

Rainfall at Katherine

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INTRODUCTION

Although rainfall is a primary requirement for agricultural development, its influence on production is difficult to evaluate quantitatively. Most farming properties accumulate daily rainfall records over a number of years. Daily rainfall has been recorded at Katherine since 1873 and archived with the Commonwealth Bureau of Meteorology.

Individual farm records and district rainfall records can be used to predict rainfall patterns. The following information is offered so that farmers and residents in the Katherine region can have a better understanding of the rainfall pattern in their area.

MONTHLY RAINFALL AT KATHERINE SINCE 1873

Table 1 shows the monthly rainfall at Katherine from 1873, plus the mean monthly rainfall for the period. The figures have been arranged in financial years (July-June) so that total rainfall for the wet season is included in the yearly total.

Table 1. Monthly rainfall at Katherine since 1873 (mm)

Financial		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	TOTAL
Year														
	1873							153	321	291	175	6	1	
1873	1874	0	0	0	1	32	407	347	188	127	40	0	0	1142
1874	1875	1	0	5	85	79	241	259	258	159	155	0	0	1242
1875	1876	0	0	0	81	65	178	329	192	254	38	18	1	1156
1876	1877	0	0	4	1	48	222	122	358	205	5	0	1	966
1877	1878	0	0	0	21	56	192	290	205	240	87	0	0	1091
1878	1879	0	0	0	9	41	192	319	399	280	29	29	0	1298
1879	1880	0	0	0	58	58	162	275	120	217	10	1	0	901
1880	1881	0	0	0	34	71	202	73	329	17	0	0	0	726
1881	1882	0	1	10	5	74	109	190	315	219	7	50	43	1023
1882	1883	0	0	1	52	107	336	70	138	1	8	0	0	713
1883	1884	0	5	2	39	46	242	120	274	106	13	0	0	847
1884	1885	0	0	0	10	186	44	235	269	148	1	0	0	893
1885	1886	0	0	0	5	87	332	72	271	54	0	0	3	824
1886	1887	0	14	0	9	162	146	146	224	143	82	0	0	926
1887	1888	0	0	0	28	262	84	401	151	0	0	0	0	926
1888	1889	0	0	0	0	41	216	340	244	92	31	36	4	1004
1889	1890	0	0	38	69	51	291	348	187	101	74	0	0	1159
1890	1891	0	2	11	17	50	215	199	159	40	130	0	7	830
1891	1892	0	0	0	0	115	71	82	39	117	0	0	0	424
1892	1893	0	0	0	49	43	149	173	318	52	19	1	0	804
1893	1894	0	0	2	47	149	112	359	177	114	95	0	0	1055
1894	1895	0	0	18	107	94	123	278	235	220	2	0	0	1077
1895	1896	0	0	91	31	79	181	232	247	221	50	0	0	1132
1896	1897	4	0	0	0	195	206	349	167	16	0	0	0	937
1897	1898	0	0	0	84	26	752	191	271	581	18	0	0	1923

Financial														
Year		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	TOTAL
1898	1899	0	0	67	4	130	235	398	145	636	0	0	8	1623
1899	1900	0	0	0	14	75	102	242	123	126	23	0	1	706
1900	1901	21	0	0	5	26	246	176	218	647	0	0	0	1339
1901	1902	0	0	0	1	1	109	232	95	61	0	0	0	499
1902	1903	0	0	0	59	60	112	101	335	95	36	9	0	807
1903	1904	0	0	0	10	133	268	705	102	210	58	6	22	1514
1904	1905	0	0	31	70	70	208	149	192	15	13	0	3	751
1905	1906	0	0	0	3	71	107	172	157	110	0	0	0	620
1906	1907	0	0	17	78	125	335	193	490	43	11	1	0	1293
1907	1908	0	0	1	5	94	429	236	187	246	44	0	0	1242
1908	1909	3	0	0	0	116	172	97	136	136	20	1	0	681
1909	1910	0	0	1	19	356	81	391	233	33	90	0	0	1204
1910	1911	0	0	0	4	195	176	105	204	23	39	0	0	746
1911	1912	0	0	0	57	53	255	116	246	246	0	0	0	973
1912	1913	0	0	0	2	57	125	134	337	201	0	0	0	856
1913	1914	0	0	1	1	48	115	430	55	115	45	17	0	827
1914	1915	0	0	0	11	38	193	296	109	41	0	62	0	750
1915	1916	0	0	1	141	37	444	196	141	103	0	1	0	1064
1916	1917	0	0	9	19	183	282	280	170	161	30	0	2	1136
1917	1918	0	6	7	76	245	239	420	158	67	1	0	0	1219
1918	1919	0	3	0	1	68	126	135	210	44	26	13	0	626
1919	1920	0	0	0	31	92	121	192	46	176	0	0	0	658
1920	1921	6	0	3	36	124	188	182	250	331	0	0	0	1120
1921	1922	0	0	1	3	95	91	171	145	336	0	0	0	842
1922	1923	0	0	0	38	6	281	184	124	147	192	38	10	1020
1923	1924	0	0	0	64	50	433	83	325	118	0	0	0	1073
1924	1925	0	0	3	1	66	146	211	319	101	22	0	0	869
1925	1926	0	0	0	0	9	105	262	84	90	9	40	0	599
1926	1927	0	0	0	20	7	357	191	10	78	0	0	0	663
1927	1928	0	0	0	54	162	109	97	133	219	8	0	0	782
1928	1929	0	0	0	3	12	129	118	66	142	36	0	0	506
1929	1930	0	0	0	8	24	282	147	446	148	0	0	0	1055
1930	1931	0	0	0	24	63	293	316	109	242	99	0	0	1146
1931	1932	0	0	40	7	75	124	108	75	268	0	4	4	705
1932	1933	0	0	0	26	66	303	126	58	149	0	3	3	734
1933	1934	0	0	0	57	108	281	229	131	152	10	0	0	968
1934	1935	1	0	0	63	156	84	287	194	290	1	8	54	1138
1935	1936	0	0	6	7	70	213	180	212	26	25	20	5	764
1936	1937	0	0	40	22	82	99	687	117	134	0	0	0	1181
1937	1938	0	1	6	30	18	164	237	245	1	0	0	0	702
1938	1939	12	0	0	13	168	35	372	353	35	41	0	11	1040
1939	1940	0	0	3	63	67	181	491	313	302	12	0	0	1432
1940	1941	0	0	0	0	58	147	229	82	354	0	6	0	876
1941	1942	0	0	0	10	87	246	216	201	25	57	0	0	842
1942	1943	0	0	36	13	59	287	147	351	165	21	0	0	1079
1943	1944	0	0	3	80	70	129	281	124	492	0	0	0	1179
1944	1945	0	0	0	4	113	181	199	165	115	28	0	0	805
1945	1946	0	0	0	9	32	371	222	280	2	0	0	0	916
1946	1947	0	0	0	5	9	123	184	306	185	0	0	1	813
1947	1948	0	19	10	23	67	169	163	192	131	78	0	0	852
1948	1949	0	0	23	5	36	166	120	246	222	0	0	0	818
1949	1950	0	0	0	0	78	329	226	193	139	5	0	0	970
1950	1951	0	0	28	142	80	250	365	255	80	0	0	0	1200
1951	1952	0	1	0	8	31	58	198	45	24	0	0	0	365
1952	1953	0	0	0	5	63	104	184	176	79	213	0	0	824
1953	1954	0	0	5	0	166	183	390	191	97	77	0	0	1109
1954	1955	0	0	0	149	87	239	128	219	116	7	48	8	1001
1955	1956	4	0	0	76	125	68	113	287	92	37	26	0	828
1956	1957	8	0	9	51	69	309	191	256	463	6	0	0	1362

Financial														
Year		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	TOTAL
1957	1958	0	0	0	16	77	391	148	58	148	102	2	0	942
1958	1959	0	0	0	31	48	156	263	73	90	179	21	0	861
1959	1960	0	0	0	21	28	54	319	290	216	44	34	0	1006
1960	1961	0	0	3	11	171	168	106	206	24	118	0	0	807
1961	1962	0	0	0	3	26	43	242	159	30	0	0	0	503
1962	1963	0	0	0	1	126	61	478	137	68	180	1	0	1052
1963	1964	0	0	0	46	5	128	205	105	197	17	2	0	705
1964	1965	0	0	0	99	214	188	98	27	221	0	15	0	862
1965	1966	0	0	0	30	4	177	241	226	48	0	2	0	728
1966	1967	0	0	29	33	140	132	208	401	217	0	0	0	1160
1967	1968	0	0	0	0	104	155	367	444	176	7	40	0	1293
1968	1969	48	0	2	3	86	109	220	430	158	0	0	2	1058
1969	1970	0	0	2	87	4	266	75	133	12	69	1	0	649
1970	1971	0	0	1	15	160	93	163	269	309	89	4	0	1103
1971	1972	0	11	24	28	88	278	51	273	237	80	9	0	1079
1972	1973	0	0	0	1	47	51	323	180	211	5	0	50	868
1973	1974	0	0	32	12	135	101	209	351	468	54	0	0	1362
1974	1975	0	3	12	49	58	74	385	294	66	115	0	0	1056
1975	1976	0	0	12	138	89	156	230	448	340	0	0	0	1413
1976	1977	0	0	0	35	82	125	266	243	516	0	1	0	1268
1977	1978	0	0	0	22	86	216	440	277	61	7	0	3	1112
1978	1979	16	0	5	21	128	196	262	207	207	0	0	0	1042
1979	1980	0	0	42	14	64	125	253	493	225	9	12	0	1237
1980	1981	0	0	0	11	59	262	381	316	22	0	5	11	1067
1981	1982	0	0	18	16	142	121	191	355	181	2	0	0	1026
1982	1983	0	0	0	0	79	244	67	122	173	67	0	0	752
1983	1984	0	0	5	57	165	177	542	199	462	3	0	0	1610
1984	1985	0	0	7	29	157	168	150	189	90	134	0	2	926
1985	1986	0	0	45	2	196	157	199	83	25	45	3	0	755
1986	1987	77	0	65	29	57	112	384	339	3	1	1	0	1068
1987	1988	0	0	3	67	222	189	129	236	46	30	0	0	922
1988	1989	0	0	0	14	71	315	168	61	353	129	0	0	1111
1989	1990	0	0	0	37	60	90	221	131	93	1	88	0	721
1990	1991	0	0	0	1	133	324	417	361	3	22	0	0	1261
1991	1992	0	0	1	0	118	85	84	280	22	26	30	0	647
1992	1993	0	0	2	82	119	122	334	272	28	1	0	0	960
1993	1994	0	0	0	25	105	297	117	187	268	6	0	0	1005
1994	1995	0	0	0	23	178	133	353	187	130	44	3	0	1051
1995	1996	0	0	2	37	74	119	259	59	58	95	0	0	703
1996	1997	0	0	0	1	84	405	510	254	99	0	0	0	1353
1997	1998	0	0	0	7	57	392	914	99	97	5	0	6	1577
1998	1999	0	0	49	101	83	419	160	300	236	39	0	0	1387
1999	2000	0	0	0	123	91	157	121	207	300	171	0	1	1171
2000	2001	0	0	0	122	65	276	540	306	170	17	0	0	1499
2001	2002	0	0	0	124	239	123	117	445	66	0	0	0	1114
2002	2003	0	0	0	0	127	108	433	253	226	1	0	0	1148
2003	2004	0	3	2	8	42	531	301	387	350	58	4	0	1686
2004	2005	0	0	0	2	75	164	290	103	228	0	0	0	862
2005	2006	0	0	0	34	194	393	294	62	456	213	0	0	1646
2006	2007	0	0	0	0	21	183	241	98	476	0	0	8	1027
2007	2008	0	32	0	18	106	331	219	470	196	2	0	0	1374
2008	2009	0	0	1	4	58	399	436	308	10	0	0	0	1216
2009	2010	0	0	0	1	21	291	343	214	107	57	12	0	1046
2010	2011	0	4	19	77	65	419	268	360	236	228	0	0	1675
2011	2012													
MEAN MONTHLY RAINFALL		1	1	7	31	90	204	248	218	165	35	5	2	1006

Total rainfall ranged from a low of 365 mm in 1951/52 to a high of 1923 mm in 1897/98. Average seasonal rainfall for the period 1873–2011 is 1006 mm. During 70% of the time annual rainfall was between 700 mm and 1200 mm.

TOTAL RAINFALL

Figure 1 indicates the number of years of total annual rainfall in 100 mm classes. Rainfall at Katherine has two modal peaks. The most frequent rainfall was 1000–1100 mm (18% of years) while a rainfall of 800–900 mm occurred in 17% of years.

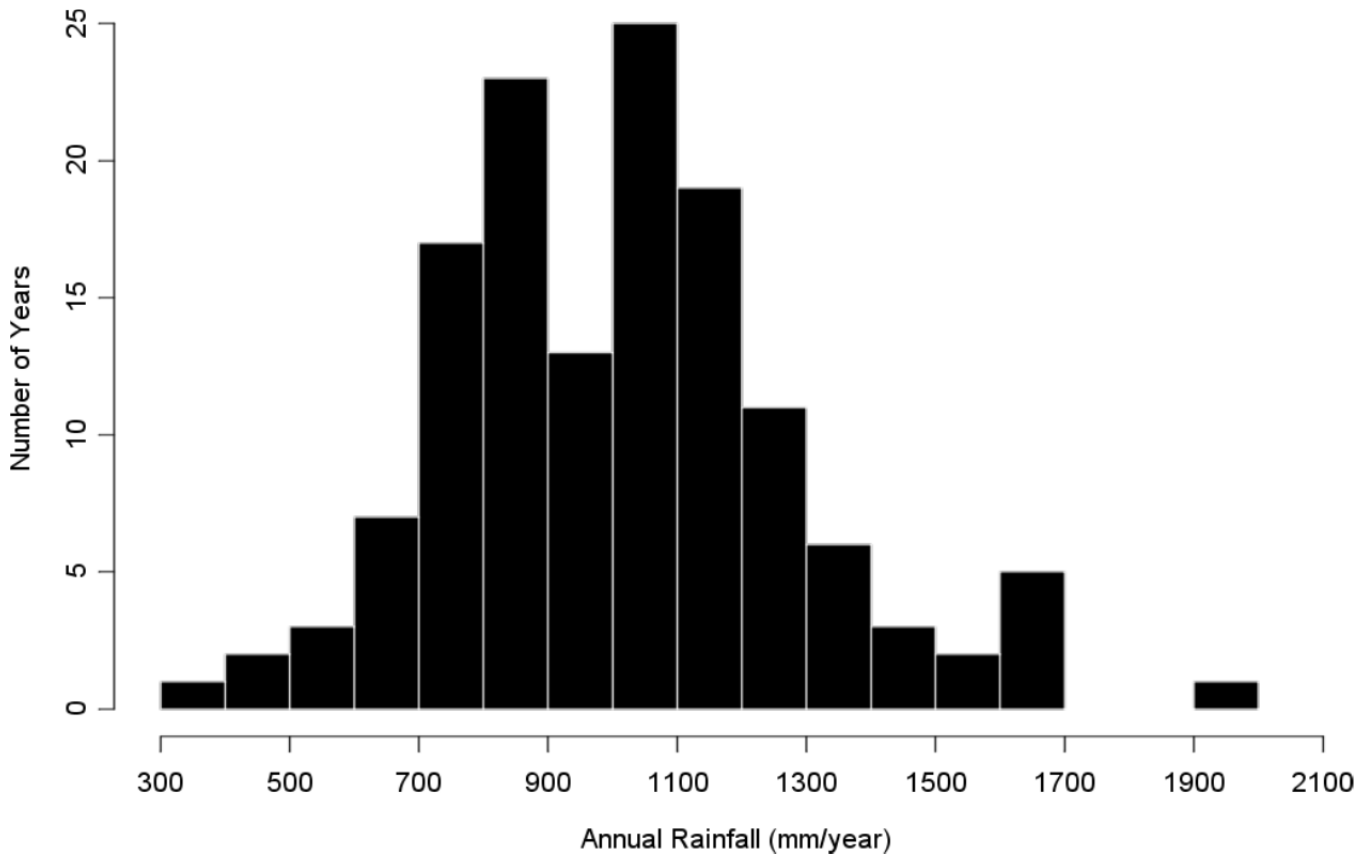


Figure 1. Total annual rainfall 1873–2011

Note: The rainfall values 350 to 1,950 are mid points for the annual rainfall classes.

Figure 2 indicates the long-term 10-year cyclic pattern of rainfall at Katherine. With a ten year moving average, the rainfall figure given for an individual year is the average rainfall in the preceding ten years. For example the rainfall figure for 1930 is the average rainfall over the period 1921 to 1930. Generally, rainfall over a period of years will follow a “wave” of above average rainfall and then a “wave” of below average rainfall. Katherine is currently experiencing a “wave” of above average annual rainfall.

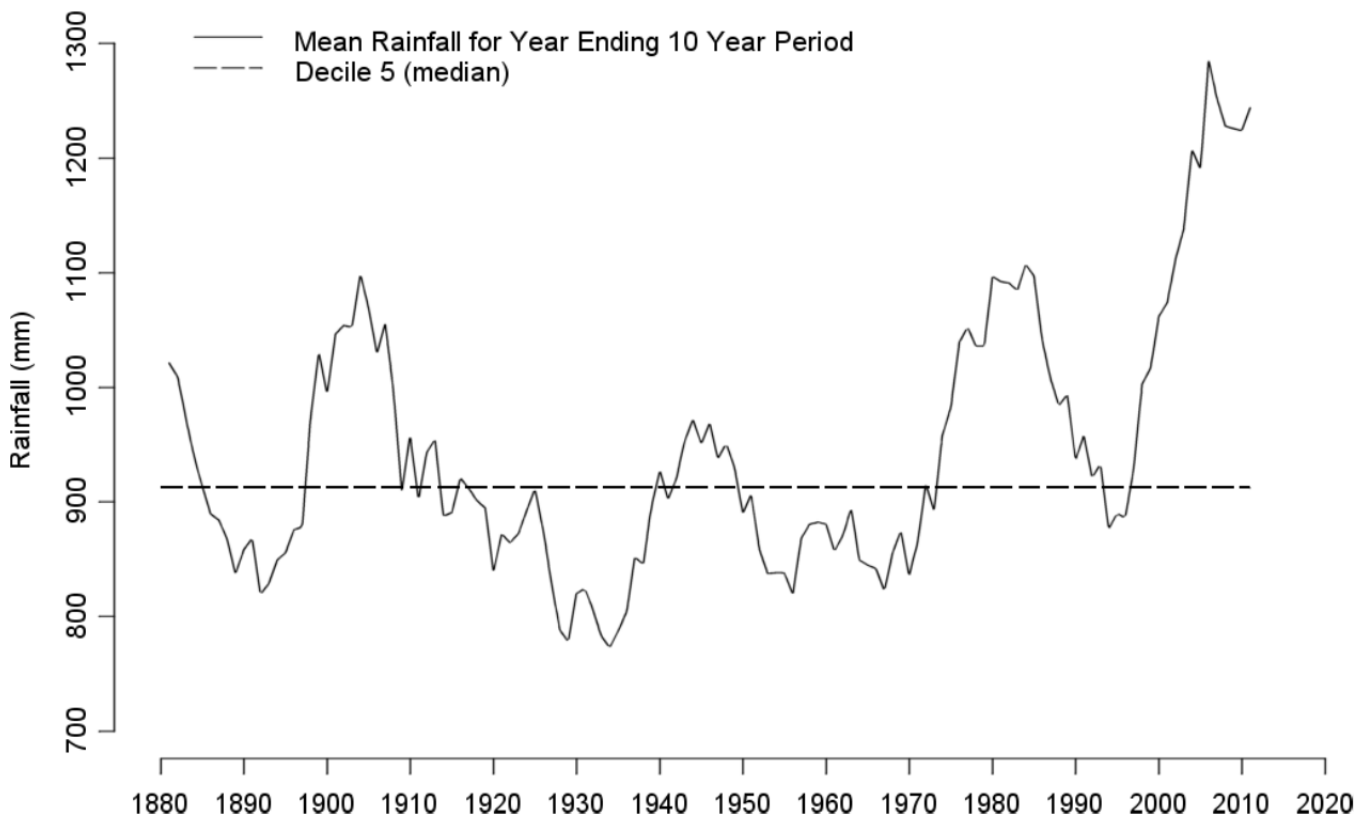


Figure 2. Ten year moving average of November–April rainfall

RAINFALL DISTRIBUTION

Rainfall in Katherine is strongly seasonal in character. June, July and August experience no rainfall in most years. Sporadic thunderstorms commence during September–October while during November–December rainfall still associated with thunderstorm activity increases rapidly. From January to March rainfall is generally associated with monsoonal activity. Rainfall in April and May is again sporadic but intense and accompanied by strong winds.

Table 1 indicates that 92% of average annual rainfall is received in the five month period from November to March. The lowest rainfall recorded for the five month period was 356 mm in 1951/52. In nine out of 10 years rainfall for the five month period was 629 mm or greater (decile 1). The decile 1 value is the value that is exceeded 90% of the time, and for 10% of the time total rainfall will be less than this value. Decile values are a measure of frequency or probability of the rainfall total being above or below a particular value. The decile values for monthly rainfall in the Katherine wet season, and for groups of these months, are shown in Table 2.

Table 2. Decile values for individual and grouped months for the November to April period at Katherine, 1873–2011

Period	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Nov	1	26	46	58	66	75	86	107	132	169	356
Dec	35	89	110	125	156	178	203	246	289	361	752
Jan	51	106	131	172	193	222	244	290	348	406	914
Feb	10	80	122	152	187	207	244	271	311	356	493
March	0	24	47	90	107	138	171	217	239	337	647
April	0	0	0	0	5	10	22	39	58	100	228
May	0	0	0	0	0	0	0	1	4	19	88
Total	365	703	758	842	921	1006	1059	1119	1202	1362	1923
Nov-Apr	356	649	727	807	875	943	1007	1056	1145	1300	1839
Nov-Mar	356	629	685	764	842	907	974	1017	1112	1271	1821
Dec-Apr	309	552	636	731	768	849	920	959	1050	1218	1813
Dec-Mar	309	535	602	663	745	801	873	927	1025	1195	1795
Jan-Mar	209	367	433	487	557	635	673	726	780	976	1203

Note: D0 = lowest recorded rainfall, D5 = median rainfall, D10 = highest recorded rainfall

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