

Chapter 5 Hydrological Analysis of Flood Control

5.1 Rainfall Analysis

5.1.1 Data Collection Situation

The collected data related to hydrology are following.

Hydrological data required for rainfall analysis and run-off analysis was collected from FMS. Observatory of rainfall and water level are shown in Table 5-1, and location map of these facilities is shown in Figure 5-1 and collected rainfall data is shown in Table 5-2.

Table 5-1 Rainfall and Water Level Observatory

	SITE	Name	Coordinate			Status	Managed by	Type	Remark
			Latitude	Longitude	Source				
Rainfall	1778510	Navu/Solovi	17°50' 52" S	177°31' 06" E	Rep 1	Not operating	FMS	PA	Installed by PWD Not working from 2008
	V7793103	Nawaicoba Res. Sin	17°55' 26.5"S	177°22' 59.6"E	FMS	Not operating	MOA		
	77744	Nadi Airport	17°45' 35.8"S	177°26' 41.7"E	FMS	Operating	FMS	Telemetry	
	177765	Vaturu dam	17°45' 03"S	177°39' 56"E	FMS	Operating	WAF	Telemetry	
	1777612	Waidum	17°44' 43" S	177°35' 52" E	Repl	Operating	WAF	Telemetry	
	1778611	Tubenasolo (old) Tubenasolo (new)	17°51' 41.92" S 17°49'47.29"S	177°35' 46.53" E 177°36'16.14"E	FMS	Not operating Operating	FMS	Old Telemetry	IWRM, Telemetry from 2010.12
	777701	Navunitawa	17°45'16.36"S	177°42'53.94"E	FMS	Operating	FMS	Telemetry	IWRM, Telemetry from 2010.12
	1777512	Molveitala	17°45' 06.51" S	177°33' 23" E	Repl	Not Operating	FMS	PA	Discontinue from 2009
	1777510	Naboutini	17°43' 15" S	177°32' 10" E	Repl	Not Operating	FMS	PA	Discontinue from 2008
	1777513	Nadurugu	17°42' 34.36" S	177°44' 44.52" E	Repl	Not Operating	FMS	PA	Not working from 1999.12
	1777710	Bukuyu	17°46' 31" S	177°45' 41" E	Repl	Operating	FMS	Telemetry	Upgrade 2013
	V7786103	Nausori Highland	17°48' 40"S	177°35' 58"E	FMS	Not operating	DOF		
	1779510	Vunamoli	17°56' 43" S	177°29' 36" E	Repl	Not operating	FMS	PA	
	1776510	Navilawa	17°44' 57" S	177°33' 45" E	Repl	Not operating	FMS	PA	
	778602	Natawa Village	17°47' 35.90" S	177°39' 30.07" E	FMS	Operating	FMS	Telemetry	IWRM
	777502	Toko Village	17°47' 12.36" S	177°35' 22.12" E	FMS	Operating	FMS	Telemetry	IWRM
	777501	Nagado	17°44' 25.72" S	177°32' 43.59" E	FMS	Operating	FMS	Telemetry	IWRM
	778501	K2	17°51' 20.91" S	177°30' 21.32" E	FMS	Operating	FMS	Telemetry	IWRM
Water Level	426351	Toko Village	17°47'14.82"S	177°35'25.01"E	FMS	Operating	FMS	Telemetry	IWRM
	425302	Votualevu Old P/House	17°46'24.94"S	177°29'50.30"E	FMS	Operating	FMS	Telemetry	IWRM
	424330	Nadi Bridge	17°47'55.05"S	177°24'58.83"E	FMS	Operating	FMS	Telemetry Automatic before IWRM	IWRM
	425200	Yavuna	17°49'36.67"S	177°32'13.14"E	FMS	Operating	FMS	Telemetry	IWRM
	425202	Namulomulo	17°47'41.26"S	177°29'58.68"E	FMS	Operating	FMS	Telemetry	IWRM
	425201	Natuacere	17°50'28.76"S	177°28'13.17"E	FMS	Not operating	FMS	Telemetry Automatic before IWRM	IWRM

V: Meteorological Station

PA: Rainfall Station with Automatic Recorder

P:Manual

Rep1: Detailed Planning Survey for The Project for The Planning of The Nadi River Flood Control Structures

FMS: Fiji Meteorological Service

MOA: Ministry of Agriculture

WAF: Water Authority of Fiji

DOF: Department of Forest

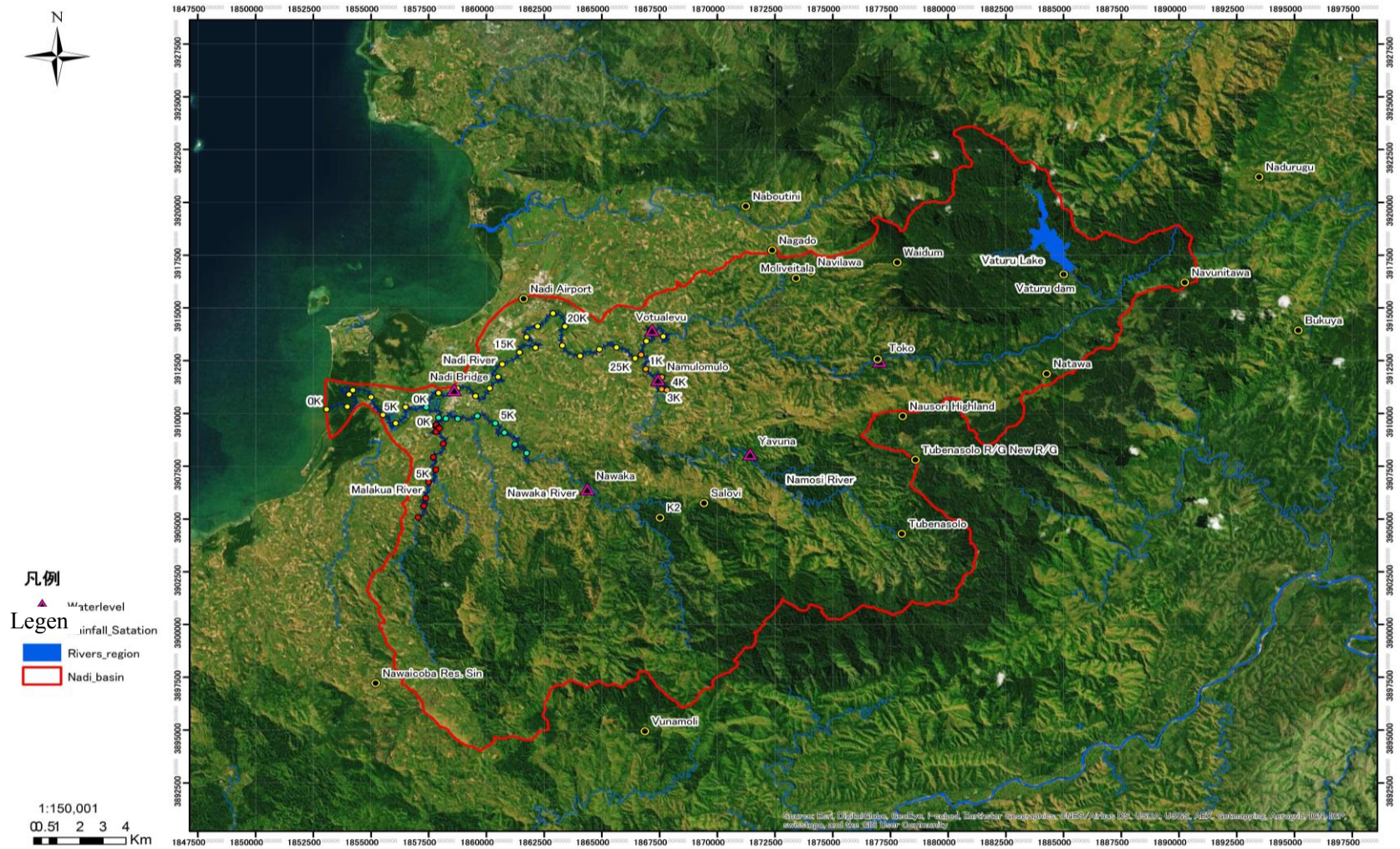


Figure 5-1 Location Map of Rainfall and Water Level Observatory

5.1.2 Selection of Target Flood

Target floods to be used for setting of flood concentration time and design rainfall duration should be major floods after 1991, in which hourly rainfall data is observed and water level in Votualevu water level gauge is over 6.0m. As a result 26 major floods were selected to comply with the above criteria.

Water level of 6.0m at Votualevu water gauge is set based on the flood warning standards (refer to Figure 5-2), and referred to the discharge which flows down from Votualevu water level gauge to Nadi Town Bridge water level gauge in condition of river channel fully occupied.

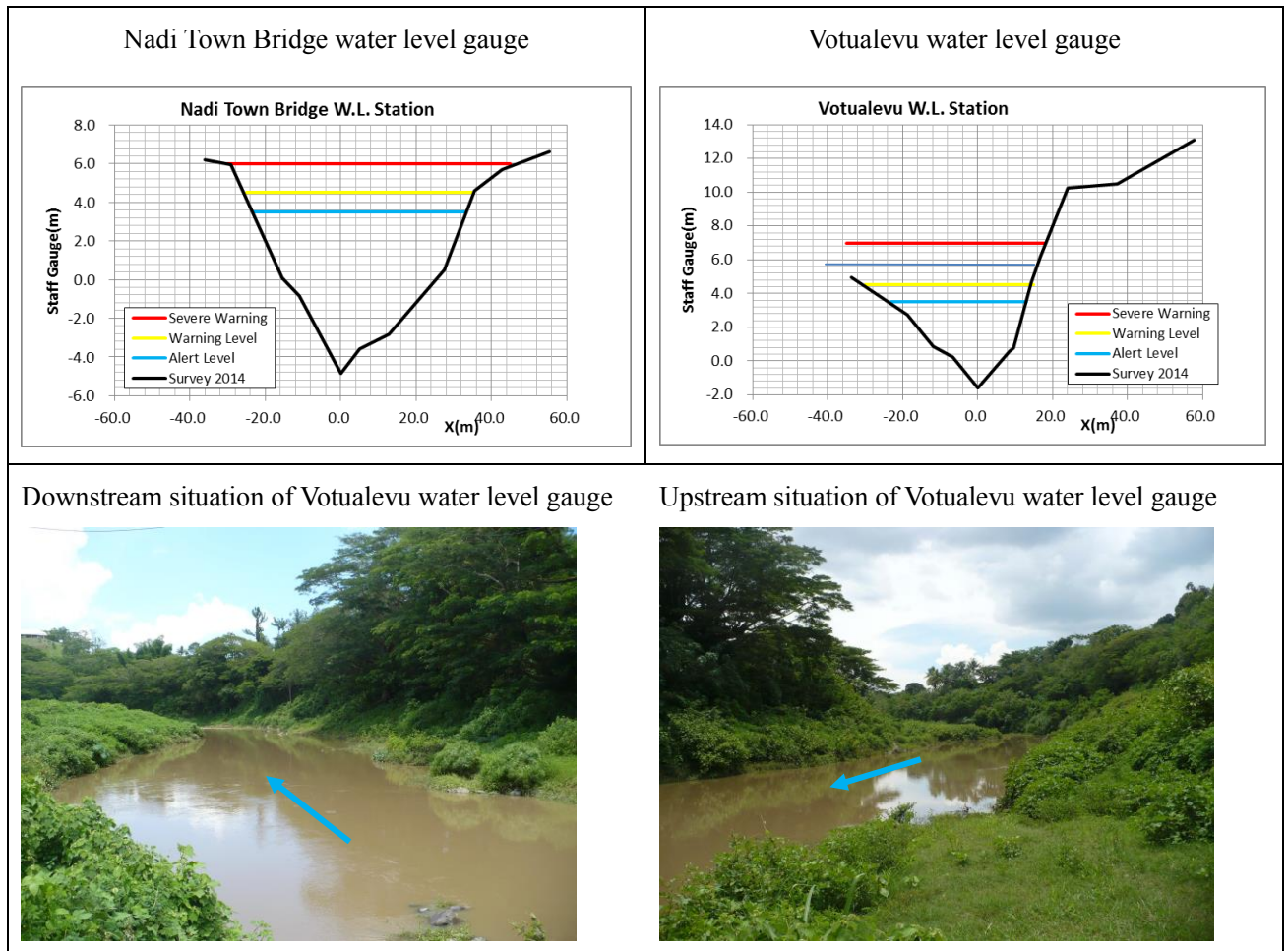


Figure 5-2 Warning Standards of Votualevu Water Level Gauge and Nadi Town Bridge Water Level Gauge

5.1.3 Setting of Flood Concentration Time

Understanding of the time / interval which contributes to the development of peak discharge is required to set the design discharge. Therefore, flood concentration time is needed to be calculated. There are several methods to set flood concentration time as shown in Table 5-4. Gravity center of hyetograph is used for setting here, since the rainfall gauges in the basin are sparsely-distributed and not all the gauges can be used for calculating of average depth of rainfall over area depending on floods, and the peak of average depth of rainfall cannot be acquired properly. Flood concentration time is set as twice the time deference between a peak of rainfall and a peak of outflow. Therefore, the flood concentration time at Nadi Town Bridge is set as 14 hours.

“(3)Calculation of Flood Concentration Time by Kinematic Wave Method”, “(4)Calculation of Flood Concentration Time by ”, “(5)Relation between Short-Term Rainfall and Peak Flow Discharge” are shown only as references. Flood concentration times calculated by (3) to (5) are similar to the calculated value by (2). Therefore, 14 hours of flood concentration time is considered as an appropriate value.

Table 5-4 Setting of Flood Concentration Time

Methods	Flood concentration time (hr)	✓ : Value to be used
	Nadi Town Bridge Water Level Gauge	● : As references
(1) Calculation of Flood Concentration Time by Time Difference of Peak	15.0 (Average)	●
(2) Calculation of Flood Concentration Time by Gravity Center of Hyetograph	Around 14.0 (Average)	✓
(3) Calculation of Flood Concentration Time by Kinematic Wave Method	11.1 (Average)	●
(4) Calculation of Flood Concentration Time by Kadoya’s Method	12.1 (Average)	●
(5) Relation between Short-Term Rainfall and Peak Flow Discharge	16.6	●
Set flood concentration time	14	

(1) Calculation of Flood Concentration Time by Time Difference of Peaks

Since there are limited number of floods, which have the observed water level to be used for calculation of flood concentration time by time difference of peaks, at the control point (Nadi Town Bridge), time difference of peaks at Votualevu water level gauge and flow time between Votualevu to Nadi Town Bridge are used. Flow time is the average time difference between peak times of water levels at Votualevu and Nadi Town Bridge. Here, watershed of Votualevu is considered as almost the same with watershed of confluence of the Namosi River. Therefore, peak of rainfall in watershed of confluence of the Namosi River is used for calculation (refer to Figure 5-4).

Calculated flood concentration time is as shown in Table 5-5.

Table 5-5 Flood Concentration Time by Time Difference of Peaks

	Peak of time difference (tg)	Flood concentration time (2tg)
1) Time difference of peaks at Votualevu (refer to Table 5-6)	5.22 (hr)	10.44 (hr)
2) Flow time between Votualevu and Nadi Town Bridge (refer to Table 5-7)		4.6 (hr)
Total		15.0 (hr)

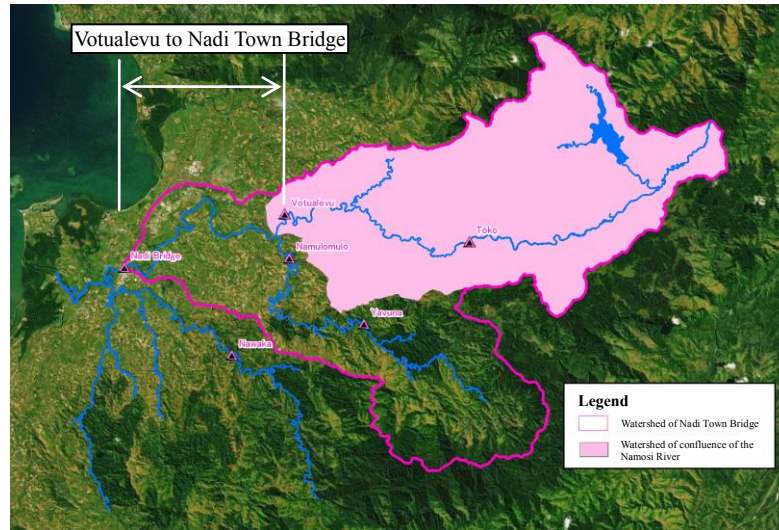


Figure 5-4 Positional relation between Nadi Town Bridge and Votualevu

Table 5-6 Time Difference between Peak of Water level and Peak of Rainfall at Votualevu Water Level Gauge

No.	Date (year / month / day)	Peak of Water Level		Peak of Rainfall		Time Difference, Tg (h)	2tg (hr)	Votualevu~ NadiTownBridge Flow Time	Evaluation	
		Time of Occurrence	Water Level (m)	Time of Occurrence	Rainfall (mm)					
1	1997/1/25-1/27	1997/1/25 22:00	6.20	1997/1/25 11:00	18.02	11.00	22.00		○	
2	1997/1/30-1/31	1997/1/31 1:00	6.20	1997/1/30 11:00	10.43	14.00	28.00			
3	1997/3/7-3/10	1997/3/8 2:00	8.70	1997/3/8 2:00	26.89	0.00	0.00			
4	1999/1/18-1/19	1999/1/19 8:00	9.40	1999/1/19 4:00	33.66	4.00	8.00		○	
5	2000/5/4	2000/5/4 17:00	6.90	2000/5/4 15:00	26.52	2.00	4.00		○	
6	2000/12/5-12/7	2000/12/7 14:00	6.70	2000/12/7 10:00	26.89	4.00	8.00		○	
7	2000/12/12	2000/12/12 16:00	6.50	2000/12/12 11:00	17.70	5.00	10.00		○	
8	2001/3/14	2001/3/14 20:00	9.00	2001/3/14 17:00	49.75	3.00	6.00		○	
9	2001/10/22	2001/10/22 17:00	6.20	2001/10/22 14:00	23.99	3.00	6.00		○	
10	2002/2/23-2/24	2002/2/24 12:00	8.40	2002/2/24 9:00	20.36	3.00	6.00		○	
11	2003/3/9-3/14	2003/3/12 16:00	7.10	2003/3/12 13:00	23.13	3.00	6.00			
12	2005/4/18-4/19	2005/4/19 1:00	9.50	2005/4/18 19:00	24.30	6.00	12.00		○	
13	2007/2/9-2/10	2007/2/9 22:00	6.30	2007/2/9 19:00	16.67	3.00	6.00		○	
14	2007/2/12	Missing Data		2007/2/12 21:00	27.90					
15	2007/3/24-3/26	2007/3/25 10:00	9.50	2007/3/25 0:00	18.80	10.00	20.00		○	
16	2008/1/28-1/30	Missing Data		2008/1/29 3:00	19.63					
17	2008/2/25	2008/2/25 5:00	6.60	2008/2/25 3:00	2.46	2.00	4.00			
18	2008/3/29	2008/3/29 20:00	7.30	2008/3/29 14:00	18.39	6.00	12.00		○	
19	2008/11/28-11/29	2008/11/29 5:00	5.80	2008/11/29 2:00	22.33	3.00	6.00		○	
20	2009/1/7-1/11	2009/1/9 4:00	10.60	2009/1/8 22:00	37.96	6.00	12.00		○	
21	2009/1/12-1/15	2009/1/13 19:00	9.80	2009/1/13 16:00	26.41	3.00	6.00		○	
22	2011/2/18-2/19	2011/2/18 21:00	7.04	2011/2/18 18:00	18.77	3.00	6.00		○	
23	2012/1/5-1/7	2012/1/7 4:00	6.52	2012/1/5 18:00	11.22	34.00	68.00			
24	2012/1/23-1/25	Missing Data		2012/1/23 7:00	30.67					
25	2012/3/29-4/2	2012/3/30 8:00	14.40	2012/3/30 5:00	47.88	3.00	6.00		○	
26	2014/1/29-1/31	2014/1/30 15:00	7.68	2014/1/29 23:00	20.61	16.00	32.00		○	
Average						5.22	10.44	4.60		
Flood Concentration Time @ Nadi Town Bridge								15.0		

* No20, 25 are estimate values by flood simulation. Moreover, the first peak out of two peaks of rainfall is used for calculation of value of No20

Table 5-7 Flow time between Votualevu to Nadi Town Bridge

No.	Date (year / month / day)	Peak of Water Level at Votualevu		Peak of Water Level at Nadi Town Bridge		Time Difference (h)
		Time of Occurrence	Water Level (m)	Time of Occurrence	Water Level (m)	
1	2012/3/29-4/2	Missing Data		Missing Data		
2	2008/1/28-1/30	Missing Data		Missing Data		
3	2009/1/7-1/11	Missing Data		Missing Data		
4	2007/2/12	Missing Data		2007/2/12 12:00	6.20	
5	2009/1/12-1/15	2009/1/13 19:00	9.80	Missing Data		
6	2012/1/23-1/25	Missing Data		Missing Data		
7	2005/4/18-4/19	2005/4/19 1:00	9.50	2005/4/19 6:00	4.70	5.00
8	2007/3/24-3/26	2007/3/25 10:00	9.50	2007/3/25 13:00	5.93	3.00
9	1999/1/18-1/19	1999/1/19 8:00	9.40	1999/1/19 16:00	6.93	8.00
10	2001/3/14	2001/3/14 20:00	9.00	2001/3/15 0:00	5.44	4.00
11	1997/3/7-3/10	1997/3/8 2:00	8.70	Missing Data		
12	2002/2/23-2/24	2002/2/24 12:00	8.40	Missing Data		
13	2014/1/29-1/31	2014/1/30 15:00	7.68	2014/1/30 19:00	5.35	4.00
14	2008/3/29	2008/3/29 20:00	7.30	Missing Data		
15	2003/3/9-3/14	2003/3/12 16:00	7.10	Missing Data		
16	2011/2/18-2/19	2011/2/18 21:00	7.04	2011/2/19 2:00	5.58	5.00
17	2000/5/4	2000/5/4 17:00	6.90	Missing Data		
18	2000/12/5-12/7	2000/12/7 14:00	6.70	2000/12/7 18:00	5.04	4.00
19	2008/2/25	2008/2/25 5:00	6.60	Missing Data		
20	2012/1/5-1/7	2012/1/7 4:00	6.52	2012/1/7 8:00	5.52	4.00
21	2000/12/12	2000/12/12 16:00	6.50	2000/12/12 21:00	5.48	5.00
22	2007/2/9-2/10	2007/2/9 22:00	6.30	2007/2/10 2:00	3.99	4.00
23	1997/1/25-1/27	1997/1/25 22:00	6.20	Missing Data		
24	1997/1/30-1/31	1997/1/31 1:00	6.20	Missing Data		
25	2001/10/22	2001/10/22 17:00	6.20	Missing Data		
26	2008/11/28-11/29	2008/11/29 5:00	5.80	Missing Data		
Average						4.60

(2) Calculation of Flood Concentration Time by Gravity Center of Hyetograph

Since hyetograph has a time variability and it varies enormously, not peak time of rainfall but gravity center of hyetograph is used to calculate the time difference between peak of rainfall and peak of discharge in this method (refer to Figure 5.1-). Delay time of runoff is described as “tg” and flood concentration time is set as twice the time difference between a peak of rainfall and a peak of outflow in this method.

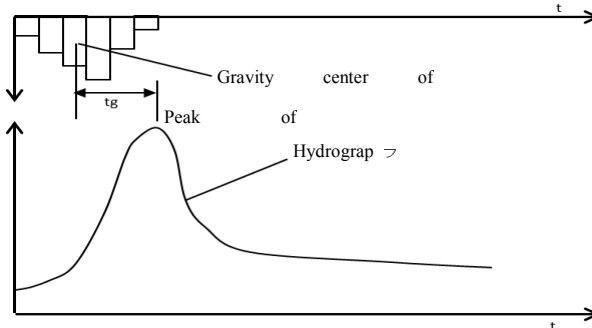


Figure 5.1-5 Image of Flood Concentration Time by Gravity Center of Hyetograph

Calculated flood concentration time with this method is 14 hours as shown in Table 5-8.

Table 5-8 Calculation Result of Flood Concentration Time by Gravity Center of Hyetograph

	Delay time (tg)	Flood concentration time (2tg)
1) Time difference of peaks at Votualevu (refer to Table 5-6 Table 5-9)	4.69 (hr)	9.39 (hr)
2) Flow time between Votualevu and Nadi Town Bridge (refer to Table 5-7)		4.60 (hr)
	In total	14.0 (hr)

Table 5-9 Time Difference between Gravity Center of Hyetograph and Peak of Water Level at Votualevu

No.	Date (year / month / day)	Peak of Water Level		Peak of Rainfall	Time Difference, Tg (h)	2tg (hr)	Votualevu~ NaditownBridge Flow Time	Evaluation
		Time of Occurrence	Water Level (m)	Time of Occurrence				
1	1997/1/25-1/27	1997/1/25 22:00	6.20	1997/1/25 13:32	8.46	16.93		○
2	1997/1/30-1/31	1997/1/31 1:00	6.20	1997/1/30 18:40	6.33	12.65		○
3	1997/3/7-3/10	1997/3/8 2:00	8.70	1997/3/7 20:24	5.59	11.17		○
4	1999/1/18-1/19	1999/1/19 8:00	9.40	1999/1/19 1:56	6.06	12.12		○
5	2000/5/4	2000/5/4 17:00	6.90	2000/5/4 14:38	2.36	4.73		○
6	2000/12/5-12/7	2000/12/7 14:00	6.70	2000/12/7 8:38	5.37	10.73		○
7	2000/12/12	2000/12/12 16:00	6.50	2000/12/12 12:38	3.36	6.72		○
8	2001/3/14	2001/3/14 20:00	9.00	2001/3/14 17:08	2.87	5.73		○
9	2001/10/22	2001/10/22 17:00	6.20	2001/10/22 11:06	5.90	11.79		○
10	2002/2/23-2/24	2002/2/24 12:00	8.40	2002/2/24 7:23	4.61	9.22		○
11	2003/3/9-3/14	2003/3/12 16:00	7.10	2003/3/11 7:26				
12	2005/4/18-4/19	2005/4/19 1:00	9.50	2005/4/18 18:21	6.64	13.27		○
13	2007/2/9-2/10	2007/2/9 22:00	6.30	2007/2/9 16:21	5.64	11.27		○
14	2007/2/12	Missing Data		2007/2/12 4:18				
15	2007/3/24-3/26	2007/3/25 10:00	9.50	2007/3/25 2:54	7.10	14.20		○
16	2008/1/28-1/30	Missing Data		2008/1/29 10:50				
17	2008/2/23	2008/2/25 5:00	6.60	2008/2/25 3:34	1.42	2.84		○
18	2008/3/29	2008/3/29 20:00	7.30	2008/3/29 14:09	5.84	11.68		○
19	2008/11/28-11/29	2008/11/29 5:00	5.80	2008/11/29 1:25	3.57	7.14		○
20	2009/1/7-1/12	2009/1/9 4:00	10.60	2009/1/8 23:03	4.95	9.89		○
21	2009/1/12-1/15	2009/1/13 19:00	9.80	2009/1/13 14:30	4.49	8.99		○
22	2011/2/18-2/19	2011/2/18 21:00	7.04	2011/2/18 17:21	3.64	7.28		○
23	2012/1/5-1/7	2012/1/7 4:00	6.52	2012/1/7 1:06	2.88	5.77		○
24	2012/1/23-1/25	Missing Data		2012/1/24 21:55				
25	2012/3/29-4/2	2012/3/30 8:00	14.40	2012/3/30 4:32	3.45	6.91		○
26	2014/1/29-1/31	2014/1/30 15:00	7.68	2014/1/30 12:14	2.75	5.50		○
Average					4.69	9.39	4.60	
Flood Concentration Time @ Nadi Town Bridge							14.0	

* No20, 25 are estimate values by flood simulation. Moreover, the first peak out of two peaks of rainfall is used for calculation of value of No20

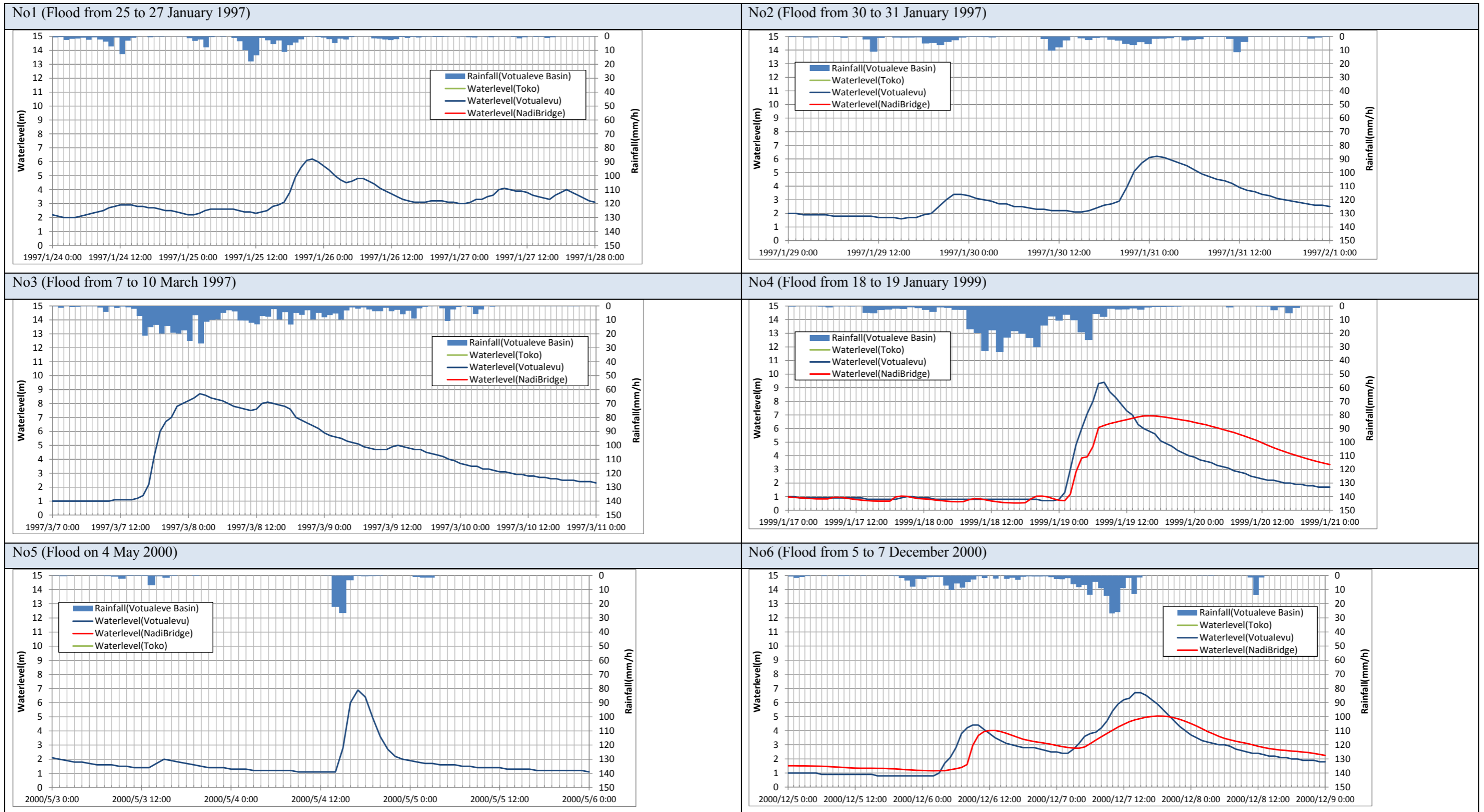


Figure 5.1-6 Hydrograph and Hyetograph of Target Flood (1/5)

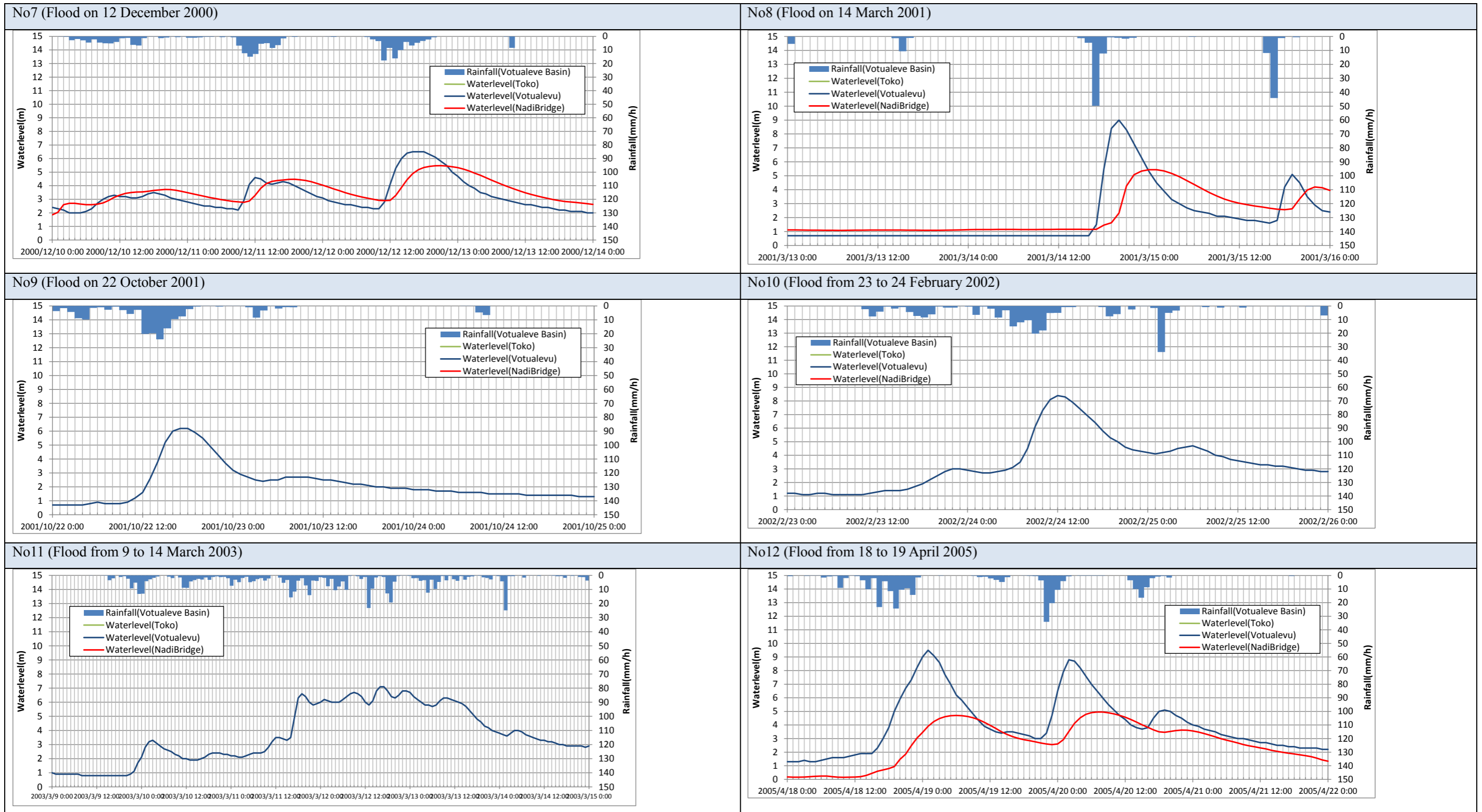


Figure 5.1-7 Hydrograph and Hyetograph of Target Flood (2/5)

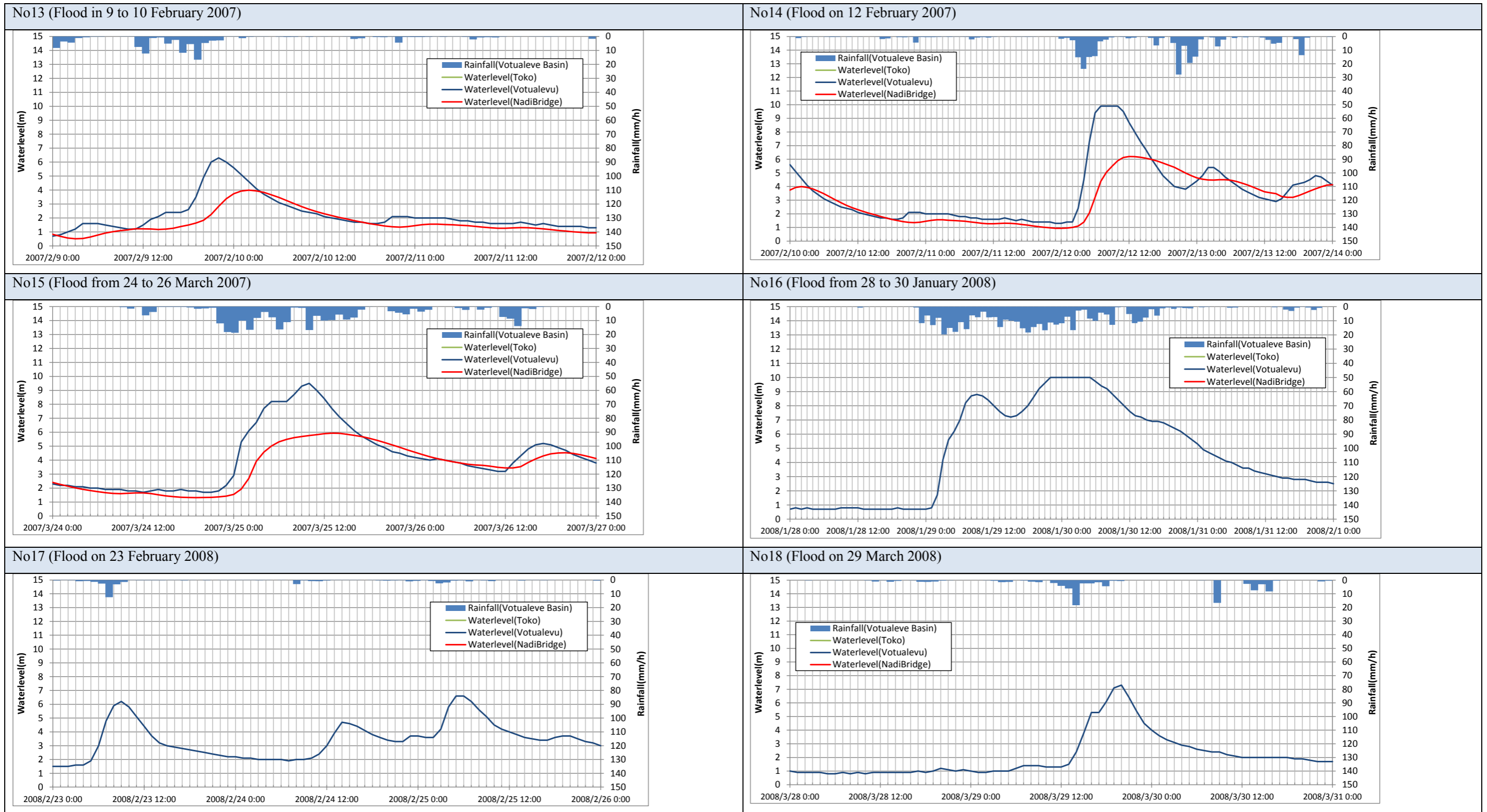


Figure 5.1-8 Hydrograph and Hyetograph of Target Flood (3/5)

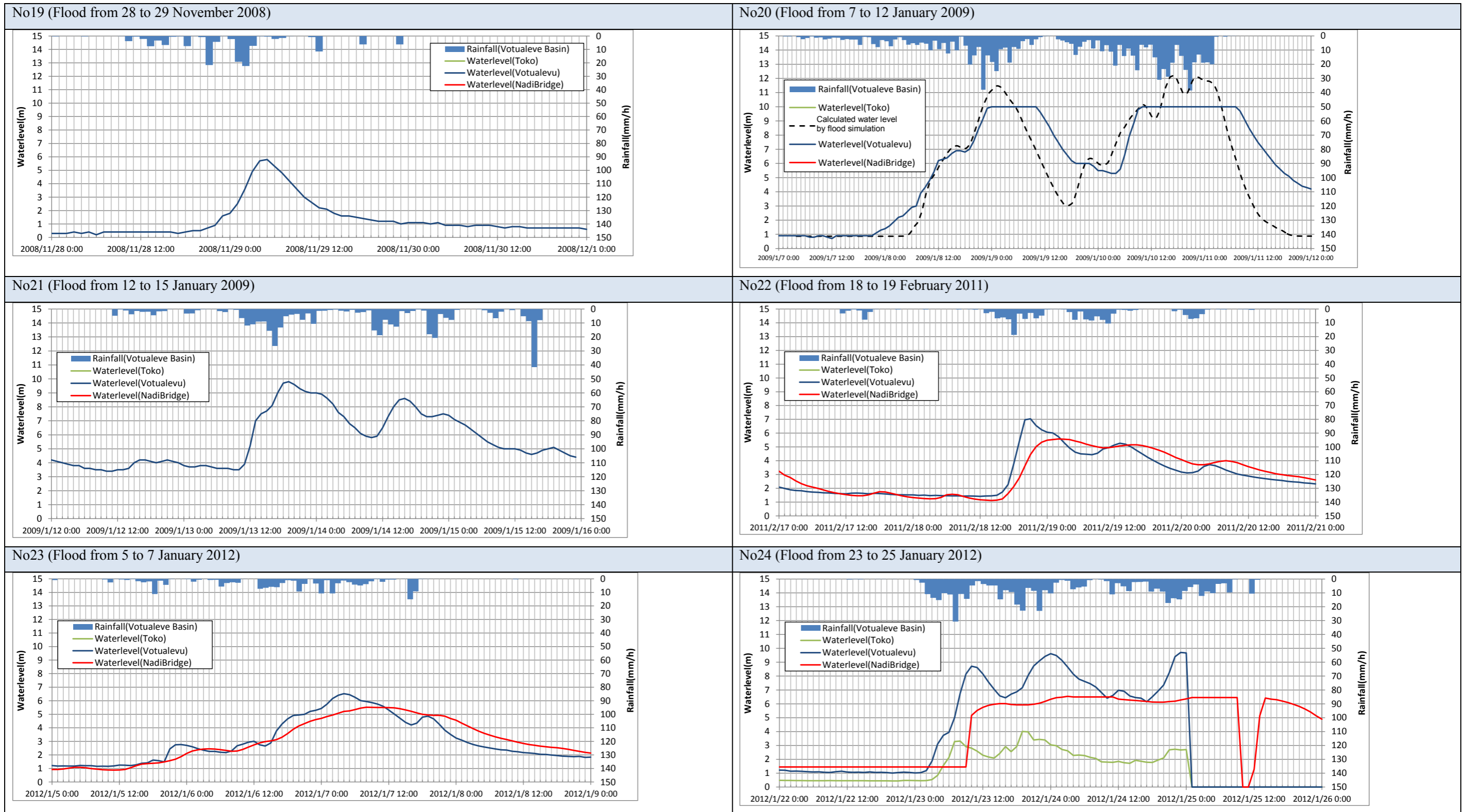


Figure 5.1-9 Hydrograph and Hyetograph of Target Flood (4/5)

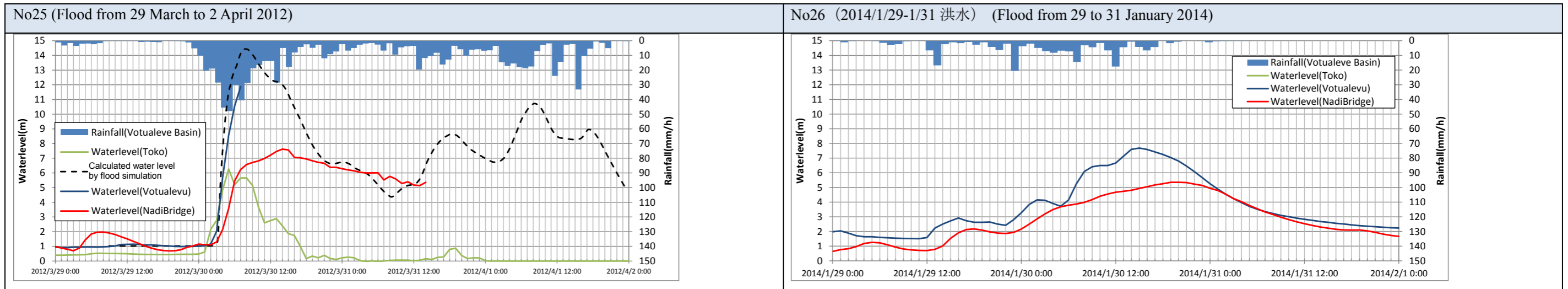


Figure 5-5 Hydrograph and Hyetograph of Target Flood (5/5)

(3) Calculation of Flood Concentration Time by Kinematic Wave Method

Flood concentration time will be calculated applying the theory of Kinematic Wave to surface flow on rectangular slope in this method. The time in which amount of rainfall before the time of peak discharge is equal to amount of rainfall at the time of peak discharge (t_p) is set as " τ_p ", and flood concentration time is assumed as " $T_p = t_p - \tau_p$ " using observed hyetograph and hydrograph.

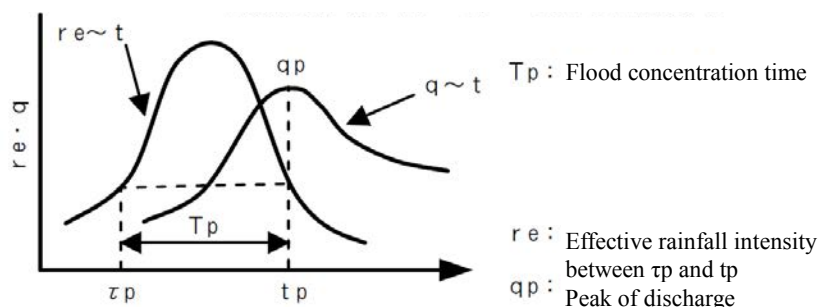


Figure 5-6 Definition of T_p in Kinematic Wave method

Calculation result of flood concentration time of each flood is as shown in Table 5-10. Average flood concentration time of all floods is 11.1 hours (minimum = 7.6 hours, maximum = 17.6 hours). Set T_p s are shown in Figure 5-7(1)~Figure 5-7 (7).

Table 5-10 Calculation Result of Flood Concentration Time by Kinematic Wave Method

No.	Date (year / month /)	Time of Occurrence of (t_p)		The time in which amount of rainfall before the time of peak discharge is equal to amount of rainfall at the time of peak discharge (τ_p)	Flood Concentration Time $T_p = t_p - \tau_p$ (hr)	Votualevu ~ Naditown Bridge Flow []	Flood Concentration Time @ Nadi Town
		Time of	Water Level				
1	1997/1/25-1/27	1997/1/25 22:00	6.20	1997/1/25 12:00	10.0		
2	1997/1/30-1/31	1997/1/31 1:00	6.20	1997/1/30 18:00	7.0		
3	1997/3/7-3/10	1997/3/8 2:00	8.70	1997/3/7 23:00	3.0		
4	1999/1/18-1/19	1999/1/19 8:00	9.40	1999/1/19 4:00	4.0		
5	2000/5/4	2000/5/4 17:00	6.90	2000/5/4 13:00	4.0		
6	2000/12/5-12/7	2000/12/7 14:00	6.70	2000/12/7 8:00	6.0		
7	2000/12/12	2000/12/12 16:00	6.50	2000/12/12 10:00	6.0		
8	2001/3/14	2001/3/14 20:00	9.00	2001/3/14 14:00	6.0		
9	2001/10/22	2001/10/22 17:00	6.20	2001/10/22 11:00	6.0		
10	2002/2/23-2/24	2002/2/24 12:00	8.40	2002/2/24 5:00	7.0		
11	2003/3/9-3/14	2003/3/12 16:00	7.10	2003/3/12 9:00	7.0		
12	2005/4/18-4/19	2005/4/19 1:00	9.50	2005/4/18 12:00	13.0		
13	2007/2/9-2/10	2007/2/9 22:00	6.30	2007/2/9 15:00	7.0		
14	2007/2/12	Missing					
15	2007/3/24-3/26	2007/3/25 10:00	9.50	2007/3/25 5:00	5.0		
16	2008/1/28-1/30	Missing					
17	2008/2/25	2008/2/25 5:00	6.60	2008/2/25 1:00	4.0		
18	2008/3/29	2008/3/29 20:00	7.30	2008/3/29 10:00	10.0		
19	2008/11/28-11/29	2008/11/29 5:00	5.80	2008/11/28 23:00	6.0		
20	2009/1/7-1/12	2009/1/9 4:00	10.60	2009/1/8 21:00	7.0		
21	2009/1/12-1/15	2009/1/13 19:00	9.80	2009/1/13 9:00	10.0		
22	2011/2/18-2/19	2011/2/18 21:00	7.04	2011/2/18 14:00	7.0		
23	2012/1/5-1/7	2012/1/7 4:00	6.52	2012/1/7 0:00	4.0		
24	2012/1/23-1/25	Missing					
25	2012/3/29-4/2	2012/3/30 8:00	14.40	2012/3/30 3:00	5.0		
26	2014/1/29-1/31	2014/1/30 15:00	7.68	2014/1/30 10:00	5.0		
					Averag	6.5	11.1
					Maximu	13.0	17.6
					Minimu	3.0	7.6

* No20, 25 are estimate values by flood simulation. Moreover, the first peak out of two peaks of rainfall is used for calculation of value of No20

(4) Calculation of Flood Concentration Time by Kadoya's Method

Length of river channel and geological law are considered in the theory of Kinematic wave in Kadoya's method. The formula is as described below.

$$T_p = CA^{0.22} re^{-0.35}$$

Where, T_p : flood concentration time (min), A: area of basin (km^2),
 re : average effective rainfall intensity (mm/hr), C: Coefficient for basin characteristics

Mountain and hill area: $C=290$, Grass farm and golf course: $C=190\sim 210$

Rough developed land: $C=90\sim 120$, Urban area: $C=60\sim 90$

The calculation result by Kadoya's method is as shown in Table 5-11. The average flood concentration time of all floods is 12.1 hours (minimum = 9.8 hours, maximum = 18.1 hours). As for coefficient for basin characteristics, the value of "Mountain and hill area" is used here.

Table 5-11 Calculation Result of Flood Concentration Time by Kadoya's Method

Coefficient for basin characteristics, C: 290
 Area of Basin, A 184

No.	Date (year / month / day)	Precipitation during T_p (mm)	Average Rainfall Intensity (mm/hr)	Votualevu Flood Concentration Time by Kadoya's Method (hr)	Votualevu~NaditownBridge Flow Time	Flood Concentration Time @ Nadi Town Bridge
1	1997/1/25-1/27	36.94	3.7	9.6		
2	1997/1/30-1/31	28.62	4.1	9.3		
3	1997/3/7-3/10	58.68	19.6	5.4		
4	1999/1/18-1/19	85.58	21.4	5.2		
5	2000/5/4	52.34	13.1	6.2		
6	2000/12/5-12/7	90.91	15.2	5.9		
7	2000/12/12	63.26	10.5	6.7		
8	2001/3/14	106.47	17.7	5.6		
9	2001/10/22	96.85	16.1	5.8		
10	2002/2/23-2/24	86.09	12.3	6.3		
11	2003/3/9-3/14	38.88	5.6	8.3		
12	2005/4/18-4/19	114.66	8.8	7.1		
13	2007/2/9-2/10	46.89	6.7	7.8		
14	2007/2/12					
15	2007/3/24-3/26	46.07	9.2	7.0		
16	2008/1/28-1/30					
17	2008/2/25	5.48	1.4	13.5		
18	2008/3/29	42.46	4.2	9.2		
19	2008/11/28-11/29	51.76	8.6	7.2		
20	2009/1/7-1/12					
21	2009/1/12-1/15	111.69	11.2	6.5		
22	2011/2/18-2/19	52.43	7.5	7.5		
23	2012/1/5-1/7	16.33	4.1	9.3		
24	2012/1/23-1/25					
25	2012/3/29-4/2					
26	2014/1/29-1/31	33.49	6.7	7.8		
			平均	7.5	4.60	12.1
			最大	13.5	4.60	18.1
			最小	5.2	4.60	9.8

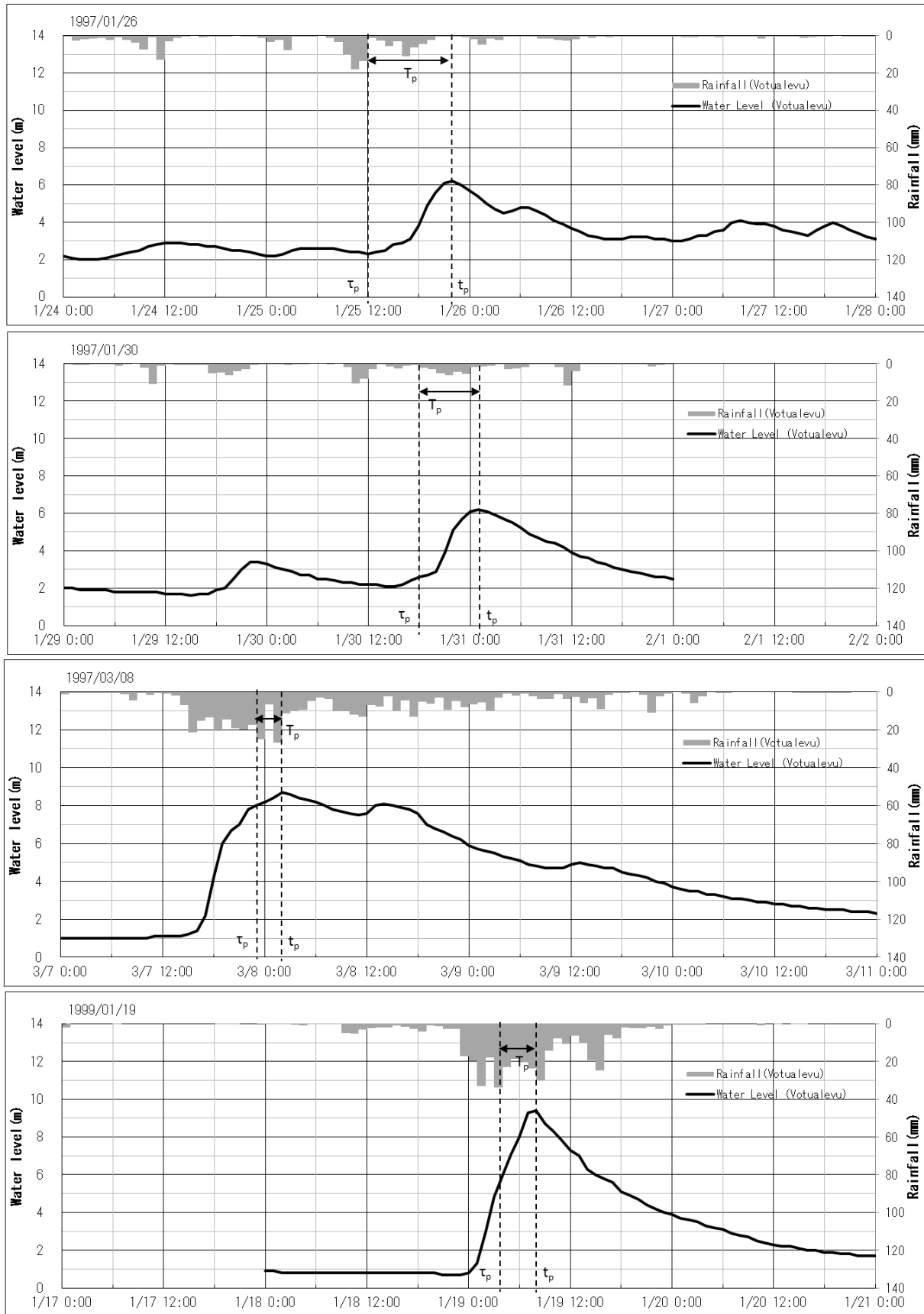


Figure 5-7 (1) Calculation of Flood Concentration Time by Kinematic Wave Method

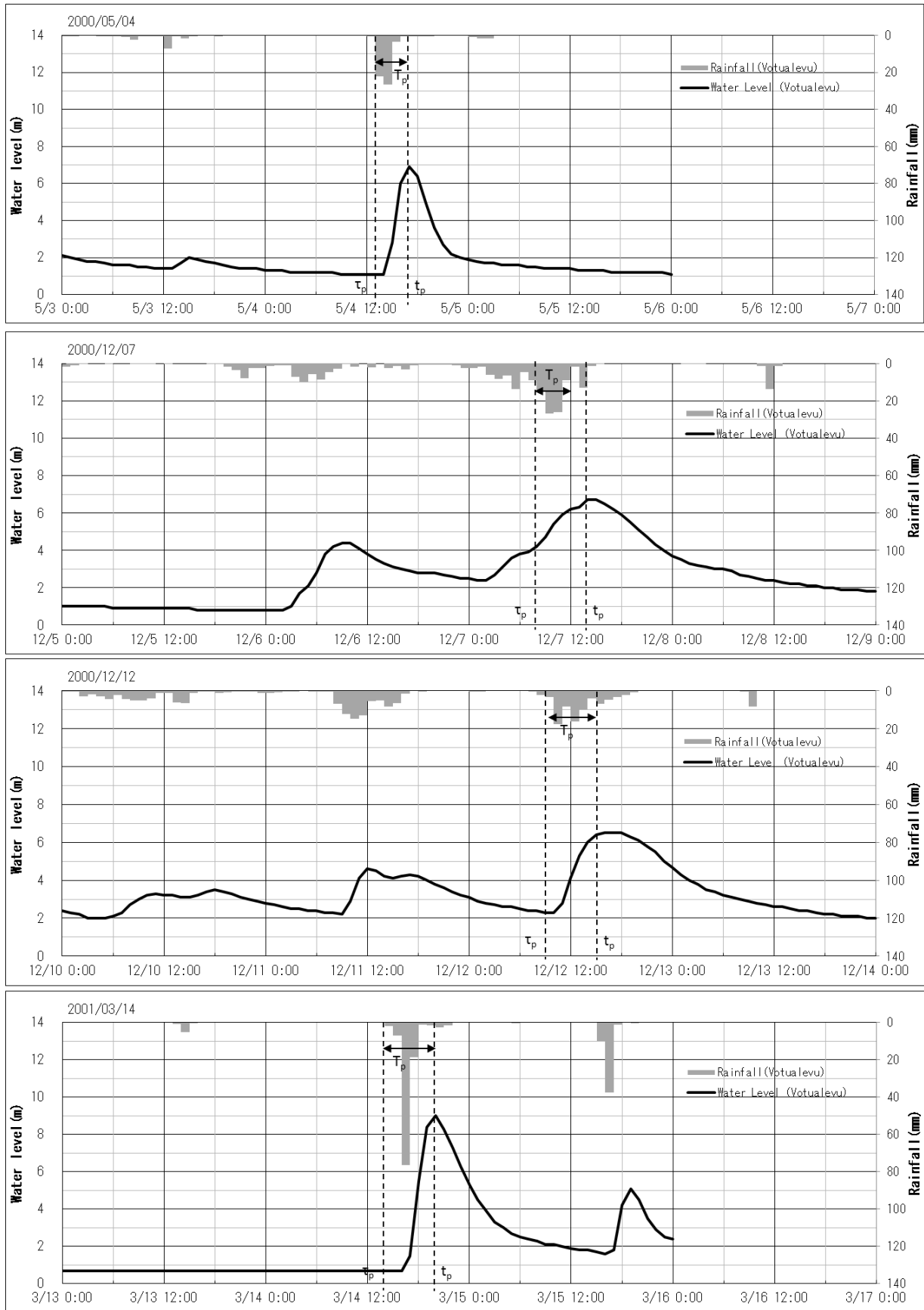


Figure 5-7 (2) Calculation of Flood Concentration Time by Kinematic Wave Method

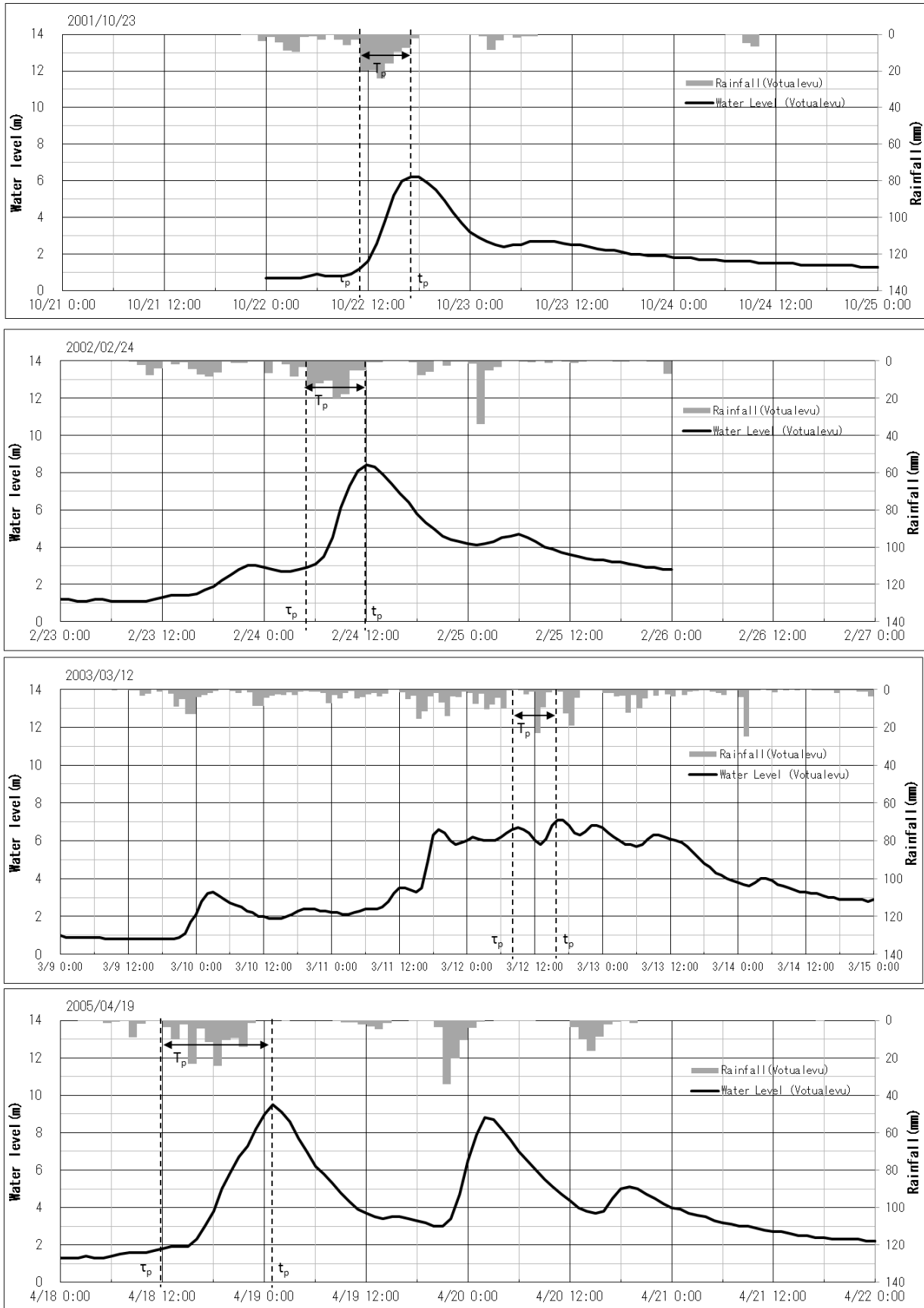


Figure 5-7 (3) Calculation of Flood Concentration Time by Kinematic Wave Method (3)

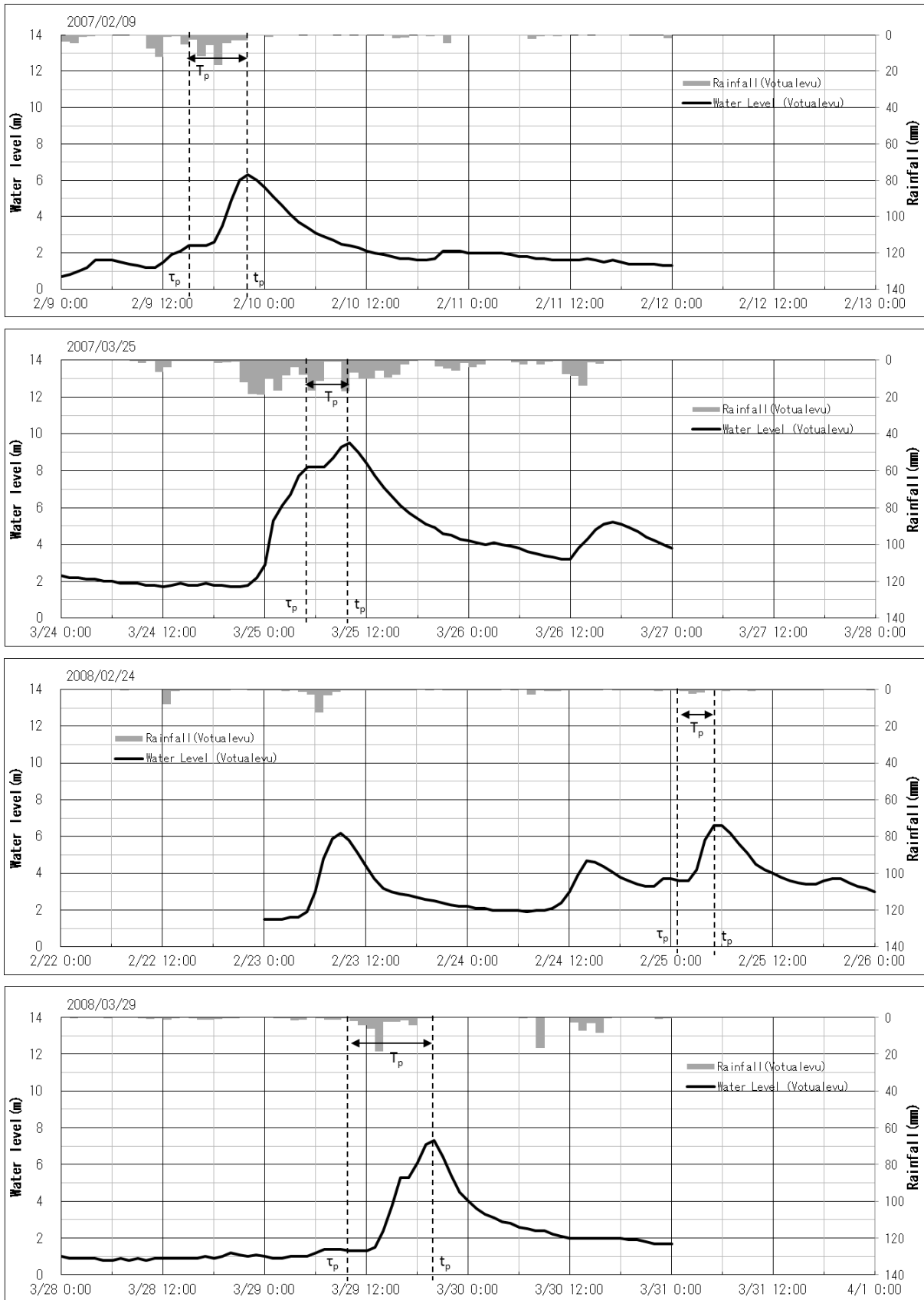


Figure 5-7 (4) Calculation of Flood Concentration Time by Kinematic Wave Method

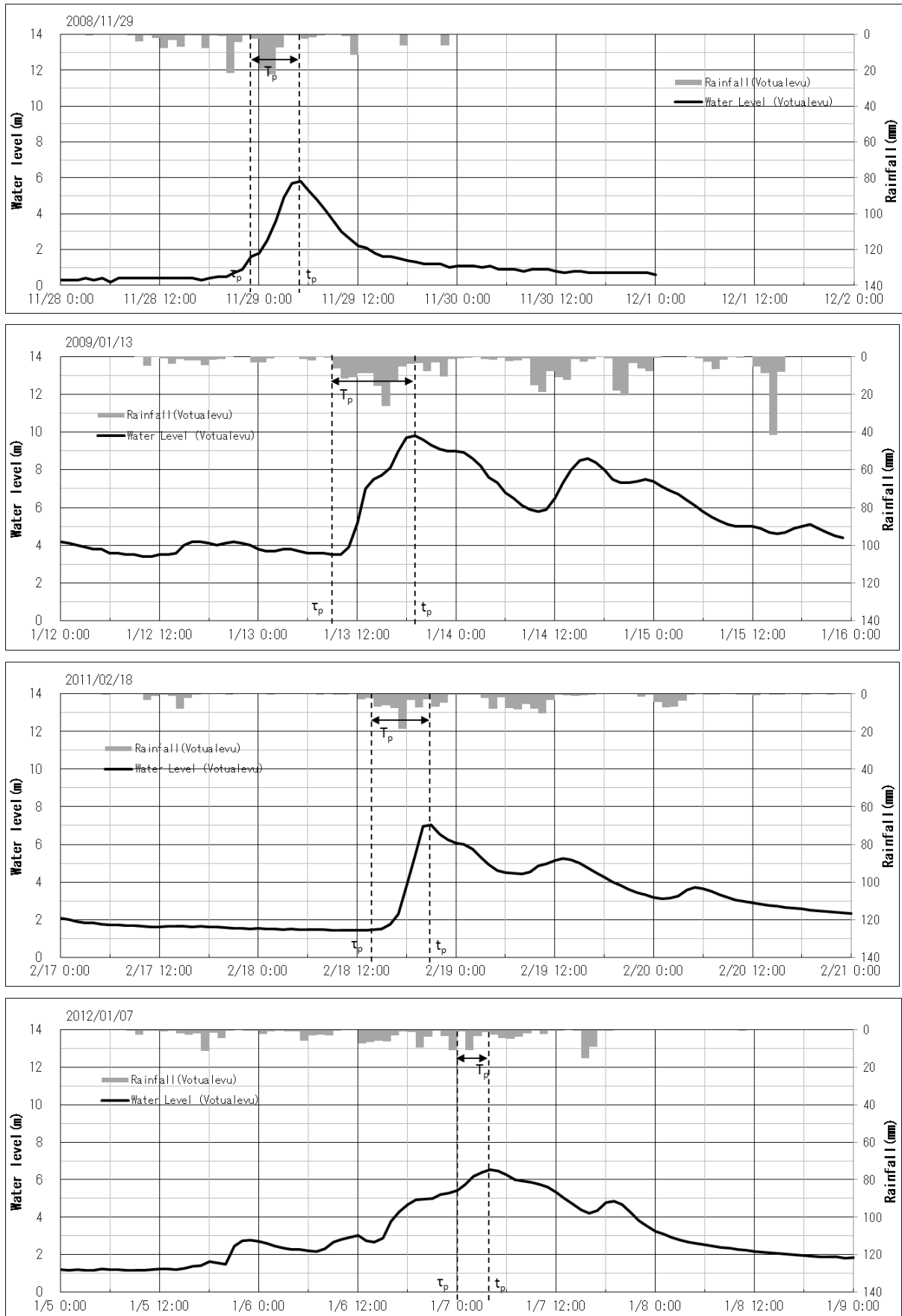


Figure 5-7 (5) Calculation of Flood Concentration Time by Kinematic Wave Method

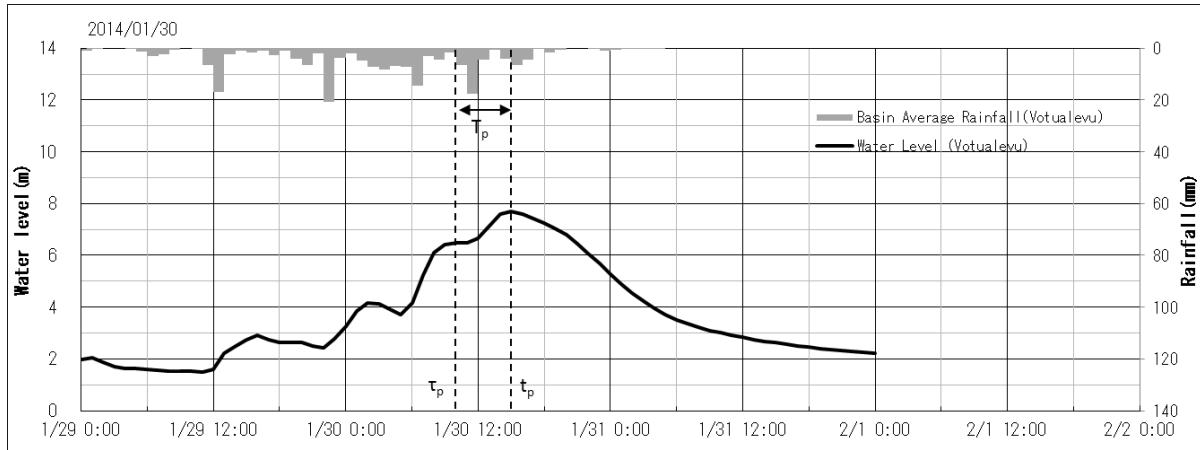


Figure 5-7 (6) Calculation of Flood Concentration Time by Kinematic Wave Method

(5) Relation between Short-Term Rainfall and Peak Flow Discharge

The correlation between peak water level of Votualevu and short-term rainfall before the peak water level is as shown in below, and the highest correlation coefficient is shown in 12 hour rainfall. Therefore, flood concentration time is calculated as 16.6 hours using this value.

Table 5-12 Calculation Result of Flood Concentration Time by Correlation

	Flood concentration time (2tg)
1) Correlation between peak water level of Votualevu and short-term rainfall	12.0 (hr)
2) Flow time between Votualevu and Nadi Town Bridge (refer to Table 5-7)	4.6 (hr)
	16.6 (hr)

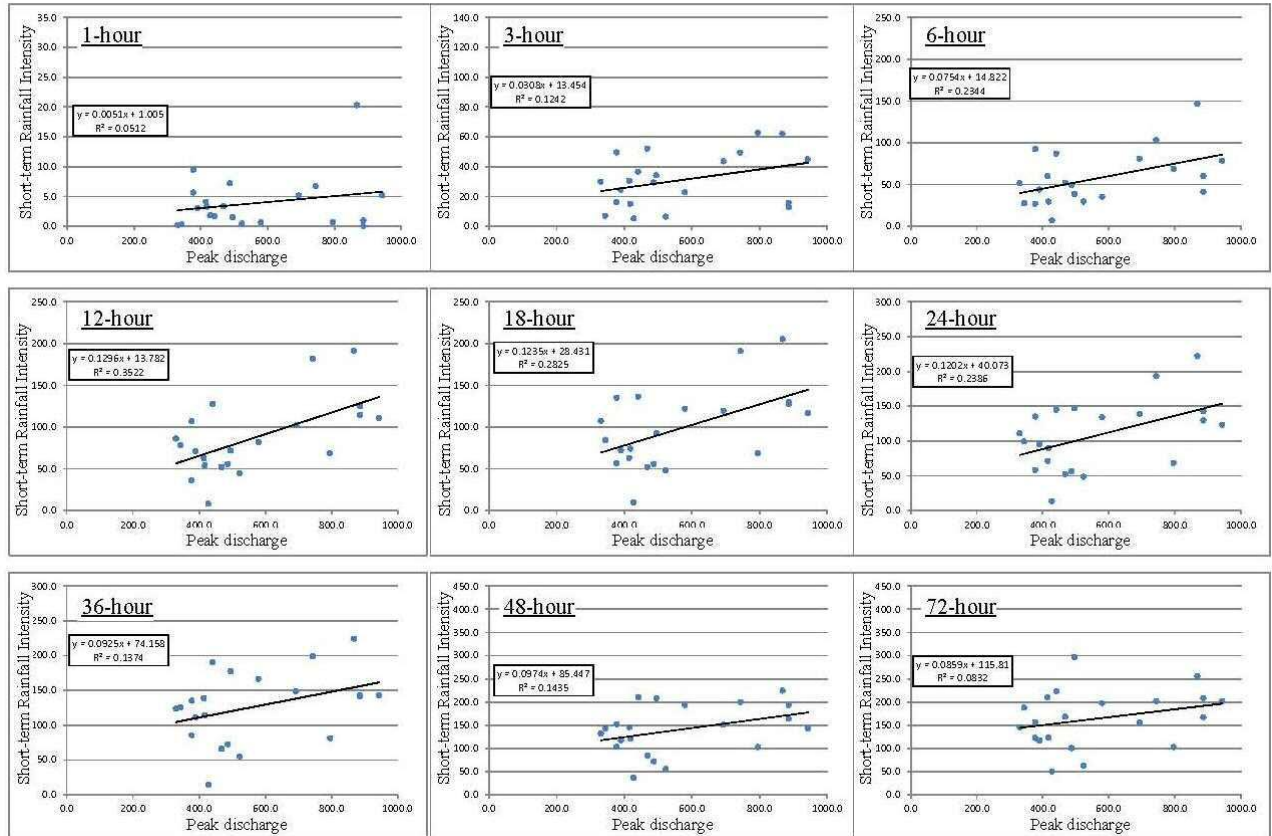
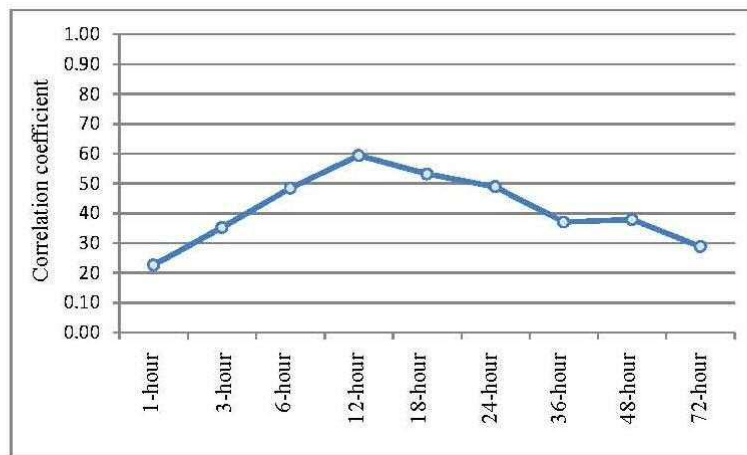


Figure 5-8 Correlation between Peak Water Level of Votualevu and Short-Term Rainfall

5.1.4 Setting of Design Rainfall Duration

The design rainfall duration is set as 48 hours based on the frequency distribution of rainfall duration, which has only one peak rainfall and ratio of 48-hour rainfall to total rainfall.

(1) Examination of Frequency Distribution of Net Storm Rain

Rainfall duration, which has only one peak rainfall, is calculated targeting the major floods after 1991, and average depth of rainfall over watershed of Nadi Town Bridge is used for calculation. Since these segmentation of hourly rainfall (from 9AM to 9AM on the following day) and daily rainfall should be varied, hourly rainfall is corrected according to the daily rainfall.

Dry day / hour for calculation of rainfall duration is set as follows.

- Dry duration: Delay time of runoff (half of flood concentration time) =7 hours
- Criterion of dry: Precipitation is less than 1.0 mm/hr

Rainfall duration of each flood is as shown in Table 5-13, and

Table 5-15 and Figure 5-9 show floods classified according to rainfall duration. The ratio of rainfall duration which is less than 48 hours is around 70%.

Table 5-13 Rainfall duration of each flood

Flood No.	Date(year/ month /day)	Rainfall Duration Criterion of dry: less than 1.0mm/hr	Factor
1	1997/1/25-1/27	40	T.C Evan
2	1997/1/30-1/31	28	T.D
3	1997/3/7-3/10	69	T.C Gavin
4	1999/1/18-1/19	47	T.D
5	2000/5/4	4	L.P
6	2000/12/5-12/7	44	T.D
7	2000/12/12	12	T.D
8	2001/3/14	7	N/R
9	2001/10/22	19	L.P
10	2002/2/23-2/24	27	T.D
11	2003/3/9-3/14	113	T.C Eseta
12	2005/4/18-4/19	18	L.P -Mansoonal Trough
13	2007/2/9-2/10	15	L.P
14	2007/2/12	44	L.P
15	2007/3/24-3/26	53	T.D
16	2008/1/28-1/30	46	T.C Gene
17	2008/2/25	20	SPCZ
18	2008/3/29	17	N/R
19	2008/11/28-11/29	38	L.P
20	2009/1/7-1/11	94	T.D
21	2009/1/12-1/15	62	T.D
22	2011/2/18-2/19	27	N/R
23	2012/1/5-1/7	57	N/R
24	2012/1/23-1/25	61	T.D
25	2012/3/29-4/2	76	TD
26	2014/1/29-1/31	43	L.P

SPCZ: South Pacific Convergence Zone
 TC: Tropical Cyclone
 TD: Tropical Depression
 L.P - Low pressure
 N/A: Not Available
 N/R: No records

Table 5-14 Average Rainfall Duration by factor

Factor	Average Rainfall Duration (hr)
Tropical Storm and Cyclone	55.1
Low pressure, SPCZ	25.8

Table 5-15 Number of Rainfall by rainfall duration

Rainfall Duration			Number of Rainfall	Cumulative Total Value	Ratio
			Criterion of dry: less than 1.0mm/hr		
1	to	6 hour	1	1	4
7	to	12 hour	2	3	12
13	to	18 hour	3	6	23
19	to	24 hour	2	8	31
25	to	30 hour	3	11	42
31	to	36 hour	0	11	42
37	to	42 hour	2	13	50
43	to	48 hour	5	18	69
49	to	54 hour	1	19	73
55	to	60 hour	1	20	77
61	to	66 hour	2	22	85
67	to	72 hour	1	23	88
73	to	78 hour	1	24	92
79	to	84 hour	0	24	92
85	to	90 hour	0	24	92
91	to	96 hour	1	25	96
97	~	hour	1	26	100

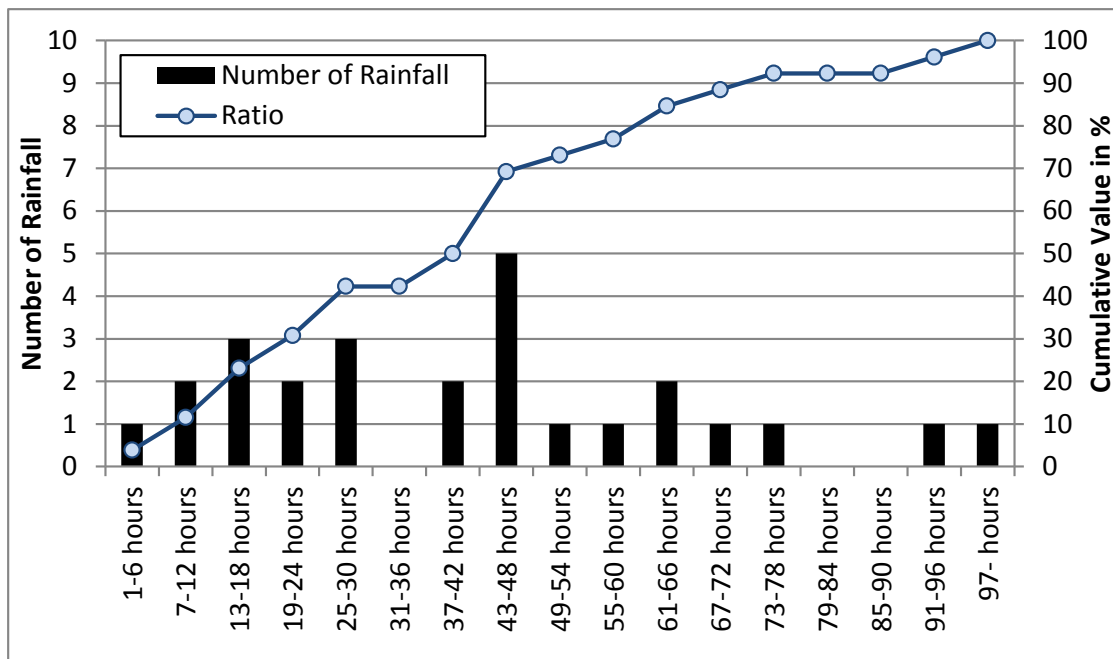


Figure 5-9 Histogram and accumulation curve of rainfall duration

Average rainfall duration of 26 major floods is 41.9 hours.

Moreover, the analysis of the rainfall duration of the 26 major floods by causes, show that the average rainfall duration caused by tropical cyclone (T/C), and South Pacific convergence zone (SPCZ) and depression, into 2 groups, average rainfall duration caused by T/C is 55.5 hours, and average rainfall duration caused by SPCZ and depression and so on is 26.5 hours (refer to Figure 5-10 and Figure 5-11).

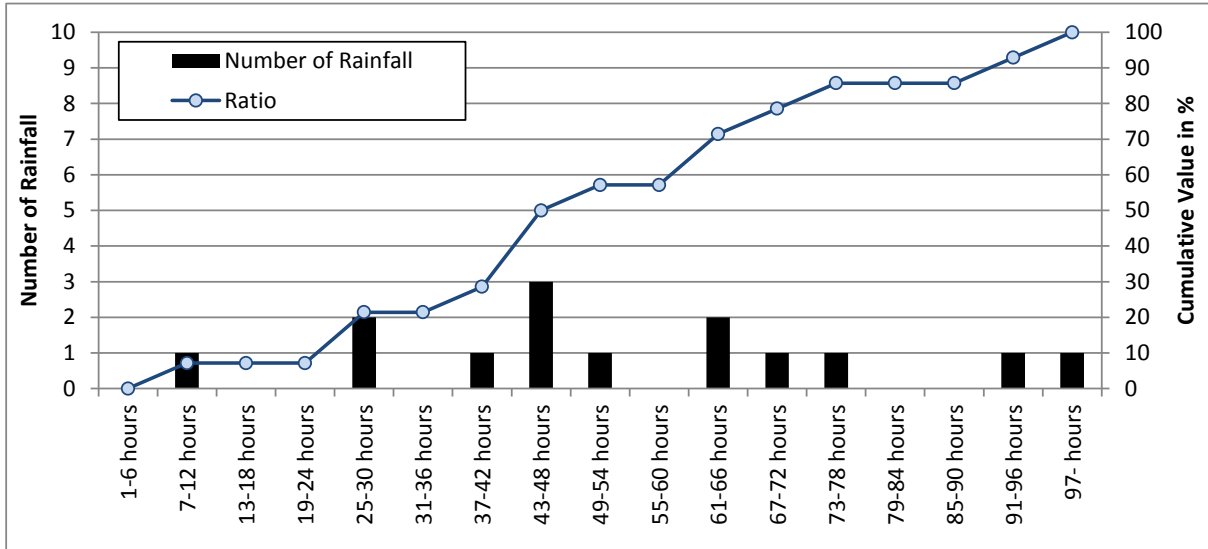


Figure 5-10 Histogram and accumulation curve of rainfall duration (T/C)

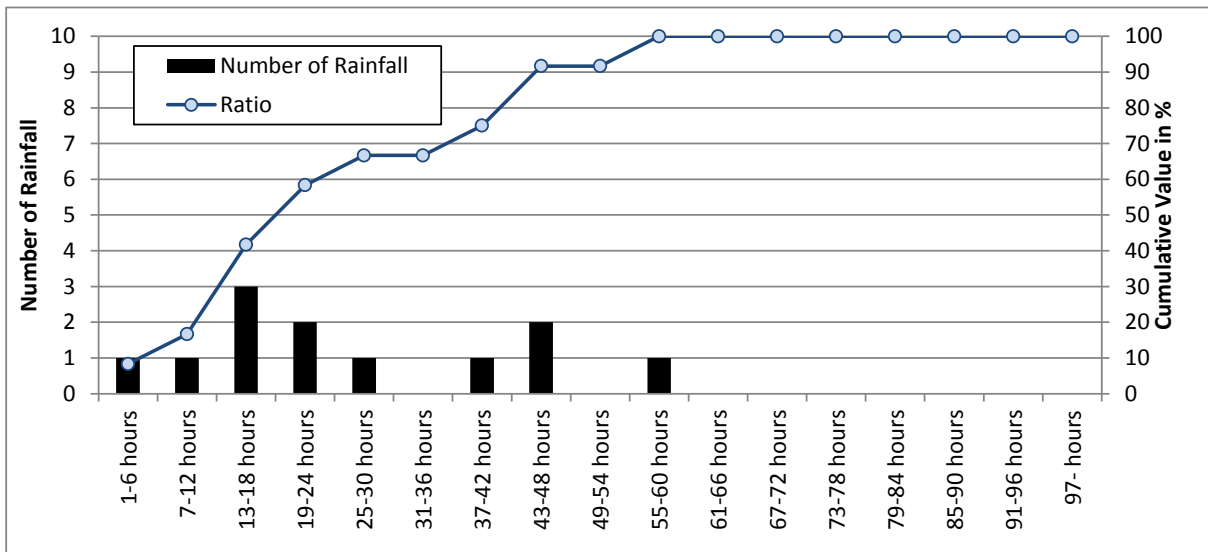


Figure 5-11 Histogram and accumulation curve of rainfall duration (SPCZ and depression)

(2) Capture ratio in total precipitation

The total precipitation capture ratios in the case that rainfall duration set as 12-hour, 24-hour, 48-hour and 72-hour, are as shown in Table 5-16. Criterion of dryness is set as “less than 1mm/hr” in all the cases.

The average capture ratio of total precipitation is 60% for 12 hours, 80% for 24-hours and 95% for 48-hours. Moreover, as for the top 10 floods, which attained water level of up to 9.0m at the Votualevu water level, the capture ratio is more than 90% for rainfall duration of 48-hour. In the case of using daily rainfall, it shows a similar result (refer to Table 5-17), and the capture ratio regarding top 10 floods is more than 85%.

Furthermore, even though the capture ratios of the flood No.11 (flood occurred from 9 to 14 March 2003), No.20 (7 to 11 January 2009), and No.25 (29 March to 2 April 2012) show relatively low value, if the rainfall duration is set as 48-hour / 2-day, the rainfall, which contributes a peak of water level, can be involved (refer to Figure 5-12). Since the possibility of including the rainfall which has two peaks of rainfall in the design rainfall is considered as low, design rainfall duration will be set as 48-hour / 2-day.

Table 5-16 Capture Ratio in Total Precipitation Using Hourly Rainfall

No.	Date (Year / month / day)	Peak Water Level @ Votualevu (m)	One Peak Rainfall		12-hour Rainfall		24-hour Rainfall		48-hour Rainfall		72-hour Rainfall	
			Rainfall Duration (hr)	Total Rainfall (mm)	12-hour Rainfall (mm)	Ratio	24-hour Rainfall (mm)	Ratio	48-hour Rainfall (mm)	Ratio	Rainfall (mm)	Ratio
1	1997/1/25-1/27	6.20	40	125.5	81.4	0.65	102.6	0.82	125.5	1.00	125.5	1.00
2	1997/1/30-1/31	6.20	28	88.1	46.5	0.53	74.5	0.85	88.1	1.00	88.1	1.00
3	1997/3/7-3/10	8.70	69	424.1	189.1	0.45	280.3	0.66	382.6	0.90	424.1	1.00
4	1999/1/18-1/19	9.40	47	409.2	210.5	0.51	321.0	0.78	409.2	1.00	409.2	1.00
5	2000/5/4	6.90	4	60.8	60.8	1.00	60.8	1.00	60.8	1.00	60.8	1.00
6	2000/12/5-12/7	6.70	44	196.5	116.5	0.59	134.4	0.68	196.5	1.00	196.5	1.00
7	2000/12/12	6.50	12	79.1	79.1	1.00	79.1	1.00	79.1	1.00	79.1	1.00
8	2001/3/14	9.00	7	65.3	65.3	1.00	65.3	1.00	65.3	1.00	65.3	1.00
9	2001/10/22	6.20	19	149.3	149.3	1.00	149.3	1.00	149.3	1.00	149.3	1.00
10	2002/2/23-2/24	8.40	27	146.7	100.0	0.68	134.7	0.92	146.7	1.00	146.7	1.00
11	2003/3/9-3/14	7.10	113	382.6	70.7	0.18	135.1	0.35	225.0	0.59	287.0	0.75
12	2005/4/18-4/19	9.50	18	120.4	120.4	1.00	120.4	1.00	120.4	1.00	120.4	1.00
13	2007/2/9-2/10	6.30	15	81.9	81.9	1.00	81.9	1.00	81.9	1.00	81.9	1.00
14	2007/2/12	9.90	44	221.7	94.4	0.43	169.5	0.76	221.7	1.00	221.7	1.00
15	2007/3/24-3/26	9.50	53	218.7	107.0	0.49	154.5	0.71	211.3	0.97	218.7	1.00
16	2008/1/28-1/30	10.00	46	387.1	146.2	0.38	267.8	0.69	387.1	1.00	387.1	1.00
17	2008/2/25	6.60	20	55.0	55.0	1.00	55.0	1.00	55.0	1.00	55.0	1.00
18	2008/3/29	7.30	17	47.8	47.8	1.00	47.8	1.00	47.8	1.00	47.8	1.00
19	2008/11/28-11/29	5.80	38	119.1	76.7	0.64	107.1	0.90	119.1	1.00	119.1	1.00
20	2009/1/7-1/11	10.00	94	773.6	219.9	0.28	374.0	0.48	512.7	0.66	724.2	0.94
21	2009/1/12-1/15	9.80	62	275.5	103.6	0.38	146.7	0.53	245.2	0.89	275.5	1.00
22	2011/2/18-2/19	7.04	27	129.2	73.0	0.57	126.7	0.98	129.2	1.00	129.2	1.00
23	2012/1/5-1/7	6.52	57	169.6	57.4	0.34	94.3	0.56	154.7	0.91	169.6	1.00
24	2012/1/23-1/25	9.70	61	435.5	124.8	0.29	248.4	0.57	384.9	0.88	435.5	1.00
25	2012/3/29-4/2	11.88	76	812.0	350.0	0.43	442.8	0.55	574.0	0.71	803.6	0.99
26	2014/1/29-1/31	7.68	43	198.4	97.2	0.49	158.6	0.80	198.4	1.00	198.4	1.00
Average						0.63		0.79		0.94		0.99
Average Capture Ratio (Floods which water level is more than						0.59		0.71		0.91		0.99

Table 5-17 Capture Ratio in Total Precipitation Using Daily Rainfall

No.	Date (Year / month / day)	Peak Water Level @ Votualevu (m)	One Peak		One Peak する		One Peak する		One Peak する	
			Rainfall Duration	Total Rainfall (mm)	1-Day Rainfall (mm)	Ratio	2-Day Rainfall (mm)	Ratio	3-Day Rainfall (mm)	Ratio
1	1997/1/25-1/27	6.20	40	125.5	94.0	0.75	125.5	1.00	125.5	1.00
2	1997/1/30-1/31	6.20	28	88.1	74.5	0.85	88.1	1.00	88.1	1.00
3	1997/3/7-3/10	8.70	69	424.1	239.0	0.56	373.8	0.88	424.1	1.00
4	1999/1/18-1/19	9.40	47	409.2	275.6	0.67	409.2	1.00	409.2	1.00
5	2000/5/4	6.90	4	60.8	60.8	1.00	60.8	1.00	60.8	1.00
6	2000/12/5-12/7	6.70	44	196.5	75.9	0.39	196.5	1.00	196.5	1.00
7	2000/12/12	6.50	12	79.1	79.1	1.00	79.1	1.00	79.1	1.00
8	2001/3/14	9.00	7	65.3	65.3	1.00	65.3	1.00	65.3	1.00
9	2001/10/22	6.20	19	149.3	149.3	1.00	149.3	1.00	149.3	1.00
10	2002/2/23-2/24	8.40	27	146.7	120.4	0.82	146.7	1.00	146.7	1.00
11	2003/3/9-3/14	7.10	113	382.6	109.2	0.29	217.9	0.57	277.3	0.72
12	2005/4/18-4/19	9.50	18	120.4	120.4	1.00	120.4	1.00	120.4	1.00
13	2007/2/9-2/10	6.30	15	81.9	81.9	1.00	81.9	1.00	81.9	1.00
14	2007/2/12	9.90	44	221.7	97.1	0.44	221.7	1.00	221.7	1.00
15	2007/3/24-3/26	9.50	53	218.7	118.9	0.54	183.8	0.84	218.7	1.00
16	2008/1/28-1/30	10.00	46	387.1	221.5	0.57	387.1	1.00	387.1	1.00
17	2008/2/25	6.60	20	55.0	55.0	1.00	55.0	1.00	55.0	1.00
18	2008/3/29	7.30	17	47.8	47.8	1.00	47.8	1.00	47.8	1.00
19	2008/11/28-11/29	5.80	38	119.1	99.6	0.84	119.1	1.00	119.1	1.00
20	2009/1/7-1/11	10.00	94	773.6	250.6	0.32	442.0	0.57	692.6	0.90
21	2009/1/12-1/15	9.80	62	275.5	129.3	0.47	245.9	0.89	275.5	1.00
22	2011/2/18-2/19	7.04	27	129.2	106.5	0.82	129.2	1.00	129.2	1.00
23	2012/1/5-1/7	6.52	57	169.6	90.3	0.53	136.1	0.80	169.6	1.00
24	2012/1/23-1/25	9.70	61	435.5	162.4	0.37	309.6	0.71	435.5	1.00
25	2012/3/29-4/2	11.88	76	812.0	285.0	0.35	483.1	0.59	712.5	0.88
26	2014/1/29-1/31	7.68	43	198.4	142.0	0.72	198.4	1.00	198.4	1.00
Average						0.70		0.92		0.98
Average Capture Ratio (Floods which water level is more than						0.57		0.86		0.98

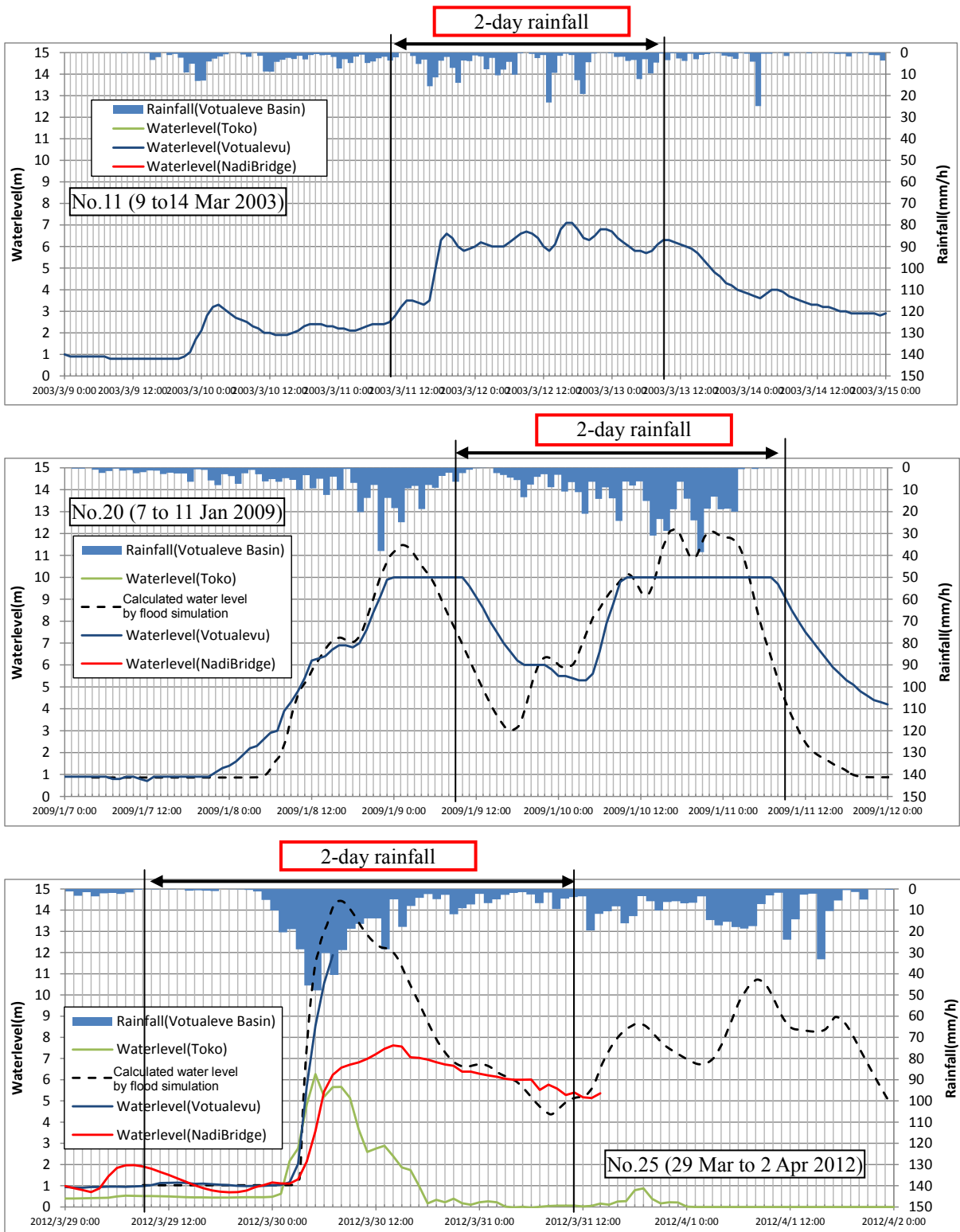


Figure 5-12 Relation between Hydrograph and 2-day Rainfall of Floods which Capture Ratio is less than 80%

5.1.5 Calculation of Annual Maximum Rainfall

As described above, the design rainfall duration is set as 48 hours. Even though, due to limited number of observed hourly rainfall, daily rainfall is also used for calculation of probable rainfall. Therefore, the design rainfall duration to be used is considered as 2 days.

Thiessen method is used for calculation of the depth of rainfall over the area, and the annual maximum rainfall is also calculated. Since the rainy season in the Nadi River Basin is from November to March, a year that starts on 1st July and ends on 30th June of the following year is set as the “Hydrological Year” .

(1) Territorial Division by Thiessen Method

Thiessen segmentation and coverage area of each observation station for calculation of average depth of rainfall over area are as shown in Table 5.1-17 ~ Table 5.1-27 and Figure 5.1-18~Figure 5.1-19.

Table 5-18 Combination of Thiessen Segmentation (using Daily Rainfall)

Hydrological year	Pattern	Number of stations	Station Name																	
			Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1967	1	3		●								●			●					
1968	1	3		●								●			●					
1969	1	3		●								●			●					
1970	1	3		●								●			●					
1971	2	4		●								●				●				
1972	3	2													●					
1973	2	4		●								●			●					
1974	2	4		●								●			●					
1975	4	2		●								●			●					
1976	2	4		●								●			●					
1977	5	5		●			●					●			●					
1978	6	5		●			●	●				●			●					
1979	7	7		●		●	●	●				●			●					
1980	8	9	●	●	●	●						●			●	●				
1981	9	8		●	●	●						●			●	●				
1982	10	11	●		●	●	●	●			●	●			●	●				●
1983	11	14	●	●	●	●	●	●			●	●			●	●				●
1984	10	11	●		●	●	●	●			●	●			●	●				●
1985	11	14	●	●	●	●	●	●			●	●			●	●				●
1986	11	14	●	●	●	●	●	●			●	●			●	●				●
1987	11	14	●	●	●	●	●	●			●	●			●	●				●
1988	12	13	●	●	●	●	●	●			●	●			●	●				●
1989	11	14	●	●	●	●	●	●			●	●			●	●				●
1990	11	14	●	●	●	●	●	●			●	●			●	●				●
1991	11	14	●	●	●	●	●	●			●	●			●	●				●
1992	13	12	●		●	●	●	●			●	●			●	●				●
1993	14	13	●	●	●	●	●	●			●	●			●	●				●
1994	11	14	●	●	●	●	●	●			●	●			●	●				●
1995	15	11	●	●	●	●	●	●			●	●			●	●				●
1996	11	14	●	●	●	●	●	●			●	●			●	●				●
1997	16	13	●		●	●	●	●			●	●			●	●				●
1998	11	14	●	●	●	●	●	●			●	●			●	●				●
1999	17	12		●	●	●	●	●			●	●			●	●				●
2000	17	12		●	●	●	●	●			●	●			●	●				●
2001	18	9		●	●	●	●	●			●	●			●	●				●
2002	19	11		●	●	●	●	●			●	●			●	●				●
2003	20	10			●	●	●	●			●	●			●	●				●
2004	21	7			●	●	●	●			●	●			●	●				●
2005	22	8		●	●	●	●	●			●	●			●	●				●
2006	23	8	●	●	●	●	●	●			●	●			●	●				●
2007	24	5			●	●	●	●			●	●			●	●				●
2008	25	7			●	●	●	●			●	●			●	●				●
2009	26	2			●	●	●	●			●	●			●	●				●
2010	27	7			●	●	●	●			●	●			●	●	●			●
2011	28	9		●	●	●	●	●			●	●			●	●	●			●
2012	29	7			●	●	●	●			●	●			●	●	●			●
2013	30	8			●	●	●	●			●	●			●	●	●			●

Table 5-19 List of Thiessen Coefficient (Daily Rainfall, Watershed of Nadi River Basin)

Thiessen coefficient :Nadi River Basin																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	3	0.000	0.307	0.000	0.000	0.000	0.000	0.000	0.000	0.196	0.000	0.000	0.496	0.000	0.000	0.000	0.000	0.000	0.000
2	4	0.000	0.306	0.000	0.000	0.000	0.000	0.000	0.000	0.076	0.000	0.000	0.401	0.000	0.217	0.000	0.000	0.000	0.000
3	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.601	0.000	0.399	0.000	0.000	0.000	0.000
4	2	0.000	0.363	0.000	0.000	0.000	0.000	0.000	0.000	0.637	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	5	0.000	0.306	0.000	0.143	0.000	0.000	0.000	0.000	0.076	0.000	0.000	0.312	0.000	0.163	0.000	0.000	0.000	0.000
6	5	0.000	0.309	0.000	0.114	0.069	0.000	0.000	0.000	0.000	0.000	0.000	0.304	0.000	0.203	0.000	0.000	0.000	0.000
7	6	0.000	0.219	0.213	0.143	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.296	0.000	0.119	0.000	0.000	0.000	0.000
8	9	0.265	0.115	0.138	0.143	0.000	0.000	0.000	0.000	0.009	0.000	0.001	0.151	0.074	0.105	0.000	0.000	0.000	0.000
9	8	0.000	0.125	0.197	0.143	0.000	0.000	0.000	0.087	0.003	0.000	0.000	0.236	0.160	0.048	0.000	0.000	0.000	0.000
10	10	0.261	0.000	0.147	0.123	0.093	0.112	0.000	0.058	0.000	0.003	0.000	0.000	0.156	0.022	0.000	0.000	0.024	0.000
11	13	0.235	0.115	0.135	0.111	0.069	0.085	0.000	0.048	0.000	0.003	0.000	0.085	0.074	0.016	0.000	0.000	0.024	0.000
12	13	0.235	0.115	0.136	0.111	0.069	0.085	0.000	0.068	0.003	0.003	0.000	0.085	0.074	0.016	0.000	0.000	0.000	0.000
13	12	0.255	0.000	0.147	0.111	0.069	0.085	0.000	0.048	0.000	0.003	0.000	0.085	0.156	0.016	0.000	0.000	0.024	0.000
14	12	0.235	0.115	0.135	0.114	0.069	0.085	0.000	0.048	0.000	0.000	0.001	0.085	0.074	0.016	0.000	0.000	0.024	0.000
15	11	0.235	0.115	0.136	0.114	0.069	0.085	0.000	0.068	0.003	0.000	0.000	0.085	0.074	0.016	0.000	0.000	0.000	0.000
16	12	0.255	0.000	0.147	0.111	0.069	0.085	0.000	0.048	0.000	0.003	0.000	0.085	0.156	0.016	0.000	0.000	0.024	0.000
17	11	0.000	0.125	0.195	0.114	0.069	0.146	0.000	0.067	0.000	0.000	0.001	0.105	0.138	0.016	0.000	0.000	0.024	0.000
18	8	0.000	0.241	0.217	0.134	0.124	0.000	0.000	0.236	0.000	0.000	0.001	0.000	0.000	0.023	0.000	0.000	0.024	0.000
19	10	0.000	0.125	0.195	0.114	0.069	0.146	0.000	0.067	0.000	0.000	0.000	0.105	0.138	0.016	0.000	0.000	0.024	0.000
20	9	0.000	0.000	0.220	0.125	0.093	0.190	0.000	0.088	0.000	0.000	0.001	0.000	0.238	0.022	0.000	0.000	0.024	0.000
21	6	0.000	0.000	0.222	0.165	0.000	0.197	0.000	0.000	0.000	0.000	0.000	0.000	0.238	0.132	0.000	0.000	0.047	0.000
22	7	0.000	0.125	0.198	0.126	0.114	0.199	0.000	0.000	0.000	0.000	0.000	0.000	0.138	0.000	0.000	0.000	0.101	0.000
23	7	0.293	0.139	0.135	0.165	0.000	0.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.113	0.000	0.000	0.039	0.000
24	5	0.000	0.000	0.346	0.165	0.000	0.314	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.165	0.000	0.000	0.000	0.000
25	6	0.000	0.000	0.342	0.126	0.093	0.311	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.081	0.000	0.000	0.047	0.000
26	2	0.000	0.000	0.631	0.369	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	7	0.000	0.000	0.134	0.110	0.000	0.146	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.053	0.000	0.115	0.427
28	9	0.000	0.124	0.130	0.101	0.000	0.100	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.112	0.073	0.304
29	7	0.000	0.000	0.134	0.000	0.000	0.100	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.087	0.128	0.079	0.424
30	7	0.000	0.000	0.134	0.000	0.000	0.100	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.087	0.128	0.079	0.424

Table 5-20 List of Coverage Area (Daily Rainfall, Watershed of Nadi River Basin)

Basin Area(km ²) :Nadi River Basin (516.2km ²)																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Naduru	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	3	0.0	158.7	0.0	0.0	0.0	0.0	0.0	0.0	101.4	0.0	0.0	256.1	0.0	0.0	0.0	0.0	0.0	0.0
2	4	0.0	158.2	0.0	0.0	0.0	0.0	0.0	0.0	39.1	0.0	0.0	206.9	0.0	112.0	0.0	0.0	0.0	0.0
3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	310.0	0.0	206.2	0.0	0.0	0.0	0.0	0.0
4	2	0.0	187.4	0.0	0.0	0.0	0.0	0.0	0.0	328.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	5	0.0	158.2	0.0	74.0	0.0	0.0	0.0	0.0	39.1	0.0	0.0	160.9	0.0	84.0	0.0	0.0	0.0	0.0
6	5	0.0	159.7	0.0	59.0	35.6	0.0	0.0	0.0	0.0	0.0	0.0	156.9	0.0	105.0	0.0	0.0	0.0	0.0
7	6	0.0	113.1	110.2	74.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	152.7	0.0	61.5	0.0	0.0	0.0	0.0
8	9	136.9	59.3	71.0	73.7	0.0	0.0	0.0	0.0	4.7	0.0	0.3	77.9	38.2	54.2	0.0	0.0	0.0	0.0
9	8	0.0	64.3	101.9	74.0	0.0	0.0	0.0	45.1	1.5	0.0	0.0	122.0	82.4	25.0	0.0	0.0	0.0	0.0
10	10	134.6	0.0	76.1	63.3	48.2	58.1	0.0	30.1	0.0	1.6	0.0	0.0	80.7	11.1	0.0	0.0	12.4	0.0
11	13	121.2	59.3	69.7	57.3	35.6	43.8	0.0	24.7	0.0	1.5	0.2	43.8	38.2	8.5	0.0	0.0	12.4	0.0
12	13	121.2	59.3	70.3	57.3	35.6	43.8	0.0	35.1	1.5	1.5	0.2	43.8	38.2	8.5	0.0	0.0	0.0	0.0
13	12	131.6	0.0	76.1	57.3	35.6	43.8	0.0	24.7	0.0	1.5	0.2	43.8	80.7	8.5	0.0	0.0	12.4	0.0
14	12	121.2	59.3	69.7	58.7	35.6	43.8	0.0	24.7	0.0	0.0	0.3	43.8	38.2	8.5	0.0	0.0	12.4	0.0
15	11	121.2	59.3	70.3	59.0	35.6	43.8	0.0	35.1	1.5	0.0	0.0	43.8	38.2	8.5	0.0	0.0	0.0	0.0
16	12	131.6	0.0	76.1	57.3	35.6	43.8	0.0	24.7	0.0	1.5	0.2	43.8	80.7	8.5	0.0	0.0	12.4	0.0
17	11	0.0	64.3	100.9	58.7	35.6	75.6	0.0	34.7	0.0	0.0	0.3	54.2	71.0	8.5	0.0	0.0	12.4	0.0
18	8	0.0	124.5	111.9	69.4	64.2	0.0	0.0	121.6	0.0	0.0	0.3	0.0	0.0	11.8	0.0	0.0	12.4	0.0
19	10	0.0	64.3	100.9	59.0	35.6	75.6	0.0	34.7	0.0	0.0	0.0	54.2	71.0	8.5	0.0	0.0	12.4	0.0
20	9	0.0	0.0	113.3	64.6	48.2	98.2	0.0	45.2	0.0	0.0	0.3	0.0	122.9	11.1	0.0	0.0	12.4	0.0
21	6	0.0	0.0	114.5	85.1	0.0	101.6	0.0	0.0	0.0	0.0	0.0	0.0	122.9	68.0	0.0	0.0	24.2	0.0
22	7	0.0	64.3	102.1	64.9	58.9	102.9	0.0	0.0	0.0	0.0	0.0	0.0	71.0	0.0	0.0	0.0	52.1	0.0
23	7	151.4	71.7	69.7	85.1	0.0	59.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.5	0.0	0.0	20.1	0.0
24	5	0.0	0.0	178.7	85.1	0.0	162.3	0.0	0.0	4.7	0.0	0.0	0.0	0.0	85.4	0.0	0.0	0.0	0.0
25	6	0.0	0.0	176.7	64.9	48.2	160.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.7	0.0	0.0	24.2	0.0
26	2	0.0	0.0	325.8	190.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7	0.0	0.0	69.1	56.5	0.0	75.3	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.2	0.0	59.4	220.4
28	9	0.0	63.8	67.0	52.0	0.0	51.6	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	57.9	37.5	157.0
29	7	0.0	0.0	69.1	0.0	0.0	51.6	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1	66.1	40.9	218.6
30	7	0.0	0.0	69.1	0.0	0.0	51.6	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1	66.1	40.9	218.6

Table 5-21 List of Thiessen Coefficient (Daily Rainfall, Watershed of Nadi Town Bridge)

Thiessen coefficient :NaditownBridge Basin																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	3	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.314	0.000	0.000	0.684	0.000	0.000	0.000	0.000	0.000	0.000
2	4	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.121	0.000	0.000	0.534	0.000	0.342	0.000	0.000	0.000	0.000
3	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.534	0.000	0.466	0.000	0.000	0.000	0.000	0.000
4	2	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.996	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	5	0.000	0.003	0.000	0.234	0.000	0.000	0.000	0.000	0.121	0.000	0.000	0.388	0.000	0.253	0.000	0.000	0.000	0.000
6	5	0.000	0.006	0.000	0.187	0.113	0.000	0.000	0.000	0.000	0.000	0.000	0.376	0.000	0.319	0.000	0.000	0.000	0.000
7	5	0.000	0.000	0.176	0.234	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.380	0.000	0.195	0.000	0.000	0.000	0.000
8	7	0.204	0.000	0.128	0.233	0.000	0.000	0.000	0.000	0.015	0.000	0.001	0.247	0.000	0.172	0.000	0.000	0.000	0.000
9	7	0.000	0.000	0.168	0.234	0.000	0.000	0.000	0.143	0.005	0.000	0.000	0.367	0.005	0.079	0.000	0.000	0.000	0.000
10	9	0.164	0.000	0.124	0.200	0.152	0.184	0.000	0.095	0.000	0.005	0.000	0.000	0.000	0.035	0.000	0.000	0.039	0.000
11	11	0.155	0.000	0.124	0.181	0.113	0.139	0.000	0.078	0.000	0.005	0.001	0.139	0.000	0.027	0.000	0.000	0.039	0.000
12	11	0.155	0.000	0.126	0.181	0.113	0.139	0.000	0.111	0.005	0.005	0.001	0.139	0.000	0.027	0.000	0.000	0.000	0.000
13	11	0.155	0.000	0.124	0.181	0.113	0.139	0.000	0.078	0.000	0.005	0.001	0.139	0.000	0.027	0.000	0.000	0.039	0.000
14	10	0.155	0.000	0.124	0.186	0.113	0.139	0.000	0.078	0.000	0.000	0.001	0.139	0.000	0.027	0.000	0.000	0.039	0.000
15	9	0.155	0.000	0.126	0.187	0.113	0.139	0.000	0.111	0.005	0.000	0.000	0.139	0.000	0.027	0.000	0.000	0.000	0.000
16	11	0.155	0.000	0.124	0.181	0.113	0.139	0.000	0.078	0.000	0.005	0.001	0.139	0.000	0.027	0.000	0.000	0.039	0.000
17	9	0.000	0.000	0.166	0.186	0.113	0.187	0.000	0.110	0.000	0.000	0.001	0.172	0.000	0.027	0.000	0.000	0.039	0.000
18	7	0.000	0.000	0.168	0.220	0.203	0.000	0.000	0.331	0.000	0.000	0.001	0.000	0.000	0.037	0.000	0.000	0.039	0.000
19	8	0.000	0.000	0.166	0.187	0.113	0.187	0.000	0.110	0.000	0.000	0.000	0.172	0.000	0.027	0.000	0.000	0.039	0.000
20	8	0.000	0.000	0.166	0.204	0.152	0.259	0.000	0.143	0.000	0.000	0.001	0.000	0.000	0.035	0.000	0.000	0.039	0.000
21	5	0.000	0.000	0.169	0.269	0.000	0.269	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.215	0.000	0.000	0.077	0.000
22	5	0.000	0.000	0.169	0.206	0.186	0.274	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.165	0.000
23	6	0.168	0.000	0.124	0.269	0.000	0.189	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.185	0.000	0.000	0.064	0.000
24	5	0.000	0.000	0.176	0.269	0.000	0.269	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.270	0.000	0.000	0.000	0.000
25	6	0.000	0.000	0.169	0.206	0.152	0.264	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.132	0.000	0.000	0.077	0.000
26	2	0.000	0.000	0.397	0.603	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	7	0.000	0.000	0.125	0.179	0.000	0.238	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.086	0.000	0.188	0.157
28	8	0.000	0.000	0.125	0.165	0.000	0.163	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.183	0.119	0.151
29	7	0.000	0.000	0.125	0.000	0.000	0.163	0.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.143	0.209	0.129	0.151
30	7	0.000	0.000	0.125	0.000	0.000	0.163	0.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.143	0.209	0.129	0.151

Table 5-22 List of Coverage Area (Daily Rainfall, Watershed of Nadi Town Bridge)

Basin Area(km ²) :NaditownBridge (315.9km2)																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	99.1	0.0	0.0	215.9	0.0	0.0	0.0	0.0	0.0	0.0
2	4	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	38.3	0.0	0.0	168.7	0.0	108.0	0.0	0.0	0.0	0.0
3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.7	0.0	147.2	0.0	0.0	0.0	0.0
4	2	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	314.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	5	0.0	0.8	0.0	74.0	0.0	0.0	0.0	0.0	38.3	0.0	0.0	122.7	0.0	80.0	0.0	0.0	0.0	0.0
6	5	0.0	2.0	0.0	59.0	35.6	0.0	0.0	0.0	0.0	0.0	0.0	118.6	0.0	100.7	0.0	0.0	0.0	0.0
7	5	0.0	0.0	55.6	74.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	120.0	0.0	61.5	0.0	0.0	0.0	0.0
8	7	64.5	0.0	40.6	73.7	0.0	0.0	0.0	0.0	4.7	0.0	0.3	77.9	0.0	54.2	0.0	0.0	0.0	0.0
9	7	0.0	0.0	53.1	74.0	0.0	0.0	0.0	45.1	1.5	0.0	0.0	115.8	1.4	25.0	0.0	0.0	0.0	0.0
10	9	51.9	0.0	39.2	63.3	48.2	58.1	0.0	30.1	0.0	1.6	0.0	0.0	0.0	11.1	0.0	0.0	12.4	0.0
11	11	48.8	0.0	39.2	57.3	35.6	43.8	0.0	24.7	0.0	1.5	0.2	43.8	0.0	8.5	0.0	0.0	12.4	0.0
12	11	48.8	0.0	39.8	57.3	35.6	43.8	0.0	35.1	1.5	1.5	0.2	43.8	0.0	8.5	0.0	0.0	0.0	0.0
13	11	48.8	0.0	39.2	57.3	35.6	43.8	0.0	24.7	0.0	1.5	0.2	43.8	0.0	8.5	0.0	0.0	12.4	0.0
14	10	48.8	0.0	39.2	58.7	35.6	43.8	0.0	24.7	0.0	0.0	0.3	43.8	0.0	8.5	0.0	0.0	12.4	0.0
15	9	48.8	0.0	39.8	59.0	35.6	43.8	0.0	35.1	1.5	0.0	0.0	43.8	0.0	8.5	0.0	0.0	0.0	0.0
16	11	48.8	0.0	39.2	57.3	35.6	43.8	0.0	24.7	0.0	1.5	0.2	43.8	0.0	8.5	0.0	0.0	12.4	0.0
17	9	0.0	0.0	52.3	58.7	35.6	59.1	0.0	34.7	0.0	0.0	0.3	54.2	0.0	8.5	0.0	0.0	12.4	0.0
18	7	0.0	0.0	53.0	69.4	64.2	0.0	0.0	104.7	0.0	0.0	0.3	0.0	0.0	11.8	0.0	0.0	12.4	0.0
19	8	0.0	0.0	52.3	59.0	35.6	59.1	0.0	34.7	0.0	0.0	0.0	54.2	0.0	8.5	0.0	0.0	12.4	0.0
20	8	0.0	0.0	52.3	64.6	48.2	81.7	0.0	45.2	0.0	0.0	0.3	0.0	0.0	11.1	0.0	0.0	12.4	0.0
21	5	0.0	0.0	53.5	85.1	0.0	85.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.0	0.0	0.0	24.2	0.0
22	5	0.0	0.0	53.5	64.9	58.9	86.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.1	0.0
23	6	53.2	0.0	39.2	85.1	0.0	59.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.5	0.0	0.0	20.1	0.0
24	5	0.0	0.0	55.6	85.1	0.0	85.1	0.0	0.0	4.7	0.0	0.0	0.0	0.0	85.4	0.0	0.0	0.0	0.0
25	6	0.0	0.0	53.5	64.9	48.2	83.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.7	0.0	0.0	24.2	0.0
26	2	0.0	0.0	125.4	190.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7	0.0	0.0	39.6	56.5	0.0	75.3	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.2	0.0	59.4	49.5
28	8	0.0	0.0	39.6	52.0	0.0	51.6	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	57.9	37.5	47.8
29	7	0.0	0.0	39.6	0.0	0.0	51.6	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1	66.1	40.9	47.8
30	7	0.0	0.0	39.6	0.0	0.0	51.6	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1	66.1	40.9	47.8

Table 5-23 List of Thiessen Coefficient (Daily Rainfall, Watershed of Confluence of the Namosi River)

Thiessen coefficient :Nadi River Basin upper of confluence Namosi River																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.298	0.000	0.000	0.702	0.000	0.000	0.000	0.000	0.000	0.000
2	3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.478	0.000	0.480	0.000	0.000	0.000	0.000
3	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.478	0.000	0.522	0.000	0.000	0.000	0.000	0.000
4	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	4	0.000	0.000	0.000	0.401	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.229	0.000	0.328	0.000	0.000	0.000	0.000
6	4	0.000	0.000	0.000	0.320	0.193	0.000	0.000	0.000	0.000	0.000	0.000	0.207	0.000	0.280	0.000	0.000	0.000	0.000
7	5	0.000	0.000	0.021	0.401	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.229	0.000	0.323	0.000	0.000	0.000	0.000
8	7	0.050	0.000	0.021	0.400	0.000	0.000	0.000	0.000	0.025	0.000	0.002	0.208	0.000	0.294	0.000	0.000	0.000	0.000
9	6	0.000	0.000	0.018	0.401	0.000	0.000	0.000	0.219	0.008	0.000	0.000	0.218	0.000	0.136	0.000	0.000	0.000	0.000
10	9	0.050	0.000	0.014	0.343	0.261	0.031	0.000	0.163	0.000	0.009	0.000	0.000	0.000	0.060	0.000	0.000	0.067	0.000
11	10	0.043	0.000	0.014	0.311	0.193	0.000	0.000	0.134	0.000	0.008	0.001	0.183	0.000	0.046	0.000	0.000	0.067	0.000
12	10	0.043	0.000	0.018	0.311	0.193	0.000	0.000	0.190	0.008	0.008	0.001	0.183	0.000	0.046	0.000	0.000	0.000	0.000
13	10	0.043	0.000	0.014	0.311	0.193	0.000	0.000	0.134	0.000	0.008	0.001	0.183	0.000	0.046	0.000	0.000	0.067	0.000
14	9	0.043	0.000	0.014	0.318	0.193	0.000	0.000	0.134	0.000	0.000	0.002	0.183	0.000	0.046	0.000	0.000	0.067	0.000
15	8	0.043	0.000	0.018	0.320	0.193	0.000	0.000	0.190	0.008	0.000	0.000	0.183	0.000	0.046	0.000	0.000	0.000	0.000
16	10	0.043	0.000	0.014	0.311	0.193	0.000	0.000	0.134	0.000	0.008	0.001	0.183	0.000	0.046	0.000	0.000	0.067	0.000
17	8	0.000	0.000	0.014	0.318	0.193	0.000	0.000	0.163	0.000	0.000	0.002	0.196	0.000	0.046	0.000	0.000	0.067	0.000
18	7	0.000	0.000	0.014	0.364	0.272	0.000	0.000	0.218	0.000	0.000	0.002	0.000	0.000	0.063	0.000	0.000	0.067	0.000
19	7	0.000	0.000	0.014	0.320	0.193	0.000	0.000	0.163	0.000	0.000	0.000	0.196	0.000	0.046	0.000	0.000	0.067	0.000
20	8	0.000	0.000	0.014	0.350	0.261	0.033	0.000	0.212	0.000	0.000	0.002	0.000	0.000	0.060	0.000	0.000	0.067	0.000
21	5	0.000	0.000	0.014	0.461	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.361	0.000	0.000	0.118	0.000
22	5	0.000	0.000	0.014	0.352	0.319	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.264	0.000
23	6	0.058	0.000	0.014	0.461	0.000	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.317	0.000	0.000	0.108	0.000
24	5	0.000	0.000	0.021	0.461	0.000	0.044	0.000	0.000	0.025	0.000	0.000	0.000	0.000	0.447	0.000	0.000	0.000	0.000
25	6	0.000	0.000	0.014	0.352	0.261	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.219	0.000	0.000	0.118	0.000
26	2	0.000	0.000	0.238	0.762	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	7	0.000	0.000	0.014	0.307	0.000	0.131	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.148	0.000	0.321	0.035
28	8	0.000	0.000	0.014	0.282	0.000	0.013	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.115	0.301	0.202	0.027
29	7	0.000	0.000	0.014	0.000	0.000	0.013	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.244	0.345	0.220	0.027
30	7	0.000	0.000	0.014	0.000	0.000	0.013	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.244	0.345	0.220	0.027

Table 5-24 List of Coverage Area (Daily Rainfall, Watershed of Confluence of the Namosi River)

Basin Area(km ²) :Nadi River Basin upper of confluence Namosi River (184.4km ²)																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Moliveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.9	0.0	0.0	129.5	0.0	0.0	0.0	0.0	0.0	0.0
2	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	88.2	0.0	88.5	0.0	0.0	0.0	0.0
3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.1	0.0	96.2	0.0	0.0	0.0	0.0	0.0
4	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	184.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4	0.0	0.0	0.0	74.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	42.1	0.0	60.5	0.0	0.0	0.0	0.0
6	4	0.0	0.0	0.0	59.0	35.6	0.0	0.0	0.0	0.0	0.0	0.0	38.1	0.0	51.7	0.0	0.0	0.0	0.0
7	5	0.0	0.0	4.0	74.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	42.1	0.0	59.6	0.0	0.0	0.0	0.0
8	7	9.2	0.0	3.9	73.7	0.0	0.0	0.0	0.0	4.7	0.0	0.3	38.3	0.0	54.2	0.0	0.0	0.0	0.0
9	6	0.0	0.0	3.2	74.0	0.0	0.0	0.0	40.4	1.5	0.0	0.0	40.3	0.0	25.0	0.0	0.0	0.0	0.0
10	9	9.3	0.0	2.7	63.3	48.2	5.8	0.0	30.0	0.0	1.6	0.0	0.0	0.0	11.1	0.0	0.0	12.4	0.0
11	10	7.9	0.0	2.7	57.3	35.6	0.0	0.0	24.7	0.0	1.5	0.2	33.7	0.0	8.5	0.0	0.0	12.4	0.0
12	10	7.9	0.0	3.2	57.3	35.6	0.0	0.0	35.0	1.5	1.5	0.2	33.7	0.0	8.5	0.0	0.0	0.0	0.0
13	10	7.9	0.0	2.7	57.3	35.6	0.0	0.0	24.7	0.0	1.5	0.2	33.7	0.0	8.5	0.0	0.0	12.4	0.0
14	9	7.9	0.0	2.7	58.7	35.6	0.0	0.0	24.7	0.0	0.0	0.3	33.7	0.0	8.5	0.0	0.0	12.4	0.0
15	8	7.9	0.0	3.2	59.0	35.6	0.0	0.0	35.0	1.5	0.0	0.0	33.7	0.0	8.5	0.0	0.0	0.0	0.0
16	10	7.9	0.0	2.7	57.3	35.6	0.0	0.0	24.7	0.0	1.5	0.2	33.7	0.0	8.5	0.0	0.0	12.4	0.0
17	8	0.0	0.0	2.7	58.7	35.6	0.0	0.0	30.1	0.0	0.0	0.3	36.2	0.0	8.5	0.0	0.0	12.4	0.0
18	7	0.0	0.0	2.7	67.0	50.1	0.0	0.0	40.2	0.0	0.0	0.3	0.0	0.0	11.6	0.0	0.0	12.4	0.0
19	7	0.0	0.0	2.7	59.0	35.6	0.0	0.0	30.1	0.0	0.0	0.0	36.2	0.0	8.5	0.0	0.0	12.4	0.0
20	8	0.0	0.0	2.7	64.6	48.2	6.1	0.0	39.0	0.0	0.0	0.3	0.0	0.0	11.1	0.0	0.0	12.4	0.0
21	5	0.0	0.0	2.7	85.1	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.6	0.0	0.0	21.8	0.0
22	5	0.0	0.0	2.7	64.9	58.9	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.7	0.0
23	6	10.6	0.0	2.7	85.1	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.5	0.0	0.0	20.0	0.0
24	5	0.0	0.0	4.0	85.1	0.0	8.2	0.0	0.0	4.7	0.0	0.0	0.0	0.0	82.5	0.0	0.0	0.0	0.0
25	6	0.0	0.0	2.7	64.9	48.2	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.3	0.0	0.0	21.8	0.0
26	2	0.0	0.0	43.9	140.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7	0.0	0.0	2.7	56.5	0.0	24.1	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.2	0.0	59.1	6.4
28	8	0.0	0.0	2.7	52.0	0.0	2.5	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	55.5	37.2	4.9
29	7	0.0	0.0	2.7	0.0	0.0	2.5	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1	63.7	40.6	4.9
30	7	0.0	0.0	2.7	0.0	0.0	2.5	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1	63.7	40.6	4.9

Table 5-25 List of Thiessen Coefficient (Daily Rainfall, Watershed of the Namosi River)

Thiessen coefficient :Namosi River Basin																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.061	0.000	0.000	0.939	0.000	0.000	0.000	0.000	0.000	0.000
2	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.125	0.000	0.000	0.000	0.000
3	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.125	0.000	0.000	0.000	0.000
4	2	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.994	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.125	0.000	0.000	0.000	0.000
6	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.125	0.000	0.000	0.000	0.000
7	3	0.000	0.000	0.133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.846	0.000	0.022	0.000	0.000	0.000	0.000
8	3	0.557	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.430	0.000	0.000	0.000	0.000	0.000	0.000
9	4	0.000	0.000	0.113	0.000	0.000	0.000	0.000	0.051	0.000	0.000	0.000	0.820	0.015	0.000	0.000	0.000	0.000	0.000
10	5	0.418	0.000	0.013	0.000	0.000	0.568	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
11	6	0.401	0.000	0.013	0.000	0.000	0.475	0.000	0.001	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.001	0.000
12	5	0.401	0.000	0.013	0.000	0.000	0.475	0.000	0.001	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.000	0.000
13	6	0.401	0.000	0.013	0.000	0.000	0.475	0.000	0.001	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.001	0.000
14	6	0.401	0.000	0.013	0.000	0.000	0.475	0.000	0.001	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.001	0.000
15	5	0.401	0.000	0.013	0.000	0.000	0.475	0.000	0.001	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.000	0.000
16	6	0.401	0.000	0.013	0.000	0.000	0.475	0.000	0.001	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.001	0.000
17	5	0.000	0.000	0.111	0.000	0.000	0.642	0.000	0.051	0.000	0.000	0.000	0.196	0.000	0.000	0.000	0.000	0.001	0.000
18	6	0.000	0.000	0.118	0.026	0.152	0.000	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.001	0.000
19	5	0.000	0.000	0.111	0.000	0.000	0.642	0.000	0.051	0.000	0.000	0.000	0.196	0.000	0.000	0.000	0.000	0.001	0.000
20	4	0.000	0.000	0.111	0.000	0.000	0.821	0.000	0.068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
21	4	0.000	0.000	0.124	0.000	0.000	0.836	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.026	0.000
22	3	0.000	0.000	0.124	0.000	0.000	0.838	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.038	0.000
23	4	0.418	0.000	0.013	0.000	0.000	0.568	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
24	3	0.000	0.000	0.132	0.000	0.000	0.836	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.000	0.000	0.000	0.000
25	4	0.000	0.000	0.124	0.000	0.000	0.836	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.026	0.000
26	2	0.000	0.000	0.457	0.543	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	4	0.000	0.000	0.018	0.000	0.000	0.556	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.423
28	5	0.000	0.000	0.018	0.000	0.000	0.533	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.003	0.420
29	5	0.000	0.000	0.018	0.000	0.000	0.533	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.003	0.420
30	5	0.000	0.000	0.018	0.000	0.000	0.533	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.003	0.420

Table 5-26 List of Coverage Area (Daily Rainfall, Watershed of the Namosi River)

Basin Area(km ²) :Namosi River Basin(92.1km2)																			
Pattem	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	86.4	0.0	0.0	0.0	0.0	0.0	0.0
2	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.6	0.0	11.5	0.0	0.0	0.0	0.0
3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.6	0.0	11.5	0.0	0.0	0.0	0.0
4	2	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	91.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.6	0.0	11.5	0.0	0.0	0.0	0.0
6	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.6	0.0	11.5	0.0	0.0	0.0	0.0
7	3	0.0	0.0	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.9	0.0	2.0	0.0	0.0	0.0	0.0
8	3	51.3	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.6	0.0	0.0	0.0	0.0	0.0	0.0
9	4	0.0	0.0	10.4	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	75.5	1.4	0.0	0.0	0.0	0.0	0.0
10	5	38.5	0.0	1.2	0.0	0.0	52.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
11	6	36.9	0.0	1.2	0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.1	0.0
12	5	36.9	0.0	1.2	0.0	0.0	43.8	0.0	0.1	0.0	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.0	0.0
13	6	36.9	0.0	1.2	0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.1	0.0
14	6	36.9	0.0	1.2	0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.1	0.0
15	5	36.9	0.0	1.2	0.0	0.0	43.8	0.0	0.1	0.0	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.0	0.0
16	6	36.9	0.0	1.2	0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0	0.0	0.0	0.1	0.0
17	5	0.0	0.0	10.2	0.0	0.0	59.1	0.0	4.7	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.1	0.0
18	6	0.0	0.0	10.9	2.4	14.0	0.0	0.0	64.5	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0
19	5	0.0	0.0	10.2	0.0	0.0	59.1	0.0	4.7	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.1	0.0
20	4	0.0	0.0	10.2	0.0	0.0	75.6	0.0	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
21	4	0.0	0.0	11.4	0.0	0.0	77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	2.4	0.0
22	3	0.0	0.0	11.4	0.0	0.0	77.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
23	4	38.5	0.0	1.2	0.0	0.0	52.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
24	3	0.0	0.0	12.2	0.0	0.0	77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0
25	4	0.0	0.0	11.4	0.0	0.0	77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	2.4	0.0
26	2	0.0	0.0	42.1	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	4	0.0	0.0	1.6	0.0	0.0	51.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	39.0
28	5	0.0	0.0	1.6	0.0	0.0	49.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.3	38.7
29	5	0.0	0.0	1.6	0.0	0.0	49.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.3	38.7
30	5	0.0	0.0	1.6	0.0	0.0	49.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.3	38.7

Table 5-27 List of Thiessen Coefficient (Daily Rainfall, Watershed of the Nawaka River)

Thiessen coefficient :Nawaka River Basin																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	3	0.000	0.776	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.211	0.000	0.000	0.000	0.000	0.000	0.000
2	4	0.000	0.774	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.201	0.000	0.021	0.000	0.000	0.000	0.000
3	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.744	0.000	0.256	0.000	0.000	0.000	0.000	0.000
4	2	0.000	0.925	0.000	0.000	0.000	0.000	0.000	0.000	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	4	0.000	0.774	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.201	0.000	0.021	0.000	0.000	0.000	0.000
6	3	0.000	0.776	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.000	0.023	0.000	0.000	0.000	0.000
7	3	0.000	0.596	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.172	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	4	0.381	0.312	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.000	0.000	0.000	0.000	0.000	0.000
9	4	0.000	0.339	0.202	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033	0.426	0.000	0.000	0.000	0.000	0.000	0.000
10	3	0.436	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425	0.000	0.000	0.000	0.000	0.000	0.000
11	4	0.381	0.312	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.000	0.000	0.000	0.000	0.000	0.000
12	4	0.381	0.312	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.000	0.000	0.000	0.000	0.000	0.000
13	3	0.436	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425	0.000	0.000	0.000	0.000	0.000	0.000
14	4	0.381	0.312	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.000	0.000	0.000	0.000	0.000	0.000
15	4	0.381	0.312	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.000	0.000	0.000	0.000	0.000	0.000
16	3	0.436	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425	0.000	0.000	0.000	0.000	0.000	0.000
17	4	0.000	0.339	0.201	0.000	0.000	0.087	0.000	0.000	0.000	0.000	0.000	0.000	0.374	0.000	0.000	0.000	0.000	0.000
18	3	0.000	0.655	0.255	0.000	0.000	0.000	0.000	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19	4	0.000	0.339	0.201	0.000	0.000	0.087	0.000	0.000	0.000	0.000	0.000	0.374	0.000	0.000	0.000	0.000	0.000	0.000
20	3	0.000	0.000	0.266	0.000	0.000	0.087	0.000	0.000	0.000	0.000	0.000	0.647	0.000	0.000	0.000	0.000	0.000	0.000
21	3	0.000	0.000	0.266	0.000	0.000	0.087	0.000	0.000	0.000	0.000	0.000	0.647	0.000	0.000	0.000	0.000	0.000	0.000
22	4	0.000	0.339	0.201	0.000	0.000	0.087	0.000	0.000	0.000	0.000	0.000	0.374	0.000	0.000	0.000	0.000	0.000	0.000
23	3	0.517	0.378	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	2	0.000	0.000	0.594	0.000	0.000	0.406	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25	2	0.000	0.000	0.594	0.000	0.000	0.406	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
26	1	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	2	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.900
28	3	0.000	0.336	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.575
29	2	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.899
30	2	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.900

Table 5-28 List of Coverage Area (Daily Rainfall, Watershed of the Nawaka River)

Basin Area(km ²) :Nawaka River Basin(189.9km ²)																			
Pattern	Number of stations	Station Name																	
		Navu/Solovi	Nawaicoba Res. Sin	Nadi Airport	Vaturu dam	Waidum	Tubenasolo	Navunitawa	Molveitala	Naboutini	Nadurugu	Bukuyu	Nausori Highland	Vunamoli	Navilawa	Natawa Village	Toko Village	Nagado	K2
1	3	0.0	147.5	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	40.1	0.0	0.0	0.0	0.0	0.0	0.0
2	4	0.0	146.9	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	38.2	0.0	4.0	0.0	0.0	0.0	0.0
3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	141.3	0.0	48.6	0.0	0.0	0.0	0.0	0.0
4	2	0.0	175.6	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4	0.0	146.9	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	38.2	0.0	4.0	0.0	0.0	0.0	0.0
6	3	0.0	147.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0	4.3	0.0	0.0	0.0	0.0
7	3	0.0	113.1	44.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.7	0.0	0.0	0.0	0.0	0.0	0.0
8	4	72.4	59.3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0	0.0	0.0	0.0	0.0
9	4	0.0	64.3	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	80.9	0.0	0.0	0.0	0.0	0.0
10	3	82.8	0.0	26.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.7	0.0	0.0	0.0	0.0	0.0
11	4	72.4	59.3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0	0.0	0.0	0.0	0.0
12	4	72.4	59.3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0	0.0	0.0	0.0	0.0
13	3	82.8	0.0	26.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.7	0.0	0.0	0.0	0.0	0.0
14	4	72.4	59.3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0	0.0	0.0	0.0	0.0
15	4	72.4	59.3	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0	0.0	0.0	0.0	0.0
16	3	82.8	0.0	26.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.7	0.0	0.0	0.0	0.0	0.0
17	4	0.0	64.3	38.1	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	71.0	0.0	0.0	0.0	0.0	0.0
18	3	0.0	124.5	48.5	0.0	0.0	0.0	0.0	16.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	4	0.0	64.3	38.1	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	71.0	0.0	0.0	0.0	0.0	0.0
20	3	0.0	0.0	50.6	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	122.9	0.0	0.0	0.0	0.0	0.0
21	3	0.0	0.0	50.6	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	122.9	0.0	0.0	0.0	0.0	0.0
22	4	0.0	64.3	38.1	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	71.0	0.0	0.0	0.0	0.0	0.0
23	3	98.2	71.7	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	2	0.0	0.0	112.7	0.0	0.0	77.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	2	0.0	0.0	112.7	0.0	0.0	77.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	1	0.0	0.0	189.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	2	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.8
28	3	0.0	63.8	16.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109.2
29	2	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.8
30	2	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.8

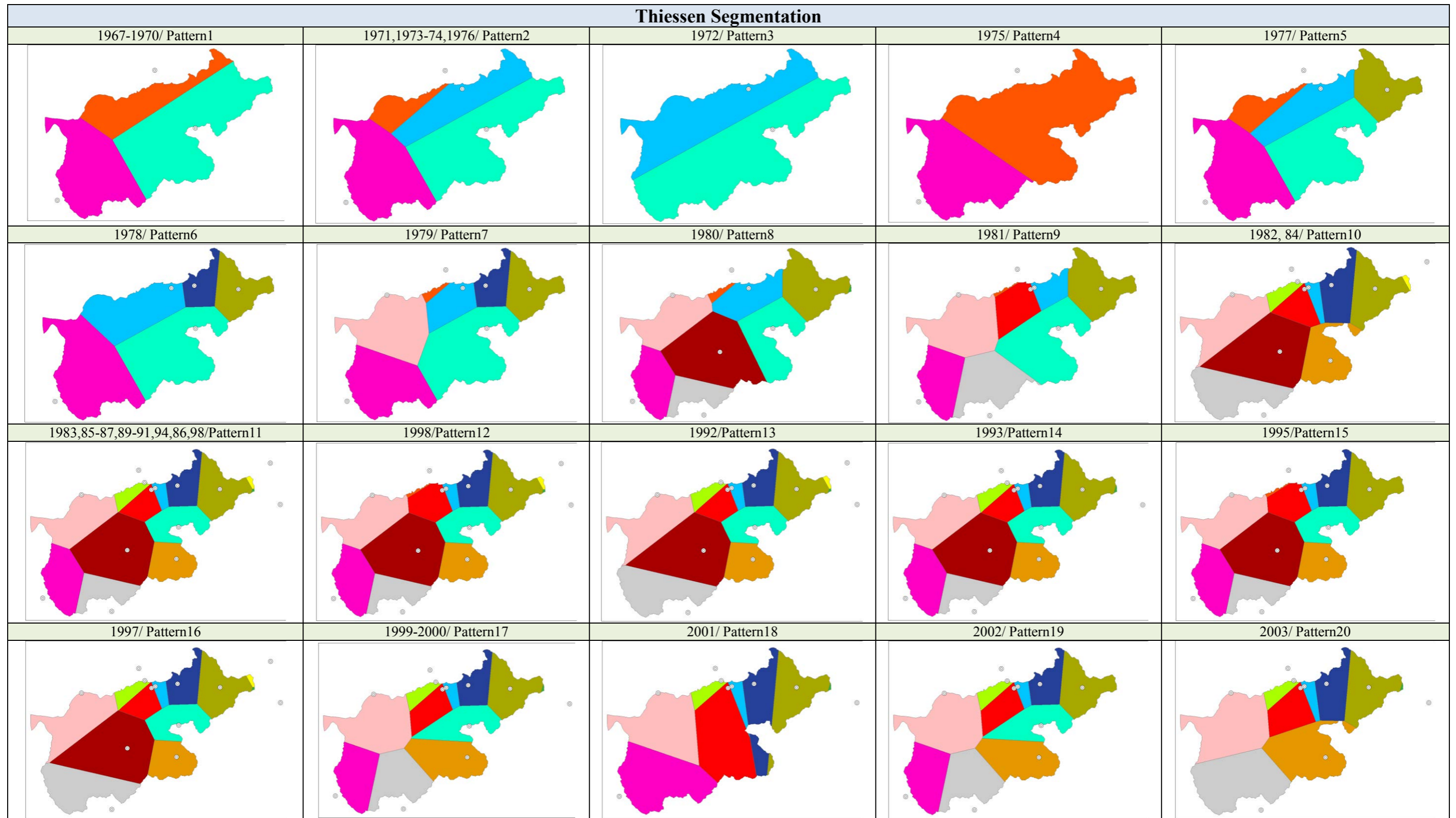


Figure 5-13 Thiessen Segmentation of (Daily Rainfall) 1/2

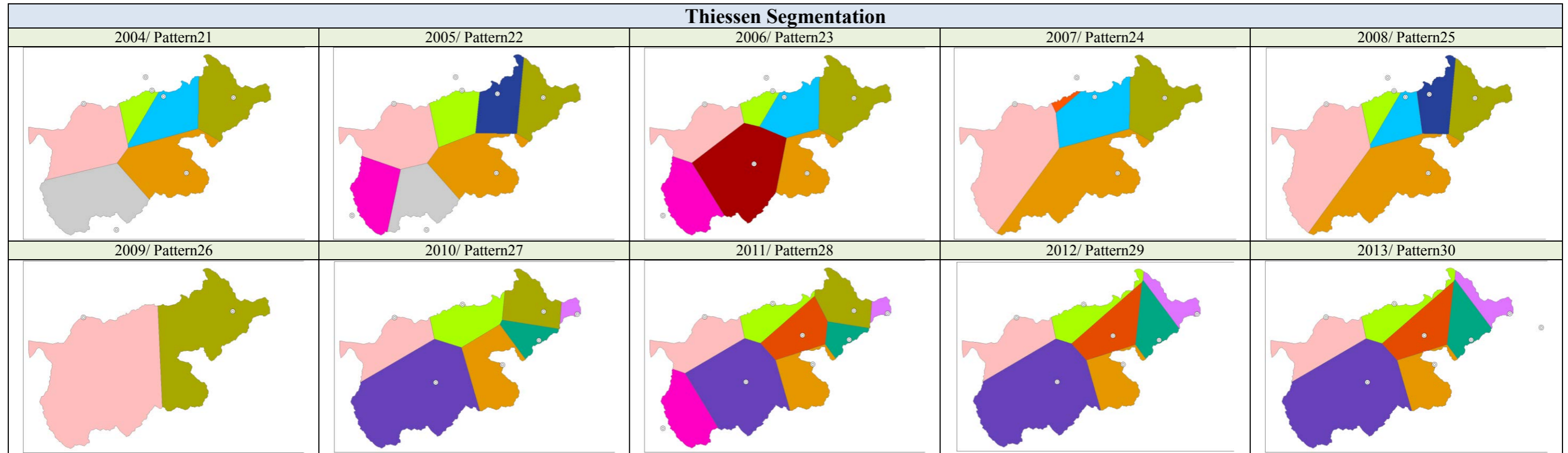


Figure 5-14 Thiessen Segmentation of (Daily Rainfall) 2/2

(2) Annual Maximum Daily Rainfall

Annual maximum daily rainfall in each watershed in Nadi River basin is as shown in the following tables.

Table 5-29 Maximum Annual Rainfall (Nadi River Basin)

Nadi River Basin							
Hydrological Year	1-day Rainfall			2-day Rainfall			
	Date of Occurrence	Rainfall (mm/day)	Rank	Date of Occurrence	Rainfall (mm/2day)	Rank	
1	1967	1968/2/25	71.01	40	1968/3/20	131.32	34
2	1968	1969/2/1	89.28	34	1969/2/1	108.73	39
3	1969	1970/2/12	110.07	26	1970/2/12	198.68	22
4	1970	1971/3/6	107.89	27	1970/12/17	144.42	31
5	1971	1972/1/17	84.65	37	1972/1/17	121.83	37
6	1972	1972/10/24	324.05	2	1972/10/23	416.38	4
7	1973	1974/4/25	143.21	18	1974/4/24	268.12	12
8	1974	1974/12/9	90.05	33	1974/12/8	133.91	33
9	1975	1975/10/29	153.30	15	1975/10/28	182.65	25
10	1976	1976/9/4	97.45	31	1976/9/4	157.02	29
11	1977	1978/1/25	71.62	39	1978/1/22	96.21	43
12	1978	1979/1/7	123.94	19	1979/1/9	196.97	23
13	1979	1980/4/3	52.87	46	1980/1/26	91.37	44
14	1980	1981/1/28	165.92	10	1981/1/27	277.72	11
15	1981	1982/1/30	115.78	23	1982/1/29	222.75	16
16	1982	1983/3/1	326.62	1	1983/3/1	400.07	6
17	1983	1984/3/17	160.08	12	1984/3/17	252.05	13
18	1984	1985/3/5	153.56	14	1985/3/4	242.70	14
19	1985	1986/4/10	168.76	9	1986/4/9	280.00	9
20	1986	1987/2/13	55.26	45	1987/2/6	75.76	47
21	1987	1987/12/19	65.40	43	1988/3/2	79.91	46
22	1988	1989/2/11	111.81	25	1989/2/10	221.87	17
23	1989	1990/3/20	156.70	13	1990/3/20	282.48	8
24	1990	1990/11/27	165.55	11	1990/11/26	207.12	18
25	1991	1991/9/14	47.94	47	1991/9/14	89.93	45
26	1992	1993/2/27	211.31	6	1993/2/26	420.82	3
27	1993	1994/6/3	86.81	35	1994/6/3	116.35	38
28	1994	1995/1/21	67.26	42	1995/3/15	100.71	41
29	1995	1996/5/10	102.62	30	1996/3/8	146.68	30
30	1996	1997/3/7	196.70	7	1997/3/7	315.21	7
31	1997	1997/8/7	68.63	41	1997/8/6	97.73	42
32	1998	1999/1/18	285.52	3	1999/1/18	407.27	5
33	1999	2000/1/24	115.91	22	2000/1/24	169.30	27
34	2000	2001/3/14	85.34	36	2000/12/11	136.23	32
35	2001	2001/10/22	122.04	20	2002/2/23	187.42	24
36	2002	2003/3/12	105.12	29	2003/3/11	204.77	19
37	2003	2004/2/13	79.46	38	2004/2/13	127.01	35
38	2004	2005/4/19	106.82	28	2005/4/18	202.15	21
39	2005	2005/11/18	60.26	44	2006/1/29	102.61	40
40	2006	2007/3/24	112.01	24	2007/2/11	181.41	26
41	2007	2008/1/29	179.59	8	2008/1/28	278.50	10
42	2008	2009/1/10	274.64	4	2009/1/9	428.31	2
43	2009	2009/12/14	144.72	17	2009/12/14	242.12	15
44	2010	2011/2/18	121.53	21	2011/2/18	165.99	28
45	2011	2012/3/29	255.82	5	2012/3/29	436.20	1
46	2012	2012/12/17	97.11	32	2013/3/2	125.81	36
47	2013	2014/1/29	152.80	16	2014/1/29	203.73	20

: Top 5位

Table 5-30 Maximum Annual Rainfall (Watershed of Nadi Town Bridge)

Watershed of Nadi Town Bridge							
Hydrological Year	1-day Rainfall			2-day Rainfall			
	Date of Occurrence	Rainfall (mm/day)	Rank	Date of Occurrence	Rainfall (mm/2day)	Rank	
1	1967	1968/2/25	100.03	35	1968/3/20	136.09	37
2	1968	1969/2/1	122.97	25	1969/2/1	146.24	32
3	1969	1970/2/12	117.47	28	1970/2/12	217.67	20
4	1970	1971/3/6	126.14	21	1971/3/6	155.03	31
5	1971	1972/1/17	100.30	34	1972/1/19	155.15	30
6	1972	1972/10/24	318.07	1	1972/10/23	404.82	3
7	1973	1974/4/25	170.15	12	1974/4/24	319.41	9
8	1974	1974/12/9	92.99	36	1974/12/8	144.94	33
9	1975	1975/10/29	170.20	11	1975/10/28	190.11	27
10	1976	1977/2/8	108.87	31	1976/9/4	192.41	24
11	1977	1978/1/25	68.32	43	1978/1/24	91.11	45
12	1978	1979/1/7	123.86	24	1979/3/27	230.16	18
13	1979	1980/1/26	58.55	45	1980/1/26	108.78	40
14	1980	1981/1/28	152.99	17	1981/1/27	249.17	15
15	1981	1982/1/29	126.92	19	1982/1/29	239.08	16
16	1982	1983/3/1	312.30	2	1983/2/28	394.38	6
17	1983	1984/3/17	193.93	9	1984/3/17	298.03	10
18	1984	1985/3/5	161.73	15	1985/3/4	261.95	14
19	1985	1986/4/10	165.19	14	1986/4/9	275.33	12
20	1986	1987/2/5	47.44	46	1987/2/5	77.07	47
21	1987	1987/12/19	71.63	41	1988/3/3	93.95	43
22	1988	1989/2/10	124.88	23	1989/2/10	238.61	17
23	1989	1990/3/20	169.66	13	1990/3/20	294.56	11
24	1990	1990/11/27	171.34	10	1990/11/27	210.10	21
25	1991	1991/9/14	45.36	47	1991/9/13	82.95	46
26	1992	1993/2/27	207.14	8	1993/2/26	400.24	5
27	1993	1994/6/3	74.34	40	1994/6/3	108.07	41
28	1994	1995/1/15	61.08	44	1995/3/16	96.14	42
29	1995	1996/5/10	125.29	22	1996/3/8	140.09	35
30	1996	1997/3/7	238.97	6	1997/3/7	373.78	7
31	1997	1998/1/7	70.12	42	1997/8/6	93.39	44
32	1998	1999/1/18	275.65	4	1999/1/18	404.23	4
33	1999	2000/1/24	117.54	27	2000/1/24	184.92	28
34	2000	2000/7/15	79.99	38	2000/12/11	140.86	34
35	2001	2001/10/22	126.27	20	2002/2/23	209.43	22
36	2002	2003/3/12	109.18	30	2003/3/11	217.91	19
37	2003	2004/2/13	82.12	37	2004/2/13	139.69	36
38	2004	2005/4/18	108.03	32	2005/4/18	202.25	23
39	2005	2005/11/18	74.39	39	2006/1/29	132.57	39
40	2006	2007/3/24	118.86	26	2007/2/11	191.53	25
41	2007	2008/1/29	221.51	7	2008/1/28	343.66	8
42	2008	2009/1/10	272.52	5	2009/1/9	441.99	2
43	2009	2009/12/15	159.18	16	2009/12/14	268.78	13
44	2010	2011/2/18	106.50	33	2011/2/18	157.47	29
45	2011	2012/3/29	285.01	3	2012/3/29	483.08	1
46	2012	2012/12/17	117.00	29	2012/12/16	134.79	38
47	2013	2014/1/29	142.02	18	2014/1/29	191.06	26

: Top 15位

**Table 5-31 Maximum Annual Rainfall
(Nadi River Basin before confluence of the Namosi River)**

Nadi River Basin before confluence of the Namosi							
Hydrological Year	1-day Rainfall			2-day Rainfall			Rank
	Date of Occurrence	Rainfall (mm/day)	Rank	Date of Occurrence	Rainfall (mm/2day)	Rank	
1	1967	1968/2/25	101.40	35	1968/3/20	136.83	39
2	1968	1969/2/1	125.00	28	1969/2/1	148.76	37
3	1969	1970/2/12	117.11	30	1970/2/12	216.92	22
4	1970	1971/3/6	128.75	25	1971/3/6	158.09	33
5	1971	1972/1/19	112.04	32	1972/1/19	193.52	26
6	1972	1972/10/24	313.03	2	1972/10/23	395.10	6
7	1973	1974/4/25	181.01	15	1974/4/24	359.35	10
8	1974	1974/12/9	80.94	42	1974/12/8	138.61	38
9	1975	1975/10/29	170.40	16	1975/10/28	190.20	28
10	1976	1977/2/8	185.34	13	1976/9/4	209.63	23
11	1977	1978/1/25	72.18	43	1978/1/4	100.26	46
12	1978	1979/3/28	161.66	18	1979/3/28	309.40	13
13	1979	1980/1/4	67.38	44	1980/3/10	108.69	43
14	1980	1981/1/14	112.87	31	1981/1/28	191.64	27
15	1981	1982/1/29	131.06	24	1982/1/29	246.73	18
16	1982	1983/3/1	398.54	1	1983/2/28	517.01	1
17	1983	1984/3/17	256.57	6	1984/3/17	366.44	9
18	1984	1985/3/5	204.52	9	1985/3/4	352.23	11
19	1985	1986/4/10	149.95	21	1986/4/9	273.23	16
20	1986	1986/12/27	43.32	47	1986/12/27	85.06	47
21	1987	1988/3/3	90.76	38	1988/3/2	121.15	41
22	1988	1989/2/10	157.23	19	1989/2/10	280.77	15
23	1989	1990/3/20	182.41	14	1990/3/20	314.97	12
24	1990	1990/11/27	185.70	12	1990/11/27	245.71	20
25	1991	1992/3/1	56.21	46	1992/2/29	105.46	44
26	1992	1993/1/2	206.14	8	1993/2/26	378.34	7
27	1993	1994/3/24	63.21	45	1994/2/11	104.12	45
28	1994	1995/1/15	89.01	39	1995/1/14	120.39	42
29	1995	1996/5/10	150.46	20	1996/5/10	154.85	34
30	1996	1997/3/7	302.71	3	1997/3/7	478.95	3
31	1997	1998/1/7	96.78	36	1998/1/7	122.45	40
32	1998	1999/1/18	195.08	11	1999/1/18	373.61	8
33	1999	2000/1/24	124.32	29	2000/1/24	200.97	24
34	2000	2000/12/7	83.73	41	2000/12/6	166.28	31
35	2001	2002/2/23	140.56	22	2002/2/23	248.31	17
36	2002	2003/3/11	128.58	26	2003/3/11	246.03	19
37	2003	2004/2/13	92.15	37	2004/2/13	162.61	32
38	2004	2005/4/18	108.12	33	2005/4/18	199.05	25
39	2005	2006/1/30	102.88	34	2006/1/29	181.28	29
40	2006	2007/3/24	163.78	17	2007/3/24	233.66	21
41	2007	2008/1/29	289.91	4	2008/1/28	465.85	4
42	2008	2009/1/10	271.56	5	2009/1/9	460.51	5
43	2009	2009/12/15	201.12	10	2009/12/14	286.87	14
44	2010	2011/2/18	87.66	40	2011/2/18	151.62	36
45	2011	2012/3/29	254.75	7	2012/3/29	481.63	2
46	2012	2012/12/17	138.63	23	2012/12/16	154.01	35
47	2013	2014/1/29	126.59	27	2014/1/29	180.37	30

∴ Top 5位

Table 5-32 Maximum Annual Rainfall (Namosi River Basin)

Namosi River Basin							
Hydrological Year	1-day Rainfall			2-day Rainfall			
	Date of Occurrence	Rainfall (mm/day)	Rank	Date of Occurrence	Rainfall (mm/2day)	Rank	
1	1967	1968/2/25	116.88	29	1968/3/20	146.57	38
2	1968	1969/2/1	149.13	18	1969/2/1	179.27	30
3	1969	1970/2/12	111.23	35	1970/2/12	204.20	23
4	1970	1971/3/6	162.68	14	1971/3/6	198.98	24
5	1971	1972/1/17	157.13	15	1972/1/17	215.95	18
6	1972	1972/10/24	348.73	3	1972/10/23	464.04	2
7	1973	1974/2/26	163.80	13	1974/2/25	244.15	12
8	1974	1974/12/9	115.19	31	1974/12/8	157.86	33
9	1975	1975/10/29	170.13	10	1975/10/28	190.08	26
10	1976	1976/9/4	119.31	27	1976/9/4	156.18	35
11	1977	1978/1/25	63.83	45	1978/1/24	89.44	46
12	1978	1979/1/10	117.38	28	1979/1/9	216.60	17
13	1979	1980/1/26	126.87	25	1980/1/26	185.94	29
14	1980	1981/1/28	275.58	4	1981/1/27	450.69	3
15	1981	1982/1/29	135.23	22	1982/1/29	251.05	11
16	1982	1983/3/1	146.65	19	1983/3/1	222.09	15
17	1983	1984/3/17	111.64	34	1984/3/17	220.94	16
18	1984	1985/1/17	154.05	16	1985/1/16	207.16	21
19	1985	1986/4/10	224.40	7	1986/4/10	331.94	7
20	1986	1987/2/5	102.86	38	1987/2/5	150.26	37
21	1987	1987/12/19	103.46	37	1987/12/19	107.66	45
22	1988	1989/2/11	101.65	39	1989/2/10	173.96	32
23	1989	1990/3/20	150.76	17	1990/3/20	277.56	9
24	1990	1990/11/27	165.09	12	1990/11/26	233.68	13
25	1991	1991/9/15	62.88	46	1991/9/14	109.80	44
26	1992	1993/2/27	245.49	6	1993/2/26	412.54	6
27	1993	1994/6/3	110.40	36	1994/6/3	135.62	40
28	1994	1995/1/24	199.61	9	1995/1/23	204.79	22
29	1995	1996/3/8	87.03	42	1996/3/7	135.76	39
30	1996	1997/1/25	116.03	30	1997/1/24	186.50	28
31	1997	1997/8/7	45.61	47	1997/8/6	78.04	47
32	1998	1999/1/18	400.99	1	1999/1/18	435.20	4
33	1999	2000/1/24	97.64	40	2000/1/24	150.49	36
34	2000	2000/7/15	96.60	41	2001/3/14	131.48	41
35	2001	2001/10/22	129.54	24	2002/3/9	191.30	25
36	2002	2003/3/12	112.19	33	2003/3/11	187.25	27
37	2003	2003/12/23	68.27	44	2004/2/13	111.06	43
38	2004	2005/4/18	120.04	26	2005/4/18	226.56	14
39	2005	2005/11/19	113.48	32	2005/11/18	209.41	20
40	2006	2007/2/12	212.05	8	2007/2/11	294.00	8
41	2007	2008/1/29	136.75	21	2008/1/29	174.87	31
42	2008	2009/1/8	275.05	5	2009/1/8	434.02	5
43	2009	2009/12/15	143.42	20	2009/12/14	261.98	10
44	2010	2011/2/18	133.03	23	2011/2/18	157.70	34
45	2011	2012/3/29	368.94	2	2012/3/29	512.86	1
46	2012	2012/12/17	84.03	43	2013/3/2	120.15	42
47	2013	2014/1/29	165.82	11	2014/1/28	210.35	19

: Top 15位

Table 5-33 Maximum Annual Rainfall (Nawaka River Basin)

Nawaka River Basin							
Hydrological Year	1-day Rainfall			2-day Rainfall			
	Date of Occurrence	Rainfall (mm/day)	Rank	Date of Occurrence	Rainfall (mm/2day)	Rank	
1	1967	1968/3/21	65.87	44	1968/3/20	124.13	36
2	1968	1969/3/7	88.54	36	1969/3/6	91.64	44
3	1969	1970/2/12	98.59	32	1970/2/12	169.26	25
4	1970	1970/12/17	118.35	23	1970/9/21	157.13	29
5	1971	1972/1/17	61.47	45	1972/1/17	94.88	43
6	1972	1972/10/24	336.98	2	1972/10/23	441.34	2
7	1973	1974/3/13	101.76	30	1974/4/24	187.62	20
8	1974	1974/12/9	85.92	37	1975/1/17	124.51	35
9	1975	1975/10/3	187.65	9	1975/10/3	188.54	19
10	1976	1976/9/4	92.80	34	1977/1/15	132.60	33
11	1977	1978/1/23	90.84	35	1978/1/22	116.95	39
12	1978	1979/1/7	123.62	19	1979/1/9	213.72	15
13	1979	1980/4/3	94.74	33	1980/4/2	132.09	34
14	1980	1981/1/28	191.77	8	1981/1/27	332.17	7
15	1981	1982/1/30	123.38	21	1982/1/29	198.19	17
16	1982	1983/3/1	351.83	1	1983/3/1	422.52	3
17	1983	1984/3/17	107.14	27	1984/3/17	180.70	22
18	1984	1985/3/5	143.59	15	1985/3/4	214.20	14
19	1985	1986/4/10	178.89	10	1986/4/9	290.99	8
20	1986	1987/2/13	79.74	39	1987/2/13	81.02	45
21	1987	1987/12/19	54.54	46	1988/2/22	63.30	47
22	1988	1989/5/29	113.53	24	1989/2/10	195.33	18
23	1989	1990/3/20	135.25	16	1990/3/20	265.00	9
24	1990	1990/11/27	158.47	12	1990/11/26	215.43	13
25	1991	1991/9/15	66.14	43	1991/9/14	118.14	38
26	1992	1993/2/26	229.63	5	1993/2/26	452.30	1
27	1993	1994/6/3	106.36	28	1994/2/12	135.53	32
28	1994	1995/1/21	105.57	29	1995/3/15	115.83	40
29	1995	1996/6/12	84.52	38	1996/3/8	157.93	28
30	1996	1997/1/25	145.11	14	1997/1/24	224.26	12
31	1997	1997/8/16	77.30	40	1997/8/6	104.50	42
32	1998	1999/1/18	298.05	3	1999/1/18	408.19	4
33	1999	2000/1/24	112.31	26	2000/1/23	151.04	30
34	2000	2001/3/14	118.60	22	2001/3/14	143.07	31
35	2001	2001/10/22	113.25	25	2001/10/21	164.17	27
36	2002	2003/3/12	100.66	31	2003/3/11	185.46	21
37	2003	2004/2/13	75.18	41	2004/2/5	107.85	41
38	2004	2005/4/19	129.20	17	2005/4/18	204.29	16
39	2005	2005/11/11	51.15	47	2005/11/18	69.08	46
40	2006	2007/2/11	127.03	18	2007/2/11	168.56	26
41	2007	2008/2/24	123.45	20	2008/1/28	174.64	24
42	2008	2009/1/10	277.83	4	2009/1/9	408.00	5
43	2009	2009/12/14	200.10	7	2009/12/13	238.30	10
44	2010	2011/2/18	146.01	13	2011/2/18	179.14	23
45	2011	2012/3/29	209.02	6	2012/3/29	359.45	6
46	2012	2013/3/3	73.08	42	2013/3/2	122.01	37
47	2013	2014/1/29	170.49	11	2014/1/29	224.74	11

: Top 15位

5.1.6 Calculation of Probable Rainfall

The probable rainfall is calculated by probability distributed model shown in Table 5-34. The probable rainfall is decided under the following conditions: SLSC (Standard Least Square Criterion) is less than 0.04, minimum Jack-knife Calculation Method Error probabilities are 1/20, 1/30 and 1/50.

The probable rainfall is evaluated in (1) Nadi River Basin, (2) Nadi Town Bridge Basin, (3) Nadi River Basin (upstream of confluence of Namosi River), (4) Namosi River Basin, and (5) Nawaka River Basin. The evaluated result of the flood in March 2012 is shown in Table 5-35. In case of the model which SLSC is less than 0.04, probable rainfall is evaluated as approximately 1/15 to 1/50 in Nadi Town Bridge Basin. In case of the model with a minimum SLSC value, the probable rainfall is evaluated as 1/35 probability, and in the case of the model which Jack-knife error shows minimum value, probable rainfall is evaluated as 1/50 probability.

The top 5 occurrence probabilities of average depth of rainfall over area calculated by selected probability distribution are shown in Table 5-36. Calculation results of probable rainfall of each basin by each model are shown in Table 5-37 to Table 5-41, and the calculation results of probability distribution are shown in Figure 5-15 to Figure 5-19.

Table 5-34 Method of Probability Distribution

No.	Method of Probability Distribution	
1	Gumbel	Gumbel Distribution
2	SqrtEt	SQRT-wxponential type maximum distribution
3	Gev	Generalization extreme value distribution
4	Exp	Exponential distribution
5	LP3Rs	Log Pearson type III distribution (method of real number space)
6	LogP3	Log Pearson type III Log Probability (method of log number)
7	Iwai	Iwai's method
8	IshiTaka	Ishihara's and Takase's method
9	LN3Q	Log-Normal Distribution 3 Parameter Quantile Method
10	LN3PM	Log-Normal Distribution 3 Parameter Moment Method (Sladell)
11	LN2LM	Log-Normal Distribution 2 Parameter Moment Method (Slade I,L Moment Method)
12	LN2PM	Log-Normal Distribution 2 Parameter L-Moment Method (Slade I, Moment Method)
13	LN4PM	Log-Normal Distribution 4 Parameter L-Moment Method (Slade IV, Moment Method)

Table 5-35 Occurrence Probability of Flood in March 2012

Basin	Rainfall Duration	Range of Probability	Minimum SLSC		SLSC less than 0.04 and Minimum Jack-knife Error	
		SLSC less than 0.04	Probability	Method	Probability	Method
Nadi River Basin	2 days	Approx. 1/20 ~ 1/30	Approx. 1/30	Iwai	Approx. 1/30	Iwai
Watershed of Nadi Town Bridge	2 days	Approx. 1/15 ~ 1/50	Approx. 1/30	LN2LM	Approx. 1/50	IshiTaka
Nadi River Basin before confluence of the Namosi River	2 days	Approx. 1/15 ~ 1/20	Approx. 1/20	Iwai	Approx. 1/20	Gev
Namosi River Basin	2 days	Approx. 1/45 ~ 1/150	Approx. 1/60	LN3PM	Approx. 1/60	LP3Rs
Nawaka River Basin	2 days	Approx. 1/15	Approx. 1/15	Iwai	Approx. 1/15	LP3Rs

Table 5-36 Occurrence Probability of Average Depth of Rainfall Over Area (Top 5)

Nadi River Basin			
Rank	2-day Rainfall		
	Date of Occurrence	Rainfall (mm / 2day)	Occurrence Probability
1	2012/3/29	436.2	Appox 1/30
2	2009/1/9	428.3	Appox 1/25
3	1993/2/26	420.8	Appox 1/25
4	1972/10/23	416.4	Appox 1/25
5	1999/1/18	407.3	Appox 1/20

Nadi River Basin (Watershed of Nadi Town Bridge)			
Rank	2-day Rainfall		
	Date of Occurrence	Rainfall (mm / 2day)	Occurrence Probability
1	2012/3/29	483.1	Appox 1/50
2	2009/1/9	442.0	Appox 1/30
3	1972/10/23	404.8	Appox 1/20
4	1999/1/18	404.2	Appox 1/20
5	1993/2/26	400.2	Appox 1/20

Nadi River Basin (upstream of confluence of the Namosi)			
Rank	2-day Rainfall		
	Date of Occurrence	Rainfall (mm / 2day)	Occurrence Probability
1	1983/2/28	517.0	Appox 1/30
2	2012/3/29	481.6	Appox 1/25
3	1997/3/7	479.0	Appox 1/20
4	2008/1/28	465.9	Appox 1/20
5	2009/1/9	460.5	Appox 1/15

Namosi River Basin			
Rank	2-day Rainfall		
	Date of Occurrence	Rainfall (mm / 2day)	Occurrence Probability
1	2012/3/29	512.9	Appox 1/60
2	1972/10/23	464.0	Appox 1/35
3	1981/1/27	450.7	Appox 1/30
4	1999/1/18	435.2	Appox 1/25
5	2009/1/8	434.0	Appox 1/25

Nawaka River Basin			
Rank	2-day Rainfall		
	Date of Occurrence	Rainfall (mm / 2day)	Occurrence Probability
1	1993/2/26	452.3	Appox 1/45
2	1972/10/23	441.3	Appox 1/35
3	1983/3/1	422.5	Appox 1/30
4	1999/1/18	408.2	Appox 1/20
5	2009/1/9	408.0	Appox 1/20

Table 5-37 Probable Rainfall (2-day Rainfall, Nadi River Basin)

Item		Annual Maximum Rainfall (1967 to 2013)													Calculation by "Non-Annual Maximum Rainfall"					
Calculation Method		Gumbel	SqrtEt	Gev	Exp	LP3Rs	LogP3	Iwai	IshiTaka	LN3Q	LN3PM	LN2LM	LN2PM	LN4PM	LExp	GP	GPExp	LExp	GP	GPExp
Sample Number		47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	100	100	100
Occurrence Probability	1/2	188.6	179.0	183.9	171.0	188.6	—	182.7	—	168.3	—	182.7	182.7	—	244.1	246.5	239.8	237.4	232.2	236.5
	1/3	232.6	221.0	226.8	217.1	235.2	—	225.7	—	212.3	—	226.7	225.6	—	286.8	295.8	287.1	281.8	276.3	278.4
	1/5	281.6	272.2	276.9	275.2	286.0	—	275.8	—	270.2	—	278.3	275.8	—	334.3	344.5	339.9	331.1	328.5	325.1
	1/10	343.1	343.0	343.1	354.0	347.2	—	341.4	—	354.6	—	346.6	341.8	—	394.0	396.9	406.2	393.1	398.9	383.7
	1/20	402.1	417.6	410.1	432.8	402.6	—	406.8	—	446.2	—	415.3	407.9	—	451.2	438.4	469.8	452.6	471.3	440.0
	1/30	436.1	463.5	450.1	478.9	432.8	—	445.3	—	503.4	—	456.3	447.3	—	484.2	458.7	506.4	486.8	515.2	472.4
	1/50	478.5	523.9	501.8	537.0	469.1	—	494.6	—	579.2	—	509.0	497.8	—	525.3	480.5	552.1	529.6	572.3	512.8
	1/80	517.4	582.0	550.6	590.4	500.9	—	540.7	—	652.8	—	558.7	545.3	—	563.0	497.2	593.9	568.8	626.7	549.9
	1/100	535.8	610.6	574.2	615.8	515.5	—	562.8	—	689.1	—	582.8	568.3	—	580.9	504.1	613.8	587.3	653.2	567.4
	1/150	569.2	663.9	617.9	661.9	541.1	—	603.6	—	757.3	—	627.3	610.8	—	613.3	515.0	649.7	620.9	702.5	599.2
	1/200	592.9	702.9	649.4	694.6	558.7	—	633.0	—	807.4	—	659.6	641.5	—	636.2	521.6	675.2	644.8	738.2	621.8
1/400	649.8	801.0	727.5	773.4	599.2	—	705.3	—	934.4	—	739.7	717.7	—	691.5	533.4	736.6	702.2	827.2	676.1	
X-COR(99%)		0.976	0.964	0.971	0.964	0.980	—	0.968	—	0.975	—	0.972	0.973	—	0.956	0.974	0.956	0.979	0.963	0.979
P-COR(99%)		0.995	0.996	0.996	0.989	0.994	—	0.996	—	0.996	—	0.996	0.996	—	0.994	0.996	0.995	0.996	0.997	0.996
SLSC(99%)		0.044	0.043	0.042	0.055	0.046	—	0.031	—	0.035	—	0.032	0.033	—	0.060	0.056	0.062	0.043	0.047	0.044
1/20 estimated value		402.10	417.60	410.10	432.80	402.60	—	406.80	—	446.20	—	415.30	407.90	—	451.20	438.40	469.80	452.60	471.30	440.00
1/20 estimated error		34.900	42.000	34.300	38.200	28.400	—	31.900	—	31.700	—	43.100	40.800	—	26.400	26.300	32.000	28.800	33.800	29.900
1/30 estimated value		436.10	463.50	450.10	478.90	432.80	—	445.30	—	503.40	—	456.30	447.30	—	484.20	458.70	506.40	486.80	515.20	472.40
1/30 estimated error		38.600	48.100	38.600	43.300	28.100	—	35.600	—	37.000	—	50.100	47.100	—	29.800	31.800	36.300	31.900	42.500	33.100
1/50 estimated value		478.50	523.90	501.80	537.00	469.10	—	494.60	—	579.20	—	509.00	497.80	—	525.30	480.50	552.10	529.60	572.30	512.80
1/50 estimated error		43.300	56.300	45.800	49.700	27.500	—	41.300	—	46.000	—	59.500	55.600	—	34.000	41.100	41.600	35.900	56.700	37.200
Evaluation								○												

◻:SLSC > 0.04 (rejection)

Table 5-38 Probable Rainfall (2-day Rainfall, Watershed of Nadi Town Bridge)

Item		Annual Maximum Rainfall (1967 to 2013)													Calculation by "Non-Annual Maximum Rainfall"					
Calculation Method		Gumbel	SqrtEt	Gev	Exp	LP3Rs	LogP3	Iwai	IshiTaka	LN3Q	LN3PM	LN2LM	LN2PM	LN4PM	LExp	GP	GPExp	LExp	GP	GPExp
Sample Number		47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	100	100	100
Occurrence Probability	1/2	200.3	190.8	197.3	181.9	201.9	—	195.1	204.3	165.3	—	194.3	194.3	—	257.8	258.4	255.3	252.0	251.2	251.8
	1/3	246.2	236.3	242.8	230.1	250.8	—	240.7	250.7	215.6	—	241.0	239.8	—	299.9	304.6	299.9	298.3	297.8	297.7
	1/5	297.4	291.7	294.8	290.7	303.3	—	293.6	300.3	288.5	—	295.8	293.1	—	346.8	353.0	349.5	349.9	350.2	348.8
	1/10	361.6	368.5	362.1	373.0	365.2	—	362.5	359.6	403.0	—	368.3	363.2	—	405.8	409.0	411.9	414.7	416.6	412.9
	1/20	423.3	449.5	428.6	455.3	420.0	—	430.9	414.1	534.8	—	441.2	433.5	—	462.4	457.2	471.8	476.9	480.4	474.5
	1/30	458.7	499.3	467.6	503.4	449.4	—	471.2	444.5	620.0	—	484.7	475.2	—	494.9	482.5	506.2	512.7	517.0	509.9
	1/50	503.1	564.8	517.1	564.1	484.2	—	522.7	481.7	736.0	—	540.6	528.8	—	535.6	511.5	549.2	557.4	562.4	554.2
	1/80	543.6	628.0	563.1	619.8	514.1	—	570.8	515.2	851.4	—	593.3	579.2	—	572.8	535.6	588.6	598.3	603.5	594.7
	1/100	562.9	659.0	585.1	646.3	527.6	—	593.9	530.9	909.1	—	618.8	603.6	—	590.4	546.1	607.3	617.7	622.8	613.9
	1/150	597.7	716.9	625.3	694.5	551.3	—	636.5	559.0	1018.9	—	666.1	648.7	—	622.4	563.9	641.1	652.8	657.5	648.7
	1/200	622.4	759.3	654.0	728.6	567.3	—	667.2	578.8	1100.7	—	700.3	681.3	—	645.1	575.4	665.1	677.7	681.7	673.4
1/400	681.9	866.0	723.7	810.9	603.5	—	742.7	626.0	1311.6	—	785.2	762.1	—	699.7	599.6	722.9	737.7	738.5	732.8	
X-COR(99%)		0.986	0.973	0.984	0.970	0.990	—	0.983	0.987	0.982	—	0.981	0.982	—	0.972	0.985	0.972	0.984	0.978	0.984
P-COR(99%)		0.995	0.996	0.996	0.982	0.993	—	0.996	0.994	0.996	—	0.996	0.996	—	0.994	0.997	0.995	0.998	0.998	0.998
SLSC(99%)		0.033	0.037	0.034	0.050	0.042	—	0.029	0.035	0.029	—	0.028	0.029	—	0.048	0.041	0.051	0.037	0.041	0.037
1/20 estimated value		423.30	449.50	428.60	455.30	420.00	—	430.90	414.10	534.80	—	441.20	433.50	—	462.40	457.20	471.80	476.90	480.40	474.50
1/20 estimated error		34.400	43.000	33.100	37.600	27.900	—	32.800	29.400	36.800	—	43.700	41.100	—	25.400	25.400	31.300	28.200	33.400	30.500
1/30 estimated value		458.70	499.30	467.60	503.40	449.40	—	471.20	444.50	620.00	—	484.70	475.20	—	494.90	482.50	506.20	512.70	517.00	509.90
1/30 estimated error		38.000	49.300	36.900	42.500	28.500	—	37.200	31.100	43.400	—	50.800	47.500	—	28.700	31.300	35.500	31.200	42.100	33.800
1/50 estimated value		503.10	564.80	517.10	564.10	484.20	—	522.70	481.70	736.00	—	540.60	528.80	—	535.60	511.50	549.20	557.40	562.40	554.20
1/50 estimated error		42.500	57.700	43.600	48.800	29.900	—	44.100	33.800	53.500	—	60.500	56.200	—	32.800	41.600	40.800	35.100	56.100	37.900
Evaluation									○											

◻:SLSC > 0.04 (rejection)

Table 5-39 Probable Rainfall (2-day Rainfall, Nadi River Basin before confluence of the Namosi River)

Item	Annual Maximum Rainfall (1967 to 2013)													Calculation by "Non-Annual Maximum Rainfall"						
	Calculation Method	Gumbel	SqrtEt	Gev	Exp	LP3Rs	LogP3	Iwai	IshiTaka	LN3Q	LN3PM	LN2LM	LN2PM	LN4PM	LExp	GP	GPExp	LExp	GP	GPExp
Sample Number	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	100	100	100
Occurrence Probability	1/2	220.8	209.8	215.5	200.3	222.3	—	210.6	—	194.6	—	214.3	214.3	—	287.0	288.9	283.3	278.3	279.7	278.5
	1/3	271.8	258.5	265.5	253.8	276.6	—	261.0	—	247.1	—	265.4	264.0	—	335.4	343.2	335.6	329.9	331.6	330.7
	1/5	328.6	318.0	323.6	321.2	335.1	—	321.7	—	318.3	—	325.4	322.1	—	389.2	398.6	393.9	387.4	388.7	388.8
	1/10	400.0	400.1	400.2	412.6	404.2	—	403.9	—	425.0	—	404.6	398.3	—	456.8	460.5	467.2	459.6	458.8	461.9
	1/20	468.5	486.6	477.5	504.0	465.3	—	488.5	—	544.4	—	484.2	474.7	—	521.7	511.8	537.4	528.9	524.2	532.0
	1/30	507.9	539.8	523.5	557.5	498.2	—	539.5	—	620.5	—	531.6	520.0	—	559.1	537.6	577.9	568.8	560.9	572.3
	1/50	557.1	609.7	582.6	624.9	537.1	—	605.9	—	723.0	—	592.5	578.0	—	605.7	566.2	628.4	618.6	605.5	622.7
	1/80	602.2	677.1	638.1	686.8	570.5	—	669.1	—	824.2	—	650.0	632.7	—	648.5	588.8	674.6	664.2	645.3	668.8
	1/100	623.5	710.1	664.9	716.3	585.7	—	699.8	—	874.6	—	677.8	659.1	—	668.7	598.3	696.5	685.8	663.7	690.7
	1/150	662.3	771.9	714.3	769.7	612.1	—	757.1	—	970.2	—	729.3	707.9	—	705.4	613.6	736.3	725.0	696.3	730.3
	1/200	689.7	817.1	749.8	807.7	630.1	—	798.8	—	1041.2	—	766.5	743.2	—	731.4	623.0	764.4	752.8	718.8	758.4
1/400	755.8	930.6	837.1	899.1	670.6	—	903.2	—	1223.5	—	858.9	830.5	—	794.0	640.5	832.2	819.7	770.9	826.0	
X-COR(99%)	0.982	0.969	0.977	0.968	0.986	—	0.975	—	0.975	—	0.977	0.978	—	0.962	0.975	0.962	0.982	0.982	0.982	
P-COR(99%)	0.993	0.996	0.995	0.991	0.991	—	0.996	—	0.996	—	0.996	0.996	—	0.993	0.995	0.994	0.998	0.998	0.998	
SLSC(99%)	0.038	0.040	0.038	0.052	0.048	—	0.029	—	0.030	—	0.030	0.031	—	0.056	0.052	0.057	0.040	0.040	0.040	
1/20 estimated value	468.50	486.60	477.50	504.00	465.30	—	488.50	—	544.40	—	484.20	474.70	—	521.70	511.80	537.40	528.90	524.20	532.00	
1/20 estimated error	38.300	49.200	35.700	41.900	29.700	—	46.200	—	44.100	—	49.300	46.200	—	29.000	28.600	36.000	32.100	38.100	34.200	
1/30 estimated value	507.90	539.80	523.50	557.50	498.20	—	539.50	—	620.50	—	531.60	520.00	—	559.10	537.60	577.90	568.80	560.90	572.30	
1/30 estimated error	42.300	56.500	38.800	47.300	29.400	—	54.300	—	52.600	—	57.100	53.200	—	32.600	35.100	40.800	35.600	47.000	37.900	
1/50 estimated value	557.10	609.70	582.60	624.90	537.10	—	605.90	—	723.00	—	592.50	578.00	—	605.70	566.20	628.40	618.60	605.50	622.70	
1/50 estimated error	47.200	66.100	45.100	54.100	29.600	—	65.900	—	65.900	—	67.700	62.700	—	37.200	46.900	46.800	40.000	60.800	42.500	
Evaluation			○																	

■:SLSC > 0.04 (rejection)

Table 5-40 Probable Rainfall (2-day Rainfall, Namosi River Basin)

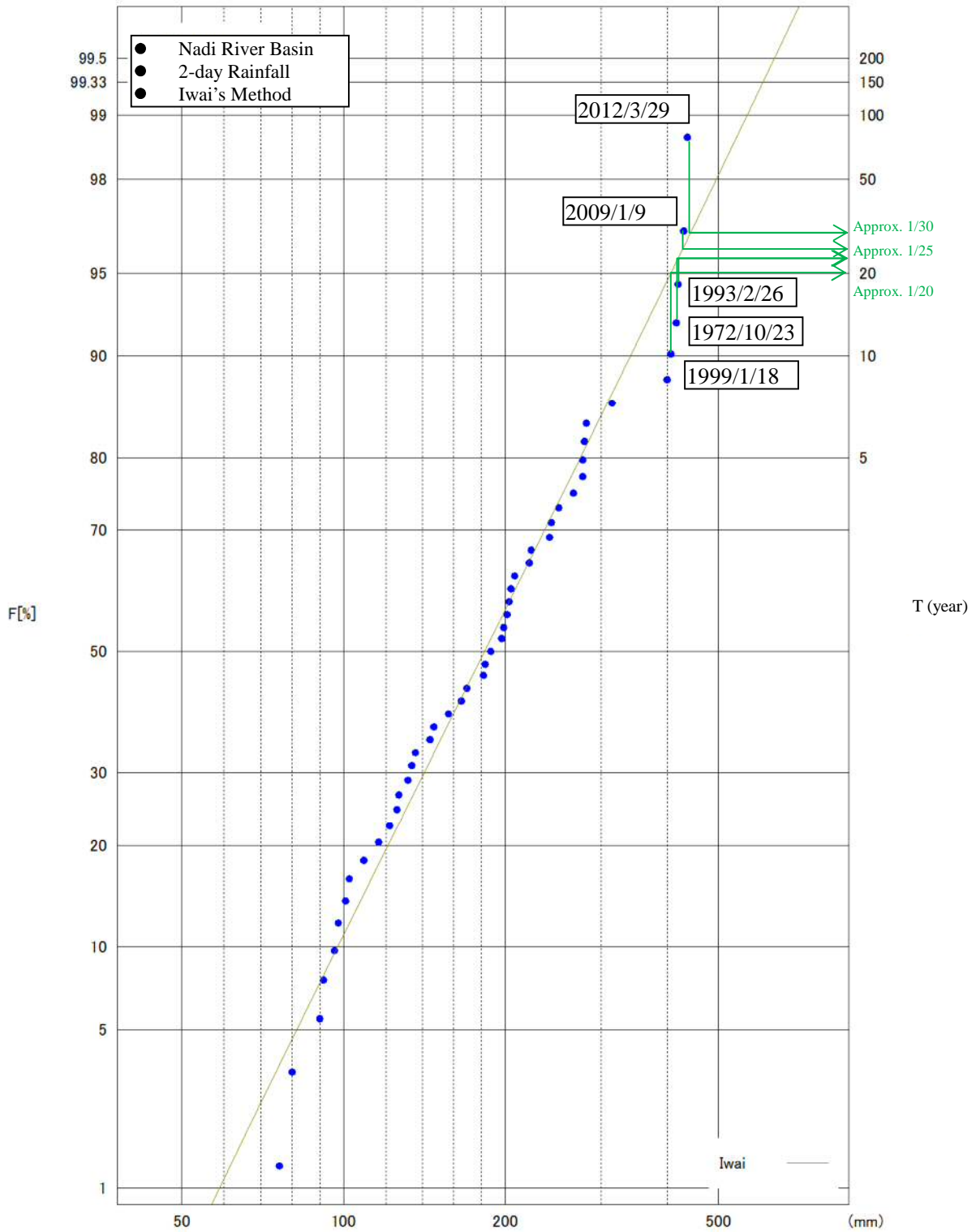
Item		Annual Maximum Rainfall (1967 to 2013)												Calculation by "Non-Annual Maximum Rainfall"						
Calculation Method		Gumbel	SqrtEt	Gev	Exp	LP3Rs	LogP3	Iwai	IshiTaka	LN3Q	LN3PM	LN2LM	LN2PM	LN4PM	LExp	GP	GPExp	LExp	GP	GPExp
Sample Number		47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	100	100	100
Occurrence Probability	1/2	203.6	195.4	194.1	186.8	199.8	195.7	200.5	199.0	205.8	200.4	199.8	199.8	—	235.6	234.9	237.7	241.3	231.1	239.8
	1/3	245.7	235.9	233.3	230.9	243.7	236.8	241.1	242.6	246.5	244.9	240.3	240.9	—	286.7	282.9	286.7	286.4	274.7	280.3
	1/5	292.6	285.0	281.4	286.5	293.6	286.0	287.1	292.6	290.0	295.1	286.4	287.8	—	343.6	339.3	341.3	336.6	329.2	325.4
	1/10	351.5	352.3	349.0	361.9	357.5	352.7	345.1	356.9	342.0	358.6	345.5	348.0	—	415.1	414.0	409.9	399.6	407.4	382.1
	1/20	407.9	422.8	422.2	437.3	419.6	421.7	400.9	419.8	389.1	419.6	403.2	407.0	—	483.7	489.5	475.7	460.1	493.9	436.5
	1/30	440.4	465.9	468.4	481.4	455.6	463.6	433.0	456.6	415.2	454.8	436.8	441.6	—	523.1	534.4	513.5	494.8	549.2	467.8
	1/50	481.1	522.5	530.5	536.9	501.0	518.4	473.3	503.1	446.7	498.9	479.5	485.4	—	572.4	591.8	560.8	538.3	624.7	506.9
	1/80	518.2	576.8	592.1	588.1	542.9	571.0	510.2	546.2	474.7	539.3	519.1	526.2	—	617.5	645.3	604.2	578.1	700.4	542.7
	1/100	535.8	603.4	622.9	612.3	562.9	596.7	527.7	566.8	487.6	558.5	538.1	545.7	—	638.9	670.9	624.7	597.0	738.6	559.7
	1/150	567.8	653.1	681.6	656.4	599.3	644.7	559.6	604.6	510.6	593.4	573.0	581.6	—	677.7	717.6	661.9	631.2	811.8	590.4
	1/200	590.4	689.3	725.5	687.7	625.2	679.8	582.2	631.6	526.6	618.3	598.0	607.4	—	705.2	750.8	688.2	655.4	867.0	612.2
1/400	644.9	780.3	839.4	763.1	688.1	768.1	636.9	697.6	563.9	678.3	659.2	670.7	—	771.3	830.6	751.7	713.8	1011.7	664.7	
X-COR(99%)		0.971	0.974	0.971	0.973	0.973	0.974	0.975	0.975	0.974	0.975	0.974	0.974	—	0.970	0.953	0.970	0.984	0.961	0.984
P-COR(99%)		0.986	0.992	0.992	0.963	0.986	0.991	0.991	0.990	0.990	0.990	0.989	0.989	—	0.991	0.992	0.991	0.991	0.998	0.994
SLSC(99%)		0.052	0.041	0.040	0.047	0.040	0.035	0.034	0.034	0.037	0.034	0.037	0.037	—	0.049	0.055	0.051	0.039	0.042	0.052
1/20 estimated value		407.90	422.80	422.20	437.30	419.60	421.70	400.90	419.80	389.10	419.60	403.20	407.00	—	483.70	489.50	475.70	460.10	493.90	436.50
1/20 estimated error		41.500	40.700	44.600	45.900	37.900	45.300	38.800	39.000	40.800	38.900	46.000	43.300	—	33.800	33.000	38.700	34.800	42.300	31.900
1/30 estimated value		440.40	465.90	468.40	481.40	455.60	463.60	433.00	456.60	415.20	454.80	436.80	441.60	—	523.10	534.40	513.50	494.80	549.20	467.80
1/30 estimated error		46.300	47.100	53.300	52.400	39.800	54.200	44.300	41.400	47.700	41.100	53.400	50.100	—	38.100	37.500	43.900	38.800	53.300	35.300
1/50 estimated value		481.10	522.50	530.50	536.90	501.00	518.40	473.30	503.10	446.70	498.90	479.50	485.40	—	572.40	591.80	560.80	538.30	624.70	506.90
1/50 estimated error		52.400	55.700	66.300	60.800	41.500	67.300	52.000	44.300	57.400	43.800	63.300	59.200	—	43.600	47.300	50.400	43.700	71.200	39.700
Evaluation						○														

■ :SLSC > 0.04 (rejection)

Table 5-41 Probable Rainfall (2-day Rainfall, Nawaka River Basin)

Item	Annual Maximum Rainfall (1967 to 2013)													Calculation by "Non-Annual Maximum Rainfall"						
	Calculation Method	Gumbel	SqrtEt	Gev	Exp	LP3Rs	LogP3	Iwai	IshiTaka	LN3Q	LN3PM	LN2LM	LN2PM	LN4PM	LExp	GP	GPExp	LExp	GP	GPExp
Sample Number		47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	100	100	100
Occurrence Probability	1/2	180.4	171.4	171.4	163.7	177.1	172.1	177.1	177.7	179.2	—	174.8	174.8	—	229.1	229.1	228.8	229.3	223.7	228.3
	1/3	222.2	211.1	210.5	207.5	221.0	212.6	217.0	220.7	219.4	—	215.3	215.2	—	275.4	276.3	275.4	272.3	266.5	268.8
	1/5	268.7	259.5	258.2	262.6	270.6	261.4	262.1	269.3	264.2	—	262.6	262.4	—	327.0	328.8	327.4	320.3	317.4	314.0
	1/10	327.1	326.3	325.0	337.5	333.0	327.9	319.1	330.7	320.1	—	324.6	324.3	—	391.7	394.1	392.6	380.5	386.3	370.7
	1/20	383.2	396.7	396.7	412.3	392.4	396.7	373.9	390.0	373.3	—	386.5	386.2	—	453.9	455.0	455.2	438.3	457.8	425.1
	1/30	415.5	439.9	441.8	456.1	426.3	438.7	405.4	424.3	403.8	—	423.2	422.9	—	489.6	488.9	491.3	471.5	501.3	456.5
	1/50	455.8	496.8	502.2	511.2	468.2	493.5	444.7	467.3	441.8	—	470.3	469.9	—	534.3	529.8	536.3	513.1	558.3	495.6
	1/80	492.7	551.6	561.8	562.0	506.2	546.0	480.7	507.0	476.5	—	514.5	514.1	—	575.2	565.3	577.5	551.1	612.8	531.4
	1/100	510.2	578.4	591.6	586.1	524.1	571.7	497.8	525.8	493.0	—	535.8	535.5	—	594.5	581.4	597.0	569.1	639.5	548.4
	1/150	541.9	628.6	648.1	629.9	556.3	619.7	528.7	560.3	522.8	—	575.2	574.9	—	629.7	609.3	632.4	601.8	689.3	579.2
	1/200	564.3	665.3	690.2	660.9	578.9	654.7	550.6	584.8	544.0	—	603.7	603.4	—	654.6	627.8	657.5	625.0	725.6	601.0
1/400	618.4	757.6	799.1	735.8	632.7	742.8	603.2	644.5	595.2	—	674.2	673.8	—	714.5	667.7	717.9	680.7	816.5	653.5	
X-COR(99%)	0.973	0.972	0.969	0.973	0.976	0.972	0.974	0.976	0.976	—	0.975	0.976	—	0.966	0.955	0.966	0.984	0.971	0.984	
P-COR(99%)	0.989	0.996	0.996	0.977	0.990	0.996	0.995	0.993	0.994	—	0.994	0.994	—	0.995	0.995	0.995	0.995	0.998	0.997	
SLSC(99%)	0.049	0.039	0.039	0.048	0.039	0.030	0.029	0.033	0.033	—	0.031	0.031	—	0.053	0.056	0.054	0.038	0.041	0.042	
1/20 estimated value	383.20	396.70	396.70	412.30	392.40	396.70	373.90	390.00	373.30	—	386.50	386.20	—	453.90	455.00	455.20	438.30	457.80	425.10	
1/20 estimated error	38.900	40.700	40.600	42.800	34.000	42.800	40.000	35.200	37.300	—	45.900	42.900	—	29.800	28.900	35.100	31.300	38.200	29.900	
1/30 estimated value	415.50	439.90	441.80	456.10	426.30	438.70	405.40	424.30	403.80	—	423.20	422.90	—	489.60	488.90	491.30	471.50	501.30	456.50	
1/30 estimated error	43.300	47.000	47.200	48.900	34.600	50.800	46.300	36.700	42.700	—	53.700	50.000	—	33.600	33.700	39.800	34.800	47.700	33.200	
1/50 estimated value	455.80	496.80	502.20	511.20	468.20	493.50	444.70	467.30	441.80	—	470.30	469.90	—	534.30	529.80	536.30	513.10	558.30	495.60	
1/50 estimated error	48.800	55.500	57.300	56.500	34.600	62.700	55.000	38.500	50.400	—	64.200	59.500	—	38.300	44.200	45.700	39.200	62.700	37.200	
Evaluation					○															

SLSC > 0.04 (rejection)



**Figure 5-15 Calculation Result of Probability Distribution
(Nadi Basin: 2-day rainfall (Iwai's method), N=47)**

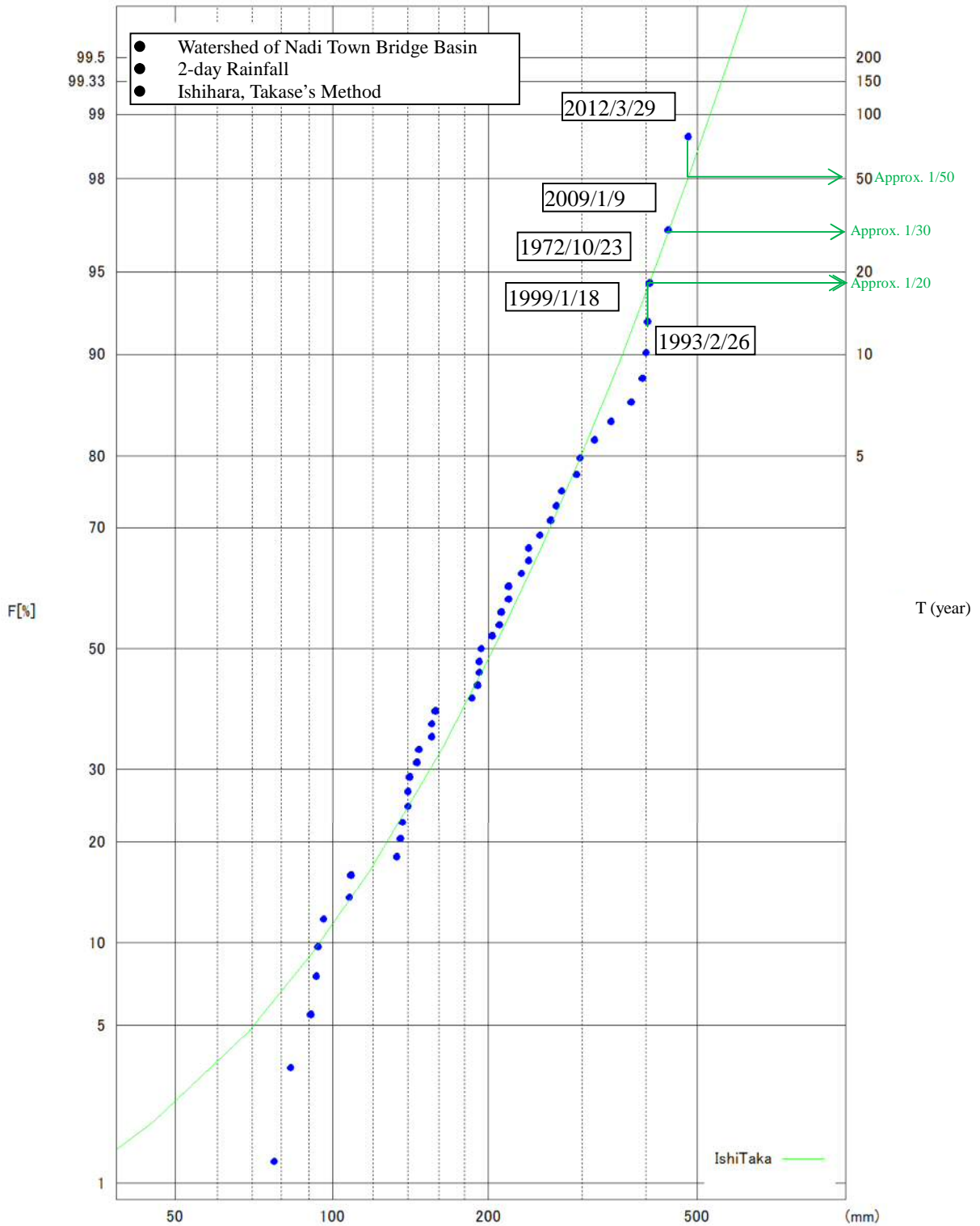


Figure 5-16 Calculation Result of Probability Distribution
(Nadi town Bridge basin: 2-day rainfall (Ishihhaar and Takase’s method), N=47)

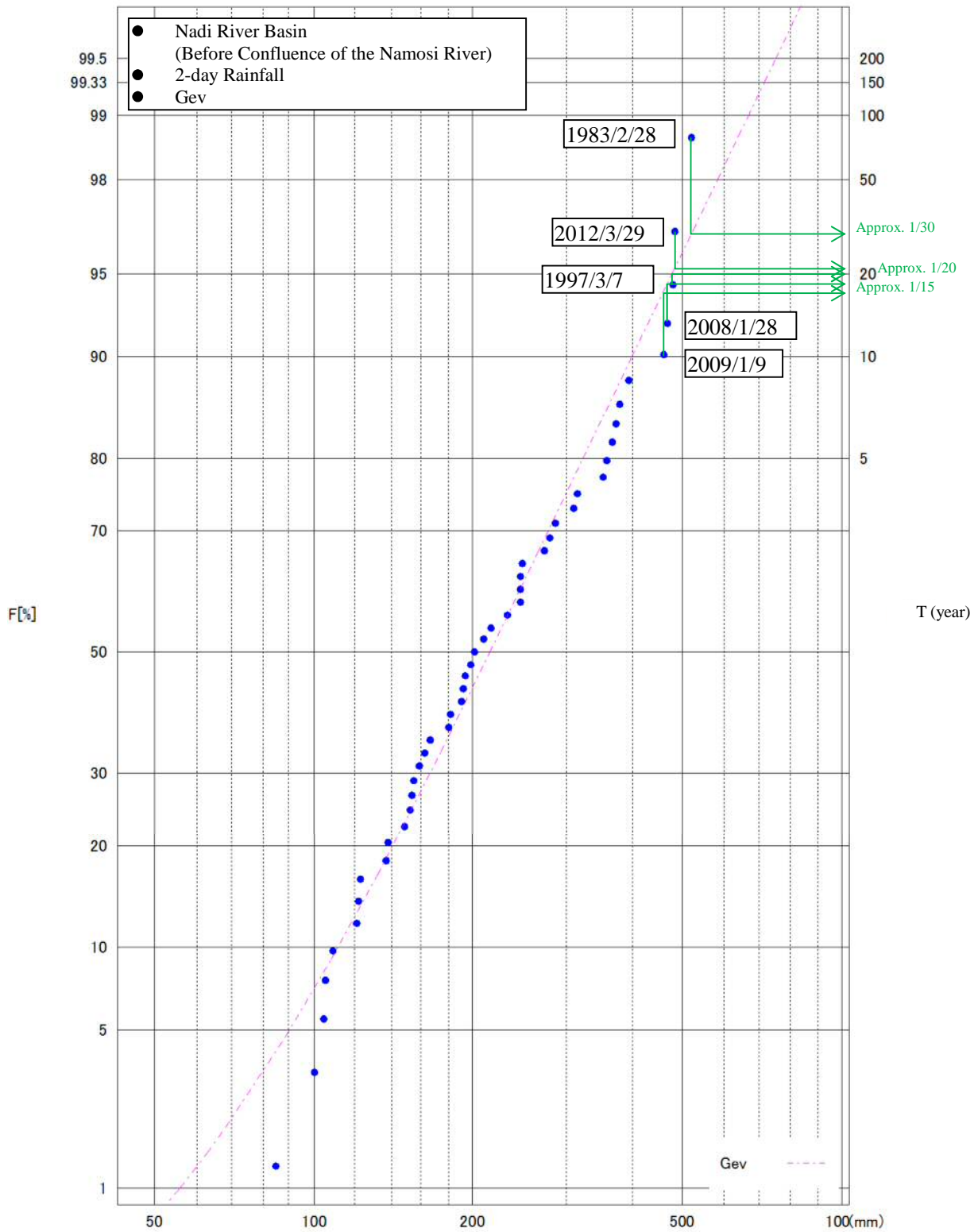
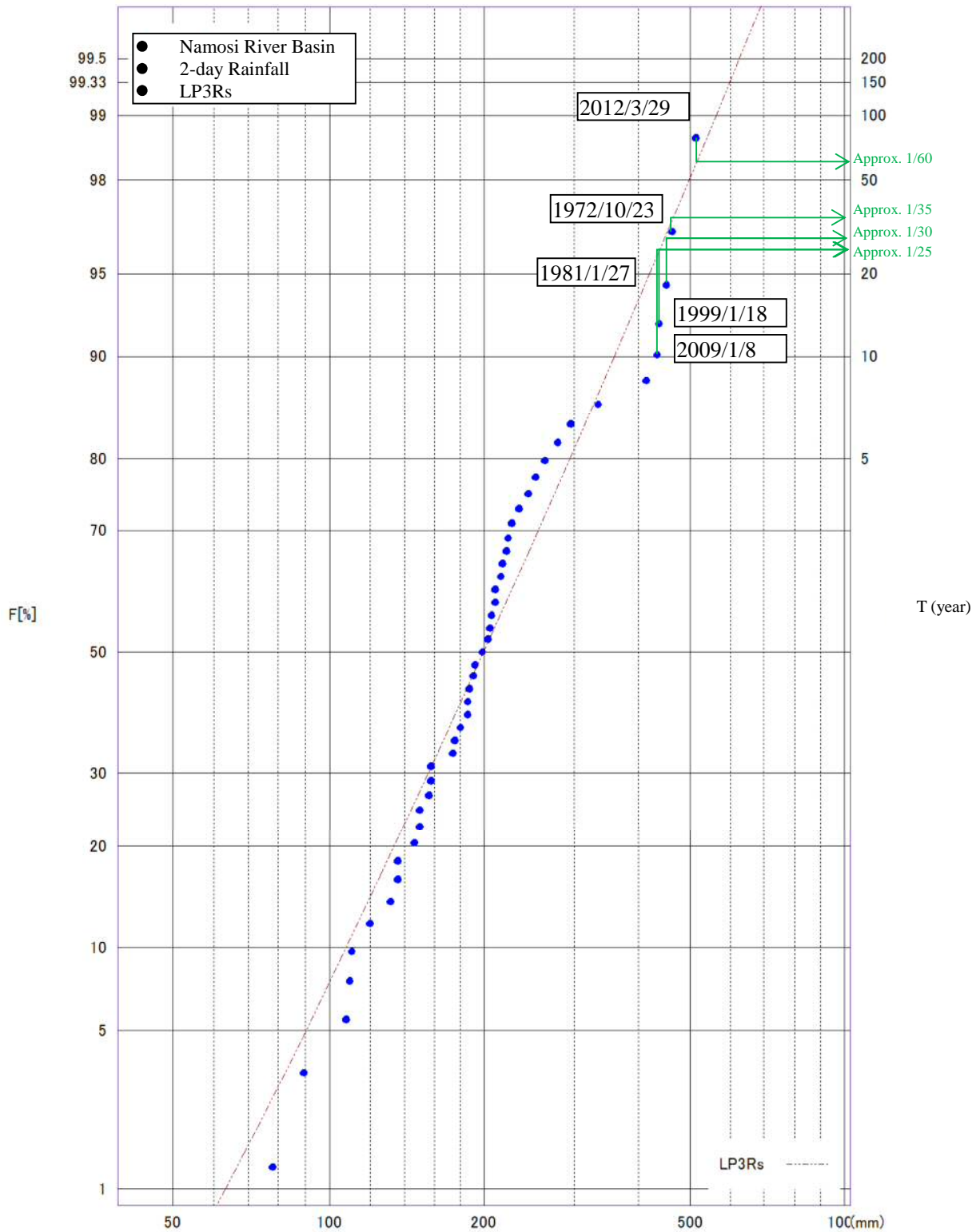
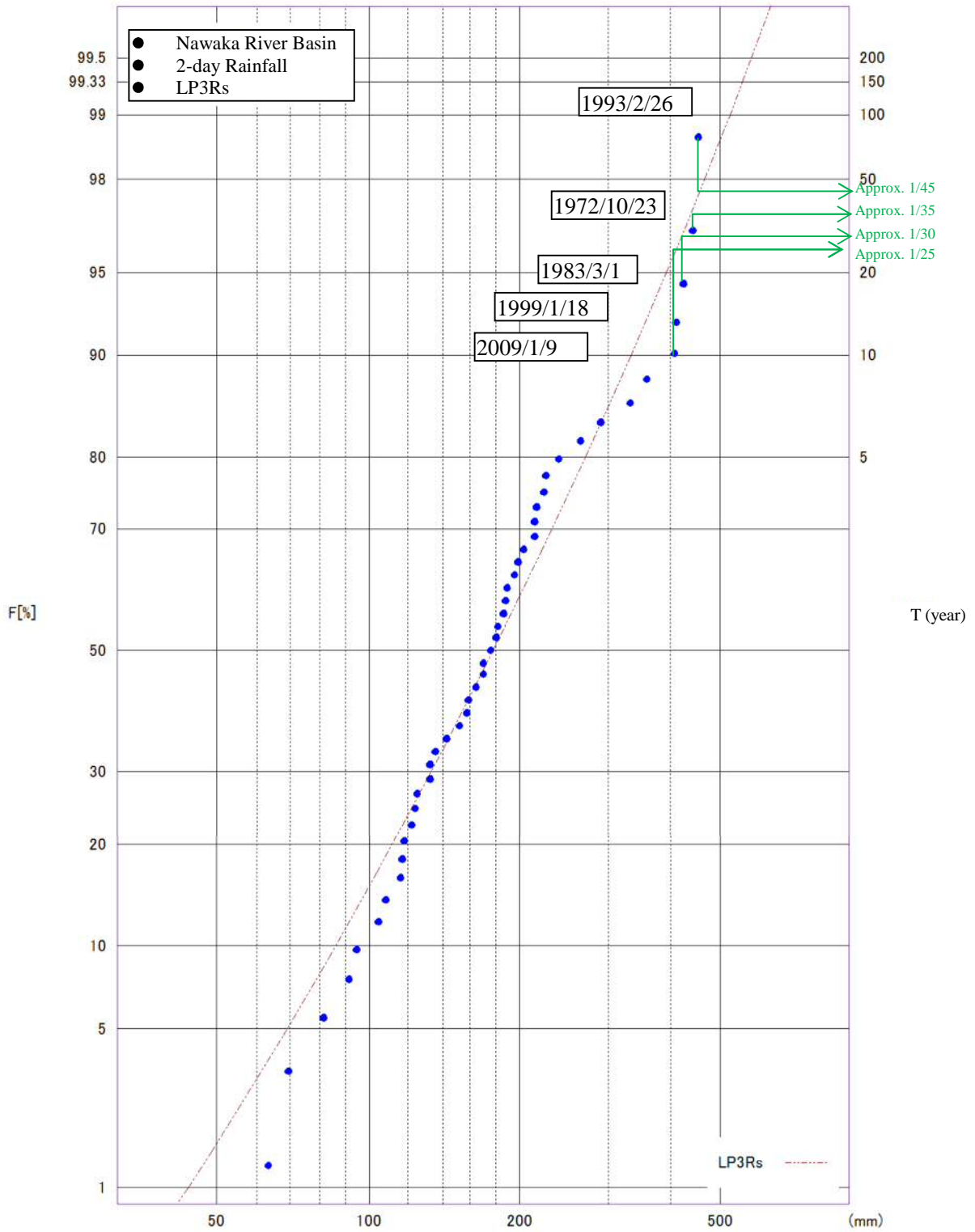


Figure 5-17 Calculation Result of Probability Distribution
(Nadi River basin, before confluence of the Namosi River: 2-day rainfall (Gev), N=47)



**Figure 5-18 Calculation Result of Probability Distribution
(Namosi River Basin: 2-day rainfall (LP3Rs), N=47)**



**Figure 5-19 Calculation Result of Probability Distribution
(Nawaka River basin: 2-day rainfall (LP3Rs), N=47)**