

12.2 Ruby Line

This IDF curve was created using 5-min data from Ruby Line (City of St. John's station). The IDF curve was compared to the St. John's A IDF curve (before update). The IDF curve decreased for short durations and increased for long durations during the update (Table 12.2). Where there are decreases greater than 5 percent, users should exercise caution when using the updated IDF curve, or use the EC IDF curve.

Table 12.2 Differences Between IDF Curves for Ruby Line

Percent Difference in Precipitation Amount (%) (Difference in Precipitation Amount (mm))						
Duration	Return Period (years)					
	2	5	10	25	50	100
5-min	-11.3 (-0.5)	-20.7 (-1.3)	-24.6 (-1.9)	-28.1 (-2.5)	-30.0 (-3.0)	-31.6 (-3.5)
10-min	-5.4 (-0.4)	-14.7 (-1.4)	-18.7 (-2.0)	-22.3 (-2.9)	-24.4 (-3.5)	-26.0 (-4.1)
15-min	-5.2 (-0.5)	-12.6 (-1.5)	-15.7 (-2.2)	-18.5 (-3.0)	-20.1 (-3.6)	-21.4 (-4.3)
30-min	-3.4 (-0.4)	-1.8 (-0.3)	-1.1 (-0.2)	-0.4 (-0.1)	0.0 (0.0)	0.3 (0.1)
1-hr	6.8 (1.2)	14.6 (3.2)	18.1 (4.6)	21.5 (6.3)	23.4 (7.6)	25.0 (8.9)
2-hr	22.0 (5.2)	23.0 (7.3)	23.4 (8.6)	23.8 (10.3)	24.0 (11.6)	24.2 (12.8)
6-hr	15.6 (6.4)	20.2 (10.3)	22.3 (12.9)	24.4 (16.1)	25.7 (18.5)	26.7 (20.9)
12-hr	15.7 (8.2)	26.4 (16.8)	31.5 (22.4)	36.7 (29.5)	39.8 (34.8)	42.4 (40.1)
24-hr	17.3 (10.8)	24.2 (18.2)	27.6 (23.1)	31.0 (29.3)	33.1 (33.9)	34.8 (38.5)

Notes:

Red numbers indicate that the updated IDF curve is lower than the EC-IDF V2.3 IDF curve for that duration and return period.

Bold numbers indicate changes greater than 5 percent.

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

RUBY LINE

NL

City of St. John's Station

Latitude: 47 29'24" N Longitude: 52 47'46" W Elevation/Altitude: 151 m
Years/Années : 1997 - 2014 # Years/Années : 16

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
UPDATE	1997	4.7	4.9	6.2	8.0	12.2	21.9	46.1	61.4	68.3
UPDATE	1998	3.6	5.8	6.8	11.9	21.3	33.0	56.0	76.0	95.8
UPDATE	1999	4.0	5.8	6.7	9.4	15.3	25.4	37.1	55.4	83.2
UPDATE	2000	3.5	5.5	7.8	14.2	20.3	30.8	48.1	62.0	73.1
UPDATE	2001	5.1	8.6	11.0	18.6	32.6	55.5	95.9	133.1	135.9
UPDATE	2002	3.5	6.7	9.5	13.2	16.1	26.4	44.0	45.0	46.3
UPDATE	2004	4.1	7.4	9.6	13.1	22.5	22.6	43.8	55.2	58.7
UPDATE	2005	3.7	7.2	10.5	14.4	22.2	35.2	43.0	62.9	77.4
UPDATE	2006	2.8	5.1	6.4	8.6	12.2	19.0	36.3	42.5	53.5
UPDATE	2007	7.2	11.1	15.1	27.1	41.7	56.4	76.4	91.0	91.9
UPDATE	2008	5.0	8.0	8.3	11.4	15.6	23.2	45.9	57.8	63.1
UPDATE	2009	4.3	5.9	7.8	10.3	16.0	26.5	49.6	74.6	75.1
UPDATE	2010	5.7	7.2	8.4	11.4	21.4	34.9	56.3	65.3	111.2
UPDATE	2011	4.3	6.4	6.8	10.2	14.6	23.8	37.4	44.9	72.0
UPDATE	2013	3.6	7.0	8.4	10.3	12.8	21.9	37.1	47.7	55.5
UPDATE	2014	4.2	6.5	8.7	12.5	21.0	36.3	45.9	51.2	64.0
# Yrs.	16	16	16	16	16	16	16	16	16	16
Années										
Mean	4.3	6.8	8.6	12.8	19.9	30.8	49.9	64.1	76.6	
Moyenne										
Std. Dev.	1.1	1.5	2.2	4.6	7.8	11.2	15.8	22.5	23.1	
Écart-type										
Skew.	1.38	1.46	1.67	2.22	1.72	1.50	2.06	2.13	1.24	
Dissymétrie										
Kurtosis	6.01	6.43	7.02	9.15	6.60	5.08	7.68	8.73	5.08	

*-99.9 Indicates Missing Data/Données manquantes

* NM Indicates No Measurements/Aucunes mesures

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 Années
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	
UPDATE 5 min	4.2	5.1	5.7	6.3	6.5	7.1	7.6	16
UPDATE 10 min	6.6	7.9	8.8	9.7	9.9	10.8	11.6	16
UPDATE 15 min	8.3	10.2	11.6	12.8	13.2	14.4	15.7	16
UPDATE 30 min	12.0	16.1	18.8	21.4	22.2	24.7	27.3	16
UPDATE 1 h	18.6	25.5	30.1	34.5	35.9	40.2	44.4	16
UPDATE 2 h	29.0	38.8	45.4	51.7	53.7	59.8	65.9	16
UPDATE 6 h	47.3	61.3	70.5	79.4	82.2	90.8	99.4	16
UPDATE 12 h	60.4	80.3	93.5	106.1	110.1	122.4	134.6	16
UPDATE 24 h	72.8	93.2	106.7	119.7	123.8	136.5	149.1	16

* 5-min data were used for the update: all durations were updated

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 Années
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	
UPDATE 5 min	49.9	61.1	68.5	75.6	77.8	84.8	91.6	16
	+/- 5.7	+/- 9.6	+/- 12.9	+/- 16.3	+/- 17.4	+/- 20.9	+/- 24.3	16

UPDATE 10 min	39.4	47.5	52.9	58.0	59.7	64.7	69.7	16
	+/- 4.1	+/- 7.0	+/- 9.4	+/- 11.9	+/- 12.7	+/- 15.2	+/- 17.7	16
UPDATE 15 min	33.0	41.0	46.2	51.3	52.9	57.8	62.7	16
	+/- 4.0	+/- 6.8	+/- 9.2	+/- 11.6	+/- 12.4	+/- 14.8	+/- 17.3	16
UPDATE 30 min	24.1	32.2	37.6	42.8	44.4	49.5	54.5	16
	+/- 4.1	+/- 7.0	+/- 9.4	+/- 11.9	+/- 12.7	+/- 15.2	+/- 17.7	16
UPDATE 1 h	18.6	25.5	30.1	34.5	35.9	40.2	44.4	16
	+/- 3.5	+/- 5.9	+/- 8.0	+/- 10.1	+/- 10.8	+/- 12.9	+/- 15.1	16
UPDATE 2 h	14.5	19.4	22.7	25.8	26.8	29.9	32.9	16
	+/- 2.5	+/- 4.2	+/- 5.7	+/- 7.2	+/- 7.7	+/- 9.2	+/- 10.7	16
UPDATE 6 h	7.9	10.2	11.8	13.2	13.7	15.1	16.6	16
	+/- 1.2	+/- 2.0	+/- 2.7	+/- 3.4	+/- 3.6	+/- 4.3	+/- 5.1	16
UPDATE 12 h	5.0	6.7	7.8	8.8	9.2	10.2	11.2	16
	+/- 0.8	+/- 1.4	+/- 1.9	+/- 2.4	+/- 2.6	+/- 3.1	+/- 3.6	16
UPDATE 24 h	3.0	3.9	4.4	5.0	5.2	5.7	6.2	16
	+/- 0.4	+/- 0.7	+/- 1.0	+/- 1.2	+/- 1.3	+/- 1.6	+/- 1.9	16

* 5-min data were used for the update: all durations were updated

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	21.7	27.5	31.3	35.0	36.2	39.8	43.3
Std. Dev. /Écart-type (RR)	16.3	19.7	21.9	24.1	24.8	26.9	29.1
Std. Error/Erreur-type	2.8	4.4	5.6	6.7	7.1	8.2	9.3
Coefficient (A)	17.0	21.9	25.2	28.2	29.2	32.2	35.2
Exponent/Exposant (B)	-0.483	-0.471	-0.466	-0.462	-0.461	-0.458	-0.455
Mean % Error/% erreur moyenne	8.2	11.1	12.4	13.3	13.6	14.3	14.9

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

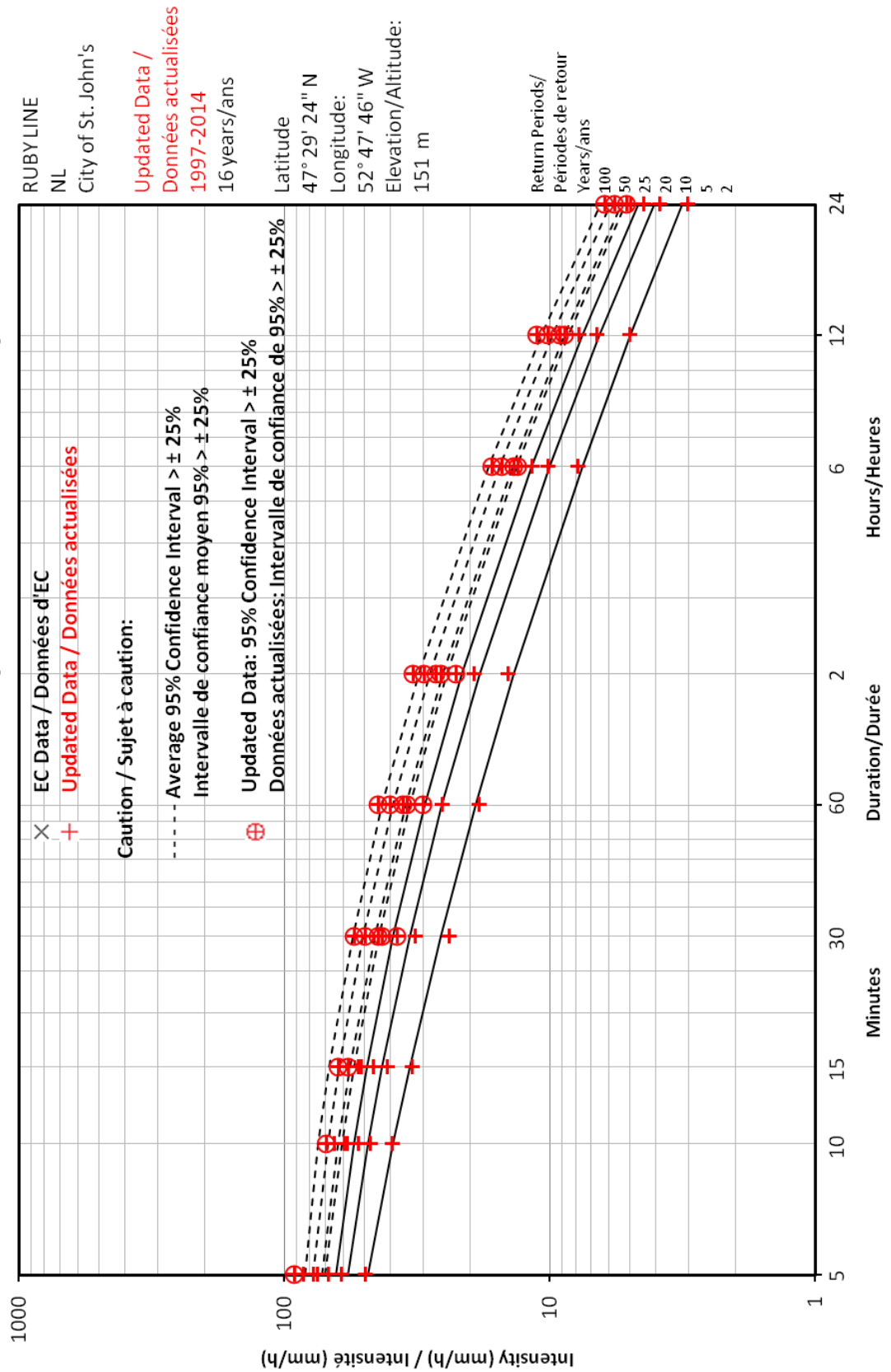


Figure 12.5 Ruby Line IDF Curve - Updated

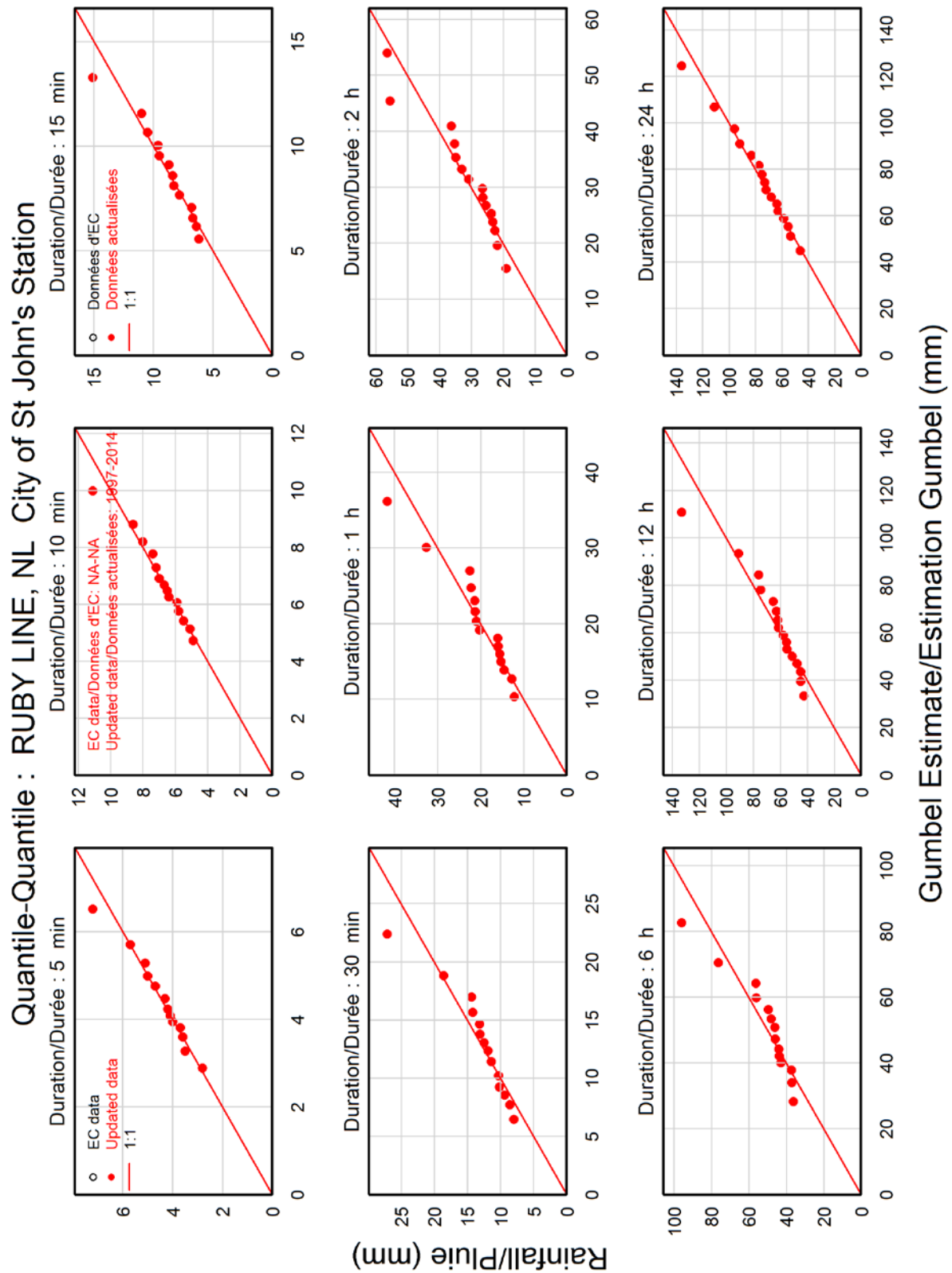
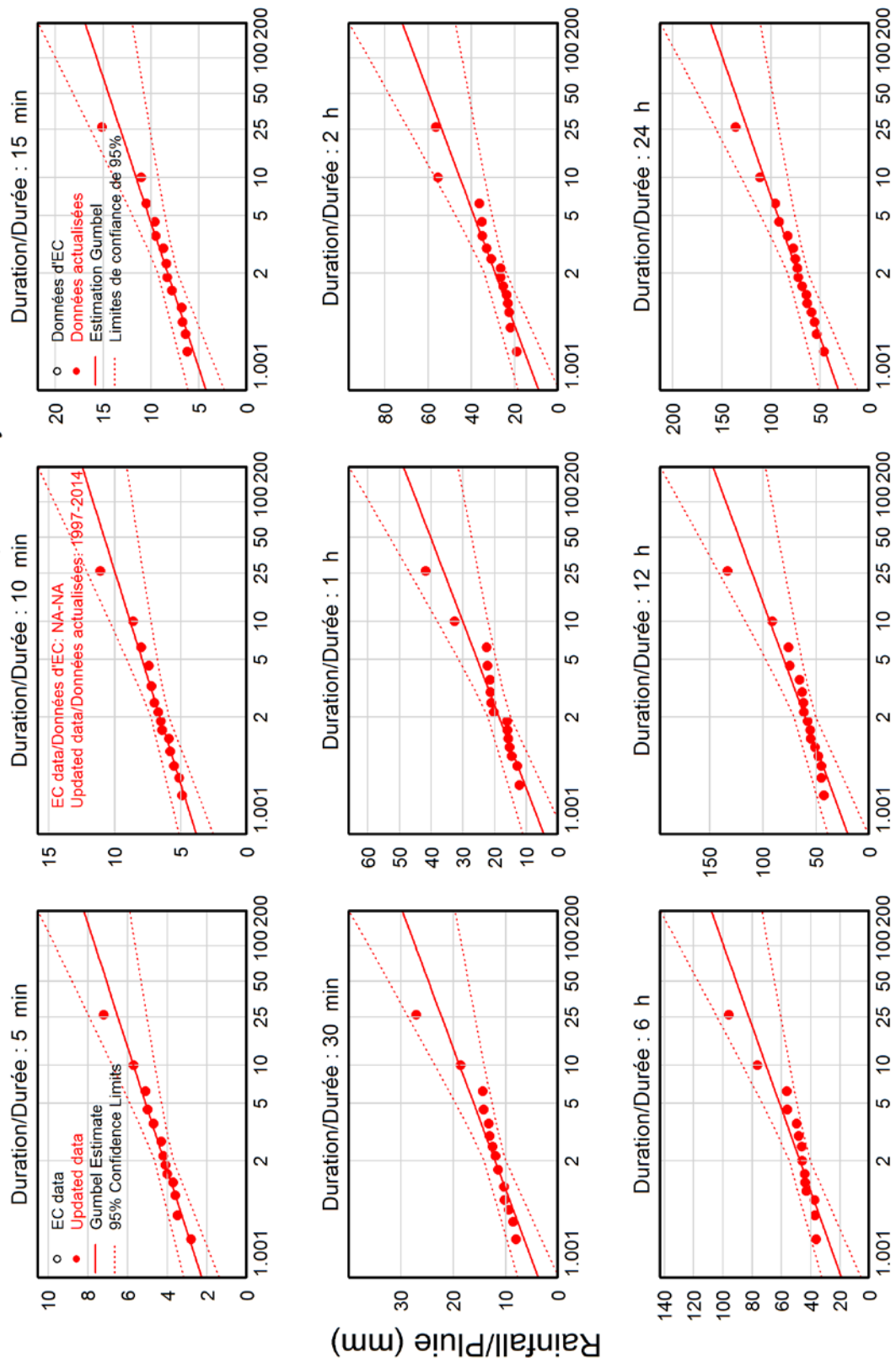


Figure 12.6 Ruby Line Quantile-Quantile Plot - Updated

Return Level/Niveau de retour : RUBY LINE, NL City of St John's Station



Return Period/Période de retour (years/années)

Figure 12.7 Ruby Line Return Level Plot – Updated

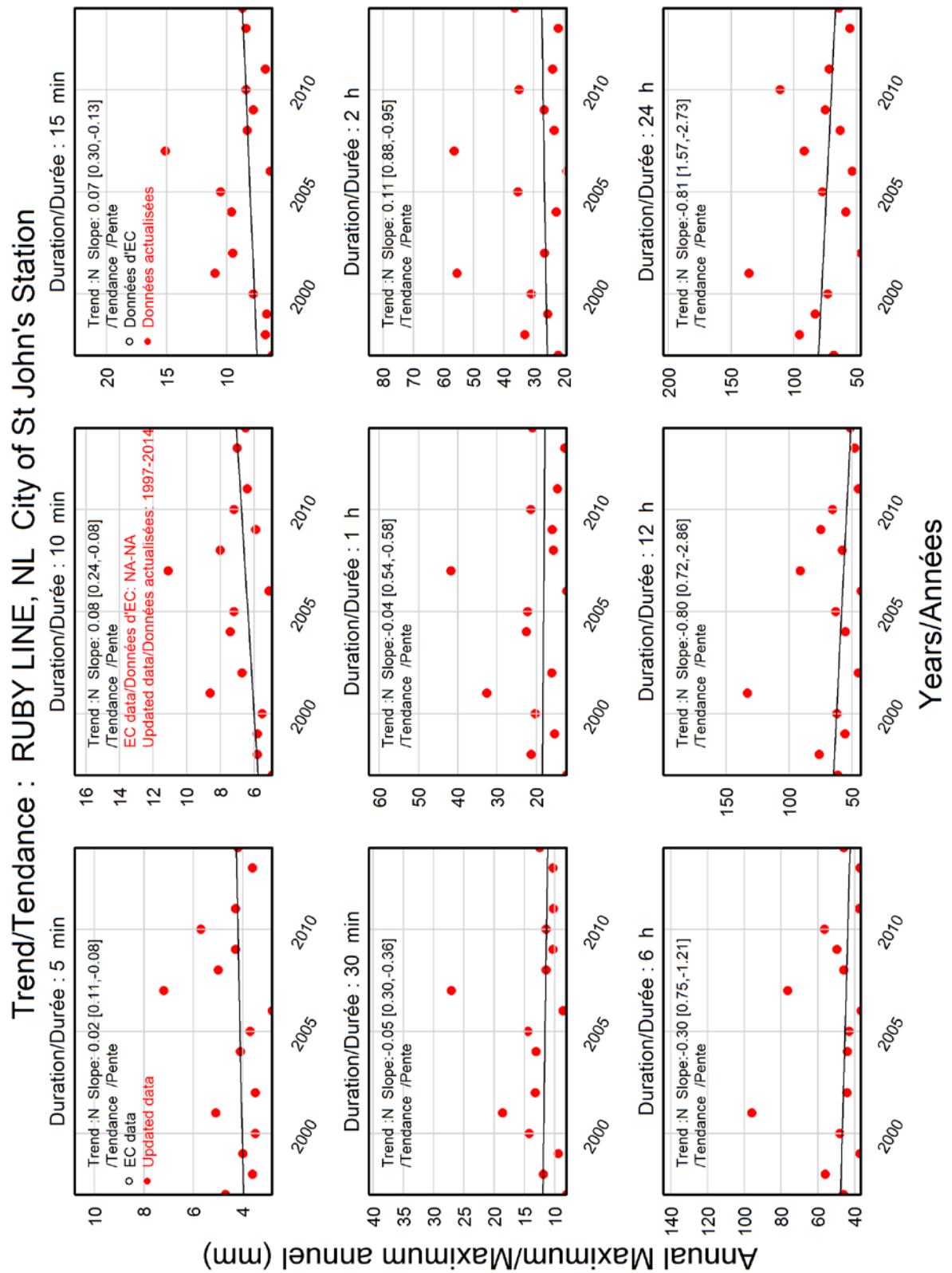


Figure 12.8 Ruby Line Trend Plot – Updated