Appendix B – Precipitation

Kruskal-Wallis Test (from Walpole & Myers, 1993, and Maidment, 1993)

The Kruskal-Wallis test is a non-parametric test (introduced in 1952 by W.H. Kruskal and W.A. Wallis) which tests the equality of means of independent samples, to identify whether they are from the identical populations.

The samples sets are combined, and ranked in ascending order. These ranks then replace the actual data in each sample. An "H" statistic is found through the following equation:

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_i} - 3(n+1)$$

Where R_i is the sum of ranks for each sample, n_i is the number of data in each sample, and n is the total number of data in all the samples combined.

This is then compared to the 95% Chi squared distribution, with degrees of freedom, and defines whether the null hypothesis (sample sets are from the same population) is met or not. If H falls within the critical region greater than the Chi squared variable ($H > X_\alpha^2$), then the null hypothesis is rejected at that significance, otherwise, the null hypothesis is accepted.

Mann-Kendall Test (from Haan, 2002, and Helsel & Hirsch, 2002)

The Mann-Kendall Test is a non-parametric test that identifies trend, typically with time, in a series of data. Each value ($X(t)$) is compared to every other later value in the series ($X(t')$), and the comparisons are ranked as either positive or negative, and placed in a matrix ($z(k)$). This is evident in the matrices presented in Tables B-1.2.

$$z(k) = 1 \quad if \quad X(t) > X(t')$$
$$z(k) = 0 \quad if \quad X(t) = X(t')$$
$$z(k) = -1 \quad if \quad X(t) < X(t')$$

The sum of the matrix values (S), the variance of the matrix ($V(S)$), and the probability of trend (U_c), are then calculated, using the following equations.

$$V(S) = \frac{1}{18}\left[n(n-1)(2n+5)\right] \qquad u_c = \frac{S+m}{\sqrt{V(S)}}$$

The value of m is +1 if S is negative, and -1 if S is positive, and n is the number of data values.

The U_c value is then compared to the z-table. If U_c is less than the corresponding z value, there is no significant trend in the data.

B-1 – Combined Precipitation

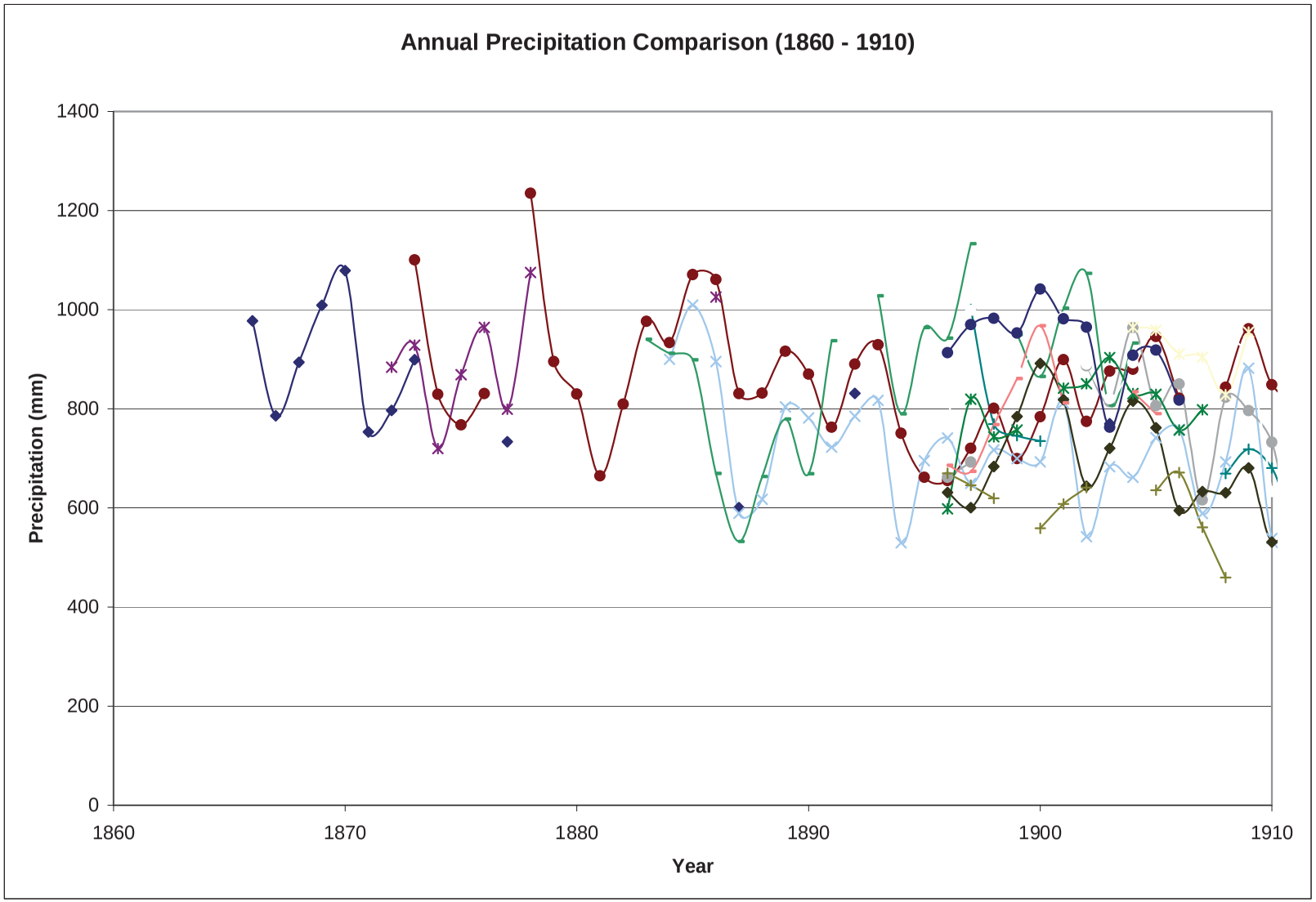

Figure B-1.1a – 1860-1910 Annual Precipitation at Climate Stations

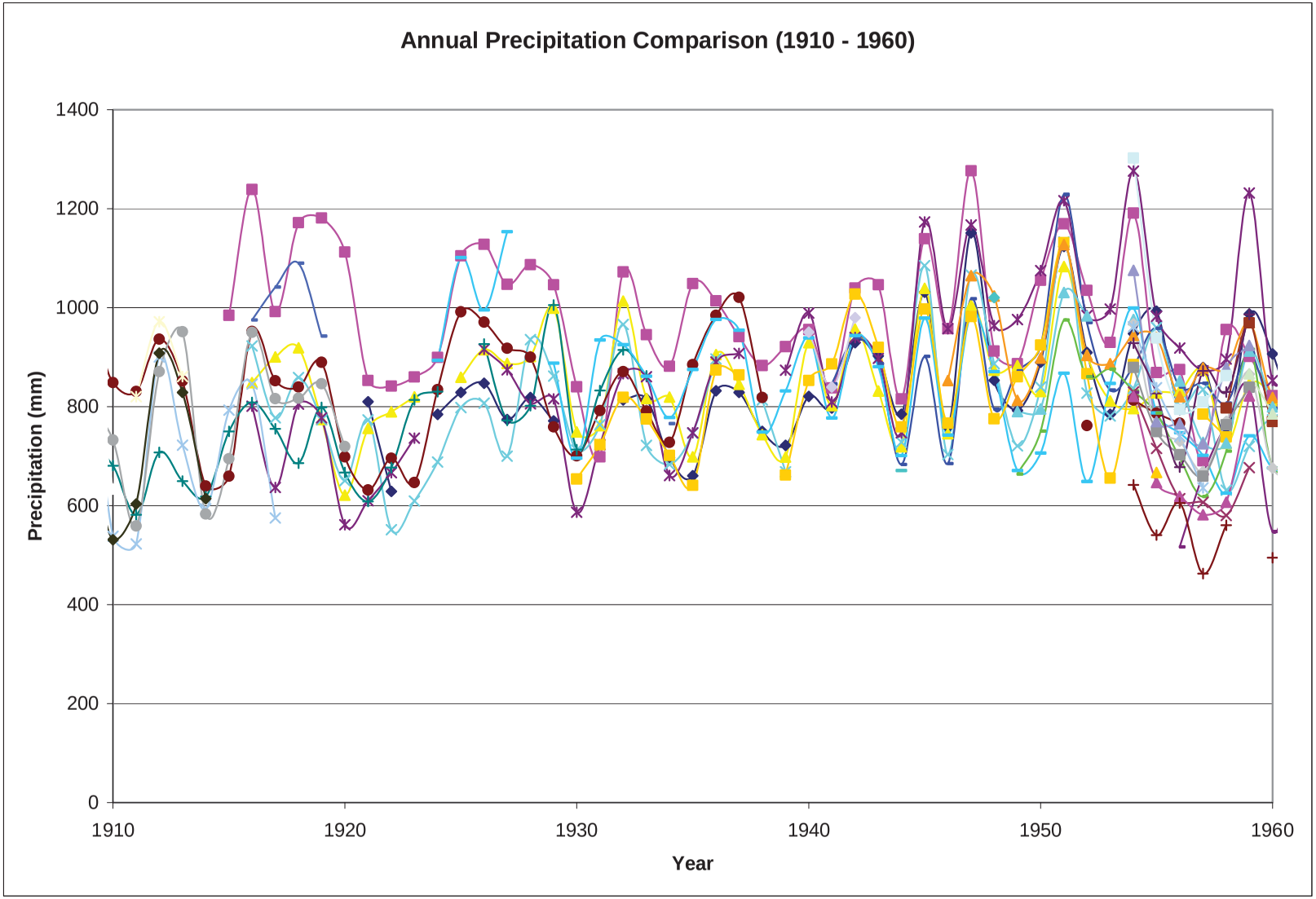

Figure B-1.1b – 1910-1960 Annual Precipitation at Climate Stations

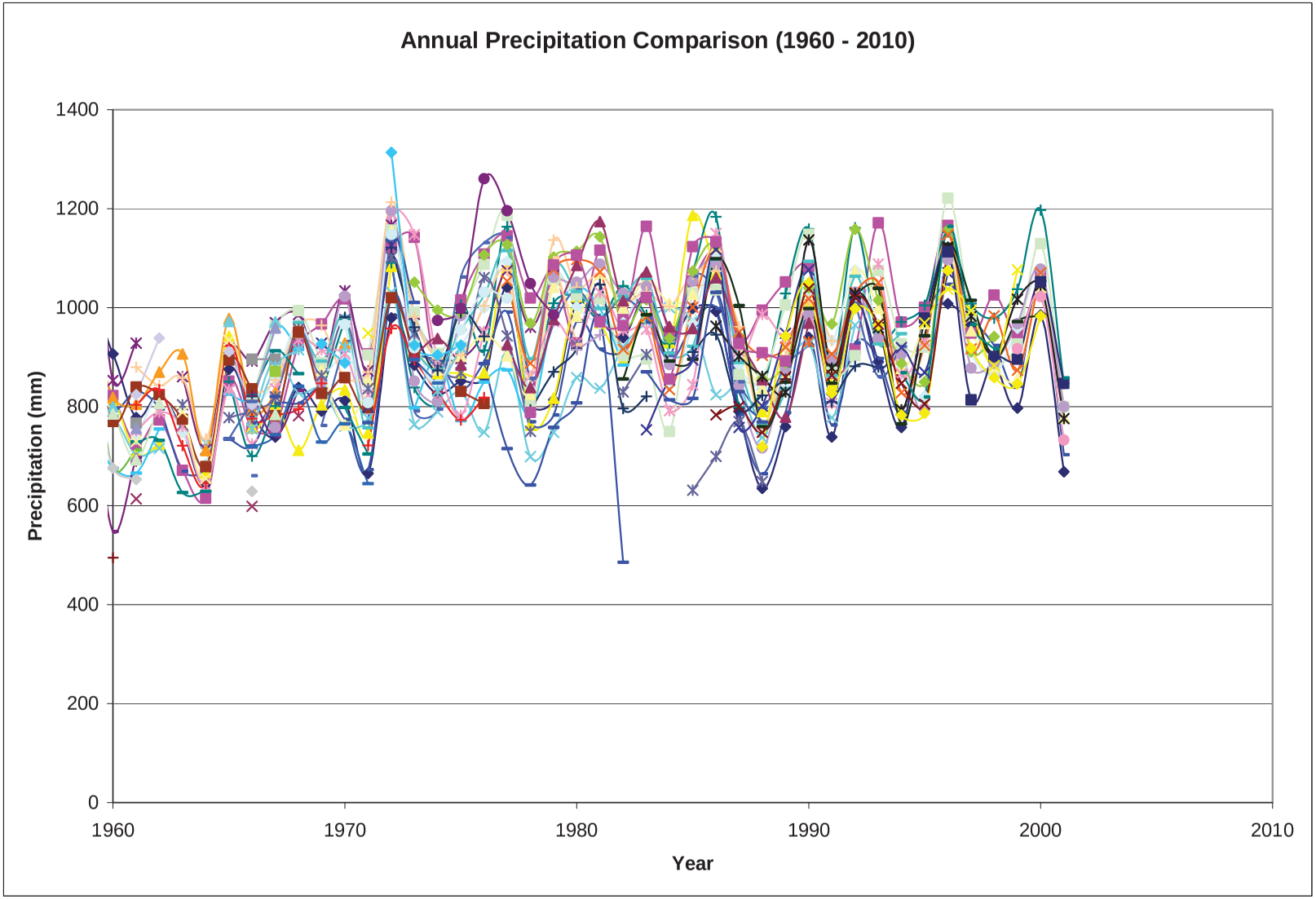

Figure B-1.1c – 1960-2010 Annual Precipitation at Climate Stations

Table B-1.1: Precipitation Kruskall-Wallis Test

Brockville PCC1961			Cataraqui TS1961	911.6	134	Centreville1961			Cressy1961			Crow Lake1961		
Brockville PCC1962			Cataraqui TS1962	810.7	39	Centreville1962			Cressy1962			Crow Lake1962		
Brockville PCC1963			Cataraqui TS1963			Centreville1963			Cressy1963			Crow Lake1963		
Brockville PCC1964			Cataraqui TS1964	741.8	13	Centreville1964			Cressy1964			Crow Lake1964		
Brockville PCC1965			Cataraqui TS1965			Centreville1965			Cressy1965			Crow Lake1965		
Brockville PCC1966			Cataraqui TS1966	841.5	59	Centreville1966			Cressy1966			Crow Lake1966		
Brockville PCC1967			Cataraqui TS1967	809.7	38	Centreville1967			Cressy1967	725.6	9	Crow Lake1967		
Brockville PCC1968	967.5	191	Cataraqui TS1968	1008.7	239	Centreville1968			Cressy1968	885.3	99	Crow Lake1968		
Brockville PCC1969	908	130	Cataraqui TS1969	957	182	Centreville1969			Cressy1969	899.7	118	Crow Lake1969		
Brockville PCC1970	1071.7	301.5	Cataraqui TS1970	859	74	Centreville1970			Cressy1970	997.2	228.5	Crow Lake1970		
Brockville PCC1971			Cataraqui TS1971	909.8	131	Centreville1971			Cressy1971	878.2	92	Crow Lake1971		
Brockville PCC1972	956.6	181	Cataraqui TS1972	1079.3	309	Centreville1972			Cressy1972	1023	257.5	Crow Lake1972		
Brockville PCC1973	1032.4	271	Cataraqui TS1973	1062.7	295	Centreville1973			Cressy1973	934	167	Crow Lake1973	956.3	179
Brockville PCC1974	1029.9	267	Cataraqui TS1974	941.7	172	Centreville1974			Cressy1974	887.7	104	Crow Lake1974	1000.1	232
Brockville PCC1975	925.8	154	Cataraqui TS1975	922.3	149	Centreville1975			Cressy1975	992.2	224	Crow Lake1975	875	90
Brockville PCC1976	1129.9	334.5	Cataraqui TS1976	1036.9	273	Centreville1976			Cressy1976	986.5	217	Crow Lake1976		
Brockville PCC1977	1002.3	235	Cataraqui TS1977	901.6	119	Centreville1977			Cressy1977			Crow Lake1977	797.2	29
Brockville PCC1978	1018.3	251	Cataraqui TS1978	983.7	212	Centreville1978			Cressy1978			Crow Lake1978	915.4	143
Brockville PCC1979			Cataraqui TS1979	1072.5	304	Centreville1979			Cressy1979	1000.7	233	Crow Lake1979	884.4	98
Brockville PCC1980	968.8	192.5	Cataraqui TS1980	1086.3	315	Centreville1980			Cressy1980	1047	280	Crow Lake1980	1118.3	325
Brockville PCC1981	1061.8	293	Cataraqui TS1981	1142.5	344	Centreville1981			Cressy1981	1181.9	350	Crow Lake1981	1233.4	358
Brockville PCC1982	905.2	125	Cataraqui TS1982	927	157	Centreville1982			Cressy1982	972	195	Crow Lake1982	937	169
Brockville PCC1983	805.6	35	Cataraqui TS1983	883.3	97	Centreville1983			Cressy1983	874.8	89	Crow Lake1983	992.4	225
Brockville PCC1984			Cataraqui TS1984	1236.4	359	Centreville1984			Cressy1984	1142.4	343	Crow Lake1984	1144.2	345
Brockville PCC1985	930.7	164	Cataraqui TS1985	934.2	168	Centreville1985			Cressy1985			Crow Lake1985	910.5	133
Brockville PCC1986	1056.5	287	Cataraqui TS1986			Centreville1986			Cressy1986	1206.4	352	Crow Lake1986	1084.8	313.5
Brockville PCC1987	861.1	75	Cataraqui TS1987	937.5	170	Centreville1987	810.8	40	Cressy1987	858.2	72	Crow Lake1987	871.4	85
Brockville PCC1988	820	46	Cataraqui TS1988	748.5	14.5	Centreville1988	864.9	79	Cressy1988	732.8	11	Crow Lake1988	831	51
Brockville PCC1989	1018.1	250	Cataraqui TS1989	870.4	84	Centreville1989	809.6	37	Cressy1989	814.9	42	Crow Lake1989	803	32
Brockville PCC1990	1084.3	312	Cataraqui TS1990	977.3	203.5	Centreville1990	1056.1	286	Cressy1990	974.7	199	Crow Lake1990	923.5	151
Brockville PCC1991	1013.8	245	Cataraqui TS1991	1075.1	306	Centreville1991	1060.2	290	Cressy1991	986.6	218	Crow Lake1991		
Brockville PCC1992	846.2	64	Cataraqui TS1992			Centreville1992	963.2	189	Cressy1992	986.4	216	Crow Lake1992		
Brockville PCC1993			Cataraqui TS1993			Centreville1993	990.8	223	Cressy1993	923.3	150	Crow Lake1993		
Brockville PCC1994	1016	248	Cataraqui TS1994	973.4	196	Centreville1994	840.3	57	Cressy1994	977.4	205	Crow Lake1994		
Brockville PCC1995	773	21	Cataraqui TS1995			Centreville1995	798.8	30	Cressy1995	678.9	4	Crow Lake1995		
Brockville PCC1996	1239.6	360	Cataraqui TS1996			Centreville1996	1211.9	353	Cressy1996	1140.4	341	Crow Lake1996		
Brockville PCC1997	1099	321	Cataraqui TS1997			Centreville1997	1072.3	303	Cressy1997	981.6	209	Crow Lake1997		
Brockville PCC1998	944.9	174	Cataraqui TS1998			Centreville1998	913.6	141	Cressy1998	945.2	175	Crow Lake1998		
Brockville PCC1999	844.5	62	Cataraqui TS1999			Centreville1999	912.4	137	Cressy1999	851	68	Crow Lake1999		
Brockville PCC2000	1121.4	327	Cataraqui TS2000			Centreville2000	1095.9	320	Cressy2000	1069	299	Crow Lake2000		
Brockville PCC2001	775.2	22	Cataraqui TS2001			Centreville2001	741.4	12	Cressy2001	756	16	Crow Lake2001		
Brockville PCC2002	961.8	186	Cataraqui TS2002			Centreville2002	1038.1	275	Cressy2002			Crow Lake2002		
	Count	31		Count	29		Count	16		Count	32		Count	17
	Sum	6125.5		Sum	5156		Sum	2772		Sum	5583		Sum	2958.5
	KW #	1210379			916701			480249			974059			514866

n=	360
df=	17
Product Sum =	11961626.5
h>	27.587
h=	21.5

Hypothesis of same population can not be rejected.

Table B-1.1: Precipitation Kruskall-Wallis Test

Delta1961			Glenburnie1961			Godfrey1961			Hartington1961			Kingston Airport1961		
Delta1962			Glenburnie1962			Godfrey1962			Hartington1962			Kingston Airport1962		
Delta1963			Glenburnie1963			Godfrey1963			Hartington1963			Kingston Airport1963		
Delta1964			Glenburnie1964			Godfrey1964			Hartington1964			Kingston Airport1964		
Delta1965			Glenburnie1965			Godfrey1965			Hartington1965			Kingston Airport1965		
Delta1966			Glenburnie1966			Godfrey1966			Hartington1966			Kingston Airport1966		
Delta1967			Glenburnie1967			Godfrey1967			Hartington1967			Kingston Airport1967		
Delta1968			Glenburnie1968			Godfrey1968			Hartington1968			Kingston Airport1968	912.6	138
Delta1969			Glenburnie1969			Godfrey1969			Hartington1969	886.7	102	Kingston Airport1969	957.2	183.5
Delta1970	926.8	156	Glenburnie1970			Godfrey1970			Hartington1970			Kingston Airport1970	906.4	128
Delta1971	898.9	117	Glenburnie1971			Godfrey1971			Hartington1971	921.3	148	Kingston Airport1971	892.1	107
Delta1972			Glenburnie1972			Godfrey1972			Hartington1972	1011.8	242	Kingston Airport1972	962.2	187
Delta1973	1049.1	282.5	Glenburnie1973	1123.4	330	Godfrey1973			Hartington1973	994.5	227	Kingston Airport1973	977.3	203.5
Delta1974	905.3	126	Glenburnie1974	1042.5	277	Godfrey1974			Hartington1974	912.9	139.5	Kingston Airport1974	924.6	152
Delta1975			Glenburnie1975	1030.8	269	Godfrey1975			Hartington1975	905.9	127	Kingston Airport1975	999.4	231
Delta1976	1012.6	243	Glenburnie1976	1129.9	334.5	Godfrey1976			Hartington1976	997.4	230	Kingston Airport1976	1062	294
Delta1977			Glenburnie1977	978.1	206	Godfrey1977			Hartington1977	811	41	Kingston Airport1977	871.9	86.5
Delta1978	877.3	91	Glenburnie1978	1094.7	319	Godfrey1978			Hartington1978	856.6	71	Kingston Airport1978	1075.9	307
Delta1979	826.8	49	Glenburnie1979	1046.7	279	Godfrey1979			Hartington1979	986.1	215	Kingston Airport1979	1043.6	278
Delta1980	901.9	121	Glenburnie1980	1117.6	324	Godfrey1980			Hartington1980	1022.6	256	Kingston Airport1980	1052	284
Delta1981	1088.6	317	Glenburnie1981	1231.5	357	Godfrey1981			Hartington1981	1130.8	336	Kingston Airport1981	1078.8	308
Delta1982			Glenburnie1982	903.1	123	Godfrey1982	821.8	48	Hartington1982	947.6	176	Kingston Airport1982	948.2	177
Delta1983	729.7	10	Glenburnie1983	881.9	94	Godfrey1983	844.3	61	Hartington1983	928.2	160	Kingston Airport1983	928.6	162
Delta1984			Glenburnie1984	1139	340	Godfrey1984	1105.9	323	Hartington1984	1212.1	354	Kingston Airport1984	1134.1	338
Delta1985			Glenburnie1985	1009.7	240	Godfrey1985			Hartington1985			Kingston Airport1985	839.7	56
Delta1986			Glenburnie1986	1136	339	Godfrey1986	1128	333	Hartington1986	1140.7	342	Kingston Airport1986	1090.5	318
Delta1987	748.5	14.5	Glenburnie1987			Godfrey1987	896.9	115	Hartington1987	870	82.5	Kingston Airport1987	858.2	73
Delta1988			Glenburnie1988	883.2	96	Godfrey1988	816.4	43	Hartington1988	867.1	81	Kingston Airport1988	787.7	25
Delta1989	862.3	77	Glenburnie1989	851.8	69	Godfrey1989	832.2	52	Hartington1989	805.3	34	Kingston Airport1989	821.6	47
Delta1990			Glenburnie1990	1001.4	234	Godfrey1990	939.1	171	Hartington1990	1030.1	268	Kingston Airport1990	989.2	220
Delta1991			Glenburnie1991	1123.5	331	Godfrey1991	1027.2	263	Hartington1991	1032	270	Kingston Airport1991	1029.4	266
Delta1992			Glenburnie1992	1061.1	292	Godfrey1992	914	142	Hartington1992	969.1	194	Kingston Airport1992	1003	236
Delta1993			Glenburnie1993	1024.9	260	Godfrey1993	1052.6	285	Hartington1993	1004	237	Kingston Airport1993	962.4	188
Delta1994			Glenburnie1994	967.3	190	Godfrey1994	843.6	60	Hartington1994	957.2	183.5	Kingston Airport1994	978.6	207
Delta1995			Glenburnie1995	759	17	Godfrey1995	759.4	18	Hartington1995	828.5	50	Kingston Airport1995		
Delta1996			Glenburnie1996			Godfrey1996	1223	355	Hartington1996	1193.7	351	Kingston Airport1996		
Delta1997			Glenburnie1997	1029	265	Godfrey1997	1101.4	322	Hartington1997	1023.6	259	Kingston Airport1997		
Delta1998			Glenburnie1998	944.1	173	Godfrey1998	920	147	Hartington1998	912.9	139.5	Kingston Airport1998		
Delta1999			Glenburnie1999			Godfrey1999	894	111	Hartington1999	767.1	20	Kingston Airport1999		
Delta2000			Glenburnie2000			Godfrey2000	1021.5	255	Hartington2000	1066.9	297	Kingston Airport2000		
Delta2001			Glenburnie2001			Godfrey2001			Hartington2001	716.4	7	Kingston Airport2001		
Delta2002			Glenburnie2002			Godfrey2002			Hartington2002	1071.7	301.5	Kingston Airport2002		
	Count	12		Count	24		Count	18		Count	32		Count	27
	Sum	1604		Sum	5758.5		Sum	3104		Sum	5941.5		Sum	5200.5
		214401			1381680			535268			1103169			1001674

Table B-1.1: Precipitation Kruskall-Wallis Test

Kingston Pumping Station1961			Lyndhurst Shawmere1961			Mallorytown Graham Lake1961			Mallorytown Landing1961		
Kingston Pumping Station1962			Lyndhurst Shawmere1962			Mallorytown Graham Lake1962			Mallorytown Landing1962		
Kingston Pumping Station1963			Lyndhurst Shawmere1963			Mallorytown Graham Lake1963			Mallorytown Landing1963		
Kingston Pumping Station1964			Lyndhurst Shawmere1964			Mallorytown Graham Lake1964			Mallorytown Landing1964		
Kingston Pumping Station1965			Lyndhurst Shawmere1965			Mallorytown Graham Lake1965			Mallorytown Landing1965		
Kingston Pumping Station1966	837	53	Lyndhurst Shawmere1966			Mallorytown Graham Lake1966			Mallorytown Landing1966		
Kingston Pumping Station1967	819.1	45	Lyndhurst Shawmere1967			Mallorytown Graham Lake1967			Mallorytown Landing1967		
Kingston Pumping Station1968	973.6	197	Lyndhurst Shawmere1968			Mallorytown Graham Lake1968	928.6	162	Mallorytown Landing1968		
Kingston Pumping Station1969	888.5	106	Lyndhurst Shawmere1969			Mallorytown Graham Lake1969	916.1	144	Mallorytown Landing1969		
Kingston Pumping Station1970	886.4	101	Lyndhurst Shawmere1970			Mallorytown Graham Lake1970	957.5	185	Mallorytown Landing1970		
Kingston Pumping Station1971	928	158.5	Lyndhurst Shawmere1971			Mallorytown Graham Lake1971	910.1	132	Mallorytown Landing1971		
Kingston Pumping Station1972			Lyndhurst Shawmere1972			Mallorytown Graham Lake1972	911.9	135.5	Mallorytown Landing1972		
Kingston Pumping Station1973	1025.2	261	Lyndhurst Shawmere1973			Mallorytown Graham Lake1973	981.7	210	Mallorytown Landing1973		
Kingston Pumping Station1974	895.2	112	Lyndhurst Shawmere1974			Mallorytown Graham Lake1974	1015.4	247	Mallorytown Landing1974		
Kingston Pumping Station1975	956.5	180	Lyndhurst Shawmere1975			Mallorytown Graham Lake1975	839	54	Mallorytown Landing1975		
Kingston Pumping Station1976	1011.1	241	Lyndhurst Shawmere1976			Mallorytown Graham Lake1976	1088.1	316	Mallorytown Landing1976		
Kingston Pumping Station1977	925.6	153	Lyndhurst Shawmere1977	892.4	108	Mallorytown Graham Lake1977	886	100	Mallorytown Landing1977		
Kingston Pumping Station1978	989.4	221	Lyndhurst Shawmere1978	1018.9	253	Mallorytown Graham Lake1978	804.5	33	Mallorytown Landing1978		
Kingston Pumping Station1979	997.2	228.5	Lyndhurst Shawmere1979	1047.2	281	Mallorytown Graham Lake1979			Mallorytown Landing1979	1041.4	276
Kingston Pumping Station1980	1015.1	246	Lyndhurst Shawmere1980	1083.8	311	Mallorytown Graham Lake1980	975.5	201	Mallorytown Landing1980	1067.5	298
Kingston Pumping Station1981	1049.1	282.5	Lyndhurst Shawmere1981	1151.8	347	Mallorytown Graham Lake1981			Mallorytown Landing1981	1059.6	288
Kingston Pumping Station1982	903	122	Lyndhurst Shawmere1982	872	88	Mallorytown Graham Lake1982	788.9	26	Mallorytown Landing1982	926.6	155
Kingston Pumping Station1983	901.7	120	Lyndhurst Shawmere1983	861.9	76	Mallorytown Graham Lake1983	847.8	66	Mallorytown Landing1983	917.7	146
Kingston Pumping Station1984	1070.3	300	Lyndhurst Shawmere1984	1037.9	274	Mallorytown Graham Lake1984			Mallorytown Landing1984	1059.7	289
Kingston Pumping Station1985			Lyndhurst Shawmere1985	887	103	Mallorytown Graham Lake1985			Mallorytown Landing1985	993.8	226
Kingston Pumping Station1986	1126.2	332	Lyndhurst Shawmere1986	1155.2	348	Mallorytown Graham Lake1986			Mallorytown Landing1986		
Kingston Pumping Station1987	865.3	80	Lyndhurst Shawmere1987	928.6	162	Mallorytown Graham Lake1987	674.3	3	Mallorytown Landing1987	911.9	135.5
Kingston Pumping Station1988	850.6	67	Lyndhurst Shawmere1988	887.9	105	Mallorytown Graham Lake1988	614.9	1	Mallorytown Landing1988	870	82.5
Kingston Pumping Station1989	790.5	27	Lyndhurst Shawmere1989	893.2	110	Mallorytown Graham Lake1989			Mallorytown Landing1989	928	158.5
Kingston Pumping Station1990	983.8	213	Lyndhurst Shawmere1990	989.8	222	Mallorytown Graham Lake1990			Mallorytown Landing1990	1007.5	238
Kingston Pumping Station1991	1084.8	313.5	Lyndhurst Shawmere1991	1060.3	291	Mallorytown Graham Lake1991			Mallorytown Landing1991		
Kingston Pumping Station1992			Lyndhurst Shawmere1992	975	200	Mallorytown Graham Lake1992			Mallorytown Landing1992		
Kingston Pumping Station1993	968.8	192.5	Lyndhurst Shawmere1993	1028.5	264	Mallorytown Graham Lake1993			Mallorytown Landing1993		
Kingston Pumping Station1994	973.7	198	Lyndhurst Shawmere1994	895.5	113.5	Mallorytown Graham Lake1994			Mallorytown Landing1994		
Kingston Pumping Station1995			Lyndhurst Shawmere1995	782.3	24	Mallorytown Graham Lake1995			Mallorytown Landing1995		
Kingston Pumping Station1996	1122.4	328	Lyndhurst Shawmere1996			Mallorytown Graham Lake1996			Mallorytown Landing1996		
Kingston Pumping Station1997	1023	257.5	Lyndhurst Shawmere1997	1013.2	244	Mallorytown Graham Lake1997			Mallorytown Landing1997		
Kingston Pumping Station1998	903.7	124	Lyndhurst Shawmere1998	1026.4	262	Mallorytown Graham Lake1998			Mallorytown Landing1998		
Kingston Pumping Station1999	840.8	58	Lyndhurst Shawmere1999			Mallorytown Graham Lake1999			Mallorytown Landing1999		
Kingston Pumping Station2000	1119	326	Lyndhurst Shawmere2000	1122.5	329	Mallorytown Graham Lake2000			Mallorytown Landing2000		
Kingston Pumping Station2001	719.6	8	Lyndhurst Shawmere2001			Mallorytown Graham Lake2001			Mallorytown Landing2001		
Kingston Pumping Station2002	906.9	129	Lyndhurst Shawmere2002			Mallorytown Graham Lake2002			Mallorytown Landing2002		
	Count	33		Count	22		Count	16		Count	11
	Sum	5781		Sum	4515.5		Sum	2015.5		Sum	2292.5
		1012726			926806			253890			477778

Table B-1.1: Precipitation Kruskall-Wallis Test

Napanee1961			Picton1961			Sandhurst1961			Wolfe Island1961		
Napanee1962			Picton1962			Sandhurst1962			Wolfe Island1962		
Napanee1963			Picton1963			Sandhurst1963			Wolfe Island1963		
Napanee1964			Picton1964			Sandhurst1964			Wolfe Island1964		
Napanee1965			Picton1965			Sandhurst1965			Wolfe Island1965		
Napanee1966			Picton1966			Sandhurst1966			Wolfe Island1966		
Napanee1967			Picton1967			Sandhurst1967			Wolfe Island1967		
Napanee1968			Picton1968			Sandhurst1968			Wolfe Island1968		
Napanee1969			Picton1969	818.1	44	Sandhurst1969			Wolfe Island1969		
Napanee1970			Picton1970	855.7	70	Sandhurst1970			Wolfe Island1970		
Napanee1971			Picton1971	895.5	113.5	Sandhurst1971			Wolfe Island1971		
Napanee1972			Picton1972			Sandhurst1972			Wolfe Island1972		
Napanee1973			Picton1973	880.6	93	Sandhurst1973			Wolfe Island1973		
Napanee1974			Picton1974			Sandhurst1974			Wolfe Island1974		
Napanee1975			Picton1975			Sandhurst1975			Wolfe Island1975		
Napanee1976			Picton1976	1166.8	349	Sandhurst1976			Wolfe Island1976		
Napanee1977			Picton1977	1018.8	252	Sandhurst1977			Wolfe Island1977		
Napanee1978			Picton1978			Sandhurst1978			Wolfe Island1978		
Napanee1979			Picton1979			Sandhurst1979			Wolfe Island1979		
Napanee1980			Picton1980			Sandhurst1980			Wolfe Island1980		
Napanee1981			Picton1981	1082.9	310	Sandhurst1981			Wolfe Island1981		
Napanee1982			Picton1982	933.1	166	Sandhurst1982			Wolfe Island1982		
Napanee1983			Picton1983	845.1	63	Sandhurst1983			Wolfe Island1983		
Napanee1984			Picton1984	1132.9	337	Sandhurst1984			Wolfe Island1984		
Napanee1985			Picton1985	808.3	36	Sandhurst1985			Wolfe Island1985		
Napanee1986			Picton1986			Sandhurst1986			Wolfe Island1986		
Napanee1987			Picton1987	882.1	95	Sandhurst1987			Wolfe Island1987	776.1	23
Napanee1988			Picton1988	796.9	28	Sandhurst1988			Wolfe Island1988		
Napanee1989	871.9	86.5	Picton1989	839.3	55	Sandhurst1989			Wolfe Island1989	863.9	78
Napanee1990	982.1	211	Picton1990	1020.1	254	Sandhurst1990			Wolfe Island1990	975.8	202
Napanee1991	1016.8	249	Picton1991			Sandhurst1991			Wolfe Island1991	986.9	219
Napanee1992	898.1	116	Picton1992			Sandhurst1992			Wolfe Island1992		
Napanee1993	978.7	208	Picton1993			Sandhurst1993			Wolfe Island1993	948.4	178
Napanee1994	847.7	65	Picton1994	1033.9	272	Sandhurst1994	916.6	145	Wolfe Island1994	931	165
Napanee1995	693.6	6	Picton1995			Sandhurst1995	687	5	Wolfe Island1995	661.8	2
Napanee1996	1074.4	305	Picton1996			Sandhurst1996	1226.4	356	Wolfe Island1996	1147.2	346
Napanee1997			Picton1997			Sandhurst1997	1065	296	Wolfe Island1997		
Napanee1998	892.5	109	Picton1998			Sandhurst1998	985.2	214	Wolfe Island1998		
Napanee1999	760.1	19	Picton1999			Sandhurst1999			Wolfe Island1999		
Napanee2000			Picton2000			Sandhurst2000			Wolfe Island2000		
Napanee2001			Picton2001			Sandhurst2001	801.1	31	Wolfe Island2001		
Napanee2002			Picton2002			Sandhurst2002			Wolfe Island2002		
	Count	10		Count	16		Count	6		Count	8
	Sum	1374.5		Sum	2537.5		Sum	1047		Sum	1213
		188925			402432			182702			183921

Table B-1.2a: Mann Kendall Test - Picton

	831.5	818.1	855.7	895.5	880.6	1166.8	1018.8	1082.9	933.1	845.1	1132.9	808.3	882.1	796.9	839.3	1020.1	1033.9
831.5																	
818.1	-1																
855.7	1	1															
895.5	1	1	1														
880.6	1	1	1	-1													
1166.8	1	1	1	1	1												
1018.8	1	1	1	1	1	-1											
1082.9	1	1	1	1	1	-1	1										
933.1	1	1	1	1	1	-1	-1	-1									
845.1	1	1	-1	-1	-1	-1	-1	-1	-1								
1132.9	1	1	1	1	1	-1	1	1	1	1							
808.3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1						
882.1	1	1	1	-1	1	-1	-1	-1	-1	1	-1	1					
796.9	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1				
839.3	1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	1			
1020.1	1	1	1	1	1	-1	1	-1	1	1	-1	1	1	1	1		
1033.9	1	1	1	1	1	-1	1	-1	1	1	-1	1	1	1	1	1	

S=	14	
m=	-1	
N=	17	
n=	0	
V(S)=	589	
uc=	0.536	No Trend