerged into Comorin Area on 1st November. Continuing to move westwards, it emerged into southeast Arabian Sea on 3rd November. According to Disaster Management Center (DMC), two deaths (one death at Thunukkai, Mullaitivu on 26th and another at Puttalam on 30th) were reported due to lightning and another two deaths were reported on 29th at Badulla districts due to heavy rain leading to flash floods. 5821 people from 1451 families were affected by heavy rain caused by low pressure area from 26th to 31st October 2021.

Table 1 stations received above 100mm rainfall during October 29 to 31 2021

Date	Station	24 hour Rainfall (mm)
29 th October 2021	Norochcholai	215.4
29 th October 2021	Wewessa Estate	102.0
30 th October 2021	Elephant pass	132.4
30 th October 2021	Norochcholai	115.1
30 th October 2021	Karandipovval	111.2
30 th October 2021	Angamedilla	105.0
31 st October 2021	Wewalthalawa	240.0
31 st October 2021	Hiniduma	143.7
31 st October 2021	BATUWANAGALA	141.7
31 st October 2021	Kukuleganga	130.0
31 st October 2021	OMANTHAI	110.0
31 st October 2021	Wewessa Estate	105.0

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

Borderline La Nina conditions were observed during Month of October 2021. Ocean Nino Index is -0.7 and -0.8 during August-September-October and September-October-November (NOAA Climate prediction Center). Slightly negative IOD was observed during October 2021 (BoM, Australia). Slightly warmer Sea surface waters can be seen over sea areas surrounding Sri Lanka (Fig. 7)

The average position of the shear line was laid between 01°N 50°E, 02°S 70°E and 02°N 120°E (Fig 4). The Inter-Tropical Convergence zone (ITCZ) was appeared from 20st onwards and it was laid between 07°N 50°E, 04°N 80°E and 07°N 120°E (Fig 6). Both shear line and ITCZ were fluctuated about 2° north and south of their average position .

Strong Madden-Julian Oscillation (MJO) was at phase 5 during first two weeks, then became weak during remaining days (Fig. 8).

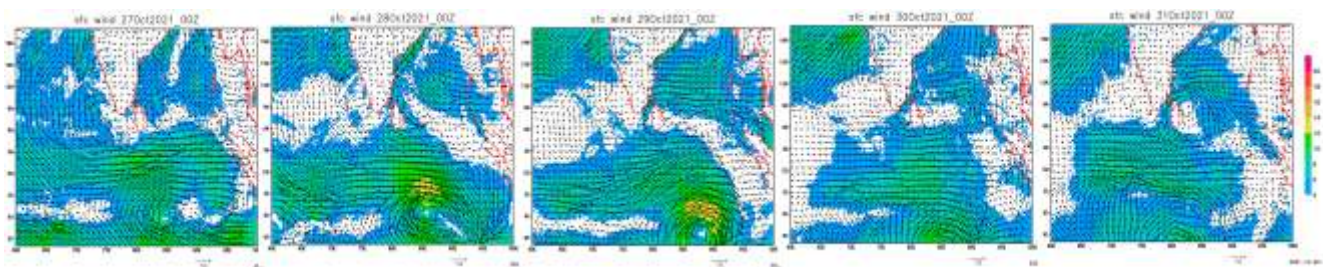


Fig 1: ECMWF 10m wind from 27th to 31st October 2021

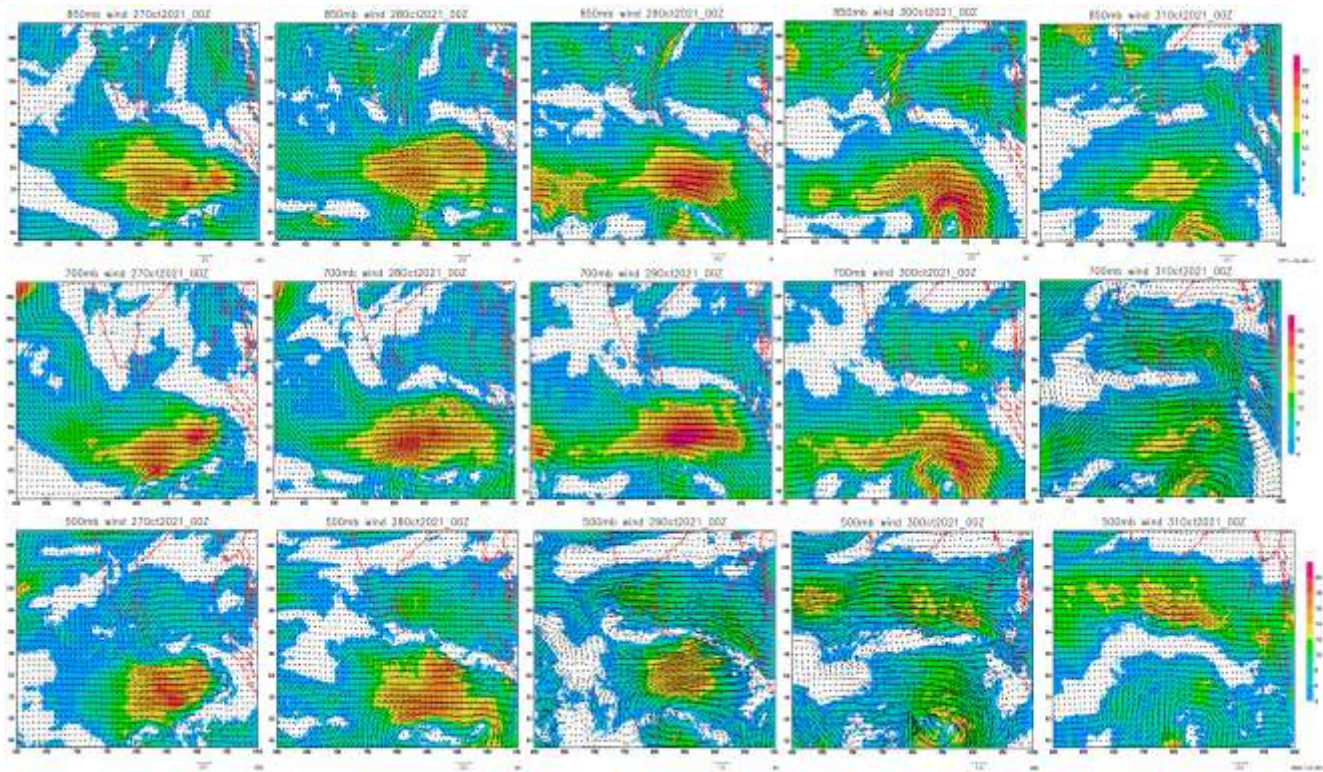


Fig 2: ECMWF 850 mb wind , 700 mb wind and 500 mb wind from 00z 27th to 31st October 2021

Weather Systems

Cyclonic storm “Shaheen” over the northeast Arabian Sea (29 September-04 Oct 2021)

The remnant of cyclonic storm Gulab emerged as a well marked low pressure area into south Gujarat region in the Arabian Sea on 29th September and intensified into cyclonic storm “Shaheen” over the northeast Arabian Sea off Gujarat coast in the morning of 1st October, 2021. It moved west-northwestwards and intensified into a severe cyclonic storm in the evening of 1st October over northwest & adjoining northeast Arabian Sea. Continuing to move further west-northwards till evening of 2nd October, it recurved west-southwestwards and crossed Oman coast between 0030 and 0130 of 4th October. Thereafter moving west-southwestwards, it weakened into a cyclonic storm over North Oman and adjoining United Arab Emirates in the morning, into deep depression in the forenoon, into a depression around noon and into a well marked low pressure area in the evening of 4th October over the same region (Source : India Meteorological Department) .

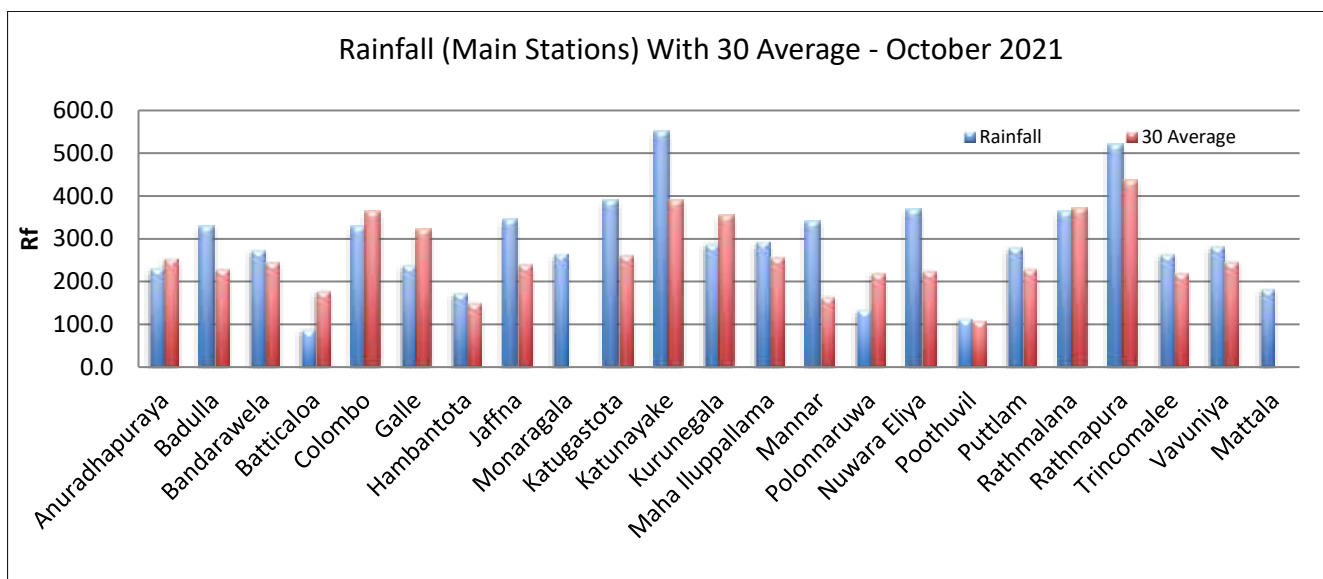


Fig 3: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Main Meteorological stations areas during October 2021.

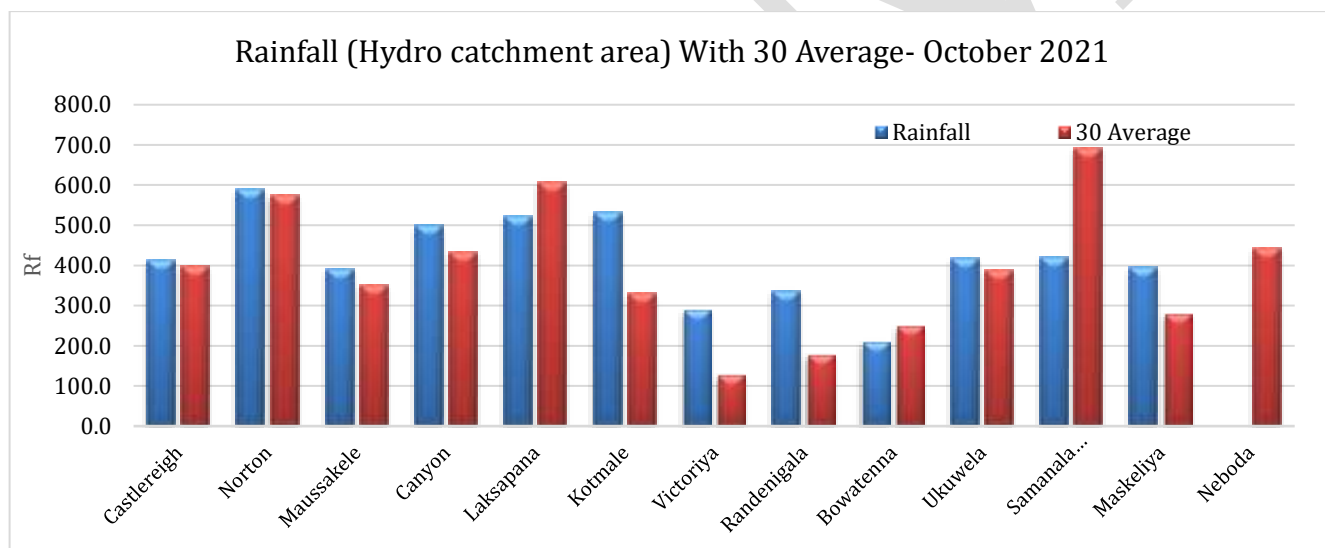


Fig 4: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Hydro catchment areas during October 2021

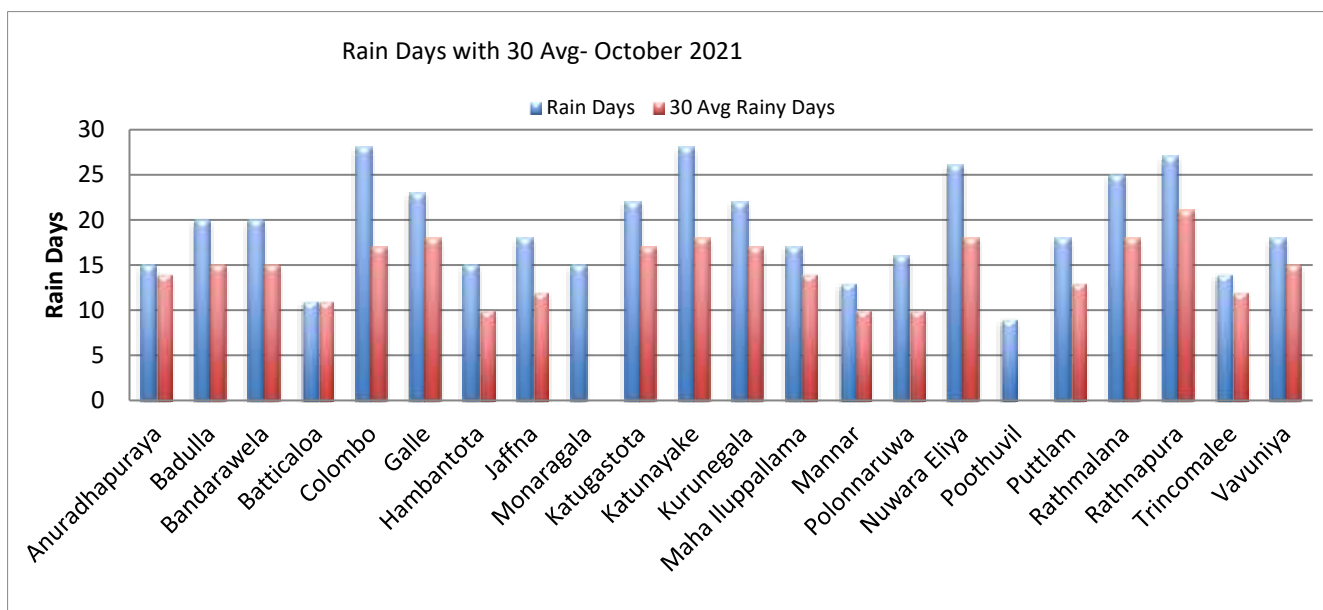


Fig 5: monthly total no of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during October 2021

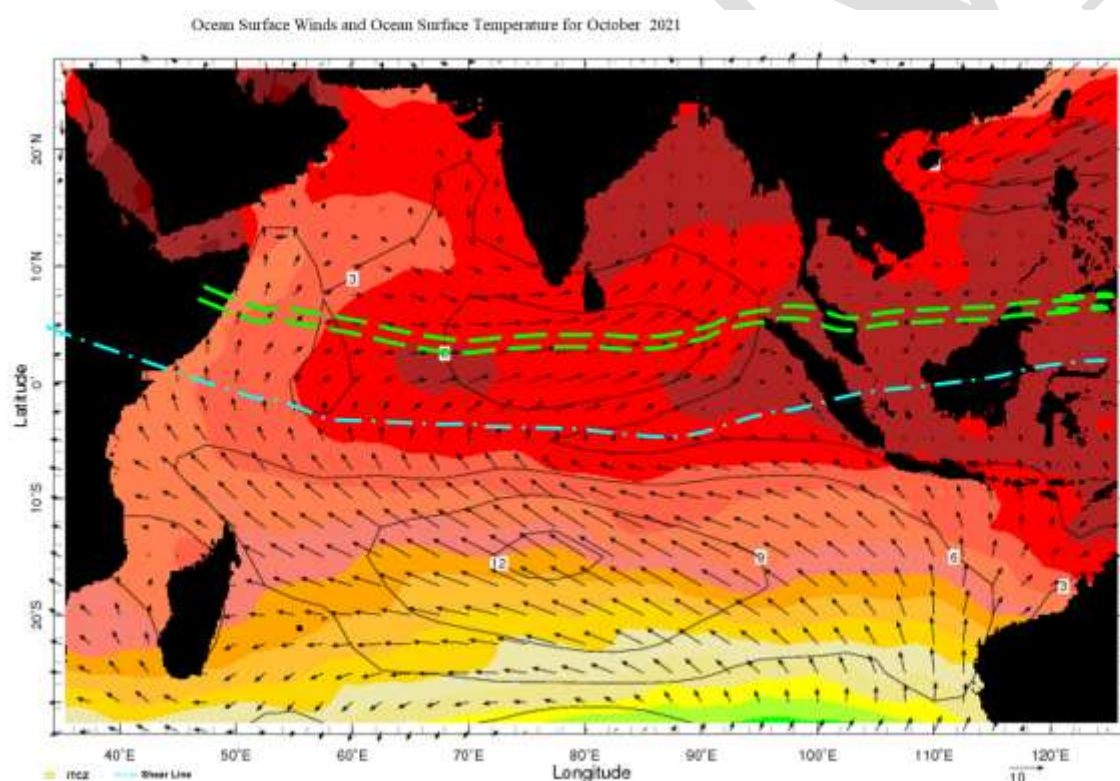


Fig 6: Ocean Surface Winds and Ocean Surface Temperature for October 2021

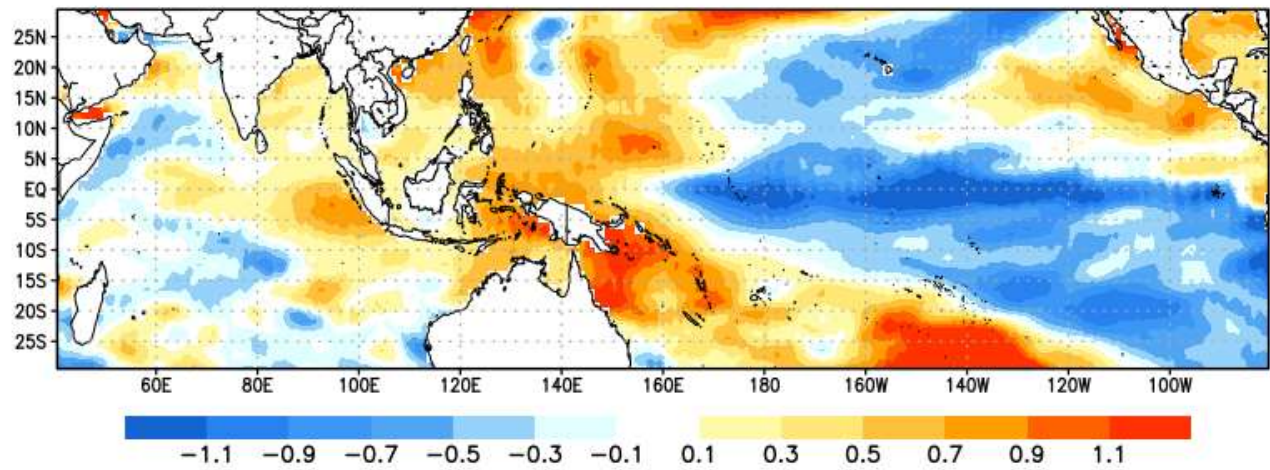


Fig 7: Sea Surface Temperature anomalies for October 2021

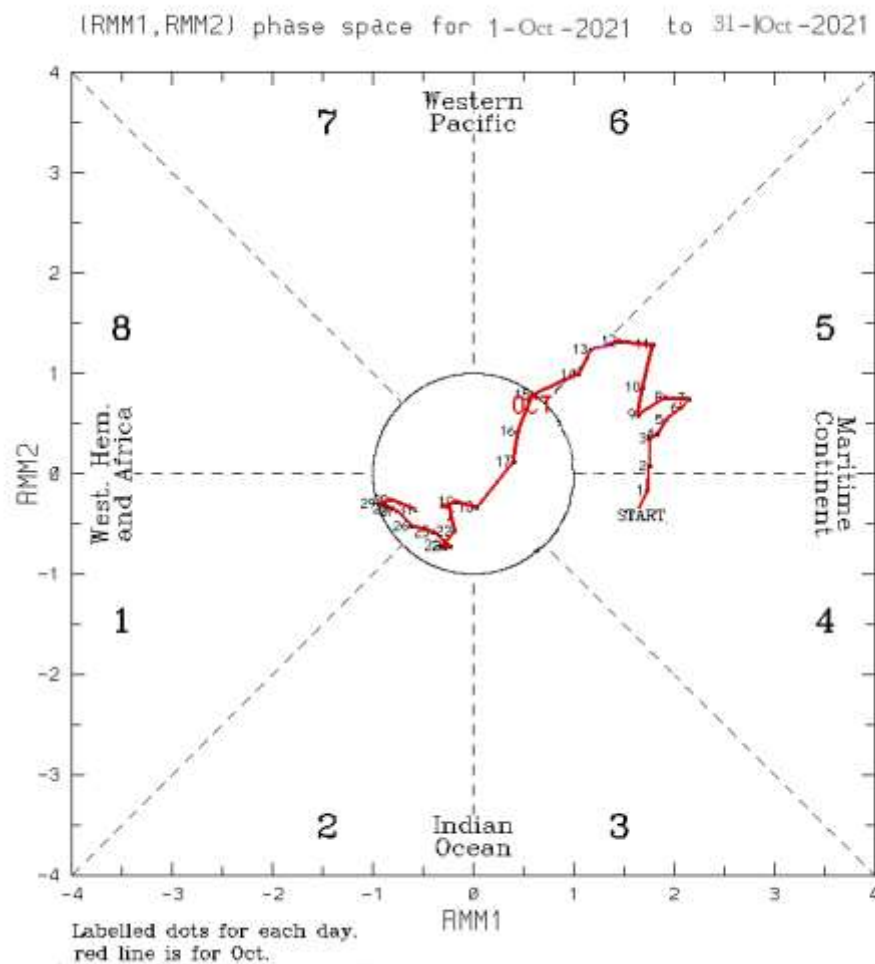


Fig 8: Phase diagram of MJO Index

Surface pressure and winds: The surface pressure was below average from 01st to 18th and again from 27th to 31st. It was above average during remaining days except 29th when about average surface pressure was observed. South-westerly pressure gradient was mild on 04th, 05th, from 08 to 10th, on 19, 24, 26, 27, 29 and 30; moderate on 06, 07, from 12th to 18th, and on 31st and steep on 11th.

The surface wind was from westerly to southwesterly direction and speed varied within 05-10kts till 20th. The surface wind was calm and variable in direction from 20th to 31st.

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 9).

At 700 hPa, Westerly wind flow is dominated over the island. Cyclonic circulation appeared to the northeast of Sri Lanka at 700mb level (Fig 10).

At 500 hPa, East-west oriented trough axis over the southern part island providing favorable conditions for cloud formation.

The 200 hpa the upper tropospheric ridge was laid about 19°N40°E, 19°N 60°E, 22°N100°E, and 20°N120°E .

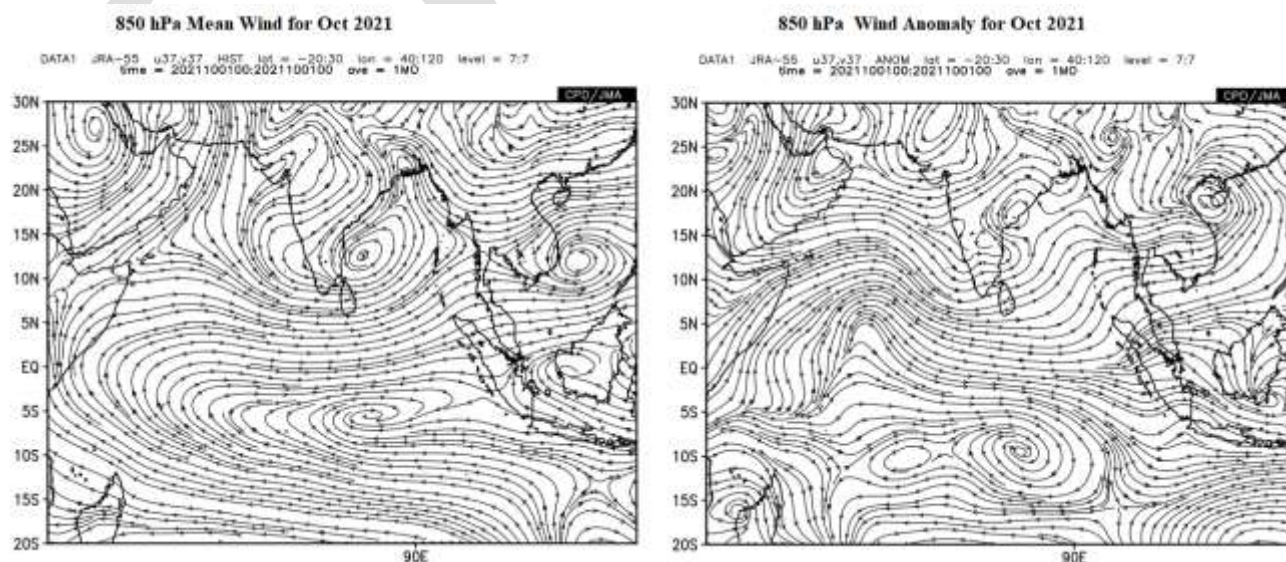


Fig. 9 Monthly average wind pattern at 850hpa level during the month of October2021 (JRA55)

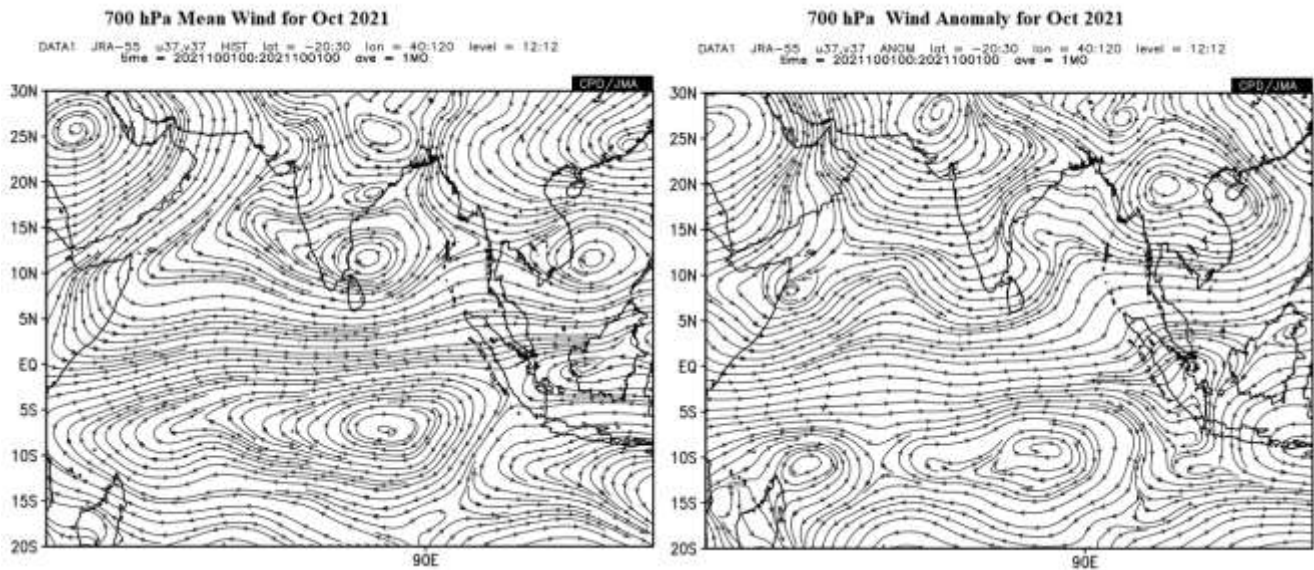


Fig. 10 Monthly average wind pattern at 700hpa level during the month of October2021 (JRA55)

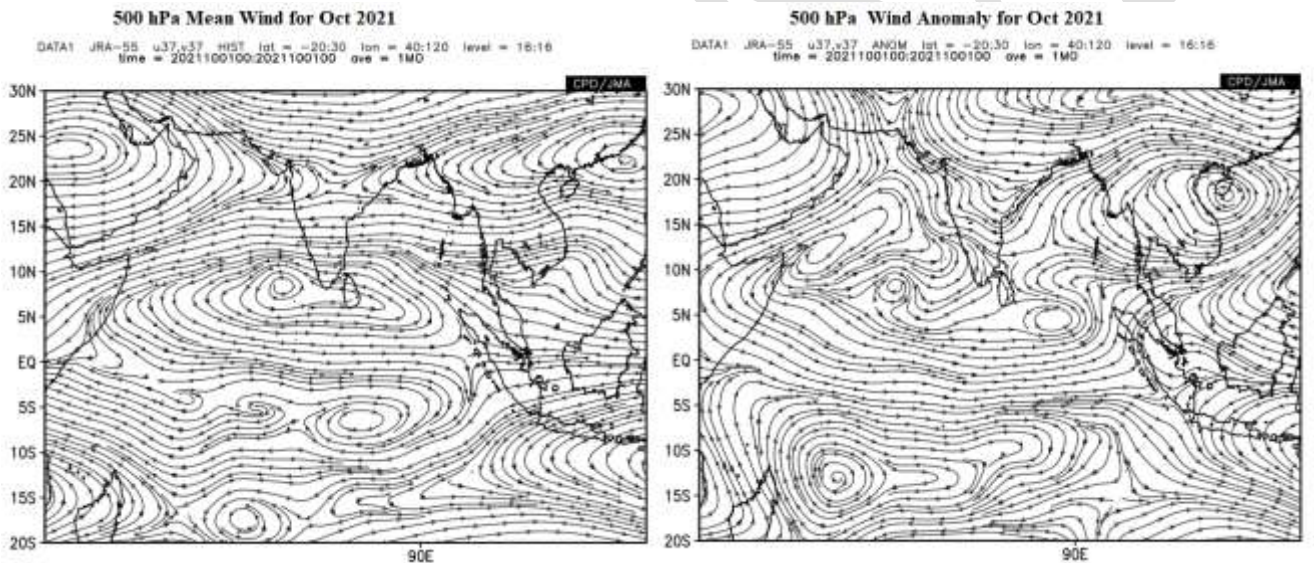


Fig. 11 Monthly average wind pattern at 500hpa level during the month of October 2021 (JRA55)

Temperature Field:

The maximum temperatures in the day were mostly above normal in most places except on 01st, 04th, 05th, 11th and 15th when below normal temperatures were experienced over most of the stations. Day temperatures were considerably above normal at Batticoloa On 10th, and from 13th to 14th. Highest recorded maximum temperature for the month of October 2021 was 36.6⁰C at Batticoloa on 14th (Table 4a).

Night minimum temperatures over most parts were above normal during the month of October 2021 (Fig 13). Lowest recorded minimum temperature for the month of October 2021 was 11.4°C at Nuwara Eliya on 02nd (Table 4b).

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

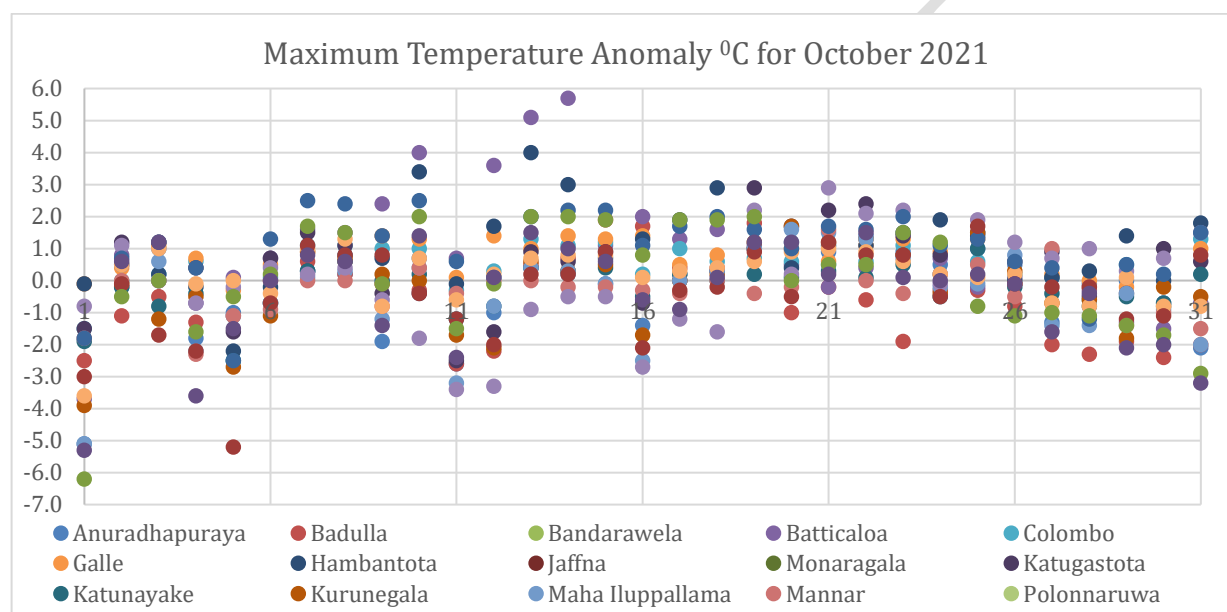


Fig 12. Maximum Temperature anomaly (°C) for October 2021

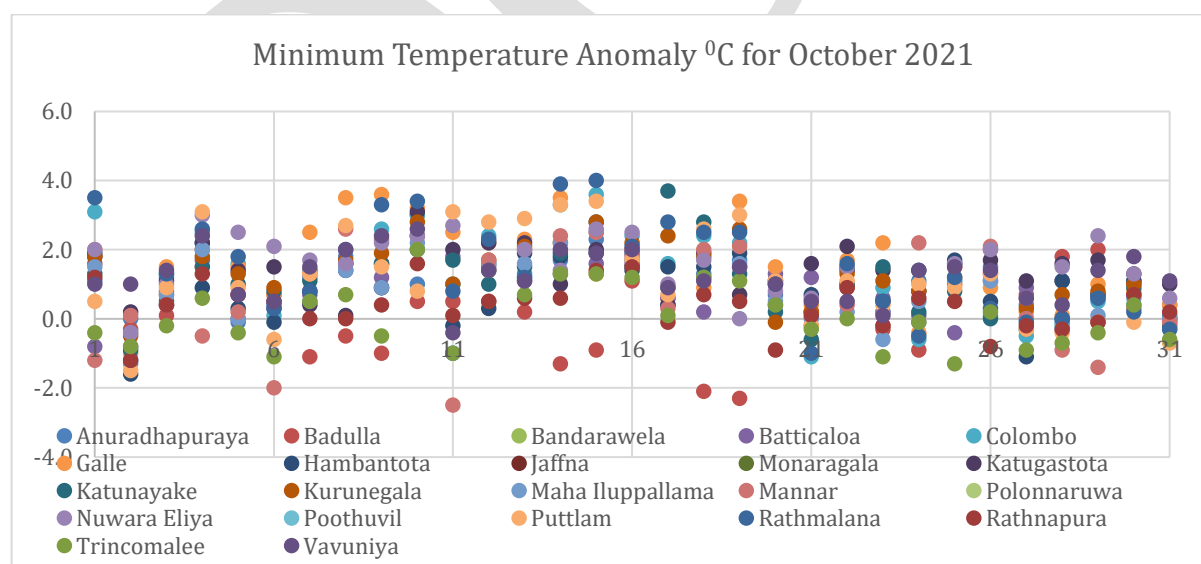


Fig 13 Minimum Temperature anomaly (°C) for October 2021

About or above normal rainfall was reported at most of the principal meteorological stations except Batticaloa, Polonnaruwa, Kurunegala and Galle for month of October (Fig 3). Above normal rainy days were reported at all meteorological stations. Inter-monsoonal conditions established after 20th . Maximum percentage was reported from Mannar (206.0%) while minimum from Batticaloa station (49.4%)(Table 2).

Except Lakshapana, Bowathenna and Samanalaweva , hydro catchment stations reported above normal rainfall..

Highest cumulative rainfall was 1005.1mm at Wewalthalawa . Highest rainfall received during 24hours, was 240mm at Wewalthalawa on 31st 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		
	2021-Oct	Average	%	2021-Oct	Average	%
Anuradhapuraya	232.8	254.5	91.5%	15	14	107.1%
Badulla	329.9	230.4	143.2%	20	15	133.3%
Bandarawela	276.0	247.3	111.6%	20	15	133.3%
Batticaloa	89.0	180.0	49.4%	11	11	100.0%
Colombo	329.0	365.4	90.0%	28	17	164.7%
Galle	240.7	322.7	74.6%	23	18	127.8%
Hambantota	175.0	152.2	115.0%	15	10	150.0%
Jaffna	345.1	242.8	142.1%	18	12	150.0%
Monaragala	265.7			15		
Katugastota	389.5	263.7	147.7%	22	17	129.4%
Katunayake	551.2	389.7	141.4%	28	18	155.6%
Kurunegala	290.3	354.4	81.9%	22	17	129.4%
Maha Iluppallama	293.6	258.1	113.8%	17	14	121.4%
Mannar	342.3	166.2	206.0%	13	10	130.0%
Polonnaruwa	135.2	220.4	61.3%	16	10	160.0%
Nuwara Eliya	369.5	226.8	162.9%	26	18	144.4%
Poothuvil	114.6	109.6	104.6%	9	na	#VALUE!
Puttlam	281.7	232.1	121.4%	18	13	138.5%
Rathmalana	363.8	371.4	98.0%	25	18	138.9%
Rathnapura	520.6	436.8	119.2%	27	21	128.6%
Trincomalee	264.8	222.1	119.2%	14	12	116.7%
Vavuniya	284.5	248.4	114.5%	18	15	120.0%
Mattala	184.5			15		

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

Hydro Catchment	October 2021	Average	% (percentage of average)
Castlereigh	412.7	396.9	104.0%
Norton	589.3	575.4	102.4%
Maussakele	391.1	351.1	111.4%
Canyon	499.7	433.0	115.4%
Laksapana	522.2	608.0	85.9%
Kotmale	531.2	330.6	160.7%
Victoriya	290.8	129.3	224.9%
Randenigala	335.7	179.5	187.0%
Bowatenna	211.3	250.8	84.3%
Ukuwela	416.5	387.3	107.5%
Samanala Wewa	421.0	692.4	60.8%
Maskeliya	394.1	280.6	140.4%
Neboda		442.7	

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	2021
	Maximum			Highest Std.Div
	Value	Offsets		
		(-)	(+)	
Value	36.6C	6.2	5.7	1.89
Station	Batticoloa	Trincomalee	Batticoloa	Batticoloa
Date	14/10	01/10	14/10	

Table 4(b) -Extremes of Minimum Temperature October 2021				
	Minimum			Highest Std.Div
	Value	Offsets		
		(-)	(+)	
Value	11.4C	2.5	4	1.45
Station	NuwaraEliya	Mannar	Ratmalana	Mannar
Date	02/10	11/10	15/10	

Prepared by National Meteorological Centre (NMC)

Department of Meteorology

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