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Colombo 07
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Hydrological Annual for the Water Year 2021/22
Hydrology and Disaster Management Division, Irrigation Department.

63rd year of publication

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Foreword

It is a great pleasure to publish the Hydrological Annual of Sri Lanka for the Water Year 2021/22 with a delay owing to unavoidable circumstances such as financial restrictions. As the pioneer government institution responsible for development and management of hydrological database of the country which is necessary for Water Resources Management, Flood Management, Research and Academic needs of various institutions and professionals; Hydrology and Disaster Management Division of Irrigation Department (ID) continued this publication since 1960 with immense effort and devotion. Being the 63rd volume of the series, this bulletin contains long-term data and information as well as data collected during the Water Year 2021/22 (October 2021 to September 2022).

This Bulletin contains general information such as Terminology and Abbreviations used, River Basin Map of Sri Lanka with catchment areas, and a list of Principal Hydrometric Stations with their locations and drainage areas. This bulletin specially contains important hydro-meteorological data and information related to the current year and a comparison of those with long term data and information. I strongly believe that this bulletin would be very useful for managers in the water sector, authorities of disaster management, Academia and Researchers for their needs.

Some considerable flood events have been occurred during the current water year (2021/22) in Kalu, Kelani, Gin, Nilvala, Mahaweli, Attanagalu and Maha Oya rivers mainly. Highest recorded major flood events occurred in Maha Oya and Mahaweli Ganga upstream, causing serious damages to the public and properties. A brief report on flood events occurred are attached in this Hydrological Annual.

I would like to pay my appreciation to various personnel who contributed to make this publication a success. **Eng. Ajith Gunasekara (DGI)**, **Eng. Dr. Kithsiri Weligepolage (Addl. DGI (IP & D)**, all the members of the review panel, all of the staff led by **Eng. A.D.S. Iresh (CE)**, **Eng. U.H.N.H. De Silva (ERE)**, **Eng. Ms. G.W.A.S. Dilthara**, **Eng. Mr. S.A.D.S. Samarasinghe**, **Mr. Hemantha Abeywickrama (HDS)** and **Mr. M.H.G. Kamaljith (HFS)**. I would like to pay my special gratitude to Hydrological Field Assistants (HFAs) and Hydrological Survey Helpers (HSHs) for working tirelessly in the field, and Hydrological Assistants (HAs) for analyzing the data and information, and all the office staff and drivers for supporting in various ways who work for collecting and analyzing continuously even with the prevailed Covid – 19 pandemic situations. I apologize for not mentioning all the names who have devoted for the success of this publication as the space is limited.

Eng. S.P.C. Sugeeshwara
Director of Irrigation (Hydrology & Disaster Management)
23-12-2024

Terminology and abbreviations used in the publication

Annual Flood Peak	-	Highest value of discharge for the year indicated by the hydrograph
Annual Runoff	-	The total volume of water measured at a particular point for the year.
Annual Yield	-	Annual yield is the volume of water available to the tank from its own catchment (without diversions) during the year.
Average Annual Rainfall	-	Arithmetic mean of annual rainfall values for the period of observation.
Average Annual Runoff	-	Arithmetic mean of annual run-off for the period of observation.
Evaporation	-	The transfer of water into the atmosphere from a free water surface.
Flood Hydrograph	-	A plot of discharge against time.
HMIS	-	Hydro-Meteorological Information System
Maximum Flood Peak	-	Maximum observed flood peak during the period of observation.
MCM	-	Million Cubic Meter
NEM	-	North East Monsoon (October to March)
Potential Evapotranspiration	-	The evapotranspiration from vegetal cover and from soil surface when the root zone is saturated.
Rainfall Intensity	-	Cumulative depth of rainfall during a particular duration.
Specific Yield	-	Yield per unit Catchment Area
SWM	-	South West Monsoon (April to September)

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1. General Information

1.1 Topography

Sri Lanka is an Island located within the tropical region (between geographical coordinates $5^0$55'N - $9^0$51'N, $79^0$41'E - $81^0$53'E). The total land area is 65,610 km2. As shown in the topographic map Fig. 1, around 60% of the land area is located within the broad first peneplain, having the elevation ranges between 0~100 m above Mean Sea Level (MSL). The second peneplain rises from 100m to 500 m above MSL and covers around 30% of the land area. The third peneplain covers about 10% of land area mostly situated in the central part of the Island, rises steeply from 500m to form a mountain range that reaches an elevation of 2,524 m above MSL.

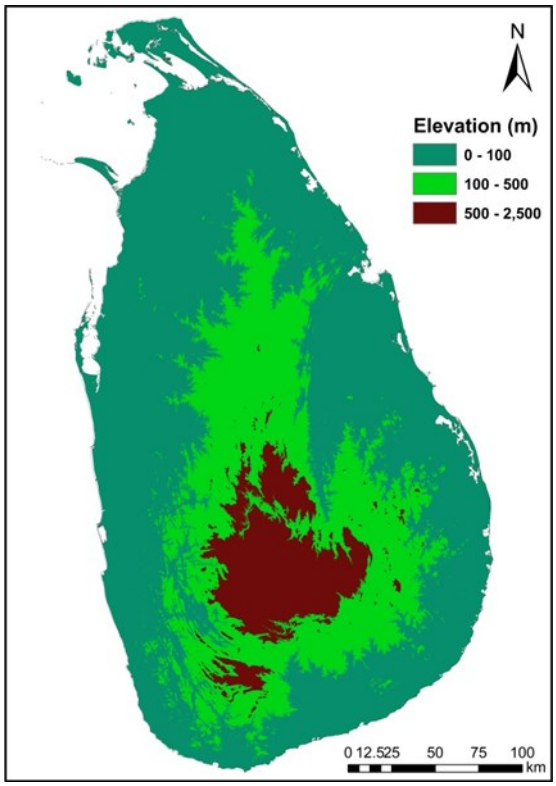

Fig. 1: Topography of Sri Lanka

1.2 Climate

The hydrologic cycle of this Island having situated in the tropical region, is mainly impacted by the seasonally varying monsoon systems. The windward southern, western and central hill regions receive high rainfall during the South-West (SW) monsoon season, May to September, with rainfall ranging from 1000 to 4000 mm, while other regions on the leeward side experience less than 500 mm rainfall during the five months. On the other hand, during the North-East (NE)

monsoon season, December to February, the eastern and southeastern parts record a significant rainfall ranging from 500 to 1200 mm, while other parts record less rainfall. In addition to the above two main monsoons, two more monsoon systems called Inter Monsoon-1 (IM-1) and Inter Monsoon-2 (IM-2) are influencing the weather system of the country. IM-1 is the warmest season, March to April, in Sri Lanka, and the whole country receives localized thunderstorms especially in the afternoon period. The South Western slopes and hilly regions receive highest rainfall of around 250 mm, while the rest of the country receives rainfall varying between 100 to 250 mm. On the other hand, IM-2 brings thunderstorms during the afternoons from October to November, having influenced by depressions and cyclones in the Bay of Bengal. The whole island experiences strong winds and a balanced distribution of rainfall. During this inter-monsoon period the South Western slopes receive higher rainfall ranging between 700 to 1200 mm while other regions receive more than 400 mm, which leads to occasional flooding and landslides (Department of Meteorology-SL, 2020).

Due to the influence of the monsoonal pattern in combination with the complex nature of the central highland's topography, a spatial variability of rainfall is observed. The Department of Agriculture has demarcated the island into three main Argo climatic zones based on the spatial variability of annual rainfall, as shown in Fig. 2, namely the wet zone (more than 2500 mm),the intermediate zone (1750-2500 mm) and the dry zone (less than 1750 mm) (Department of Meteorology-SL, 2020).

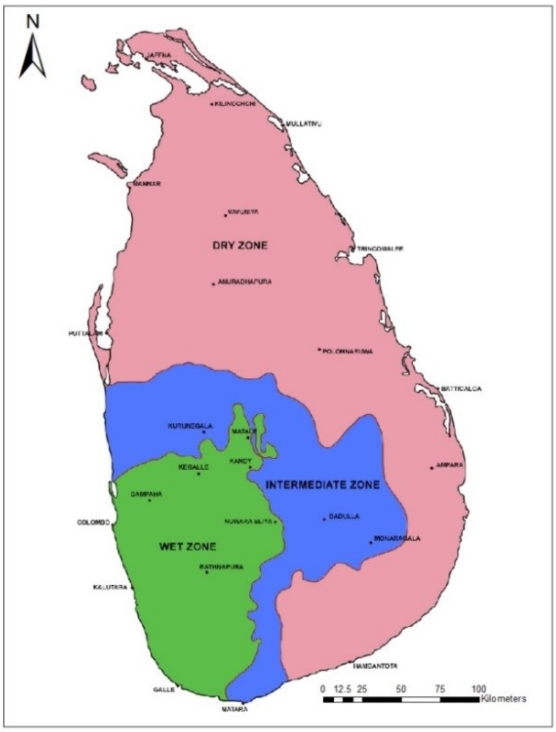

Fig. 2: Climate Zones of Sri Lanka

1.3 Water Resources of Sri Lanka

There are 103 distinct river basins in the country mainly, starting from the central hills and following radially across various topographies and climatic zones before reaching the Indian Ocean. Fig. 3 shows the river network of Sri Lanka, and the Table 1 provides the details of basin area. Also catchment area distribution of rivers are given in Fig. 4. The Distribution shows that the majority of the rivers, 75 in total, has a catchment area less than 500 sq.km. Furthermore, 41 rivers drain less than 100 sq.km. Whereas 7 major rivers have basin areas above 2000 sq.km. The largest river basin is the Mahaweli (MRB), which drains 10,366 sq. km and covers 16% of the land area of the country. Other than MRB, there are four other river basins having a catchment area above 2500 sq.km. Out of these four river basins, three are located within the dry zone (Deduru Oya, Kala Oya, and Malwathu Oya) and connected with the MRB through trans-basin channels. The fourth river, the Kalu Ganga, is entirely located within the wet zone, and floods in this river create a major threat to the Western and Sabaragamuwa provinces in Sri Lanka, mainly in Kalutara, and Ratnapura districts.

Though the Kalu, Kelani, Gin, and Nilwala river basins in the western and southern parts of the country cover only 13% of the land area, almost 30% of the population live within these river basins. The dry-zone districts cover 75% of the geographical area of the country (Amarasinghe 2010).

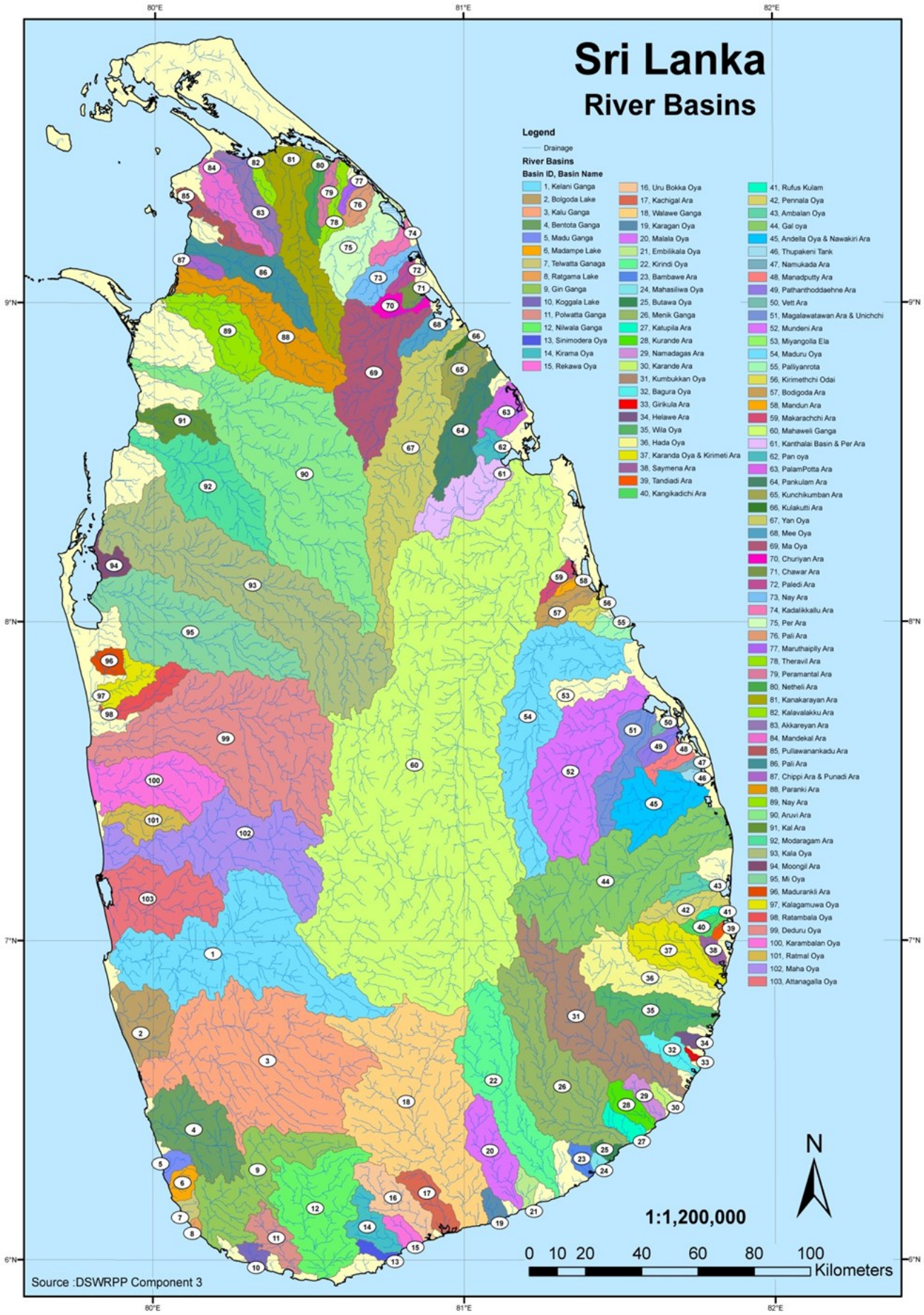

Fig. 3: River Basins of Sri Lanka

Table 1: Area of River Basins in Sri Lanka

No	River Name	Basin Area (Sq.km)
1	Kelani Ganga	2340
2	Bolgoda Ganga	396
3	Kalu Ganga	2816
4	Bentara Ganga	667
5	Madu Ganga	69
6	Madampe Ganga	90
7	Telwatta Ganga	41
8	Ratgama Lake	13
9	Gin Ganga	915
10	Koggala Ganga	55
11	Polwatta Ganga	232
12	Nilwala Ganga	1001
13	Sinimodara Oya	35
14	Kirama Oya	209
15	Rekawa Oya	70
16	Urubokka Oya	389
17	Kachchigal Ara	208
18	Walawe Ganga	2424
19	Karagan Oya	60
20	Malala Oya	409
21	Embilikala Oya	69
22	Kirindi Oya	1156
23	Bambawe Ara	66
24	Mahaseelawa Oya	13
25	Buthawa Oya	37
26	Menik Ganga	1301
27	Katupila Ara	111
28	Kurunda Ara	99
29	Nabadagas Ara	110
30	Karambe Ara	54
31	Kumbukkan Oya	1227
32	Bagura Oya	93
33	Girikula Oya	14
34	Helawa Ara	38
35	Wila Oya	472
36	Heda Oya	615
37	Karanda Oya	425
38	Semena Ara	72
39	Tandiadi Aru	20
40	Kangikadichi Aru	78

No	River Name	Basin Area (Sq.km)
41	Rufus Kulam	27
42	Pannel Oya	195
43	Ambalan Oya	112
44	Gal Oya	1911
45	Andella Oya	534
46	Tumpan Keni	18
47	Namakada Aru	12
48	Mandipattu Aru	90
49	Pathantoppu Aru	101
50	Vett Aru	22
51	Magalavatavan Aru	304
52	Mundeni Aru	1373
53	Miyangolla Ela	228
54	Maduru Oya	1439
55	Pulliyanpota Aru	87
56	Kirimechchi Odai	89
57	Bodigolla Aru	132
58	Mandan Aru	26
59	Makarachchi Aru	59
60	Mahaweli Ganga	10266
61	Kantalai Aru	437
62	Palampotta Aru	97
63	Panna Oya	164
64	Pankulam Aru	477
65	Kunchikumban Aru	245
66	Palakutta Aru	8
67	Yan Oya	1518
68	Mi Oya	89
69	Ma Oya	1042
70	Churiya Aru	105
71	Chavar Aru	35
72	Palladi Aru	66
73	Manal Aru	194
74	Kodalikallu Aru	92
75	Per Aru	392
76	Pali Aru	70
77	Maruthapillay Ary	36
78	Thervil Aru	104
79	Piramanthal Aru	91
80	Methali Aru	114

No	River Name	Basin Area (Sq.km)
81	Kanakarayan Aru	604
82	Kalwalappu Aru	68
83	Akkarayan Aru	244
84	Mandekal Aru	208
85	Pallavarayan Kaddu Aru	311
86	Pali Aru	451
87	Chappi Aru	79
88	Parangi Aru	770
89	Nay Aru	717
90	Malwathu Oya	3291
91	Kal Aru	210
92	Moderagama Aru	1001

No	River Name	Basin Area (Sq.km)
93	Kala Oya	2526
94	Moongil Aru	78
95	Mee Oya	1555
96	Madurankuli Aru	128
97	Kalagamune Oya	169
98	Rathambala Oya	244
99	Deduru Oya	2622
100	Karambala Oya	693
101	Ratmal Oya	341
102	Maha Oya	1470
103	Attanagalu Oya	811

Note: There are land areas uncounted in the above table such as Jaffna peninsula and a number of coastal basins located in between above river basins.

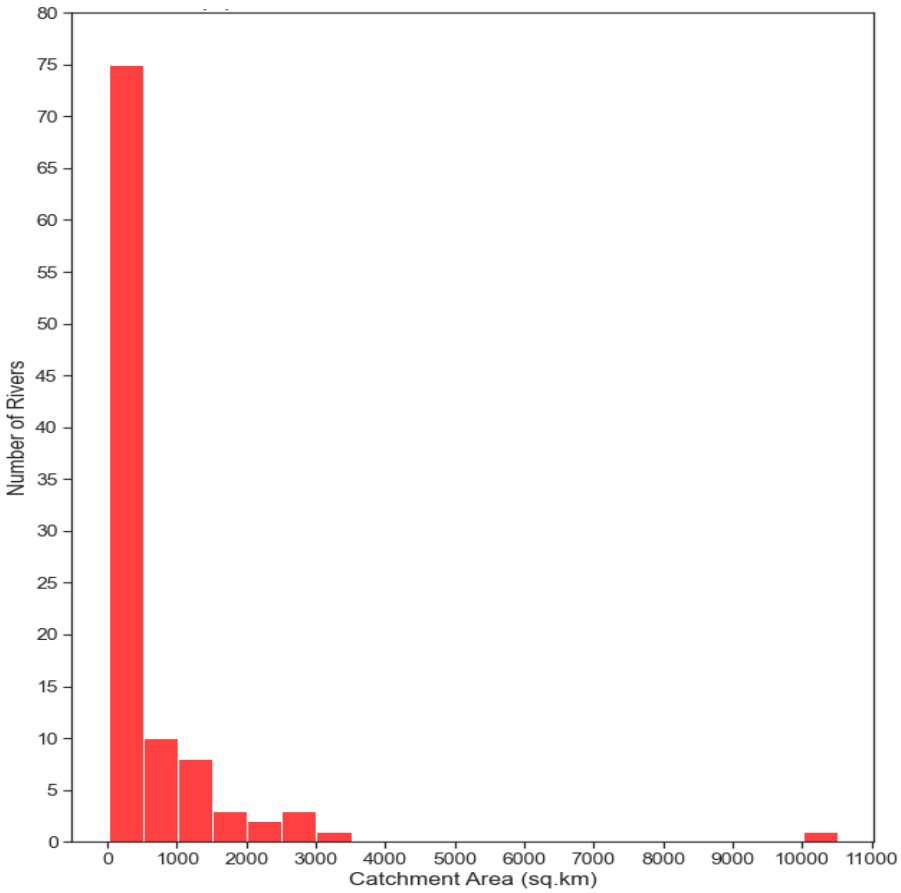

Fig. 4: Distribution of river basin area of 103 rivers

2. Hydrometric Stations - 2021/22

The Hydrology and Disaster Management Division maintains 40 principal hydrometric stations where a gauge reader is permanently kept at each location, to read the gauges manually during day time and night time so that the hourly readings can be obtained. The list of those principal hydrometric stations is given in Table 2 and the locations are shown in Fig. 5. In addition, some hydrometric stations have been established as peripheral stations, shown in Fig. 6. Further there are automated hydrometric stations installed under HMIS program as shown in Fig. 7.

Table 2: Principal Hydrometric Stations

No.	Name of Station	River Basin	Coordinate		Drainage Area (Sq.km)
			WGS 84	Kandawala	
1	Norwood	Kelani Ganga	6°50’22’’N, 80°36’42’’E	(182640, 181774)	97
2	Kithulgala	Kelani Ganga	6°59’26’’N, 80°24’44’’E	(160463, 198887)	383
3	Deraniyagala	Kelani Ganga	6°55’28’’N, 80°20’16’’E	(152178, 191467)	183
4	Holombuwa	Kelani Ganga	7°11’07’’N, 80°15’53’’E	(144013, 220455)	155
5	Glencourse	Kelani Ganga	6°58’28’’N, 80°10’58’’E	(135077, 197069)	1463
6	Hanwella	Kelani Ganga	6°54’34’’N, 80°04’46’’E	(124021, 190153)	1782
7	Nagalagam Street	Kelani Ganga	6°57’35’’N, 79°52’37’’E	(101112, 195586)	2085
8	Rathnapura	Kalu Ganga	6°40’42’’N, 80°23’39’’E	(158263, 164395)	603
9	Ellagawa	Kalu Ganga	6°43’55’’N, 80°12’36’’E	(138766, 170307)	1393
10	Millakanda	Kalu Ganga	6°37’56’’N, 80°11’23’’E	(132411, 159142)	780
11	Magura	Kalu Ganga	6°30’49’’N, 80°14’36’’E	(141560, 146189)	152
12	Putupaula	Kalu Ganga	6°36’06’’N, 80°03’26’’E	(121550, 157362)	2598
13	Baddegama	Gin Ganga	6°10’33’’N, 80°10’27’’E	(134000, 108639)	749
14	Thawalama	Gin Ganga	6°20’31’’N, 80°19’49’’E	(151199, 127205)	377
15	Urawa	Nilwala Ganga	6°14’12’’N, 80°34’18’’E	(177866, 115547)	59
16	Pitabeddara	Nilwala Ganga	6°12’47’’N, 80°28’31’’E	(167200, 112942)	310
17	Panadugama	Nilwala Ganga	6°06’30’’N, 80°28’40’’E	(167470, 101362)	445
18	Thalgahagoda	Nilwala Ganga	6°00’40’’N, 80°31’35’’E	(172611, 090566)	852
19	Moraketiya	Walawe Ganga	6°20’43’’N, 80°54’05’’E	(214091, 127508)	1542
20	Wellawaya	Kirindi Oya	6°42’35’’N, 81°06’40’’E	(237573, 167806)	172

Continued …

No.	Name of Station	River Basin	Coordinate		Drainage Area (Sq.km)
			WGS 84	Kandawala	
21	Thanamalwila	Kirindi Oya	6°28’06’’N, 81°08’03’’E	(240086, 141162)	749
22	Kuda Oya	Kirindi Oya	6°31’29’’N, 81°07’24’’E	(238889, 147394)	291
23	Katharagama	Menik Ganga	6°24’56’’N, 81°19’51’’E	(261842, 135357)	787
24	Nakkala	Kumbukkan Oya	6°53’42’’N, 81°17’49’’E	(258056, 188379)	216
25	Siyambalanduwa	Heda Oya	6°54’18’’N, 81°32’36’’E	(285535, 189464)	295
26	Padiyathalawa	Maduru Oya	7°23’01’’N, 81°11’31’’E	(246363, 242362)	159
27	Thaldena	Mahaweli Ganga	7°05’27’’N, 81°02’53’’E	(230537, 209992)	276
28	Nawalapitiya	Mahaweli Ganga	7°02’51’’N, 80°32’04’’E	(173756, 205329)	176
29	Peradeniya	Mahaweli Ganga	7°16’03’’N, 80°36’30’’E	(181959, 229533)	1168
30	Weraganthota	Mahaweli Ganga	7°19’05’’N, 80°59’21’’E	(223791, 235093)	4092
31	Manampitiya	Mahaweli Ganga	7°54’53’’N, 81°05’10’’E	(234666, 301129)	7418
32	Horowpothana	Yan Oya	8°34’39’’N, 80°52’43’’E	(211775, 374422)	720
33	Yakawewa	Ma Oya	8°43’19’’N, 80°40’49’’E	(189954, 390387)	121
34	Thanthirimale	Malwathu Oya	8°35’14’’N, 80°16’31’’E	(145359, 375505)	2116
35	Thambuththegama	Kala Oya	8°07’16’’N, 80°19’32’’E	(150614, 323928)	1186
36	Galgamuwa	Mee Oya	7°58’07’’N, 80°15’34’’E	(143043, 307296)	299
37	Moragaswewa	Deduru Oya	7°43’39’’N, 80°05’46’’E	(125239, 280406)	1708
38	Giriulla	Maha Oya	7°19’30’’N, 80°06’53’’E	(127468, 235942)	1191
39	Badalgama	Maha Oya	7°18’00’’N, 79°58’47’’E	(112639, 233302)	1360
40	Dunamale	Aththanagalu Oya	7°06’56’’N, 80°04’50’’E	(123789, 212906)	153

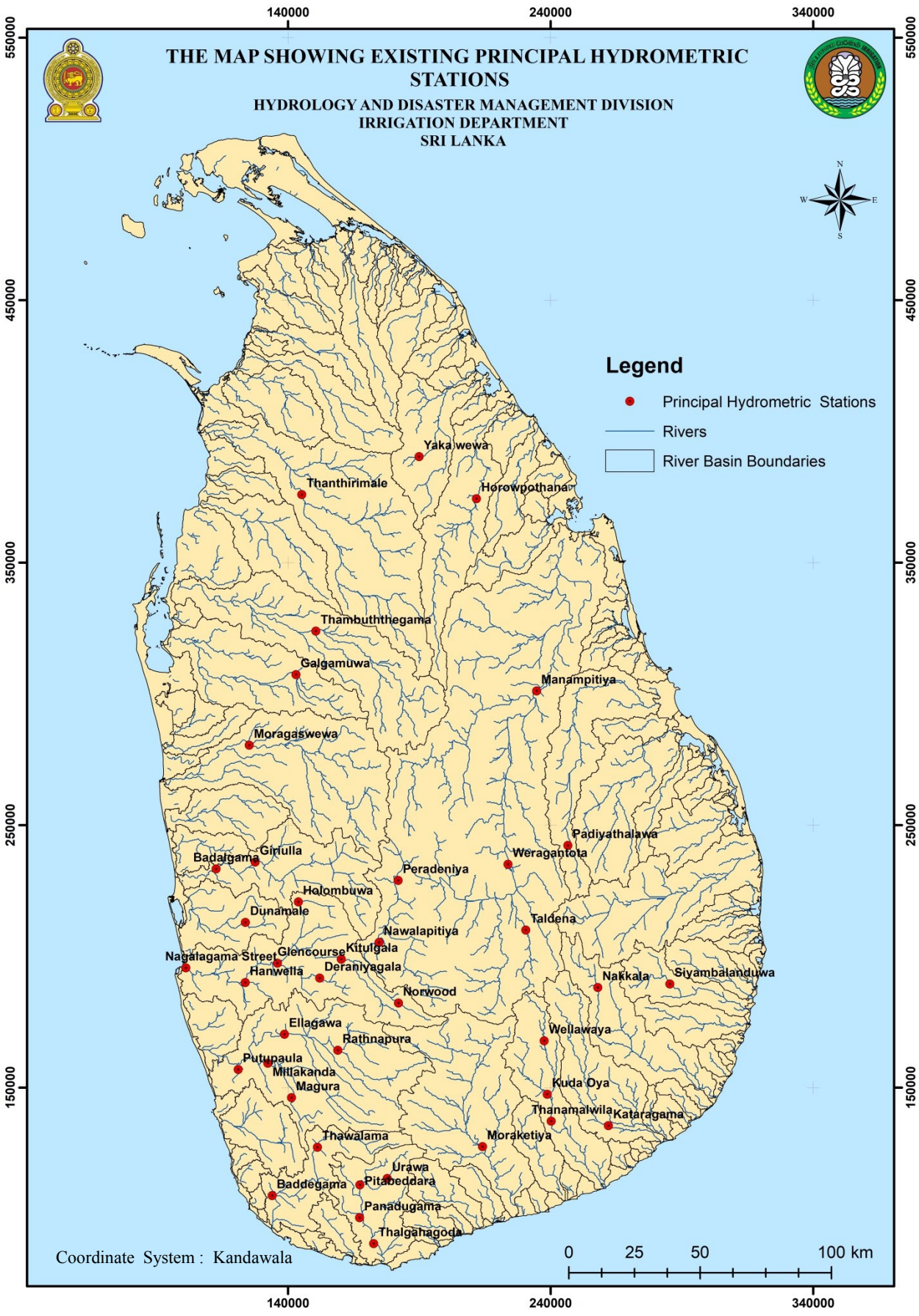

Fig. 5: Existing Principal Hydrometric Stations

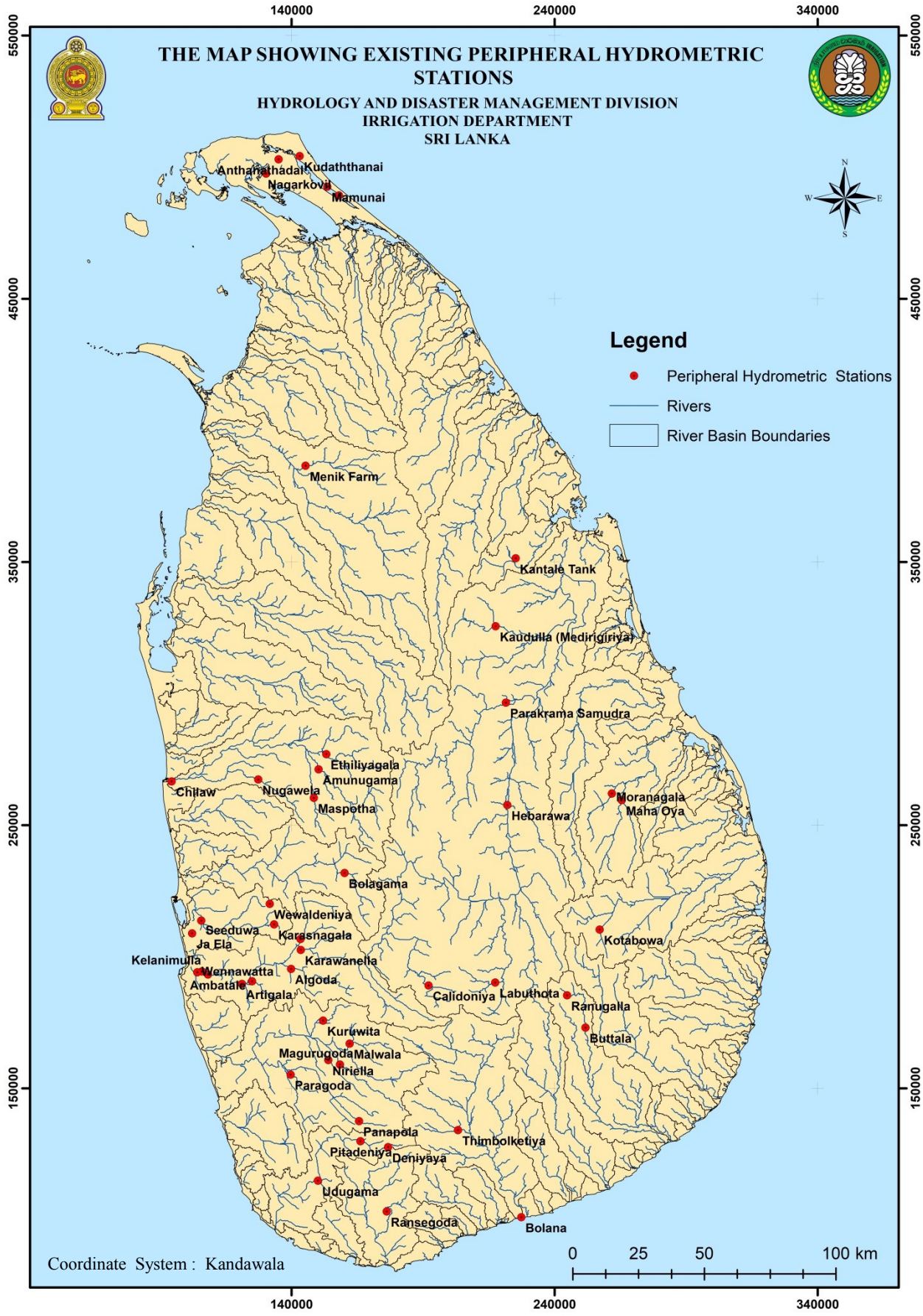

Fig. 6: Existing Peripheral Hydrometric Stations

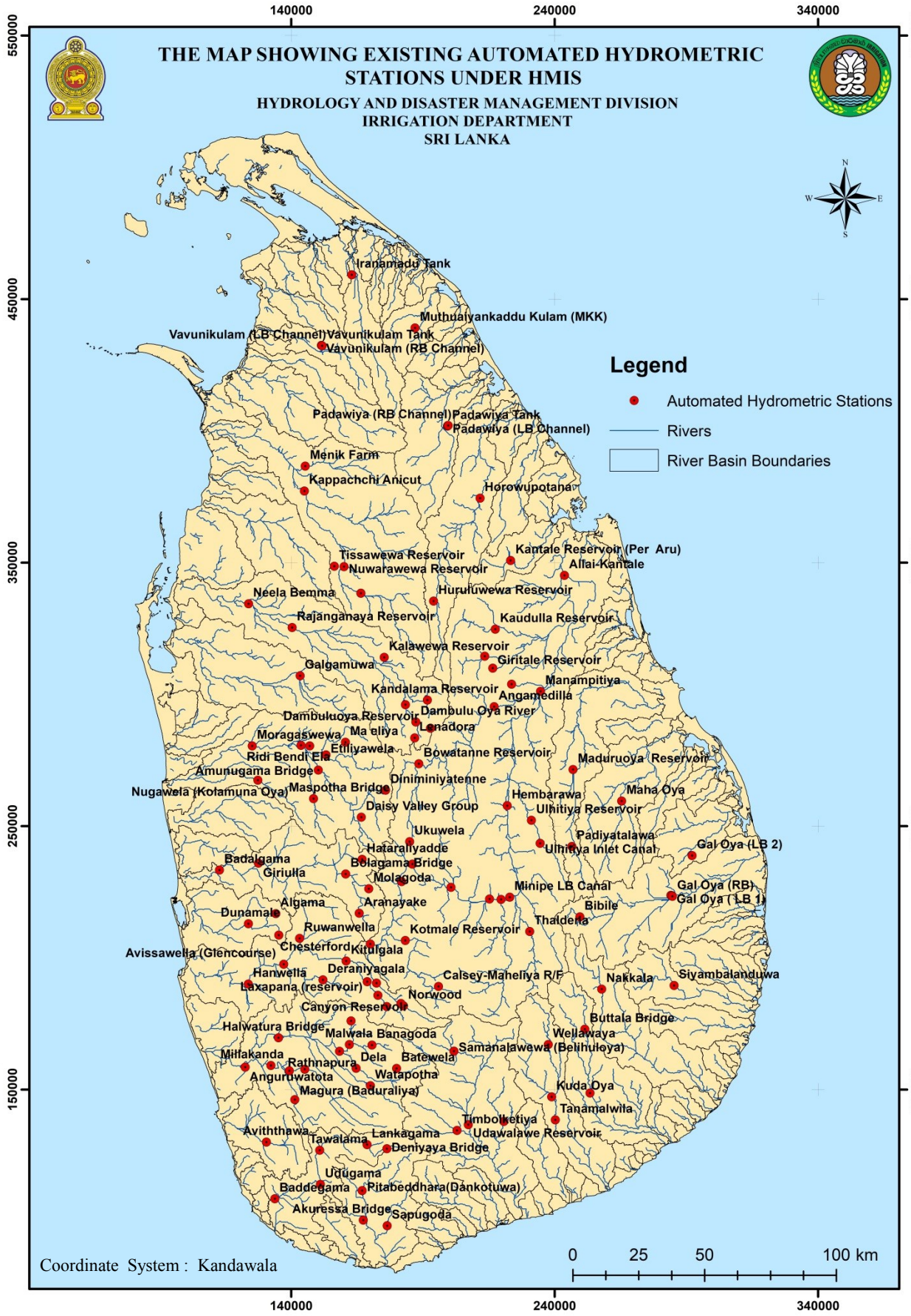

Fig. 7: Existing Automated Hydrometric Stations

3. Hydro-Meteorological Data & Information

3.1 Monthly Rainfall

Monthly rainfall data of 36 stations maintained by Hydrology and Disaster Management Division of the Irrigation Department are given in Table 3. In addition, the data collected at 23 stations maintained by the Department of Meteorology are included in Table 4. Both data sets were used to get the spatial variation over the island.

When considering temporal variation at each station, it can be seen that **Kithulgala** has received the highest annual rainfall (5194mm) in this water year while the highest long-term average of annual rainfall is also shown at the same location (4462mm). **Pitabeddara** has received the highest total rainfall for North-East monsoon (2420mm) in the current year while the highest of long-term average is shown at **Thawalama** (1997mm). The highest total rainfall of South-West monsoon in the current year is shown at **Kithulgala** (3204mm) while the highest of long-term average (2886mm) is also shown at the same location.

Likewise, the lowest annual rainfall in the current year is shown at **Hambanthota** (1042mm) while the lowest of long-term average rainfall is shown at **Mannar** (992mm). And **Hambanthota** has received the lowest total rainfall of North-East monsoon (706mm) in this water year while the lowest of long-term average is also shown at the same location (615mm). When looking at the South-West monsoon, **Pothuvil** shows the minimum total rainfall (195mm) while the minimum of long-term average (228mm) is also shown at the same location.

Table 3: Monthly Rainfall at the stations of Irrigation Department

Upper line: Current year 2021/22
Lower line: Long term average from 1989/90
Units: mm
Coordinate system: Kandawala

No	Station	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	NEM Total	SWM Total	Annual Total
1	Ampara	231	410	258	263	166	165	271	39	49	86	71	38	**1494**	**553**	**2047**
	(299222, 232192)	234	363	313	231	117	96	86	82	75	70	81	91	**1353**	**486**	**1839**
2	Badalgama	439	533	93	22	104	45	220	537	107	73	110	50	**1236**	**1097**	**2333**
	(112639, 233302)	335	270	127	56	54	85	198	261	169	81	107	198	**926**	**1014**	**1940**
3	Baddegama	263	608	174	59	111	151	387	751	323	203	338	94	**1366**	**2096**	**3462**
	(134000 , 108639)	405	395	224	109	130	179	262	426	223	201	252	352	**1442**	**1715**	**3157**
4	Calidonia	350	352	52	42	92	40	302	352	68	233	367	100	**928**	**1422**	**2351**
	(192075, 189144)	251	198	112	55	78	82	176	226	183	179	226	163	**777**	**1153**	**1930**
5	Deraniyagala	602	785	211	62	151	285	195	913	407	244	537	322	**2095**	**2618**	**4713**
	(152178, 191467)	573	422	176	104	126	240	430	603	471	337	322	447	**1641**	**2611**	**4252**
6	Dunamale	406	417	54	45	49	76	255	539	102	38	215	174	**1047**	**1321**	**2368**
	(123789, 212906)	446	337	179	75	66	152	300	428	250	127	167	330	**1254**	**1602**	**2856**
7	Ellagawa	592	678	249	120	106	302	395	907	274	139	445	294	**2048**	**2454**	**4502**
	(138766, 170307)	457	443	204	153	110	198	321	513	335	213	279	461	**1565**	**2121**	**3687**
8	Galgamuwa	294	327	71	94	80	14	341	118	17	118	78	65	**880**	**736**	**1616**
	(143043, 307296)	235	250	192	68	48	78	224	111	28	27	45	81	**871**	**515**	**1387**
9	Giriulla	413	681	111	0	156	31	258	562	97	145	260	138	**1392**	**1460**	**2852**
	(127468 , 235942)	419	331	131	51	60	111	267	305	201	116	110	214	**1103**	**1213**	**2316**
10	Glencourse	528	735	105	98	151	231	378	788	265	112	376	261	**1848**	**2180**	**4028**
	(135077, 197069)	515	505	198	118	123	272	423	493	347	206	253	384	**1732**	**2105**	**3837**
11	Hanwella	530	597	105	131	124	71	339	577	201	56	247	250	**1558**	**1671**	**3229**
	(124021, 190153)	430	374	201	115	96	165	321	396	278	181	186	336	**1381**	**1698**	**3080**
12	Holombuwa	638	782	46	21	93	33	499	689	119	132	324	258	**1612**	**2020**	**3633**
	(144013, 220455)	457	380	182	83	84	180	345	336	267	175	178	273	**1366**	**1573**	**2939**

Table 3: Monthly Rainfall at the stations of Irrigation Department

Upper line: Current year 2021/22
Lower line: Long term average from 1989/90
Units: mm
Coordinate system: Kandawala

No	Station	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	NEM Total	SWM Total	Annual Total
13	Horowpothana	429	335	199	128	153	49	219	14	34	141	122	57	**1292**	**588**	**1880**
	(211775, 374422)	210	307	326	144	92	43	97	75	15	42	81	87	**1122**	**398**	**1521**
14	Katharagama	329	97	217	17	13	45	121	34	15	245	60	32	**719**	**508**	**1227**
	(261842 , 135357)	177	289	194	95	60	79	112	84	8	22	26	55	**894**	**307**	**1201**
15	Kithulgala	703	797	209	22	82	177	310	907	398	534	683	372	**1990**	**3204**	**5194**
	(160463, 198887)	611	383	173	92	118	199	412	616	535	441	415	467	**1576**	**2886**	**4462**
16	Kuda Oya	238	170	219	157	3	82	220	34	5	124	89	6	**869**	**477**	**1346**
	(238889, 147394)	225	262	161	84	54	96	169	69	12	18	20	56	**883**	**344**	**1227**
17	Manampitiya	244	248	189	279	328	85	187	1	84	130	171	24	**1372**	**594**	**1966**
	(234666, 301129)	282	335	413	191	136	78	86	111	19	42	48	74	**1434**	**379**	**1814**
18	Millakanda	589	686	242	276	78	197	204	751	194	180	339	216	**2067**	**1885**	**3952**
	(132411 , 159142)	485	480	242	162	116	227	297	630	348	189	219	346	**1712**	**2029**	**3740**
19	Nakkala	269	408	317	100	82	59	340	42	83	294	152	86	**1234**	**997**	**2231**
	(258056, 188379)	264	352	262	158	115	96	186	113	43	66	88	116	**1248**	**612**	**1860**
20	Nawalapitiya	524	522	89	63	46	74	321	864	156	406	780	266	**1319**	**2794**	**4113**
	(173756, 205329)	527	312	196	70	82	128	303	555	502	366	455	424	**1316**	**2604**	**3920**
21	Norwood	356	308	78	62	96	151	383	477	72	310	412	101	**1049**	**1757**	**2806**
	(182640, 181774)	373	285	152	113	86	183	338	317	316	298	252	221	**1193**	**1744**	**2937**
22	Padiyathalawa	180	347	164	259	173	79	234	16	60	192	88	88	**1201**	**678**	**1880**
	(246363, 242362)	245	367	417	306	164	74	125	103	41	70	96	133	**1572**	**569**	**2142**
23	Panadugama	401	414	340	314	141	134	331	532	195	215	273	108	**1744**	**1654**	**3397**
	(167271, 100409)	359	340	209	134	127	151	219	375	209	179	201	309	**1320**	**1493**	**2813**
24	Peradeniya	536	517	51	5	25	95	258	244	55	221	391	172	**1228**	**1341**	**2569**
	(181959, 229533)	428	268	206	53	49	114	245	293	168	145	175	187	**1118**	**1213**	**2331**

Table 3: Monthly Rainfall at the stations of Irrigation Department

Upper line: Current year 2021/22
Lower line: Long term average from 1989/90
Units: mm
Coordinate system: Kandawala

No	Station	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	NEM Total	SWM Total	Annual Total
25	Pitabeddara	481	520	477	428	245	269	338	229	709	320	416	113	**2420**	**2125**	**4545**
	(167200 , 112942)	398	456	283	195	144	176	346	449	309	210	266	340	**1653**	**1920**	**3573**
26	Putupaula	537	637	230	111	81	158	372	829	213	135	240	157	**1753**	**1947**	**3700**
	(121008, 156877)	396	356	177	102	87	171	240	465	285	172	189	352	**1288**	**1704**	**2992**
27	Siyambalanduwa	411	218	238	107	85	36	373	43	90	111	165	120	**1095**	**902**	**1996**
	(285535, 189464)	247	362	294	198	122	67	151	98	50	72	68	97	**1291**	**537**	**1828**
28	Thaldena	278	209	215	182	100	86	175	36	41	82	108	80	**1069**	**522**	**1591**
	(230537 , 209992)	265	317	344	221	142	76	128	122	38	53	79	109	**1366**	**529**	**1895**
29	Thalgahagoda	242	444	258	87	37	129	188	319	182	156	118	48	**1197**	**1012**	**2209**
	(172611 , 090566)	298	282	169	86	77	76	145	234	179	145	151	250	**987**	**1103**	**2090**
30	Thanamalwila	249	152	265	83	3	74	99	92	2	163	40	54	**825**	**449**	**1275**
	(240086, 141162)	221	271	153	78	47	92	168	74	10	21	22	49	**862**	**345**	**1208**
31	Thanthirimale	414	450	61	44	42	28	288	22	28	109	128	25	**1039**	**599**	**1637**
	(145359, 375505)	237	282	179	83	49	37	132	154	17	37	76	101	**867**	**516**	**1383**
32	Thawalama	553	510	368	134	273	206	334	1055	372	340	349	172	**2044**	**2621**	**4665**
	(151351, 127265)	551	461	316	211	206	253	417	571	385	293	288	387	**1997**	**2340**	**4337**
33	Urawa	348	332	429	165	178	155	392	558	229	277	334	192	**1607**	**1983**	**3589**
	(177863, 115530)	392	416	287	125	172	203	328	384	211	170	177	303	**1595**	**1573**	**3168**
34	Wellawaya	380	170	197	28	7	201	332	21	12	212	133	22	**982**	**732**	**1714**
	(237573, 167806)	270	358	202	108	95	156	246	122	20	38	37	100	**1188**	**563**	**1751**
35	Weraganthota	331	459	266	396	115	56	215	9	8	145	39	65	**1623**	**480**	**2103**
	(223673, 234973)	365	418	524	269	203	116	158	110	19	41	46	91	**1895**	**465**	**2360**
36	Yakawewa	215	401	169	90	87	36	180	24	30	44	89	25	**997**	**392**	**1389**
	(189955, 390392)	192	311	223	110	49	17	65	98	29	52	84	64	**902**	**392**	**1294**

Table 4: Monthly Rainfall at the principal stations of Department of Meteorology

Upper line: Current year 2021/22
Lower line: Long term average from 1970/71
Units: mm
Coordinate system: Kandawala

No	Station	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	NEM Total	SWM Total	Annual Total
1	Anuradhapura	282	419	75	85	71	90	441	6	14	87	55	38	**1022**	**641**	**1663**
	(156857, 349259)	248	258	201	80	54	66	169	94	13	31	40	74	**906**	**421**	**1328**
2	Badulla	324	252	210	99	60	132	386	62	53	145	126	77	**1076**	**849**	**1924**
	(230749, 197744)	243	268	270	169	91	101	189	115	40	69	79	124	**1142**	**616**	**1758**
3	Bandarawela	271	270	120	64	60	80	290	74	95	186	146	49	**866**	**840**	**1706**
	(220811, 178940)	260	257	184	98	70	105	175	124	60	69	66	135	**973**	**629**	**1602**
4	Batticaloa	54	440	323	346	163	132	73	6	4	42	175	23	**1457**	**322**	**1779**
	(302405, 278572)	183	368	436	250	131	76	54	44	31	33	47	71	**1444**	**280**	**1724**
5	Colombo	324	483	96	76	25	55	474	352	146	13	113	99	**1059**	**1196**	**2255**
	(99242, 188984)	343	336	160	70	69	113	247	325	200	113	110	241	**1092**	**1238**	**2329**
6	Galle	214	464	211	74	127	168	257	499	200	62	188	75	**1258**	**1280**	**2538**
	(138925, 92715)	319	311	165	86	68	96	219	297	195	156	161	247	**1046**	**1275**	**2321**
7	Hambanthota	149	183	205	48	16	105	109	74	43	86	20	6	**706**	**337**	**1042**
	(239656, 102649)	128	205	121	62	41	58	92	84	47	37	53	84	**615**	**397**	**1012**
8	Jaffna	0	752	147	181	102	19	185	10	5	73	95	3	**1201**	**372**	**1573**
	(118605, 496415)	214	450	250	84	29	40	68	66	17	28	59	64	**1066**	**302**	**1368**
9	Katugastota	437	449	46	9	29	106	250	114	24	158	265	172	**1077**	**983**	**2060**
	(184354, 236442)	282	287	189	92	69	89	190	153	129	122	107	138	**1008**	**839**	**1847**
10	Katunayaka	568	443	32	9	145	37	315	317	72	14	115	73	**1235**	**906**	**2141**
	(101510, 218841)	352	319	125	49	62	115	214	288	166	86	99	201	**1023**	**1054**	**2076**
11	Kurunegala	318	718	47	9	15	122	320	222	74	125	285	208	**1228**	**1234**	**2462**
	(155661, 250835)	349	319	147	64	66	135	270	206	141	98	91	152	**1079**	**959**	**2038**
12	Mahailluppallama	384	329	125	73	81	42	344	28	2	180	97	26	**1033**	**678**	**1711**
	(165648, 323815)	259	262	199	82	69	65	181	110	18	30	38	94	**937**	**472**	**1408**

Table 4: Monthly Rainfall at the principal stations of Department of Meteorology

Upper line: Current year 2021/22
Lower line: Long term average from 1970/71
Units: mm
Coordinate system: Kandawala

No	Station	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	NEM Total	SWM Total	Annual Total
13	Mannar	334	672	63	30	15	1	240	6	0	4	34	2	**1114**	**286**	**1399**
	(105246, 419021)	168	265	194	48	40	43	93	59	6	12	12	53	**757**	**235**	**992**
14	Mattala	162	168	252	82	23	168	163	100	62	138	26	8	**854**	**496**	**1350**
	(239644, 122546)	204	240	161	54	39	75	114	93	25	42	26	97	**773**	**397**	**1170**
15	Monaragala	266	224	184	76	73	78	419	42	37	213	79	23	**901**	**813**	**1714**
	(263913, 184504)	272	278	237	113	97	117	204	142	37	77	85	107	**1113**	**653**	**1767**
16	Nuwara Eliya	388	231	79	68	36	49	243	165	63	203	293	71	**850**	**1037**	**1887**
	(198705, 195523)	240	225	183	109	65	68	136	177	175	171	148	167	**890**	**975**	**1865**
17	Polonnaruwa	202	250	213	248	251	69	265	0	78	137	117	3	**1232**	**600**	**1833**
	(228479, 300587)	284	323	412	218	146	70	92	110	14	42	58	96	**1454**	**411**	**1865**
18	Pothuvil	94	400	219	149	278	33	38	0	12	28	62	55	**1174**	**195**	**1368**
	(316963, 186806)	123	300	302	260	168	74	74	45	16	19	20	54	**1228**	**228**	**1456**
19	Puttalam	333	487	37	44	70	40	193	183	37	29	27	6	**1011**	**476**	**1487**
	(96193, 313968)	228	261	134	50	42	60	163	109	35	20	19	68	**776**	**414**	**1190**
20	Rathmalana	344	373	68	67	83	78	409	412	119	36	162	149	**1013**	**1286**	**2298**
	(101434, 179027)	368	355	167	73	68	116	266	322	204	122	120	253	**1146**	**1287**	**2433**
21	Rathnapura	520	487	194	204	151	289	432	755	268	260	530	212	**1845**	**2456**	**4302**
	(158903, 164576)	448	376	220	119	137	209	355	477	413	290	295	382	**1510**	**2213**	**3722**
22	Trincomalee	298	532	113	187	254	157	90	54	96	79	60	50	**1542**	**429**	**1971**
	(252647, 374706)	213	356	342	142	96	51	47	67	30	63	65	124	**1201**	**396**	**1597**
23	Vauniya	295	388	157	54	85	50	356	15	86	149	104	46	**1030**	**756**	**1786**
	(170105, 393484)	231	274	249	91	69	50	136	89	20	47	58	99	**965**	**450**	**1414**

3.2 Variation of Rainfall

3.2.1 Temporal Variation of Rainfalls at Each Station

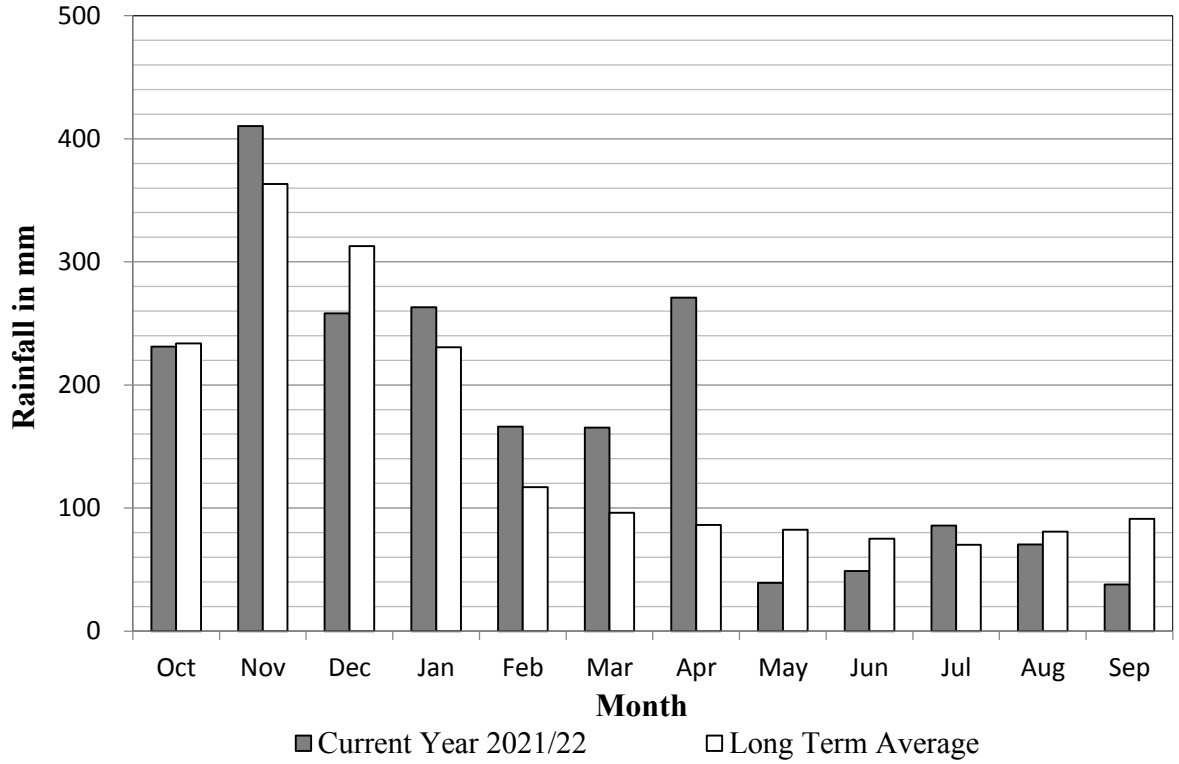

Fig. 8: Variation of Rainfall at Ampara

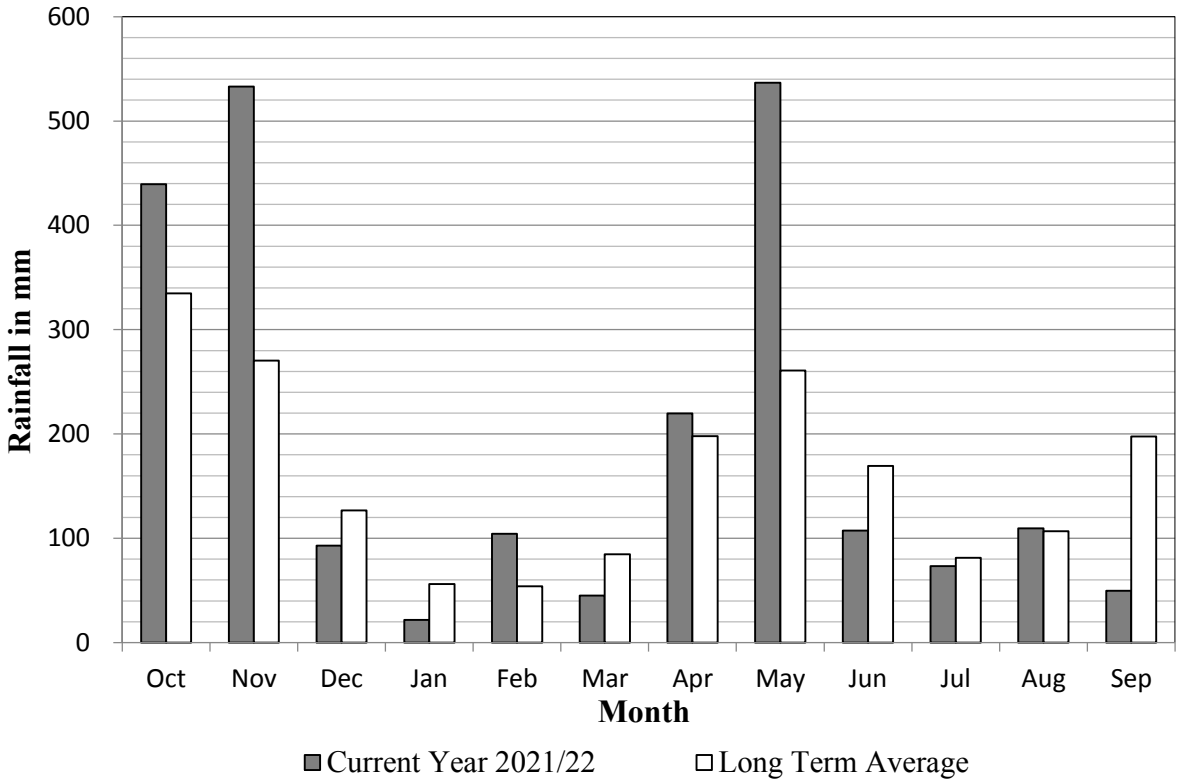

Fig. 9: Variation of Rainfall at Badalgama

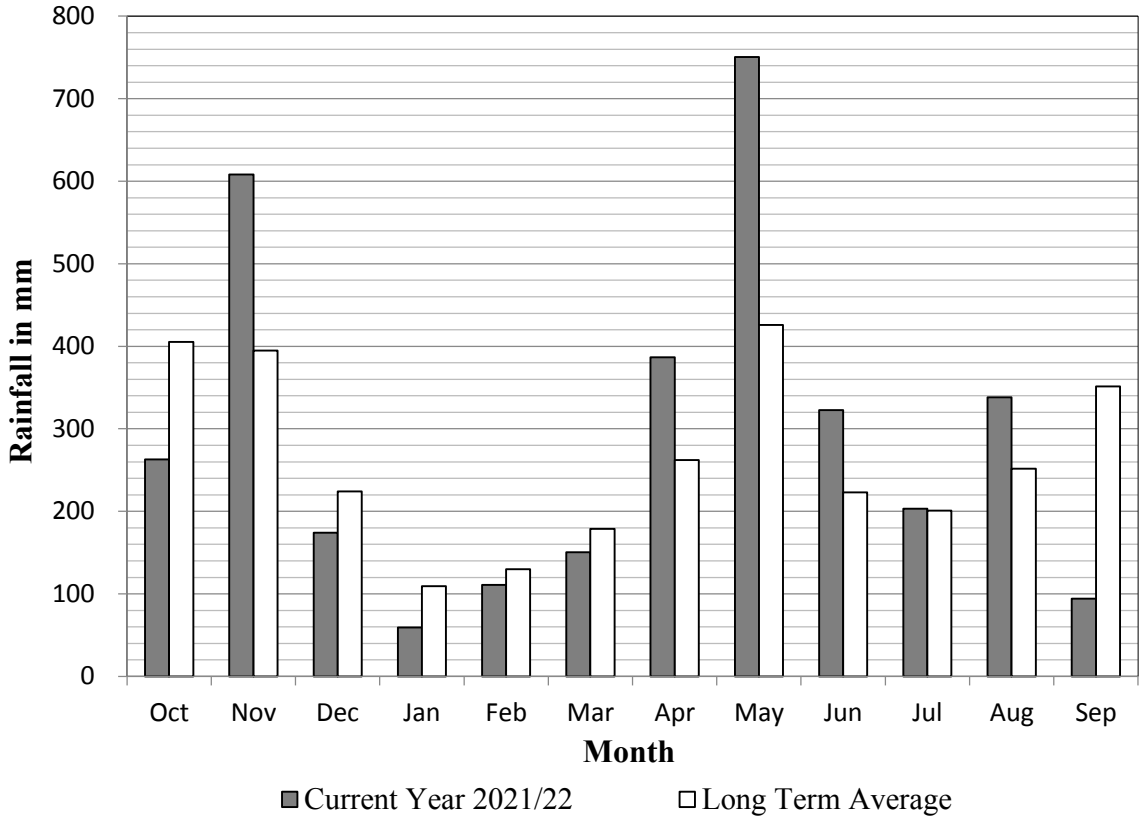

Fig. 10: Variation of Rainfall at Baddegama

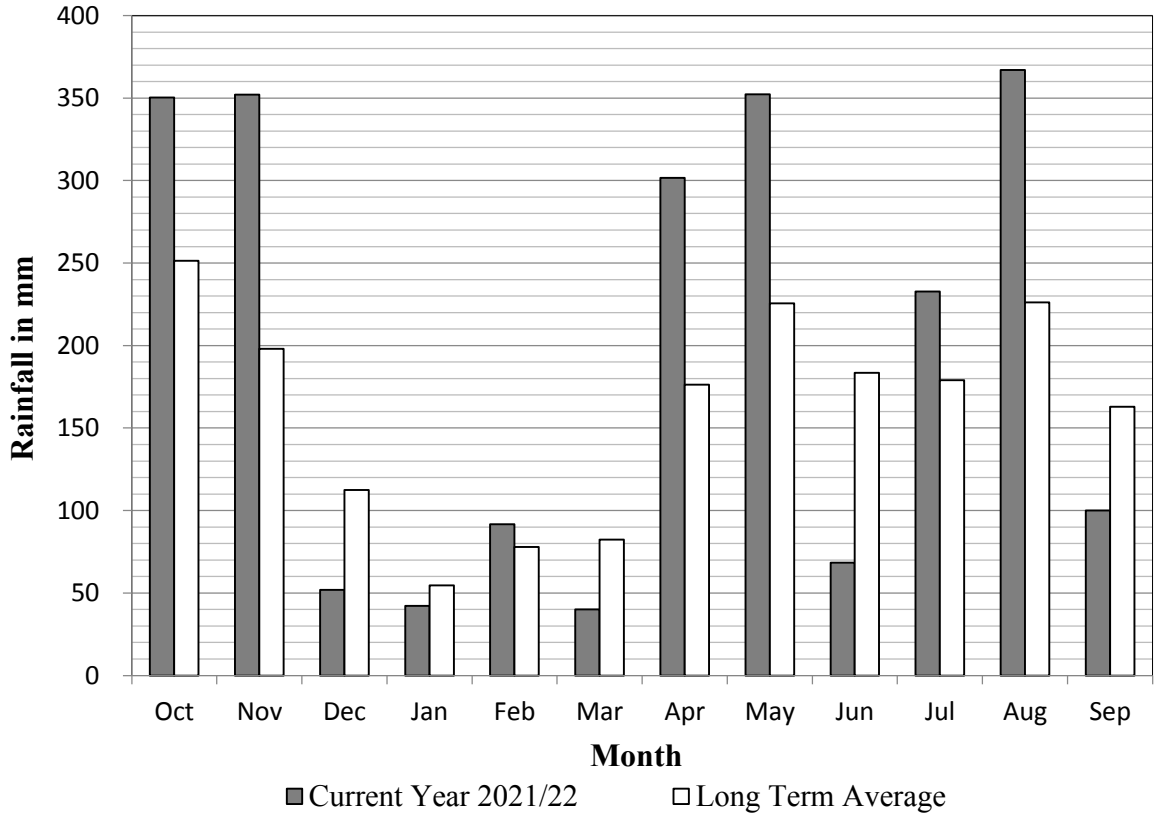

Fig. 11: Variation of Rainfall at Calidonia

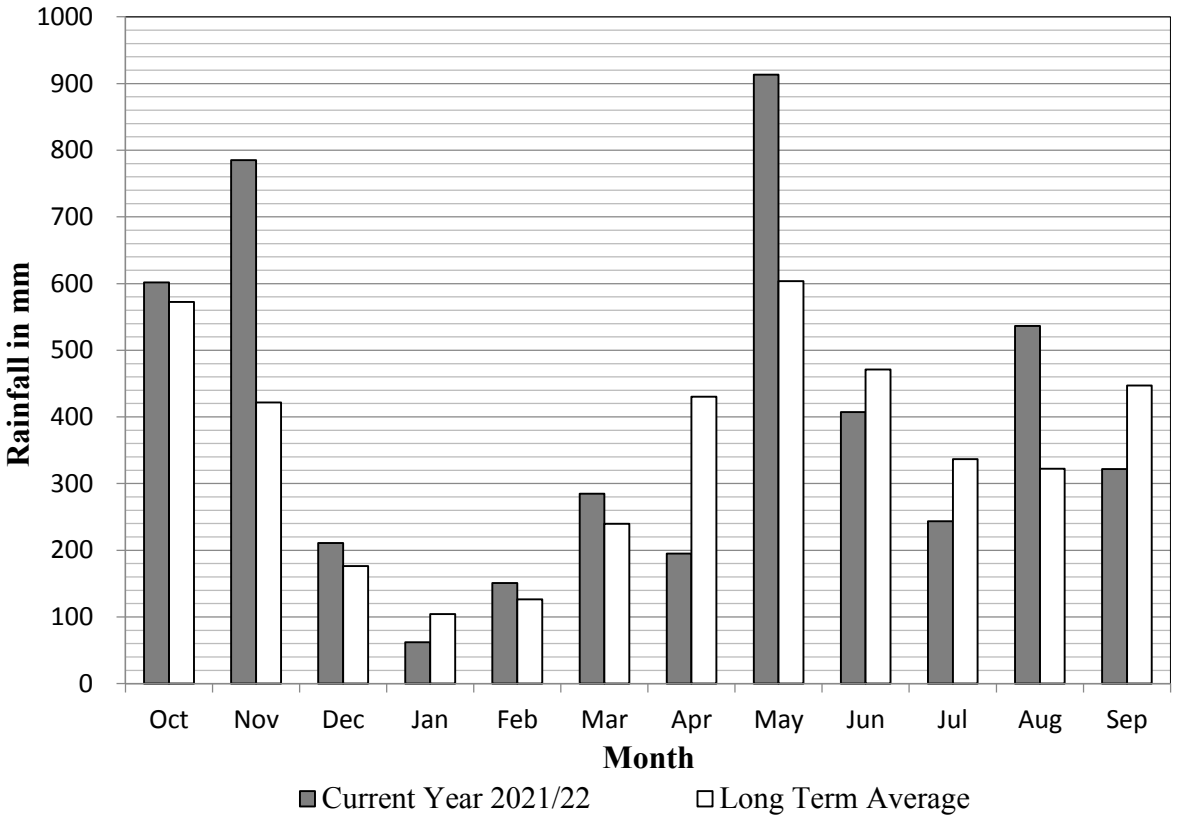

Fig. 12: Variation of Rainfall at Deraniyagala

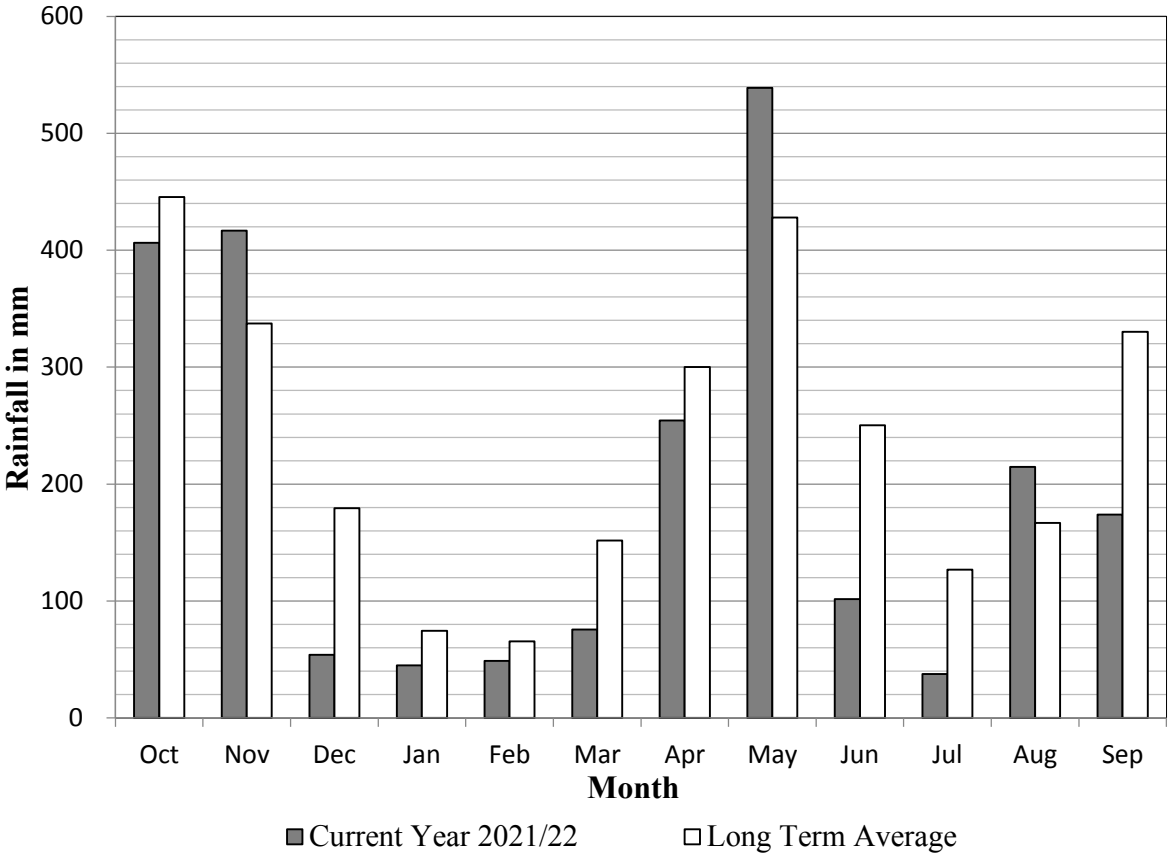

Fig. 13: Variation of Rainfall at Dunamale

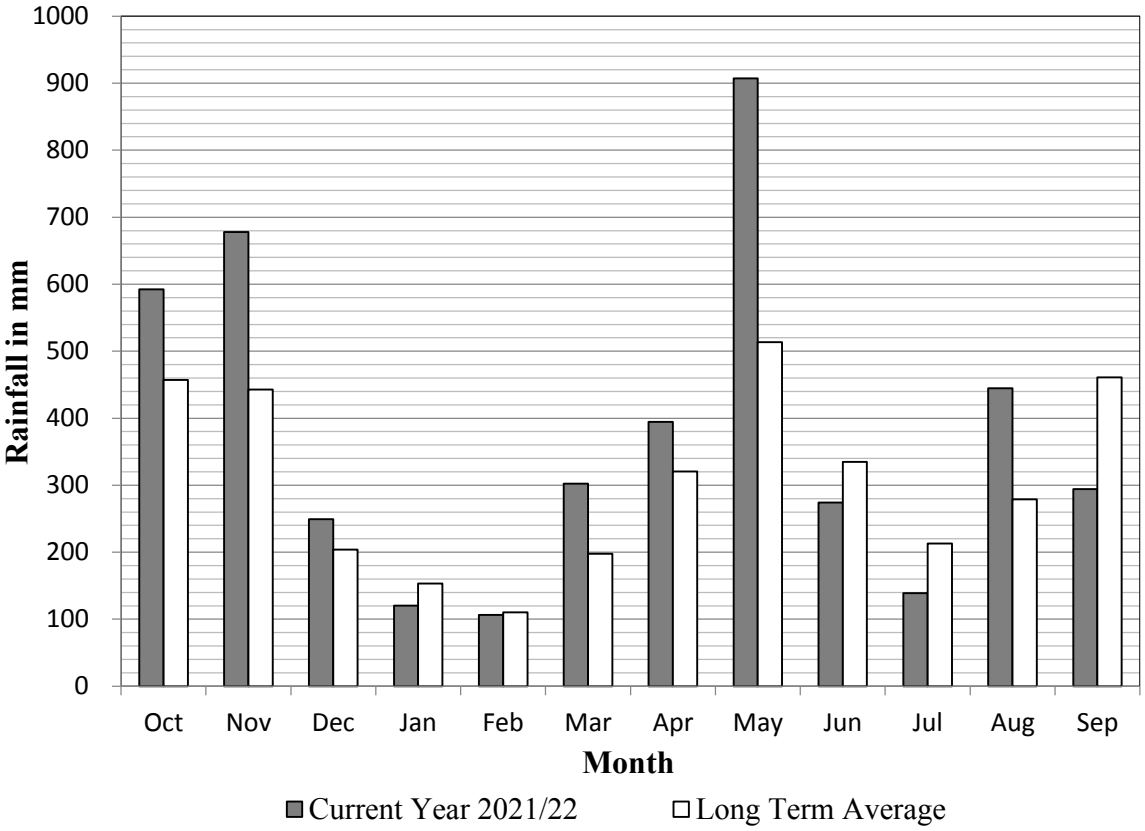

Fig. 14: Variation of Rainfall at Ellagawa

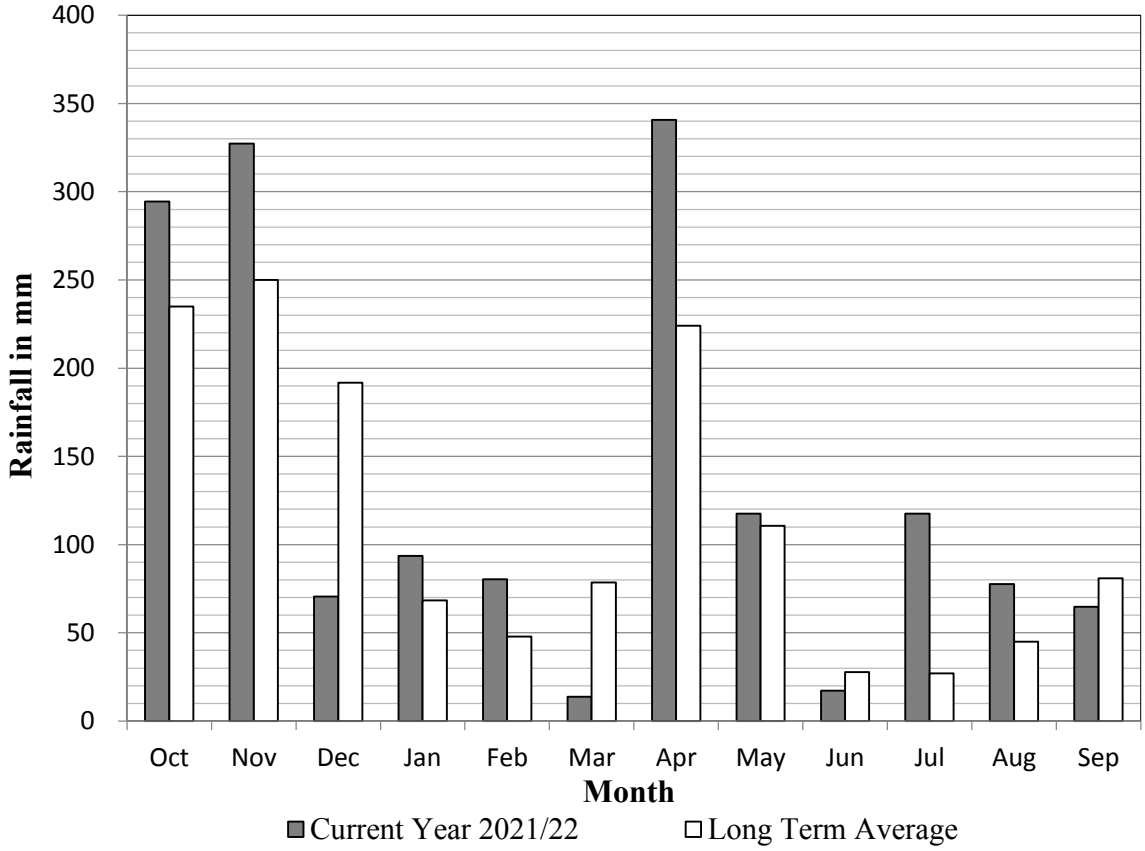

Fig. 15: Variation of Rainfall at Galgamuwa

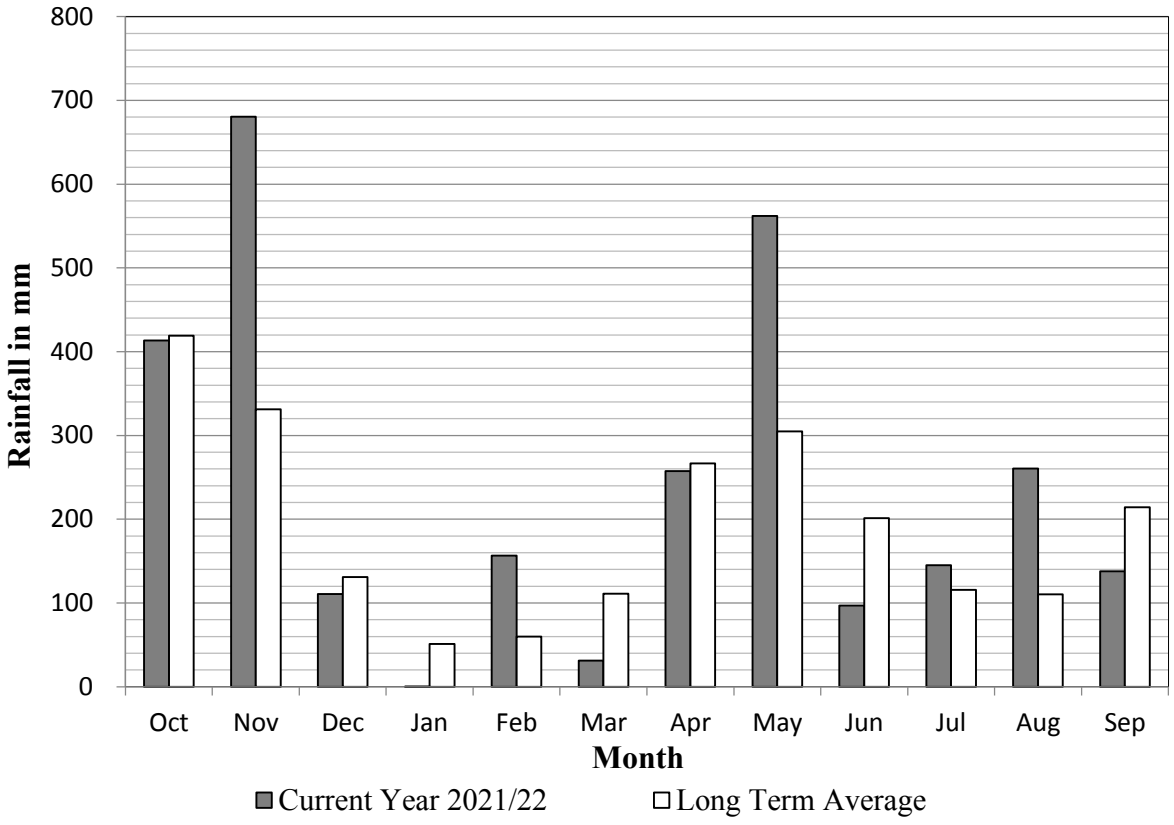

Fig. 16: Variation of Rainfall at Giriulla

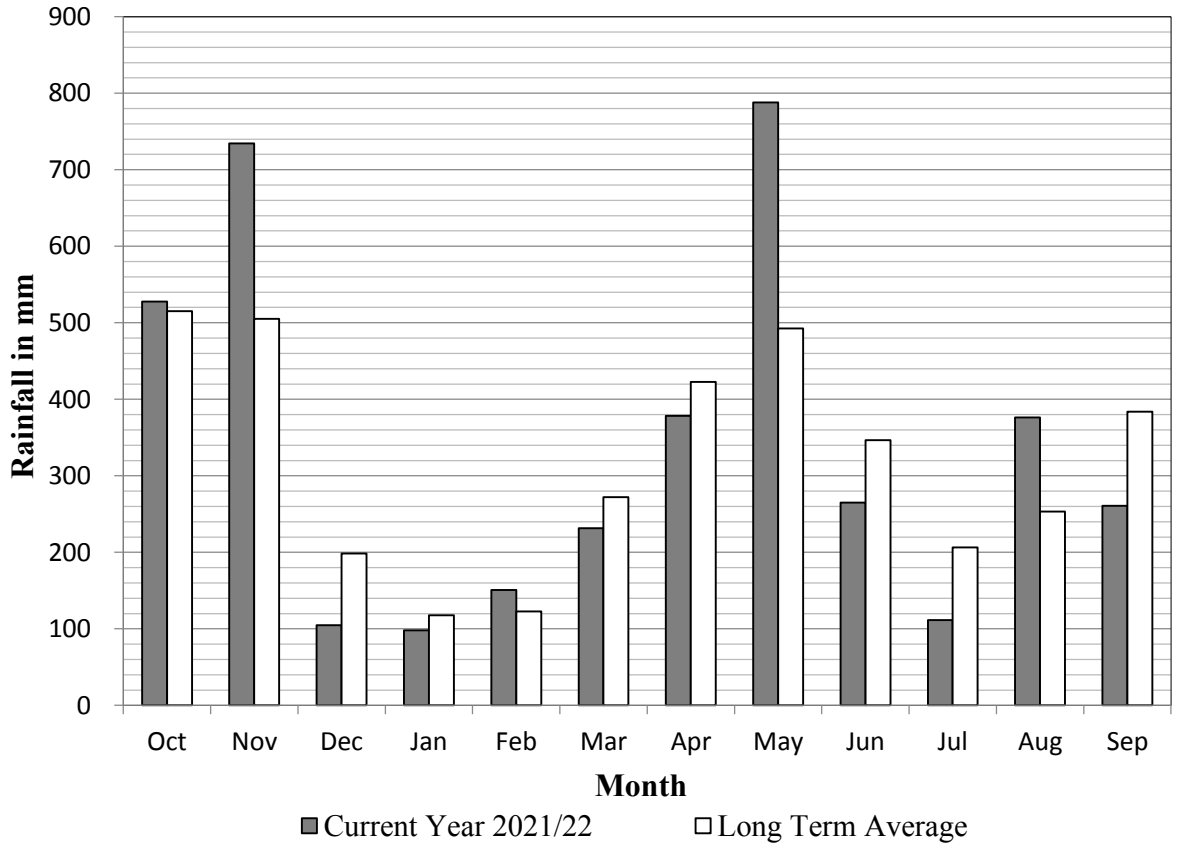

Fig. 17: Variation of Rainfall at Glencorse

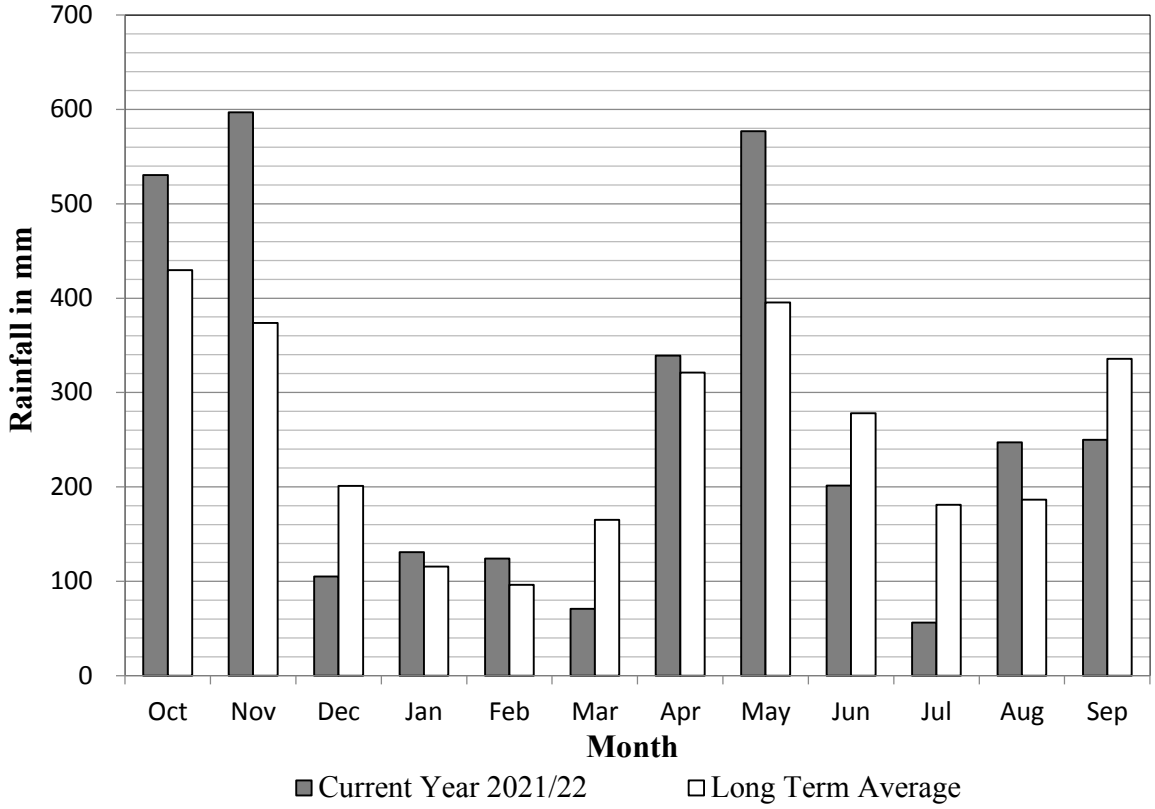

Fig. 18: Variation of Rainfall at Hanwella

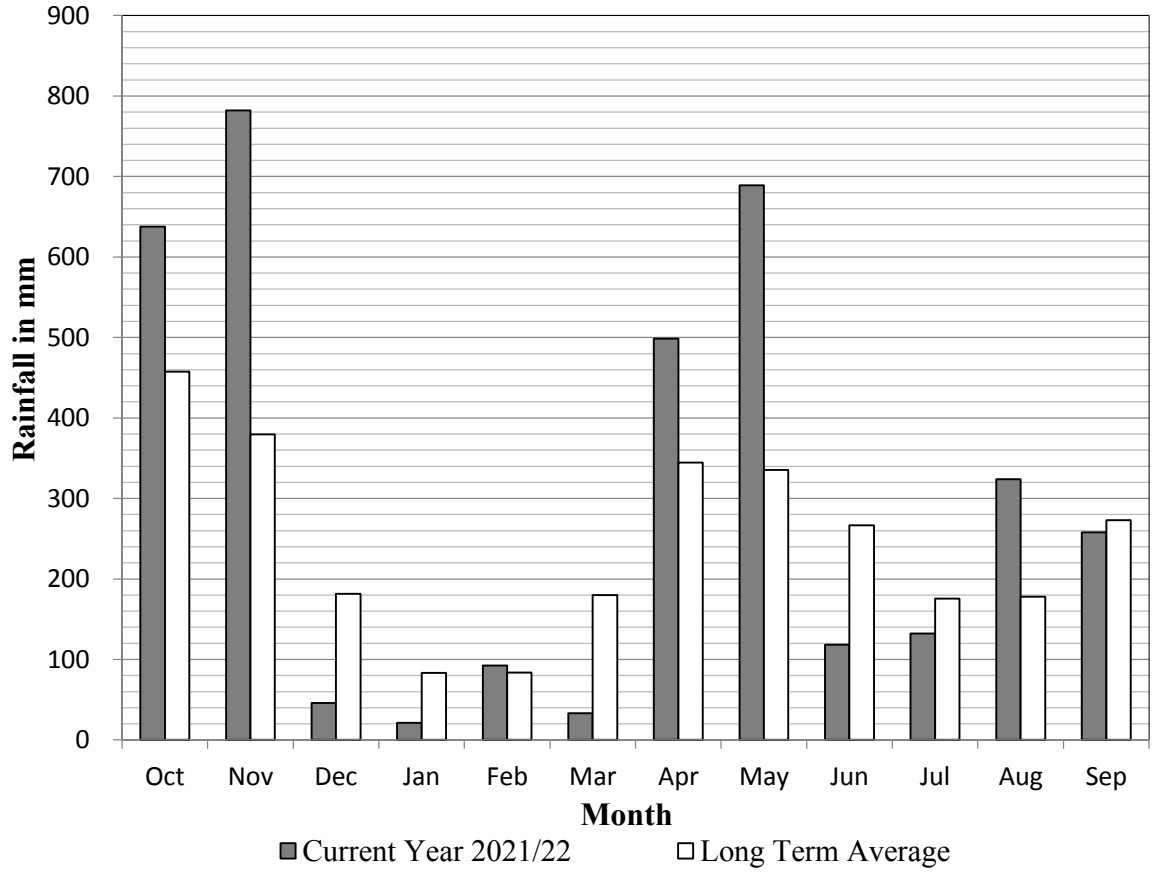

Fig. 19: Variation of Rainfall at Holombuwa

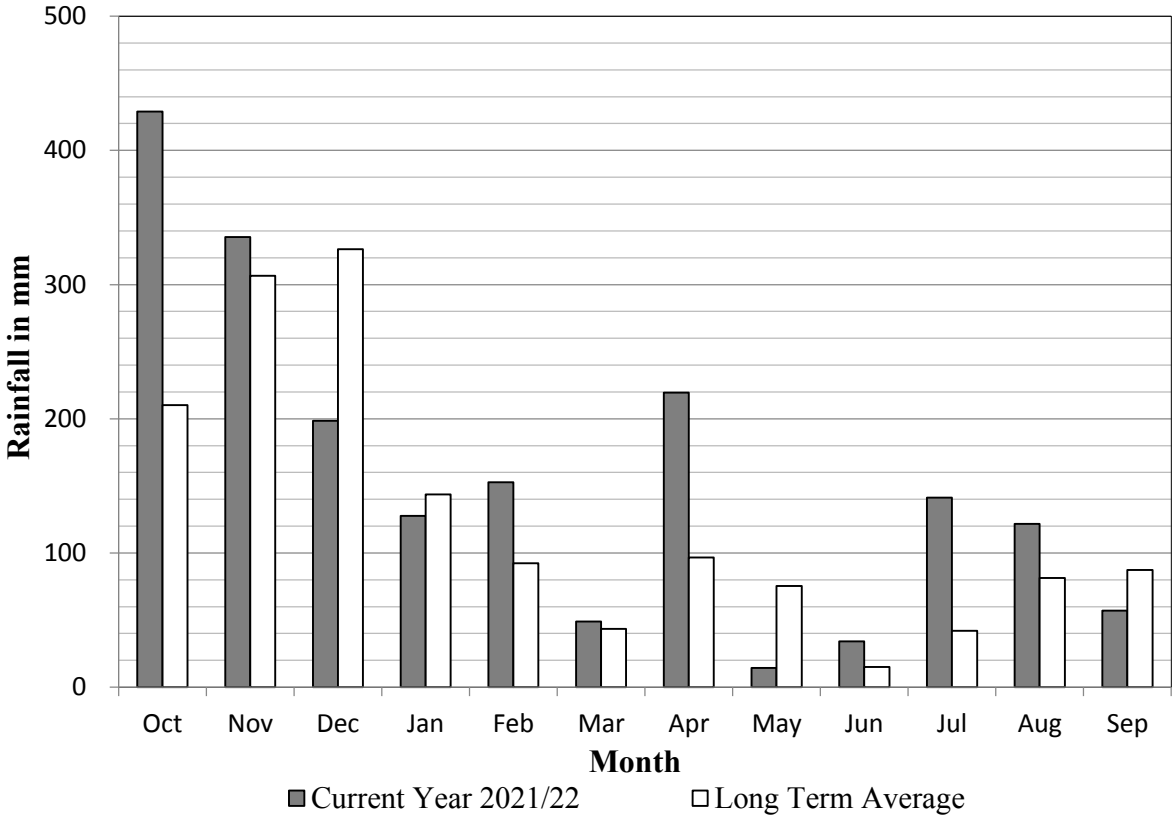

Fig. 20: Variation of Rainfall at Horowpothana

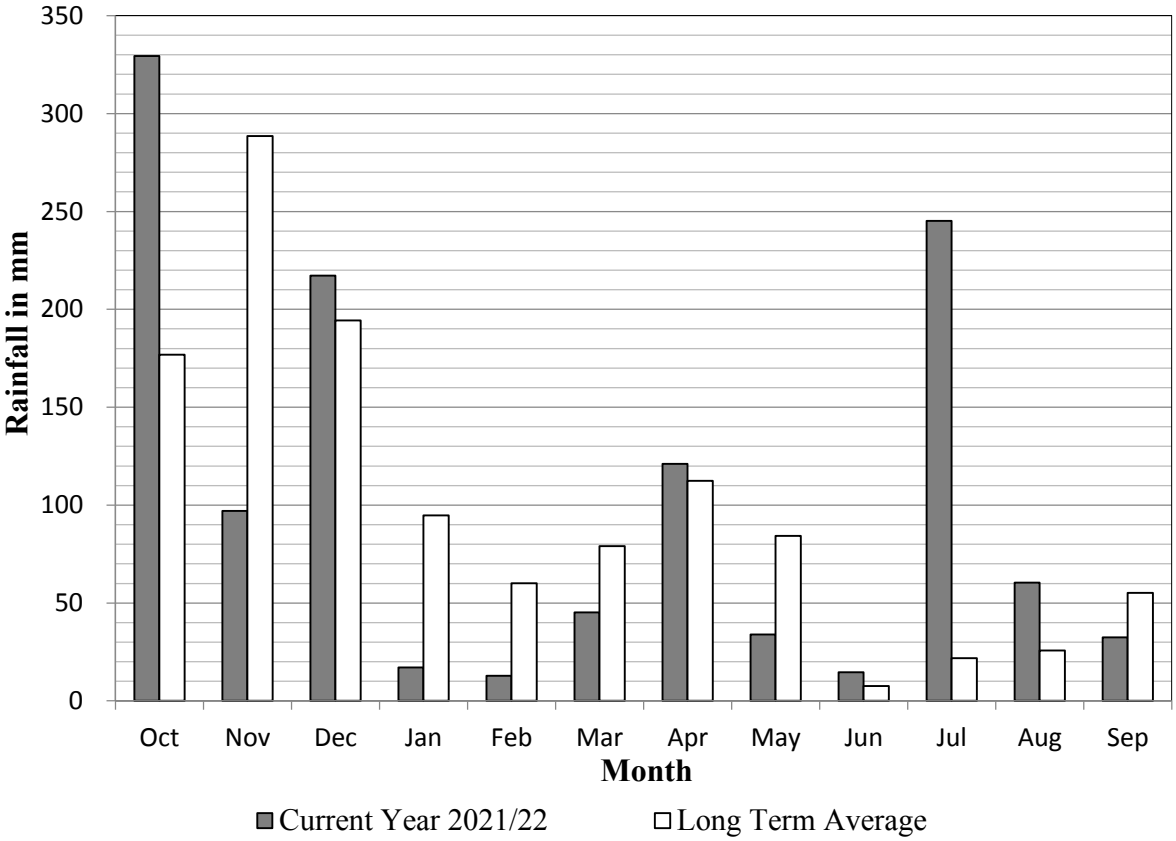

Fig. 21: Variation of Rainfall at Katharagama

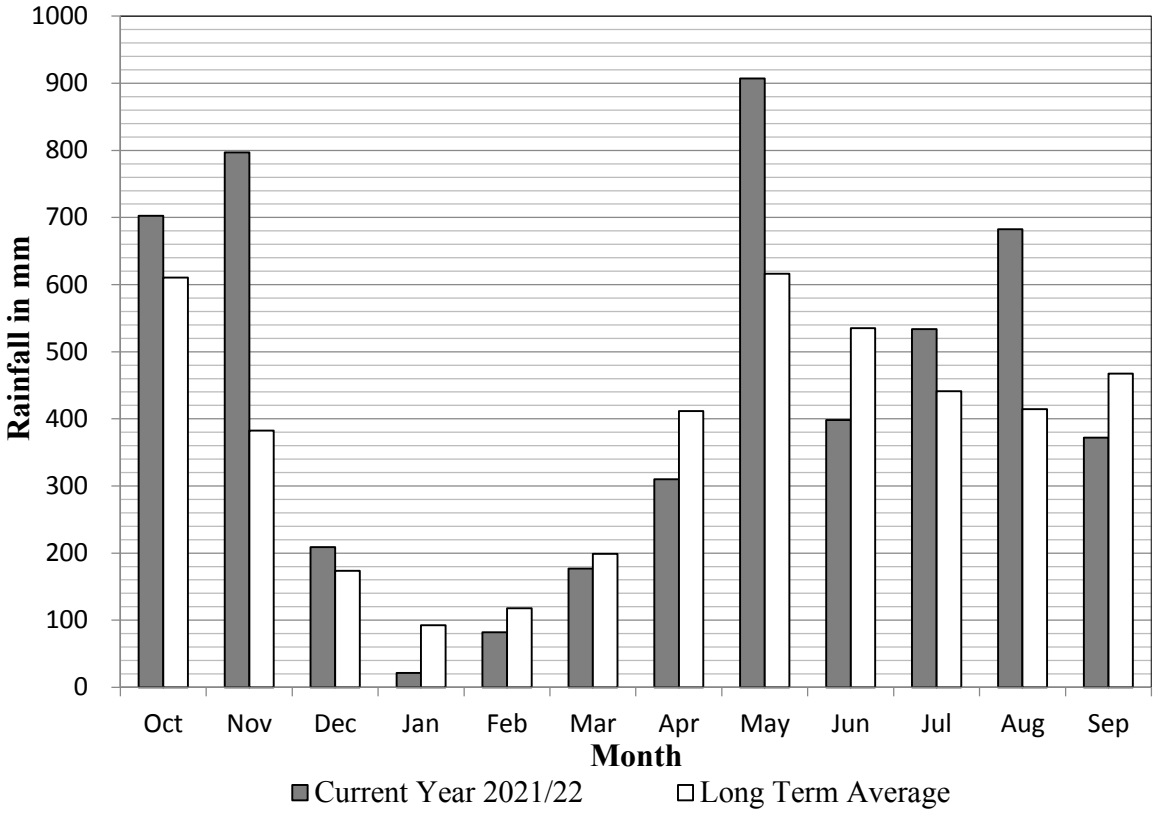

Fig. 22: Variation of Rainfall at Kithulgala

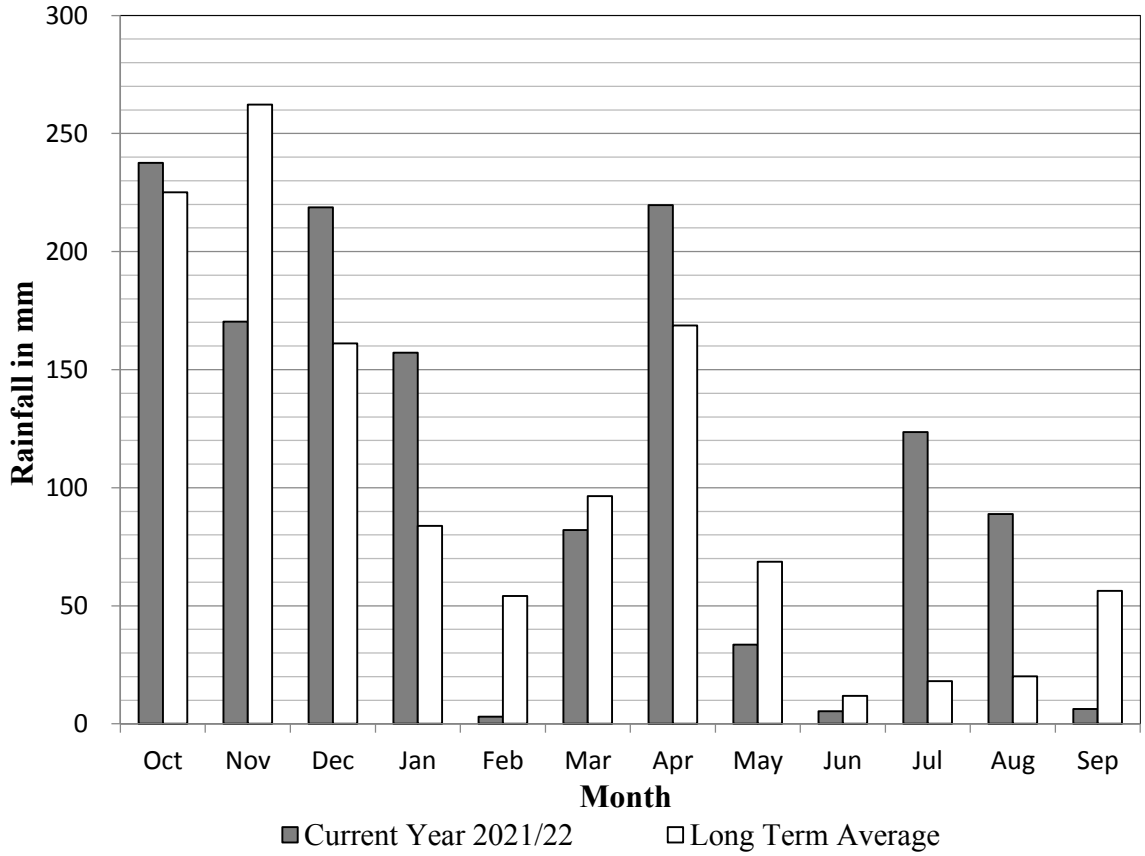

Fig. 23: Variation of Rainfall at Kuda Oya

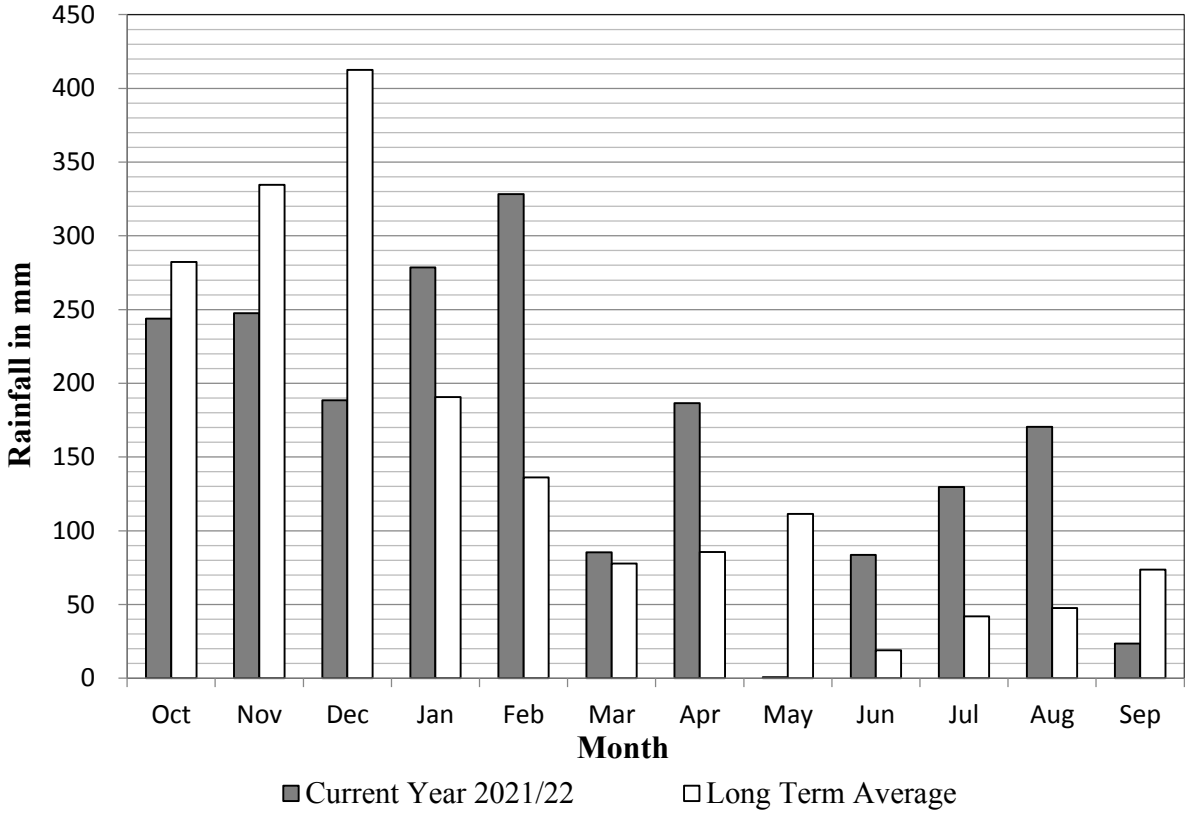

Fig. 24: Variation of Rainfall at Manampitiya

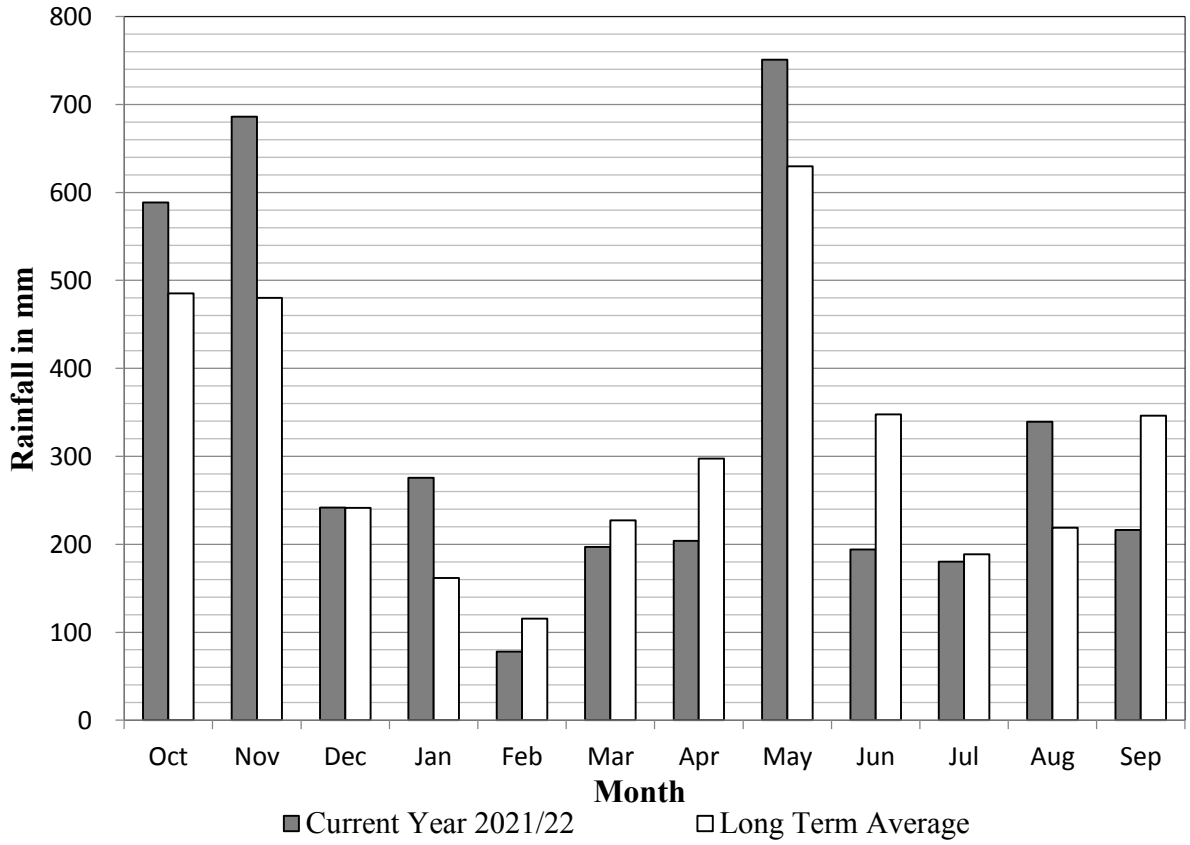

Fig. 25: Variation of Rainfall at Millakanda

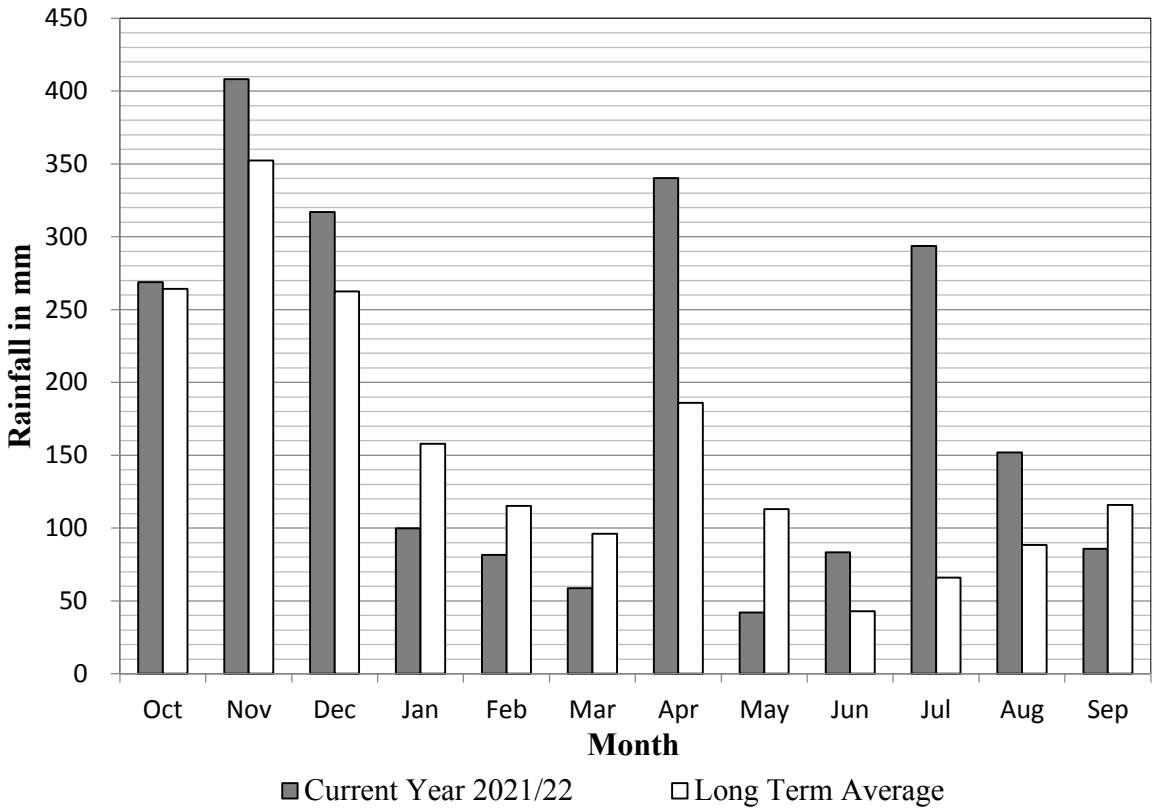

Fig. 26: Variation of Rainfall at Nakkala

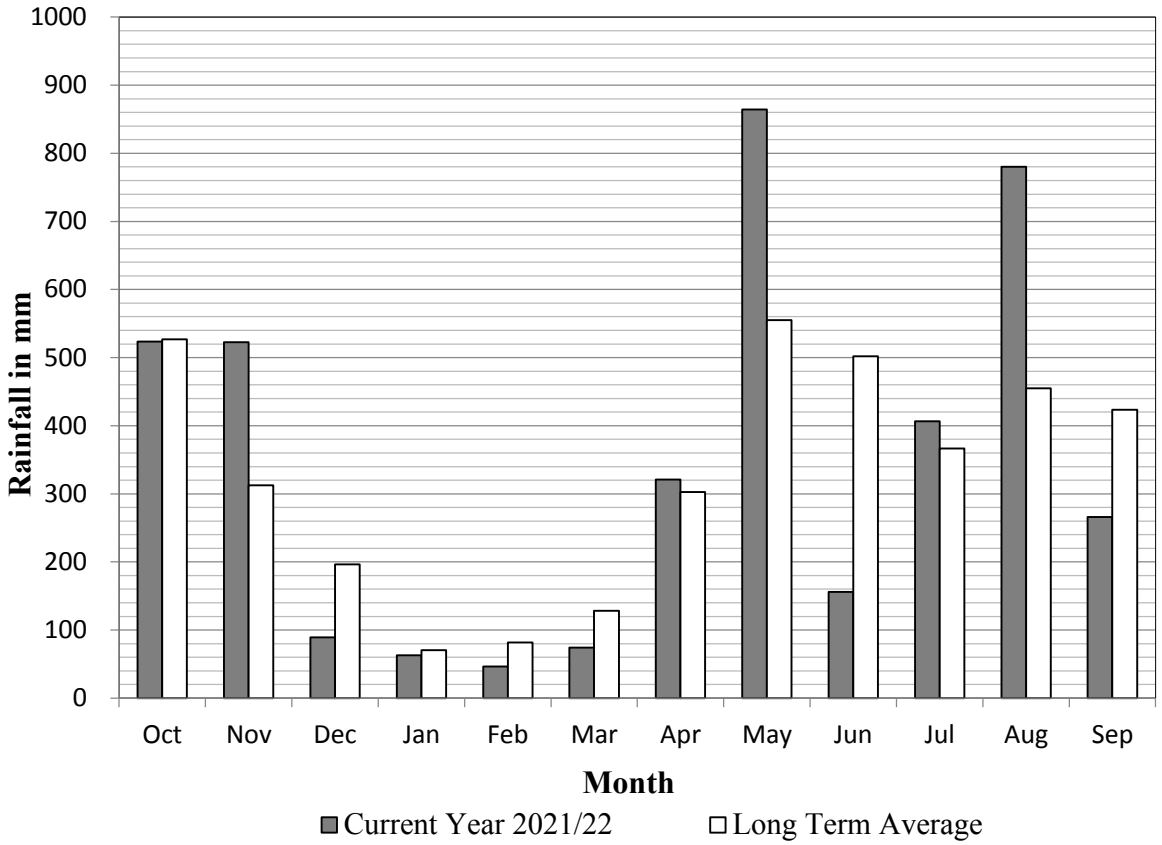

Fig. 27: Variation of Rainfall at Nawalapitiya

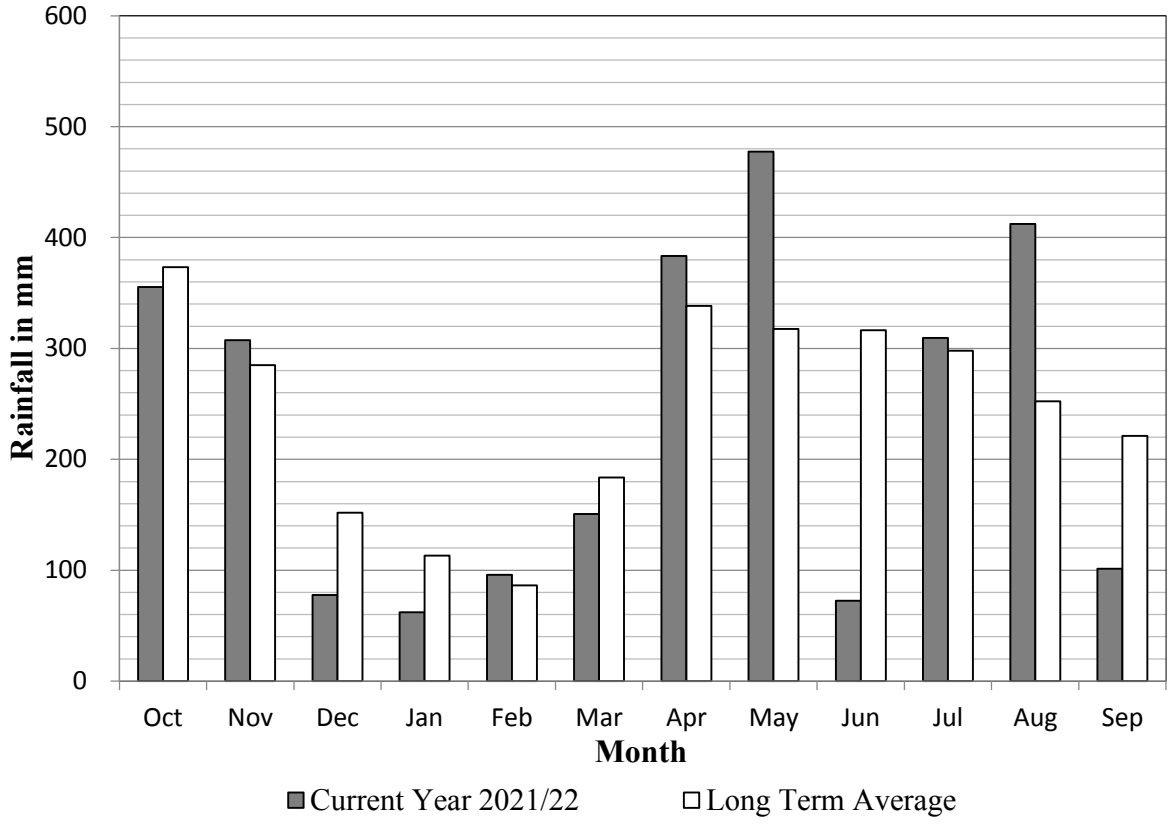

Fig. 28: Variation of Rainfall at Norwood

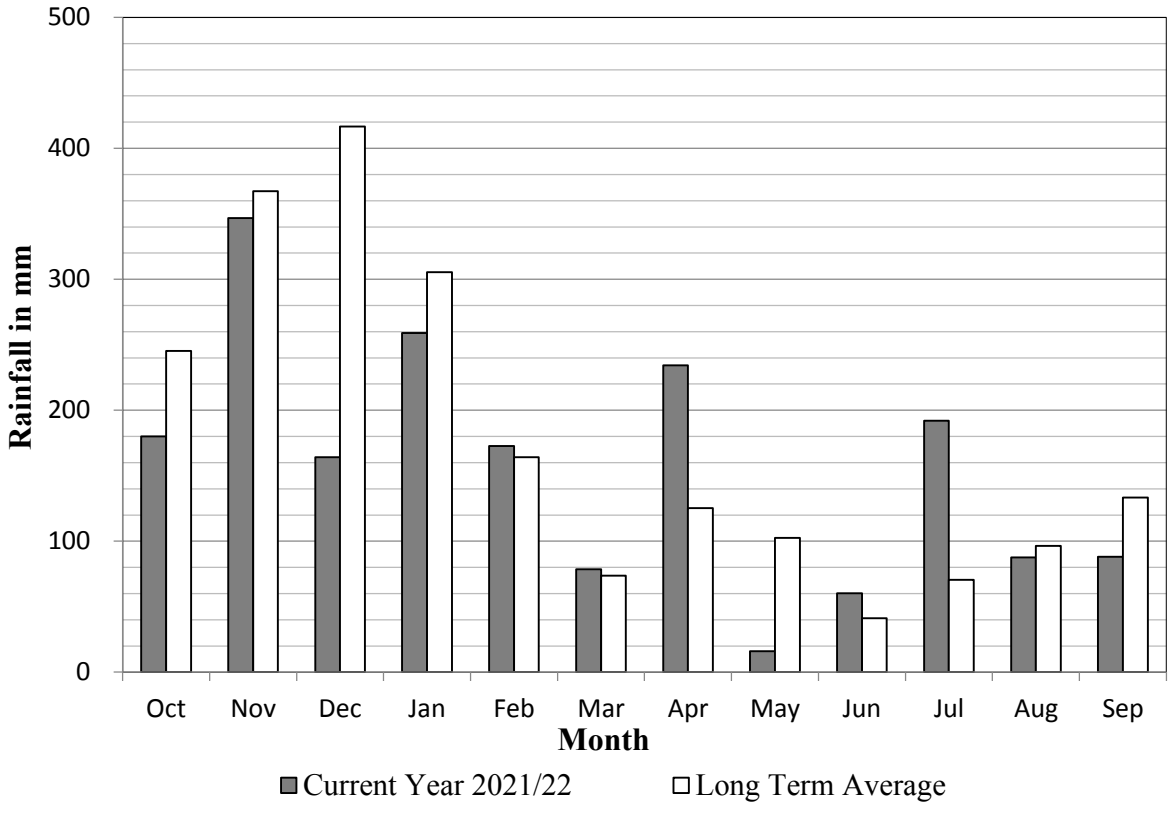

Fig. 29: Variation of Rainfall at Padiyathalawa

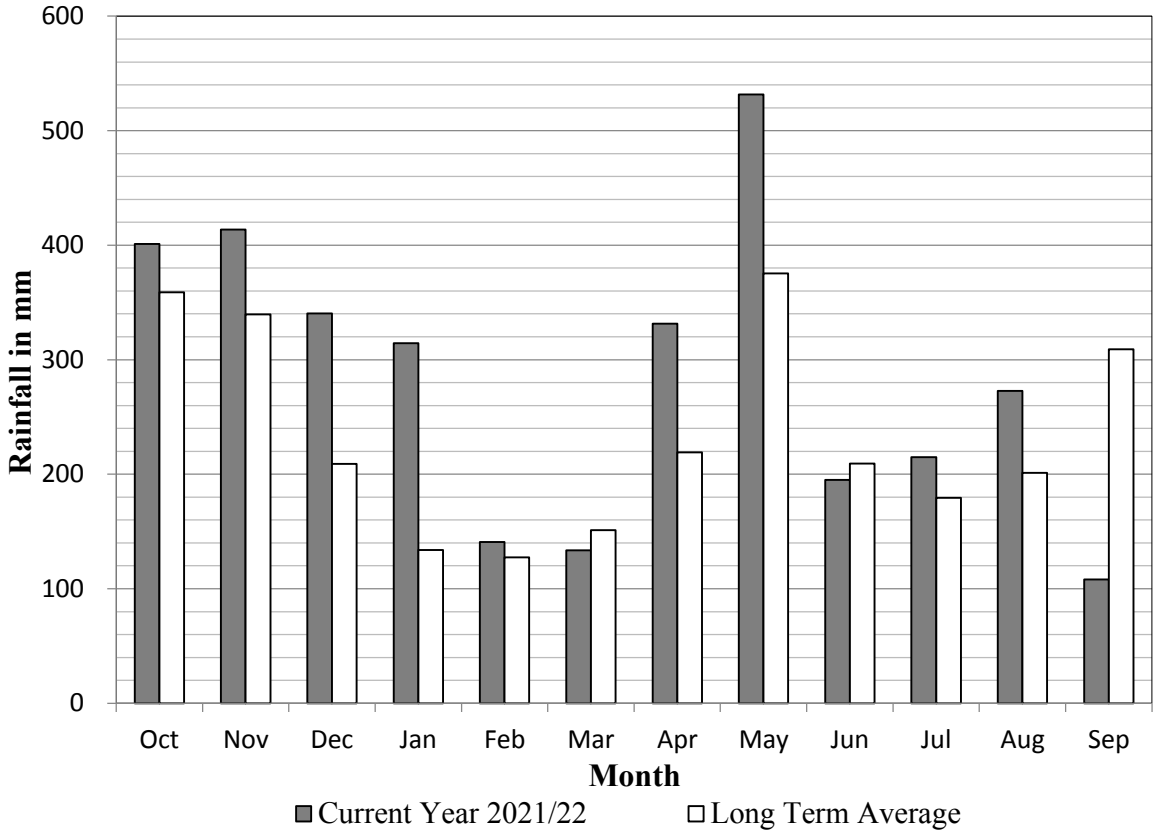

Fig. 30: Variation of Rainfall at Panadugama

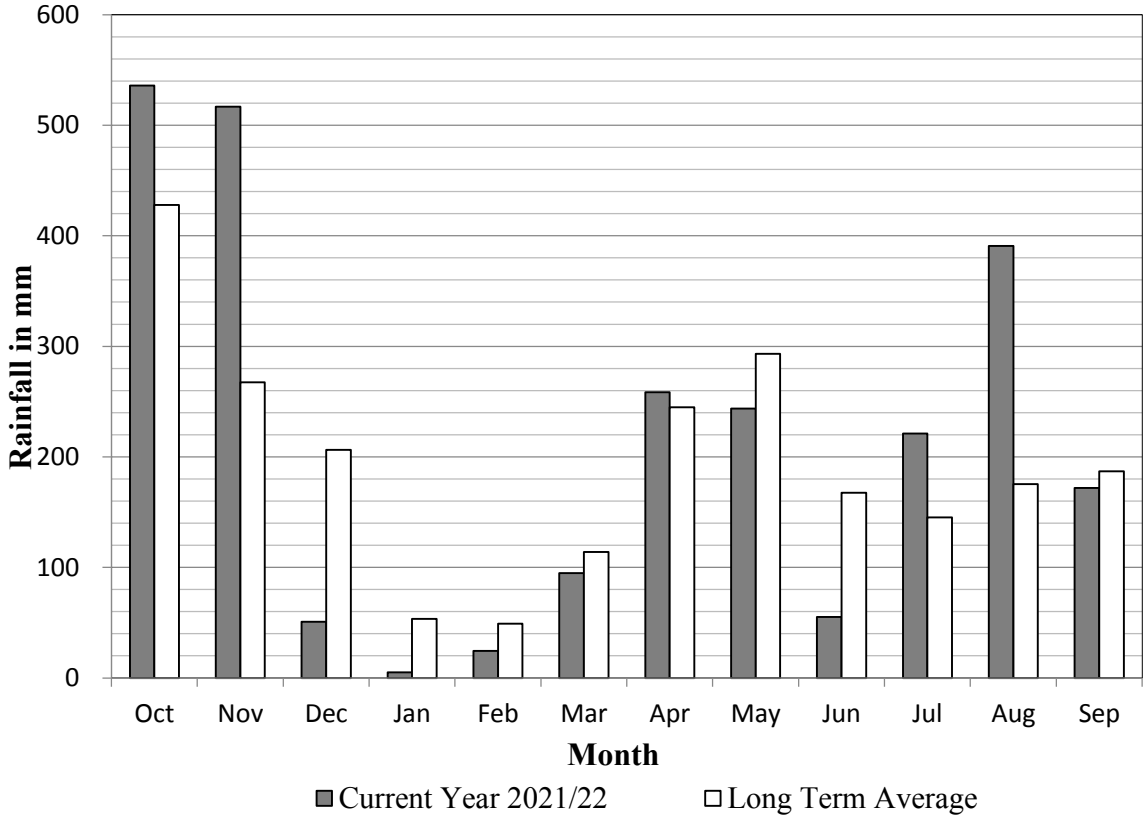

Fig. 31: Variation of Rainfall at Peradeniya

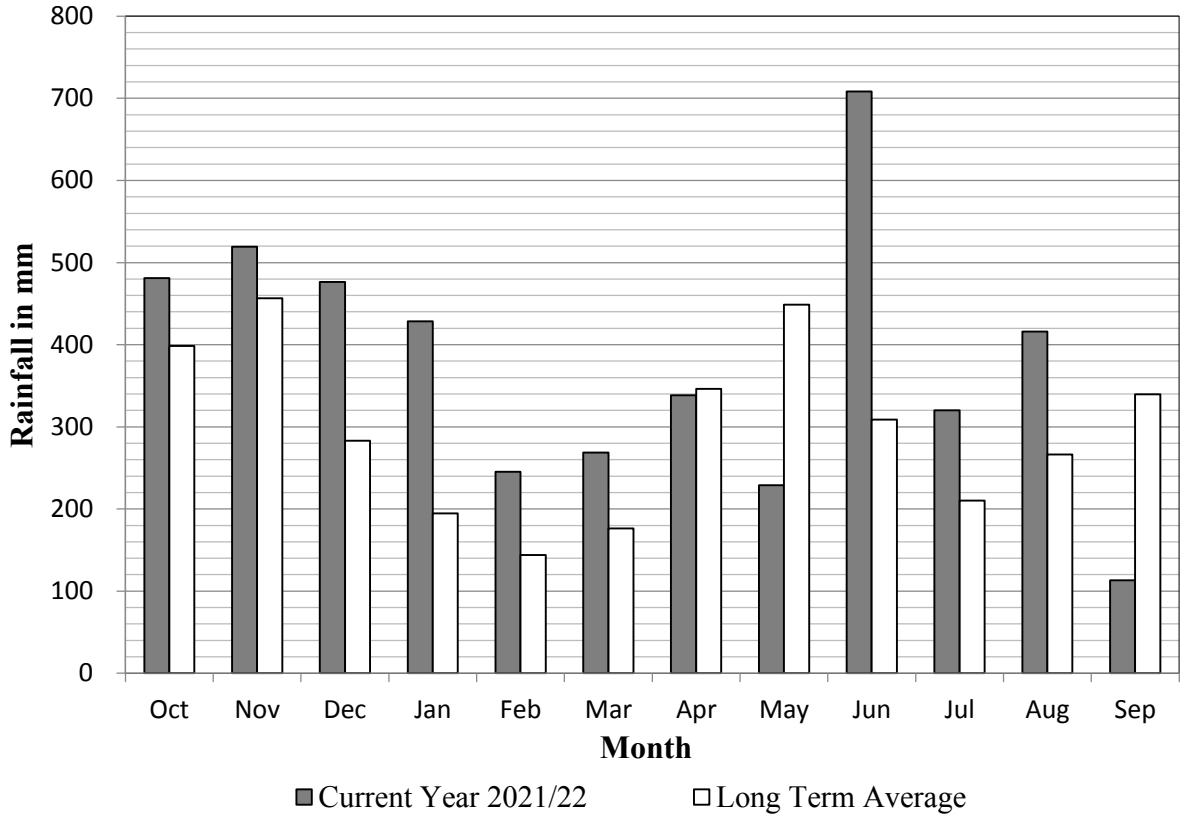

Fig. 32: Variation of Rainfall at Pitabeddara

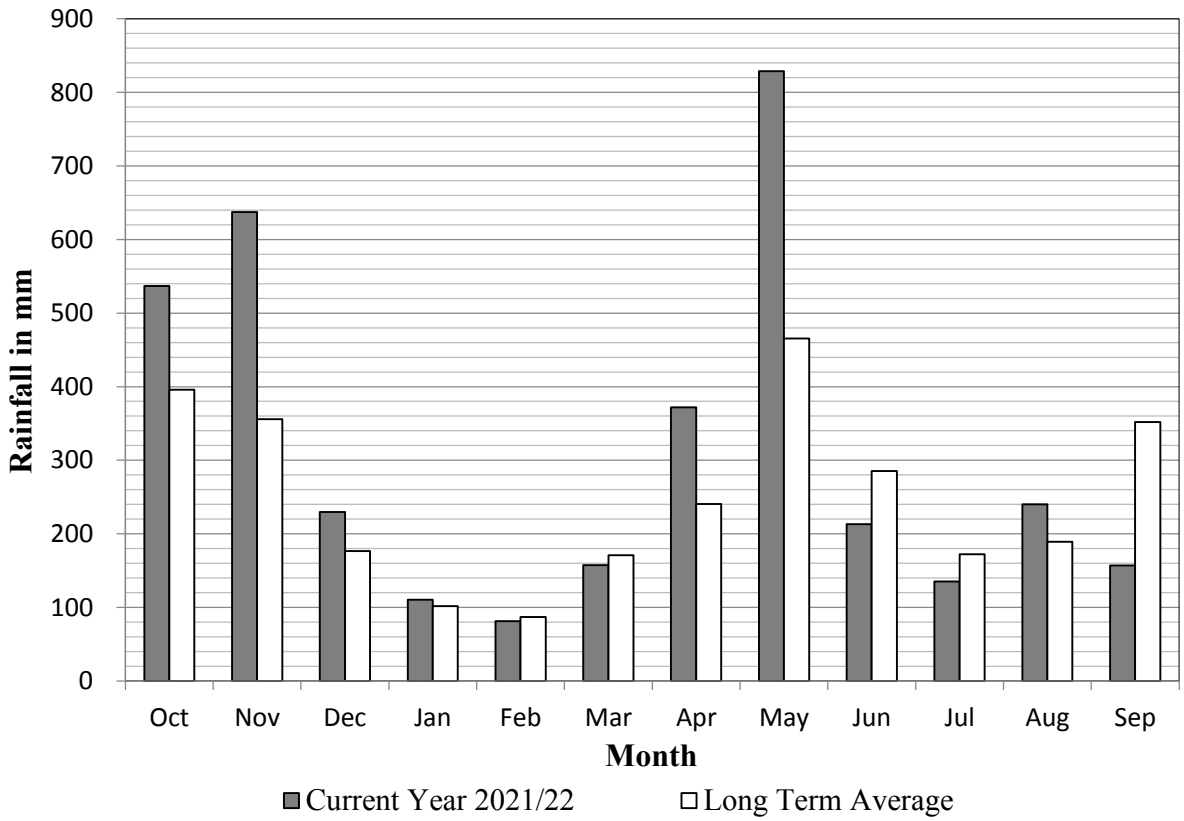

Fig. 33: Variation of Rainfall at Putupaula

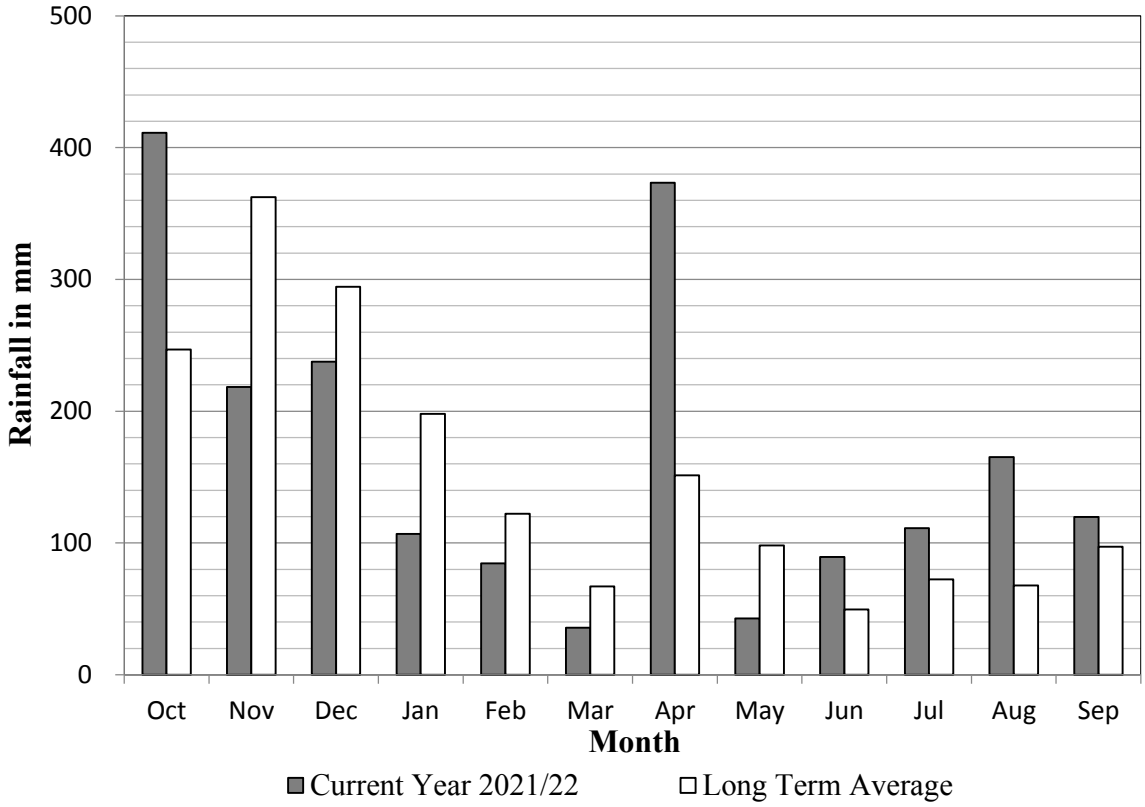

Fig. 34: Variation of Rainfall at Siyambalanduwa

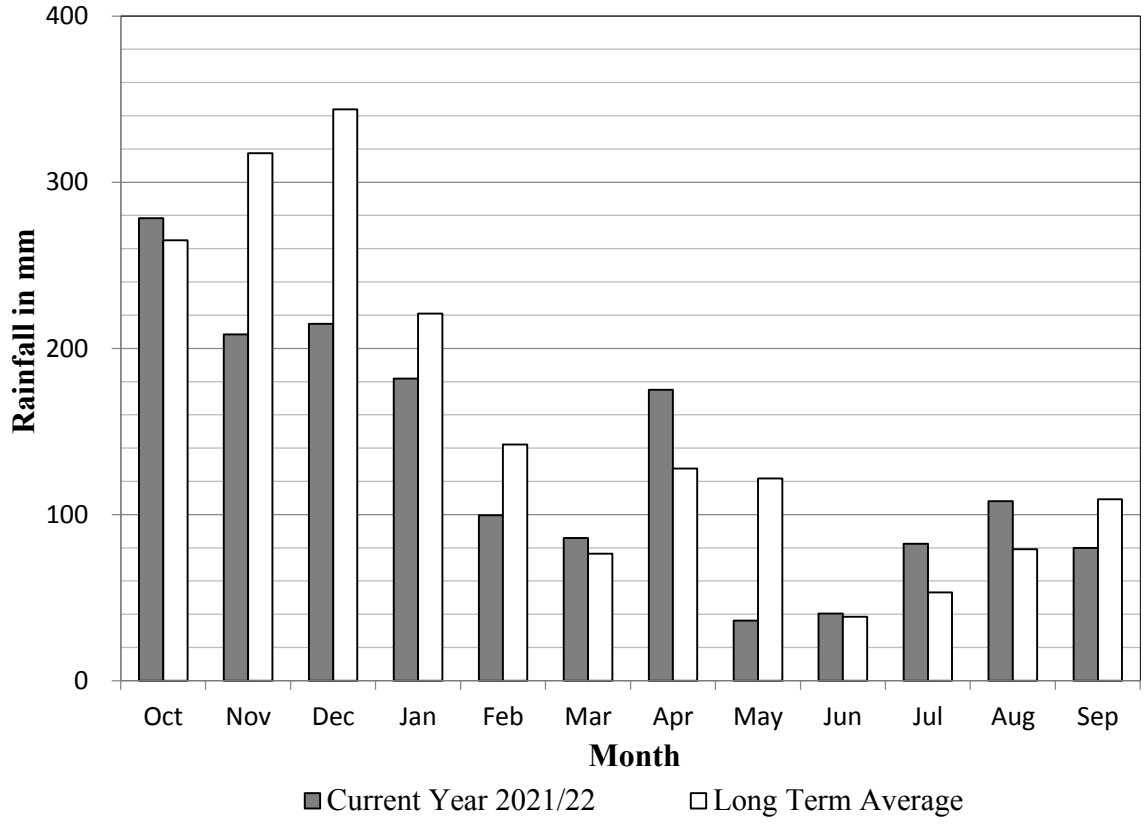

Fig. 35: Variation of Rainfall at Thaldena

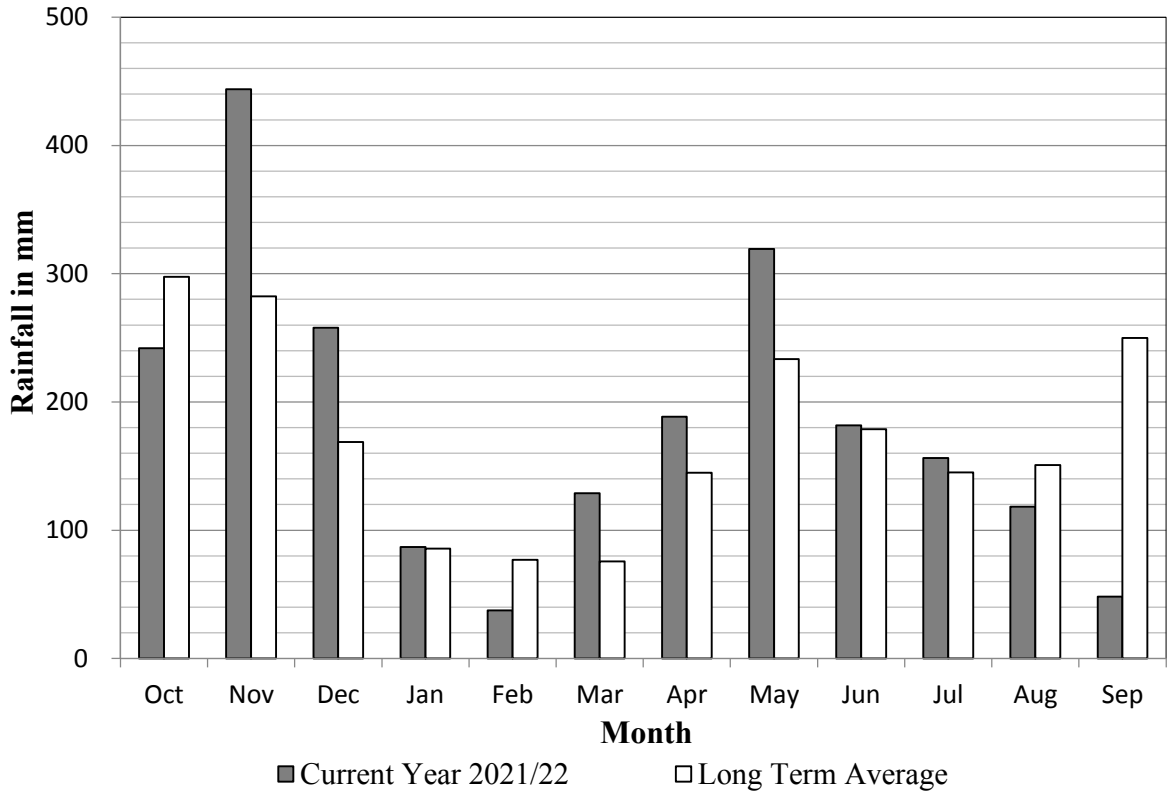

Fig. 36: Variation of Rainfall at Thalgahagoda

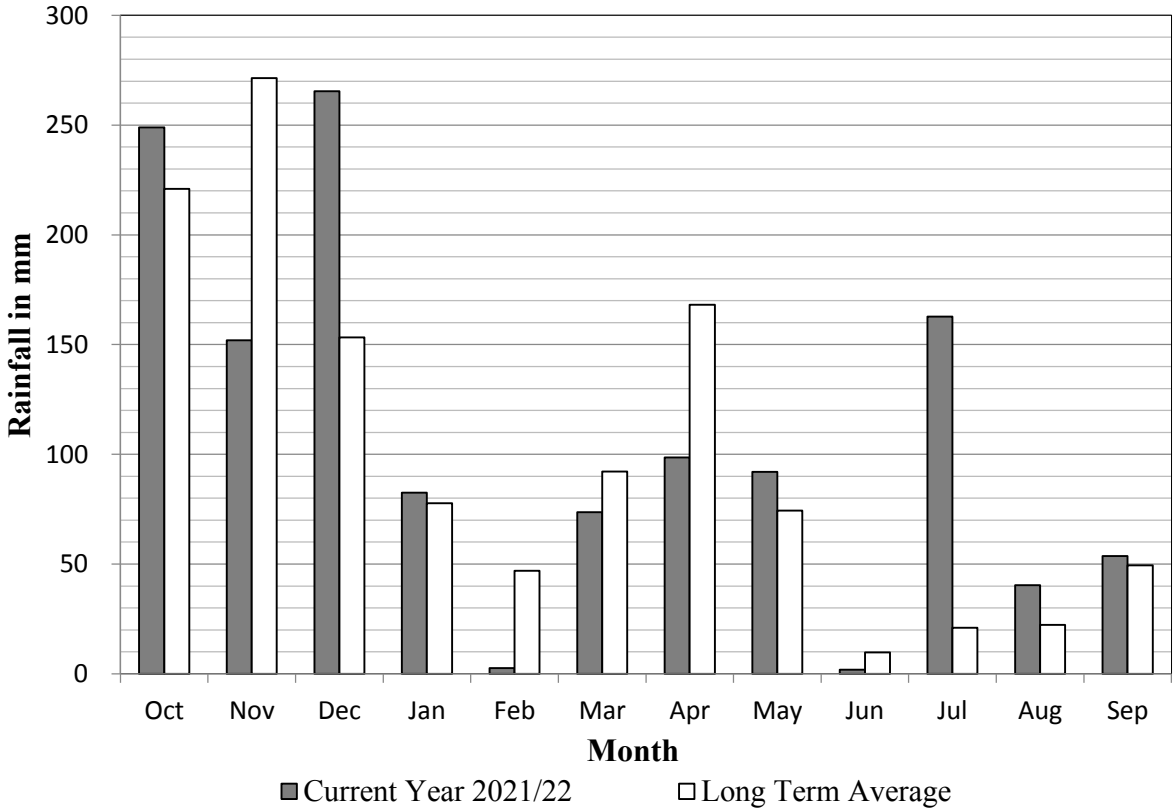

Fig. 37: Variation of Rainfall at Thanamalwila

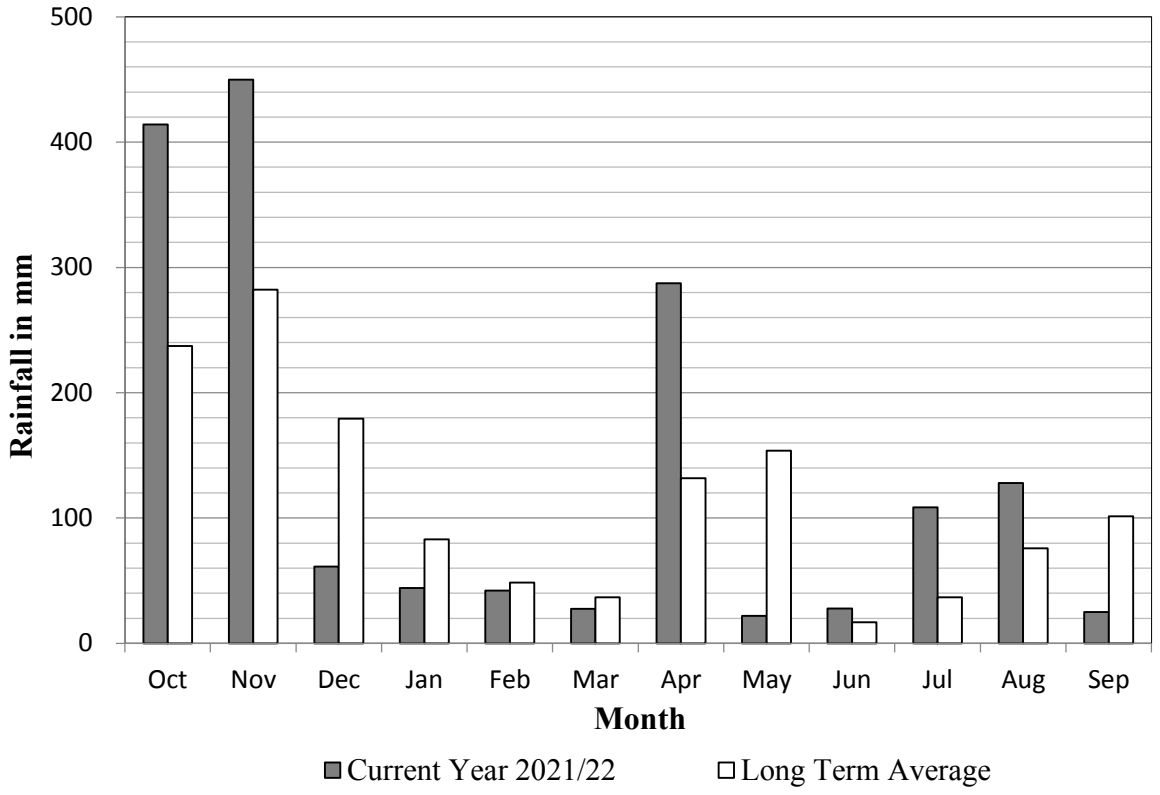

Fig. 38: Variation of Rainfall at Thanthirimale

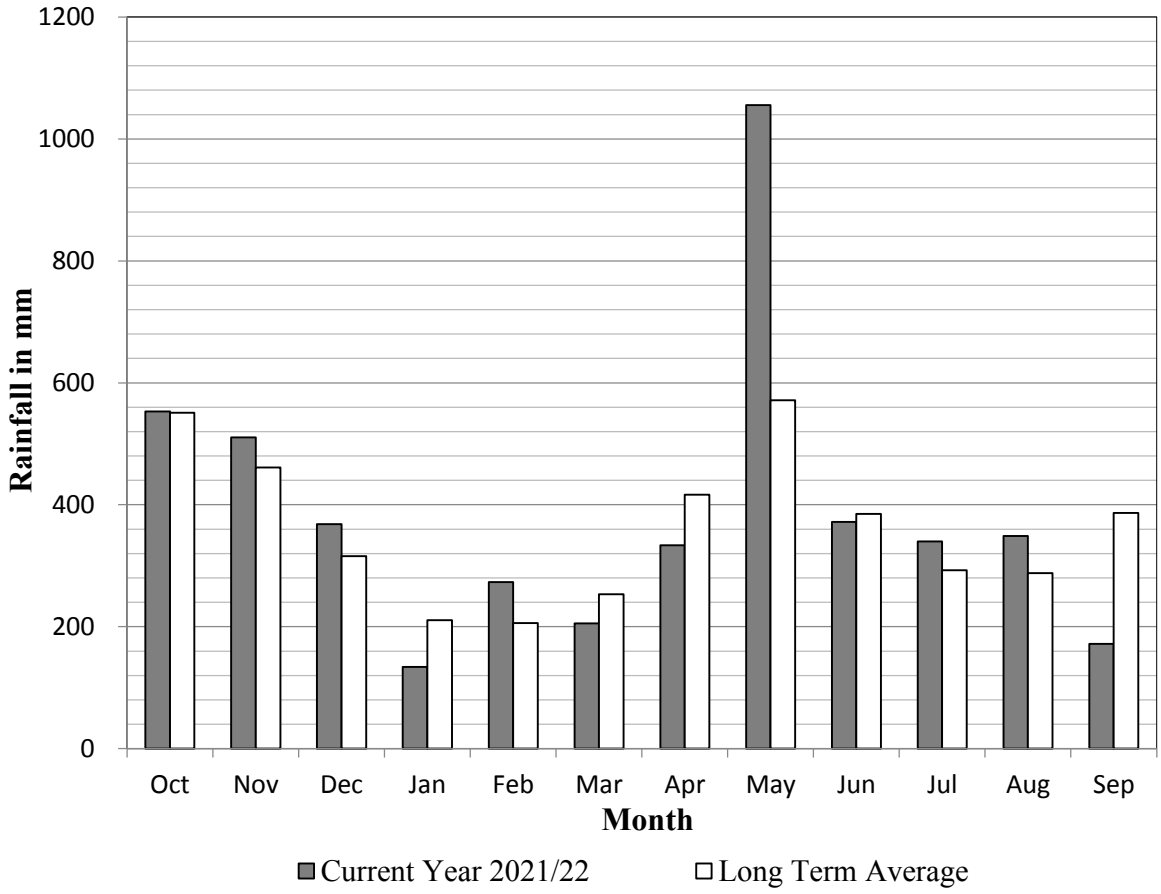

Fig. 39: Variation of Rainfall at Thawalama

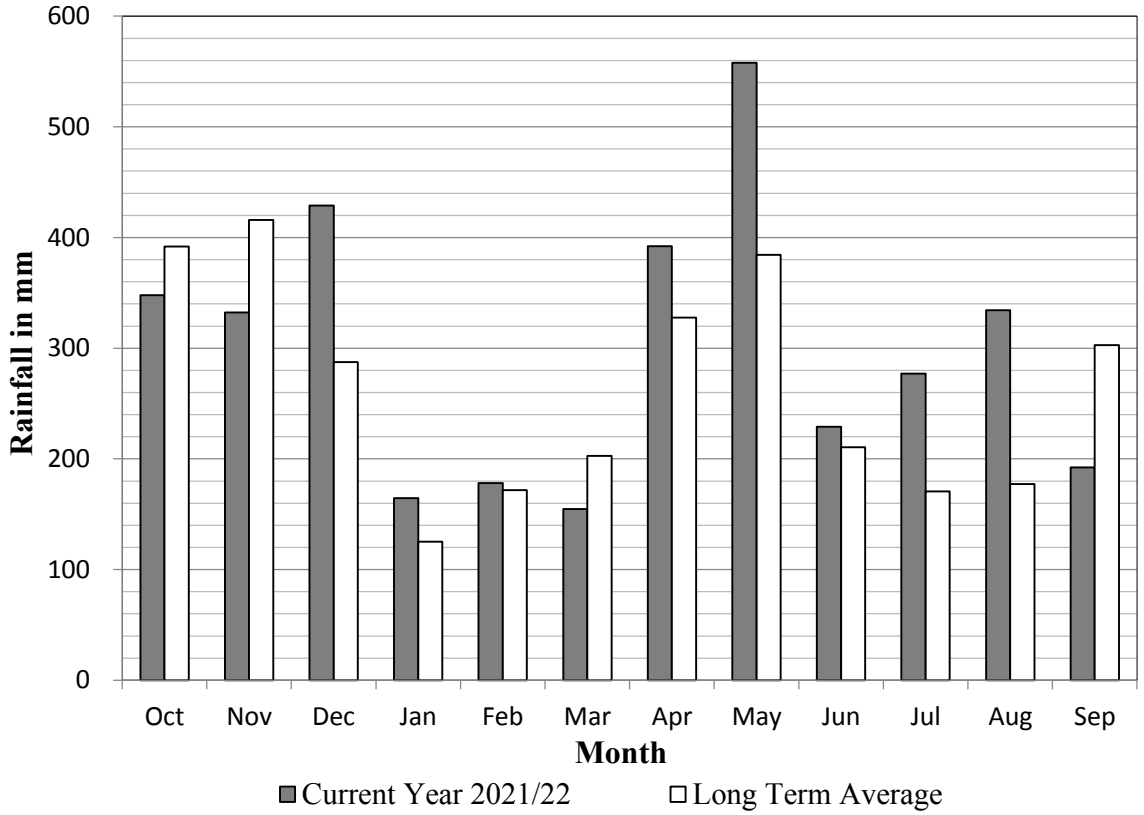

Fig. 40: Variation of Rainfall at Urawa

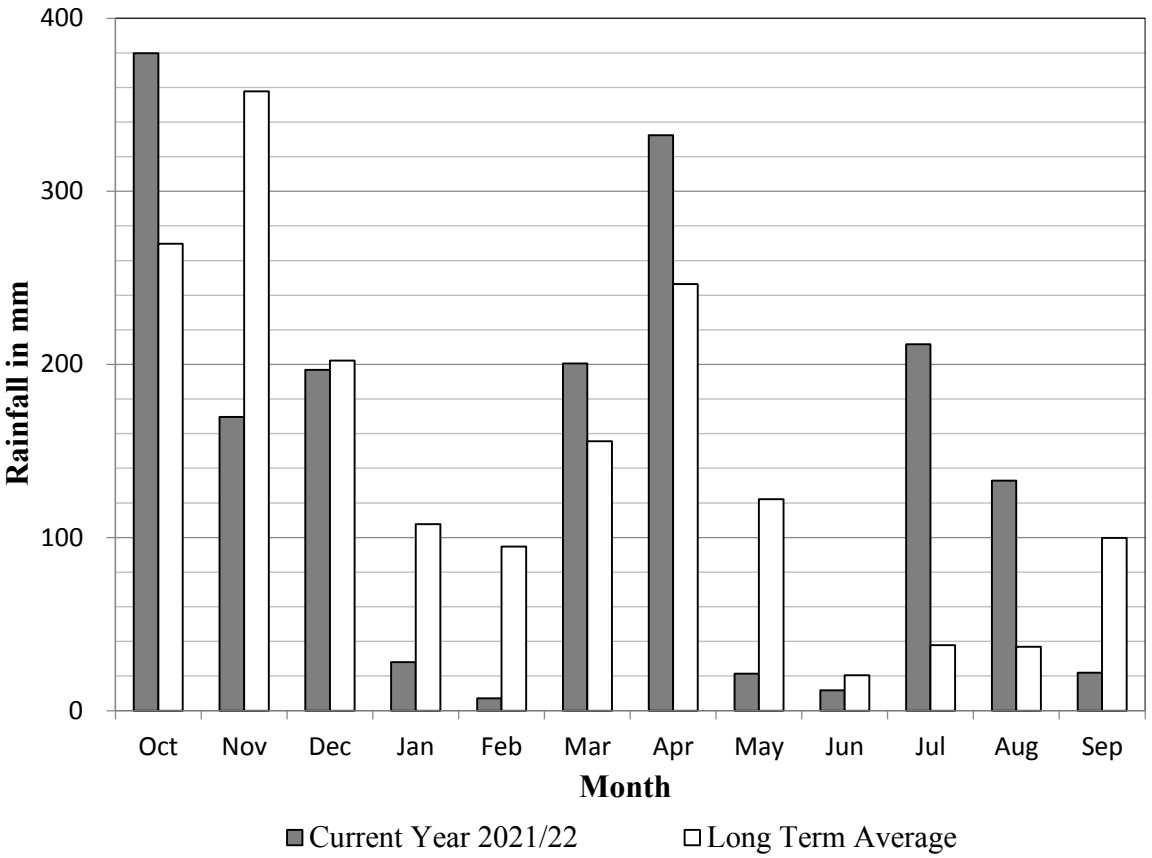

Fig. 41: Variation of Rainfall at Wellawaya

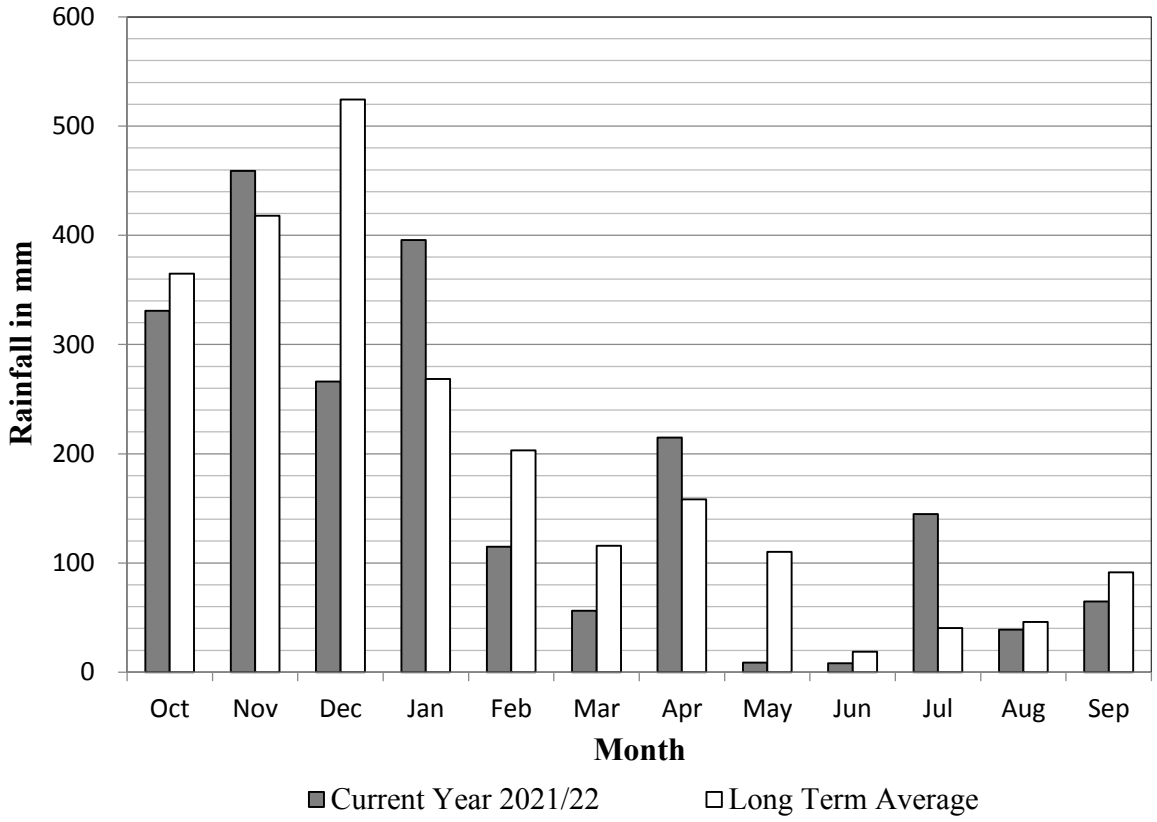

Fig. 42: Variation of Rainfall at Weraganthota

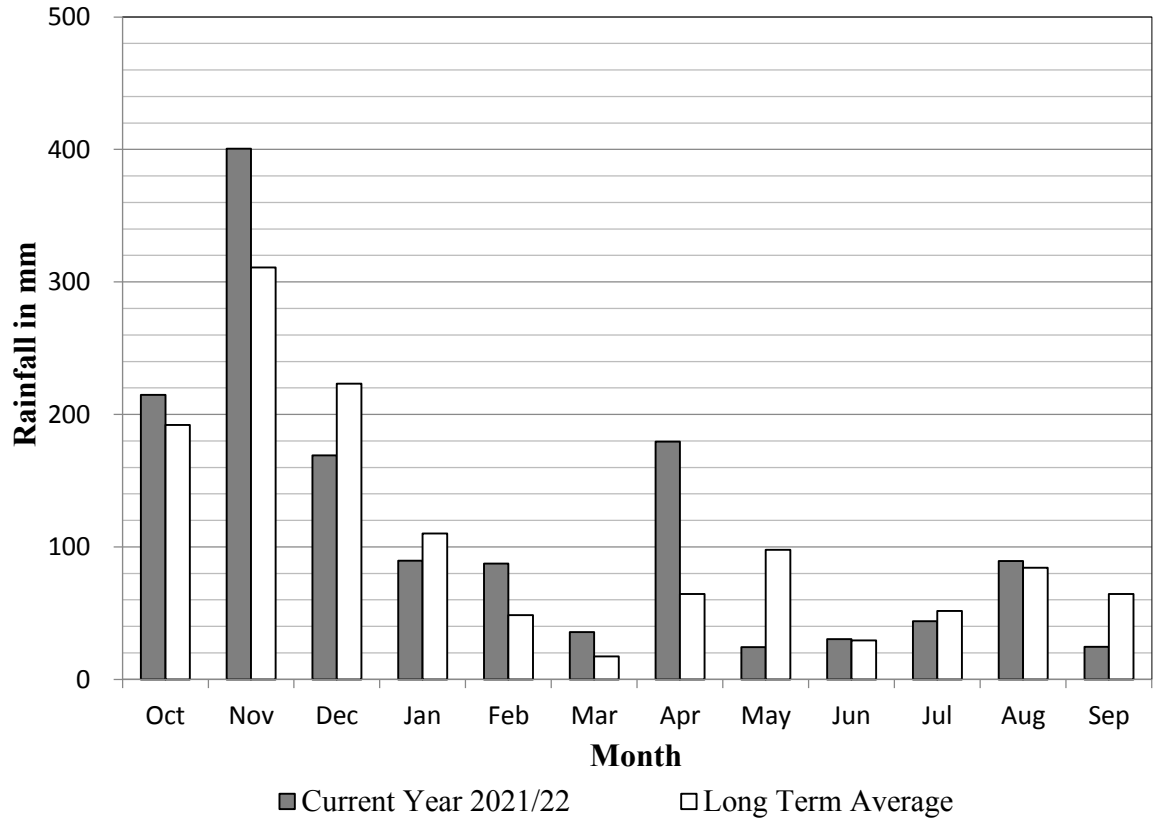

Fig. 43: Variation of Rainfall at Yakawewa

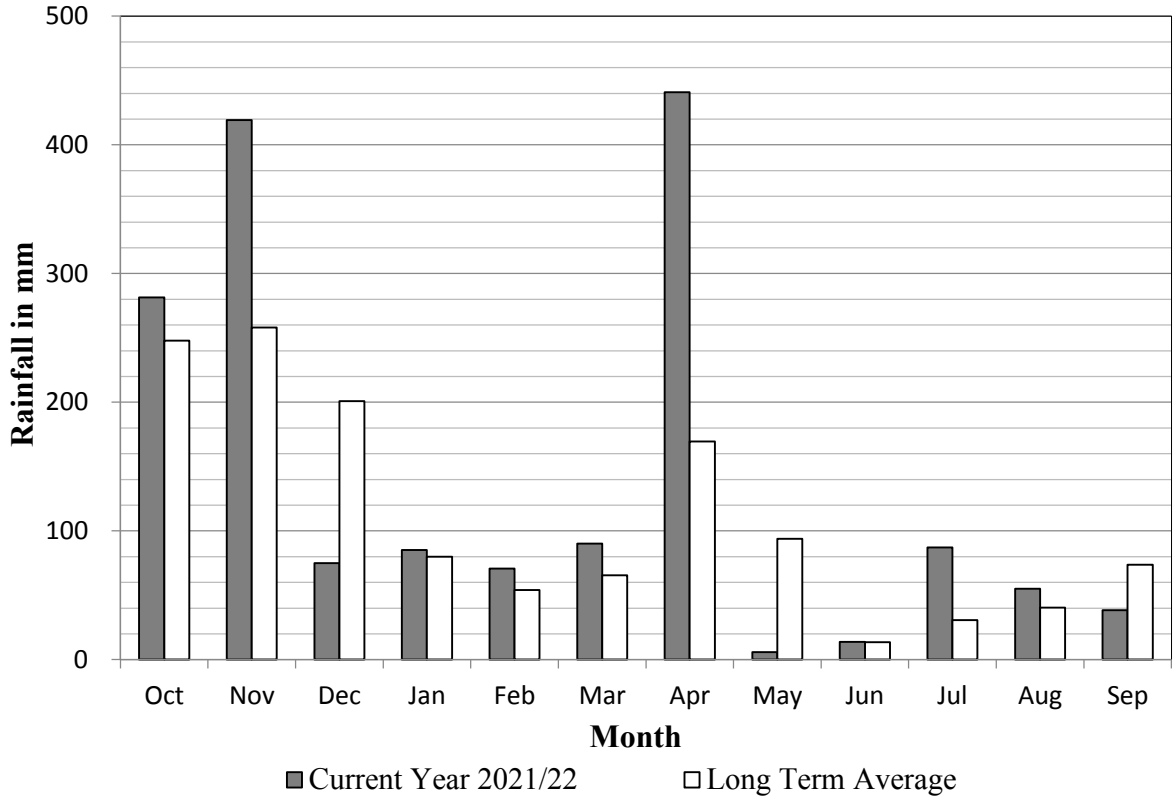

Fig. 44: Variation of Rainfall at Anuradhapura

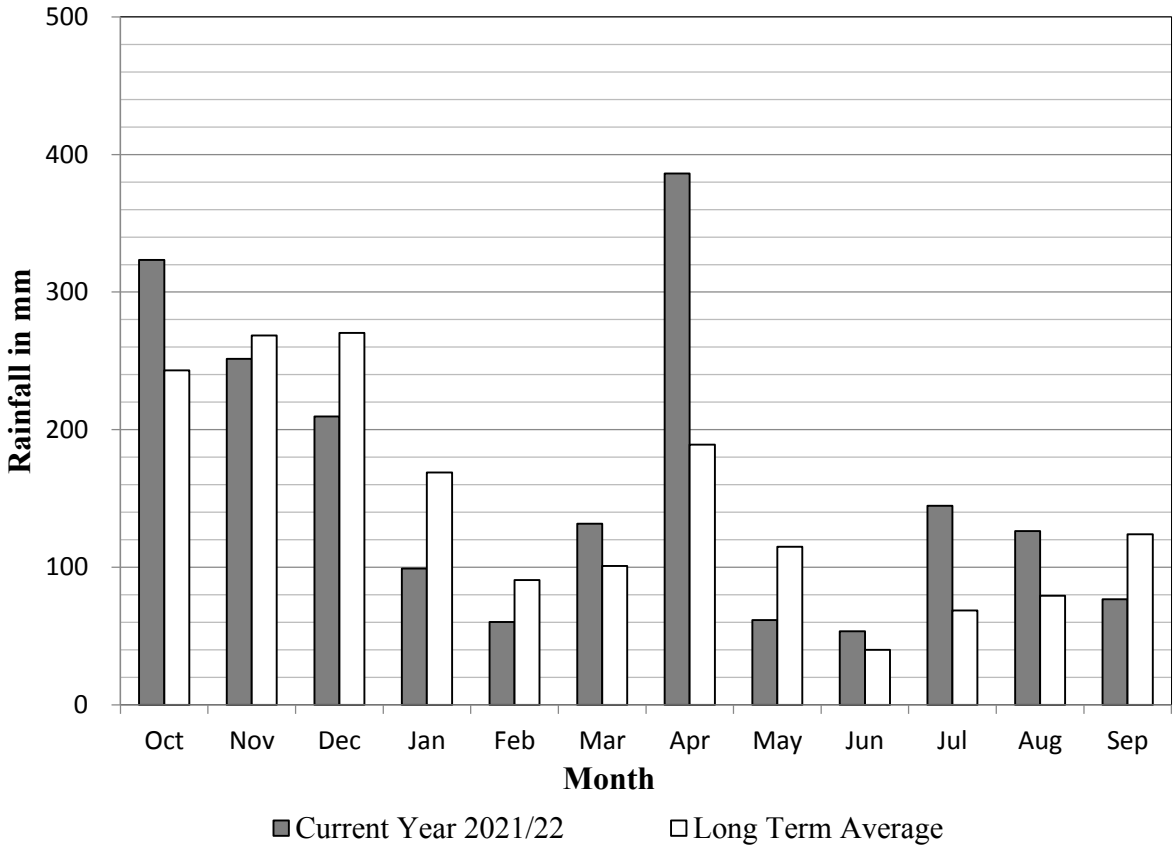

Fig. 45: Variation of Rainfall at Badulla

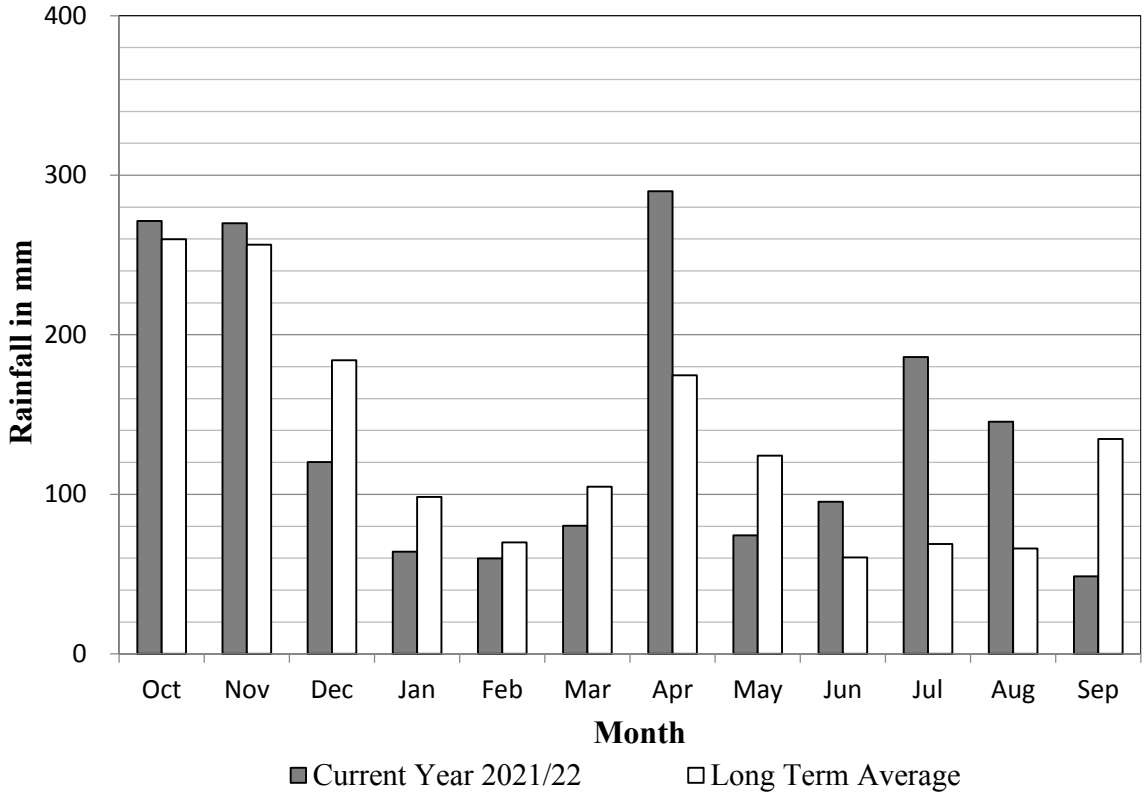

Fig. 46: Variation of Rainfall at Bandarawela

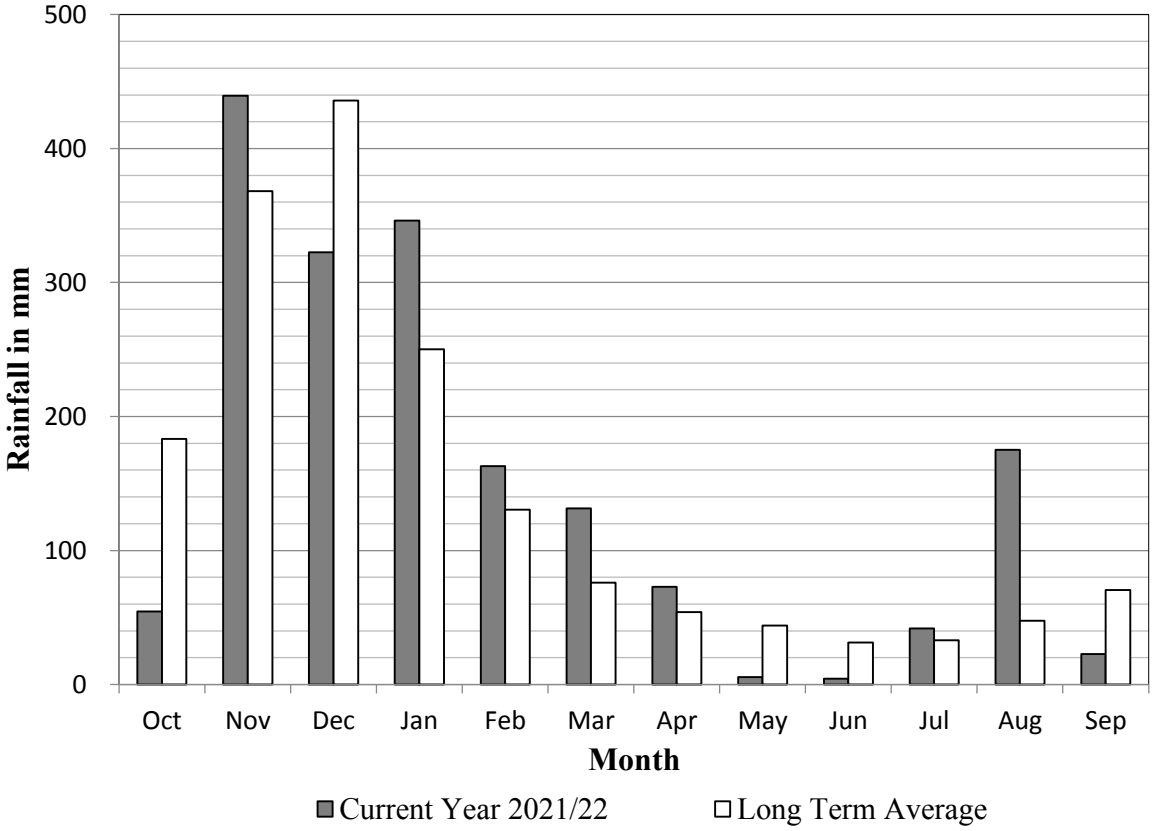

Fig. 47: Variation of Rainfall at Batticaloa

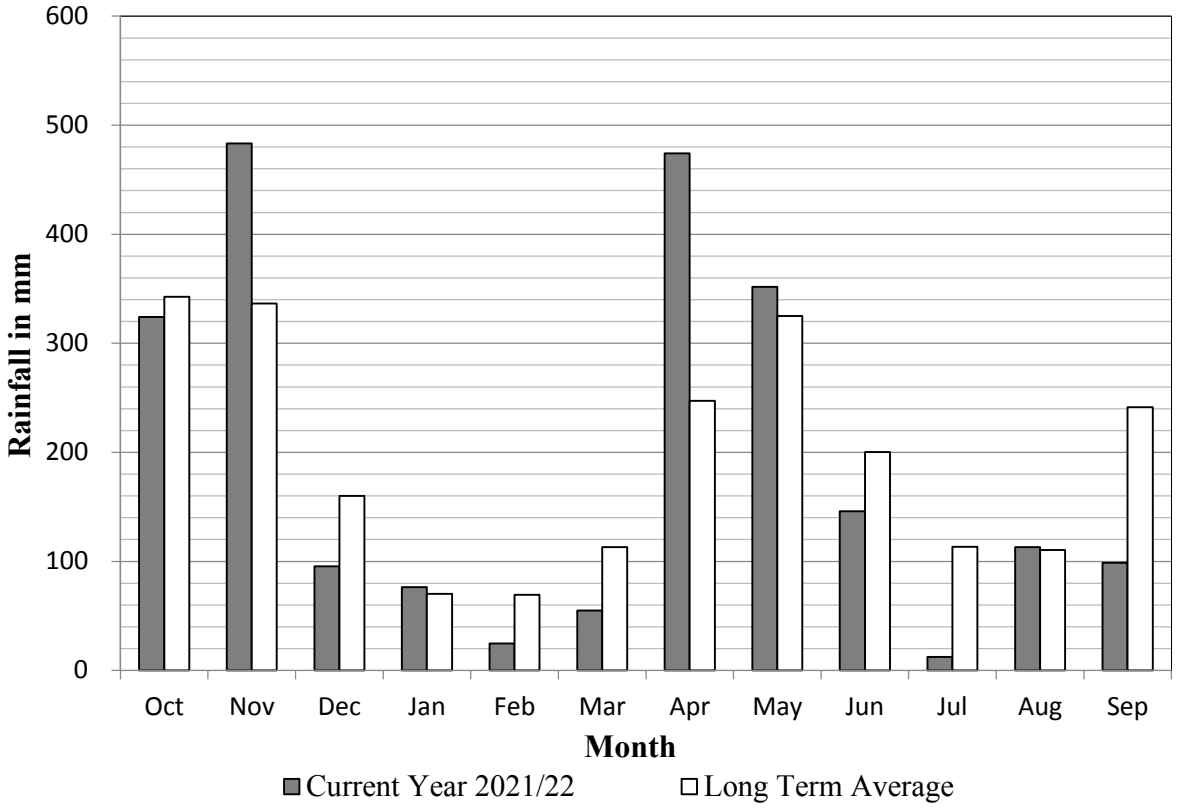

Fig. 48: Variation of Rainfall at Colombo

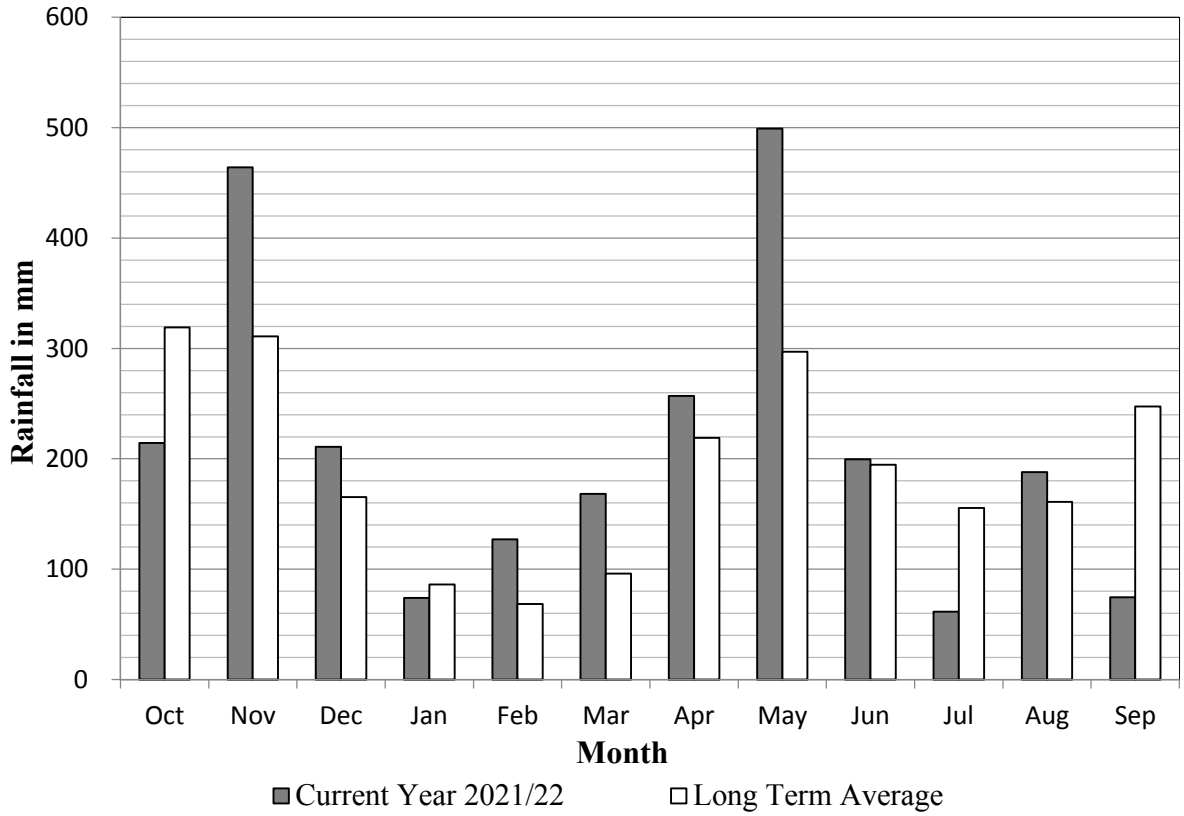

Fig. 49: Variation of Rainfall at Galle

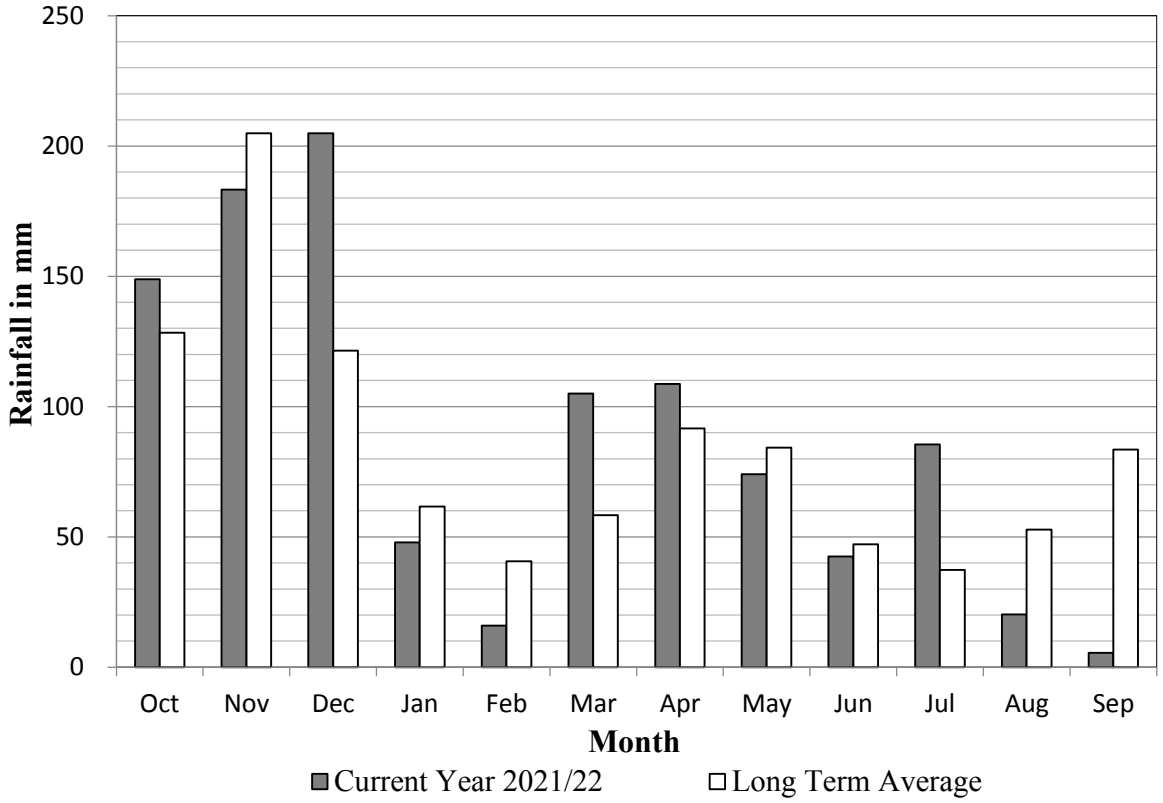

Fig. 50: Variation of Rainfall at Hambanthota

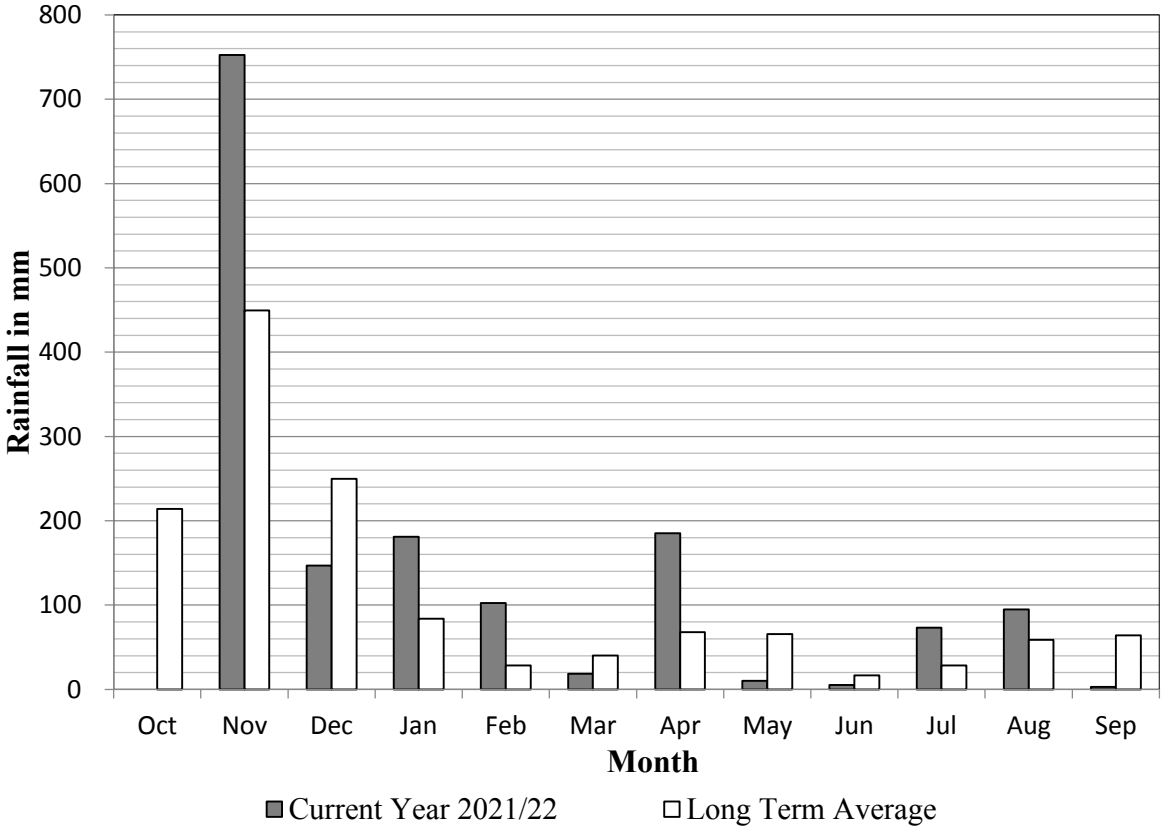

Fig. 51: Variation of Rainfall at Jaffna

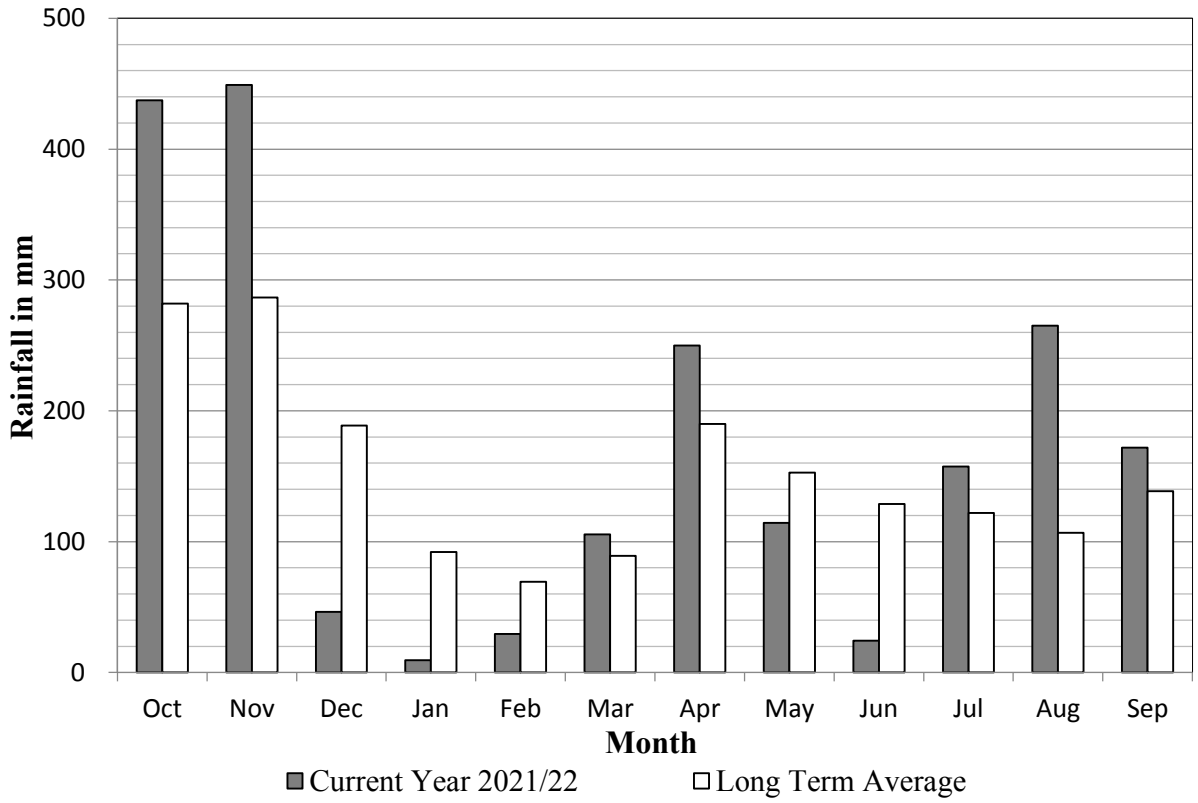

Fig. 52: Variation of Rainfall at Katugasthota

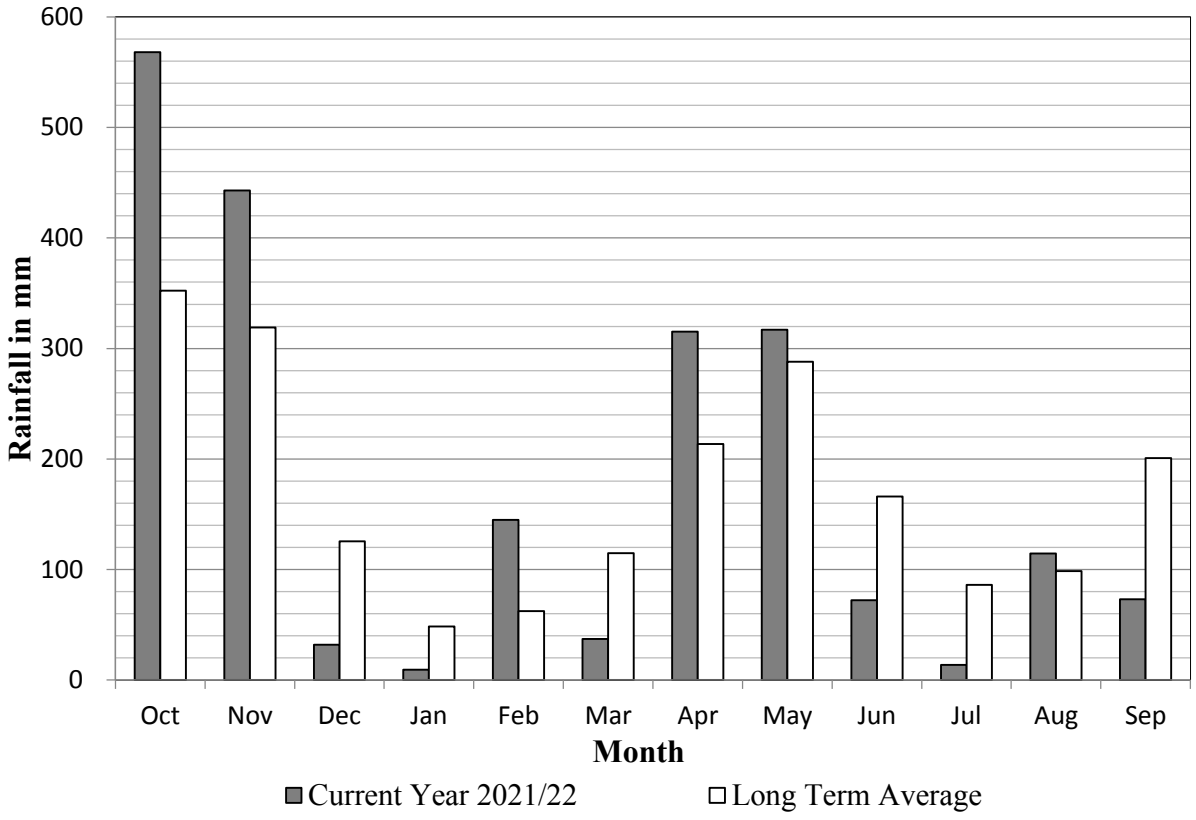

Fig. 53: Variation of Rainfall at Katunayake

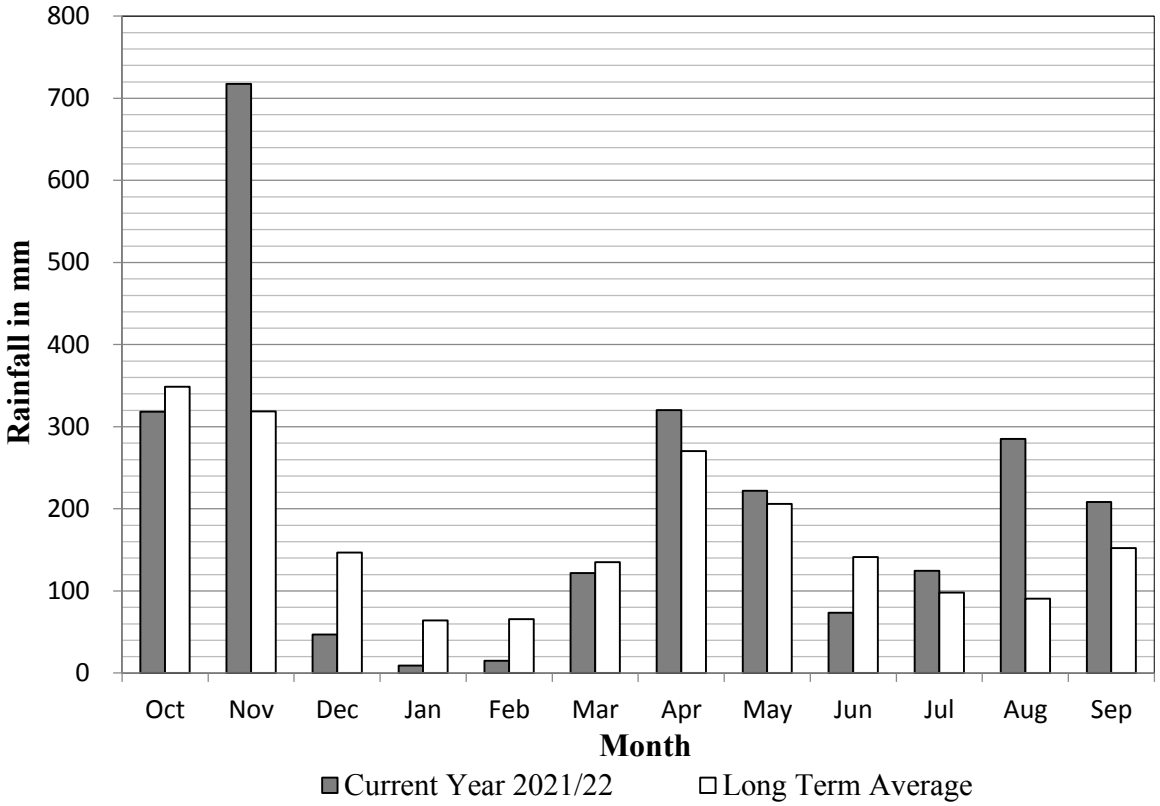

Fig. 54: Variation of Rainfall at Kurunegala

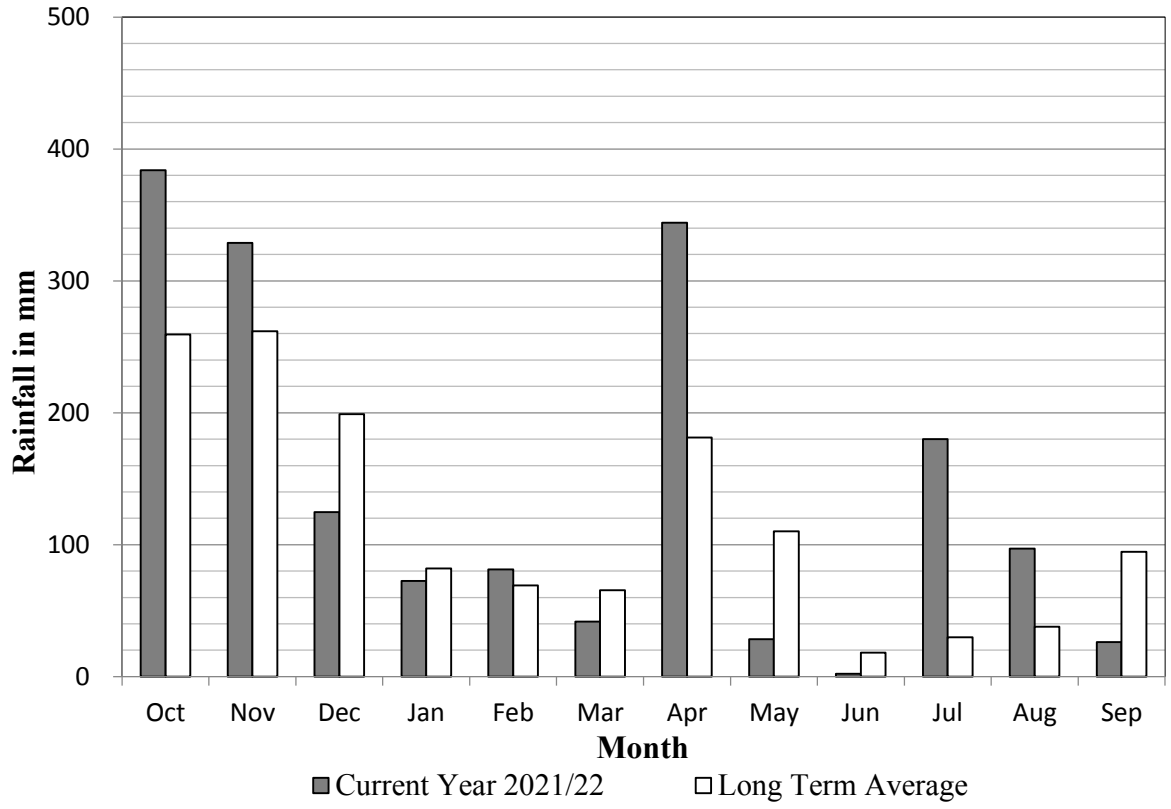

Fig. 55: Variation of Rainfall at Mahailuppallama

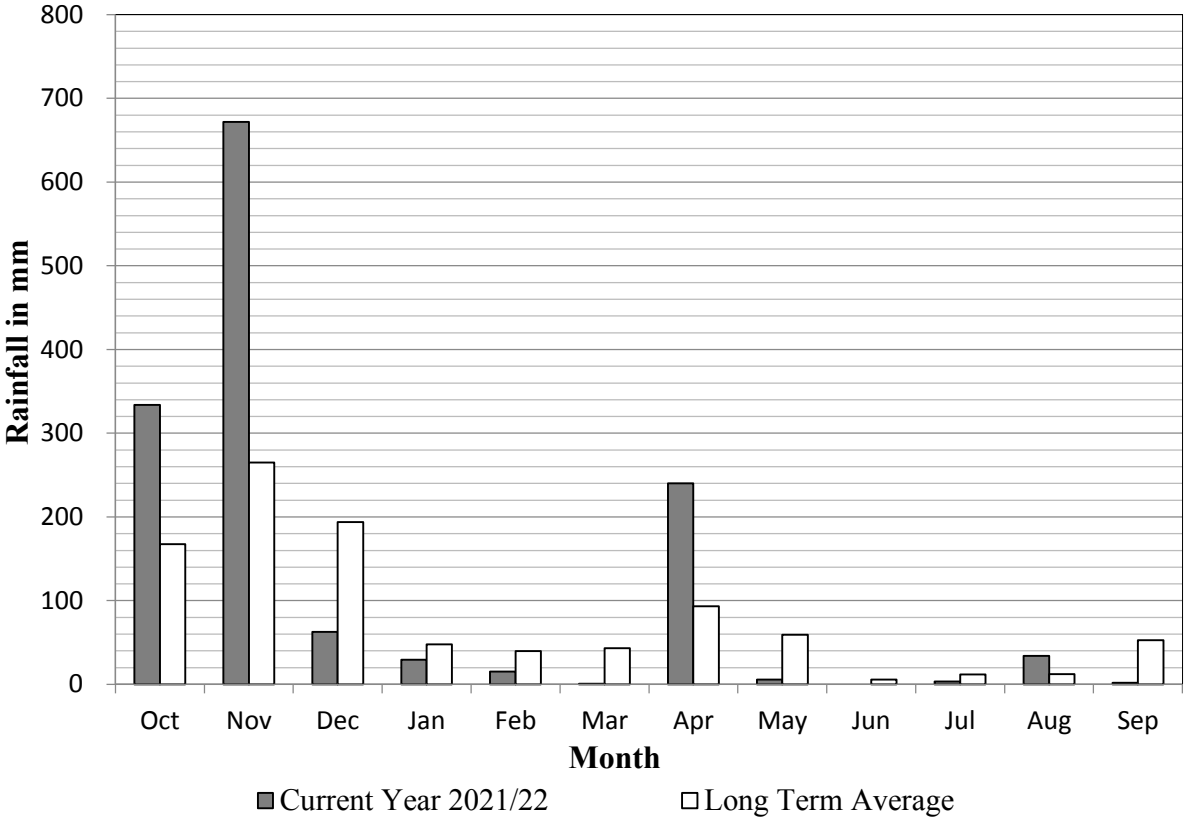

Fig. 56: Variation of Rainfall at Mannar

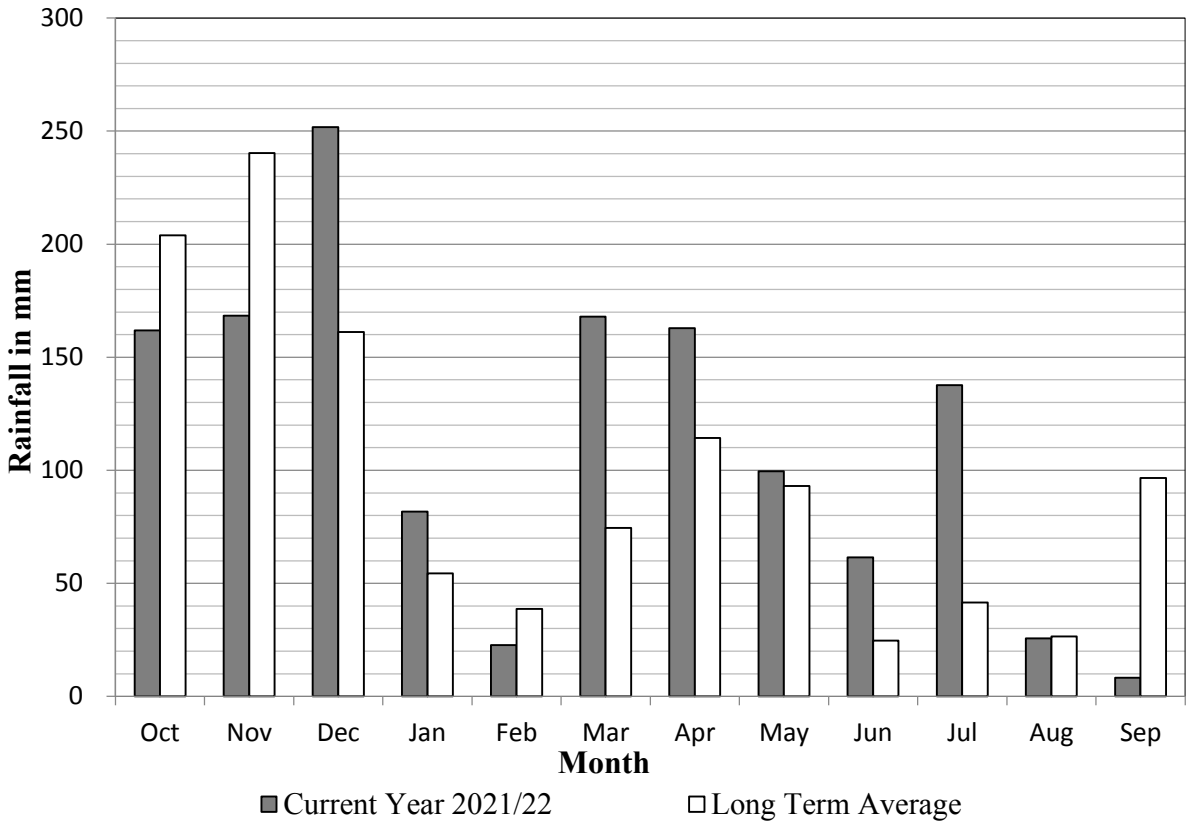

Fig. 57: Variation of Rainfall at Mattala

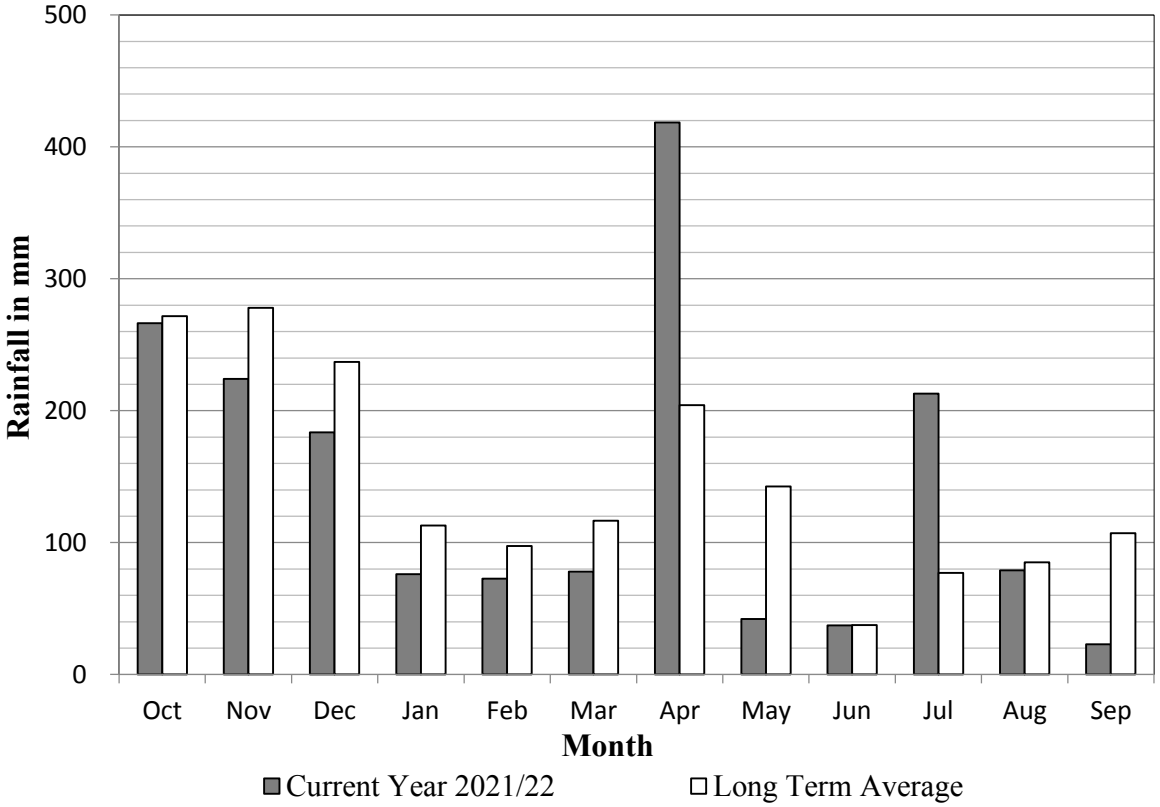

Fig. 58: Variation of Rainfall at Monaragala

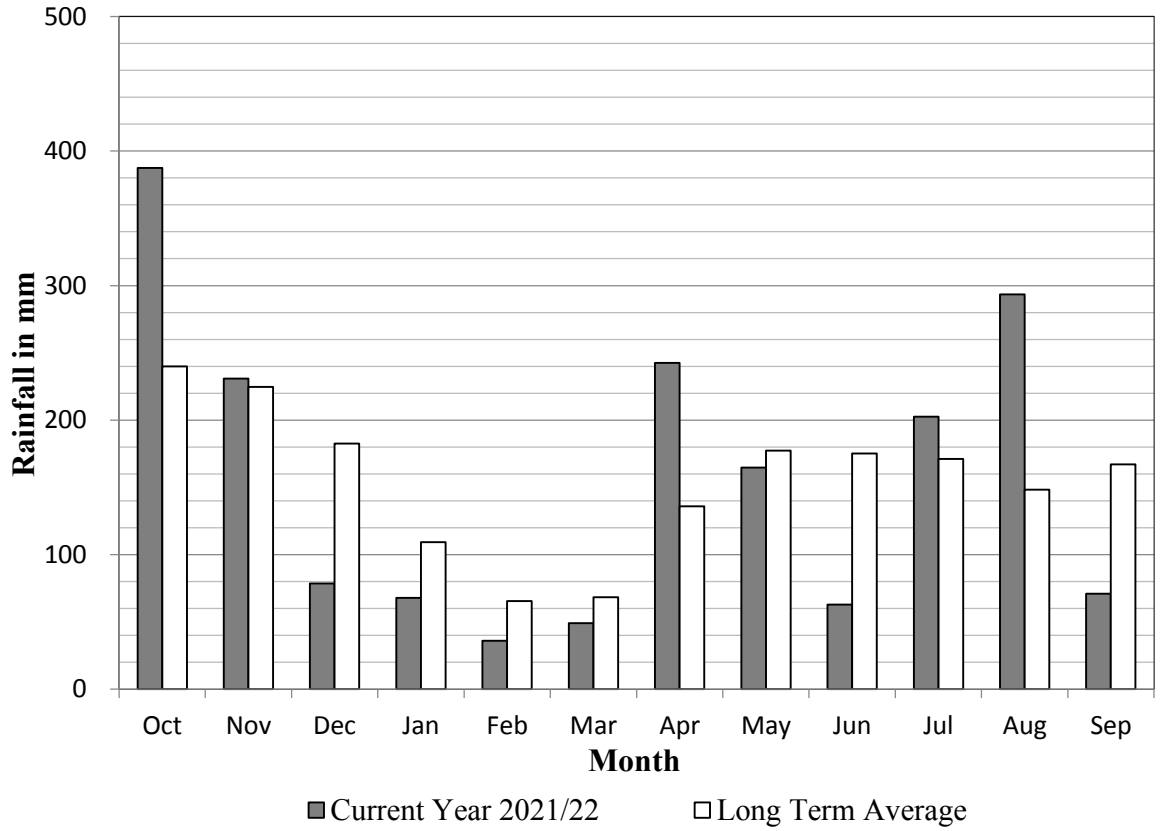

Fig. 59: Variation of Rainfall at Nuwara Eliya

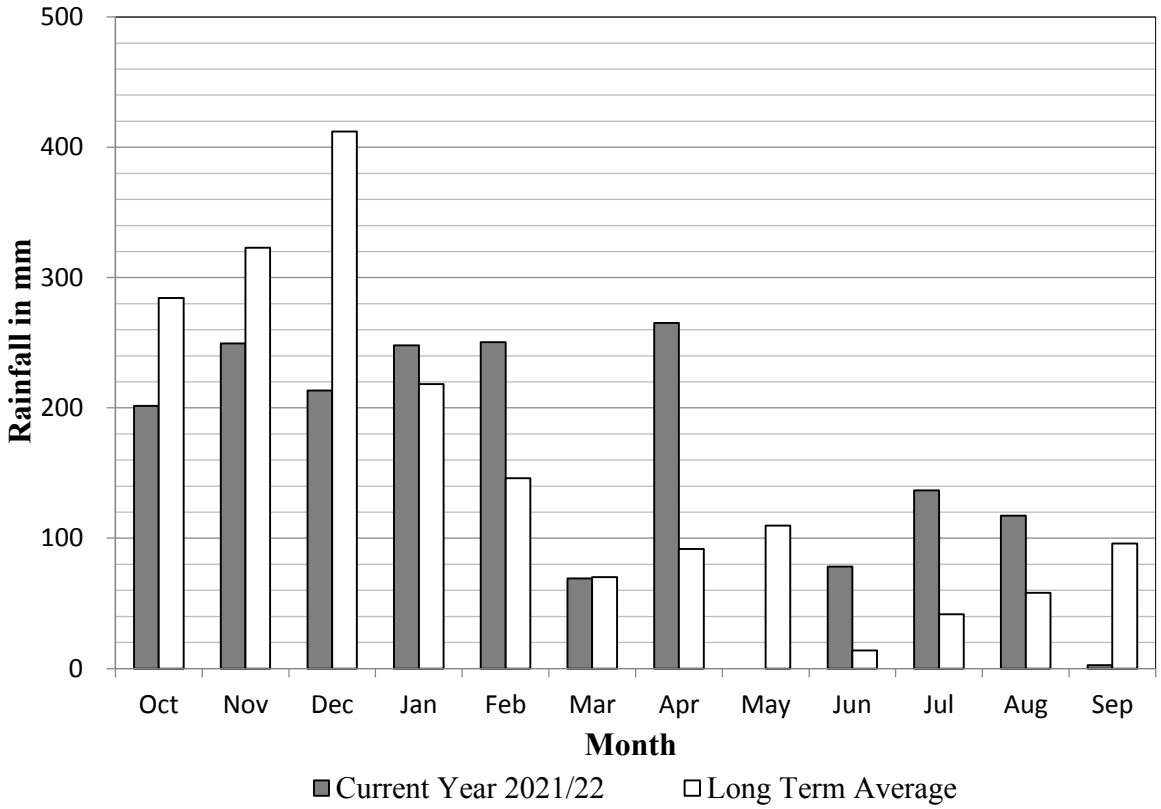

Fig. 60: Variation of Rainfall at Polonnaruwa

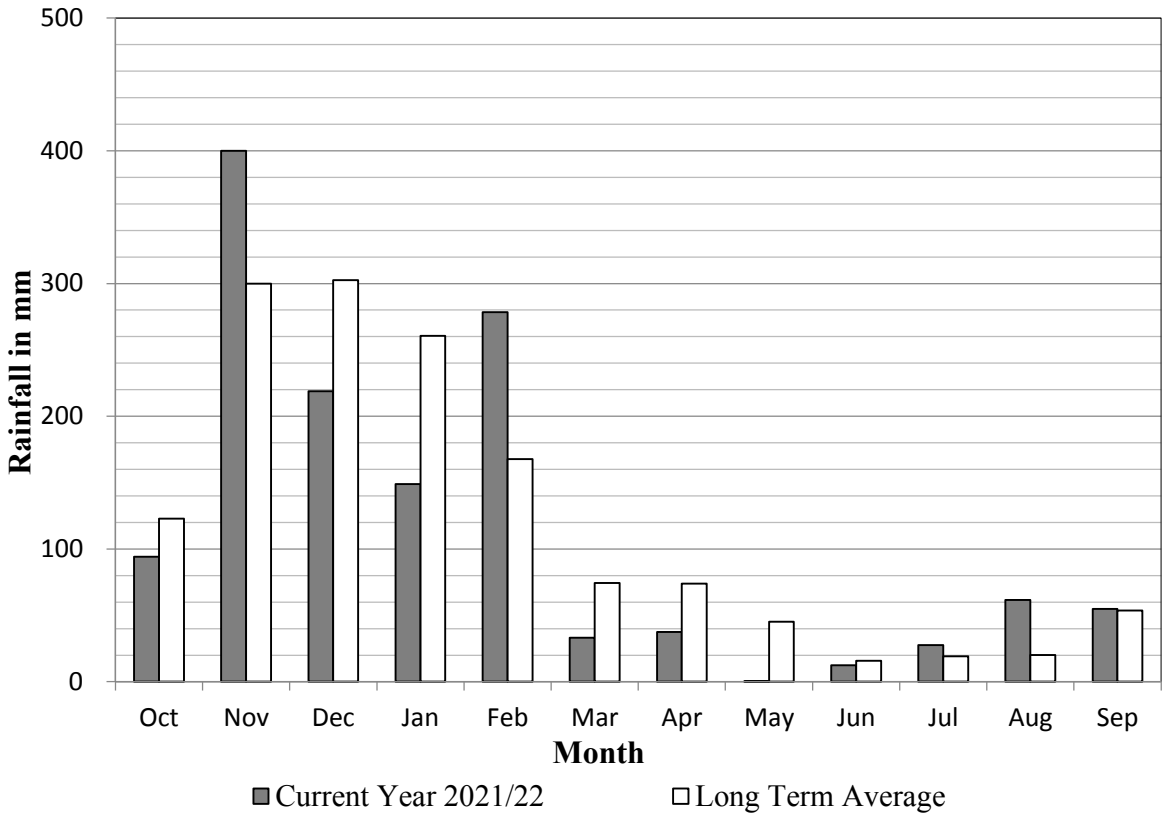

Fig. 61: Variation of Rainfall at Pothuvil

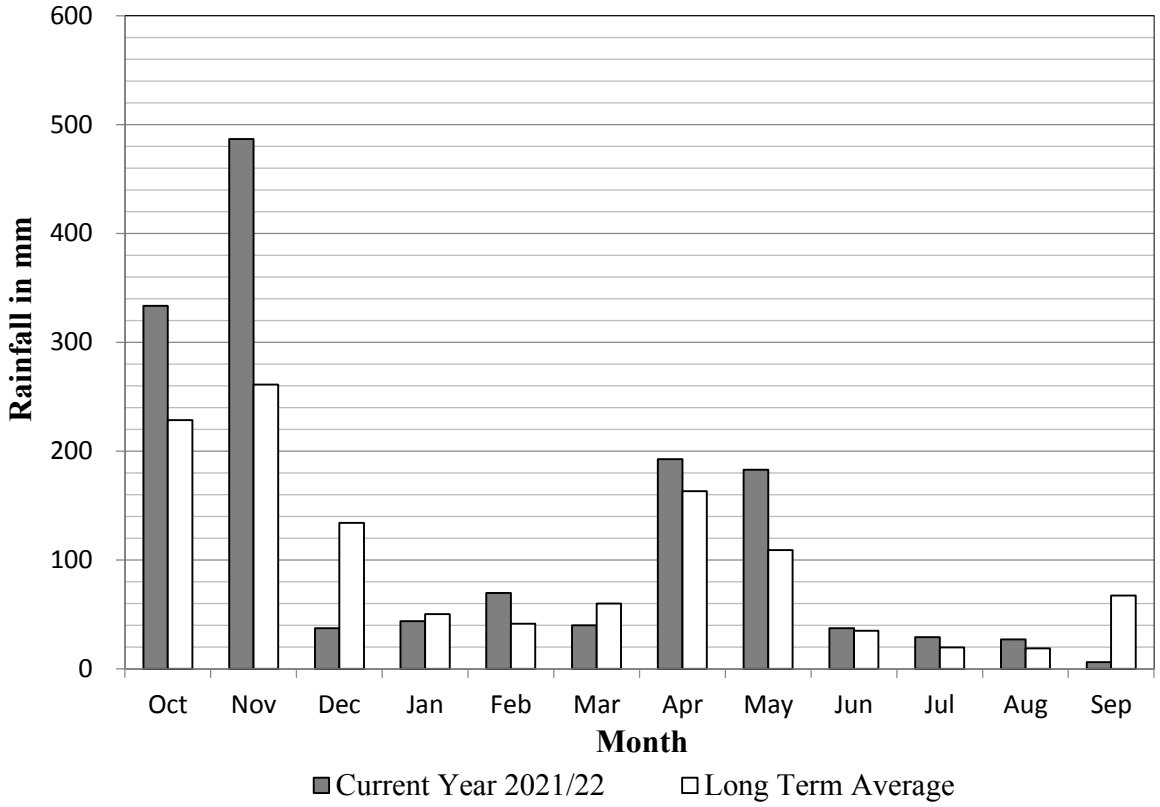

Fig. 62: Variation of Rainfall at Puttalam

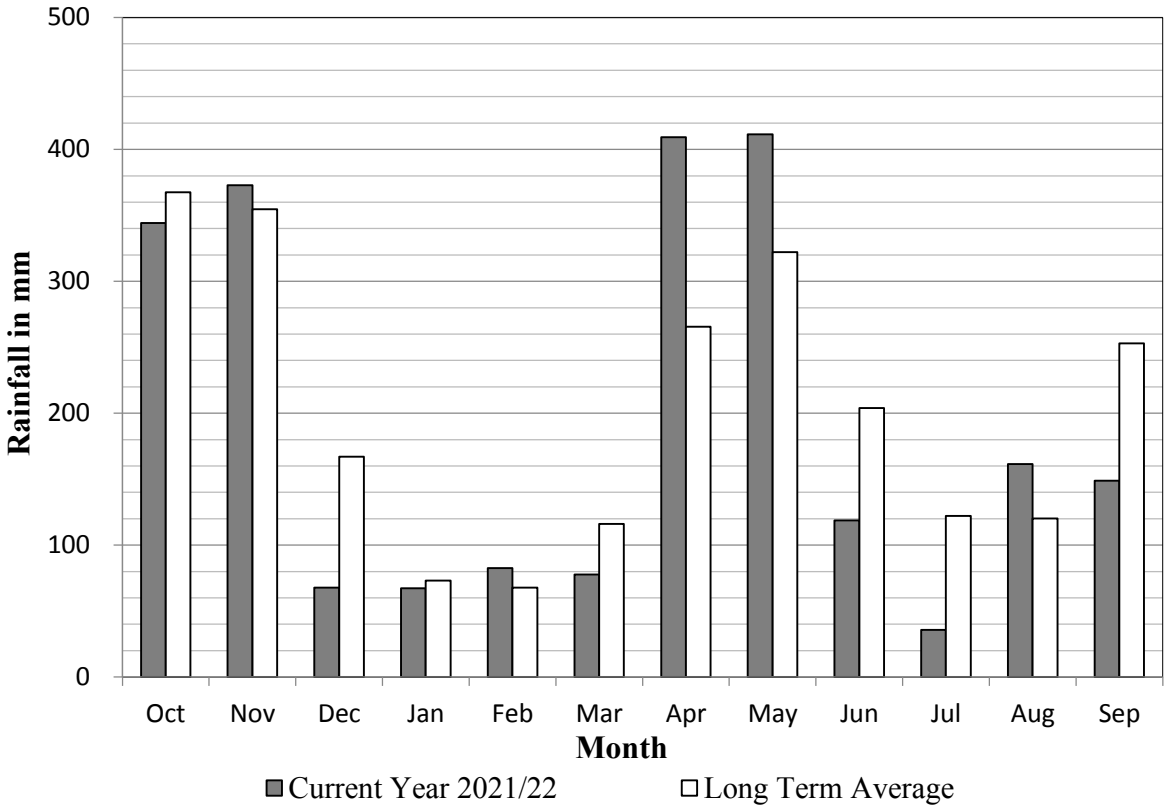

Fig. 63: Variation of Rainfall at Rathmalana

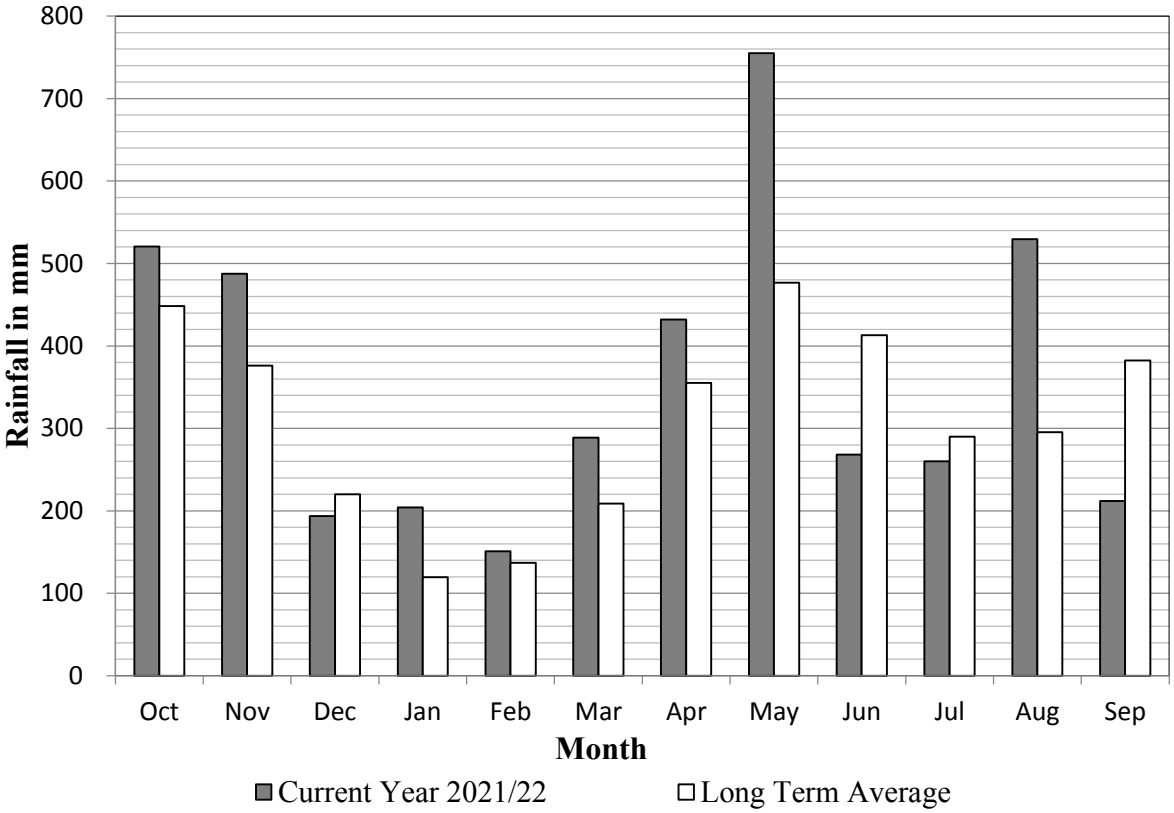

Fig. 64: Variation of Rainfall at Rathnapura

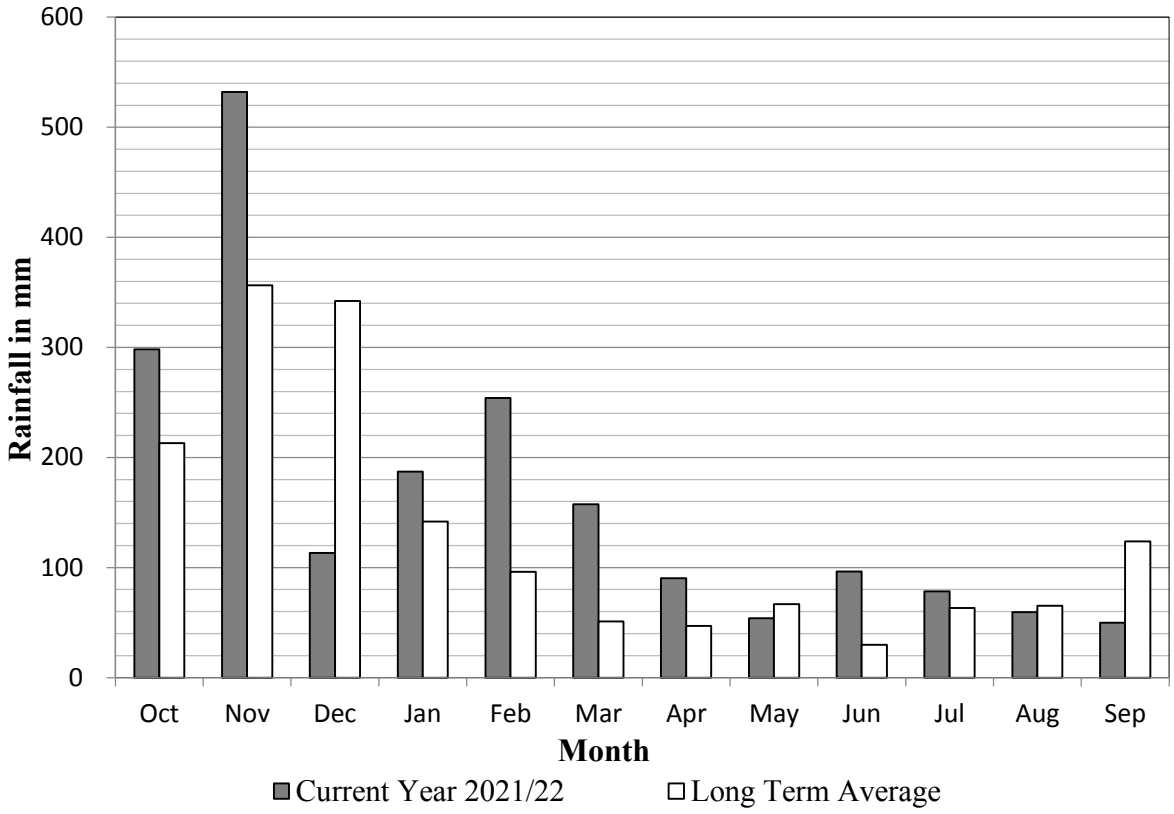

Fig. 65: Variation of Rainfall at Trincomalee

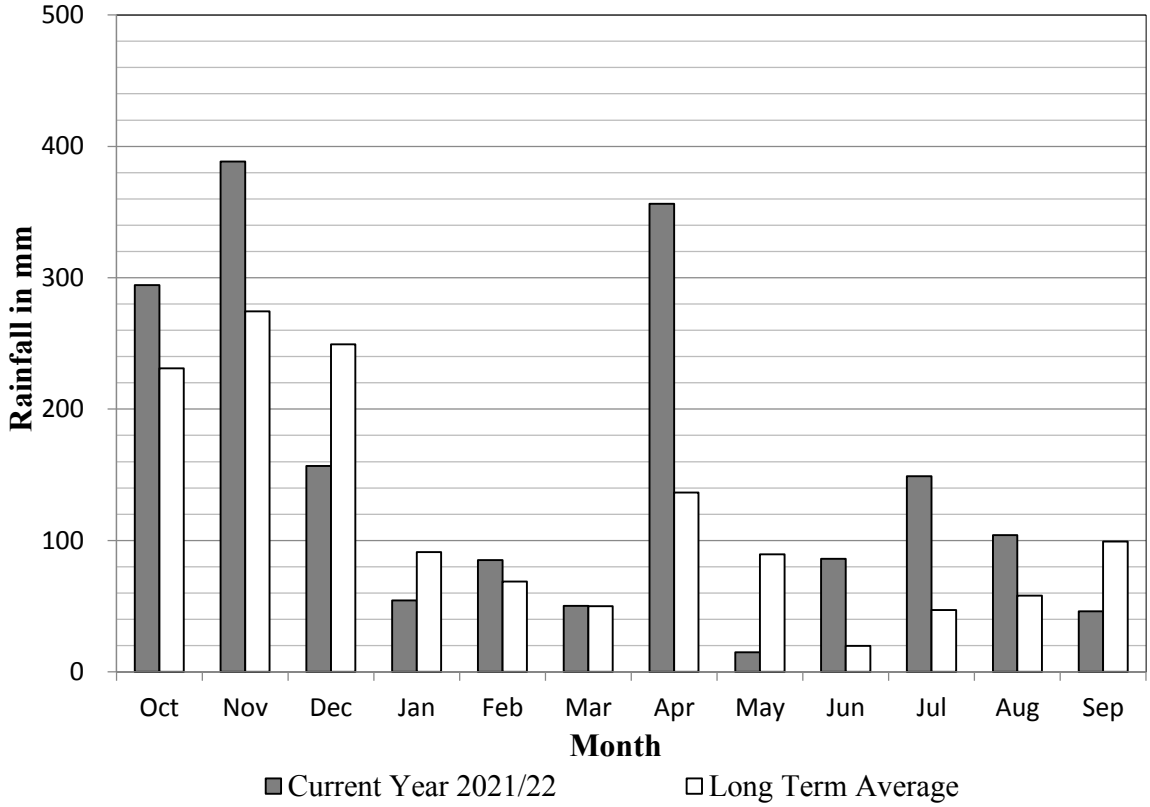

Fig. 66: Variation of Rainfall at Vavuniya

3.2.2 Spatial Variation of Rainfalls over the Island

- **NEM (North-East Monsoon) rainfall distribution**

  Overall both Wet Zone and Dry Zone especially North-Western part of the country have received higher rainfall value compared to the computed long term average value (Fig. 67 & Fig. 68).

- **SWM (South-West Monsoon) rainfall distribution**

  Overall the entire country has received a higher rainfall than the computed long-term average value (Fig. 69 & Fig. 70).

- **Annual rainfall distribution**

  Almost all the parts of the country have received higher annual rainfall than the computed long-term average value (Fig. 71 & Fig. 72).

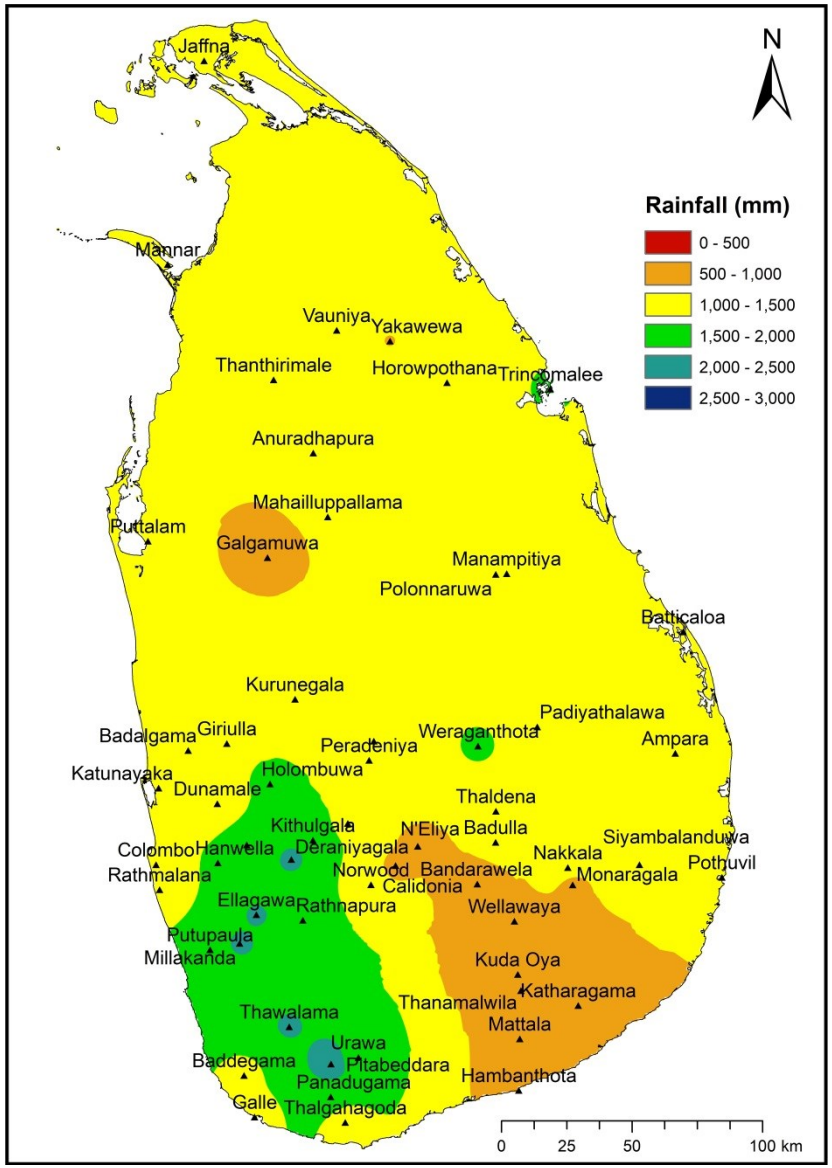

Fig. 67: NEM Rainfall Distribution – Current year 2021/22

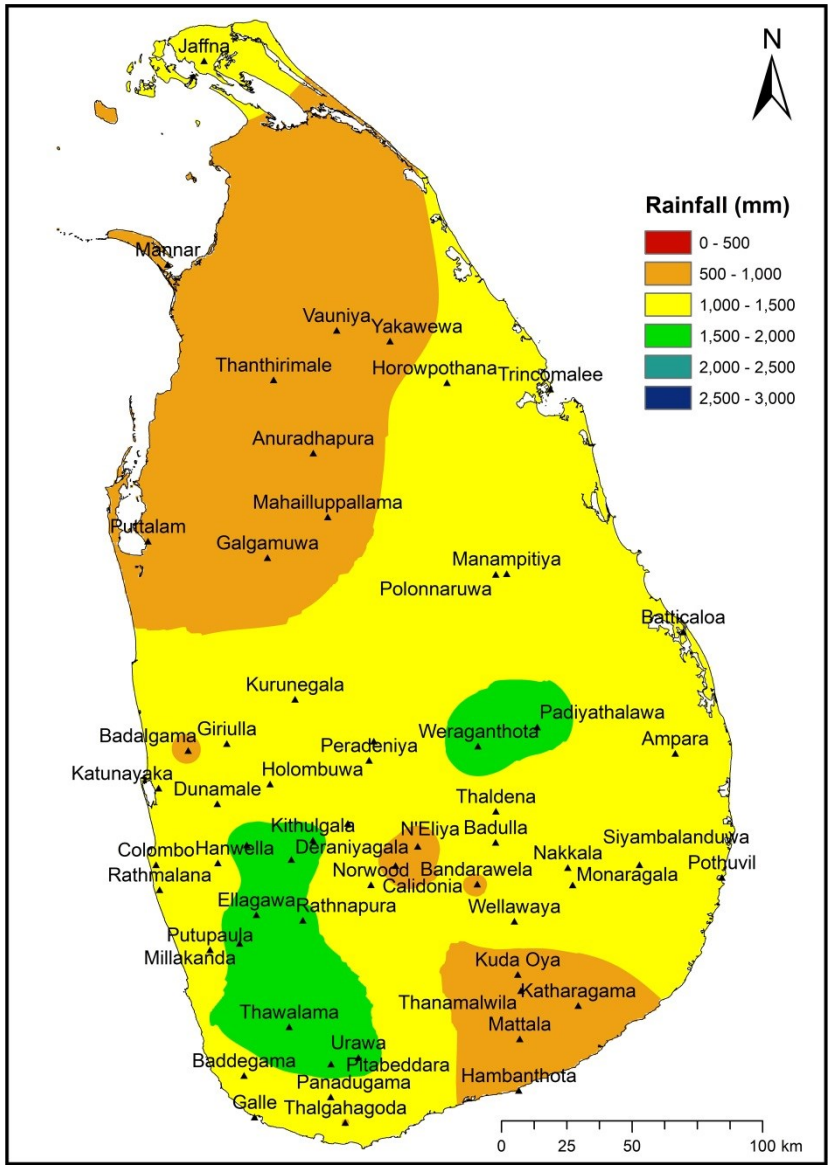

Fig. 68: NEM Rainfall Distribution – Long Term Average

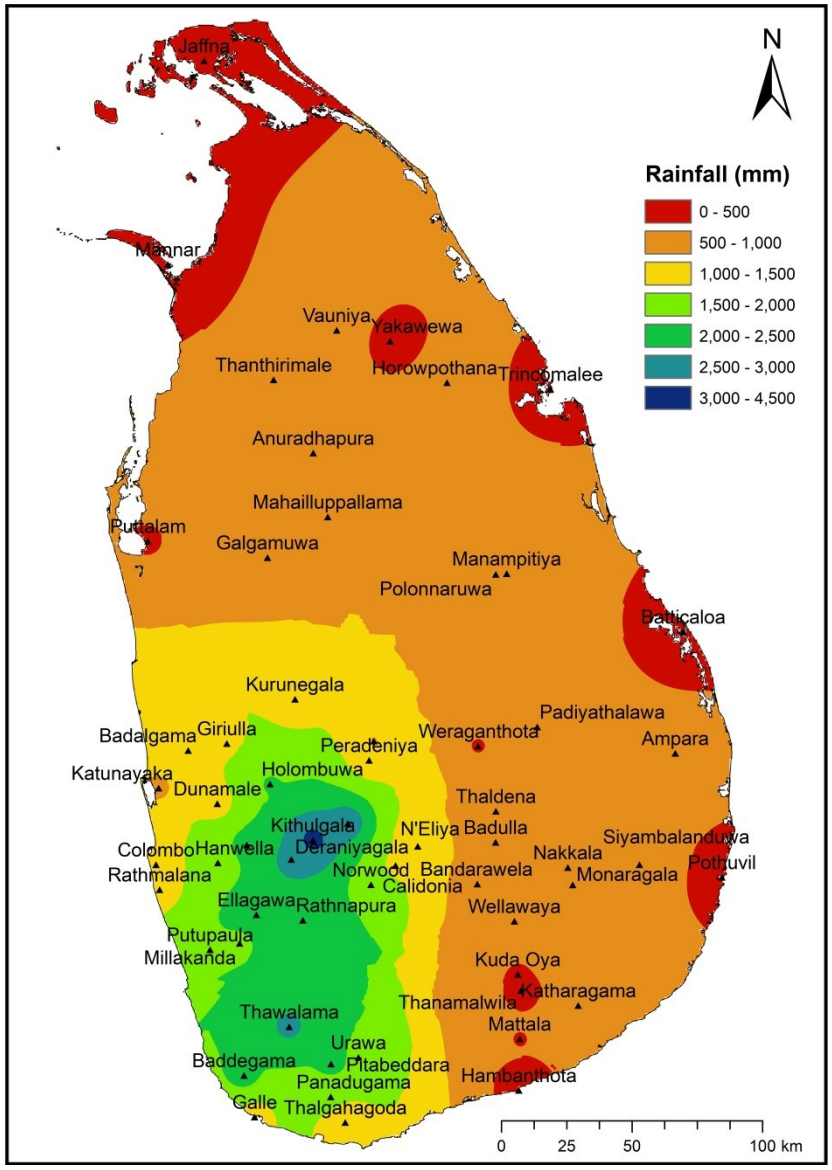

Fig. 69: SWM Rainfall Distribution – Current year 2021/22

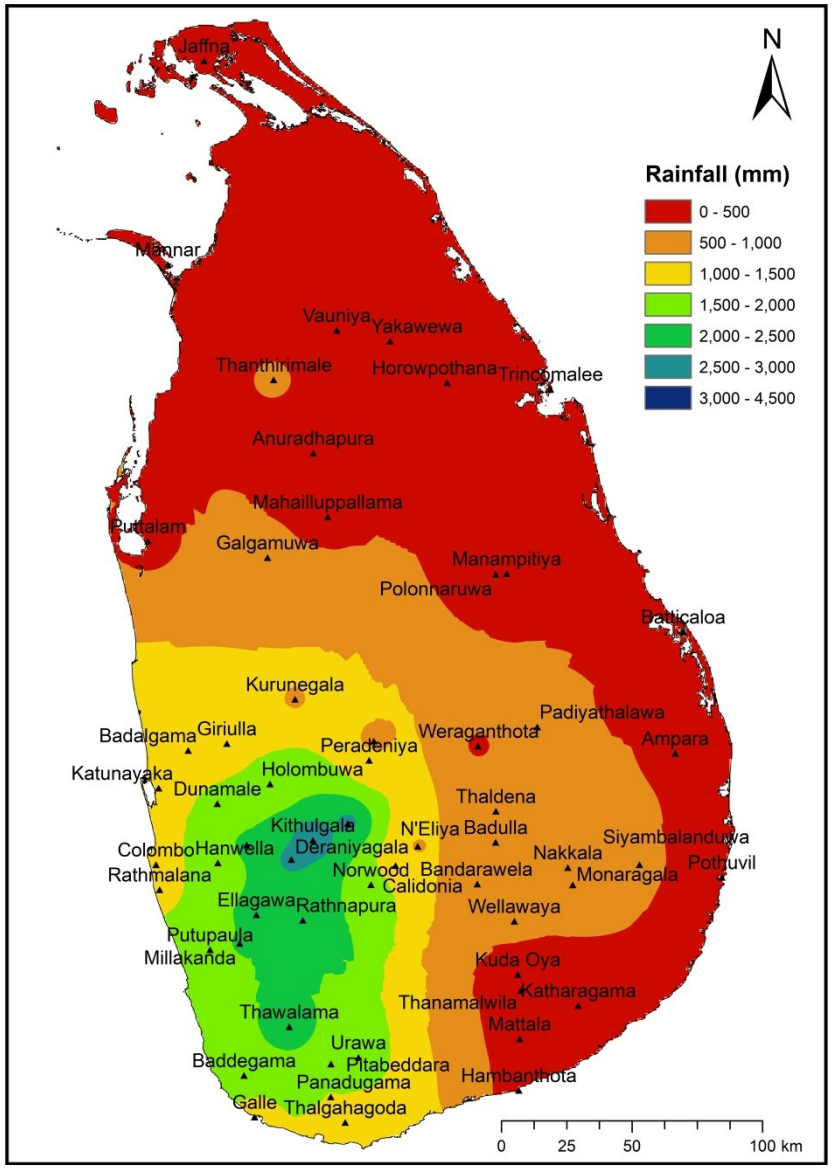

Fig. 70: SWM Rainfall Distribution – Long Term Average

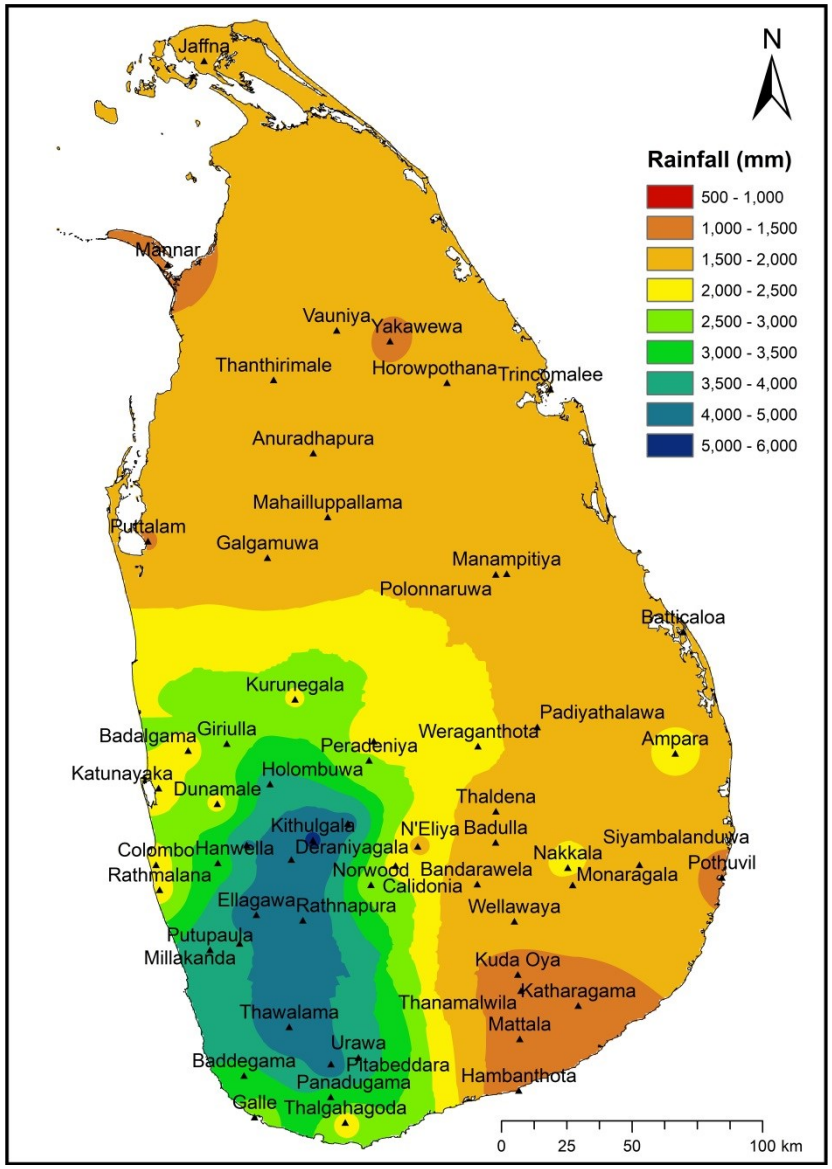

Fig. 71: Annual Rainfall Distribution – Current year 2021/22

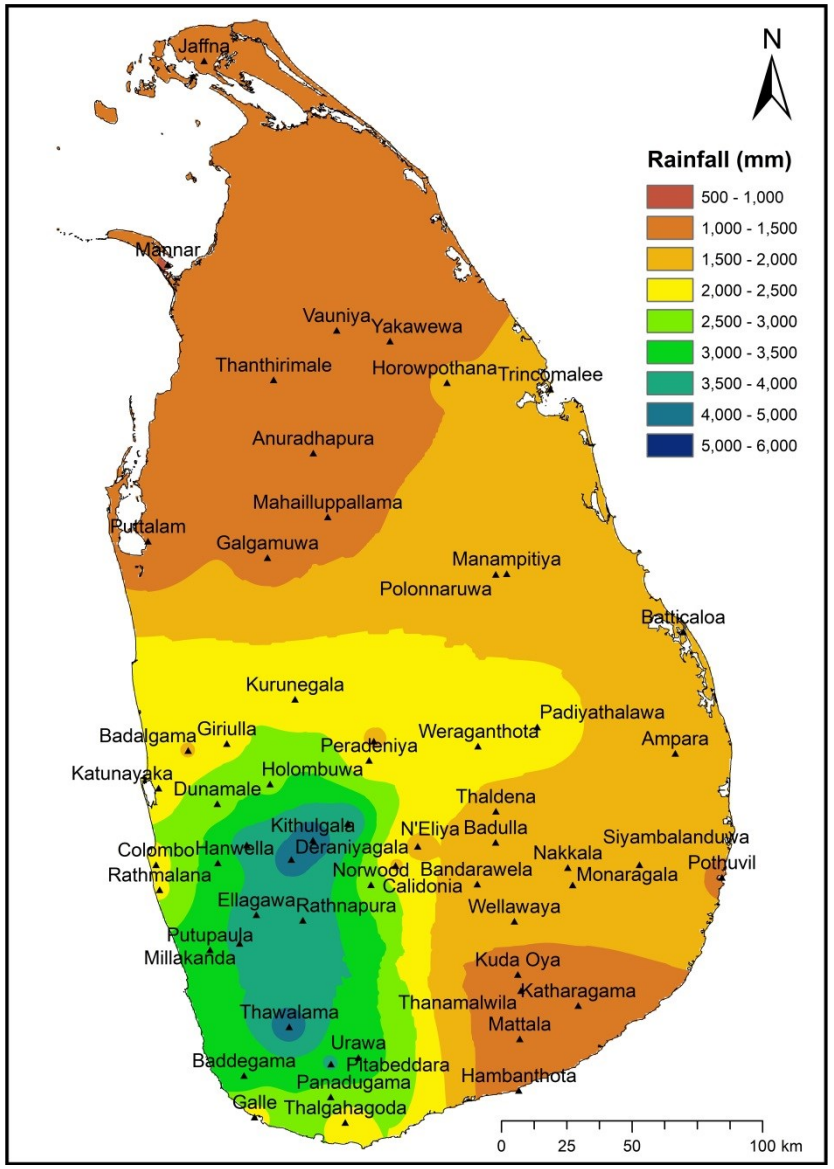

Fig. 72: Annual Rainfall Distribution – Long Term Average

3.3 Rainfall Intensities

Maximum Depth of Rainfall for given durations recorded at 37 stations maintained by Hydrology and Disaster Management Division of the Irrigation Department are given in Table 5.

Table 5: Maximum depth of Rainfall in mm - 2021/22

No	Station	Duration in Hours								
		1	3	6	12	24	48	72	96	120
1	Ampara	59	95	102	105	111	159	166	181	198
2	Badalgama	61	72	72	110	118	176	246	265	273
3	Baddegama	81	105	109	146	229	246	259	272	286
4	Deraniyagala	52	86	95	124	166	209	245	284	337
5	Dunamale	43	70	88	116	143	181	205	213	241
6	Ellagawa	103	117	122	131	196	213	221	279	346
7	Galgamuwa	56	71	73	73	74	121	127	158	185
8	Giriulla	82	99	134	152	160	207	243	275	288
9	Glencourse	84	89	115	121	187	203	221	242	275
10	Hanwella	83	112	115	138	187	212	231	246	254
11	Holombuwa	68	103	115	119	168	201	238	272	299
12	Horowpathana	53	95	97	110	113	137	169	178	204
13	Katharagama	47	74	87	92	118	122	135	167	219
14	Kithulgala	66	92	99	171	214	277	340	383	399
15	Kudaoya	63	85	85	86	93	105	122	126	146
16	Magura	78	105	143	226	226	236	236	294	308
17	Manampitiya	69	84	128	132	180	209	223	231	242
18	Millakanda	81	139	145	162	197	232	234	242	321
19	Moraketiya	62	64	68	71	98	124	154	179	185
20	Nakkala	81	87	105	105	109	120	166	176	181
21	Nawalapitiya	62	117	148	223	292	373	489	574	607
22	Norwood	42	72	87	116	137	170	215	259	284
23	Padiyathalawa	52	77	77	77	84	110	135	184	199
24	Panadugama	87	103	119	119	132	145	152	159	182
25	Peradeniya	41	76	89	117	124	146	176	219	246
26	Pitabeddara	114	147	152	182	276	283	301	313	322
27	Putupaula	88	105	134	147	230	249	268	278	303
28	Rathnapura	48	86	123	142	199	220	275	302	391
29	Siyambalanduwa	65	117	140	140	140	140	141	144	178
30	Taldena	52	71	72	72	72	79	93	119	142
31	Thalgahagoda	63	75	85	94	98	133	143	190	224
32	Thanamalwila	97	111	117	117	118	125	142	164	164
33	Thanthirimale	62	102	104	104	104	116	136	150	169
34	Thawalama	75	105	134	178	181	212	217	254	271
35	Urawa	77	128	135	150	206	229	261	269	281
36	Wellawaya	68	122	123	123	139	146	146	169	235
37	Weraganthota	55	77	82	82	98	140	169	197	237

3.4 Evaporation and Evapotranspiration

Pan Evaporation data collected from Irrigation Department, Department of Meteorology, Rubber Research Institute (Agalawathatha) and Sugar factories (Pelwaththa, Sewanagala) are summarized in Table 6. Also Table 7 to Table 14 show monthly Reference Evapotranspiration (ETo) calculated by Hydrology and Disaster Management Division using micro-meteorological data obtained from Institutes mentioned above.

Out of 36 locations, **Bandirippuwa** shows the highest Annual Pan Evaporation (1932mm) in 2021/22 water year while **Pelwatta** shows the corresponding highest figure (2069mm) in long term average for past 30 years. **Rathnapura** has recorded the minimum Annual Pan Evaporation (705mm) in current water year while **Seetha Eliya** shows the corresponding minimum in long term average (877mm).

When considering the observed data of available 8 locations, the calculated highest annual Rererence Evapotranspiration is shown in **Mahailuppallama** (1555mm) while the corresponding lowest is in **Agalawaththa** (1165mm).

Table 6: Monthly Pan Evaporation

Upper line: Current year 2021/22
Lower line: Long term average from 1989/90
Units: mm
Coordinate System: Kandawala

No	Name of Station	Period (yrs)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total		
															NEM	SWM	Annual
1	Agalawaththa		80	60	92	106	106	109	98	91	89	88	90	91	552	546	1099
	(131239, 148382)	24	68	63	66	73	82	96	80	71	68	72	72	69	448	432	880
2	Ampara		109	85	92	97	88	103	94	109	69	118	119	119	574	628	1202
	(299221, 232191)	15	101	79	66	73	88	123	129	132	134	140	139	122	530	796	1326
3	Angunakolapelessa *		113	94	114	127	120	136	125	116	119	131	137	139	704	768	1472
	(214808, 105651)	42	129	100	108	126	135	158	137	137	135	153	153	139	755	853	1608
4	Badalgama		94	84	102	112	107	133	104	77	88	101	96	102	632	568	1200
	(112639, 233302)	15	89	77	79	99	111	113	100	87	80	92	96	89	568	544	1112
5	Bandarawela *		50	37	53	57	62	55	35	79	58	-1	63	66	316	-1	-1
	(223022, 181152)	39	70	56	51	63	78	95	79	86	98	99	100	84	412	547	959
6	Bandirippuwa *		152	125	93	216	178	179	156	175	153	148	179	179	943	989	1932
	(99116, 236504)	37	92	88	105	124	121	135	117	114	105	121	118	108	665	682	1348
7	Bombuwela *		65	63	79	86	78	103	85	91	85	83	86	86	474	517	991
	(116865, 151350)	36	87	82	79	86	93	109	98	92	88	90	96	90	535	556	1090
8	Colombo *		91	75	115	123	114	136	116	96	98	105	105	115	655	634	1289
	(99239, 188984)	43	94	89	96	112	114	127	118	107	100	106	116	107	632	655	1287
9	Dunamale		72	72	67	72	63	97	81	78	68	66	72	81	443	446	889
	(123789, 212906)	37	68	63	63	75	89	97	86	70	64	67	68	74	455	429	884
10	Galgamuwa		94	62	72	82	83	122	113	109	107	113	109	110	516	661	1177
	(143043, 307296)	21	98	76	70	84	96	130	110	115	112	126	130	112	554	705	1259
11	Gannoruwa *		-1	-1	-1	-1	97	101	81	79	71	82	79	97	-1	487	-1
	(181038, 227598)	30	81	74	86	105	109	114	85	97	84	82	81	89	569	518	1087
12	Girandurukotte *		107	84	73	93	74	88	-1	-1	-1	-1	-1	-1	518	-1	-1
	(234033, 244195)	39	107	78	70	75	91	119	115	128	144	154	158	135	541	834	1375

'-1':- Missing Data, '*':- Data from Department of Meteorology

Table 6: Monthly Pan Evaporation

Upper line: Current year 2021/22
Lower line: Long term average from 1989/90
Units: mm
Coordinate System: Kandawala

No	Name of Station	Period (yrs)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total		
															NEM	SWM	Annual
13	Horowpathana		104	61	67	80	70	101	102	143	134	131	134	133	484	777	1261
	(211775, 374422)	8	115	74	68	76	83	110	122	125	151	162	155	140	525	855	1381
14	Huruluwewa		146	114	96	110	90	135	159	149	155	152	166	159	691	942	1633
	(194058, 335361)	6	135	111	87	101	97	135	151	147	163	175	179	167	667	982	1649
15	Jaffna *		79	53	62	61	68	95	83	125	112	119	105	-1	417	-1	-1
	(118715, 497904)	23	118	76	83	96	100	133	143	165	170	167	165	150	605	960	1565
16	Kanthale		119	88	105	105	99	123	140	161	157	127	150	140	638	875	1514
	(223247, 350789)	32	124	83	78	87	97	127	126	144	171	173	168	158	595	940	1535
17	Kothmale *		82	63	88	114	111	112	75	98	68	103	69	87	570	500	1070
	(178600, 208761)	23	80	78	86	104	112	132	97	92	75	70	77	80	592	492	1084
18	Kottawa *		58	44	60	78	72	87	63	-1	67	46	53	74	399	-1	-1
	(148672, 98199)	13	72	60	66	79	81	97	81	70	65	77	75	68	454	437	891
19	Kurunegala *		87	74	97	113	112	132	104	98	98	107	97	110	615	613	1229
	(153453, 251947)	28	80	72	79	98	111	129	97	98	88	95	101	93	569	572	1141
20	Mahailluppallama *		98	60	70	82	76	119	99	112	119	126	116	116	504	687	1192
	(165647, 323823)	40	101	75	72	85	101	139	119	129	129	146	151	138	572	811	1383
21	Mathale *		55	65	87	90	89	104	86	94	97	90	87	95	490	549	1039
	(185476, 250094)	32	75	66	70	85	86	103	84	84	73	82	83	78	485	483	969
22	Monaragala *		79	48	71	74	76	79	75	101	83	81	75	94	427	509	936
	(260607, 177864)	13	85	55	61	82	80	97	86	92	109	107	116	106	459	617	1076
23	Padaviya		134	94	92	96	106	131	133	159	138	148	148	128	653	853	1506
	(199323, 401750)	4	153	94	83	103	104	129	148	168	177	170	169	155	665	986	1652
24	Palugasdamana		109	78	99	92	85	130	111	161	157	142	157	155	593	882	1475
	(227374, 305048)	31	120	69	65	78	93	130	133	154	171	183	177	161	555	977	1532

'-1':- Missing Data, '*' :- Data from Department of Meteorology

Table 6: Monthly Pan Evaporation

Upper line: Current year 2021/22
Lower line: Long term average from 1989/90
Units: mm
Coordinate System: Kandawala

No	Name of Station	Period (yrs)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total		
															NEM	SWM	Annual
25	Panadugama		109	67	101	106	88	114	81	112	91	93	83	97	585	558	1143
	(168082, 104113)	6	89	76	84	90	98	99	92	82	84	94	97	90	535	538	1073
26	Parakrama Samudraya		107	87	86	79	81	113	117	160	146	137	145	155	553	860	1412
	(223669, 303817)	5	125	84	70	84	89	116	132	139	174	174	177	153	567	948	1516
27	Pelwatta		107	83	110	117	103	125	117	141	137	130	131	138	646	795	1441
	(238529, 134713)	38	160	123	139	160	162	175	152	176	200	205	215	200	920	1149	2069
28	Polonnaruwa *		100	64	63	67	66	88	94	156	145	135	136	145	449	810	1260
	(230465, 300888)	6	119	57	58	71	71	96	110	119	154	156	167	154	471	859	1330
29	Puttalam *		105	83	91	103	103	130	120	128	121	124	136	140	616	770	1385
	(96190, 313975)	28	118	83	79	96	112	147	133	145	143	153	160	145	635	878	1513
30	Rathnapura *		46	37	65	74	64	77	67	46	50	56	58	65	363	342	705
	(158902, 164574)	35	77	76	74	86	100	115	94	86	81	81	85	80	528	506	1035
31	Seetha Eliya *		55	43	72	81	81	77	62	59	65	50	61	64	410	361	771
	(203126, 192206)	42	60	56	54	74	90	110	85	81	68	69	67	64	444	434	877
32	Sewanagala		110	98	99	115	108	130	112	110	133	141	140	145	660	780	1440
	(214769, 131690)	27	121	99	92	111	120	145	120	130	138	164	163	134	689	850	1539
33	Siyambalanduwa		87	-1	57	80	81	95	94	120	115	102	98	112	-1	641	-1
	(285535, 189464)	6	97	74	95	87	84	105	101	100	110	110	110	97	542	627	1170
34	Thanamalwila		91	-1	75	85	93	104	93	115	134	139	127	151	-1	759	-1
	(240086, 141162)	8	109	73	78	95	104	118	101	98	125	142	145	133	577	744	1321
35	Udawalawe *		95	80	74	90	88	96	89	100	113	135	124	133	524	694	1218
	(204013, 135774)	17	116	83	85	102	113	131	116	119	130	155	151	128	631	800	1430
36	Vavuniya *		83	60	67	72	77	99	95	103	106	111	98	103	459	615	1074
	(170104, 393496)	24	89	55	56	70	81	112	104	116	133	137	134	126	463	750	1213

'-1':- Missing Data, '*':- Data from Department of Meteorology

Table 7: Potential Evapotranspiration (ETo) for Reference Crop - Pelwaththa

Co-ordinate : 6° 41' N, 81° 12' E
Altitude : 152 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	28.4	70.1	5.9	1.39	150	113
Nov	26.5	75.5	4.4	1.43	120	88
Dec	27.2	78.9	7.3	3.46	148	113
Jan	27.1	65.2	7.5	3.80	155	118
Feb	24.9	71.5	6.9	4.13	152	114
Mar	28.5	67.6	6.6	2.47	168	129
Apr	27.8	70.8	7.1	1.70	172	129
May	29.5	64.7	7.4	5.68	192	153
Jun	28.1	62.8	7.5	3.97	178	138
Jul	29.3	66.6	6.6	2.95	172	133
Aug	28.4	64.9	8.4	3.68	193	149
Sep	27.5	61.3	7.9	3.57	182	139
Annual (2021/22)	27.8	68.3	7.0	3.18	1982	1517

Table 8: Potential Evapotranspiration (ETo) for Reference Crop - Galgamuwa

Co-ordinate : 8° 00' N, 80° 15' E
Altitude : 76 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	28.1	96.5	5.0	1.95	118	91
Nov	27.2	98.7	3.6	1.96	85	65
Dec	27.4	99.1	4.3	1.80	84	64
Jan	27.4	98.5	6.5	1.68	105	80
Feb	27.0	99.3	6.5	1.83	112	86
Mar	29.5	99.3	7.0	2.13	158	122
Apr	29.3	99.6	7.0	1.51	165	129
May	28.9	99.7	6.2	2.95	166	127
Jun	28.7	98.6	6.3	2.37	162	125
Jul	28.8	98.7	5.6	2.19	160	123
Aug	28.3	98.6	6.1	2.63	159	122
Sep	28.3	98.3	7.4	2.63	157	120
Annual (2021/22)	28.2	98.7	5.9	2.14	1632	1252

Table 9: Potential Evapotranspiration (ETo) for Reference Crop - Sewanagala

Co-ordinate : 6° 54' N, 81° 32' E
Altitude : 94 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	27.6	75.9	6.0	3.24	146	112
Nov	26.6	78.9	4.9	2.98	128	97
Dec	27.1	78.9	6.4	2.27	133	100
Jan	27.0	75.9	6.8	2.86	144	109
Feb	24.9	73.7	7.1	2.51	149	109
Mar	28.6	72.4	6.7	2.80	170	130
Apr	27.4	78.9	6.9	2.32	168	127
May	28.6	72.6	6.5	3.85	170	132
Jun	27.9	68.5	7.6	4.35	178	137
Jul	28.7	68.6	6.3	5.06	174	138
Aug	28.2	66.9	6.6	4.72	174	137
Sep	27.8	61.2	7.5	4.70	184	144
Annual (2021/22)	27.5	72.7	6.6	3.47	1918	1472

Table 10: Potential Evapotranspiration (ETo) for Reference Crop - Agalawaththa

Co-ordinate : 6° 32' N, 80° 09' E
Altitude : 65 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	27.1	83.2	4.4	0.75	128	98
Nov	25.8	84.0	3.5	0.60	107	80
Dec	27.6	78.4	5.8	0.22	126	88
Jan	27.3	75.0	6.3	0.27	133	98
Feb	27.8	76.1	5.9	0.23	133	96
Mar	28.0	77.5	5.6	0.83	150	113
Apr	27.8	80.1	5.3	0.71	146	107
May	27.4	86.0	3.0	0.95	119	91
Jun	25.4	83.4	3.1	0.79	113	82
Jul	27.1	83.2	3.8	1.36	127	97
Aug	26.5	81.4	4.9	1.54	139	106
Sep	25.9	78.8	6.0	1.00	147	110
Annual (2021/22)	27.0	80.6	4.8	0.77	1570	1165

Table 11: Potential Evapotranspiration (ETo) for Reference Crop - Monaragala

Co-ordinate : 6° 50' N, 81° 18' E
Altitude : 165 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	27.5	72.9	5.6	2.06	147	112
Nov	25.9	79.2	3.8	0.89	111	82
Dec	26.5	73.3	6.6	1.95	135	101
Jan	26.1	71.2	6.5	2.06	137	102
Feb	26.5	68.7	6.5	2.33	137	103
Mar	27.7	69.8	6.3	1.66	160	120
Apr	27.0	75.1	6.7	0.89	162	120
May	28.6	66.7	6.8	4.90	180	142
Jun	27.3	64.6	6.2	2.07	156	117
Jul	28.2	66.6	5.5	1.79	154	118
Aug	27.4	69.4	6.3	1.83	160	121
Sep	26.8	63.5	7.4	2.24	170	127
Annual (2021/22)	27.1	70.1	6.2	2.06	1809	1366

Table 12: Potential Evapotranspiration (ETo) for Reference Crop - Mahailuppallama

Co-ordinate : 8° 06' N, 80° 27' E
Altitude : 113 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	27.6	76.9	5.6	4.55	152	118
Nov	25.7	82.9	4.0	3.61	116	88
Dec	26.2	77.8	6.8	4.11	140	105
Jan	26.2	74.5	7.7	4.51	152	115
Feb	25.9	71.5	7.4	4.37	147	112
Mar	28.1	68.0	7.7	3.85	184	141
Apr	27.6	71.9	8.4	2.92	188	142
May	28.6	74.7	7.5	7.47	189	146
Jun	27.8	68.8	7.8	7.24	189	148
Jul	28.6	68.7	7.0	6.47	184	146
Aug	27.9	70.6	7.3	7.13	188	147
Sep	27.0	68.5	8.2	6.78	192	148
Annual (2021/22)	27.3	72.9	7.1	5.25	2020	1555

Table 13: Potential Evapotranspiration (ETo) for Reference Crop - Bandarawela

Co-ordinate : 6° 50' N, 80° 59' E
Altitude : 1300 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	12.5	77.0	5.0	7.06	114	80
Nov	8.8	80.5	3.7	4.72	80	55
Dec	19.7	79.7	5.7	4.77	116	85
Jan	19.6	74.7	5.4	5.13	118	88
Feb	17.8	72.2	5.8	5.11	125	90
Mar	20.8	75.5	6.0	5.00	146	109
Apr	20.6	82.5	5.5	4.51	139	101
May	22.4	74.0	6.2	8.77	161	121
Jun	21.6	68.4	6.2	7.67	158	120
Jul	22.4	70.7	5.1	10.58	162	127
Aug	21.8	71.8	5.7	8.55	160	123
Sep	21.1	67.6	6.2	6.93	157	120
Annual (2021/22)	19.1	74.5	5.5	6.57	1637	1220

Table 14: Potential Evapotranspiration (ETo) for Reference Crop - Colombo

Co-ordinate : 6° 54' N, 79° 52' E
Altitude : 1 m

Month	Temp. Avg. ^{o}C	Humidity Avg. %	Sunshine hrs	Wind Speed km/h	Eo mm	ETo mm
Oct	27.8	84.8	5.0	4.08	141	108
Nov	26.2	86.1	3.8	3.83	115	86
Dec	27.8	78.8	8.5	4.75	162	123
Jan	28.1	75.6	8.8	4.86	171	131
Feb	28.1	73.5	7.7	5.18	159	123
Mar	29.1	76.3	7.9	5.17	191	147
Apr	27.6	82.9	7.3	3.73	175	132
May	28.7	83.0	4.7	6.39	150	115
Jun	27.7	83.1	6.2	5.45	160	120
Jul	28.4	81.1	5.4	5.60	157	120
Aug	28.1	81.1	6.1	6.14	166	127
Sep	27.3	80.7	7.3	5.58	175	131
Annual (2021/22)	27.9	80.6	6.6	5.06	1921	1463

3.5 Stream Flow Data

Observed River flow data and averaged catchment rainfall values are summarized for 34 Principal Hydrometric stations out of 40 stations, maintained by the Hydrology and Disaster Management Division in Table 15.

As given in the table, the highest Annual Runoff for the current year (9875 MCM) as well as the corresponding long-term average (6082 MCM) are observed in Kalu Ganga at **Putupaula**. The minimum Annual Runoff for the current year (40 MCM) and corresponding long-term average value (46 MCM) are shown at Mee Oya at **Galgamuwa**.

The recorded highest peak discharge in the current year is shown as 2732 Cumecs in Maha Oya at **Badalgama**. However, the highest flow rate has been recorded historically in Mahaweli Ganga at **Manampitiya** in the year 1957 as 18,889 Cumecs, before the commencement of Mahaweli Development Project. And the minimum peak discharge in the current year is recorded as 43 Cumecs in Menik Ganga at **Katharagama**.

Table 15: Stream Flow data - 2021/22

Upper line: Runoff in MCM
Lower line: Catchment Rainfall in mm

	Name of station & River Basin	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Annul Runoff & Annual Catchment Rainfall 2021/22	Long-term Average of Annual Runoff & Catchment Rainfall up to 2020/21		Observed Maximum Peak Discharge for 2021/22 & Observed Maximum Peak Discharge up to 2020/21		
															Value	Yrs	Cumecs	Time	Date
1	Badalgama	391.0	1034.6	244.1	123.9	95.9	94.6	158.6	278.1	209.4	120.4	199.4	274.5	3224.5	1304.6	56	2732.25	3:00am	10.11.2021
	(Maha Oya)	544	867	97	14	75	85	383	540	167	120	272	225	3389	2410		1988.78	9:00am	22.05.2018
2	Baddegama	211.9	358.6	192.0	116.5	129.3	119.0	160.8	430.1	279.0	129.2	155.5	174.0	2455.9	2133.4	15	343.20	6:00pm	02.06.2022
	(Gin Ganga)	494	572	296	165	235	208	474	926	284	348	384	219	4604	3888		691.92	11:00am	28.05.2017
3	Calidonia	32.9	48.1	18.2	10.1	6.9	6.3	17.3	25.0	14.8	21.2	47.5	22.8	271.2	217.1	37	225.86	5:00pm	03.11.2021
	(Agra Oya)	348	314	76	51	69	63	431	276	81	230	335	98	2372	2001		178.48	3:00pm	12.06.2014
4	Deraniyagala	89.2	118.0	46.4	15.0	8.8	14.4	35.8	113.0	71.8	52.1	89.8	73.0	727.0	611.3	65	365.42	3:00pm	01.08.2022
	(Kelani Ganga)	783	933	243	118	156	388	565	1189	545	559	826	408	6713	5120		2313.00	9:00am	31.05.1985
5	Dunamale	58.6	107.6	22.8	7.3	3.7	4.5	12.6	51.0	36.3	6.6	6.6	36.7	354.3	280.4	16	105.92	7:00am	01.06.2022
	(Attanagalu Oya)	532	736	92	36	98	116	384	718	155	83	299	293	3541	3402		206.38	6:00pm	14.05.2021
6	Ellagawa	439.3	621.4	290.4	86.5	61.4	70.5	202.4	875.6	420.7	184.8	377.0	393.3	4023.4	3319.1	64	856.55	4:00am	16.05.2022
	(Kalu Ganga)	491	546	275	159	142	225	443	961	272	307	482	249	4551	3723		2620.00	4:00am	19.05.2003
7	Galgamuwa	1.2	23.1	4.7	2.4	2.2	0.5	3.3	1.2	0.8	0.6	0.2	0.2	40.3	46.0	32	85.59	6:00pm	25.11.2021
	(Mee Oya)	301	422	27	49	54	14	361	135	7	91	112	51	1625	1334		159.25	1:00pm	19.11.2006
8	Giriulla	175.7	595.6	54.5	8.6	5.8	5.7	16.9	105.2	40.5	9.3	53.1	102.3	1173.2	986.0	21	1760.29	2:00pm	09.11.2021
	(Maha Oya)	541	905	97	15	67	93	399	535	178	119	280	239	3467	2716		1690.50	4:00pm	26.12.2014
9	Glencourse	624.9	915.1	284.5	111.3	61.1	75.0	191.2	683.2	397.4	252.0	489.3	484.5	4569.5	3914.6	73	1382.36	7:00am	06.09.2022
	(Kelani Ganga)	639	755	146	64	120	202	404	882	301	382	625	328	4846	3661		3500.00	10:00am	04.06.1989
10	Hanwella	568.2	956.1	229.1	86.5	61.7	69.2	162.6	624.5	382.2	172.2	386.4	474.7	4173.3	4220.2	37	1142.47	2:00pm	06.09.2022
	(Kelani Ganga)	608	735	141	69	118	189	401	845	283	329	565	314	4597	3767		2745.58	8:00am	05.06.1989
11	Holombuwa	34.2	83.4	10.6	1.8	0.7	0.4	7.0	38.4	8.4	3.7	19.6	32.1	240.2	253.9	57	395.20	9:00pm	05.09.2022
	(Kelani Ganga)	698	780	60	26	92	95	431	833	121	304	450	361	4251	3147		644.47	7:00am	03.06.1989
12	Horowpothana	21.5	85.5	39.2	43.5	26.8	10.7	28.8	9.4	8.5	10.5	7.6	6.9	298.9	173.0	60	173.06	5:00am	10.11.2021
	(Yan Oya)	333	279	169	150	113	52	274	6	21	101	80	73	1652	1446		5663.32	4:00pm	26.12.1957

Table 15: Stream Flow data - 2021/22

Upper line: Runoff in MCM
Lower line: Catchment Rainfall in mm

	Name of station & River Basin	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Annul Runoff & Annual Catchment Rainfall 2021/22	Long-term Average of Annual Runoff & Catchment Rainfall up to 2020/21		Observed Maximum Peak Discharge for 2021/22 & Observed Maximum Peak Discharge up to 2020/21		
															Value	Yrs	Cumecs	Time	Date
13	Kataragama	14.3	21.8	22.7	13.3	10.6	11.7	12.4	11.8	10.7	12.1	10.7	9.7	161.8	216.3	76	43.32	9:00am	04.12.2021
	(Menik Ganga)	324	218	201	66	27	139	312	46	40	218	122	45	1756	1548		1365.00	1:00pm	25.12.1957
14	Kithulgala	155.6	189.1	96.0	74.7	53.6	54.8	55.8	140.5	114.4	121.4	181.3	143.7	1380.9	1153.6	73	979.42	2:00pm	01.08.2022
	(Kelani Ganga)	483	486	107	81	111	167	370	705	214	435	664	246	4071	3444		2157.00	5:15pm	30.05.1989
15	Kuda Oya	6.1	12.3	16.2	3.5	1.6	3.3	24.1	4.1	1.2	1.5	1.8	0.9	76.6	113.9	54	93.73	8:00pm	08.04.2022
	(Kirindi Oya)	315	183	209	90	7	143	278	31	11	172	118	17	1573	1484		728.58	12:00mn	23.11.2012
16	Manampitiya	80.7	686.8	433.8	299.1	104.2	75.0	113.5	57.2	27.3	46.5	44.6	72.3	2041.3	2753.8	21	935.28	4:00pm	28.11.2021
	(Mahaweli Ganga)	352	364	221	157	101	67	255	127	42	161	200	97	2144	2480		18859.00	11:00am	26.12.1957
17	Millakanda	356.6	509.6	194.8	118.2	66.2	67.8	201.0	721.8	370.7	128.1	233.7	358.2	3326.6	2205.4	31	566.40	5:00am	02.06.2022
	(Kalu Ganga)	524	572	269	173	125	250	387	1093	272	302	485	292	4742	4363		1233.16	2:00am	27.05.2017
18	Moraketiya	39.9	54.6	126.5	40.2	29.9	22.1	94.1	66.4	36.2	33.2	36.9	15.3	595.3	-1	-1	455.04	12:00mn	05.12.2021
	(Walawe Ganga)	201	266	210	65	4	100	240	51	49	93	46	40	1366	-1		-1	-1	-1
19	Nakkala	37.0	57.3	51.6	28.7	18.0	18.0	34.8	20.7	16.6	30.0	26.4	22.4	361.3	271.8	5	429.43	6:00pm	01.11.2021
	(Kumbukkan Oya)	330	382	311	147	109	77	399	24	65	248	155	110	2357	1841		622.74	6:00pm	20.12.2019
20	Nawalapitiya	69.3	81.8	23.3	9.5	5.6	4.3	17.7	89.2	45.8	53.2	132.2	56.9	588.7	480.8	31	864.44	3:00pm	01.08.2022
	(Mahaweli Ganga)	479	555	78	39	58	121	361	844	202	426	788	331	4282	4062		623.37	12:00nn	21.05.2018
21	Norwood	22.3	23.8	14.0	10.0	8.9	8.1	18.9	25.8	12.7	14.8	24.0	14.4	197.6	141.0	36	65.98	3:00pm	01.08.2022
	(Kelani Ganga)	461	262	77	119	172	154	408	454	77	300	424	147	3055	2543		402.46	1:00am	14.05.2021
22	Padiyathalawa	1.3	5.5	9.4	14.5	3.8	2.5	2.4	0.3	0.1	0.7	0.2	0.1	40.8	142.6	37	111.19	5:00pm	04.01.2022
	(Maduru Oya)	250	270	156	177	150	78	260	15	33	70	50	54	1562	2119		972.30	9:00am	26.12.2014
23	Peradeniya	387.0	566.8	205.9	83.7	89.4	67.6	76.4	268.2	154.8	203.0	541.4	304.2	2948.3	1751.2	21	1151.30	7:00pm	01.08.2022
	(Mahaweli Ganga)	566	519	89	40	46	79	339	492	117	313	545	207	3352	2941		5097.71	2:30am	15.08.1947

Table 15: Stream Flow data - 2021/22

Upper line: Runoff in MCM
Lower line: Catchment Rainfall in mm

	Name of station & River Basin	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Annul Runoff & Annual Catchment Rainfall 2021/22	Long-term Average of Annual Runoff & Catchment Rainfall up to 2020/21		Observed Maximum Peak Discharge for 2021/22 & Observed Maximum Peak Discharge up to 2020/21		
															Value	Yrs	Cumecs	Time	Date
24	Pitabeddara	56.3	70.7	90.8	54.1	30.7	33.0	59.6	116.4	75.1	46.3	71.4	35.8	740.1	513.2	41	453.16	3:00pm	01.08.2022
	(Nilwala Ganga)	489	485	352	242	163	272	469	740	246	374	404	206	4441	2975		1559.58	4:00am	26.05.2017
25	Putupaula	1001.9	1285.3	838.0	571.0	448.4	466.8	620.7	1593.0	963.0	482.9	694.2	909.9	9875.1	6082.3	76	1157.96	8:00pm	16.05.2022
	(Kalu Ganga)	469	529	246	180	140	239	445	1041	317	301	461	296	4664	3254		2829.00	9:30am	16.08.1947
26	Ratnapura	125.0	160.8	98.6	39.0	29.2	27.3	73.0	305.7	118.1	79.7	162.8	104.0	1323.1	992.4	15	417.24	8:00pm	01.08.2022
	(Kalu Ganga)	483	476	270	187	140	167	416	960	267	328	452	200	4345	3221		814.10	12:00nn	31.05.1989
27	Siyambalanduwa	13.9	17.5	25.5	7.4	3.6	1.9	16.1	8.5	2.4	2.9	8.6	0.7	108.7	124.2	30	317.45	9:00pm	01.10.2021
	(Heda Oya)	411	218	238	107	85	36	373	43	90	111	165	120	1996	1728		889.27	4:00pm	12.01.2007
28	Thaldena	21.8	27.4	21.4	11.4	7.1	6.8	19.5	8.1	5.5	8.3	9.5	7.4	154.2	201.8	21	304.03	10:00pm	29.10.2021
	(Mahaweli Ganga)	364	313	220	105	89	124	405	58	76	194	160	93	2199	2344		667.68	1:00am	26.12.2014
29	Thanamalwila	21.0	35.9	39.2	9.8	2.4	6.7	51.1	10.1	2.0	7.6	5.0	1.8	192.4	251.5	34	126.14	1:00am	07.12.2021
	(Kirindi Oya)	344	227	216	80	13	153	287	42	16	188	144	29	1737	1614		824.70	3:00am	24.11.2012
30	Thanthirimale	24.4	147.0	61.9	50.0	21.1	9.0	69.6	21.7	14.6	17.9	10.5	4.5	452.2	360.9	32	274.65	7:00am	10.11.2021
	(Malwathu Oya)	305	316	132	132	72	44	305	6	19	93	66	63	1553	1348		6512.81	4:00pm	26.12.1957
31	Thawalama	124.0	145.2	103.7	59.2	43.1	49.0	106.0	237.0	123.7	85.0	93.0	80.2	1249.1	1049.3	41	371.24	8:00pm	31.05.2022
	(Gin Ganga)	554	504	358	233	258	223	540	955	260	414	394	205	4899	4058		1339.07	5:00am	18.05.2003
32	Urawa	7.7	8.9	9.1	7.1	4.4	3.7	7.7	13.2	9.1	6.2	8.5	4.5	90.0	81.7	21	45.49	5:00pm	01.08.2022
	(Nilwala Ganga)	544	469	333	236	158	184	571	744	179	298	357	196	4269	3122		196.88	1:00am	26.05.2017
33	Wellawaya	14.8	24.0	19.4	8.7	4.9	5.6	23.0	9.6	4.3	7.5	7.2	5.7	134.7	122.2	33	154.73	9:00pm	27.11.2021
	(Kirindi Oya)	431	387	242	61	33	180	319	76	33	236	238	62	2298	2017		634.50	8:00pm	21.10.2012
34	Weraganthota	65.2	404.9	261.6	82.9	28.2	46.6	42.0	35.6	20.5	25.6	29.6	103.5	1146.3	1977.5	16	715.48	6:00am	28.11.2021
	(Mahaweli Ganga)	438	390	177	110	69	82	313	224	65	204	294	126	2493	2434		3818.41	11:00am	26.12.2014

3.6 Runoff - Rainfall Ratio

The percentage of annual runoff to the annual volume of catchment rainfall at 30 hydrometric stations are given in Table 16.

Table 16: Runoff Rainfall Ratios - 2021/22

No	Name of River Basin	Station	Annual Rainfall (mm)	Annual Runoff (mm)	Runoff / Rainfall ratio (%)	Long term average of Runoff/Rainfall ratio(%)
1	Kelani Ganga	Norwood	3055	2037	67	52
2	Kelani Ganga	Kithulgala	4071	3606	89	82
3	Kelani Ganga	Deraniyagala	6713	3972	59	67
4	Kelani Ganga	Holombuwa	4251	1550	36	53
5	Kelani Ganga	Glencourse	4846	3123	64	69
6	Kelani Ganga	Hanwella	4597	2342	51	60
7	Kalu Ganga	Rathnapura	4345	2194	51	49
8	Kalu Ganga	Ellagawa	4551	2888	63	64
9	Kalu Ganga	Millakanda	4742	4265	90	66
10	Kalu Ganga	Putupaula	4664	3801	81	61
11	Gin Ganga	Thawalama	4899	3313	68	68
12	Gin Ganga	Baddegama	4604	3279	71	73
13	Nilwala Ganga	Urawa	4269	1525	36	45
14	Nilwala Ganga	Pitabeddara	4441	2509	56	59
15	Kirindi Oya	Wellawaya	2298	783	34	36
16	Kirindi Oya	Thanamalwila	1737	257	15	20
17	Menik Ganga	Katharagama	1756	206	12	15
18	Heda Oya	Siyambalanduwa	1996	369	18	22
19	Kumbukkan Oya	Nakkala	2357	1673	71	56
20	Maduru Oya	Padiyathalawa	1562	257	16	40
21	Mahaweli Ganga	Thaldena	2199	559	25	31
22	Mahaweli Ganga	Nawalapitiya	4282	3345	78	67
23	Mahaweli Ganga	Peradeniya	3352	2524	75	46
24	Mahaweli Ganga	Manampitiya	2144	275	13	28
25	Yan Oya	Horowpothana	1652	415	25	18
26	Malwathu Oya	Thanthirimale	1553	214	14	9
27	Mee Oya	Galgamuwa	1625	135	8	6
28	Maha Oya	Giriulla	3467	984	28	32
29	Maha Oya	Badalgama	3389	2371	70	40
30	Aththanagalu Oya	Dunamale	3541	2316	65	46

3.7 Monthly Discharges in Major Rivers

Monthly flow variation in major rivers at selected locations are given in Table 17 and Fig. 73 to Fig. 81 as follows. As shown in the figures, Monthly flow distribution in current water year closely follow the pattern of long-term average at several stations. Most figures show high flows in the month of May except Manampitiya and Peradeniya which show high flows in November.

Table 17: Comparison of Monthly Runoff in Major Rivers

Upper line: Current year 2021/22
Lower line: Long term average
Units: MCM

Station	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Kelani Ganga at Glencourse	624.9	915.1	284.5	111.3	61.1	75.0	191.2	683.2	397.4	252.0	489.3	484.5	4569.5
	533.3	453.1	237.1	135.3	100.3	129.9	241.5	438.7	508.5	402.3	338.4	396.3	3914.6
Kalu Ganga at Rathnapura	125.0	160.8	98.6	39.0	29.2	27.3	73.0	305.7	118.1	79.7	162.8	104.0	1323.1
	114.1	123.4	71.4	34.3	28.0	35.5	67.4	140.3	129.3	79.5	69.3	99.9	992.4
Kalu Ganga at Ellagawa	439.3	621.4	290.4	86.5	61.4	70.5	202.4	875.6	420.7	184.8	377.0	393.3	4023.4
	438.4	401.1	214.1	111.4	79.3	105.6	220.0	432.7	444.8	295.0	245.8	331.0	3319.2
Kalu Ganga at Putupaula	1001.9	1285.3	838.0	571.0	448.4	466.8	620.7	1593.0	963.0	482.9	694.2	909.9	9875.1
	795.2	713.4	449.3	274.5	210.3	269.3	415.1	753.8	771.3	509.2	414.8	543.2	6119.3
Gin Ganga at Thawalama	124.0	145.2	103.7	59.2	43.1	49.0	106.0	237.0	123.7	85.0	93.0	80.2	1249.1
	122.9	128.7	91.0	51.3	37.7	47.2	82.6	129.2	117.4	78.6	68.0	94.7	1049.3
Gin Ganga at Baddegama	211.9	358.6	192.0	116.5	129.3	119.0	160.8	430.1	279.0	129.2	155.5	174.0	2455.9
	256.5	255.5	196.9	105.1	98.9	118.9	162.8	265.6	204.1	133.9	125.9	209.3	2133.4
Nilwala Ganga at Pitabeddara	56.3	70.7	90.8	54.1	30.7	33.0	59.6	116.4	75.1	46.3	71.4	35.8	740.1
	56.6	75.4	57.9	32.7	23.2	24.6	39.1	61.9	50.9	31.7	26.9	37.9	513.2
Mahaweli Ganga at Peradeniya	387.0	566.8	205.9	83.7	89.4	67.6	76.4	268.2	154.8	203.0	541.4	304.2	2948.3
	216.6	205.6	162.1	98.4	72.6	53.2	72.3	146.8	181.7	184.6	194.0	163.3	1751.2
Mahaweli Ganga at Manampitiya	80.7	686.8	433.8	299.1	104.2	75.0	113.5	57.2	27.3	46.5	44.6	72.3	2041.3
	108.8	312.7	720.0	582.4	322.8	178.8	135.9	124.2	71.2	71.1	64.9	61.1	2753.8

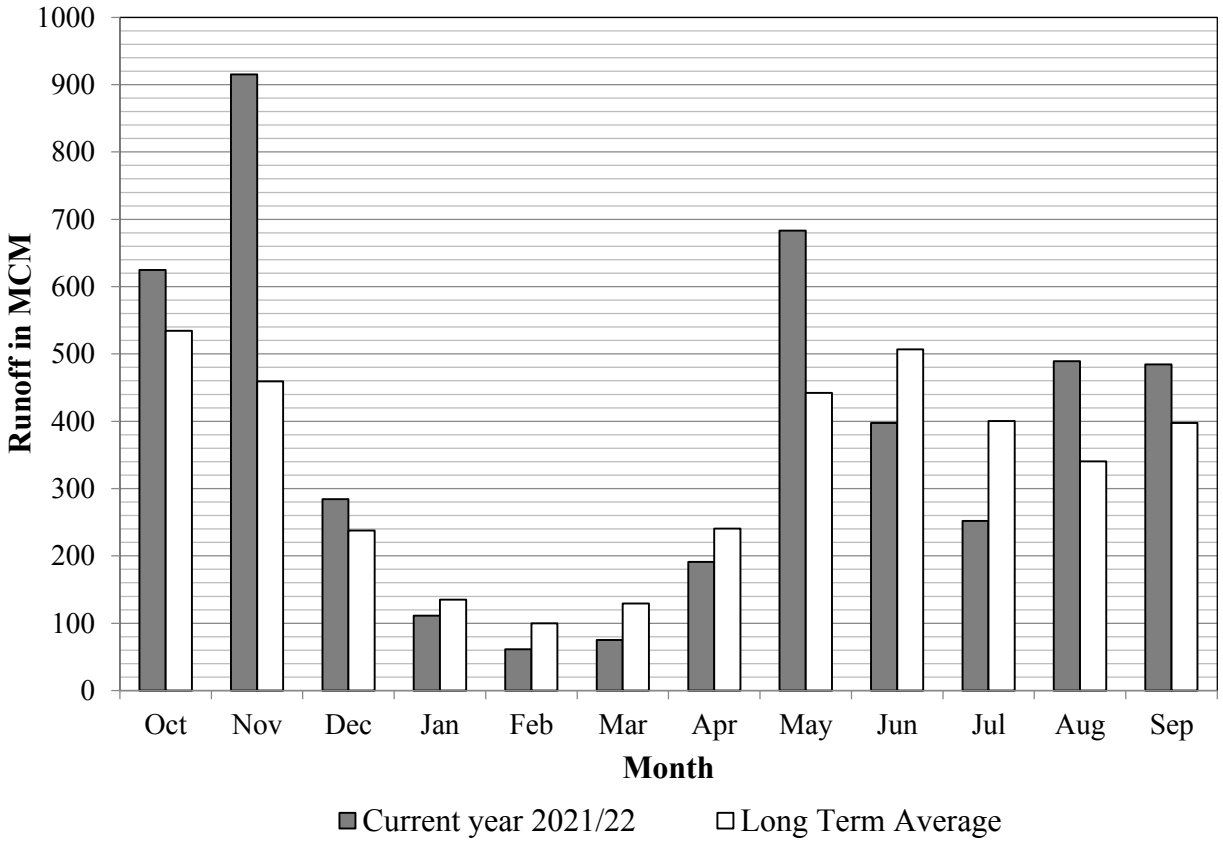

Fig. 73: Monthly Discharge in Kelani Ganga at Glencourse

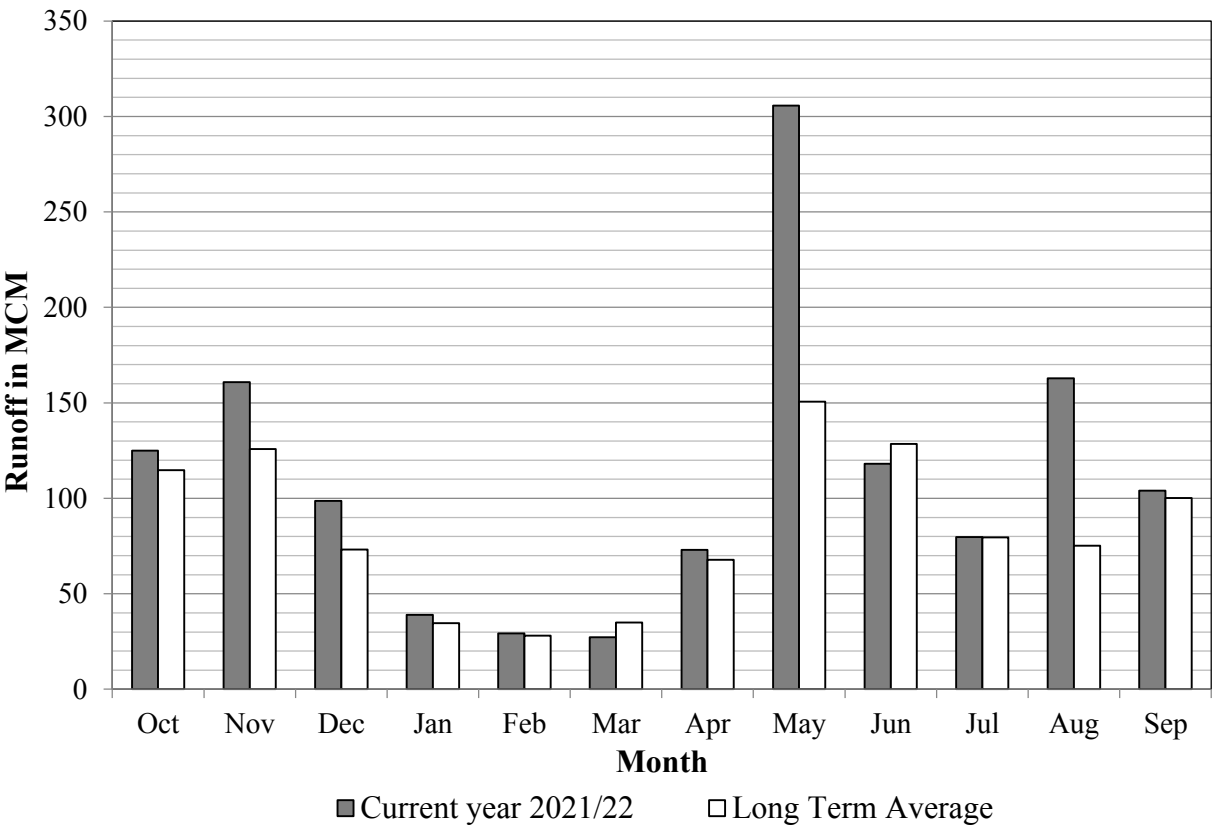

Fig. 74: Monthly Discharge in Kalu Ganga at Rathnapura

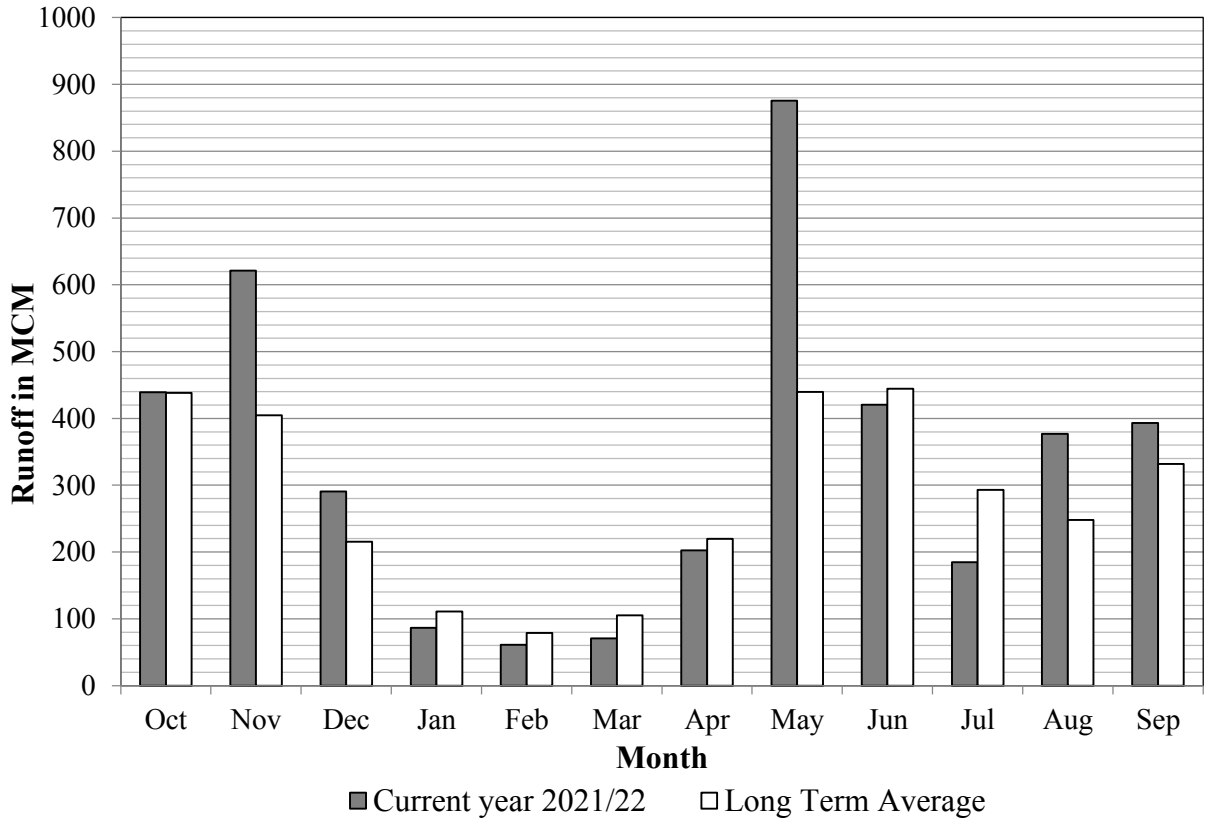

Fig. 75: Monthly Discharge in Kalu Ganga at Ellagawa

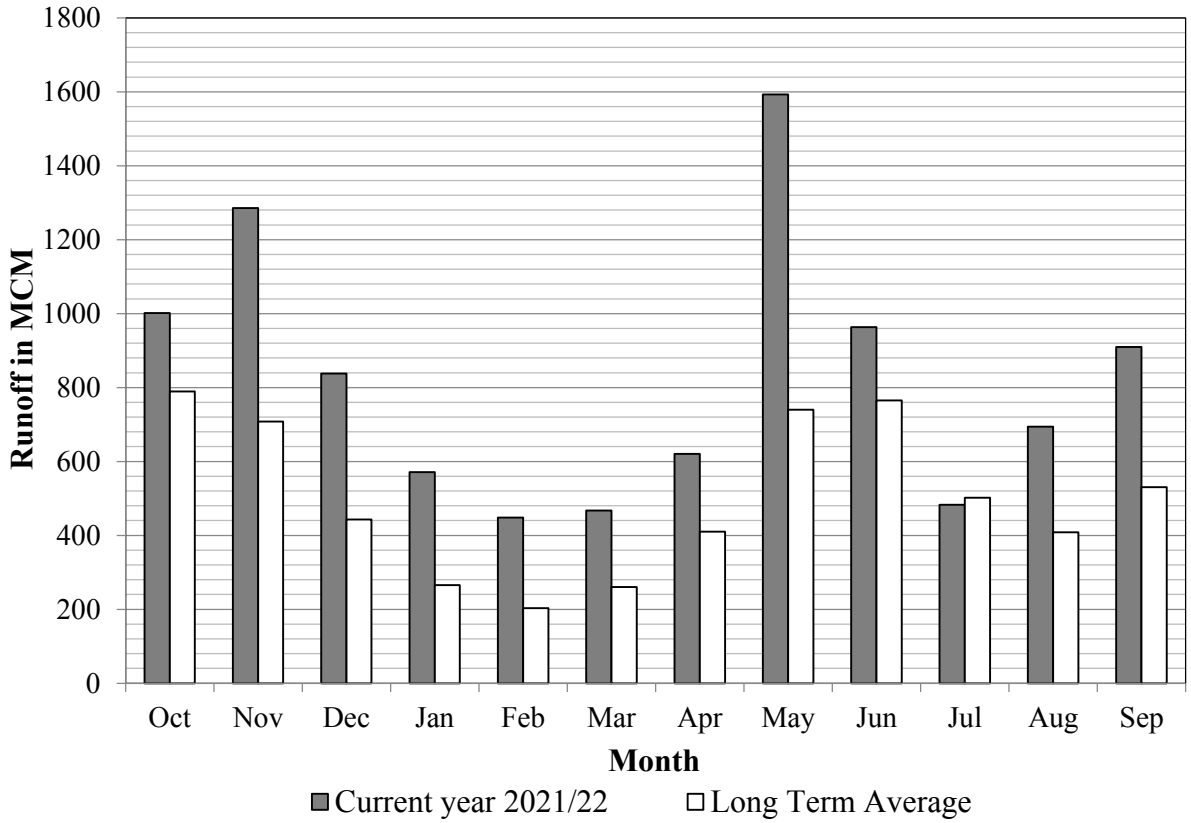

Fig. 76: Monthly Discharge in Kalu Ganga at Putupaula

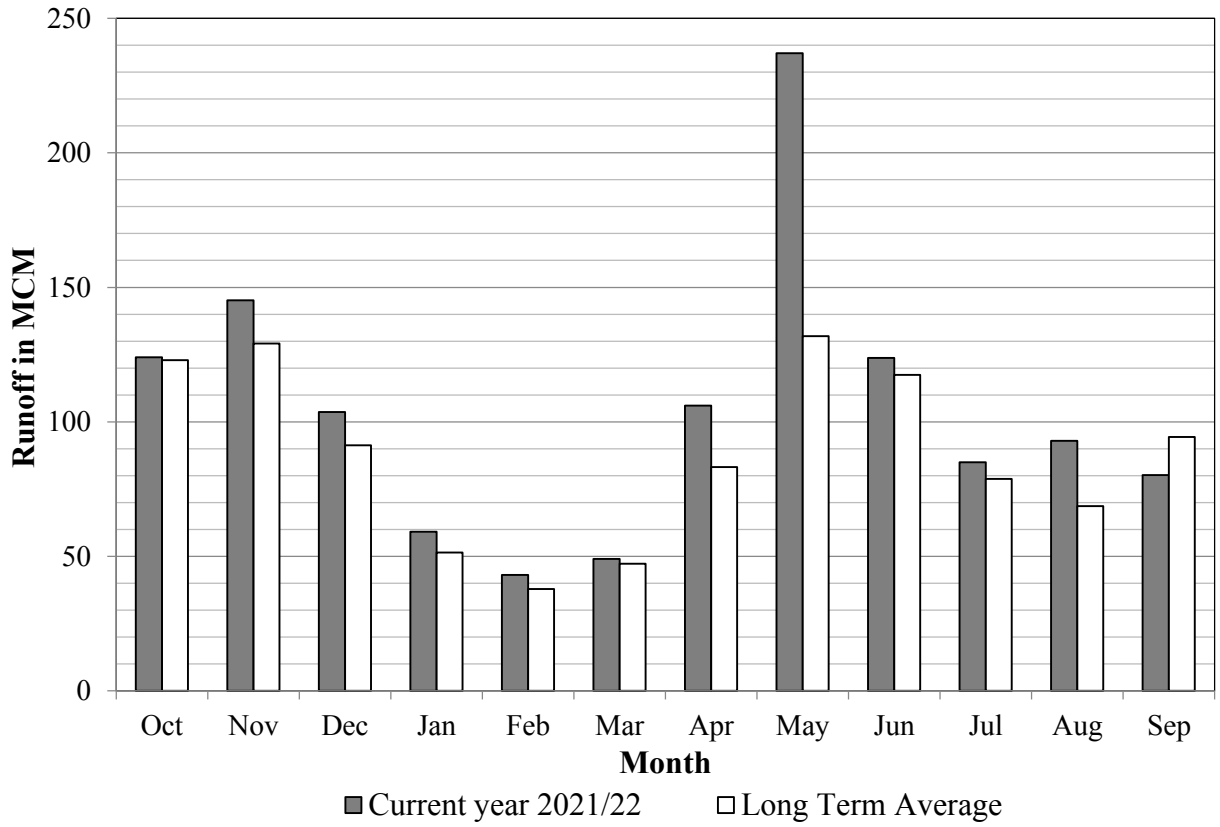

Fig. 77: Monthly Discharge in Gin Ganga at Thawalama

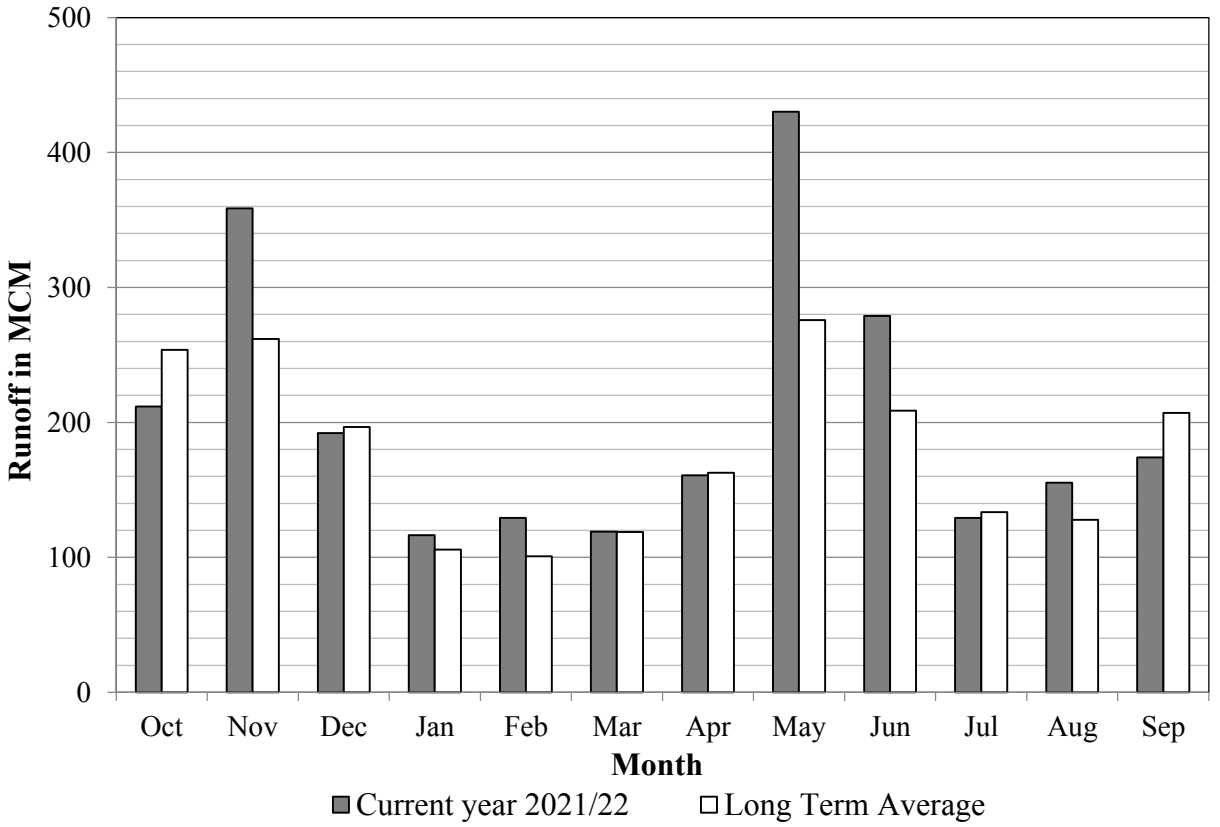

Fig. 78: Monthly Discharge in Gin Ganga at Baddegama

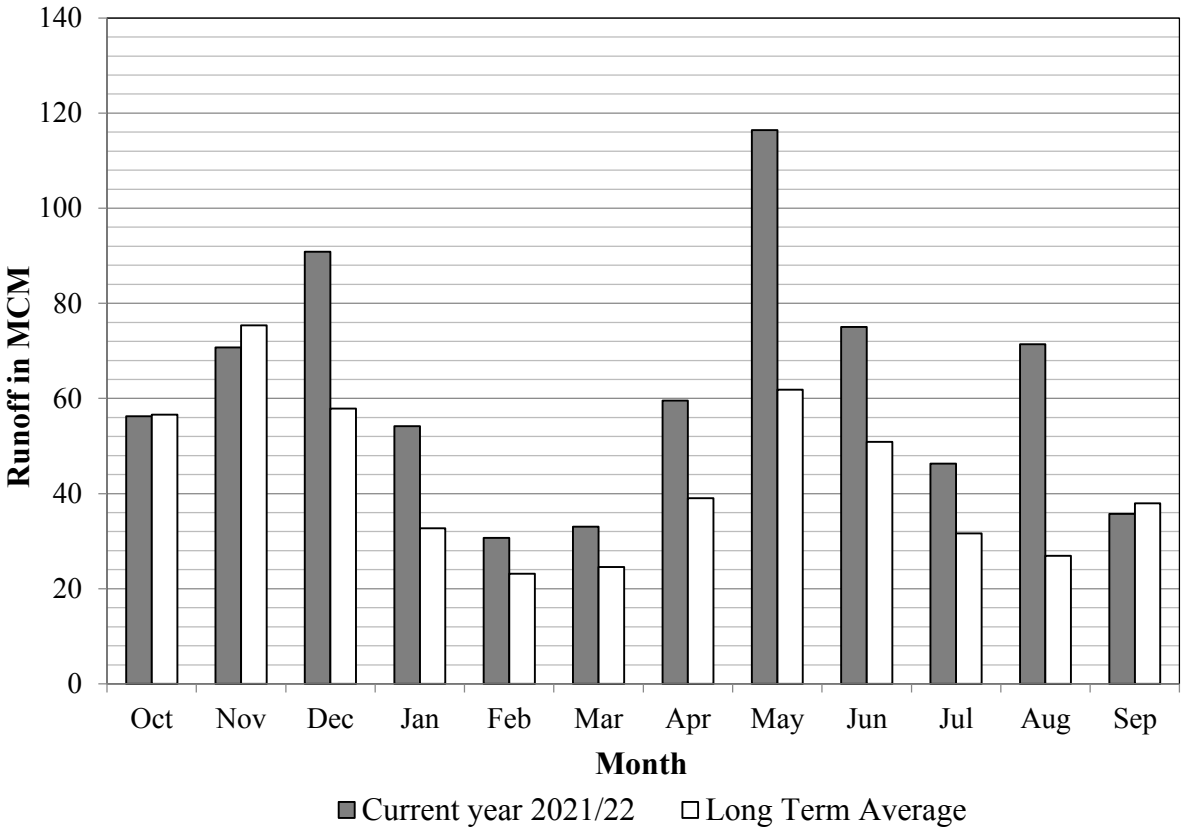

Fig. 79: Monthly Discharge in Nilwala Ganga at Pitabeddara

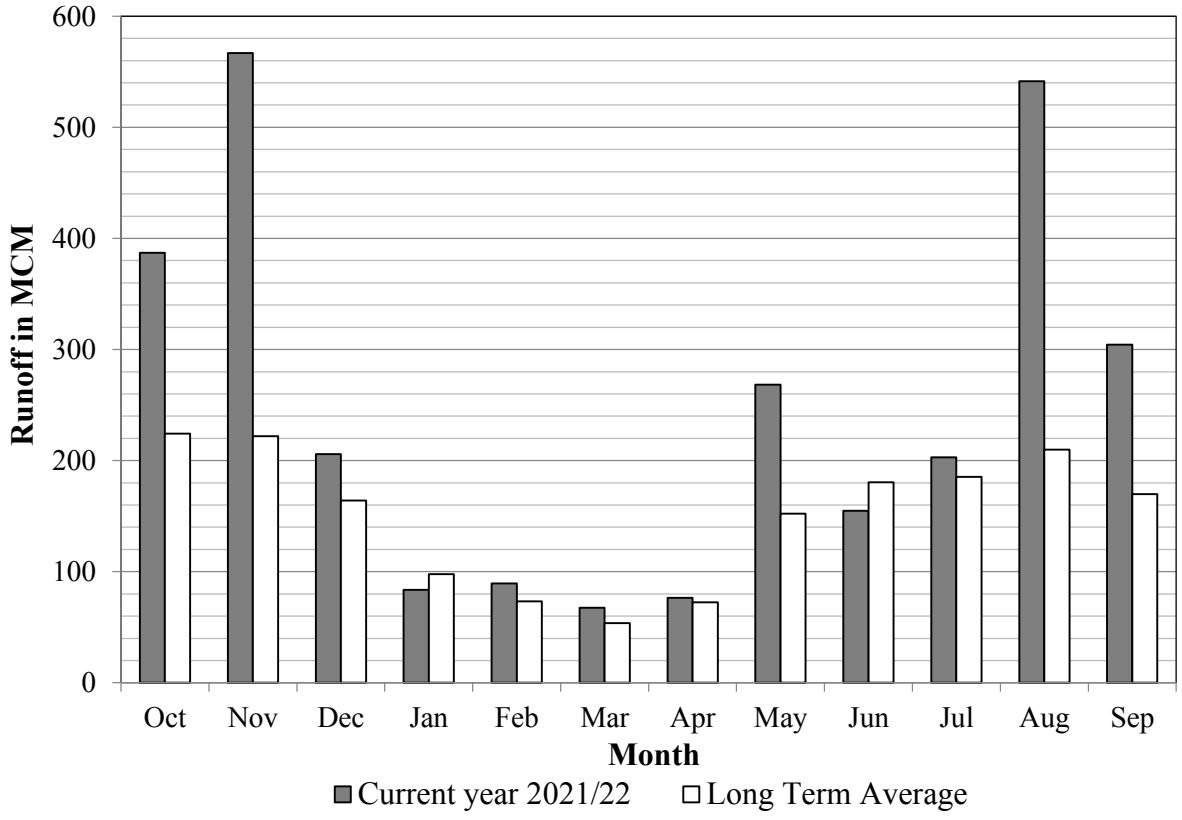

Fig. 80: Monthly Discharge in Mahaweli Ganga at Peradeniya

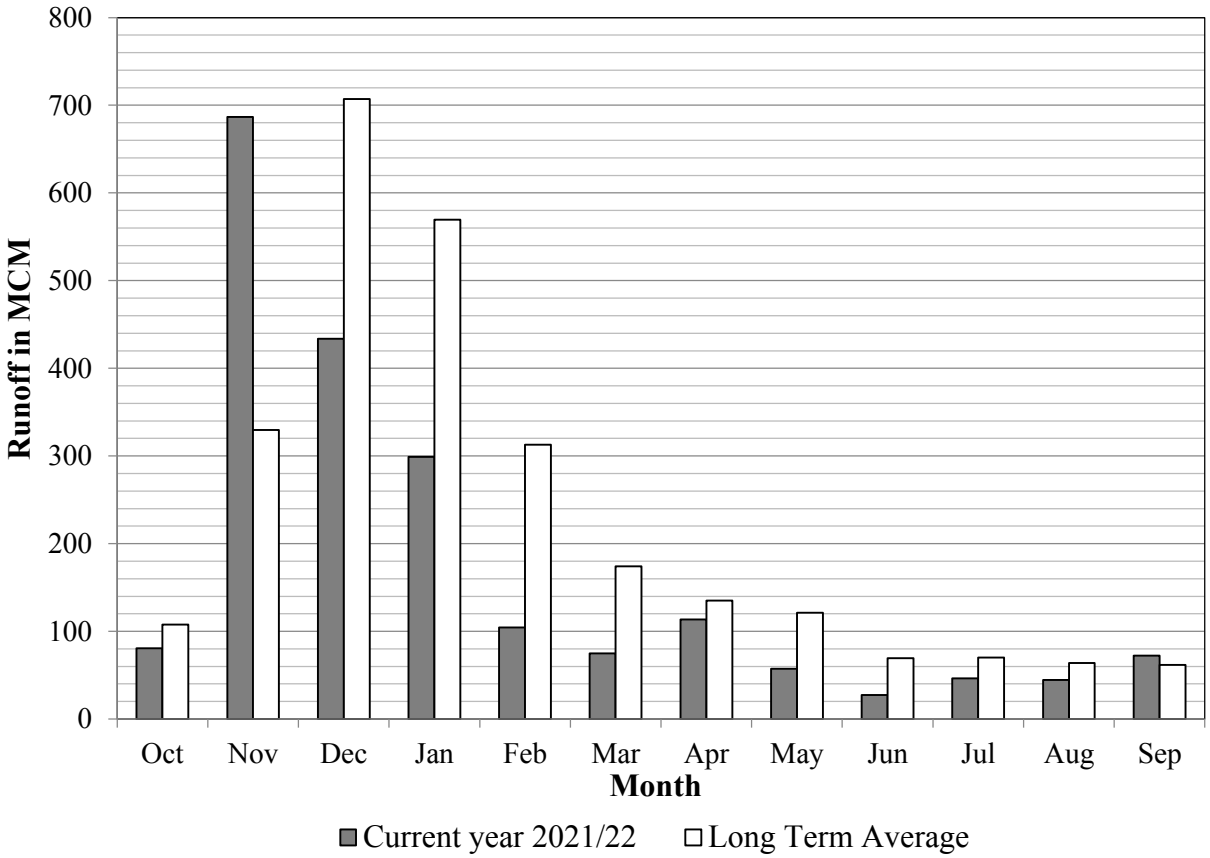

Fig. 81: Monthly Discharge in Mahaweli Ganga at Manampitiya

3.8 Flood Overview – 2021/22

There is a high probability of flooding in river basins in Wet Zone of the country, during the South-West monsoon and during the second inter monsoon periods. In other words May, June, October and November months are critical for occurring floods in those areas. Deduru oya, Maha oya, Attanagalu oya, Kelani, Kalu, Gin and Nilwala rivers are being identified as most vulnerable river basins for floods in the said months. Besides those rivers, Mahaweli and Malwathu Oya also experienced floods during this water year.

The details of floods occurred during the water year 2021/22 are summarized in the Table 18 given below. In addition, flood hydrographs at Hydrometric stations maintained by Irrigation Department are shown in Fig. 82 to Fig. 96.

Table 18: Details of highest Flood Events occurred at following stations during 2021/22

River	Hydrometric Station	Date of Flood Peak	Observed Maximum Gauge Height (m)	Observed Maximum Discharge (m^3/s)	Total Flood Volume (MCM)	Average Catchment Rainfall (mm)	Runoff Rainfall Ratio of the flood (%)	Inundated DS Divisions	Return Period (yr)
Kelani Ganga	Glencorse	06.09.2022	17.58	1382.36	163.6	200	56	Dompe Seethawaka Dehiowita Ruwanwella	3
	Hanwella	06.09.2022	8.26	1142.97	196.5	197	56	Dompe Seethawaka Kaduwela Kolonnawa Biyagama	3
Kalu Ganga	Ratnapura	01.08.2022	8.84	417.24	89.6	231	64	Ratnapura Elapatha Kiriella Kuruvita	2
	Ellagawa	16.05.2022	10.97	856.55	145.0	235	44	Kiriella Ayagama Bulathsinhala Ingiriya	2
	Millakanda	02.06.2022	8.80	566.40	303.7	429	91	Ayagama Bulathsinhala Dodangoda Horana Millaniya Palindanuwara Kaluthara	1
	Putupaula	17.05.2022	4.14	1157.96	535.0	392	53	Dodangoda Millaniya Kaluthara	1
Gin Ganga	Thawalama	31.05.2022	6.43	371.21	23.56	185	34	Neluwa Thawalama	2

River	Hydrometric Station	Date of Flood Peak	Observed Maximum Gauge Height (m)	Observed Maximum Discharge (m^3/s)	Total Flood Volume (MCM)	Average Catchment Rainfall (mm)	Runoff Rainfall Ratio of the flood (%)	Inundated DS Divisions	Return Period (yr)
	Baddegama	02.06.2022	4.68	343.20	73	251	39	Baddegama Bope-Poddala Divithura	2
Nilwala Ganga	Pitabeddara	01.08.2022	5.93	453.16	16.6	258	22	Pitabeddara Athuraliya Akuressa	5
Attanagalu Oya	Dunamale	01.06.2022	5.33	105.92	46.7	314	97	Gampaha Aththanagalla Minuvangoda Ja Ela	2
Maha Oya	Giriulla	09.11.2021	9.98	1760.29	227.1	304	63	Pannala Mirigama Divulapitiya	19
	Badalgama	10.11.2021	10.37	2732.25	400.8	318	92	Pannala Divulapitiya Dankotuwa Katana	10
Mahaweli Ganga	Nawalapitiya	01.08.2022	8.08	864.44	21.1	292	41	Pasbage-korale	78
	Peradeniya	01.08.2022	9.43	1151.30	44.4	173	22	Yatinuwara	23
Malwathu Oya	Thanthirimale	10.11.2021	7.98	274.65	49.4	125	18	Mahavilachchi-ya Vengalacheddi-kulam Nuwaragampa-latha	6

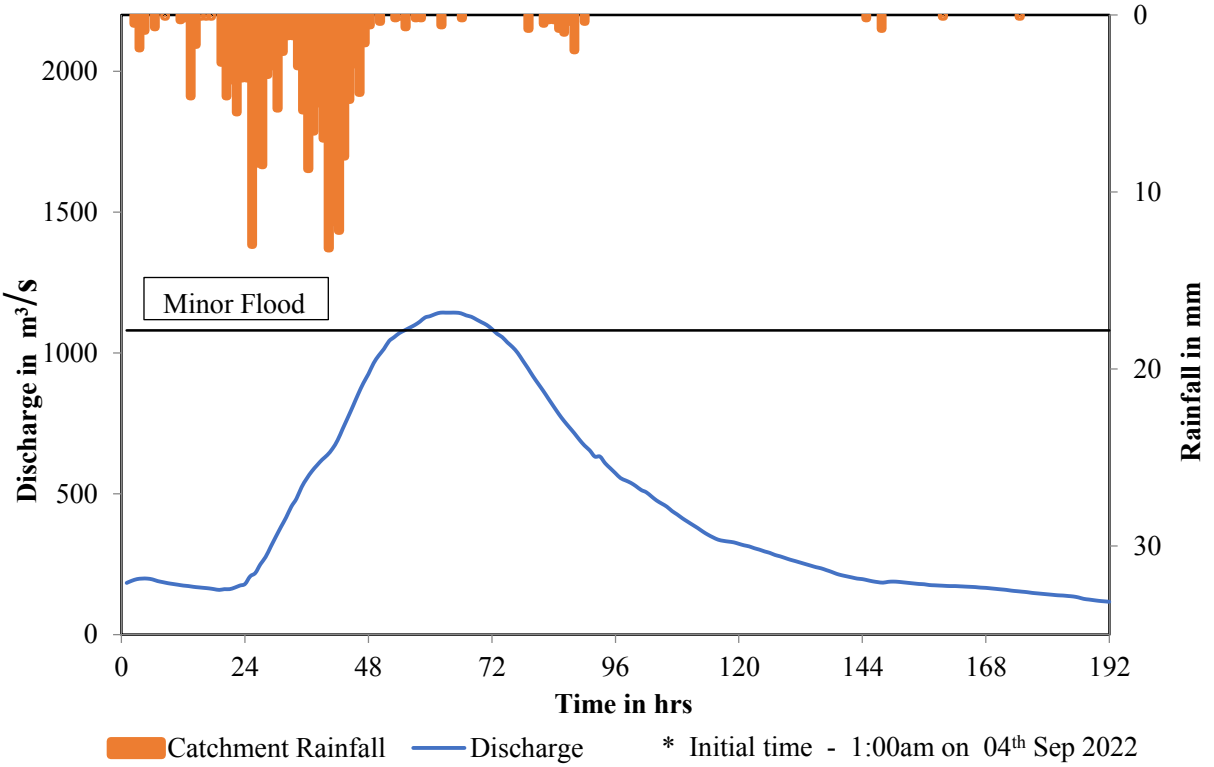

Fig. 82: Maximum flood during 2021/22 - Kelani Ganga at Hanwella

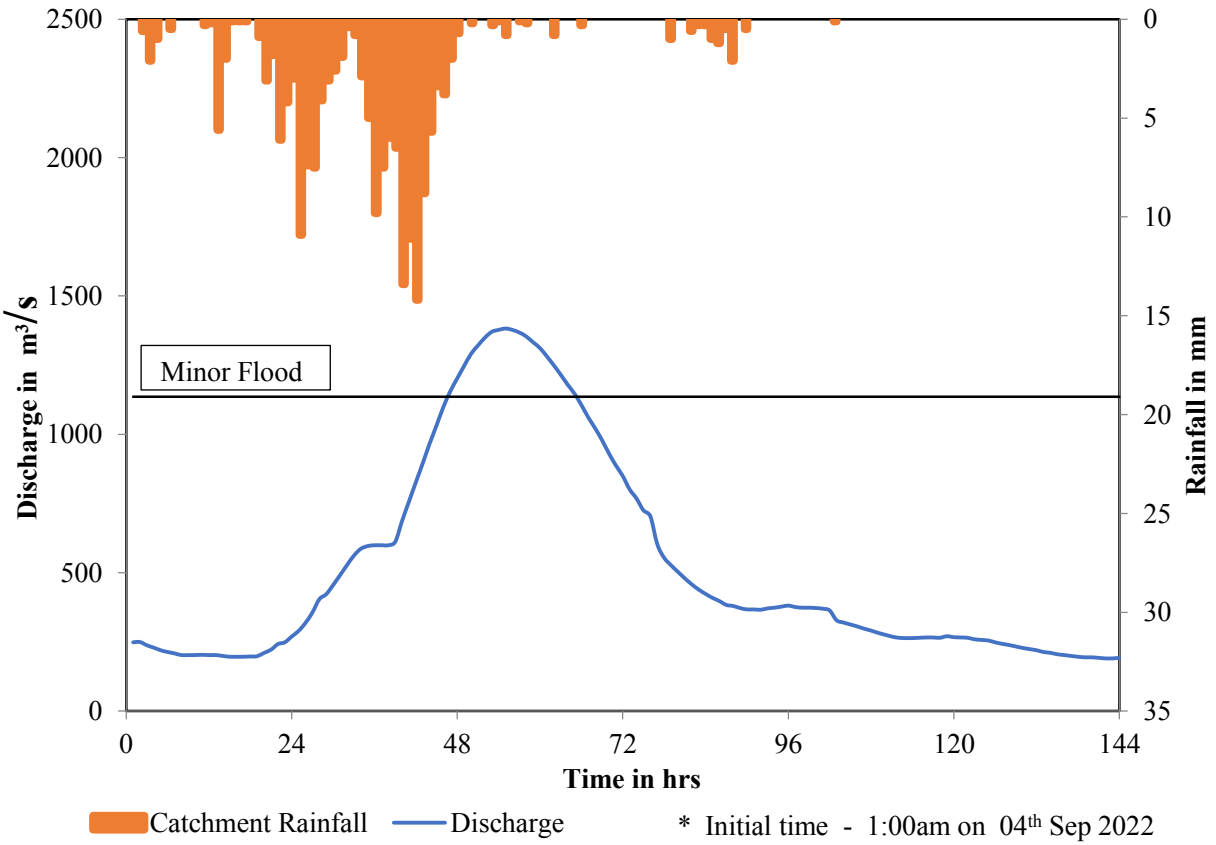

Fig. 83: Maximum flood during 2021/22 - Kelani Ganga at Glencorse

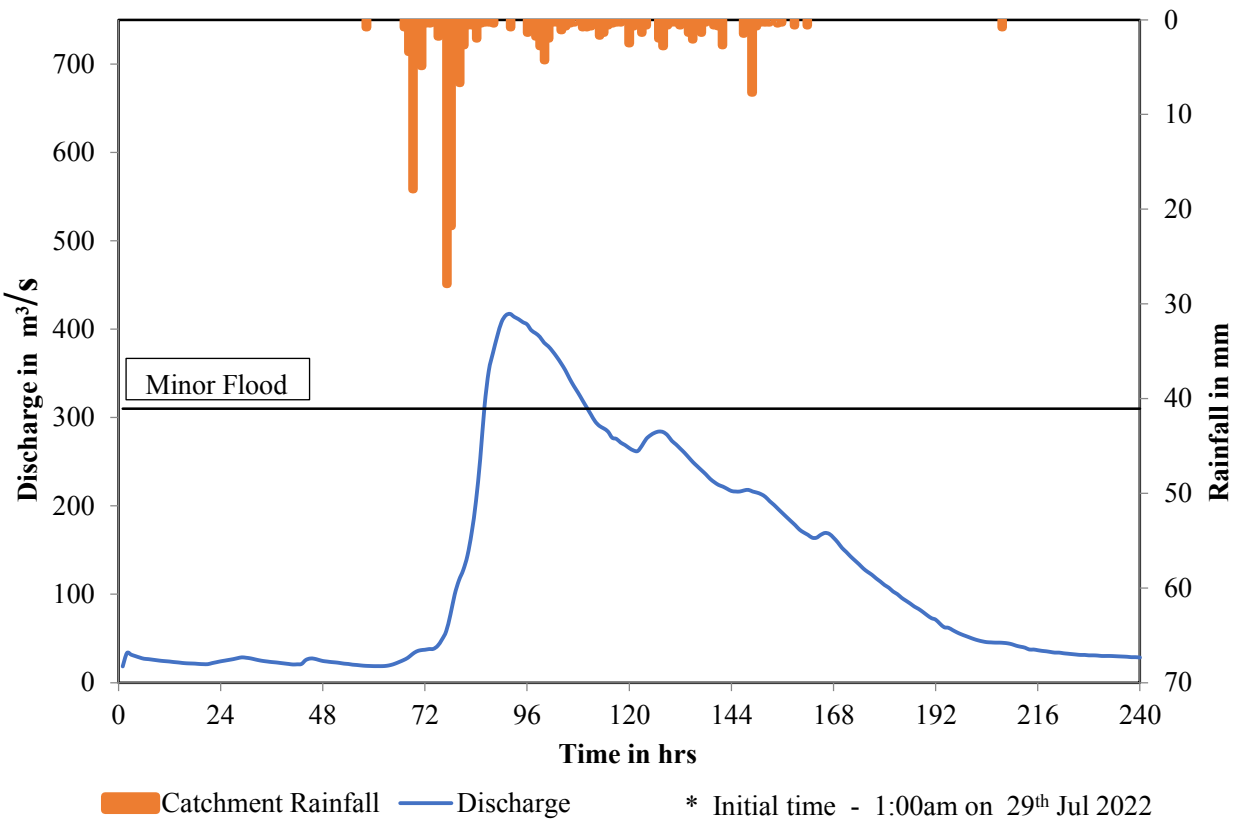

Fig. 84: Maximum flood during 2021/22 - Kalu Ganga at Rathnapura

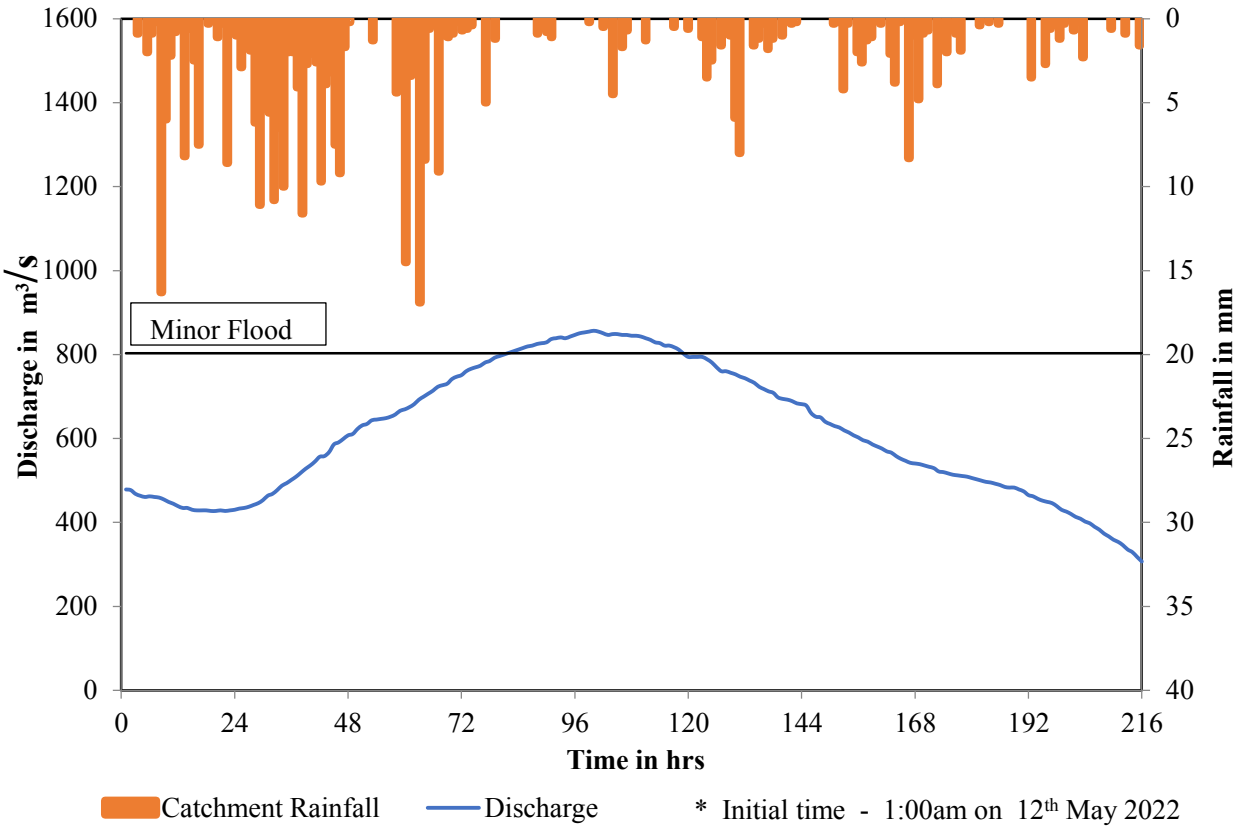

Fig. 85: Maximum flood during 2021/22 - Kalu Ganga at Ellagawa

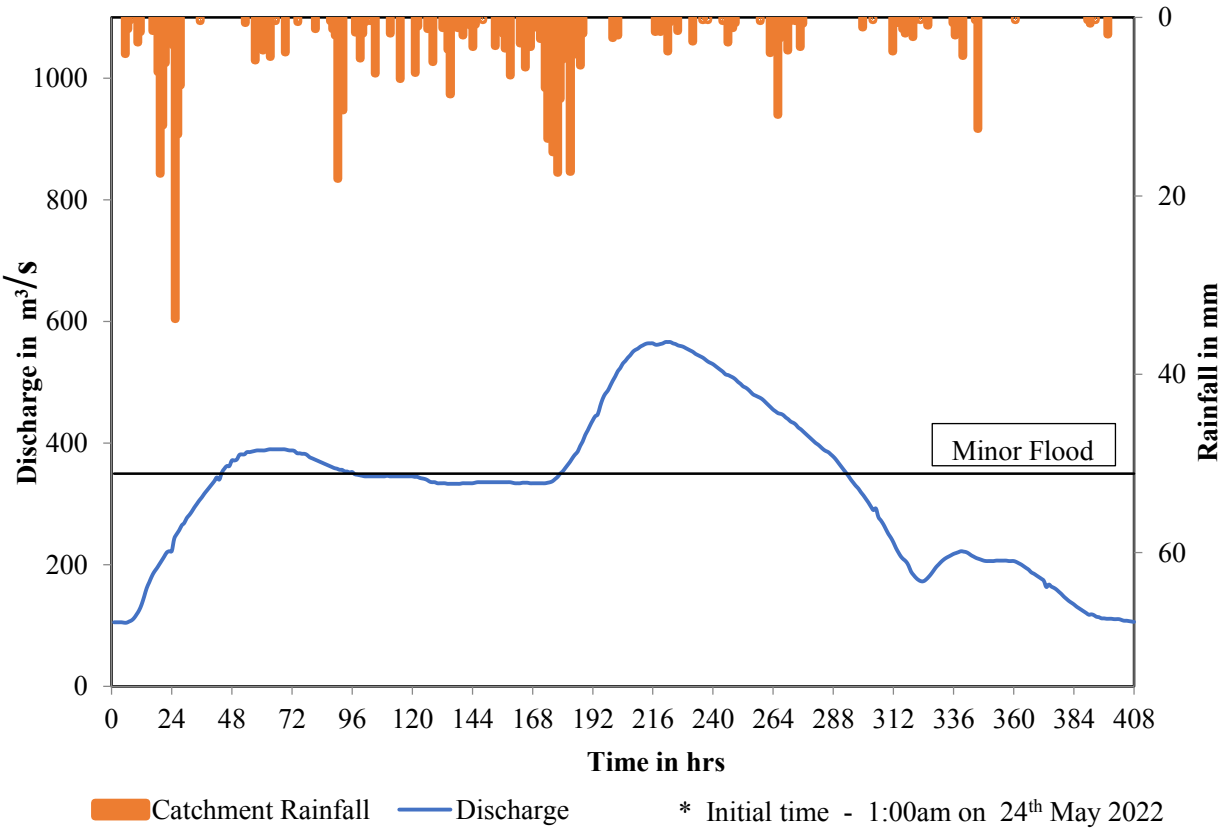

Fig. 86: Maximum flood during 2021/22 - Kuda Ganga at Millakanda

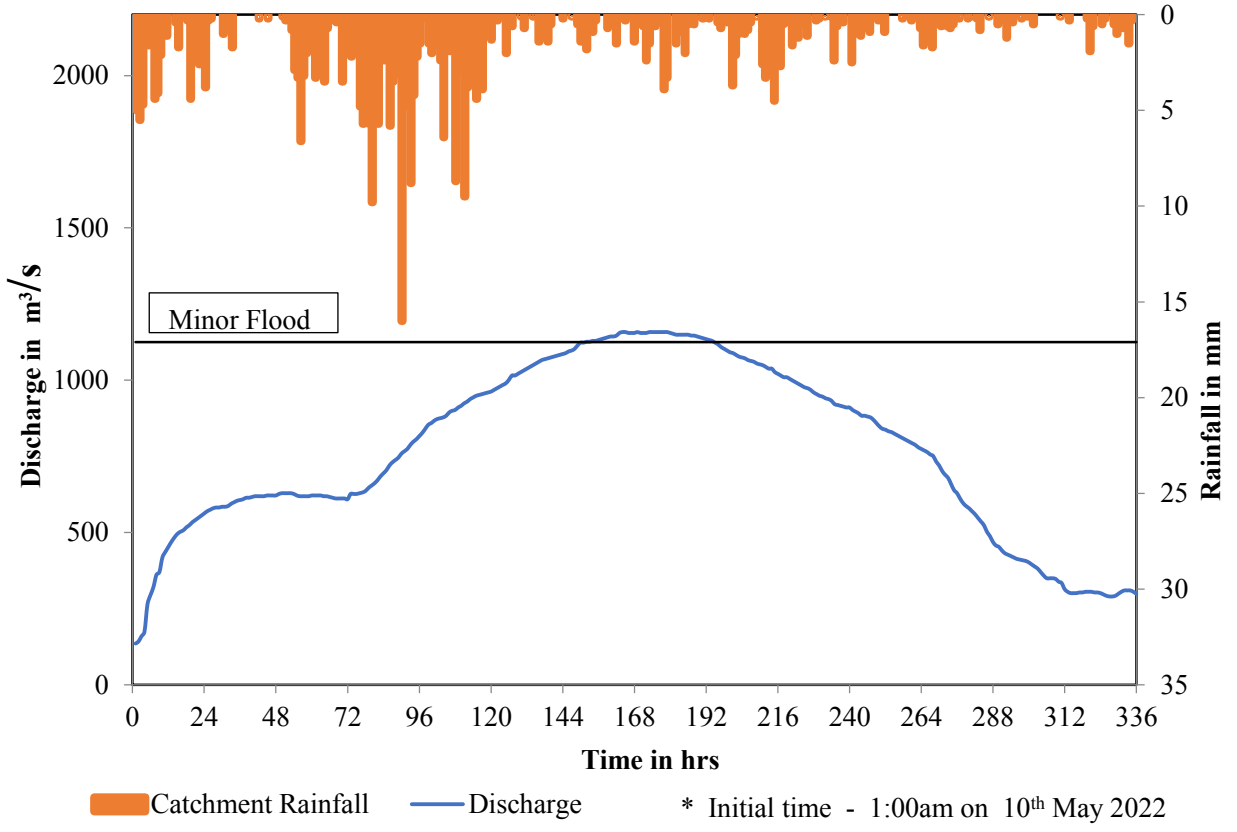

Fig. 87: Maximum flood during 2021/22 - Kalu Ganga at Putupaula

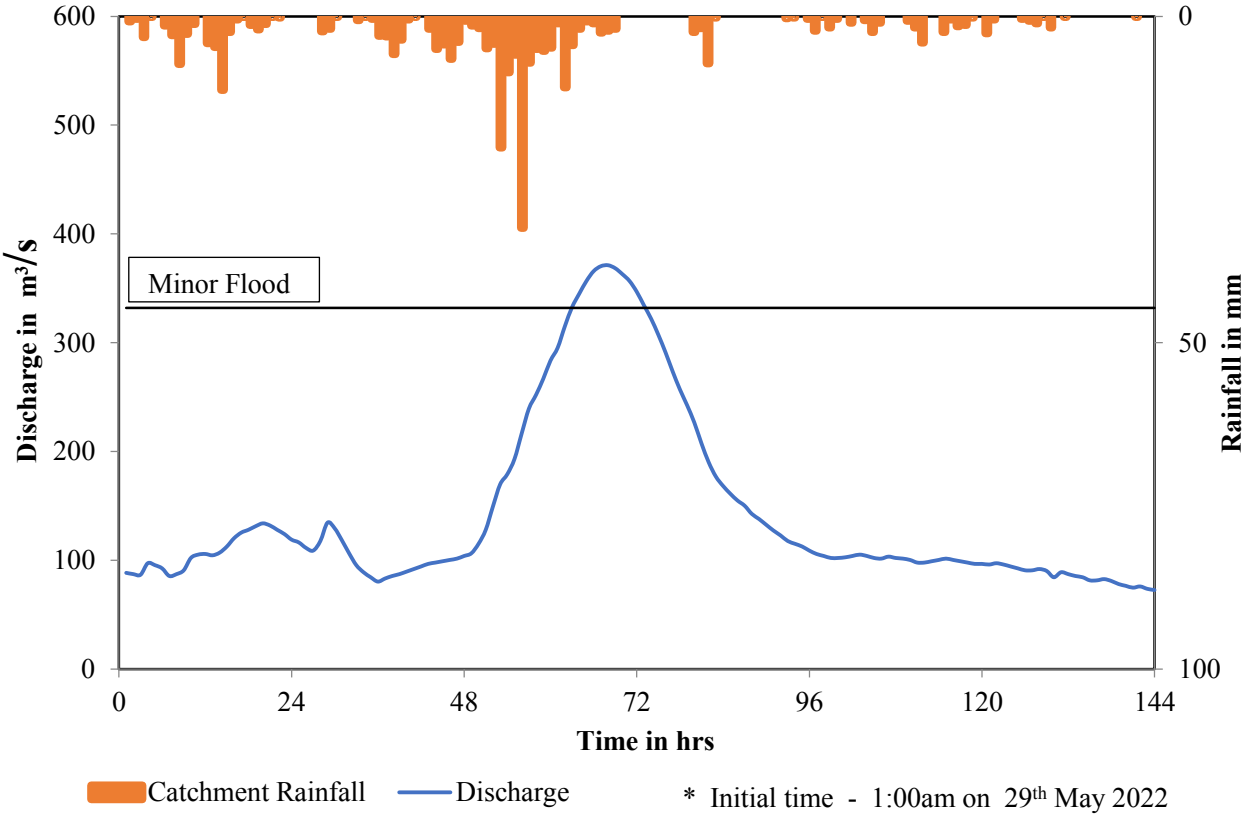

Fig. 88: Maximum flood during 2021/22 - Gin Ganga at Thawalama

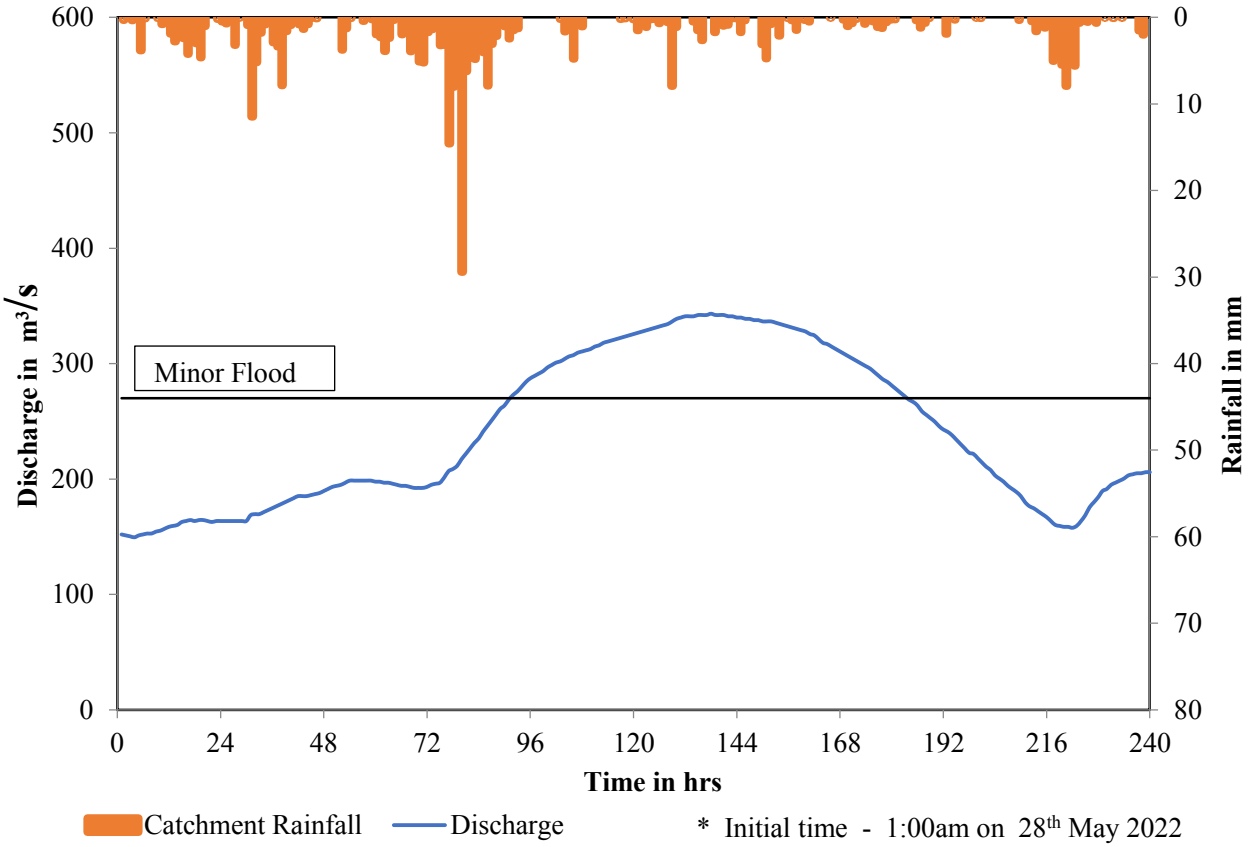

Fig. 89: Maximum flood during 2021/22 - Gin Ganga at Baddegama

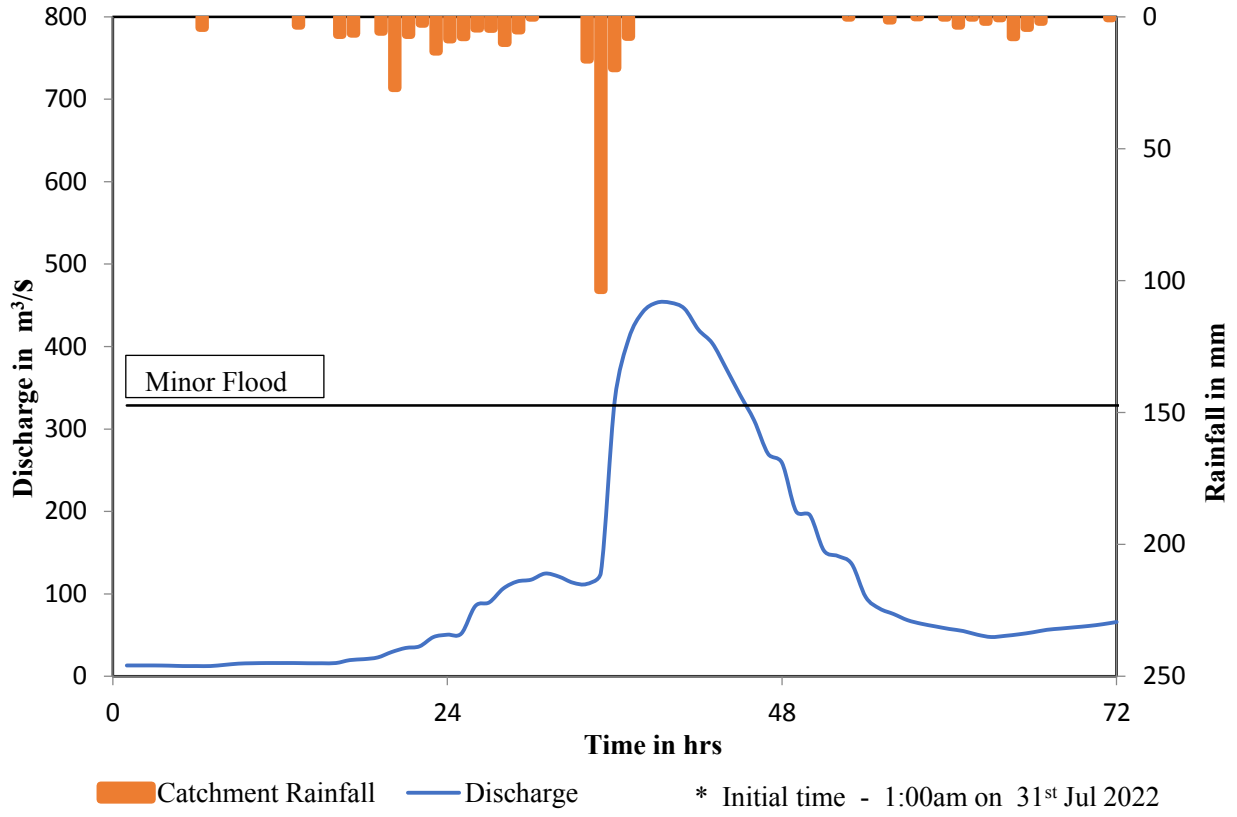

Fig. 90: Maximum flood during 2021/22 - Nilwala Ganga at Pitabeddara

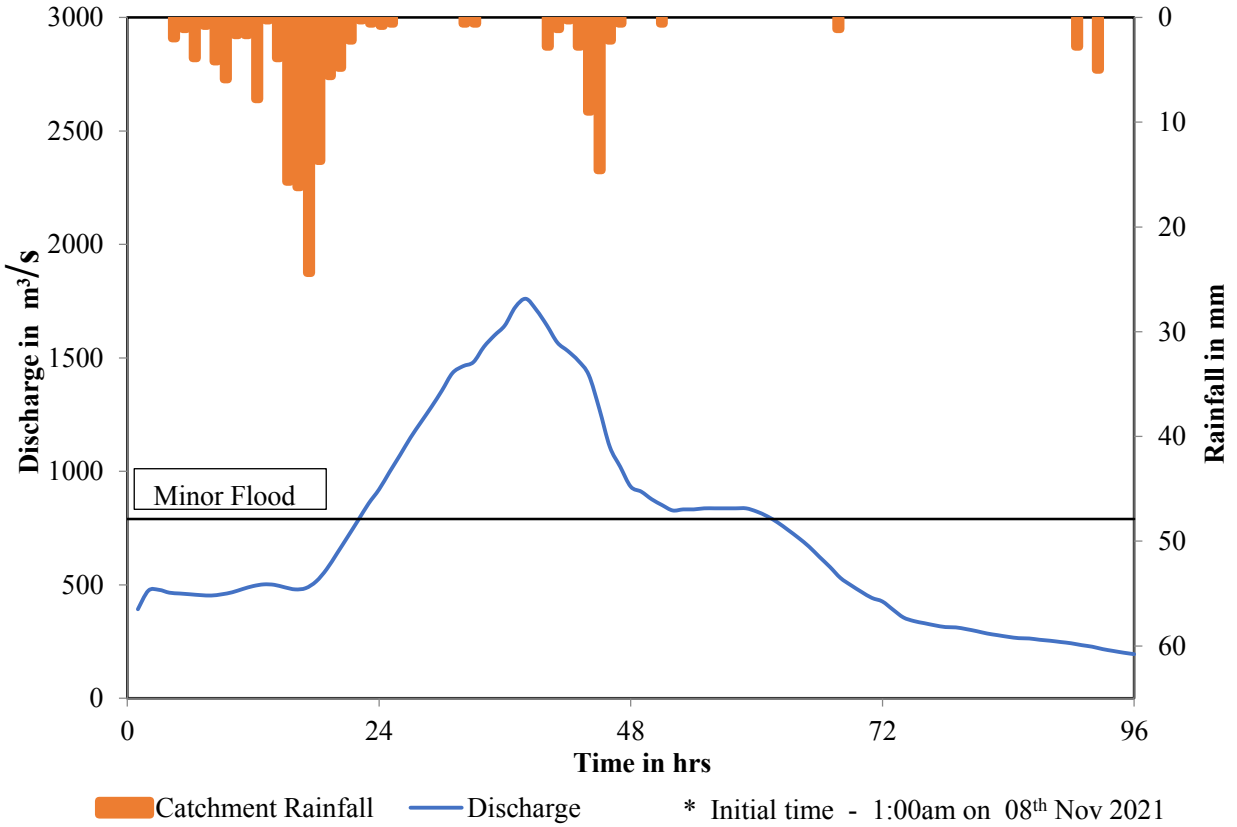

Fig. 91: Maximum flood during 2021/22 - Maha Oya at Giriulla

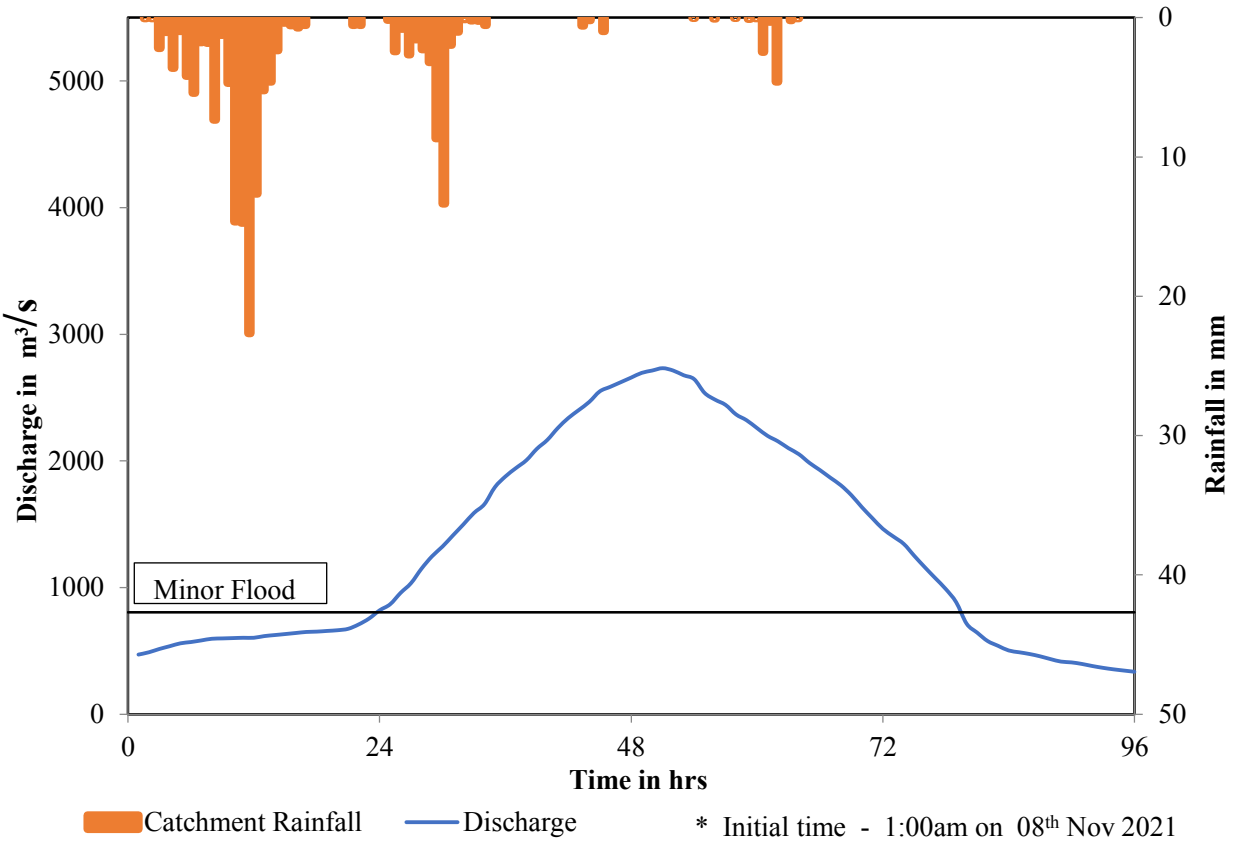

Fig. 92: Maximum flood during 2021/22 - Maha Oya at Badalgama

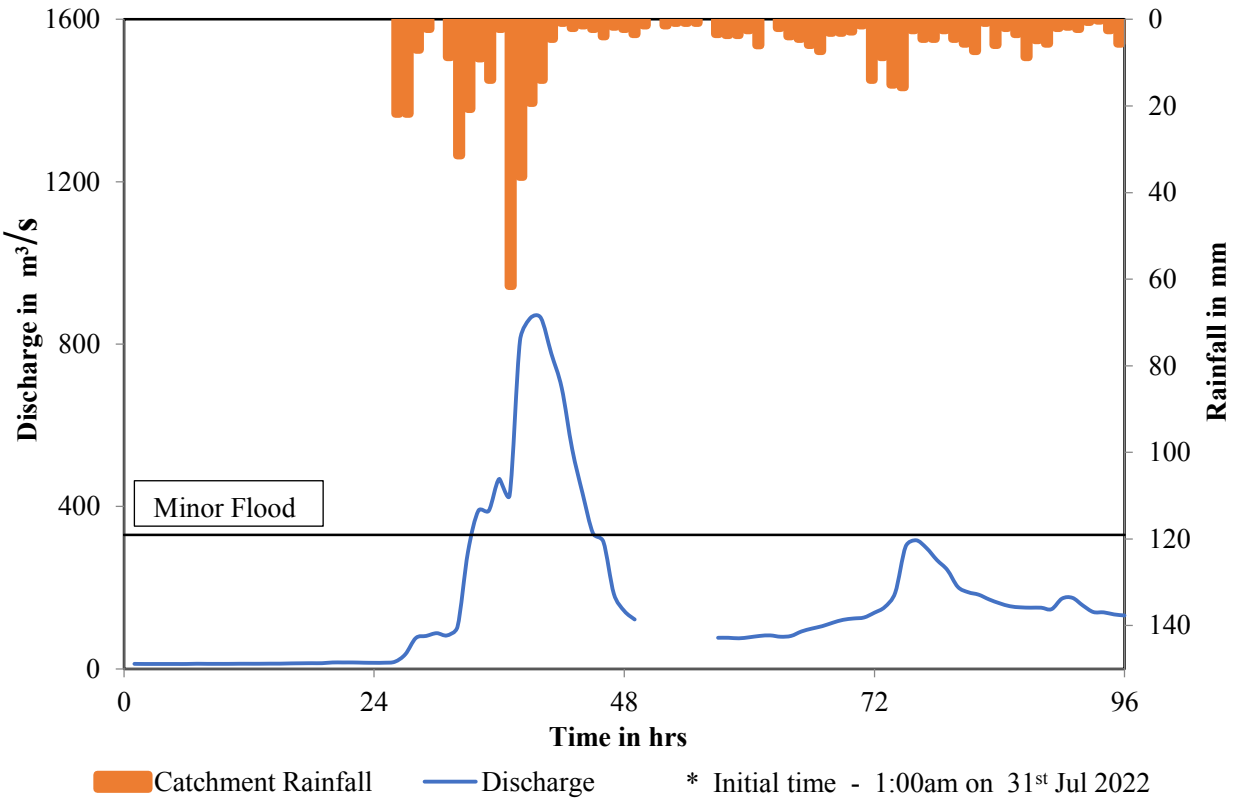

Fig. 93: Maximum flood during 2021/22 - Mahaweli Ganga at Nawalapitiya

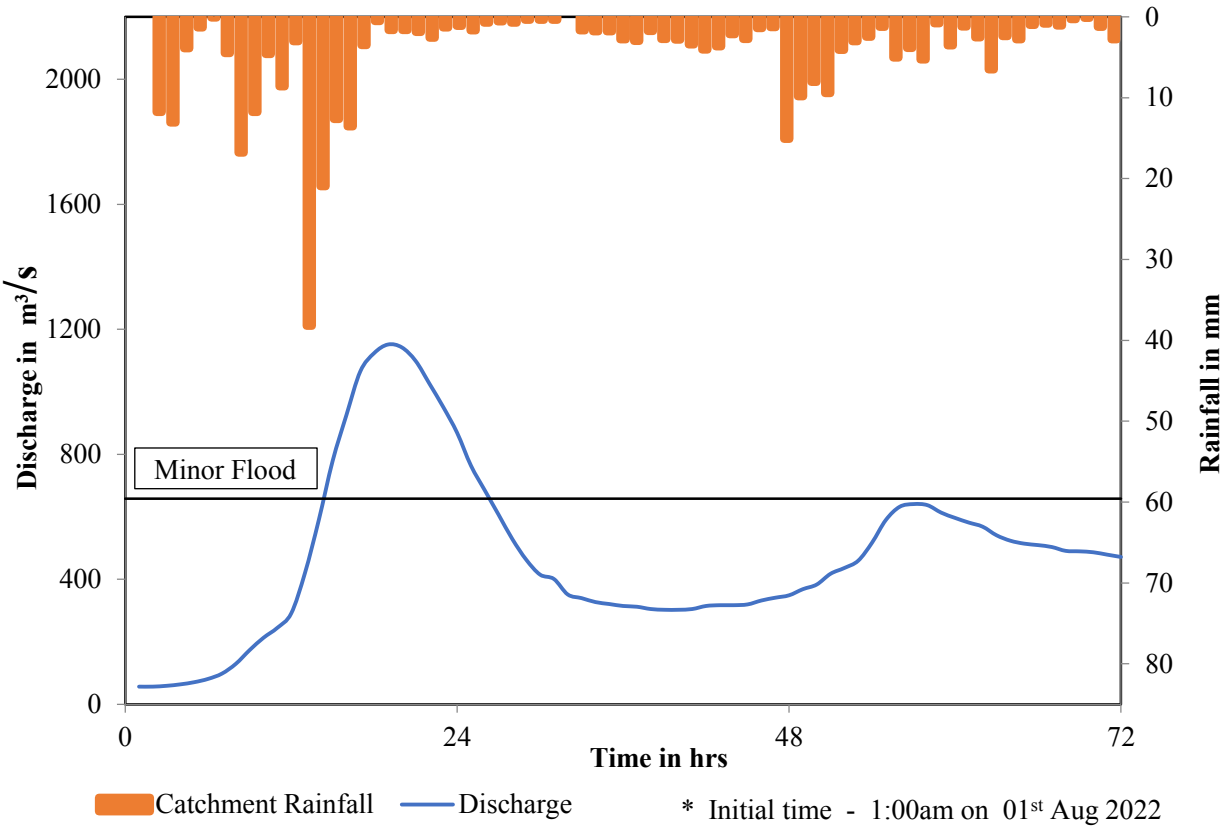

Fig. 94: Maximum flood during 2021/22 - Mahaweli Ganga at Peradeniya

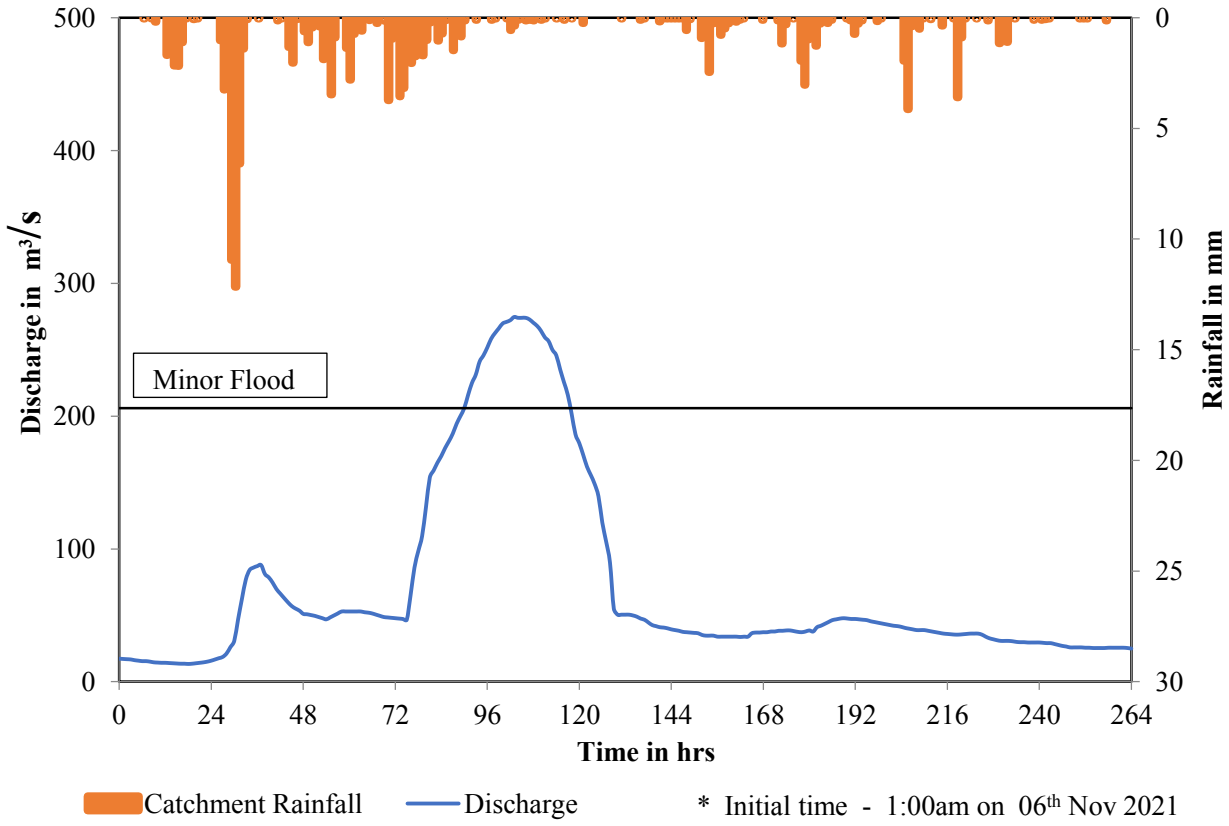

Fig. 95: Maximum flood during 2021/22 - Malwathu Oya at Thanthirimale

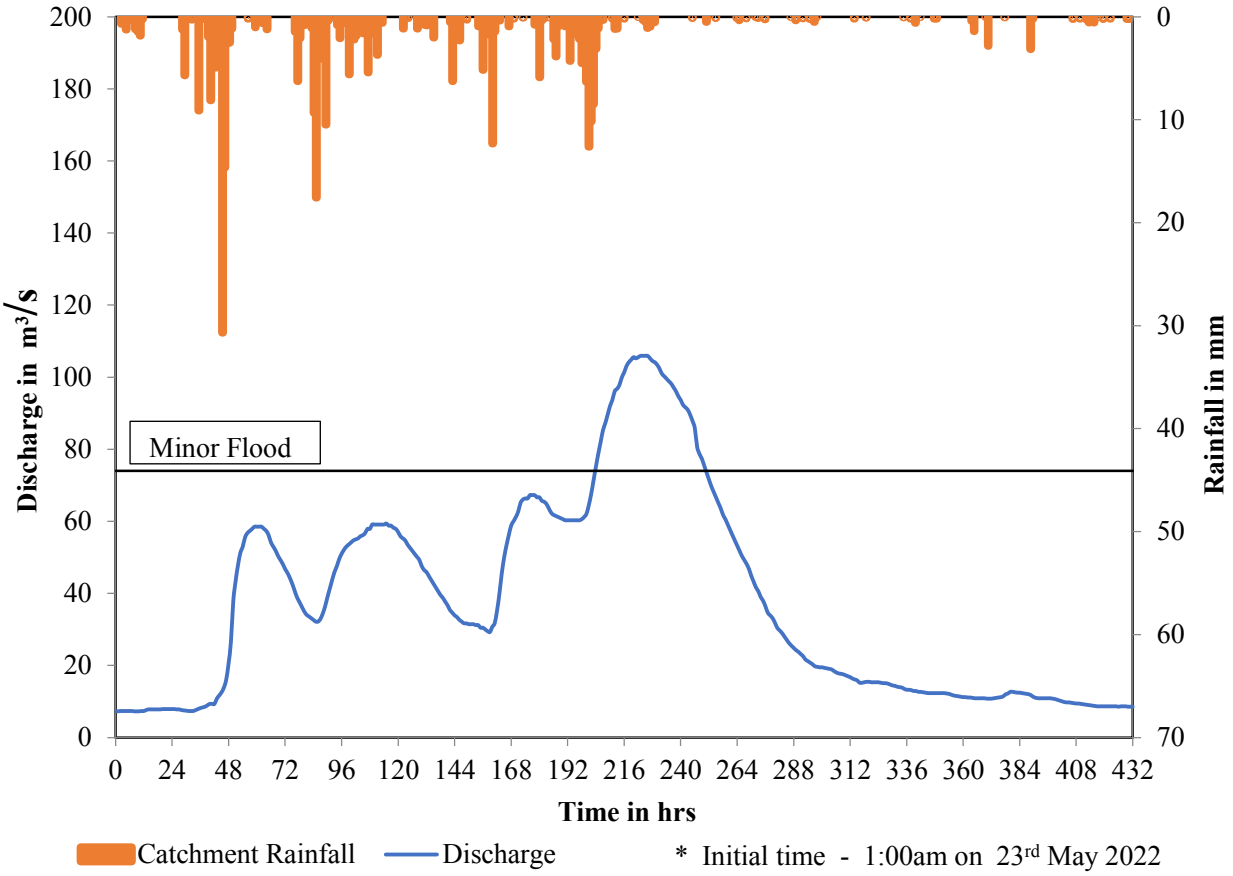

Fig. 96: Maximum flood during 2021/22 - Aththanagalu Oya at Dunamale