

14. Stephenville A

This station was not updated in CRA (2015) because it is an active IDF station and was updated by EC. The EC IDF V2.3 (2015) curve is reproduced below, with the addition of the 20-year return period.

Office of Climate Change and Energy Efficiency

Short Duration Rainfall Intensity-Duration-Frequency Data
Données sur l'intensité, la durée et la fréquence des chutes
de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2015/10/30

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STEPHENVILLE A                               NL          8403800
Latitude: 48 32'N   Longitude: 58 33'W   Elevation/Altitude: 24      m
Years/Années : 1967 - 2012           # Years/Années :    43
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Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

	Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
EC-IDF	1967	4.3	7.9	8.9	14.0	18.0	18.5	25.4	38.6	51.8
EC-IDF	1968	4.1	6.9	8.1	8.6	14.0	17.0	36.6	52.8	70.6
EC-IDF	1969	2.3	3.3	4.1	5.8	7.6	14.5	29.7	48.3	58.4
EC-IDF	1970	4.8	8.6	8.6	9.1	14.0	21.6	39.6	41.4	54.9
EC-IDF	1971	3.8	5.6	7.9	11.2	16.8	21.6	37.6	47.5	57.4
EC-IDF	1972	6.1	7.4	9.1	12.7	15.7	25.1	40.9	43.4	48.8
EC-IDF	1973	2.8	5.3	7.1	10.7	20.6	37.6	49.0	52.8	89.7
EC-IDF	1974	3.3	4.3	6.6	11.4	18.5	25.7	47.0	60.5	63.0
EC-IDF	1975	5.6	8.6	9.4	9.9	14.5	16.3	32.8	36.3	41.1
EC-IDF	1976	3.0	5.3	6.6	7.9	10.4	13.5	22.9	33.8	36.6
EC-IDF	1978	2.3	3.3	4.6	7.9	11.2	17.3	23.5	34.3	42.0
EC-IDF	1979	5.1	10.1	13.6	16.7	22.6	33.5	74.4	87.5	98.0
EC-IDF	1980	4.6	6.4	7.8	11.4	18.0	19.6	36.3	44.4	59.4
EC-IDF	1981	3.1	5.0	5.5	7.3	10.4	16.0	31.1	34.0	52.1
EC-IDF	1982	3.3	4.0	5.4	6.6	11.1	14.2	30.0	35.7	44.8
EC-IDF	1983	3.8	6.0	7.4	10.0	14.6	20.9	45.3	52.2	82.4
EC-IDF	1984	4.5	5.5	6.8	10.2	13.8	18.2	28.1	41.1	63.2
EC-IDF	1985	2.9	5.5	6.4	8.0	9.9	13.3	23.0	31.8	32.6
EC-IDF	1986	3.6	6.2	7.3	10.4	16.8	22.3	23.7	33.8	46.1
EC-IDF	1987	4.6	7.8	9.4	14.0	18.0	27.4	41.0	44.0	49.9
EC-IDF	1988	6.5	10.8	14.2	21.7	22.2	22.4	53.1	56.0	56.0
EC-IDF	1989	4.4	7.9	9.7	11.5	17.7	29.6	47.1	59.5	97.5
EC-IDF	1990	9.4	18.7	23.2	33.2	41.5	46.3	51.5	54.6	88.9
EC-IDF	1991	3.8	5.9	6.8	8.8	13.4	23.6	46.4	52.8	55.9
EC-IDF	1993	6.8	11.7	14.8	20.7	21.6	25.4	32.4	42.2	56.5
EC-IDF	1994	3.8	6.2	6.4	10.6	17.1	18.1	31.5	54.8	69.4
EC-IDF	1995	7.9	8.8	10.8	14.0	26.0	45.3	82.5	97.6	134.5
EC-IDF	1996	3.4	6.4	9.3	17.7	23.1	30.1	47.8	67.1	68.4
EC-IDF	1997	6.1	8.8	9.9	13.8	14.5	17.1	24.7	31.4	46.0
EC-IDF	1998	6.8	12.9	16.3	19.9	24.6	30.3	38.2	41.6	52.5
EC-IDF	1999	5.1	5.1	6.5	10.8	18.2	25.1	32.8	37.9	40.4
EC-IDF	2000	4.2	6.1	8.1	12.0	14.2	24.2	45.5	48.7	58.8
EC-IDF	2001	3.5	4.0	5.0	8.5	12.7	18.3	33.5	40.4	57.9
EC-IDF	2002	4.4	6.2	8.6	13.8	19.6	25.2	58.0	59.4	60.5
EC-IDF	2003	6.1	7.1	10.7	14.7	16.0	19.9	36.6	41.0	52.7
EC-IDF	2004	3.4	4.8	6.0	8.5	13.5	21.8	33.6	39.9	65.3
EC-IDF	2005	4.8	6.2	9.0	13.2	14.6	24.4	60.3	106.6	138.4

EC-IDF	2006	5.1	5.9	8.1	11.4	21.2	24.1	35.8	50.6	55.5
EC-IDF	2007	5.4	5.8	8.4	11.2	13.6	20.6	43.3	47.9	62.6
EC-IDF	2008	4.2	4.2	5.6	9.4	13.2	24.8	53.4	56.6	57.2
EC-IDF	2009	12.4	14.4	14.8	21.0	37.1	37.1	50.2	53.4	53.4
EC-IDF	2010	4.4	6.0	8.0	13.4	18.2	22.0	26.2	41.4	47.9
EC-IDF	2012	4.5	8.1	10.4	23.2	26.8	32.7	40.8	49.2	68.8

# Yrs.		43	43	43	43	43	43	43	43	43
Années										
Mean		4.8	7.1	8.9	12.7	17.6	23.8	40.1	49.4	62.5
Moyenne										
Std. Dev.		1.9	3.0	3.6	5.3	6.6	7.7	13.1	16.0	22.2
Écart-type										
Skew.		2.00	1.88	1.93	1.79	1.74	1.22	1.16	1.99	1.93
Dissymétrie										
Kurtosis		8.84	7.68	8.22	7.39	7.39	4.70	5.01	7.76	7.39

*-99.9 Indicates Missing Data/Données manquantes

Warning: annual maximum amount greater than 100-yr return period amount
Avertissement : la quantité maximale annuelle excède la quantité
pour une période de retour de 100 ans

Year/Année	Duration/Durée	Data/Données	100-yr/ans
1990	10 min	18.7	16.6
1990	15 min	23.2	20.1
1990	30 min	33.2	29.3
1990	1 h	41.5	38.2
1995	6 h	82.5	81.2
1995	24 h	134.5	132.1
2005	12 h	106.6	99.6
2005	24 h	138.4	132.1
2009	5 min	12.4	10.7

Table 2a : Return Period Rainfall Amounts (mm)
Quantité de pluie (mm) par période de retour

Duration/Durée	2	5	10	20	25	50	100	#Years
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	Années
EC-IDF	5 min	4.4	6.1	7.2	8.3	8.6	9.6	10.7
EC-IDF	10 min	6.6	9.3	11.0	12.7	13.3	14.9	16.6
EC-IDF	15 min	8.3	11.4	13.5	15.6	16.2	18.2	20.1
EC-IDF	30 min	11.8	16.5	19.6	22.6	23.5	26.4	29.3
EC-IDF	1 h	16.5	22.3	26.2	29.9	31.0	34.6	38.2
EC-IDF	2 h	22.5	29.3	33.8	38.1	39.5	43.7	47.9
EC-IDF	6 h	37.9	49.5	57.2	64.6	66.9	74.1	81.2
EC-IDF	12 h	46.8	60.9	70.3	79.2	82.1	90.9	99.6
EC-IDF	24 h	58.9	78.5	91.4	103.9	107.8	120.0	132.1

Table 2b :

Return Period Rainfall Rates (mm/h) - 95% Confidence limits
Intensité de la pluie (mm/h) par période de retour - Limites de confiance de 95%

Duration/Durée	2	5	10	20	25	50	100	#Years
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	Années
EC-IDF	5 min	53.3	73.3	86.6	99.3	103.3	115.7	128.1
	+/-	6.2	+/- 10.5	+/- 14.1	+/- 17.9	+/- 19.1	+/- 22.8	+/- 26.6
EC-IDF	10 min	39.6	55.6	66.2	76.3	79.6	89.5	99.4
	+/-	5.0	+/- 8.4	+/- 11.3	+/- 14.3	+/- 15.2	+/- 18.2	+/- 21.2
EC-IDF	15 min	33.1	45.8	54.2	62.3	64.8	72.7	80.5
	+/-	3.9	+/- 6.6	+/- 9.0	+/- 11.3	+/- 12.1	+/- 14.5	+/- 16.8
EC-IDF	30 min	23.7	33.0	39.2	45.2	47.0	52.8	58.6
	+/-	2.9	+/- 4.9	+/- 6.6	+/- 8.3	+/- 8.9	+/- 10.6	+/- 12.4
EC-IDF	1 h	16.5	22.3	26.2	29.9	31.0	34.6	38.2
	+/-	1.8	+/- 3.0	+/- 4.1	+/- 5.2	+/- 5.5	+/- 6.6	+/- 7.7
EC-IDF	2 h	11.3	14.7	16.9	19.1	19.8	21.9	24.0

EC-IDF	6 h	+/- 1.1	+/- 1.8	+/- 2.4	+/- 3.0	+/- 3.2	+/- 3.9	+/- 4.5	43
		6.3	8.3	9.5	10.8	11.1	12.3	13.5	43
EC-IDF	12 h	+/- 0.6	+/- 1.0	+/- 1.4	+/- 1.7	+/- 1.8	+/- 2.2	+/- 2.6	43
		3.9	5.1	5.9	6.6	6.8	7.6	8.3	43
EC-IDF	24 h	+/- 0.4	+/- 0.6	+/- 0.8	+/- 1.1	+/- 1.1	+/- 1.3	+/- 1.6	43
		2.5	3.3	3.8	4.3	4.5	5.0	5.5	43
		+/- 0.3	+/- 0.4	+/- 0.6	+/- 0.7	+/- 0.8	+/- 0.9	+/- 1.1	43

Table 3 : Interpolation Equation / Équation d'interpolation: $R = A \cdot T^B$

R = Interpolated Rainfall rate (mm/h)/Intensité interpolée de la pluie (mm/h)

RR = Rainfall rate (mm/h) / Intensité de la pluie (mm/h)

T = Rainfall duration (h) / Durée de la pluie (h)

Statistics/Statistiques	2	5	10	20	25	50	100
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
Mean of RR/Moyenne de RR	21.1	29.0	34.3	39.3	40.9	45.8	50.7
Std. Dev. /Écart-type (RR)	17.7	24.7	29.3	33.8	35.2	39.6	43.9
Std. Error/Erreur-type	2.4	3.7	4.6	5.5	5.8	6.6	7.5
Coefficient (A)	15.4	20.9	24.5	27.9	29.0	32.4	35.7
Exponent/Exposant (B)	-0.542	-0.554	-0.559	-0.563	-0.564	-0.567	-0.569
Mean % Error/% erreur moyenne	6.2	5.8	5.7	5.6	5.5	5.5	5.6

Short Duration Rainfall Intensity-Duration-Frequency Data Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée

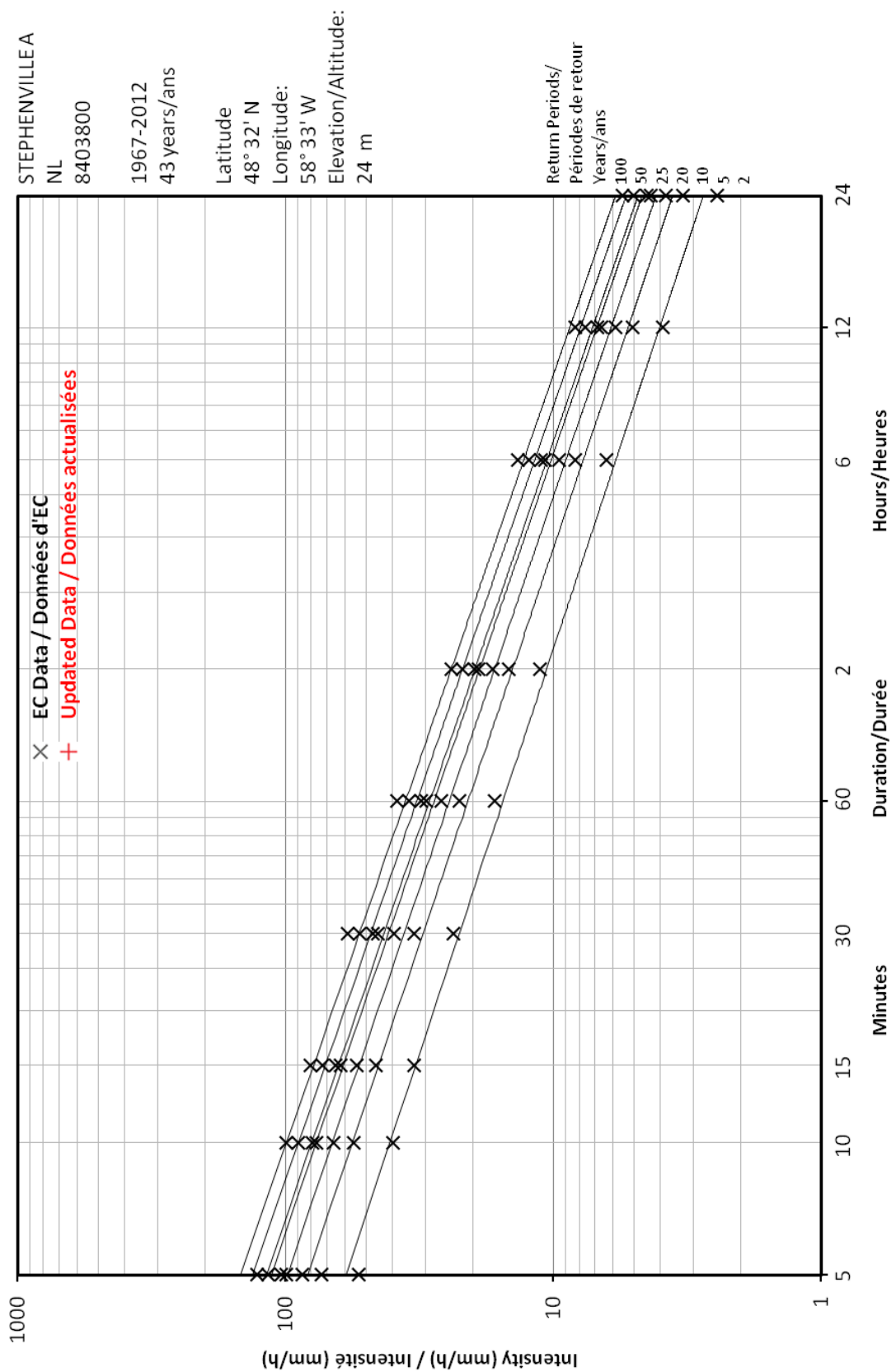


Figure 14.1 Stephenville A IDF Curve – EC IDF V2.3

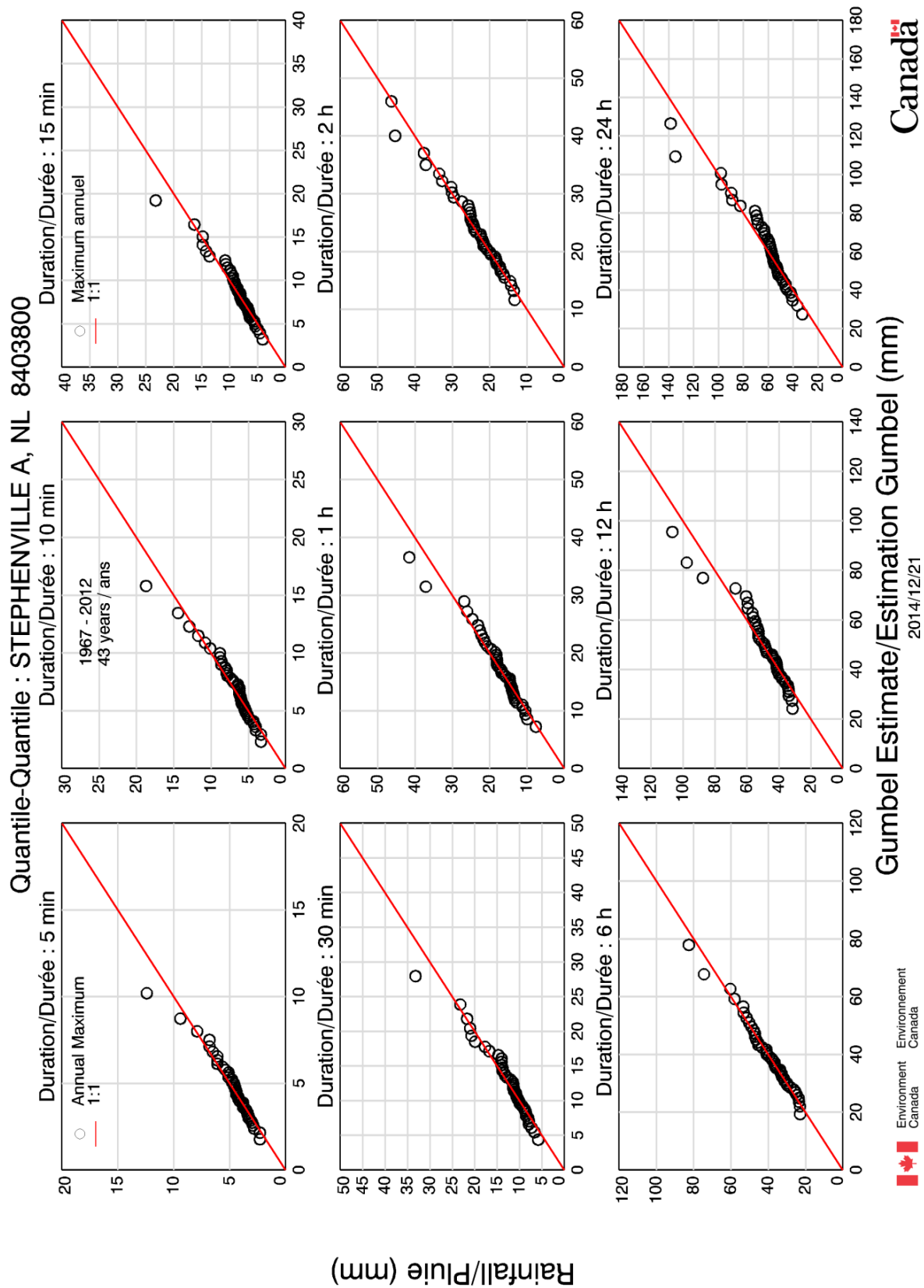


Figure 14.2 Stephenville A Quantile-Quantile Plot – EC IDF V2.3

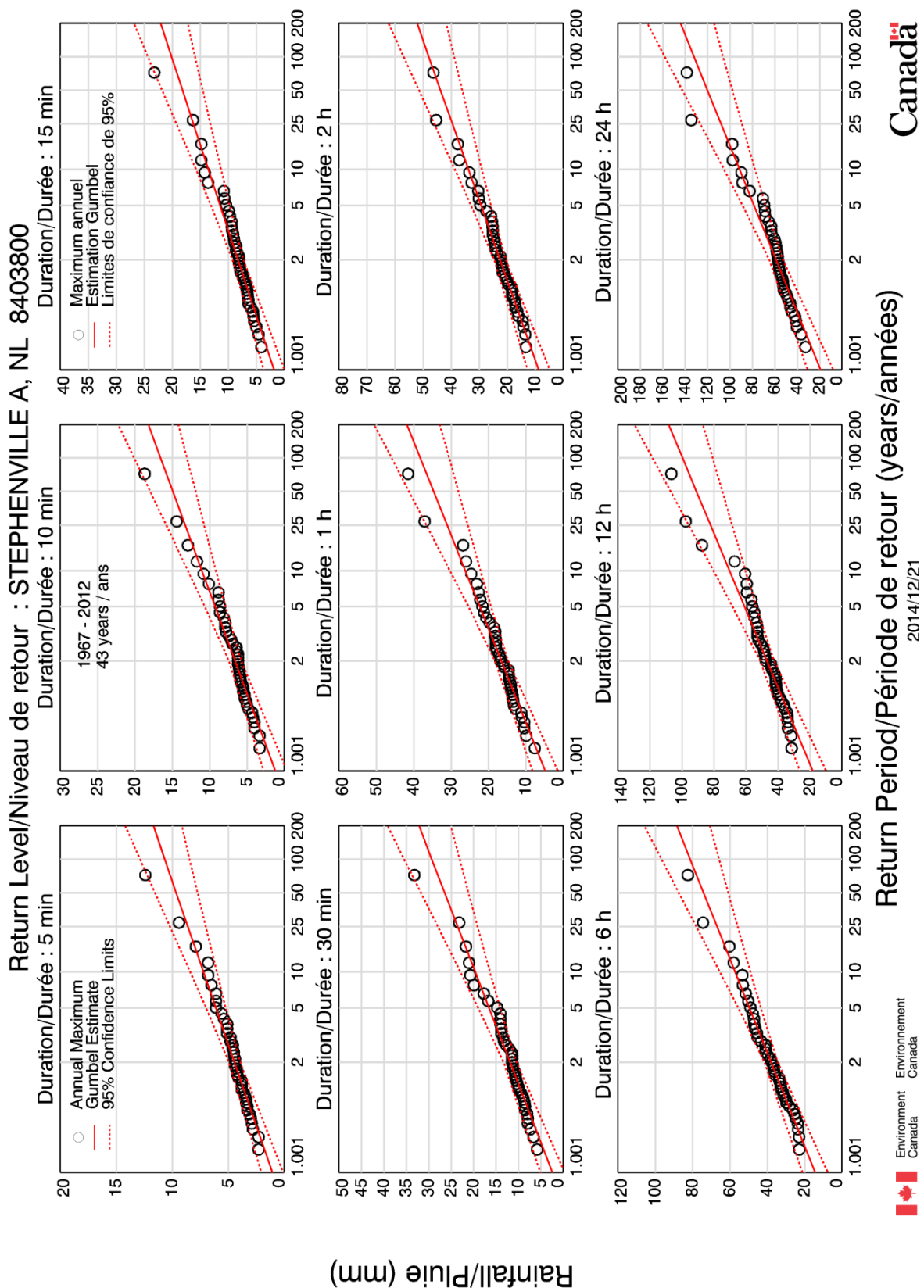
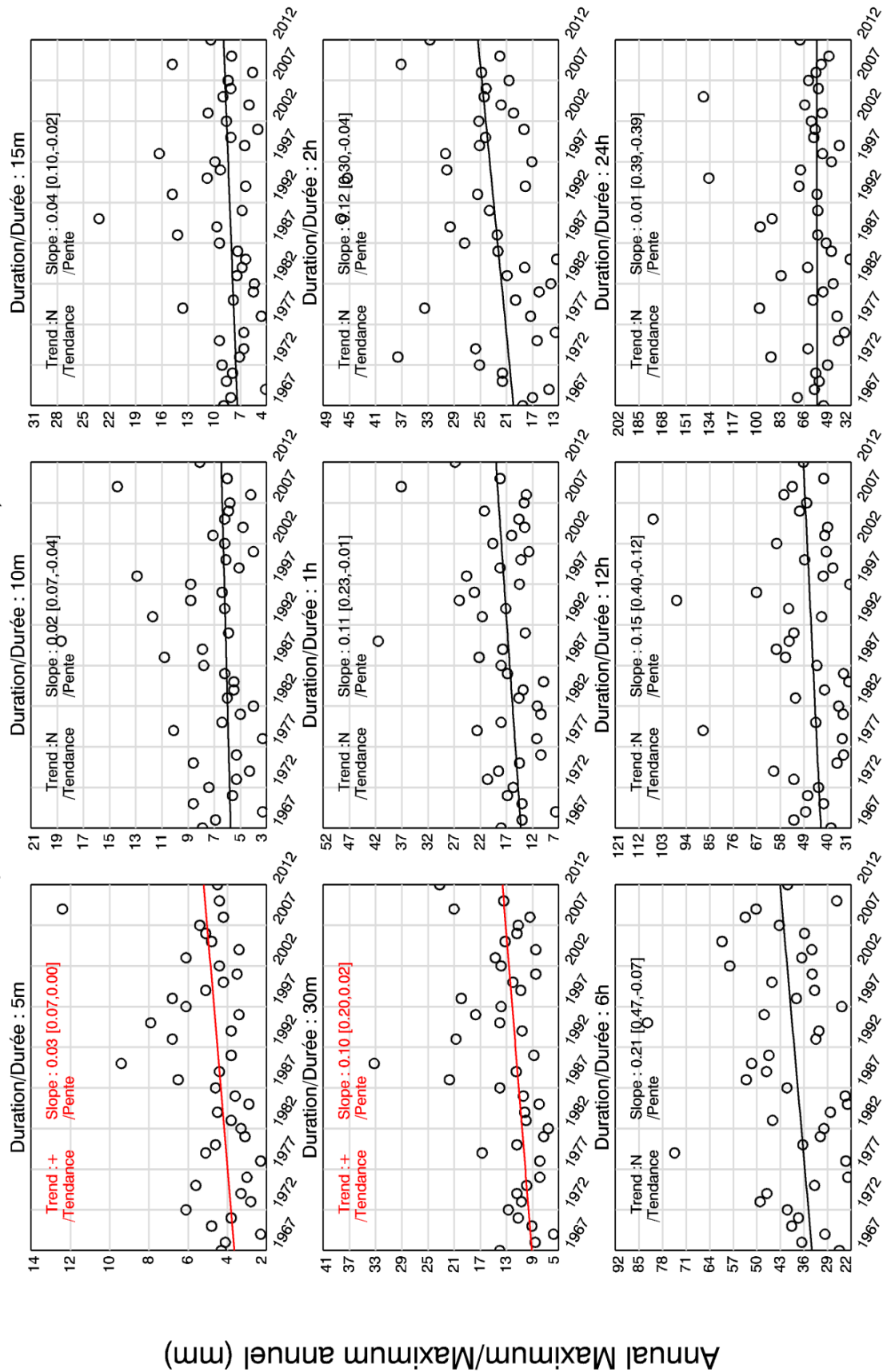


Figure 14.3 Stephenville A Return Level Plot – EC IDF V2.3

Trend/Tendance : STEPHENVILLE A, NL 8403800



Canada

Years/Années

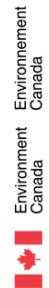


Figure 14.4 Stephenville A Trend Plot – EC IDF V2.3