Weather Synopsis –September 2020.

Above normal rainfall was reported at the principal meteorological stations except stations located in north-eastern and eastern parts such as Anuradhapuraya, Maha Iluppallama, Vavunia, Polonnaruwa, Batticaloa, Pothuvil, Bandarawela and Puttalum (Fig 1). Number of rainy days was above normal over most of the principal meteorological stations except Anuradhapura, and Vavunia where nearly 80% of rainy days were reported.

Hydro catchment stations located along western slopes of the central hills reported above normal rainfall. However most of the hydro catchment stations located along eastern slopes of the central hills such as Victoria, Randenigala, Bowatenna and Samanalawewa reported below normal rainfall.

Highest cumulative rainfall was 967.7 mm at Baddegama . Highest rainfall received during 24hours, was 286mm at Ketendola on 01st September.

Showery conditions were enhanced due to mid level trough appeared over Sri Lanka on 1st with very heavy falls exceeding 250mm reported at several places in southwest quarter. Showery and windy conditions over the island, were enhanced due to low level convergence on 6th and 09th. Showery and windy conditions were enhanced over southwest quarter due active southwest monsoon conditions from 10th to 22nd September. Afternoon thunderstorms occurred at Eastern and Uva provinces and at Mullativ district from 24th . Showery conditions were enhanced over southwest quarter from 28th to 30th with afternoon convective showers in the northern, north- -eastern parts from 28th to 29th September.

According to Disaster Management Center (DMC), one death was reported from Niwithigala on 06th , from Kaduwela on 07th, Mahara on 09th . Three deaths were reported from Gangawata korale on 20th due to Landslide. Several families were affected by strong winds and heavy rain during September 2020 (Table 3**).**

On the apparent southward relative motion of the sun, it is going to be directly over the latitudes of Sri Lanka during 01st September to 07th of September in this year.

Date	Time	The nearest towns of Sri Lanka over which the sun is overhead
September 01	12.10	Nochchiyagama, Yalegama, Galkulama, Siyambalewa, Nitulgollewa and Verugal
September 02	12.09	Madurankuli, Talgaswewa, Hunugallewa, Mannampitiya and Kalkudah
September 03	12.09	Kakkapalliya, Katupotha, Guruwela, Wilegama, Maha-Oya, Tumpankeni, Palukamam
September 04	12.09	Katunayake, Pasyala, Gampola, Bibile, Koknahara and Tampaddai
September 05	12.09	Angulana, Kiragala, Bogawantalawa, Diyatalawa and Kumbukkana
September 06	12.09	Bentota, Meegama, Dodampapitiya, Pelawatta, Bodagama and Kataragama
September 07	12.08	Gintota, Galwelawatta, Gallalla, Aturaliya and Kahandamodara

Generally, below normal day temperatures and above normal night temperatures were reported from majority of stations. Reported maximum temperature was 37.2^0C at Polonnaruwa on 27th and reported minimum temperature was 11.2^0C at Nuwara Eliya on 07th.

Borderline La Nina conditions were observed during Month of September 2020. Ocean Nino Index was -.6 during July August and September (NOAA Climate prediction Center). IOD neutral condition was observed during September 2020 (BoM, Australia). Sea surface waters in Bay of Bengal were warmer than average. Slightly cooler sea surface waters were apparent over west of Sri Lanka (Fig. 5)

The average position of the shear line was laid about Equator from 40^0E to 70^0E, about 01^0S 80^0E, 02^0N 100^0E, and 05^0N 120^0E (Fig 4). It was fluctuated south the average position during early part of the month and north of the average position during latter part of the month.

Strong Madden-Julian Oscillation (MJO) was at phase 3 on 1st September, became weak during rest of 1st and 2nd weeks, re-strengthen at the phase 4 during 3rd week from 15 to 18th and became weak during rest of 3rd week and re-strengthen at the phase 5 from 23rd to 30th September (Fig.6).

Weather Systems

A Low Pressure Area was observed over southeast Arabian and adjoining east central Arabian Sea during 06-08 Sep off Karnataka coast. A Low Pressure Area formed over West central Bay of Bengal and adjoining Andhra Pradesh on 13th September and moved inland to Telangana on 16th September. Source : India Meteorological Department) .

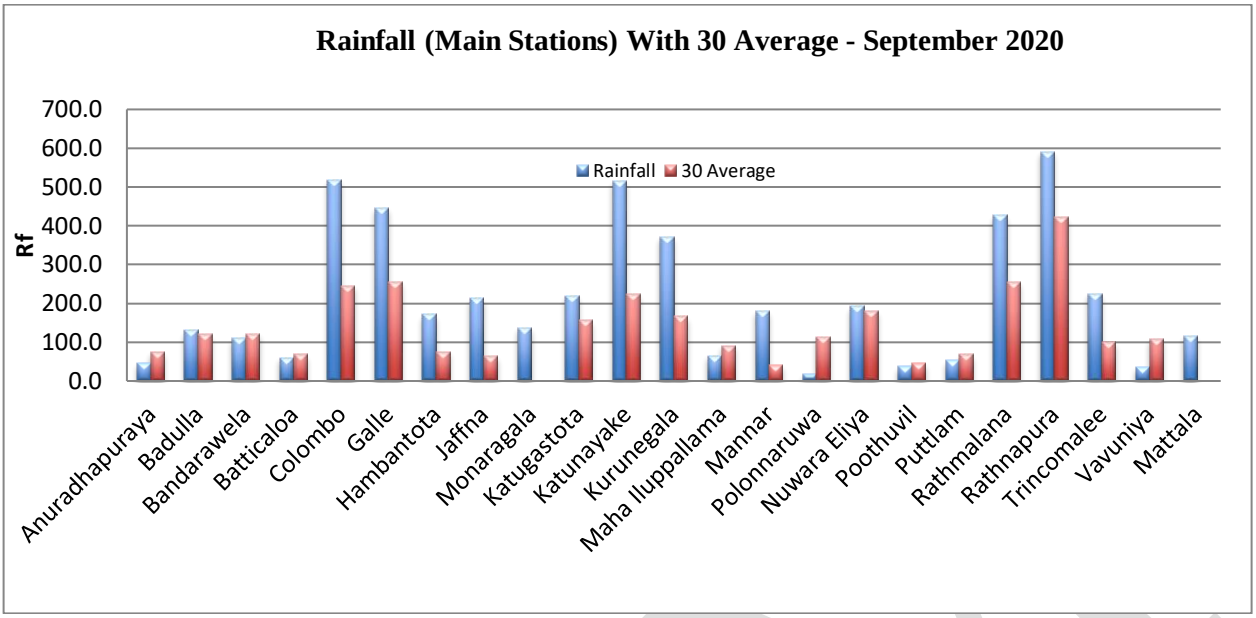

Fig 1: Monthly Total Rainfall(mm) with 30 years (1961-1990) of their averages at Main Meteorological stations areas during September 2020

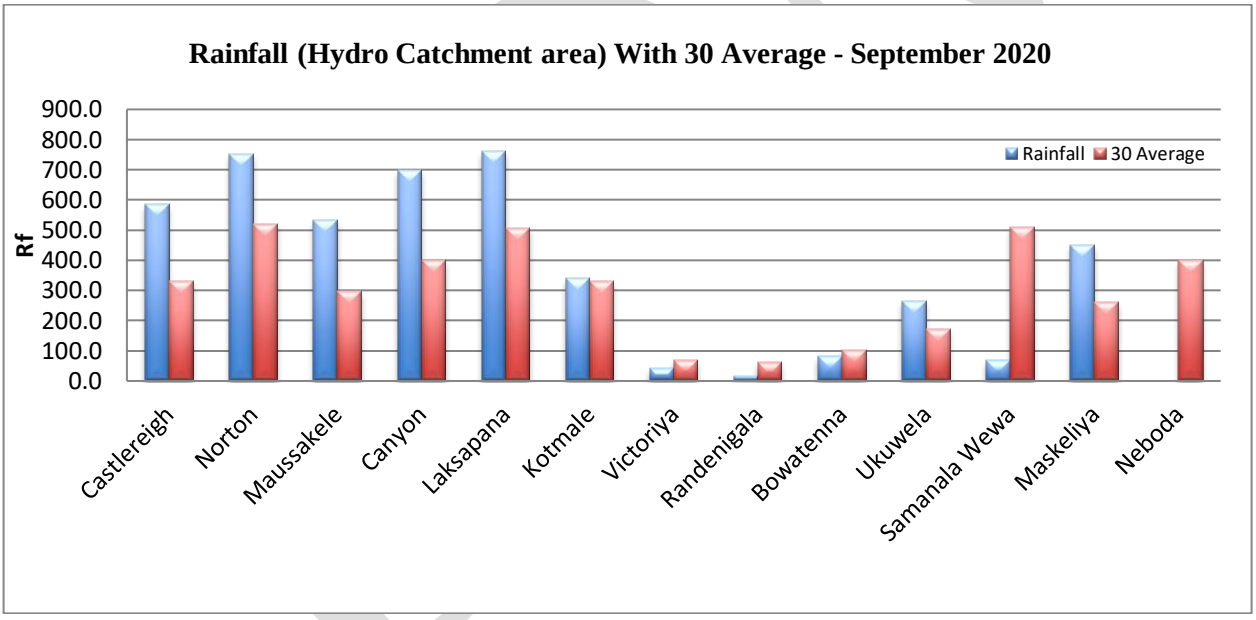

Fig 2: Monthly Total Rainfall (mm) with 30 years (1961-1990) of their averages at Hydro catchment areas during September 2020

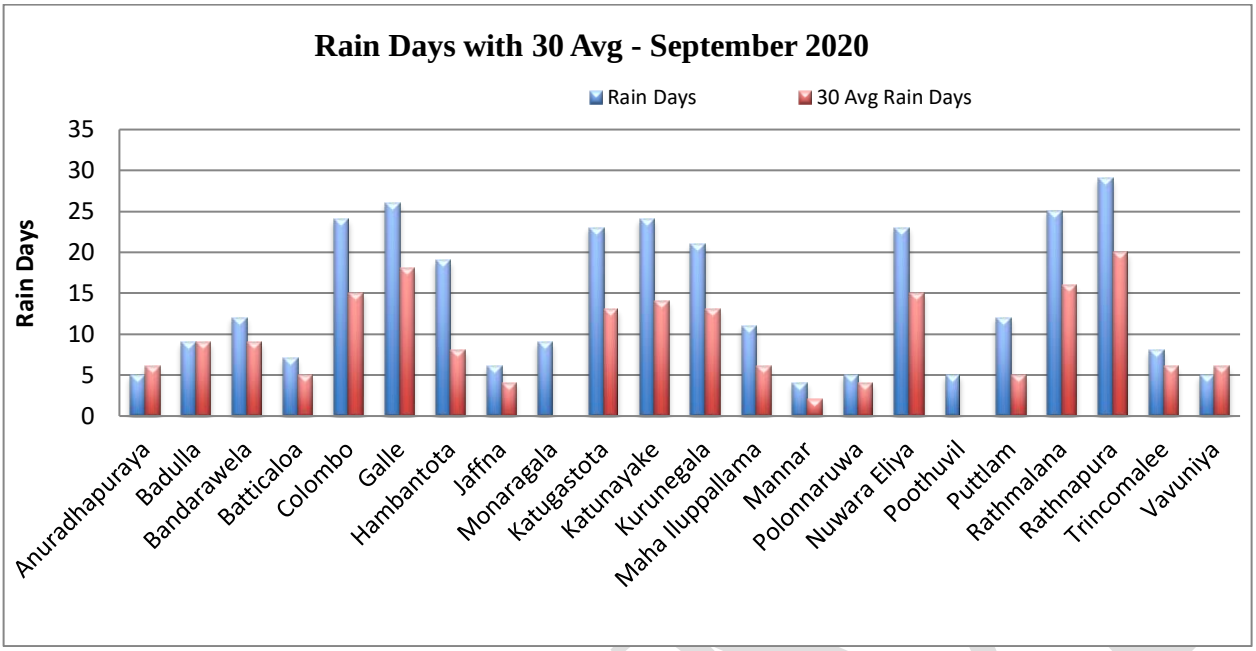

Fig 3: monthly total no of rainy days with 30 years (1961-1990) of their averages at main Meteorological stations during September 2020

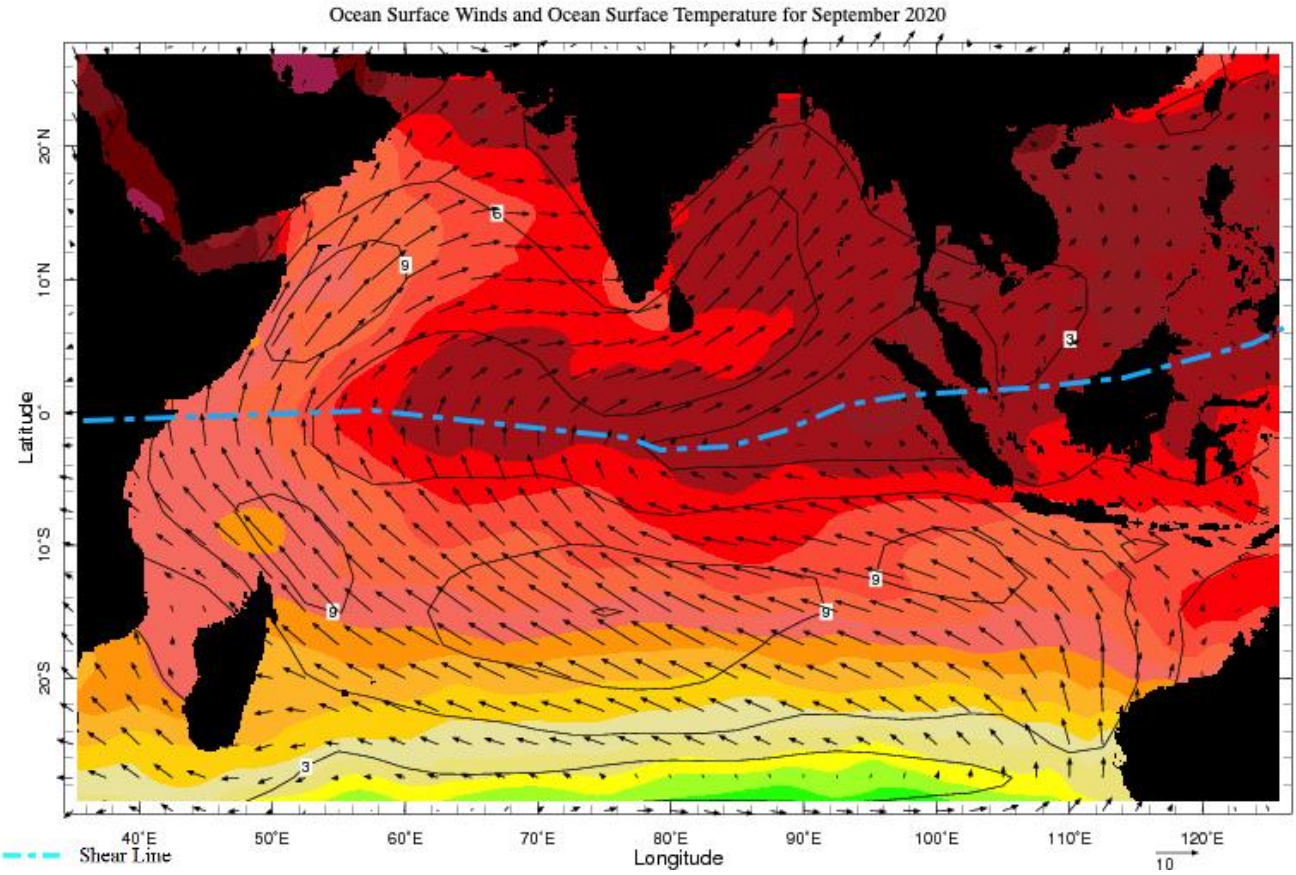

Fig 4: Ocean Surface Winds and Ocean Surface Temperature for September 2020

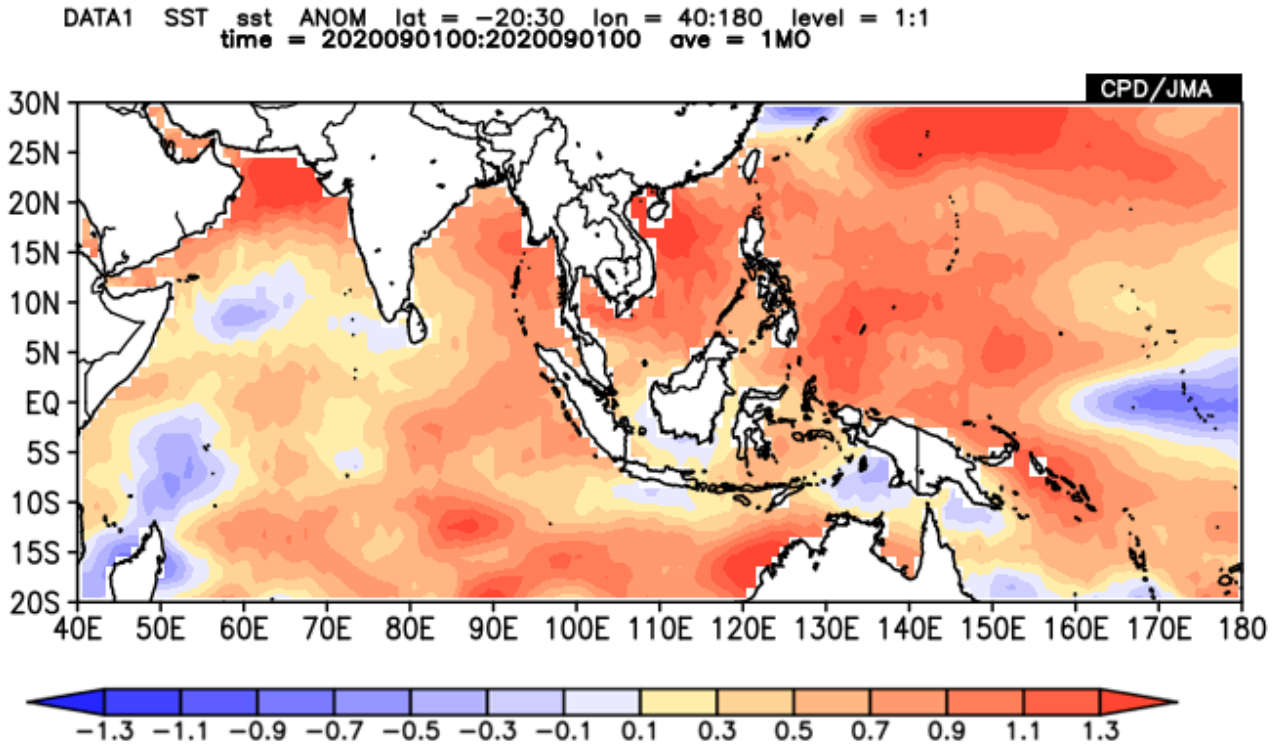

Fig 5: Sea Surface Temperature anomalies for September 2020

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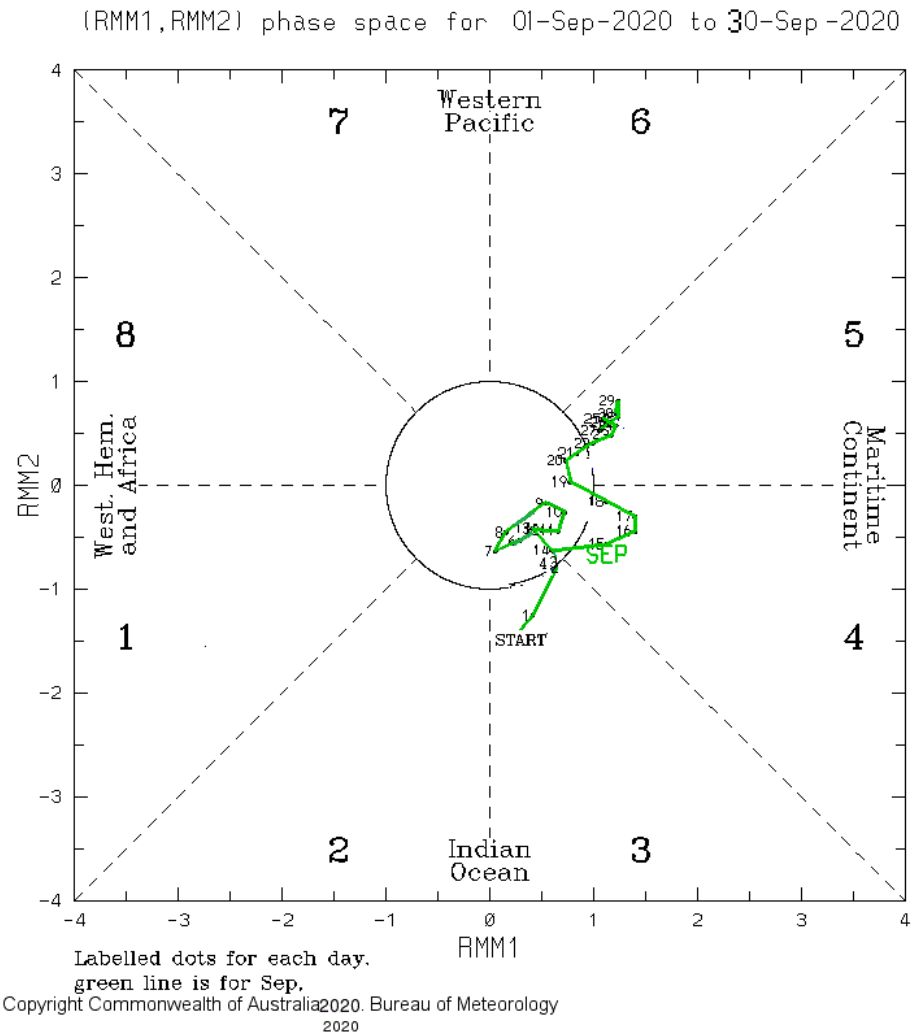

Fig 6: Phase diagram of MJO Index

Surface pressure and winds: The surface pressure was about or below average except 13th and 24th when it was above average. South-westerly pressure gradient was mild from 01st to 06th ,08th to 09th , 12th 26th to 27th, 29th to 30th; moderate on 07th, 10th to 11th, 16th to 17th, 19th to 20th; 22nd to 25th , 28th and steep on 18th and 21st.

The surface wind was from westerly to south westerly direction and speed varied within 05-15kts. The surface wind was from westerly to south westerly direction and speed varied within 05-20kts during the 16th and 18 to 23rd .

Upper winds:

At 850hPa, South-westerly wind flow is dominated over the island. Anomalous southwesterlies appeared over Sri Lanka at 850mb level suggested that strengthening of southwesterly wind flow over Sri Lanka during September (Fig 7).

At 700 hPa, Westerly wind flow is dominated over the island. Anomalous westerlies appeared over Sri Lanka at 700mb level suggested that strengthening of westerly wind flow over Sri Lanka during September (Fig 8).

At 500 hPa, South westerly to westerly wind flow is dominated over the island. Cyclonic circulation appeared to North of Sri Lanka. Anomalous north south oriented trough appeared to the west of Sri Lanka providing favourable condition for rainfall enhancement .

The 200 hpa the upper tropospheric ridge was laid from 23^0N 40^0E, 27^0N 90^0E and 25^0N 100^0E . Tropical easterly jet was appeared in the vicinity of Sri Lanka.

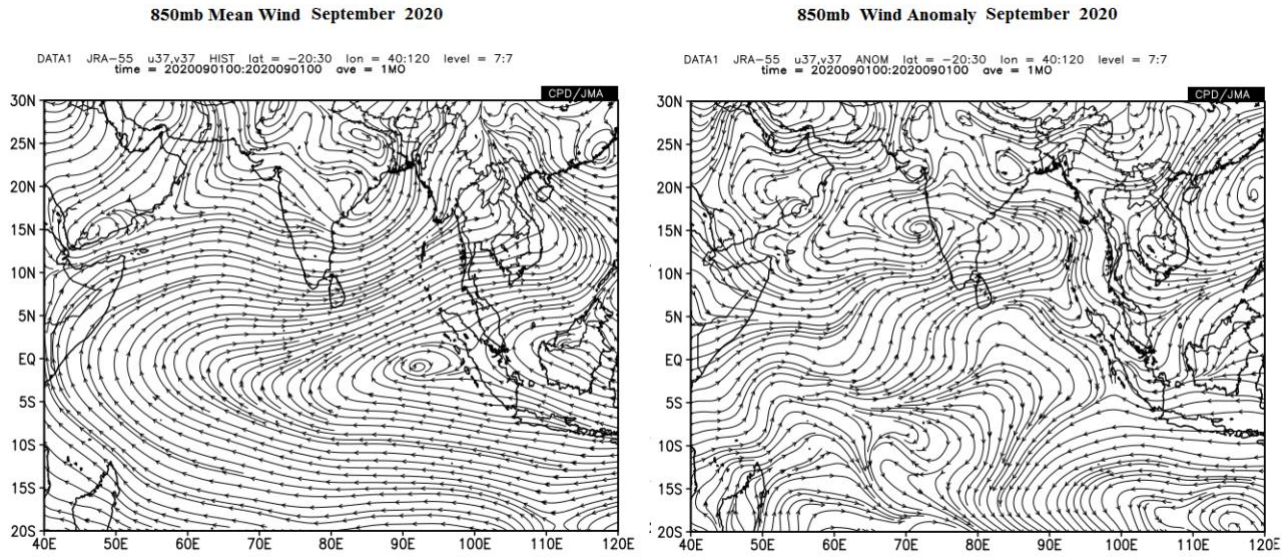

Fig. 7 Monthly average wind pattern at 850 hpa level during the month of September 2020 (JRA55)

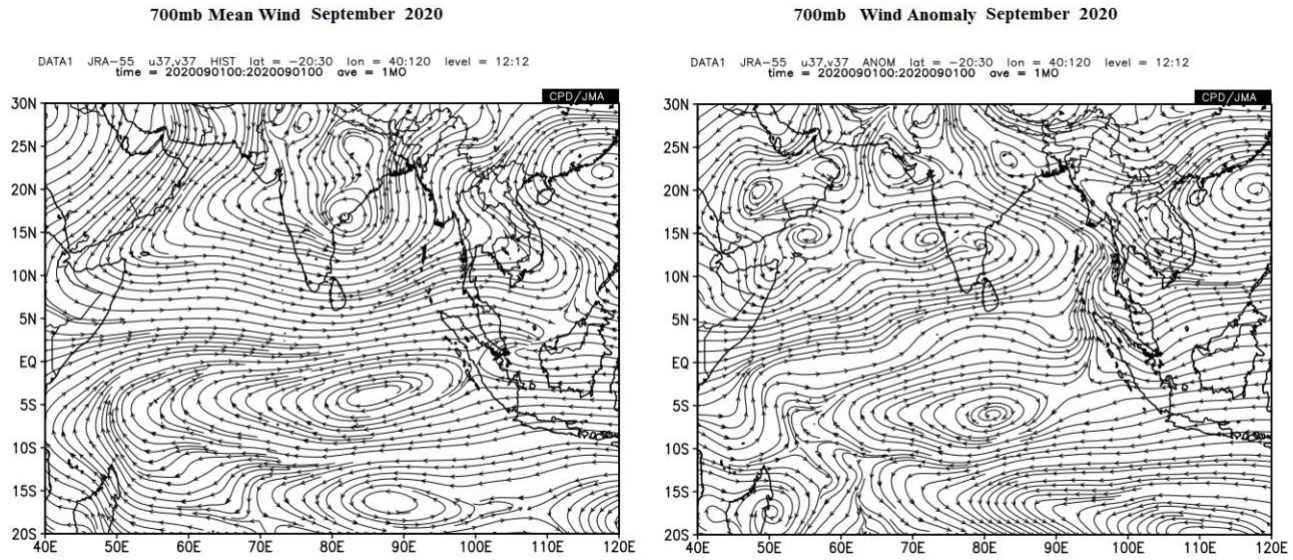

Fig. 8 Monthly average wind pattern at 700hpa level during the month of September 2020 (JRA55)

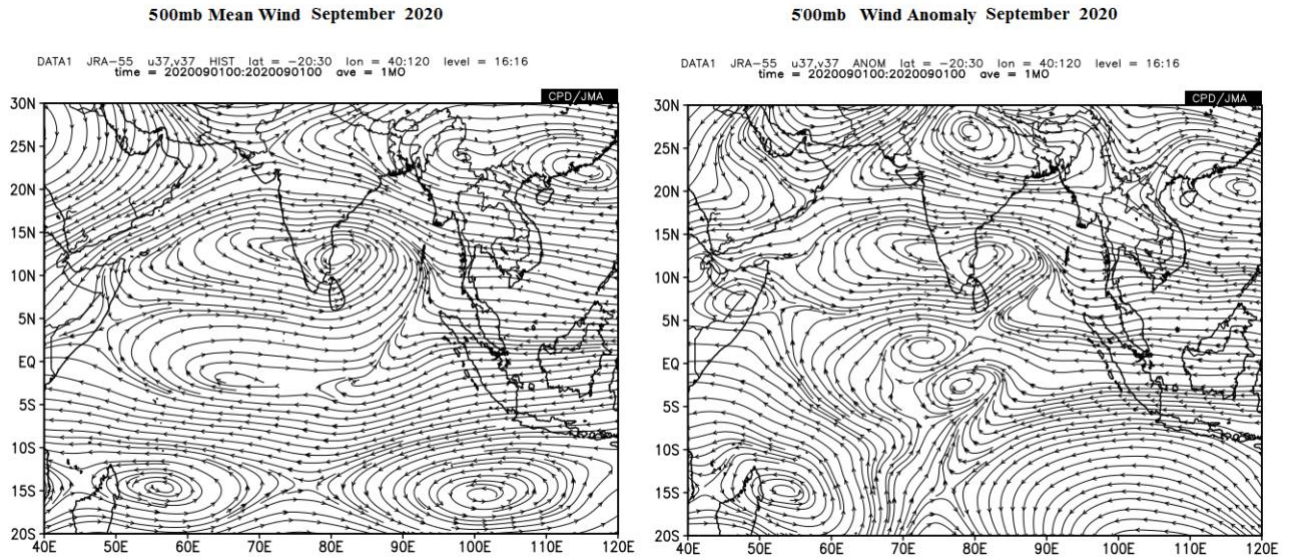

Fig. 9 Monthly average wind pattern at 500 hPa level during the month of September 2020 (JRA55)

Temperature Field:

Generally below normal maximum temperatures were reported from majority of station on 01st, 09th, from 11 to 13th , on 18th, on 20th, on 22nd, on 25th and from 29th to 30th of September. However well above normal maximum temperatures were reported from Batticoloa on 02nd, 10th , 14th and 21st with

considerably above normal temperatures were reported on 20th (Fig. 10). Highest recorded maximum temperature for the month of September 2020 was 37.2 ^{0}C at Polonnaruwa on 27th (Table 4a).

Night minimum temperatures over most parts were above normal except on 06th, on 07th , on 10th and on 22nd when mostly below normal night temperatures were reported (Fig 11). However considerably below normal night temperatures were reported from Maha Iluppallama on 09th , 12th , 22nd and 25th. Lowest recorded minimum temperature for the month of September 2020 was 11.2 ^{0}C at Nuwara Eliya on 07th (Table 4b).

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

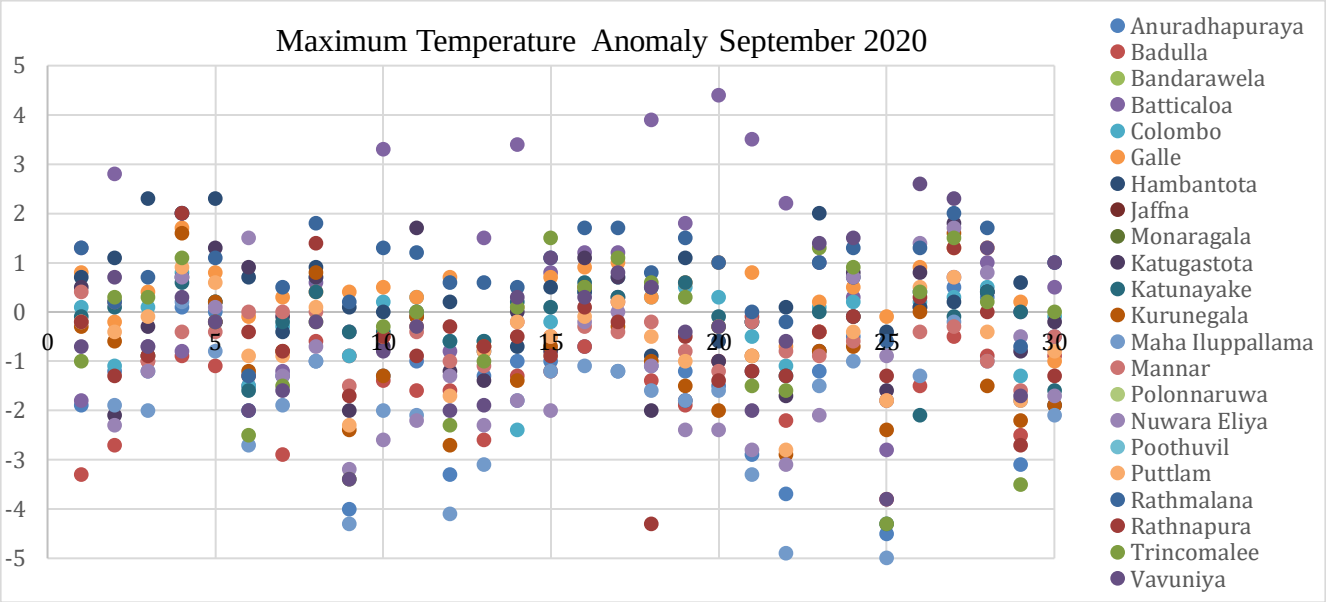

Fig 10 Maximum Temperature anomaly (^{0}C) for September 2020

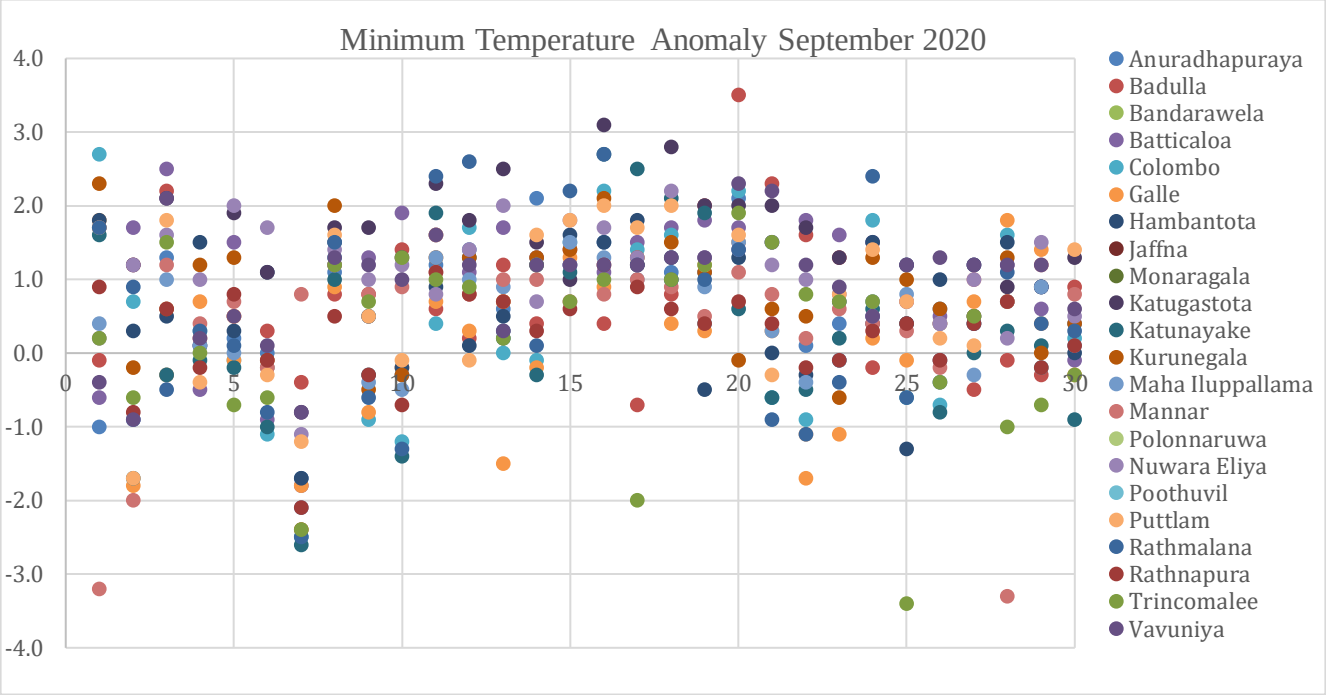

Fig 11 Minimum Temperature anomaly (^{0}C) for September 2020

Above average rainfall was reported from most of the main meteorological station except Batticaloa, Bandarawela, Pottuvil, Anuradhapura, Maha Iluppallama, Vavunia, Polonnaruwa, and Puttalum stations. Maximum percentage was reported from Mannar (441.6%) while minimum from Polonnaruwa station (15.7%) (Table 2).

Most of the hydro catchment stations located along western slopes of the central hills reported above normal rainfall. However the hydro catchment stations located along eastern slopes of the central hills such as Victoria, Randenigala, Bowatenna and Samanalavewa reported below normal rainfall (Fig 2).

Highest cumulative rainfall was 967.7 mm at Baddegama . Highest rainfall received during 24hours, was 286mm at Ketendola on 01st September.

The monthly total rainfall and the number of rain days at the principal meteorological stations, total rainfall at hydro catchment areas, are shown in tables1and 2.

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

Hydro Catchment	September 2020	Average	% (percentage of average)
Castlereigh	**584.8**	330.5	176.9%
Norton	**752.7**	521.3	144.4%
Maussakele	**532.8**	298.0	178.8%
Canyon	**698.7**	399.6	174.8%
Laksapana	**762.1**	505.8	150.7%
Kotmale	**338.6**	329.7	102.7%
Victoriya	**39.9**	68.4	58.3%
Randenigala	**14.0**	60.5	23.1%
Bowatenna	**80.2**	101.2	79.2%
Ukuwela	**264.6**	171.5	154.3%
SamanalaWewa	**67.5**	509.9	13.2%
Maskeliya	**450.3**	260.9	172.6%
Neboda		399.0	0.0%

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).

	Monthly Total rainfall(mm)			Monthly Total No of rainy Days		
Meteorological station	2020-September	Average	%	2020-September	Average	%
Anuradhapuraya	45.6	74.0	61.6%	5	6	83.3%
Badulla	129.4	119.8	108.0%	9	9	100.0%
Bandarawela	108.9	121.8	89.4%	12	9	133.3%
Batticaloa	59.5	67.0	88.8%	7	5	140.0%
Colombo	517.7	245.4	211.0%	24	15	160.0%
Galle	446.2	255.8	174.4%	26	18	144.4%
Hambantota	170.4	75.2	226.6%	19	8	237.5%
Jaffna	212.6	63.3	335.9%	6	4	150.0%
Monaragala	136.8			9		
Katugastota	219.1	155.2	141.2%	23	13	176.9%
Katunayake	514.2	224.1	229.5%	24	14	171.4%
Kurunegala	370.5	165.3	224.1%	21	13	161.5%
Maha Iluppallama	65.1	90.7	71.8%	11	6	183.3%
Mannar	179.3	40.6	441.6%	4	2	200.0%
Polonnaruwa	17.6	112.0	15.7%	5	4	125.0%
Nuwara Eliya	191.6	178.8	107.2%	23	15	153.3%
Poothuvil	36.9	44.8	82.4%	5	Na	
Puttlam	52.1	67.8	76.8%	12	5	240.0%
Rathmalana	427.7	254.9	167.8%	25	16	156.3%
Rathnapura	590.9	421.4	140.2%	29	20	145.0%
Trincomalee	224.9	99.6	225.8%	8	6	133.3%
Vavuniya	35.9	107.3	33.5%	5	6	83.3%
Mattala	114.9			15		

Table 3 hazards caused during September 2020

Date	Lightning	Strong Winds and Heavy Rain	Cutting failure/ Rock fallen/ Wall fallen
01	Mannar Town Nannadan Musali	Katuwana Hambantota Ambalantota Kadawathsathara Bopepoddala Akmeemana Niyagame Elpitiya Meerigame Biyagame Gampaha Eheliyagoda Embilipitiya	
02	Dompe Meerigama Elahera	Nagoda Attanagalle Biyagame Divulapitiya Dompe Minuwangoda Meerigama Mahara Kalpitiya Arachchikattuwa Dankotuwa Kirielle Kanthale Thambalagamam	Ruwanwella
03		Yatiyantota	
04		Yatiyanthota Aranayake	
05	Siyambalanduwa	Thanamalvila Ruwanwella	Ruwanwella
06		Pathahewaheta Haldummulla Uwaparanagama Ella Hali Ela Kandaketiya Passara Badulle Wellawaya Medagama Bibila Badalkumbura Ruwanwella Kegalle Bulathkohupitiya Warakapola Deraniyagala Galigamuwa Aranayake Kiriella Elapatha Nivithigala Eheliyagoda Imbulpe Pelmadulla Balangoda Godakawela Weligapola Kalawana Embilipitiya Kalawana Embilipitiya Thihagoda Hakmana Katuwana Beliaththa Thangalla Kelaniya	Abagamuwa Kegalle Warakapola Dehiovita Rambukkana Palindanuwara Nuwara Eliya
07		Passara Welimada Lunugala Ruwanwella Kegalle Bulathkohupitiya Warakapola Mawanella Aranayake Suriyawewa Colombo Seethawaka Attanagalla	Kegalle Bulathkohupitiya
08		Passara Harispattuwa Welimada Ruwanwella Kegalle Warakapola Mawanella Wattala Meerigama Minuwangoda Seruwila	Mawanella Nuwara Eliya
09		Deltota Pathadumbara Gangawatakorale Haldummulla Ruwanwella Kegalle Warakapola Mawanella Deraniyagala Galigamuwa Kiriella Elapatha Kolonna Katuwana Colombo Rathmalana Kolonnawa Kotte Moratuwa Padukka Maharagama Dehiwala Thimbirigasyaya Kaduwela Mahara Gampaha Katana Jae la Meerigama Biyagama Dompe Wennapuwa Dankotuwa Naththandiya Madampe Eraurpattu	Kegalle Warakapola Rambukkana
10		Deltota Pasbagekorale Homagama Kaduwela Dompe Mahawewa	
11		Beliaththa Attanagalla Divulapitiya	
12		Kegalle	
14		Bulathkohupitiya	Bulathkohupitiya
16		Bulathkohupitiya	
17		Walassmulla	

18		Udunuwara Harispattuwa Pathadumbara Akurana Thumpane Gangawata korale Ayagame Kalawana Kahawatta Kolonna Kegalle Yatinuwara Minipe Ridimaliyedda Agunukolapelessa	Kahawatta Kolonna
19		Yatinuwara Pathahewaheta Medadumbara Redimaliyadda Godakawela Weligapola Pathahewaheta Kundasale Beliatta Walasmulla	Godakawela Weligapola
20		Ududumbara Hatharaliyadda Gangawata Korale Pathahewaheta Panwila Kahawatta Pelmadulla Kalawana Balangoda Kegalle Galigamuwa Agunukolapelessa Beliatta Walasmulla Vavuniya Vavuniya South	Godakawela Pelmadulla Kahawatta Gangawata korale
21		Abagamuwa Pasbage korale Doluwa Harispattuwa Pathahewaheta Kundasale Nivithigala Kuruvita Dehiovita Deraniyagala Bulathkohupitiya Yatiyanthota Aranayake Ruwanwella Kegalle Warakapola Galigamuwa Agunukolapelessa Beliatta Walasmulla Thangalla Vavuniya North Vengalacheddikulam Puthukudiyiruppu Oddusuddan Welioya Thunukal Maritimepattu Thampalakamam Kuchcaveli Verugal Seruwil Pathvisripura	Deraniyagala Harispattuwa
22		Hatharaliyadda Kahawatta Deraniyagala Yatiyanthota Ruwanwella Kegalle Chilaw Katuwana	Kahawatta
23		Madampe NaaththandiyaYatinuwara Warakapola Mawanella Palindanuwara	Mawanella Warakapola Palindanuwara
24		Akurana Yatinuwara Udunuwara Pathavisripura Kuchchaveli Thissamaharama Walasmulla	
25		Yatinuwara Bulathkohupitiya	Pujapitiya Mawanella
26		Bulathkohupitiya Eravurpattu, Chenkalady Weeraketiya	
27		Eravurpattu, Chenkalady Weeraketiya Beliaththa	Warakapola
28		Thampalakamam Kuchcaveli Verugal Seruwil Pathvisripura	
29		Chavakachcheri Beliaththa	
30		Weeraketiya Ambalanthota	

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Table 4(a) - Extremes of Maximum Temperatures		September	2020
	Maximum		
	Value	Offsets (-)	Offsets (+)	Highest Std.Div
Value	37.2^{0}C	5	4.4	1.78
Station	Polonnaruwa	Maha Iluppallama	Batticoloa	Batticoloa
Date	27/09	25/09	20/09	

Table 4(b) -Extremes of Minimum Temperature September 2020				
	Minimum			
	Value	Offsets (-)	Offsets (+)	Highest Std. Div
Value	11.2	3.3	3.5	1.44
Station	Nuwara Eliya	Mannar	Badulla	Jaffna
Date	07/09	28/09	20/09	

Prepared by National Meteorological Centre (NMC)

Department of Meteorology

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