

IDF Kingston.txt  
 ATMOSPHERIC ENVIRONMENT SERVICE  
 SERVICE DE L'ENVIRONNEMENT ATMOSPHERIQUE

RAINFALL INTENSITY-DURATION FREQUENCY VALUES  
 INTENSITE, DUREE ET FREQUENCE DES PLUIES

DATA INTEGRATION DIVISION  
 LA DIVISION DU TRAITEMENT DES DONNEES

GUMBEL - METHOD OF MOMENTS/METHODE DES MOMENTS - 1990

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TABLE 1 KINGSTON PUMPING STATION ONT (COMPOSITE) 6104175

LATITUDE 4414 LONGITUDE 7629 ELEVATION/ALTIUDE 77 M

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YEAR ANNEE	5 MIN	10 MIN	15 MIN	30 MIN	1 H	2 H	6 H	12 H	24 H
1914	5.8	7.9	9.7	12.2	19.3	25.4	29.2	37.1	40.1
1915	3.6	5.3	7.6	10.2	16.0	28.2	45.2	58.9	65.0
1921	8.1	16.0	17.0	18.0	18.3	18.3	25.9	27.9	45.0
1922	4.8	6.9	9.7	15.7	20.6	22.6	32.3	32.3	36.1
1926	8.6	13.0	18.0	23.4	33.5	48.8	54.6	54.6	57.9
1927	8.6	13.0	16.5	21.8	39.1	39.9	40.1	40.1	49.8
1928	10.9	16.8	22.6	29.0	34.8	35.8	41.1	41.7	48.0
1929	10.7	14.7	14.7	18.8	23.9	28.4	30.2	39.6	52.8
1930	8.4	11.4	11.4	13.2	15.7	17.0	21.8	34.8	44.4
1931	6.9	10.7	14.2	17.5	18.8	25.9	27.7	39.4	39.4
1932	8.9	15.7	18.3	21.3	21.3	21.3	26.9	34.3	50.8
1933	7.1	11.2	12.2	14.7	15.5	18.3	38.4	47.0	51.1
1934	5.1	9.1	11.4	15.2	18.5	20.1	26.7	40.4	45.0
1935	10.2	14.2	19.8	34.5	40.4	55.4	59.4	59.4	64.5
1936	4.6	8.1	8.4	10.9	15.0	22.6	32.8	47.5	49.5
1937	10.2	15.0	19.8	28.7	42.4	52.3	62.5	78.7	79.8
1938	8.9	13.0	13.0	13.0	19.0	33.5	42.7	42.7	57.9
1961	5.3	9.4	13.2	13.2	13.2	20.6	32.3	34.5	35.8
1962	10.7	13.2	19.8	24.1	24.4	25.4	30.2	40.6	42.2
1963	7.6	8.9	12.4	17.8	21.6	27.9	32.3	32.8	39.6
1964	4.1	6.3	6.6	7.6	10.4	16.3	23.6	32.8	33.3
1965	5.6	8.1	9.4	16.0	23.4	26.2	26.7	33.5	37.3
1966	5.1	9.1	10.9	15.0	23.6	24.1	46.7	47.0	47.0
1967	12.4	14.2	16.3	24.9	35.8	37.1	37.1	46.2	51.3
1968	10.4	13.2	16.0	19.3	21.1	22.9	30.2	43.7	45.0
1969	6.9	8.4	9.9	10.4	15.7	19.6	32.0	39.9	47.8
1970	5.6	9.1	12.4	21.6	24.1	26.7	26.9	28.2	28.4
1971	8.1	10.2	10.7	14.0	15.2	17.5	25.4	30.0	47.0
1972	9.7	11.4	12.7	15.5	20.8	36.1	54.1	79.2	79.5
1973	8.6	10.4	12.2	16.5	24.1	26.9	33.5	34.8	43.4
1974	4.8	6.3	7.1	7.6	8.9	14.0	17.3	20.8	23.9
1975	7.6	13.2	15.2	16.3	17.0	22.6	40.1	52.1	65.0
1976	10.9	14.5	16.0	16.3	27.4	35.8	37.1	38.4	41.7
1977	8.1	9.7	11.4	13.0	14.2	19.0	42.2	45.2	45.5
1978	7.4	10.0	12.8	16.4	17.1	23.8	36.0	40.2	43.0
1979	7.4	10.2	12.4	14.1	22.4	37.9	100.6	126.0	127.1
1980	8.6	11.7	14.8	19.9	28.0	43.9	44.8	44.8	53.0
1981	6.4	8.1	9.5	17.6	28.8	39.3	56.3	57.0	59.1
1982	9.3	14.4	15.8	16.0	16.0	23.7	39.7	45.0	45.0
1983	15.4	18.2	18.6	21.0	26.9	34.1	50.8	55.4	70.6
1984	6.4	6.6	7.1	10.4	15.7	22.5	30.6	38.6	45.4
1985	15.8	19.8	26.7	34.3	39.0	50.5	53.6	53.6	53.7
1986	7.0	9.0	9.7	15.0	19.8	26.7	50.2	65.3	74.2

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1987	4.0	6.5	9.7	10.5	14.3	16.8	30.0	48.4	56.6
1988	6.6	10.3	12.8	16.2	25.5	28.1	28.8	28.8	30.2
1989	3.8	6.6	8.4	11.5	12.0	15.2	30.5	33.7	42.0
1990	7.4	10.8	14.3	14.3	16.5	20.7	37.9	38.7	41.4
1991	11.4	12.7	13.1	19.3	33.9	34.6	37.4	37.6	43.4
1992	7.6	10.8	14.2	24.0	35.1	41.9	44.7	46.2	46.2
1993	8.0	12.8	16.0	24.6	28.6	31.7	32.5	32.9	64.6
1994	11.1	14.1	16.4	20.3	25.6	29.4	47.7	51.8	52.8
1995	4.4	5.7	7.2	8.5	13.0	18.3	33.7	49.2	56.1
1996	5.7	7.7	8.5	10.9	13.0	18.0	28.0	33.8	44.5
1997	9.4	13.2	15.5	21.2	21.2	28.3	33.1	34.0	39.2
1998	10.4	14.1	16.6	19.0	20.8	21.0	28.9	32.9	35.0
1999	6.5	9.8	10.8	12.0	16.2	22.0	28.3	41.2	44.7
2000	7.7	8.1	9.8	11.4	17.8	20.8	28.1	35.7	49.4
2001	5.8	8.8	11.9	19.3	20.8	21.2	27.4	36.9	44.8
2002	8.0	10.0	10.4	12.6	15.2	19.7	26.4	36.9	43.1
2003	8.4	15.4	17.7	25.1	28.0	31.6	38.2	43.2	45.0

NOTE: -99.9 INDICATES MSG DATA  
DONNEES MANQUANTES

# YRS. ANNEES	60	60	60	60	60	60	60	60	60
MEAN MOYENNE	7.9	11.1	13.3	17.2	22.1	27.6	37.2	43.7	49.7
STD. DEV. ECART-TYPE	2.6	3.3	4.1	6.0	8.0	9.7	13.0	15.5	15.3
SKEW DISSYMETRIE	.75	.37	.70	.88	.85	1.08	2.26	2.96	2.48
KURTOSIS KURTOSIS	4.10	2.75	3.81	3.97	3.19	3.78	11.52	16.02	13.44

WARNING / AVERTISSEMENT  
YEAR 1979 HAD VALUE GREATER THAN 100 YEAR STORM.  
EN 1979 L'INTENSITE DE LA PLUIE A DE PASSE  
CELLE POUR UNE PERIODE DE RETOUR DE 100 ANS  
DATA/LA VALEUR = 100.6      100 YEAR/ANNEE = 77.9

WARNING / AVERTISSEMENT  
YEAR 1979 HAD VALUE GREATER THAN 100 YEAR STORM.  
EN 1979 L'INTENSITE DE LA PLUIE A DE PASSE  
CELLE POUR UNE PERIODE DE RETOUR DE 100 ANS  
DATA/LA VALEUR = 126.0      100 YEAR/ANNEE = 92.3

WARNING / AVERTISSEMENT  
YEAR 1979 HAD VALUE GREATER THAN 100 YEAR STORM.  
EN 1979 L'INTENSITE DE LA PLUIE A DE PASSE  
CELLE POUR UNE PERIODE DE RETOUR DE 100 ANS  
DATA/LA VALEUR = 127.1      100 YEAR/ANNEE = 97.5

WARNING / AVERTISSEMENT  
YEAR 1985 HAD VALUE GREATER THAN 100 YEAR STORM.  
EN 1985 L'INTENSITE DE LA PLUIE A DE PASSE  
CELLE POUR UNE PERIODE DE RETOUR DE 100 ANS  
DATA/LA VALEUR = 26.7      100 YEAR/ANNEE = 26.2

NOTE: -99.9 INDICATES LESS THAN 10 YEARS OF DATA AVAILABLE  
INDIQUE MOINS DE 10 ANNEES DE DONNEES DISPONIBLES  
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 INTENSITE, DUREE ET FREQUENCE DES PLUIES

GUMBEL - METHOD OF MOMENTS/METHODE DES MOMENTS - 1990

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TABLE 2 KINGSTON PUMPING STATION ONT (COMPOSITE) 6104175

LATITUDE 4414 LONGITUDE 7629 ELEVATION/ALTITUDE 77 M

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RETURN PERIOD RAINFALL AMOUNTS (MM)  
 PERIODE DE RETOUR QUANTITIES DE PLUIE (MM)

DURATION DUREE	2 YR/ANS	5 YR/ANS	10 YR/ANS	25 YR/ANS	50 YR/ANS	100 YR/ANS	# YEARS ANNEES
5 MIN	7.5	9.7	11.3	13.2	14.6	16.0	60
10 MIN	10.5	13.4	15.3	17.8	19.6	21.4	60
15 MIN	12.6	16.2	18.7	21.7	23.9	26.2	60
30 MIN	16.2	21.5	25.0	29.4	32.6	35.9	60
1 H	20.8	27.8	32.5	38.3	42.7	47.0	60
2 H	26.0	34.6	40.2	47.4	52.7	58.0	60
6 H	35.0	46.5	54.1	63.7	70.8	77.9	60
12 H	41.2	54.9	63.9	75.4	83.9	92.3	60
24 H	47.2	60.6	69.6	80.9	89.2	97.5	60

RETURN PERIOD RAINFALL RATES (MM/HR) -95% CONFIDENCE' LIMITS  
 INTENSITE DE LA PLUIE PAR PERIODE DE RETOUR (MM/H) -LIMITES DE CONFIANCE DE 95%

DURATION DUREE	2 YR/ANS	5 YR/ANS	10 YR/ANS	25 YR/ANS	50 YR/ANS	100 YR/ANS
5 MIN	89.5	116.9	135.2	158.2	175.2	192.2
	+/- 7.2	+/- 12.2	+/- 16.4	+/- 22.2	+/- 26.5	+/- 30.9
10 MIN	63.1	80.5	92.0	106.6	117.4	128.1
	+/- 4.6	+/- 7.7	+/- 10.4	+/- 14.0	+/- 16.8	+/- 19.6
15 MIN	50.4	65.0	74.6	86.8	95.8	104.7
	+/- 3.8	+/- 6.4	+/- 8.7	+/- 11.7	+/- 14.0	+/- 16.3
30 MIN	32.5	43.0	50.0	58.7	65.3	71.8
	+/- 2.8	+/- 4.7	+/- 6.3	+/- 8.5	+/- 10.1	+/- 11.8
1 H	20.8	27.8	32.5	38.3	42.7	47.0
	+/- 1.8	+/- 3.1	+/- 4.2	+/- 5.7	+/- 6.8	+/- 7.9
2 H	13.0	17.3	20.1	23.7	26.4	29.0
	+/- 1.1	+/- 1.9	+/- 2.6	+/- 3.5	+/- 4.1	+/- 4.8
6 H	5.8	7.8	9.0	10.6	11.8	13.0
	+/- .5	+/- .8	+/- 1.1	+/- 1.5	+/- 1.8	+/- 2.1
12 H	3.4	4.6	5.3	6.3	7.0	7.7
	+/- .3	+/- .5	+/- .7	+/- .9	+/- 1.1	+/- 1.3
24 H	2.0	2.5	2.9	3.4	3.7	4.1
	+/- .1	+/- .2	+/- .3	+/- .5	+/- .5	+/- .6

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TABLE 3 KINGSTON PUMPING STATION ONT (COMPOSITE) 6104175

LATITUDE 4414 LONGITUDE 7629 ELEVATION/ALTITUDE 77 M

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INTERPOLATION EQUATION / EQUATION D'INTERPOLATION:  $R = A * T^{**} B$   
 R = RAINFALL RATE / INTENSITE DE LA PLUIE (MM /HR)  
 T = TIME IN HOURS / TEMPS EN HEURES

STATISTICS STATISTIQUES	2 YR ANS	5 YR ANS	10 YR ANS	25 YR ANS	50 YR ANS	100 YR ANS
MEAN OF R MOYENNE DE R	31.1	40.5	46.8	54.7	60.5	66.3
STD. DEV. R ECART-TYPE	30.6	39.6	45.5	53.1	58.7	64.3
STD. ERROR ERREUR STANDARD	5.3	6.9	8.0	9.4	10.4	11.5
COEFF. (A) COEFFICIENT (A)	19.0	24.9	28.9	33.8	37.5	41.2
EXPONENT (B) EXPOSANT (B)	-.679	-.677	-.676	-.674	-.674	-.673
MEAN % ERROR % D'ERREUR	6.7	7.6	7.9	8.3	8.5	8.7