

Task B.3.2 Precipitation Data

B.3.2 Precipitation (using data set 2.2)

Period of Record, Missing Days

Annual Average Daily

Median, Max, Min of Annual Average

Annual Maximum Daily

Std Deviation and Skewness

Annual Summary of Deviation from Median Annual

Percent Exceedence on Annual Basis

Monthly Summary of Average Daily

Monthly Summary of Max Daily

Percent Exceedence on Monthly Basis

Percent Days with No Precipitation

Precipitation Gaps

Precipitation Intensity and Frequency

USGS Precipitation

Data Set 2.2

Precipitation Data – National Weather Service / National Climatic Data Center

Daily precipitation (rain and frozen) collected as part of the National Weather Service Cooperative Station Network and purchased from NCDC. (These data sets are for distribution only by NCDC.) Five stations with relatively long and complete data sets in Loudoun County and vicinity currently purchased by B&D: Lincoln (1/30-7/06), Mt. Weather (8/48-7/06), Sterling RCS (9/77-7/06), Dulles Airport (3/63-7/06), and The Plains in Fauquier County (4/54-7/06). Data sets have been converted from text files into Excel spreadsheets, missing records identified, and have monthly and annual totals calculated. **{Commercial data - restricted distribution}**

Compilation of all NCDC Precipitation Data

Flags created when value reported is either "9999" or "T". In these cases, field for values (precipitation or snow) is left blank and a value entered in Flag field.

Codes:

T = Trace

A = Accumulated amount since last measurement.

Station_Name:

Name of station assigned by Loudoun County for easy identification and labelling.

COOPID: (COOPERATIVE STATION NUMBER)

This 6-character alphanumeric station identifier is assigned by the National Climatic Data Center. The first two digits refer to a state code (value range is 01-91; reference Table "A"). The next four digits refer to the Cooperative Network Index number (value range is 0001-9999).

DATE_Prcp: Date of precipitation reading. This value was calculated by Loudoun County from year-Month-Date provided by NCDC.

PRCP: Daily precipitation. Precipitation reading for 24 hours ending at time of observation. Trace is less than 0.005 inch. Unit Measurement, Inches to Hundredths.

SNOW: Daily Snowfall (Snowfall includes sleet). Amount is for 24-hour period ending at observation time. Hail was included with snowfall from July 1948 through December 1955. Hail occurring alone was not included with either snowfall or snow depth before and after that period. Trace is less than 0.05 inch. Unit Measurement, Inches to Tenths

SNWD: Snow depth at observation time. (Snow depth is depth of snow on the ground at time of observation. Trace is depth less than 0.5 inch.) Unit Measurement, Whole Inches.

David Ward 8/15/2007

Revised 9/28/07

Processing steps:

- 1 Load .txt files
- 2 Add columns for Prcp, Snow and Snrd flags
- 3 Move all text and 999 (any permutation) into "Flag" fields for all 3 entries
- 4 Expand to identify "Missing" records
- 5 Summarize the "Period or Record"
- 6 Construct aligned composite to develop statistics
- 7 Modify compilation in preparation for Stagraphics in which all "Missing" data is shown as "NA" and all "T" (trace) and "Nulls" are entered as zero.
- 8 Calculate statistical average, mean and deviations for monthly and annual for all stations
- 9 Percent exceedance analysis (Tools>Data Analysis>Rank and Percent) for annual and monthly
- 10 Apply station averaging to fill in data gaps.

Station_Name	COOPID	Start	End	Number of days	Number of records	Number of missing days	Missing periods
Station: Lincoln	444909	01/01/30	07/31/06	27971	27787	184	10/1/50 to 10/31/50, 1/1/94 to 1/31/94, 7/1/94 to 7/31/94, 11/1/96 to 11/30/96, 1/1/05 to 1/31/05, 6/1/06 to 6/30/06
Station: Mt. Weather	445851	08/01/48	07/31/06	21184	21124	60	11/1/03 to 11/30/03, 6/1/06 to 6/30/06
Station: Sterling Rcs	448084	09/01/77	07/31/06	10561	10469	92	1/1/82 to 1/31/82, 5/1/90 to 5/31/90, 6/1/06 to 6/30/06
Station: The Plains	448396	04/01/54	07/31/06	19115	18596	519	5/1/54 to 5/31/54, 1/1/66 to 1/31/66, 12/1/74 to 1/31/75, 5/1/75 to 5/31/75, 12/1/78 to 12/31/78, 2/1/03 to 11/30/03, 6/1/06 to 6/30/06
Station: Dulles	448903	11/01/62	10/31/01	14245	14245	0	None

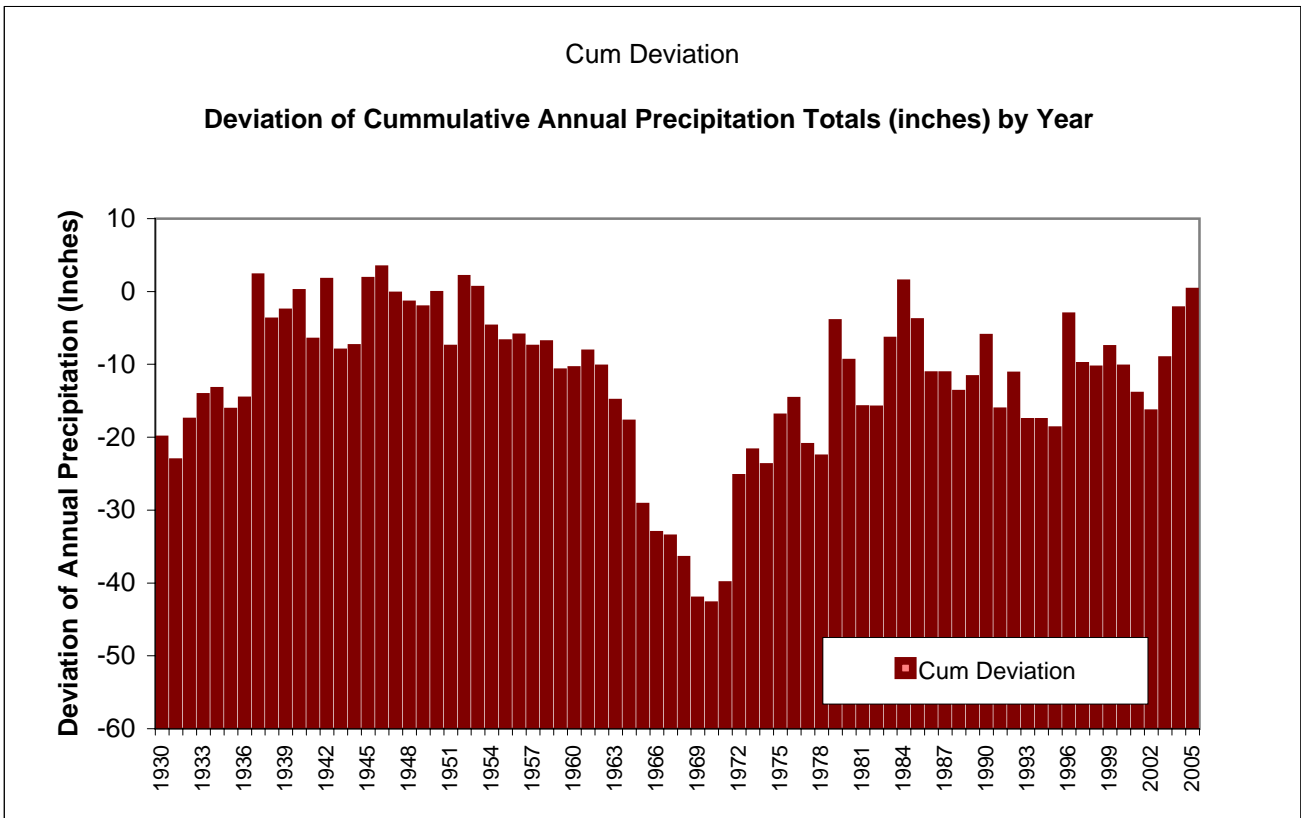
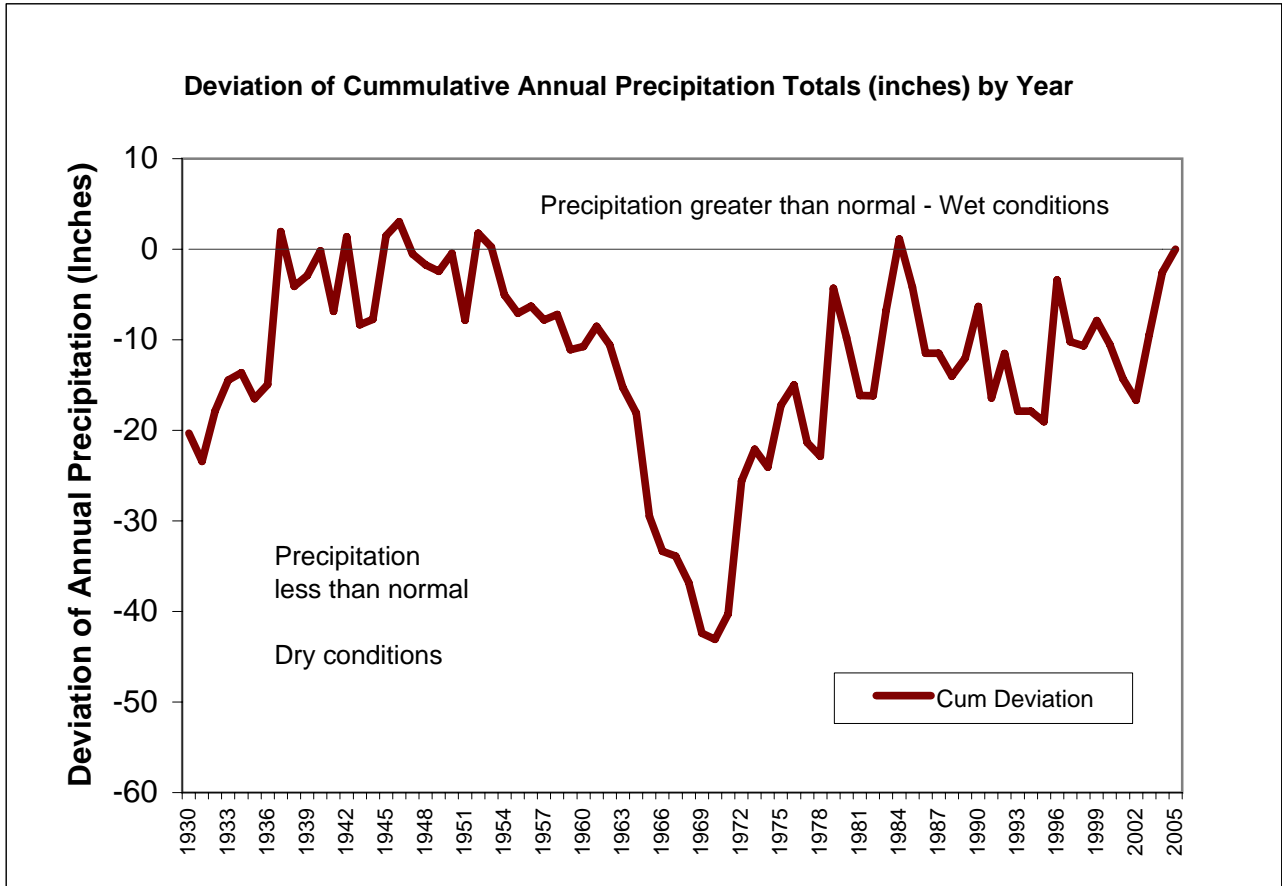
Period of Record

Deviation of Cumulative Annual Precipitation Totals (inches) by Year

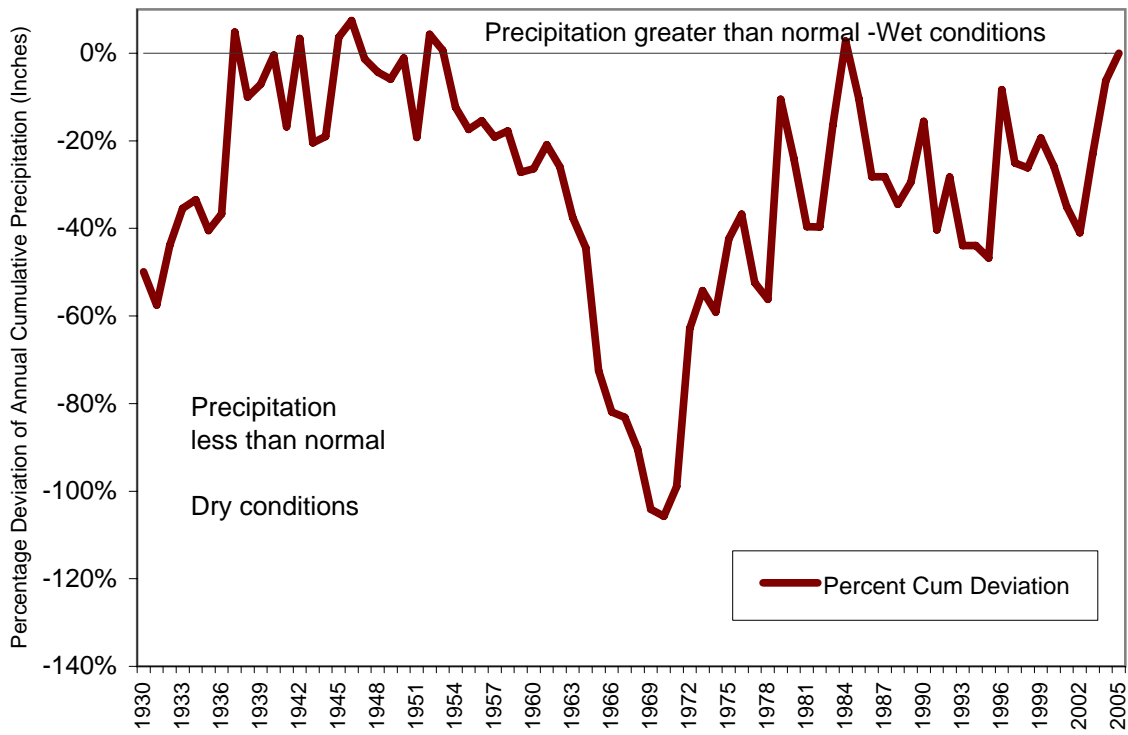
Year	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles	Average	Cum	Norm	Cum Deviation	Percent of Norm Cum Deviation
1930	20.41					20.41	20.41	40.73	-20.32	-49.9%
1931	37.61					37.61	58.02	81.46	-23.44	-57.5%
1932	46.31					46.31	104.33	122.19	-17.86	-43.8%
1933	44.14					44.14	148.47	162.92	-14.45	-35.5%
1934	41.53					41.53	190.00	203.65	-13.65	-33.5%
1935	37.88					37.88	227.88	244.38	-16.50	-40.5%
1936	42.29					42.29	270.17	285.11	-14.94	-36.7%
1937	57.61					57.61	327.78	325.83	1.95	4.8%
1938	34.69					34.69	362.47	366.56	-4.09	-10.1%
1939	41.94					41.94	404.41	407.29	-2.88	-7.1%
1940	43.44					43.44	447.85	448.02	-0.17	-0.4%
1941	34.04					34.04	481.89	488.75	-6.86	-16.8%
1942	48.96					48.96	530.85	529.48	1.37	3.4%
1943	31.01					31.01	561.86	570.21	-8.35	-20.5%
1944	41.34					41.34	603.20	610.94	-7.74	-19.0%
1945	49.95					49.95	653.15	651.67	1.48	3.6%
1946	42.29					42.29	695.44	692.40	3.04	7.5%
1947	37.15					37.15	732.59	733.13	-0.54	-1.3%
1948	52.26	26.78				39.52	772.11	773.86	-1.75	-4.3%
1949	42.86	37.24				40.05	812.16	814.59	-2.43	-6.0%
1950	42.59	42.80				42.70	854.86	855.32	-0.46	-1.1%
1951	36.84	29.88				33.36	888.22	896.05	-7.83	-19.2%
1952	51.93	48.69				50.31	938.53	936.77	1.75	4.3%
1953	43.00	35.47				39.24	977.76	977.50	0.26	0.6%
1954	37.40	43.53		25.36		35.43	1013.19	1018.23	-5.04	-12.4%
1955	43.28	24.82		47.98		38.69	1051.88	1058.96	-7.08	-17.4%
1956	49.05	26.83		48.72		41.53	1093.42	1099.69	-6.28	-15.4%
1957	38.32	41.46		37.79		39.19	1132.61	1140.42	-7.81	-19.2%
1958	41.56	40.42		41.98		41.32	1173.93	1181.15	-7.22	-17.7%
1959	38.39	40.09		32.13		36.87	1210.80	1221.88	-11.08	-27.2%
1960	42.65	39.79		40.74		41.06	1251.86	1262.61	-10.75	-26.4%
1961	40.64	44.33		43.97		42.98	1294.84	1303.34	-8.50	-20.9%
1962	37.38	37.28		41.36		38.67	1333.51	1344.07	-10.56	-25.9%
1963	34.57	38.66		35.88	34.96	36.02	1369.53	1384.80	-15.27	-37.5%
1964	39.96	34.91		40.77	35.97	37.90	1407.43	1425.53	-18.10	-44.4%
1965	31.01	25.31		32.08	28.86	29.32	1436.75	1466.26	-29.51	-72.5%
1966	38.52	32.40		36.52	40.05	36.87	1473.62	1506.99	-33.37	-81.9%
1967	41.41	38.25		42.30	38.93	40.22	1513.84	1547.71	-33.87	-83.2%
1968	40.06	34.64		37.94	38.48	37.78	1551.62	1588.44	-36.82	-90.4%
1969	34.77	34.68		32.92	38.24	35.15	1586.77	1629.17	-42.40	-104.1%
1970	41.32	39.00		41.01	38.94	40.07	1626.84	1669.90	-43.06	-105.7%
1971	46.08	39.87		41.41	46.61	43.49	1670.33	1710.63	-40.30	-98.9%
1972	54.44	50.74		57.53	59.05	55.44	1725.77	1751.36	-25.59	-62.8%
1973	40.12	48.66		46.71	41.49	44.25	1770.02	1792.09	-22.07	-54.2%

Cumulative_Annual

1974	42.89	41.81		32.13	38.12	38.74	1808.76	1832.82	-24.07	-59.1%
1975	44.04	49.12		44.38	52.64	47.55	1856.30	1873.55	-17.25	-42.4%
1976	48.49	43.73		43.62	36.19	43.01	1899.31	1914.28	-14.97	-36.8%
1977	42.16	37.68	16.35	39.73	35.92	34.37	1933.68	1955.01	-21.33	-52.4%
1978	37.57	40.92	40.40	39.37	37.66	39.18	1972.86	1995.74	-22.88	-56.2%
1979	53.85	64.13	60.05	63.08	55.43	59.31	2032.17	2036.47	-4.30	-10.6%
1980	38.45	36.81	34.48	32.77	33.81	35.26	2067.43	2077.20	-9.76	-24.0%
1981	34.73	35.21	32.27	37.45	32.13	34.36	2101.79	2117.93	-16.14	-39.6%
1982	44.90	38.08	37.76	44.15	38.56	40.69	2142.48	2158.65	-16.18	-39.7%
1983	56.55	46.89	48.58	52.73	46.18	50.19	2192.67	2199.38	-6.72	-16.5%
1984	51.38	48.04	46.12	53.22	44.07	48.57	2241.23	2240.11	1.12	2.7%
1985	39.76	36.62	32.52	35.21	32.94	35.41	2276.64	2280.84	-4.20	-10.3%
1986	36.01	33.29	32.07	35.47	30.38	33.44	2310.09	2321.57	-11.49	-28.2%
1987	42.18	37.87	40.92	41.92	40.77	40.73	2350.82	2362.30	-11.48	-28.2%
1988	39.04	37.82	40.38	33.82	39.81	38.17	2388.99	2403.03	-14.04	-34.5%
1989	40.45	45.50	44.23	39.32	44.34	42.77	2431.76	2443.76	-12.00	-29.5%
1990	44.26	49.82	43.11	49.49	45.33	46.40	2478.16	2484.49	-6.33	-15.5%
1991	29.90	26.34	35.19	27.68	34.02	30.63	2508.79	2525.22	-16.43	-40.3%
1992	46.02	45.88	44.91	47.10	44.36	45.65	2554.44	2565.95	-11.51	-28.3%
1993	33.55	30.67	35.65	33.55	38.36	34.36	2588.80	2606.68	-17.88	-43.9%
1994	27.54	44.26	41.75	45.85	44.26	40.73	2629.53	2647.41	-17.88	-43.9%
1995	29.77	44.53	39.24	44.12	40.20	39.57	2669.10	2688.14	-19.03	-46.7%
1996	46.14	59.32	62.17	60.98	53.22	56.37	2725.47	2728.87	-3.40	-8.3%
1997	28.17	31.30	33.74	39.87	36.52	33.92	2759.39	2769.59	-10.21	-25.1%
1998	39.07	43.66	38.10	43.13	37.41	40.27	2799.66	2810.32	-10.66	-26.2%
1999	37.72	47.37	45.04	43.78	43.60	43.50	2843.16	2851.05	-7.89	-19.4%
2000	35.20	39.15	37.16	42.12	36.79	38.08	2881.25	2891.78	-10.54	-25.9%
2001	41.35	34.72	40.52	35.43	32.79	36.96	2918.21	2932.51	-14.30	-35.1%
2002	42.78	36.00	39.03	35.58		38.35	2956.56	2973.24	-16.68	-41.0%
2003	63.51	53.56	67.65	7.26		48.00	3004.55	3013.97	-9.42	-23.1%
2004	45.22	48.58	45.51	51.07		47.60	3052.15	3054.70	-2.55	-6.3%
2005	35.85	42.37	48.88	46.03		43.28	3095.43	3095.43	0.00	0.0%
						Average	40.73			



Percent Deviation of Cumulative Annual Precipitation Totals (inches) by Year



Daily Precipitation Totals (inches) by Year

Year	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles	Average
1930	20.41					20.41
1931	37.61					37.61
1932	46.31					46.31
1933	44.14					44.14
1934	41.53					41.53
1935	37.88					37.88
1936	42.29					42.29
1937	57.61					57.61
1938	34.69					34.69
1939	41.94					41.94
1940	43.44					43.44
1941	34.04					34.04
1942	48.96					48.96
1943	31.01					31.01
1944	41.34					41.34
1945	49.95					49.95
1946	42.29					42.29
1947	37.15					37.15
1948	52.26	64.06				58.16
1949	42.86	37.24				40.05
1950	46.54	42.80				44.67
1951	36.84	32.65				34.75
1952	51.93	48.69				50.31
1953	43.00	35.47				39.24
1954	37.40	43.53		37.94		39.62
1955	43.28	27.12		47.98		39.46
1956	49.05	35.71		48.72		44.49
1957	38.32	41.46		37.79		39.19
1958	41.56	40.42		41.98		41.32
1959	38.39	40.09		32.13		36.87
1960	42.65	39.79		40.74		41.06
1961	40.64	44.33		43.97		42.98
1962	37.38	40.62		41.36		39.79
1963	34.57	38.66		35.88	34.96	36.02
1964	39.96	34.91		40.77	35.97	37.90
1965	31.01	25.31		32.08	28.86	29.32
1966	38.52	35.09		39.91	40.05	38.39
1967	41.41	38.25		42.30	38.93	40.22
1968	40.06	34.64		37.94	38.48	37.78
1969	34.77	34.68		32.92	38.24	35.15
1970	41.32	39.00		41.01	38.94	40.07
1971	46.08	39.87		41.41	46.61	43.49
1972	54.44	50.74		57.53	59.05	55.44
1973	40.12	48.66		46.71	41.49	44.25
1974	42.89	41.81		35.11	38.12	39.48

1975	48.13	49.12		53.46	52.64	50.84
1976	52.66	43.73		43.62	36.19	44.05
1977	42.16	37.68	48.92	39.73	35.92	40.88
1978	37.57	40.92	40.40	43.02	37.66	39.91
1979	53.85	64.13	60.05	63.08	55.43	59.31
1980	38.45	36.81	34.48	32.77	33.81	35.26
1981	34.73	35.21	32.27	37.45	32.13	34.36
1982	44.90	38.08	41.26	44.15	38.56	41.39
1983	56.55	46.89	48.58	52.73	46.18	50.19
1984	51.38	48.04	46.12	53.22	44.07	48.57
1985	39.76	36.62	32.52	35.21	32.94	35.41
1986	36.01	33.29	32.07	35.47	30.38	33.44
1987	42.18	37.87	40.92	41.92	40.77	40.73
1988	39.04	37.82	40.38	33.82	39.81	38.17
1989	40.45	45.50	44.23	39.32	44.34	42.77
1990	44.26	49.82	47.11	49.49	45.33	47.20
1991	29.90	26.34	35.19	27.68	34.02	30.63
1992	46.02	45.88	44.91	47.10	44.36	45.65
1993	37.68	37.95	40.04	37.68	43.08	39.29
1994	36.55	44.26	41.75	45.85	44.26	42.53
1995	35.51	44.53	39.24	44.12	40.20	40.72
1996	55.19	59.32	62.17	60.98	53.22	58.18
1997	30.78	34.10	33.74	39.87	36.52	35.00
1998	39.07	43.66	38.10	43.13	37.41	40.27
1999	37.72	47.37	45.04	43.78	43.60	43.50
2000	35.20	39.15	37.16	42.12	36.79	38.08
2001	41.35	34.72	40.52	35.43	39.37	38.28
2002	42.78	36.00	39.03	38.88		39.17
2003	63.51	58.36	67.65	42.74		58.06
2004	45.22	48.58	45.51	51.07		47.60
2005	39.30	42.37	48.88	46.03		44.14
						41.65

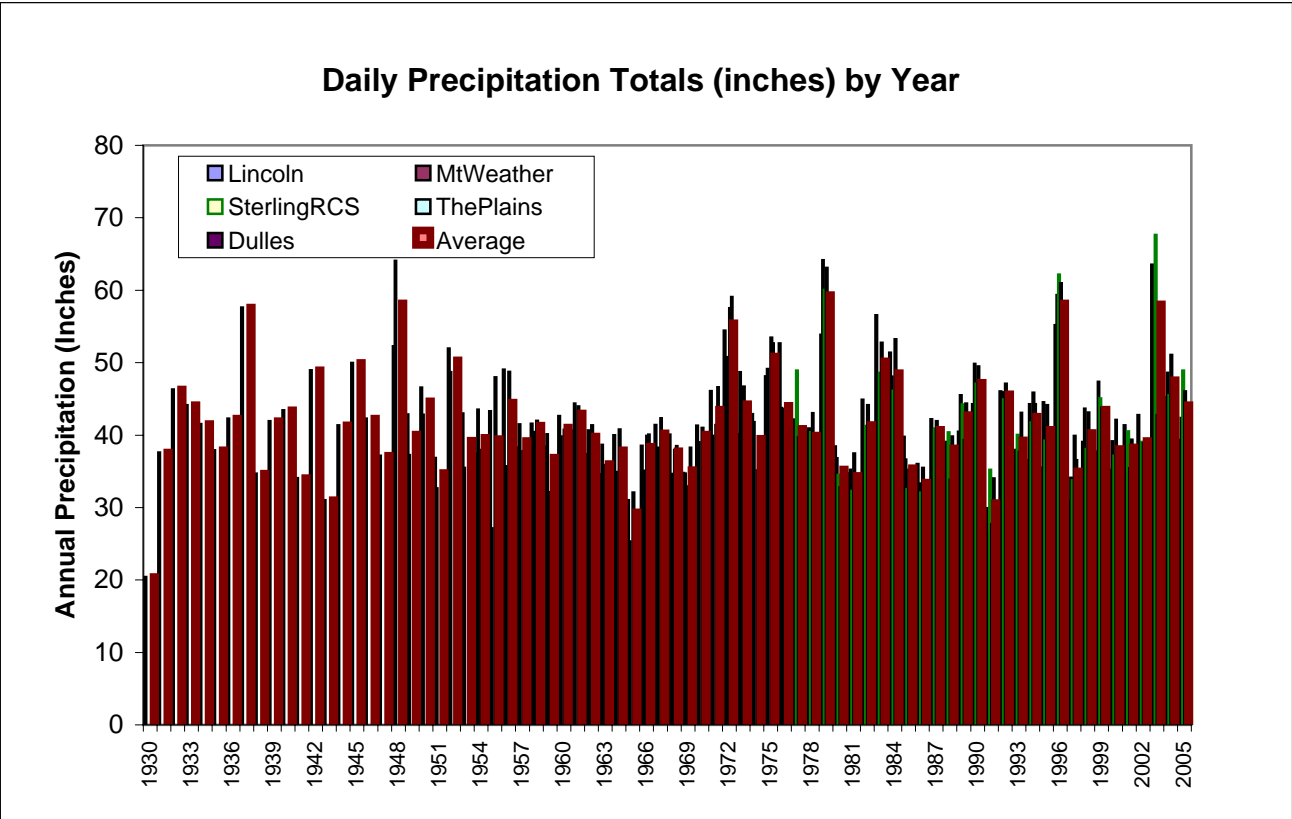
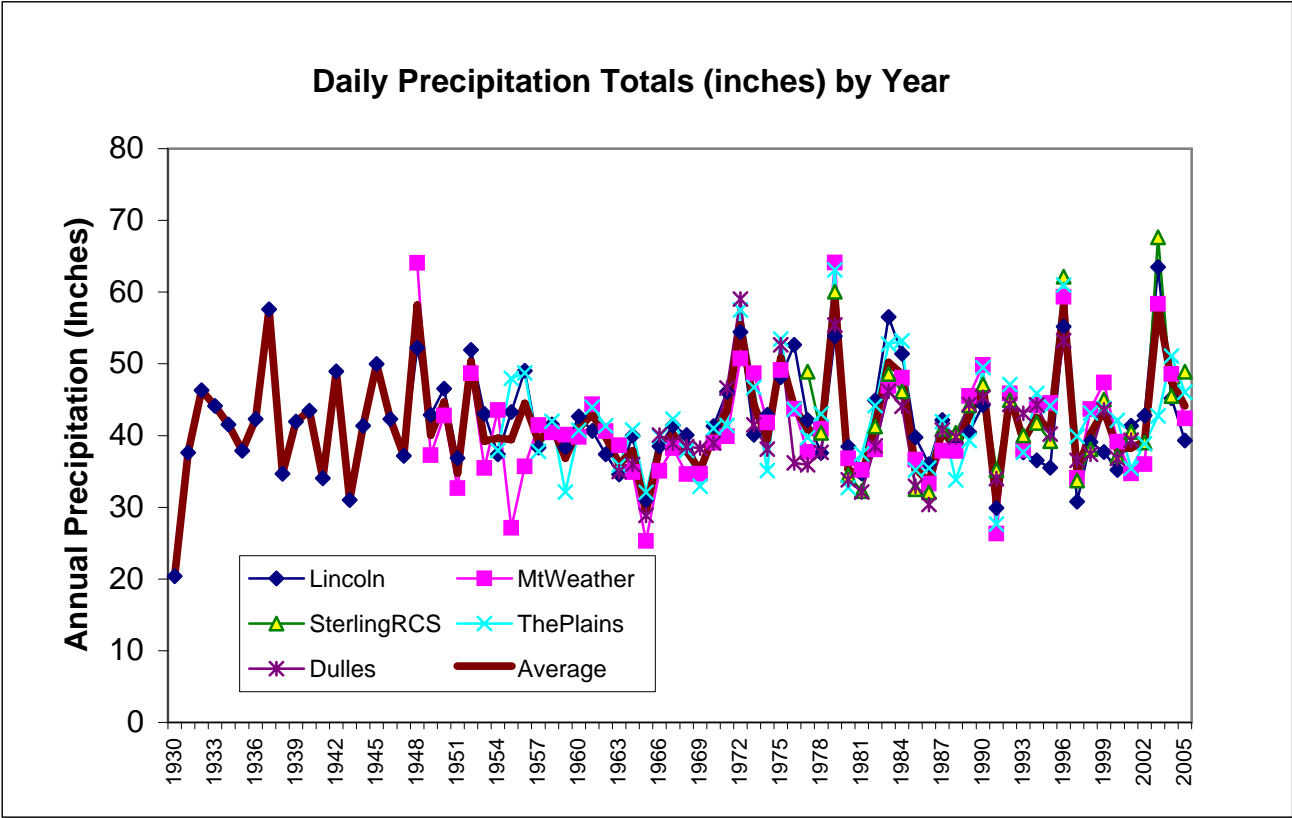
Daily Precipitation Totals (inches) by Year

Entire Period of Record

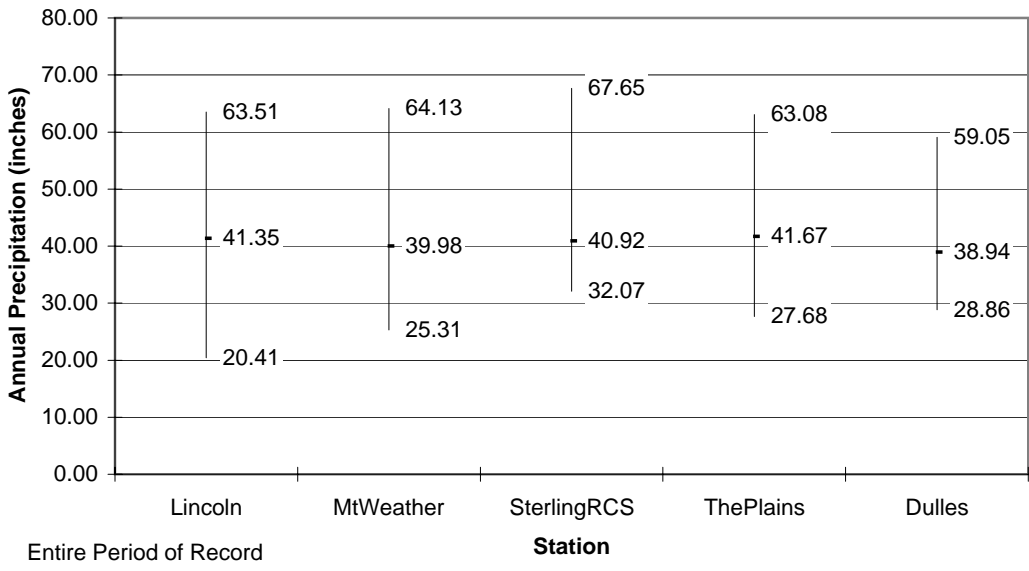
	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles
Median	41.35	39.98	40.92	41.67	38.94
Max	63.51	64.13	67.65	63.08	59.05
Min	20.41	25.31	32.07	27.68	28.86
Std Dev	7.11	7.95	8.66	7.29	6.61
Skewness	0.41	0.84	1.26	0.77	0.92

Selected Common Period 1977-2001

	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles
Median	39.07	39.15	40.52	42.12	39.81
Max	56.55	64.13	62.17	63.08	55.43
Min	29.90	26.34	32.07	27.68	30.38
Std Dev	7.06	8.20	7.65	8.39	6.13
Skewness	0.84	0.95	1.13	0.79	0.65



Annual Precipitation Summary (Median, Min, Max Annual)



Maximum Individual Daily Precipitation (inches) by Year

Year	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles	Maximum
1930	2.00					2.00
1931	1.87					1.87
1932	2.34					2.34
1933	4.08					4.08
1934	2.10					2.10
1935	2.73					2.73
1936	2.03					2.03
1937	3.23					3.23
1938	2.00					2.00
1939	2.05					2.05
1940	1.79					1.79
1941	4.15					4.15
1942	3.18					3.18
1943	2.19					2.19
1944	1.70					1.70
1945	3.50					3.50
1946	2.54					2.54
1947	2.32					2.32
1948	1.79	2.75				2.75
1949	2.78	1.60				2.78
1950	3.26	2.83				3.26
1951	1.85	2.40				2.40
1952	2.36	2.59				2.59
1953	2.61	1.90				2.61
1954	1.55	3.96		3.57		3.96
1955	3.77	2.00		6.04		6.04
1956	2.77	7.90		5.71		7.90
1957	1.90	2.60		3.65		3.65
1958	1.91	1.87		1.88		1.91
1959	3.90	3.43		2.22		3.90
1960	2.47	3.00		2.23		3.00
1961	2.41	2.02		1.64		2.41
1962	2.23	2.13		2.93		2.93
1963	2.72	4.73		4.42	2.42	4.73
1964	4.55	2.54		3.76	1.79	4.55
1965	2.63	1.53		2.32	1.55	2.63
1966	4.22	4.34		3.63	5.52	5.52
1967	2.27	2.00		4.47	3.88	4.47
1968	2.30	1.90		3.03	2.36	3.03
1969	1.46	1.69		1.48	2.93	2.93
1970	2.70	3.06		2.68	2.28	3.06
1971	2.82	2.01		2.91	3.39	3.39
1972	8.26	7.67		10.48	10.67	10.67
1973	2.73	2.60		2.10	2.34	2.73
1974	2.07	4.73		1.60	2.02	4.73

1975	2.98	2.56		3.80	3.21	3.80
1976	4.80	4.12		2.75	2.53	4.80
1977	1.97	1.90	1.95	2.28	2.92	2.92
1978	2.08	2.20	1.67	2.32	1.91	2.32
1979	2.24	5.55	4.00	4.03	4.06	5.55
1980	2.01	2.12	1.80	1.55	2.22	2.22
1981	1.76	1.46	1.77	2.94	1.42	2.94
1982	2.42	1.33	2.00	3.73	2.16	3.73
1983	2.43	1.96	1.96	2.67	2.59	2.67
1984	5.11	3.27	5.79	3.88	4.68	5.79
1985	1.78	2.05	1.98	1.66	1.77	2.05
1986	1.73	1.60	2.03	2.37	2.49	2.49
1987	2.61	1.75	3.62	3.05	3.56	3.62
1988	2.86	2.58	2.44	2.34	3.13	3.13
1989	1.92	3.20	2.90	2.89	2.34	3.20
1990	2.73	2.34	2.87	3.07	2.63	3.07
1991	1.84	1.42	3.69	1.50	4.34	4.34
1992	4.27	4.55	2.90	4.07	2.26	4.55
1993	2.45	3.36	1.80	2.11	2.43	3.36
1994	3.12	2.91	3.21	3.94	3.50	3.94
1995	2.02	3.20	3.07	2.55	2.45	3.20
1996	2.20	2.80	3.20	3.03	3.62	3.62
1997	2.15	2.21	2.30	2.09	3.32	3.32
1998	1.95	3.71	2.26	2.30	2.17	3.71
1999	1.88	3.80	2.93	2.40	3.03	3.80
2000	2.48	3.00	2.52	2.27	2.33	3.00
2001	3.95	5.13	3.70	4.05	2.17	5.13
2002	3.06	2.20	1.95	1.80		3.06
2003	4.40	3.95	2.85	2.06		4.40
2004	4.67	5.50	2.10	5.67		5.67
2005	3.63	3.65	4.72	4.10		4.72

Maximum Individual Daily Precipitation (inches) by Year

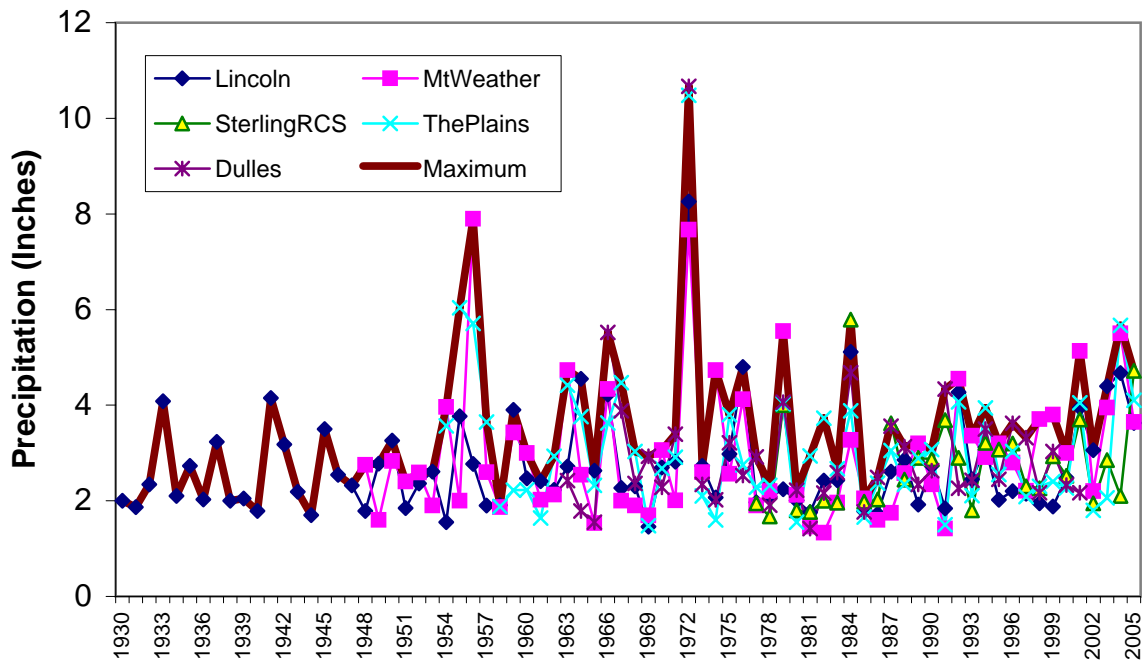
Entire Period of Record

	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles
Median	2.43	2.59	2.52	2.82	2.49
Max	8.26	7.90	5.79	10.48	10.67
Min	1.46	1.33	1.67	1.48	1.42
Std Dev	1.08	1.40	0.97	1.51	1.54
Skewness	2.28	1.64	1.36	2.57	3.53

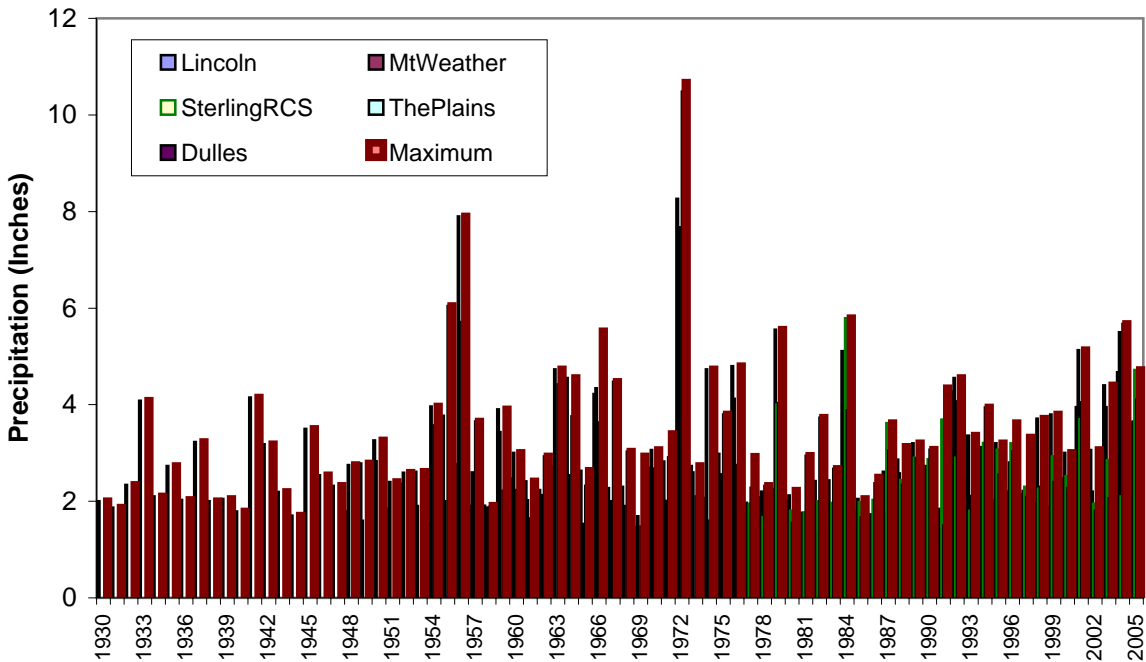
Selected Common Period 1977-2001

	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles
Median	2.20	2.58	2.52	2.55	2.49
Max	5.11	5.55	5.79	4.07	4.68
Min	1.73	1.33	1.67	1.50	1.42
Std Dev	0.84	1.13	0.94	0.80	0.82
Skewness	1.92	0.92	1.46	0.36	0.73

Maximum Individual Daily Precipitation (inches) by Year



Maximum Individual Daily Precipitation (inches) by Year

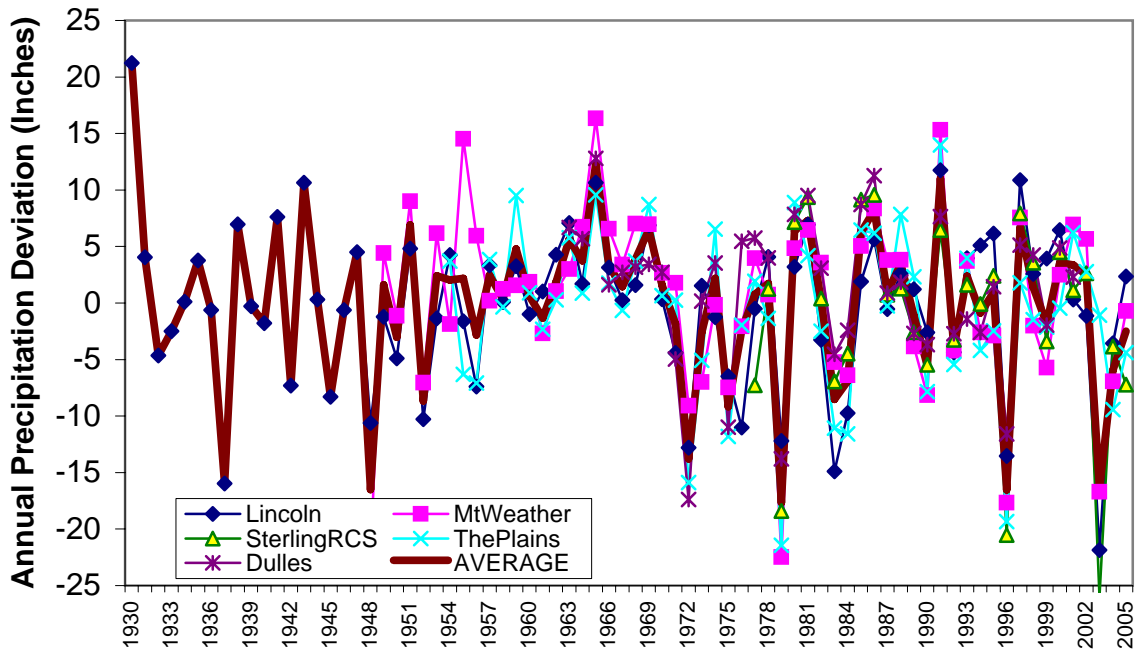


Deviation from Median Annual Precipitation (inches) by Year

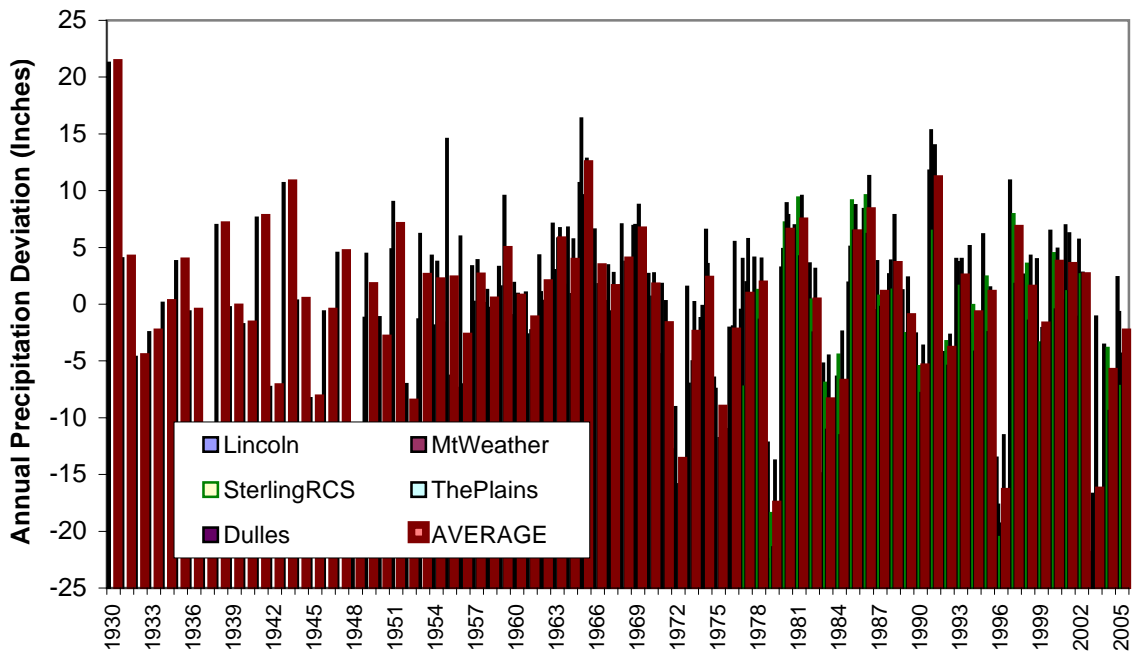
Year	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles	AVERAGE
1930	21.24					21.24
1931	4.04					4.04
1932	-4.66					-4.66
1933	-2.49					-2.49
1934	0.12					0.12
1935	3.77					3.77
1936	-0.64					-0.64
1937	-15.96					-15.96
1938	6.96					6.96
1939	-0.29					-0.29
1940	-1.79					-1.79
1941	7.61					7.61
1942	-7.31					-7.31
1943	10.64					10.64
1944	0.31					0.31
1945	-8.30					-8.30
1946	-0.64					-0.64
1947	4.50					4.50
1948	-10.61	-22.41				-16.51
1949	-1.21	4.41				1.60
1950	-4.89	-1.15				-3.02
1951	4.81	9.00				6.91
1952	-10.28	-7.04				-8.66
1953	-1.35	6.18				2.42
1954	4.25	-1.88		3.72		2.03
1955	-1.63	14.53		-6.33		2.19
1956	-7.40	5.95		-7.07		-2.84
1957	3.33	0.19		3.86		2.46
1958	0.09	1.23		-0.33		0.33
1959	3.26	1.56		9.52		4.78
1960	-1.00	1.86		0.91		0.59
1961	1.01	-2.68		-2.32		-1.33
1962	4.27	1.03		0.29		1.87
1963	7.08	2.99		5.77	6.69	5.64
1964	1.69	6.74		0.88	5.68	3.75
1965	10.64	16.34		9.57	12.79	12.34
1966	3.13	6.56		1.74	1.60	3.26
1967	0.24	3.40		-0.65	2.72	1.43
1968	1.59	7.01		3.71	3.17	3.87
1969	6.88	6.97		8.73	3.41	6.50
1970	0.33	2.65		0.64	2.71	1.59
1971	-4.43	1.78		0.24	-4.96	-1.84
1972	-12.79	-9.09		-15.88	-17.40	-13.79
1973	1.53	-7.01		-5.06	0.16	-2.59
1974	-1.24	-0.16		6.54	3.53	2.17

1975	-6.47	-7.47		-11.81	-10.99	-9.18
1976	-11.01	-2.08		-1.97	5.46	-2.40
1977	-0.51	3.97	-7.26	1.92	5.73	0.77
1978	4.08	0.73	1.25	-1.37	3.99	1.74
1979	-12.20	-22.48	-18.40	-21.43	-13.78	-17.65
1980	3.20	4.84	7.17	8.88	7.84	6.39
1981	6.92	6.44	9.38	4.20	9.52	7.30
1982	-3.25	3.57	0.39	-2.50	3.09	0.26
1983	-14.90	-5.24	-6.93	-11.08	-4.53	-8.53
1984	-9.73	-6.39	-4.47	-11.57	-2.42	-6.91
1985	1.89	5.03	9.13	6.44	8.71	6.24
1986	5.64	8.36	9.58	6.18	11.27	8.21
1987	-0.53	3.78	0.73	-0.27	0.88	0.92
1988	2.61	3.83	1.27	7.83	1.84	3.48
1989	1.20	-3.85	-2.58	2.33	-2.69	-1.11
1990	-2.61	-8.17	-5.46	-7.84	-3.68	-5.55
1991	11.75	15.31	6.46	13.97	7.63	11.03
1992	-4.37	-4.23	-3.26	-5.45	-2.71	-4.00
1993	3.97	3.71	1.62	3.97	-1.43	2.37
1994	5.10	-2.61	-0.10	-4.20	-2.61	-0.88
1995	6.14	-2.88	2.41	-2.47	1.45	0.93
1996	-13.53	-17.67	-20.52	-19.33	-11.57	-16.52
1997	10.87	7.55	7.91	1.78	5.13	6.65
1998	2.58	-2.01	3.55	-1.48	4.24	1.38
1999	3.93	-5.72	-3.39	-2.13	-1.95	-1.85
2000	6.45	2.50	4.49	-0.47	4.86	3.57
2001	0.30	6.93	1.13	6.22	2.28	3.38
2002	-1.13	5.65	2.62	2.77		2.48
2003	-21.86	-16.70	-26.00	-1.09		-16.41
2004	-3.57	-6.93	-3.86	-9.42		-5.94
2005	2.36	-0.72	-7.23	-4.38		-2.49

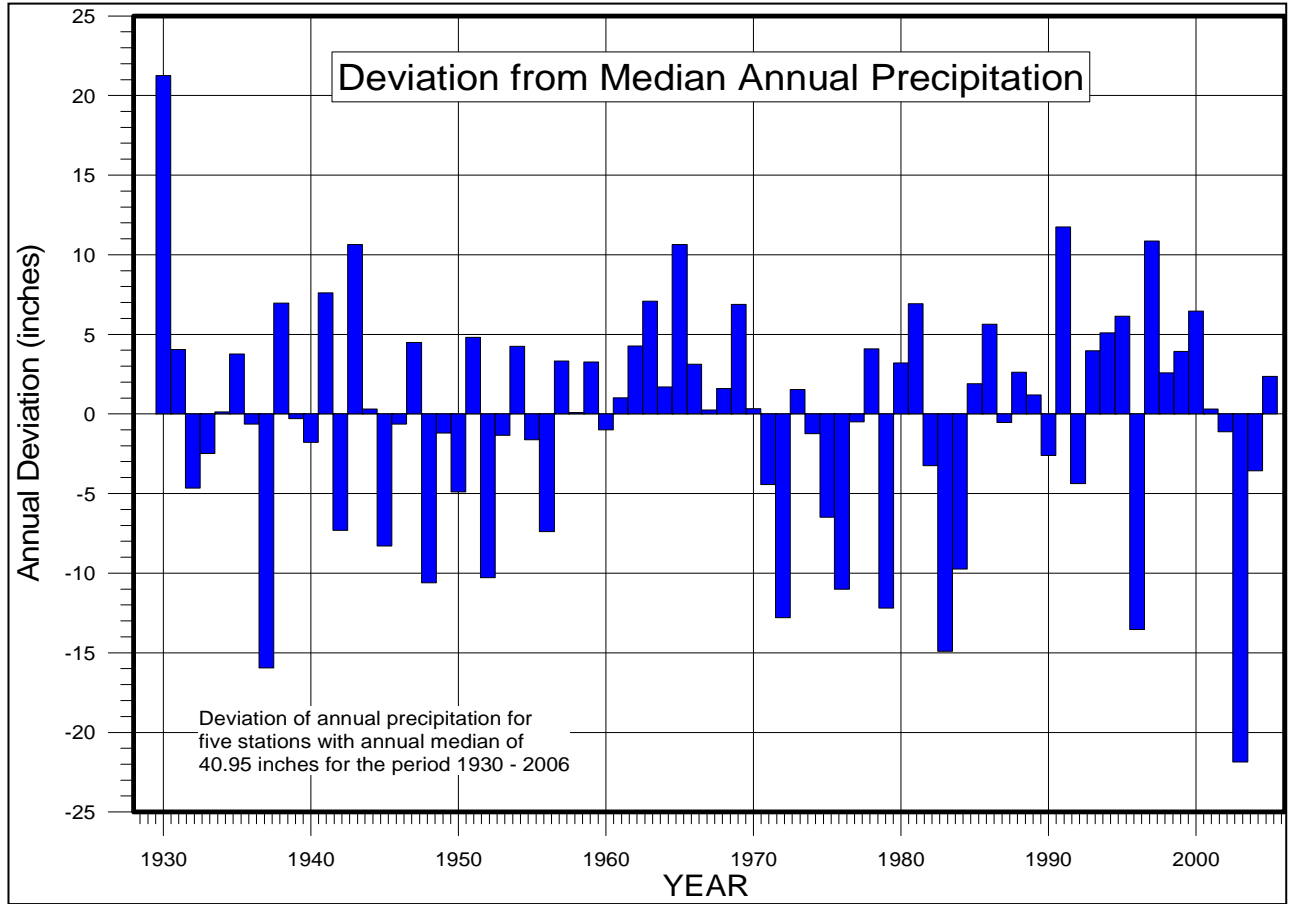
Deviation from Median Annual Precipitation (inches) by Year



Deviation from Median Annual Precipitation (inches) by Year



Below bar chart is originally in Grapher

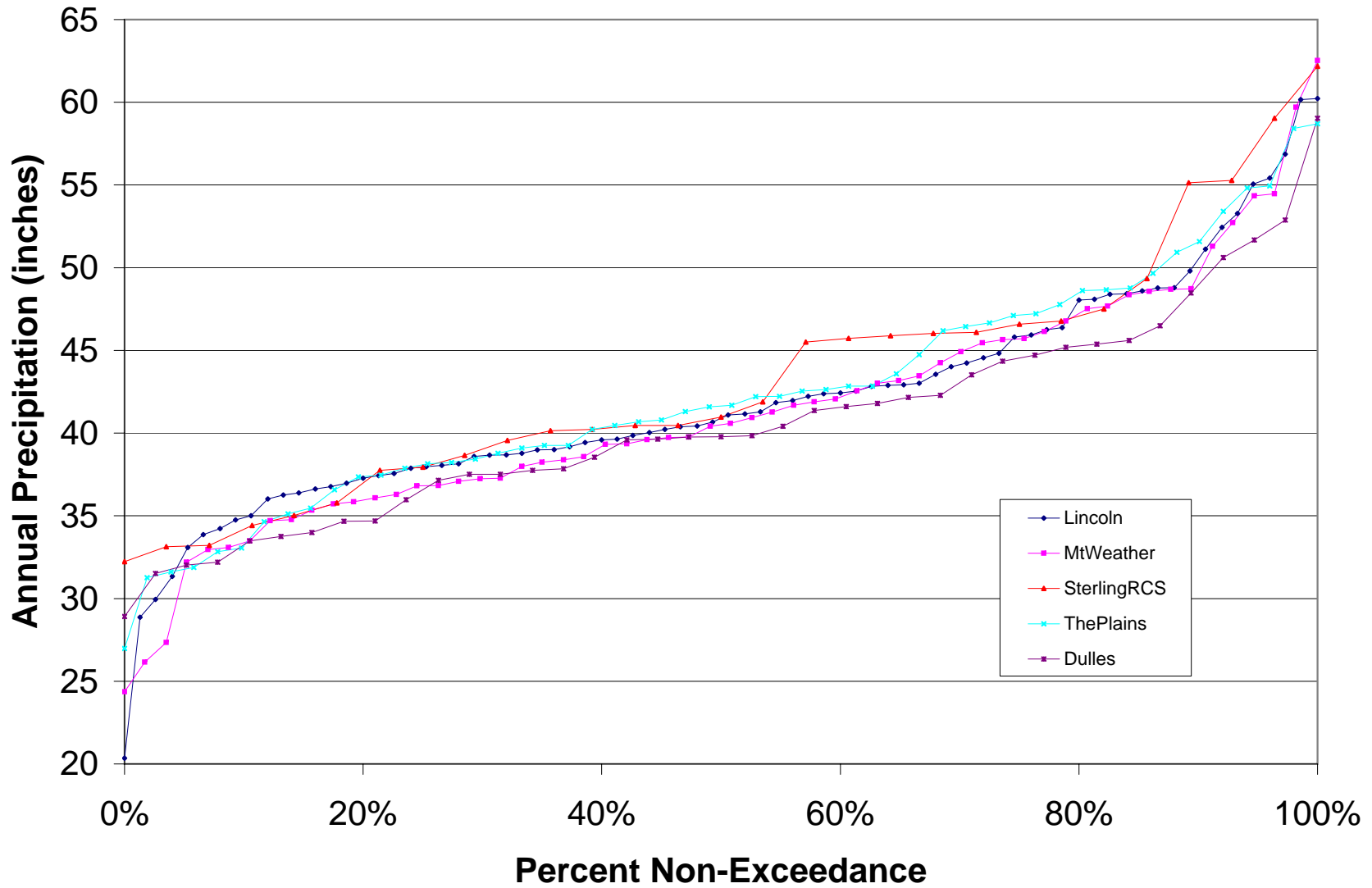


Lincoln				MtWeather				SterlingRCS				ThePlains				Dulles			
Point	Column1	Rank	Percent	Point	Column1	Rank	Percent	Point	Column1	Rank	Percent	Point	Column1	Rank	Percent	Point	Column1	Rank	Percent
67	60.22	1	100.00%	1	62.53	1	100.00%	27	62.18	1	100.00%	19	58.71	1	100.00%	10	59.04	1	100.00%
74	60.16	2	98.60%	32	59.70	2	98.20%	20	59.04	2	96.40%	26	58.42	2	98.00%	13	52.89	2	97.30%
8	56.86	3	97.30%	49	54.47	3	96.40%	1	55.28	3	92.80%	22	54.95	3	96.00%	17	51.68	3	94.70%
43	55.42	4	96.00%	56	54.35	4	94.70%	3	55.13	4	89.20%	43	54.82	4	94.10%	34	50.61	4	92.10%
54	55.05	5	94.60%	25	52.72	5	92.90%	29	49.34	5	85.70%	31	53.40	5	92.10%	31	48.47	5	89.40%
23	53.28	6	93.30%	28	51.29	6	91.20%	7	47.51	6	82.10%	30	51.59	6	90.10%	9	46.49	6	86.80%
55	52.44	7	92.00%	57	48.72	7	89.40%	26	46.77	7	78.50%	51	50.93	7	88.20%	30	45.60	7	84.20%
19	51.12	8	90.60%	26	48.69	8	87.70%	8	46.58	8	75.00%	2	49.65	8	86.20%	22	45.39	8	81.50%
16	49.80	9	89.30%	43	48.57	9	85.90%	28	46.09	9	71.40%	42	48.77	9	84.30%	21	45.19	9	78.90%
50	48.80	10	88.00%	5	48.36	10	84.20%	13	46.02	10	67.80%	44	48.67	10	82.30%	27	44.72	10	76.30%
46	48.78	11	86.60%	37	47.68	11	82.40%	16	45.88	11	64.20%	37	48.61	11	80.30%	28	44.35	11	73.60%
47	48.60	12	85.30%	42	47.52	12	80.70%	17	45.72	12	60.70%	3	47.77	12	78.40%	32	43.53	12	71.00%
27	48.42	13	84.00%	48	46.78	13	78.90%	14	45.50	13	57.10%	20	47.22	13	76.40%	11	42.28	13	68.40%
13	48.40	14	82.60%	36	46.13	14	77.10%	18	41.89	14	53.50%	39	47.11	14	74.50%	35	42.15	14	65.70%
48	48.10	15	81.30%	52	45.70	15	75.40%	23	40.97	15	50.00%	52	46.66	15	72.50%	39	41.79	15	63.10%
73	48.04	16	80.00%	45	45.65	16	73.60%	11	40.47	16	46.40%	24	46.44	16	70.50%	33	41.61	16	60.50%
21	46.37	17	78.60%	46	45.46	17	71.90%	19	40.47	17	42.80%	40	46.19	17	68.60%	15	41.37	17	57.80%
75	46.25	18	77.30%	50	44.92	18	70.10%	21	40.23	18	39.20%	41	44.74	18	66.60%	1	40.41	18	55.20%
63	45.93	19	76.00%	58	44.26	19	68.40%	2	40.15	19	35.70%	14	43.59	19	64.70%	37	39.84	19	52.60%
42	45.80	20	74.60%	14	43.46	20	66.60%	12	39.55	20	32.10%	8	42.84	20	62.70%	8	39.78	20	50.00%
26	44.82	21	73.30%	47	43.17	21	64.90%	6	38.65	21	28.50%	49	42.84	21	60.70%	25	39.77	21	47.30%
61	44.56	22	72.00%	30	43.01	22	63.10%	25	37.95	22	25.00%	29	42.63	22	58.80%	5	39.64	22	44.70%
3	44.23	23	70.60%	10	42.56	23	61.40%	24	37.75	23	21.40%	17	42.53	23	56.80%	26	39.59	23	42.10%
4	44.02	24	69.30%	7	42.06	24	59.60%	5	35.78	24	17.80%	25	42.22	24	54.90%	6	38.54	24	39.40%
11	43.55	25	68.00%	3	41.89	25	57.80%	22	35.01	25	14.20%	47	42.20	25	52.90%	4	37.85	25	36.80%
45	43.02	26	66.60%	27	41.69	26	56.10%	15	34.43	26	10.70%	5	41.68	26	50.90%	12	37.75	26	34.20%
64	42.93	27	65.30%	31	41.27	27	54.30%	4	33.21	27	7.10%	7	41.59	27	49.00%	20	37.52	27	31.50%
31	42.89	28	64.00%	16	40.94	28	52.60%	10	33.14	28	3.50%	36	41.31	28	47.00%	16	37.51	28	28.90%
41	42.82	29	62.60%	11	40.59	29	50.80%	9	32.23	29	0.00%	34	40.79	29	45.00%	38	37.15	29	26.30%
38	42.53	30	61.30%	13	40.42	30	49.10%					9	40.69	30	43.10%	7	35.97	30	23.60%
53	42.42	31	60.00%	23	39.76	31	47.30%					18	40.47	31	41.10%	36	34.69	31	21.00%
17	42.38	32	58.60%	15	39.74	32	45.60%					28	40.22	32	39.20%	19	34.67	32	18.40%
20	42.22	33	57.30%	29	39.60	33	43.80%					10	39.26	33	37.20%	14	33.99	33	15.70%
5	41.97	34	56.00%	12	39.35	34	42.10%					11	39.26	34	35.20%	29	33.76	34	13.10%
10	41.85	35	54.60%	55	39.31	35	40.30%					46	39.10	35	33.30%	2	33.49	35	10.50%
24	41.29	36	53.30%	24	38.57	36	38.50%					4	38.78	36	31.30%	24	32.20	36	7.80%
58	41.16	37	52.00%	53	38.38	37	36.80%					45	38.42	37	29.40%	18	32.03	37	5.20%
7	41.09	38	50.60%	20	38.25	38	35.00%					23	38.22	38	27.40%	23	31.51	38	2.60%
60	40.67	39	49.30%	51	37.99	39	33.30%					13	38.14	39	25.40%	3	28.92	39	0.00%
29	40.43	40	48.00%	40	37.27	40	31.50%					16	37.87	40	23.50%				
32	40.38	41	46.60%	35	37.24	41	29.80%					50	37.46	41	21.50%				
44	40.22	42	45.30%	41	37.09	42	28.00%					15	37.36	42	19.60%				
76	40.03	43	44.00%	38	36.83	43	26.30%					33	36.58	43	17.60%				
15	39.86	44	42.60%	34	36.82	44	24.50%					1	35.46	44	15.60%				
72	39.63	45	41.30%	2	36.29	45	22.80%					32	35.11	45	13.70%				
2	39.58	46	40.00%	9	36.08	46	21.00%					21	34.64	46	11.70%				
56	39.43	47	38.60%	33	35.85	47	19.20%					35	33.05	47	9.80%				

6	39.17	48	37.30%	21	35.72	48	17.50%
59	39.00	49	36.00%	4	35.35	49	15.70%
30	38.98	50	34.60%	6	34.77	50	14.00%
28	38.77	51	33.30%	17	34.71	51	12.20%
35	38.69	52	32.00%	39	33.48	52	10.50%
39	38.67	53	30.60%	19	33.09	53	8.70%
18	38.59	54	29.30%	22	32.97	54	7.00%
65	38.15	55	28.00%	54	32.19	55	5.20%
52	38.05	56	26.60%	8	27.34	56	3.50%
49	37.97	57	25.30%	44	26.16	57	1.70%
68	37.88	58	24.00%	18	24.36	58	0.00%
22	37.56	59	22.60%				
37	37.44	60	21.30%				
51	37.28	61	20.00%				
40	36.97	62	18.60%				
34	36.77	63	17.30%				
33	36.62	64	16.00%				
57	36.38	65	14.60%				
25	36.25	66	13.30%				
69	36.02	67	12.00%				
71	35.00	68	10.60%				
9	34.74	69	9.30%				
12	34.23	70	8.00%				
70	33.87	71	6.60%				
14	33.08	72	5.30%				
36	31.33	73	4.00%				
66	29.95	74	2.60%				
62	28.86	75	1.30%				
1	20.35	76	0.00%				

48	32.84	48	7.80%
6	31.87	49	5.80%
27	31.61	50	3.90%
12	31.26	51	1.90%
38	26.98	52	0.00%

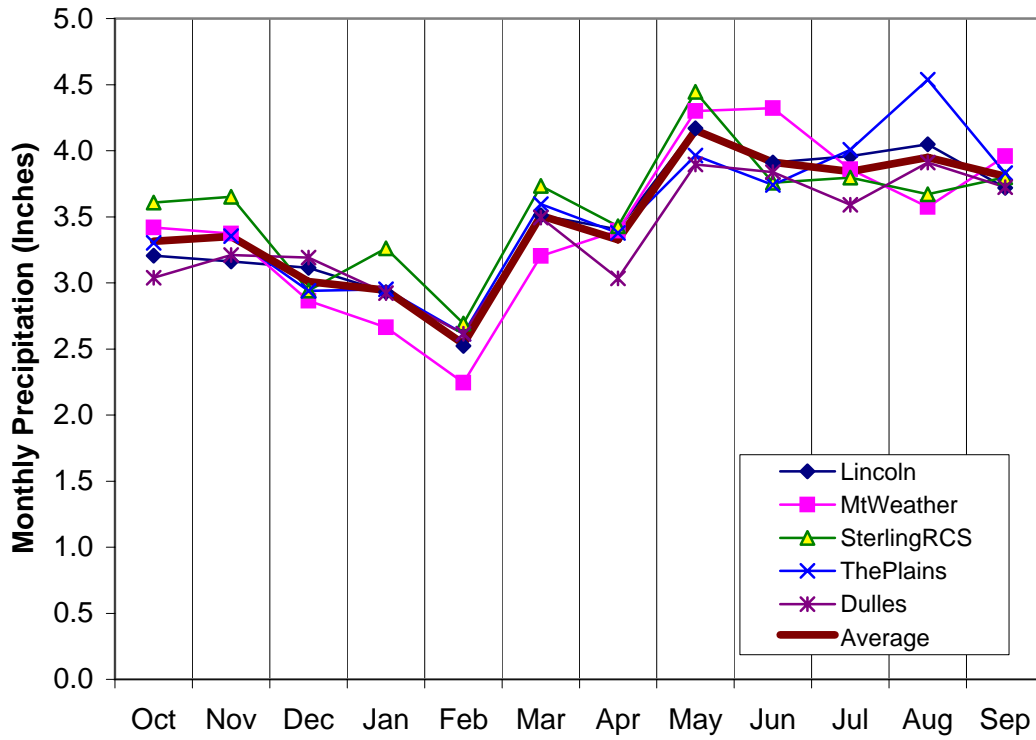
Precipitation Exceedance using Annual Summary by Station



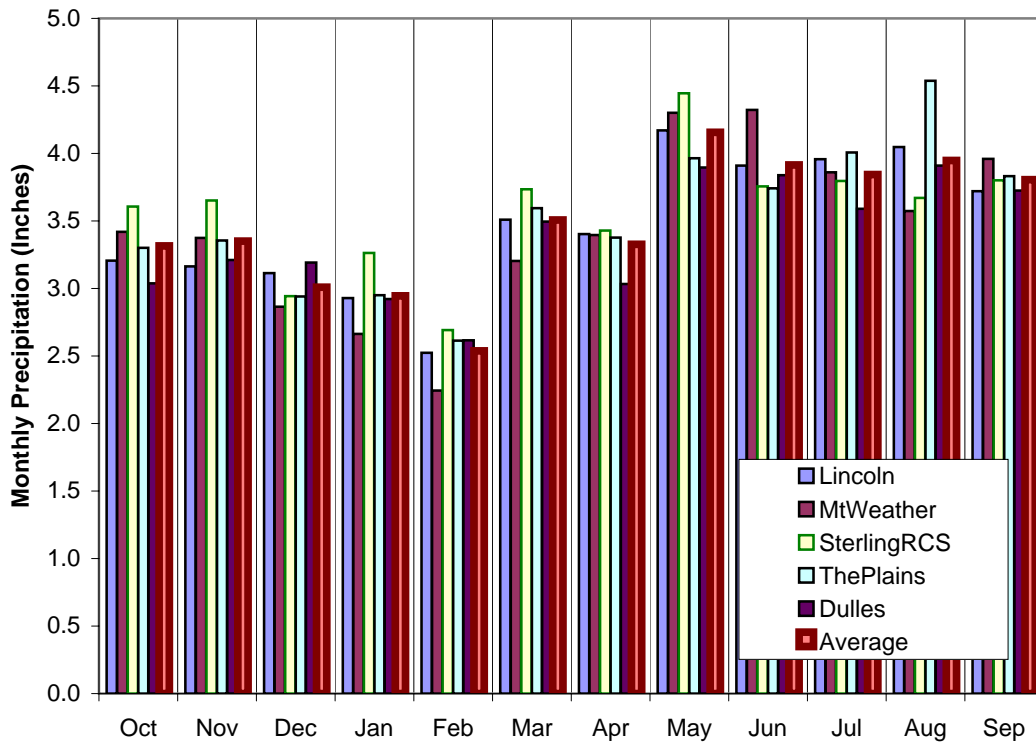
Average Monthly Total Precipitation (inches)

Month	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles	Average
Oct	3.21	3.42	3.61	3.30	3.04	3.31
Nov	3.16	3.37	3.65	3.35	3.21	3.35
Dec	3.11	2.87	2.94	2.94	3.19	3.01
Jan	2.93	2.66	3.26	2.95	2.92	2.95
Feb	2.52	2.24	2.69	2.61	2.62	2.54
Mar	3.51	3.20	3.73	3.60	3.49	3.51
Apr	3.40	3.40	3.43	3.38	3.03	3.33
May	4.17	4.30	4.45	3.96	3.90	4.16
Jun	3.91	4.32	3.76	3.74	3.84	3.91
Jul	3.96	3.86	3.80	4.01	3.59	3.84
Aug	4.05	3.57	3.67	4.54	3.91	3.95
Sep	3.72	3.96	3.80	3.83	3.72	3.81
Total	41.65	41.18	42.79	42.22	40.47	41.66

Average Monthly Total Precipitation (inches)



Average Monthly Total Precipitation (inches)



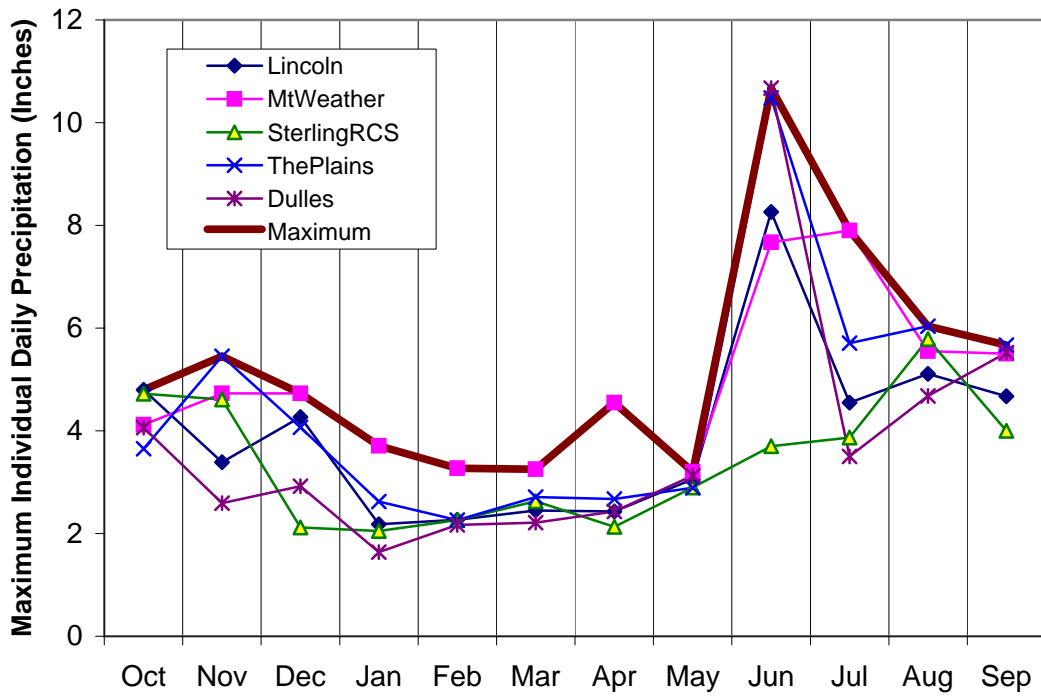
Monthly Summary of Maximum Individual Daily Precipitation (inches)

Month	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles	Maximum
Oct	4.80	4.12	4.72	3.65	4.06	4.80
Nov	3.39	4.73	4.61	5.45	2.59	5.45
Dec	4.27	4.73	2.12	4.07	2.92	4.73
Jan	2.18	3.71	2.05	2.62	1.64	3.71
Feb	2.27	3.27	2.26	2.26	2.17	3.27
Mar	2.45	3.25	2.63	2.71	2.21	3.25
Apr	2.43	4.55	2.13	2.67	2.43	4.55
May	3.06	3.20	2.90	2.89	3.13	3.20
Jun	8.26	7.67	3.70	10.48	10.67	10.67
Jul	4.55	7.90	3.87	5.71	3.50	7.90
Aug	5.11	5.55	5.79	6.04	4.68	6.04
Sep	4.67	5.50	4.00	5.67	5.52	5.67
Max	8.26	7.90	5.79	10.48	10.67	10.67

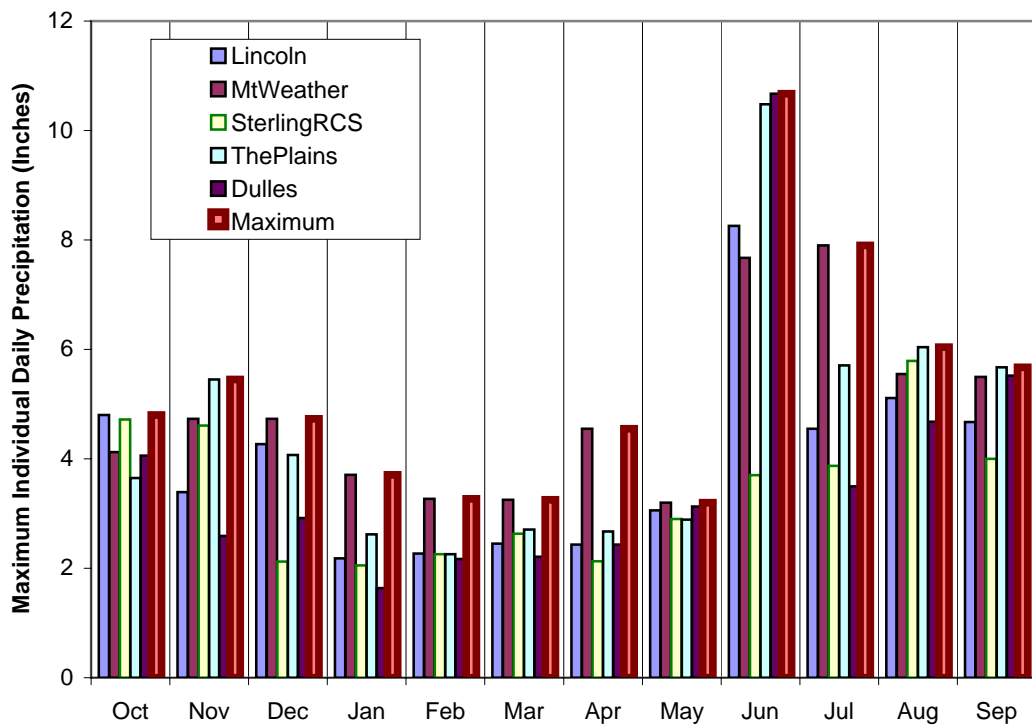
Note:

This is not a good measure of many of the storm events that span several days.

Monthly Summary of Maximum Individual Daily Precipitation (inches)

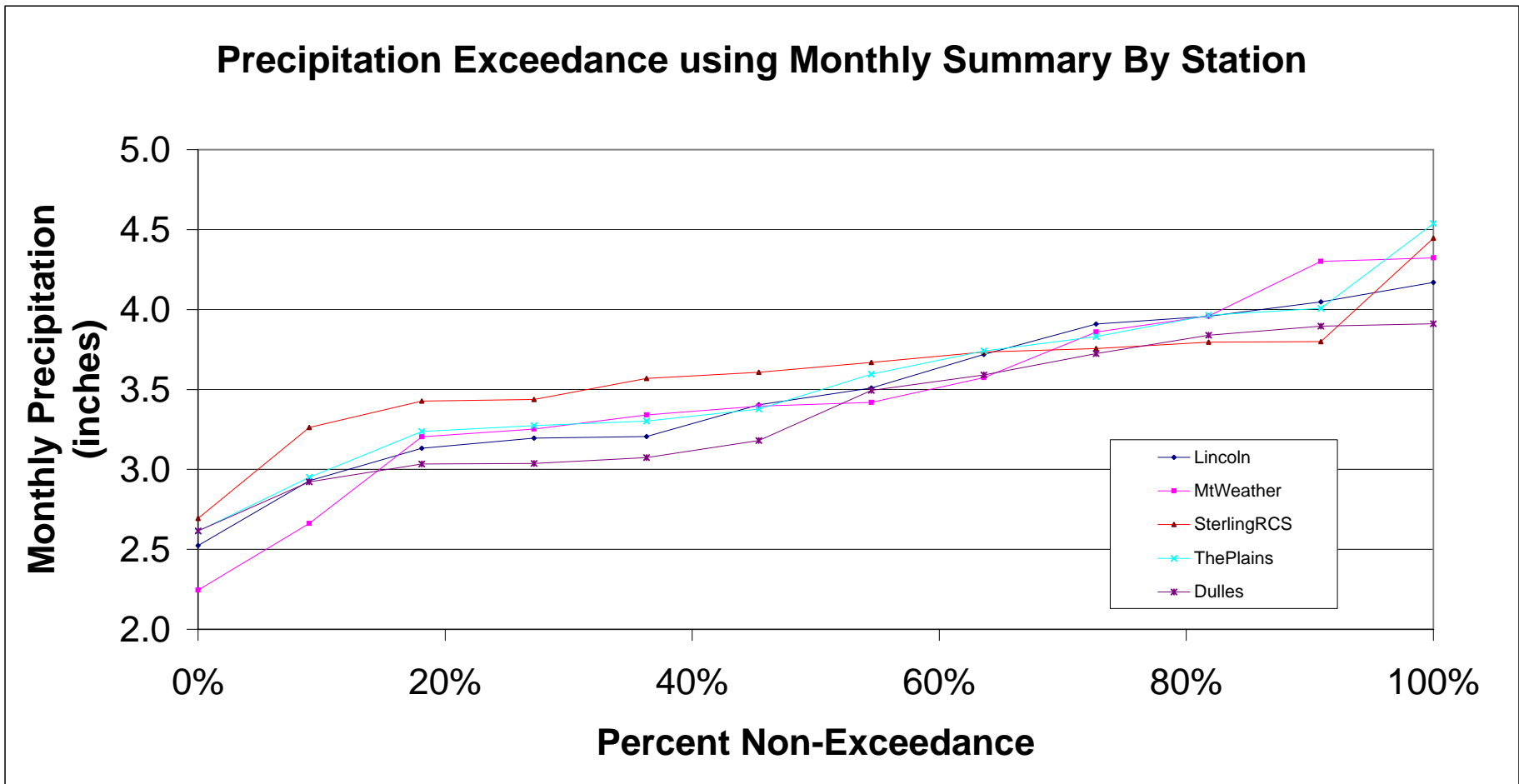


Monthly Summary of Maximum Individual Daily Precipitation (inches)



Precipitation Exceedance on Monthly Basis By Station

Lincoln			MtWeather				SterlingRCS				ThePlains			Dulles					
Point	Lincoln	Rank	Percent	Point	MtWeather	Rank	Percent	Point	SterlingRCS	Rank	Percent	Point	ThePlains	Rank	Percent	Point	Dulles	Rank	Percent
	4.17	1	100.00%	9	4.32	1	100.00%	8	4.45	1	100.00%	11	4.54	1	100.00%	11	3.91	1	100.00%
	4.05	2	90.90%	8	4.30	2	90.90%	12	3.80	2	90.90%	10	4.01	2	90.90%	8	3.90	2	90.90%
	3.96	3	81.80%	12	3.96	3	81.80%	10	3.80	3	81.80%	8	3.96	3	81.80%	9	3.84	3	81.80%
	3.91	4	72.70%	10	3.86	4	72.70%	9	3.76	4	72.70%	12	3.83	4	72.70%	12	3.72	4	72.70%
	3.72	5	63.60%	11	3.57	5	63.60%	6	3.73	5	63.60%	9	3.74	5	63.60%	10	3.59	5	63.60%
	3.51	6	54.50%	1	3.42	6	54.50%	11	3.67	6	54.50%	6	3.60	6	54.50%	6	3.49	6	54.50%
	3.40	7	45.40%	7	3.40	7	45.40%	1	3.61	7	45.40%	7	3.38	7	45.40%	3	3.18	7	45.40%
1	3.21	8	36.30%	2	3.34	8	36.30%	2	3.57	8	36.30%	1	3.30	8	36.30%	2	3.07	8	36.30%
	3.20	9	27.20%	3	3.25	9	27.20%	3	3.44	9	27.20%	2	3.27	9	27.20%	1	3.04	9	27.20%
	3.13	10	18.10%	6	3.20	10	18.10%	7	3.43	10	18.10%	3	3.24	10	18.10%	7	3.03	10	18.10%
	2.93	11	9.00%	4	2.66	11	9.00%	4	3.26	11	9.00%	4	2.95	11	9.00%	4	2.92	11	9.00%
	2.52	12	0.00%	5	2.24	12	0.00%	5	2.69	12	0.00%	5	2.61	12	0.00%	5	2.62	12	0.00%



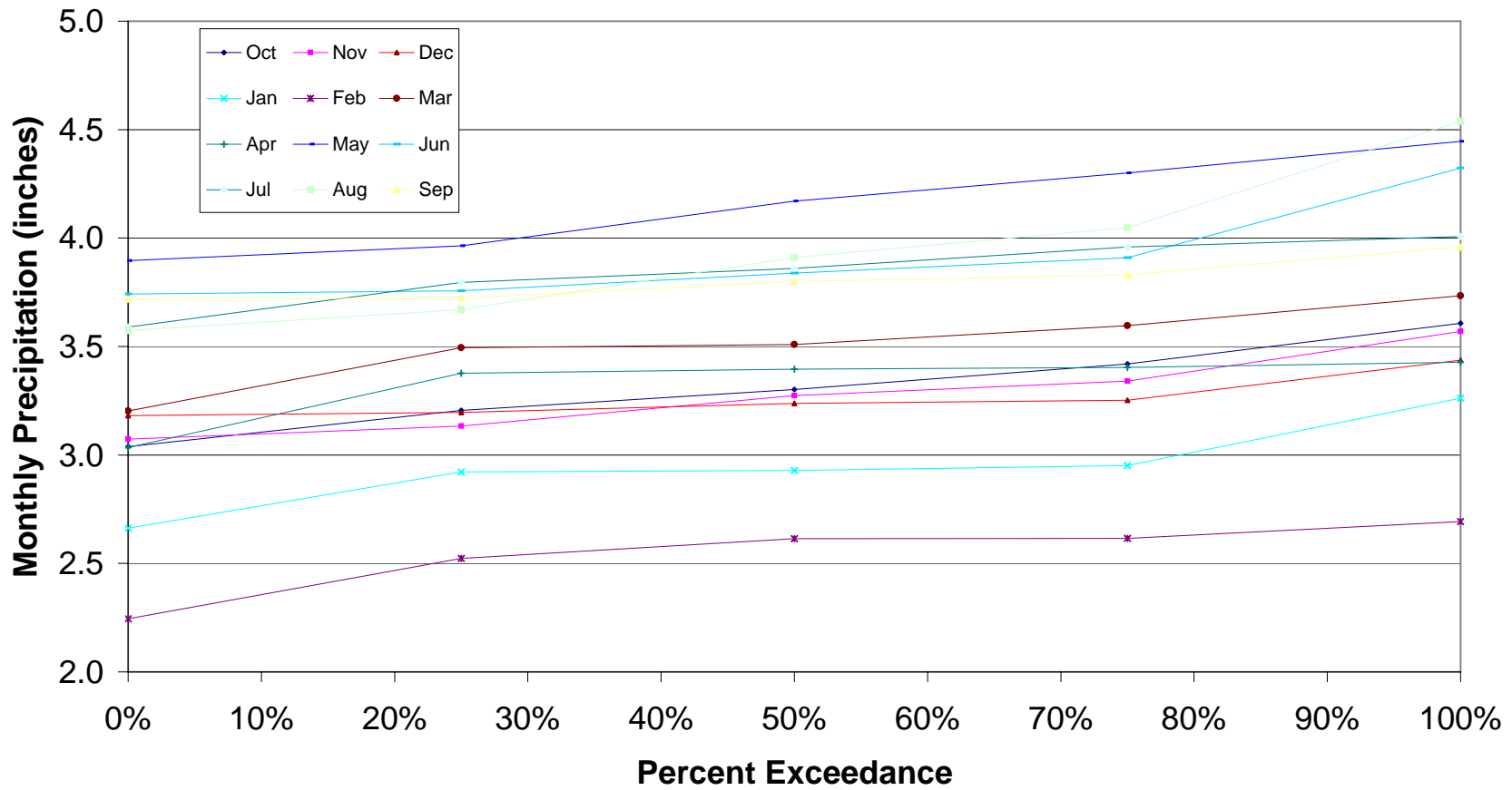
Precipitation Exceedance on Monthly Basis By Month

Point	Oct	Rank	Percent	Point	Nov	Rank	Percent	Point	Dec	Rank	Percent	Point	Jan	Rank	Percent
3	3.61	1	100.00%	3	3.57	1	100.00%	3	3.44	1	100.00%	3	3.26	1	100.00%
2	3.42	2	75.00%	2	3.34	2	75.00%	2	3.25	2	75.00%	4	2.95	2	75.00%
4	3.30	3	50.00%	4	3.27	3	50.00%	4	3.24	3	50.00%	1	2.93	3	50.00%
1	3.21	4	25.00%	1	3.13	4	25.00%	1	3.20	4	25.00%	5	2.92	4	25.00%
5	3.04	5	0.00%	5	3.07	5	0.00%	5	3.18	5	0.00%	2	2.66	5	0.00%

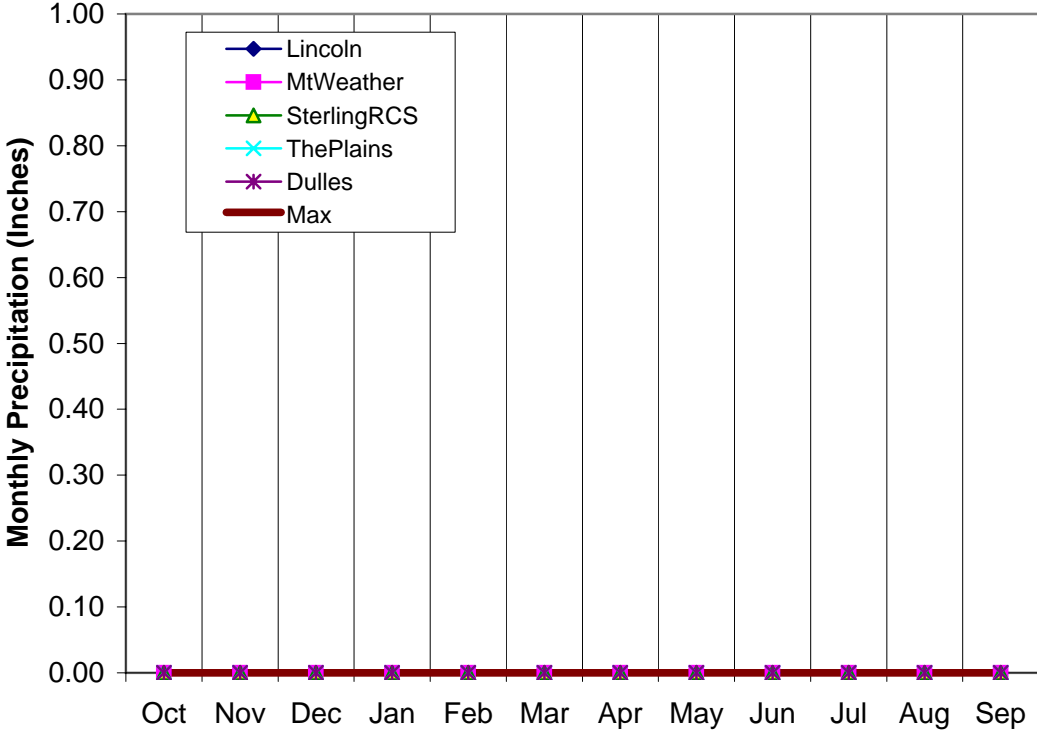
Point	Feb	Rank	Percent	Point	Mar	Rank	Percent	Point	Apr	Rank	Percent	Point	May	Rank	Percent
3	2.69	1	100.00%	3	3.73	1	100.00%	3	3.43	1	100.00%	3	4.45	1	100.00%
5	2.62	2	75.00%	4	3.60	2	75.00%	1	3.40	2	75.00%	2	4.30	2	75.00%
4	2.61	3	50.00%	1	3.51	3	50.00%	2	3.40	3	50.00%	1	4.17	3	50.00%
1	2.52	4	25.00%	5	3.49	4	25.00%	4	3.38	4	25.00%	4	3.96	4	25.00%
2	2.24	5	0.00%	2	3.20	5	0.00%	5	3.03	5	0.00%	5	3.90	5	0.00%

Point	Jun	Rank	Percent	Point	Jul	Rank	Percent	Point	Aug	Rank	Percent	Point	Sep	Rank	Percent
2	4.32	1	100.00%	4	4.01	1	100.00%	4	4.54	1	100.00%	2	3.96	1	100.00%
1	3.91	2	75.00%	1	3.96	2	75.00%	1	4.05	2	75.00%	4	3.83	2	75.00%
5	3.84	3	50.00%	2	3.86	3	50.00%	5	3.91	3	50.00%	3	3.80	3	50.00%
3	3.76	4	25.00%	3	3.80	4	25.00%	3	3.67	4	25.00%	5	3.72	4	25.00%
4	3.74	5	0.00%	5	3.59	5	0.00%	2	3.57	5	0.00%	1	3.72	5	0.00%

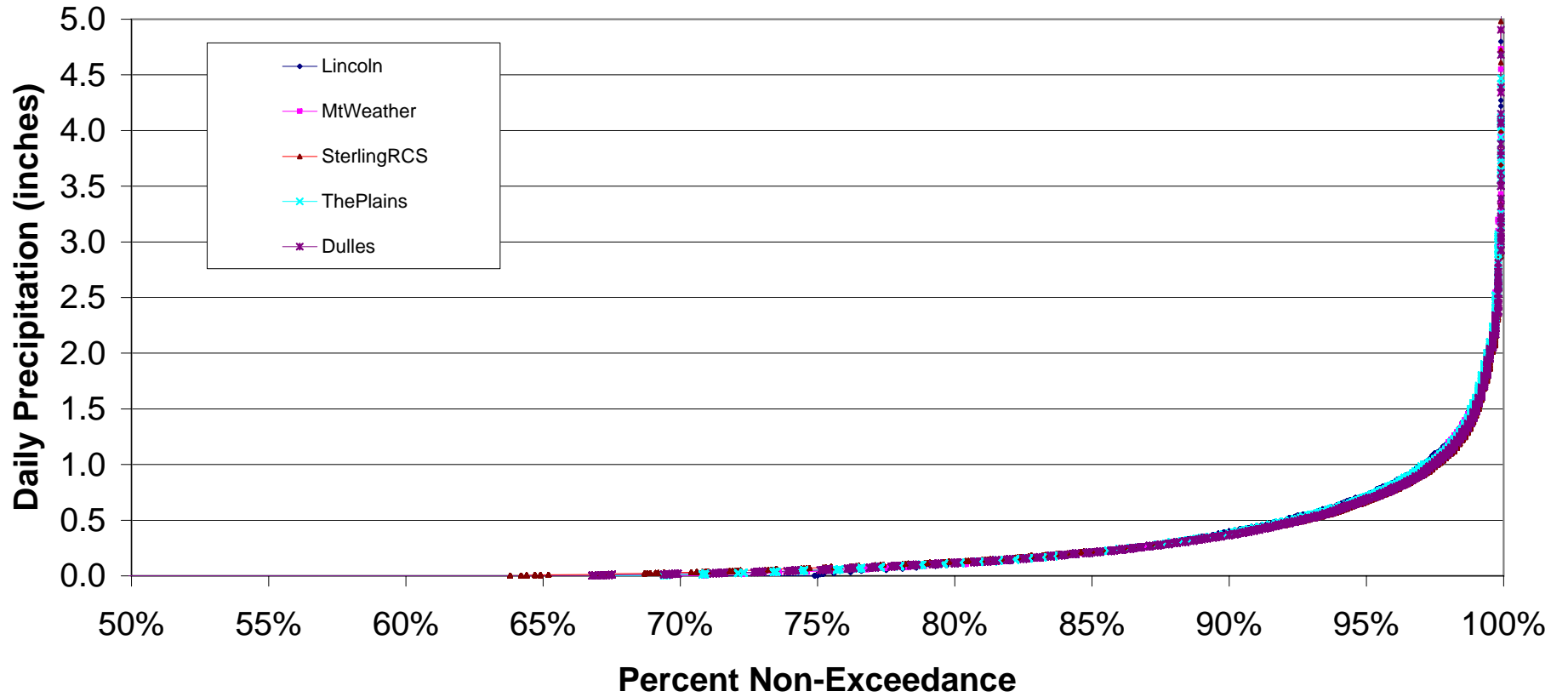
Precipitation Exceedance on Monthly Basis By Month

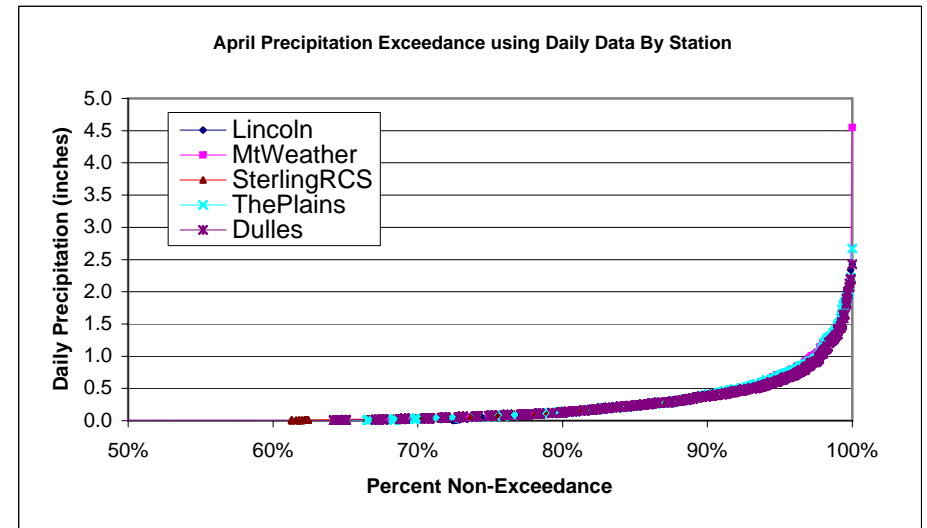
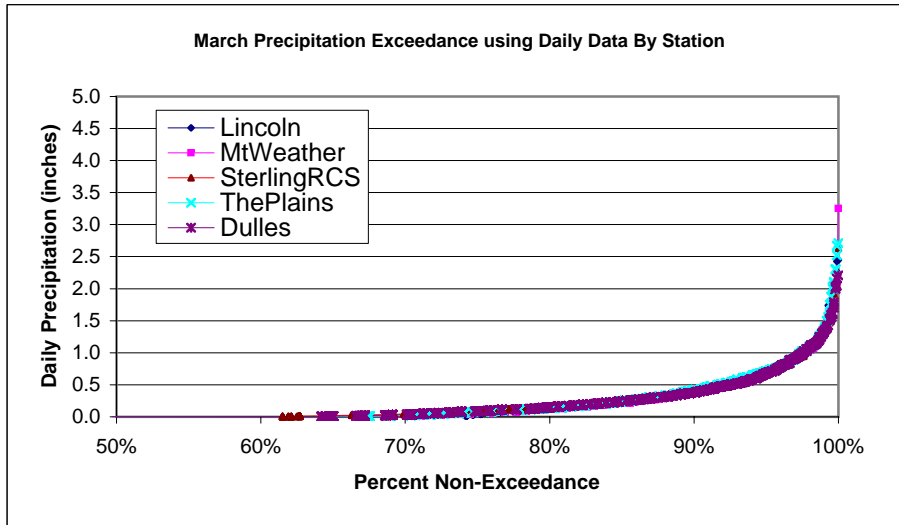
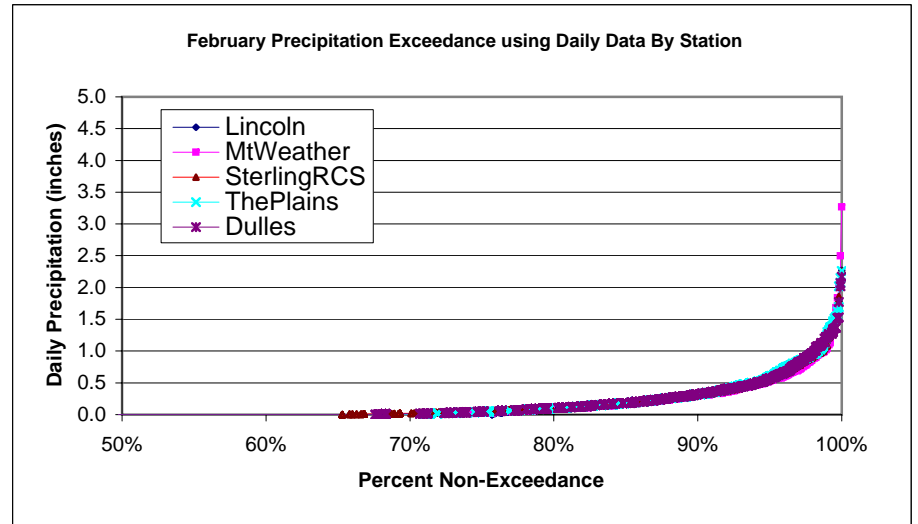
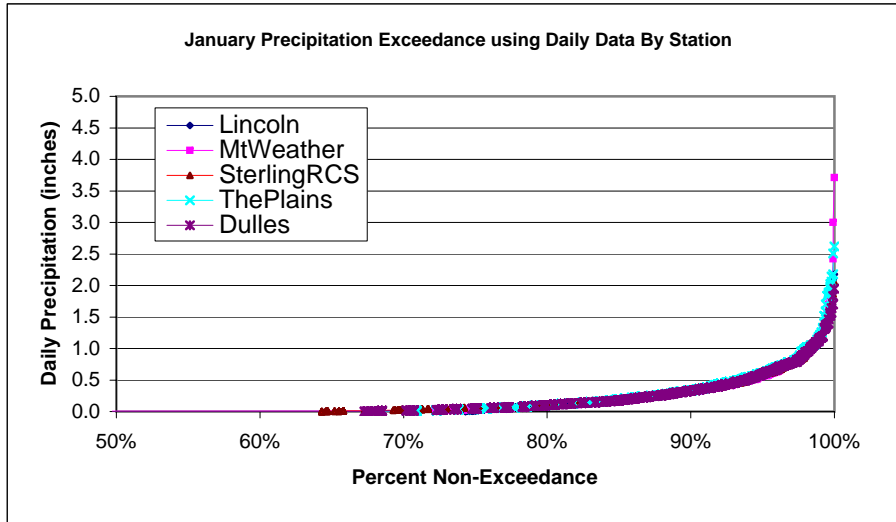


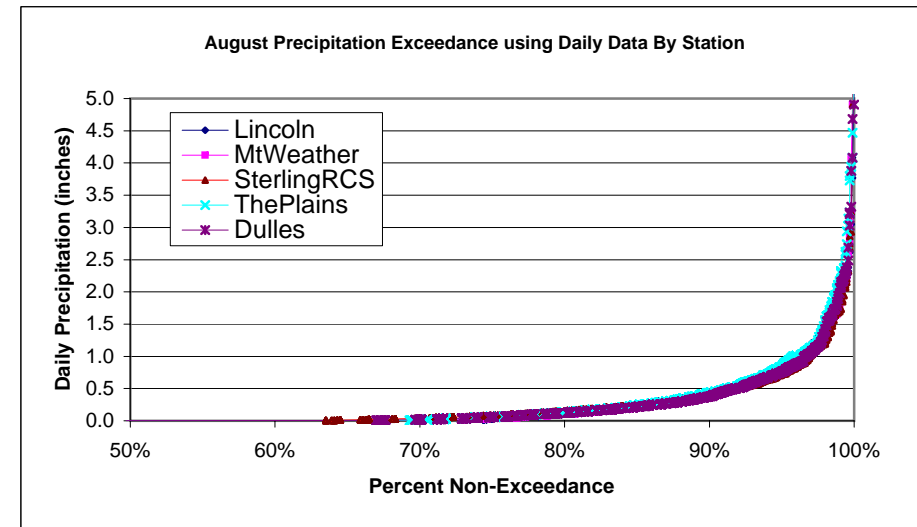
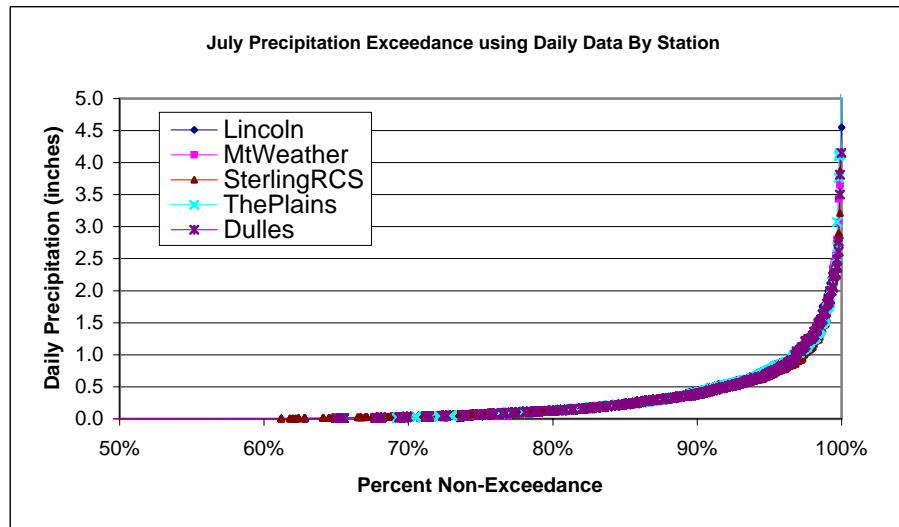
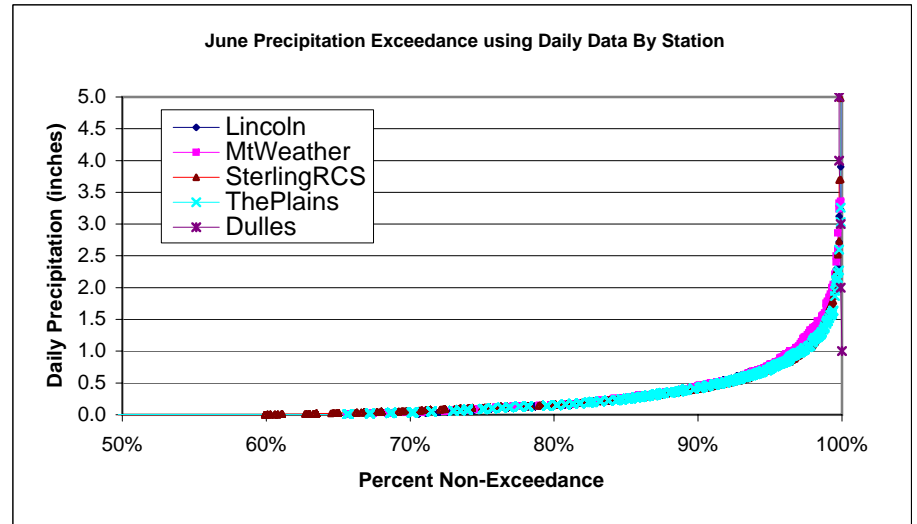
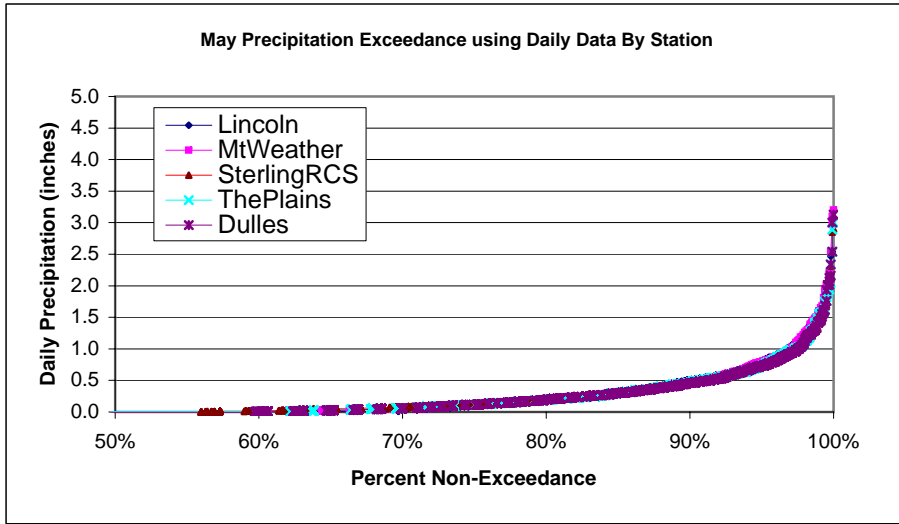
Min Monthly Precipitation

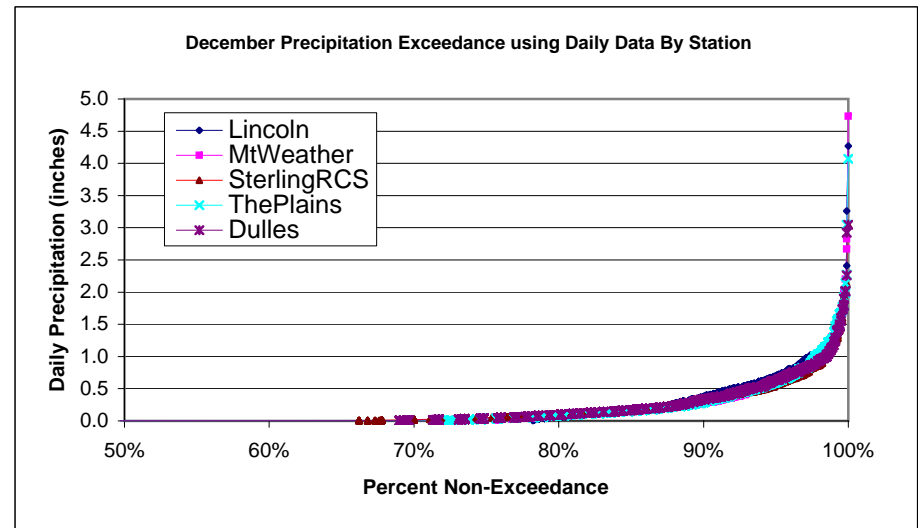
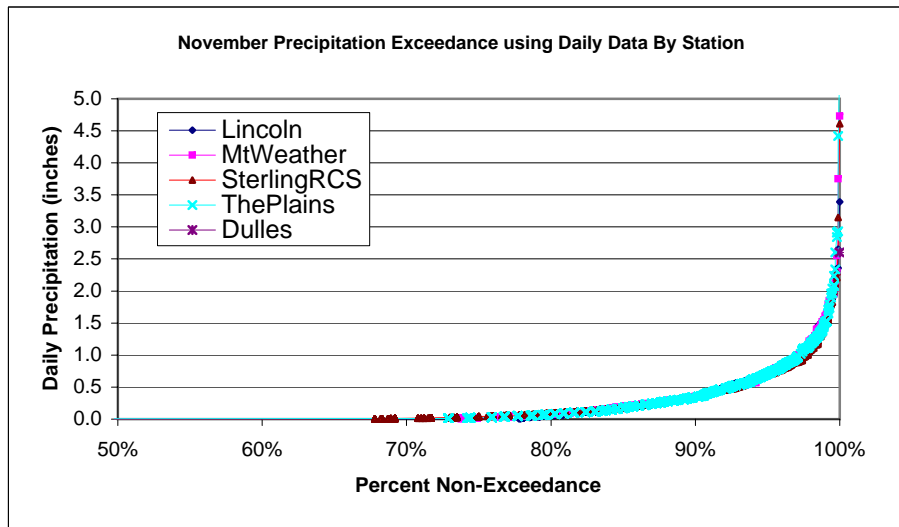
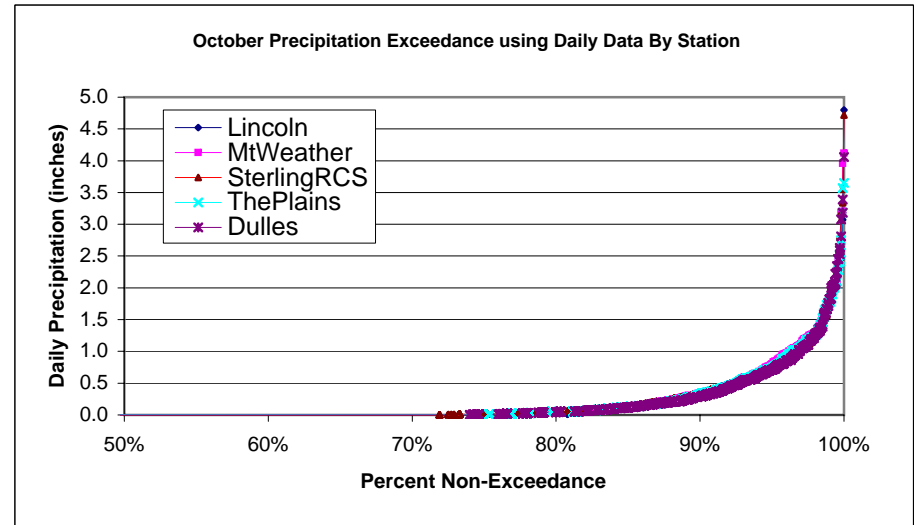
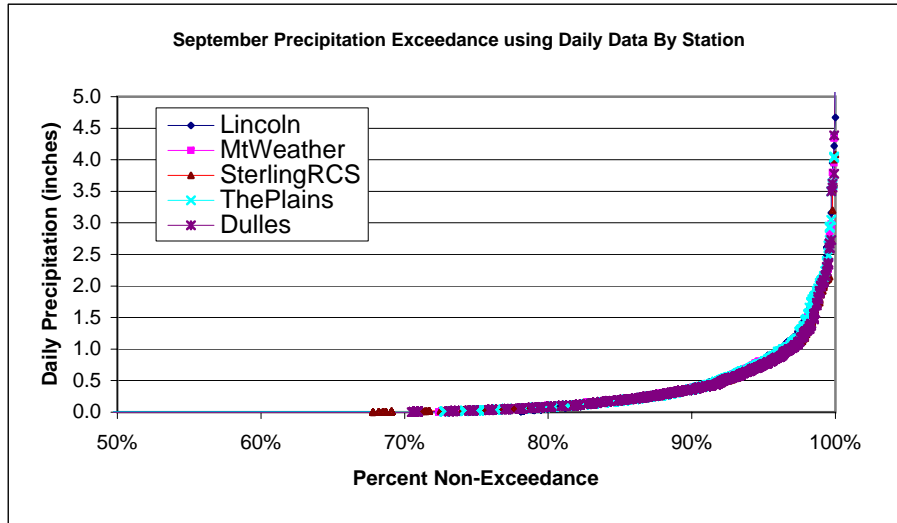


Precipitation Exceedance using Daily Data By Station









	Lincoln	MtWeather	SterlingRCS	ThePlains	Dulles
Number of Days with Precipitation Data	27,577	20,852	10,468	18,564	14,214
Number of Days with Zero Precipitation Recorded	20,770	14,663	7,032	12,909	9,708
Number of Days with Nonzero Precipitation	6,807	6,189	3,436	5,655	4,506
Percentage days with Zero Precipitation	75.3%	70.3%	67.2%	69.5%	68.3%
Percentage days with Nonzero Precipitation	24.7%	29.7%	32.8%	30.5%	31.7%

These are the counts prior to adding the missing data.

COOPID	STATION_NAME	COUNTY	ELEVATION_FT	LatitudeDD	LongitudeDD	URL
444909	LINCOLN	LOUDOUN	152.4	39.0833333	-77.7000000	http://cirrus.dnr.state.sc.us/cgi-bin/sercc/cliMAIN.pl?va4909
445851	MOUNT WEATHER	LOUDOUN	524.3	39.0666667	-77.8833333	http://cirrus.dnr.state.sc.us/cgi-bin/sercc/cliMAIN.pl?va5851
448084	STERLING RCS	LOUDOUN	85.3	38.9833333	-77.4833333	http://cirrus.dnr.state.sc.us/cgi-bin/sercc/cliMAIN.pl?va8084
448396	THE PLAINS 2 NNE	FAUQUIER	161.5	38.9000000	-77.7500000	http://cirrus.dnr.state.sc.us/cgi-bin/sercc/cliMAIN.pl?va8396
448903	WASHINGTON DULLES	LOUDOUN	290	38.9333333	-77.4833333	http://cirrus.dnr.state.sc.us/cgi-bin/sercc/cliMAIN.pl?va8903

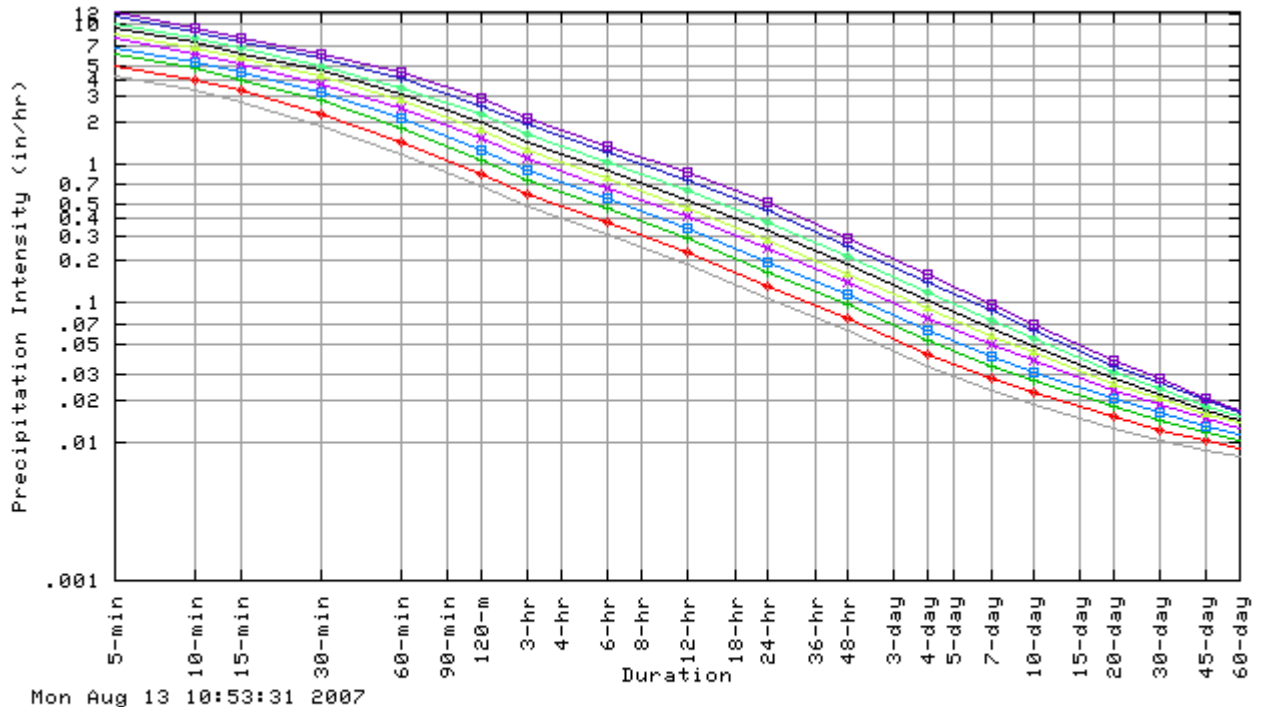
Coordinates

Precipitation Intensity Estimates for Loudoun County

The following estimates were obtained from NOAA website.

Precipitation Intensity Estimates (in/hr)																		
ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	4.22	3.35	2.77	1.88	1.16	0.69	0.50	0.31	0.19	0.11	0.06	0.04	0.02	0.02	0.01	0.01	0.01	0.01
2	5.06	4.02	3.34	2.29	1.43	0.84	0.60	0.37	0.23	0.13	0.08	0.04	0.03	0.02	0.01	0.01	0.01	0.01
5	6.06	4.81	4.02	2.82	1.80	1.07	0.77	0.47	0.29	0.17	0.10	0.05	0.04	0.03	0.02	0.01	0.01	0.01
10	6.80	5.39	4.50	3.22	2.09	1.25	0.90	0.55	0.34	0.20	0.11	0.06	0.04	0.03	0.02	0.02	0.01	0.01
25	7.81	6.14	5.15	3.76	2.48	1.52	1.09	0.67	0.41	0.24	0.14	0.08	0.05	0.04	0.02	0.02	0.01	0.01
50	8.60	6.73	5.64	4.18	2.81	1.74	1.25	0.77	0.48	0.28	0.16	0.09	0.06	0.04	0.03	0.02	0.02	0.01
100	9.37	7.31	6.14	4.61	3.15	1.98	1.42	0.88	0.55	0.33	0.19	0.10	0.06	0.05	0.03	0.02	0.02	0.01
200	10.16	7.91	6.64	5.06	3.52	2.23	1.61	1.00	0.63	0.38	0.21	0.12	0.07	0.05	0.03	0.02	0.02	0.02
500	11.29	8.72	7.32	5.69	4.04	2.61	1.89	1.18	0.75	0.46	0.25	0.14	0.09	0.06	0.04	0.03	0.02	0.02
1000	12.22	9.35	7.82	6.19	4.46	2.93	2.13	1.34	0.86	0.52	0.29	0.16	0.10	0.07	0.04	0.03	0.02	0.02

Partial duration based Point IDF Curves Version: 3
39.035 N 77.732 W 380 ft



Average Recurrence Interval (years)	
1-year	—
2-year	—♦—
5-year	—+—
10-year	—□—
25-year	—x—
50-year	—▲—
100-year	—■—
200-year	—◇—
500-year	—+—
1000-year	—□—

Confidence Limits -

* Upper bound of the 90% confidence interval Precipitation Intensity Estimates (in/hr)																		
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	4.69	3.73	3.08	2.09	1.30	0.77	0.56	0.35	0.21	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.01	0.01
2	5.63	4.47	3.72	2.54	1.58	0.94	0.68	0.42	0.25	0.14	0.08	0.05	0.03	0.02	0.02	0.01	0.01	0.01
5	6.74	5.35	4.47	3.14	2.00	1.19	0.86	0.53	0.32	0.18	0.11	0.06	0.04	0.03	0.02	0.02	0.01	0.01
10	7.55	5.98	5.00	3.58	2.31	1.39	1.01	0.62	0.38	0.22	0.12	0.07	0.04	0.03	0.02	0.02	0.01	0.01
25	8.64	6.79	5.69	4.16	2.75	1.69	1.22	0.75	0.46	0.27	0.15	0.08	0.05	0.04	0.03	0.02	0.02	0.01
50	9.50	7.43	6.23	4.62	3.10	1.93	1.39	0.86	0.53	0.31	0.18	0.10	0.06	0.05	0.03	0.02	0.02	0.01
100	10.34	8.06	6.77	5.09	3.47	2.19	1.58	0.98	0.61	0.36	0.20	0.11	0.07	0.05	0.03	0.02	0.02	0.02
200	11.21	8.72	7.32	5.58	3.88	2.47	1.79	1.11	0.70	0.41	0.23	0.13	0.08	0.06	0.03	0.03	0.02	0.02
500	12.46	9.62	8.08	6.28	4.46	2.89	2.10	1.32	0.84	0.50	0.28	0.15	0.09	0.07	0.04	0.03	0.02	0.02
1000	13.49	10.33	8.64	6.83	4.93	3.24	2.37	1.49	0.96	0.57	0.32	0.17	0.11	0.08	0.04	0.03	0.02	0.02

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.

** These precipitation frequency estimates are based on a [partial duration series](#). ARI is the Average Recurrence Interval. Please refer to the [documentation](#) for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Intensity Estimates (in/hr)																		
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	3.79	3.01	2.49	1.69	1.05	0.62	0.44	0.28	0.17	0.10	0.06	0.03	0.02	0.02	0.01	0.01	0.01	0.01
2	4.55	3.61	3.00	2.05	1.28	0.75	0.54	0.34	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.01	0.01
5	5.44	4.31	3.61	2.53	1.61	0.96	0.69	0.42	0.26	0.15	0.09	0.05	0.03	0.03	0.02	0.01	0.01	0.01
10	6.08	4.82	4.02	2.88	1.86	1.12	0.80	0.49	0.30	0.18	0.10	0.06	0.04	0.03	0.02	0.02	0.01	0.01
25	6.94	5.45	4.57	3.34	2.21	1.35	0.96	0.59	0.36	0.22	0.13	0.07	0.05	0.04	0.02	0.02	0.01	0.01
50	7.60	5.95	4.99	3.70	2.48	1.53	1.10	0.68	0.42	0.25	0.15	0.08	0.05	0.04	0.02	0.02	0.01	0.01
100	8.24	6.43	5.40	4.05	2.77	1.73	1.24	0.77	0.48	0.29	0.17	0.09	0.06	0.04	0.03	0.02	0.02	0.01
200	8.87	6.90	5.79	4.42	3.07	1.94	1.40	0.87	0.54	0.33	0.19	0.10	0.07	0.05	0.03	0.02	0.02	0.01
500	9.76	7.54	6.32	4.92	3.49	2.25	1.62	1.01	0.64	0.39	0.22	0.12	0.08	0.06	0.03	0.02	0.02	0.02
1000	10.46	8.01	6.70	5.30	3.83	2.50	1.80	1.13	0.72	0.45	0.25	0.14	0.09	0.06	0.03	0.03	0.02	0.02

* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.

** These precipitation frequency estimates are based on a [partial duration maxima series](#). ARI is the Average Recurrence Interval. Please refer to the [documentation](#) for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

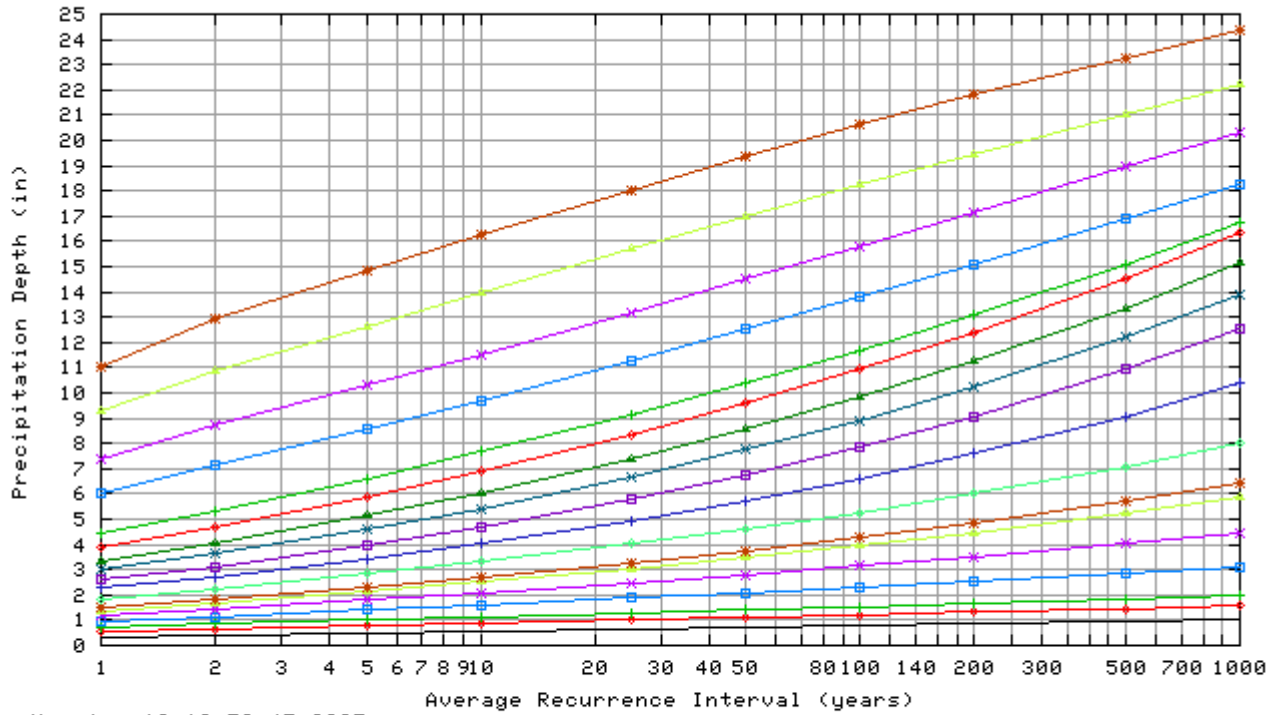
Data Source: Precipitation Intensity

<http://hdsc.nws.noaa.gov/cgi-bin/hdsc/buildout.perl?type=idf&series=pd&units=us&state=VA&stateabv=va&study=orb&season=All&intype=5&plat=39.035&plon=-77.732&liststation=0&slat=lat&slon=lon&mplat=39.035&mplon=-77.732&elev=380&xy0=lat&xy1=-lon&xy2=lat&xy3=-lon&xy4=lat&xy5=-lon&xy6=lat&xy7=-lon&xy8=lat&xy9=-lon&xy10=lat&xy11=-lon&xy12=lat&xy13=-lon&xy14=lat&xy15=-lon&xy16=lat&xy17=-lon&xy18=lat&xy19=-lon&xy20=lat&xy21=-lon&xy22=lat&xy23=-lon>

Precipitation Frequency Estimates for Loudoun County

Precipitation Frequency Estimates (inches)																		
ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.35	0.56	0.69	0.94	1.16	1.37	1.49	1.85	2.26	2.59	3.01	3.37	3.91	4.47	6.02	7.39	9.27	11.02
2	0.42	0.67	0.83	1.14	1.43	1.68	1.81	2.24	2.73	3.12	3.63	4.06	4.70	5.36	7.15	8.72	10.91	12.94
5	0.51	0.80	1.00	1.41	1.80	2.14	2.30	2.82	3.45	3.98	4.60	5.14	5.89	6.62	8.57	10.29	12.66	14.84
10	0.57	0.90	1.13	1.61	2.09	2.51	2.70	3.30	4.05	4.71	5.43	6.06	6.88	7.66	9.71	11.52	13.99	16.25
25	0.65	1.02	1.29	1.88	2.48	3.04	3.27	4.01	4.96	5.82	6.67	7.41	8.34	9.15	11.27	13.19	15.71	18.05
50	0.72	1.12	1.41	2.09	2.81	3.48	3.76	4.62	5.74	6.78	7.74	8.57	9.57	10.37	12.51	14.50	17.00	19.38
100	0.78	1.22	1.53	2.31	3.15	3.95	4.28	5.28	6.62	7.86	8.92	9.85	10.91	11.68	13.78	15.82	18.25	20.62
200	0.85	1.32	1.66	2.53	3.52	4.47	4.84	6.00	7.60	9.08	10.23	11.26	12.38	13.08	15.09	17.15	19.47	21.81
500	0.94	1.45	1.83	2.85	4.04	5.22	5.68	7.08	9.08	10.93	12.19	13.37	14.54	15.08	16.88	18.94	21.04	23.29
1000	1.02	1.56	1.96	3.09	4.46	5.86	6.39	8.00	10.37	12.54	13.88	15.16	16.37	16.76	18.28	20.32	22.19	24.36

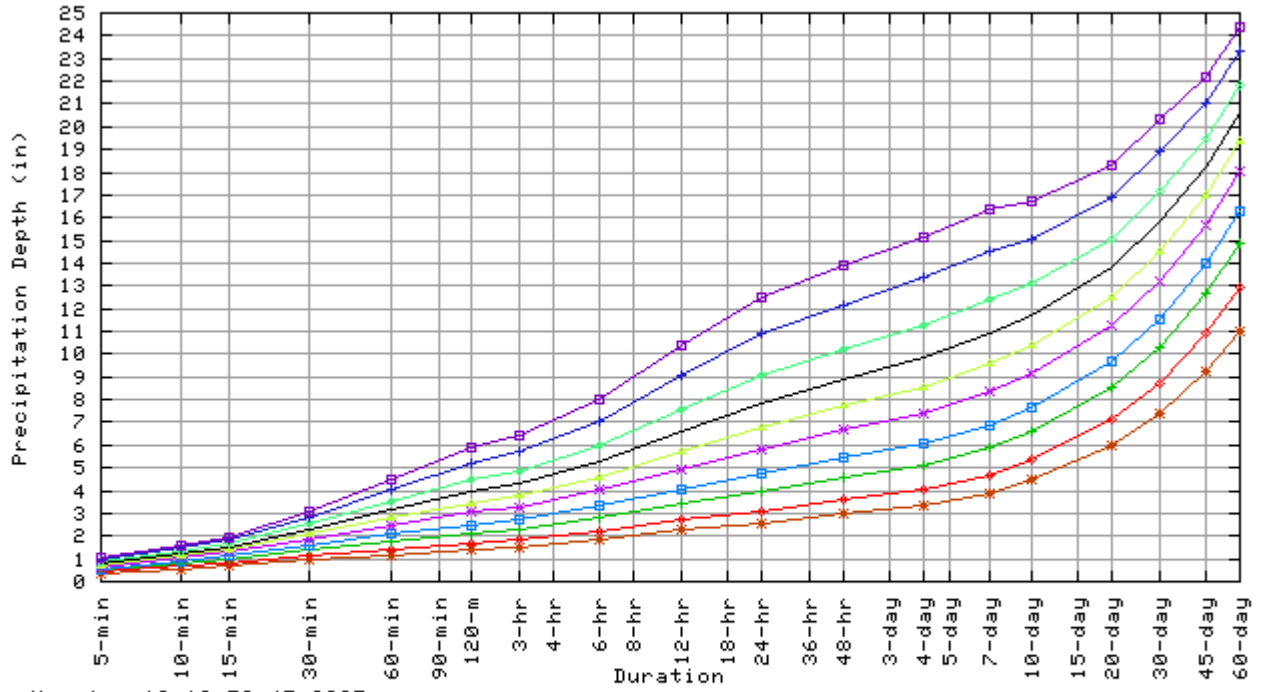
Partial duration based Point Precipitation Frequency Estimates Version: 3
 39.035 N 77.732 W 380 ft



Mon Aug 13 10:58:47 2007

Duration							
5-min	—	120-m	—	48-hr	—	30-day	—
10-min	—	3-hr	—	4-day	—	45-day	—
15-min	—	6-hr	—	7-day	—	60-day	—
30-min	—	12-hr	—	10-day	—		
60-min	—	24-hr	—	20-day	—		

Partial duration based Point Precipitation Frequency Estimates Version: 3
 39.035 N 77.732 W 380 ft



Mon Aug 13 10:58:47 2007

Average Recurrence Interval (years)	
1	*
2	+
5	+
10	+
25	+
50	+
100	+
200	+
500	+
1000	+

Confidence Limits -

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)																		
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.39	0.62	0.77	1.05	1.30	1.53	1.67	2.08	2.55	2.86	3.30	3.67	4.24	4.82	6.44	7.85	9.76	11.59
2	0.47	0.74	0.93	1.27	1.58	1.87	2.04	2.52	3.07	3.46	3.98	4.43	5.09	5.78	7.65	9.28	11.49	13.59
5	0.56	0.89	1.12	1.57	2.00	2.38	2.58	3.17	3.87	4.40	5.05	5.61	6.38	7.15	9.18	10.94	13.33	15.60
10	0.63	1.00	1.25	1.79	2.31	2.79	3.02	3.70	4.53	5.20	5.95	6.60	7.46	8.26	10.39	12.24	14.73	17.09
25	0.72	1.13	1.42	2.08	2.75	3.37	3.65	4.49	5.53	6.40	7.29	8.05	9.02	9.85	12.05	14.02	16.54	18.98
50	0.79	1.24	1.56	2.31	3.10	3.86	4.18	5.15	6.40	7.44	8.44	9.30	10.34	11.16	13.38	15.41	17.91	20.38
100	0.86	1.34	1.69	2.54	3.47	4.38	4.75	5.87	7.37	8.61	9.71	10.67	11.78	12.57	14.75	16.84	19.25	21.72
200	0.93	1.45	1.83	2.79	3.88	4.94	5.38	6.68	8.44	9.92	11.14	12.21	13.38	14.07	16.16	18.27	20.57	23.00
500	1.04	1.60	2.02	3.14	4.46	5.78	6.32	7.88	10.10	11.92	13.28	14.52	15.74	16.26	18.12	20.23	22.27	24.62
1000	1.12	1.72	2.16	3.42	4.93	6.48	7.12	8.90	11.54	13.67	15.14	16.50	17.76	18.11	19.67	21.76	23.55	25.79

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.

** These precipitation frequency estimates are based on a [partial duration series](#). ARI is the Average Recurrence Interval. Please refer to the [documentation](#) for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)																		
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.32	0.50	0.62	0.84	1.05	1.23	1.34	1.66	2.03	2.37	2.77	3.10	3.61	4.14	5.65	6.98	8.80	10.50
2	0.38	0.60	0.75	1.03	1.28	1.51	1.63	2.01	2.44	2.86	3.34	3.74	4.34	4.97	6.71	8.24	10.35	12.32
5	0.45	0.72	0.90	1.27	1.61	1.92	2.06	2.53	3.08	3.63	4.22	4.73	5.43	6.14	8.03	9.70	12.00	14.12
10	0.51	0.80	1.01	1.44	1.86	2.24	2.40	2.95	3.60	4.29	4.97	5.55	6.33	7.08	9.08	10.85	13.25	15.45
25	0.58	0.91	1.14	1.67	2.21	2.70	2.90	3.56	4.37	5.26	6.05	6.75	7.63	8.42	10.50	12.39	14.86	17.12
50	0.63	0.99	1.25	1.85	2.48	3.07	3.30	4.07	5.02	6.09	6.97	7.77	8.71	9.50	11.62	13.58	16.06	18.34
100	0.69	1.07	1.35	2.03	2.77	3.47	3.73	4.61	5.73	7.00	7.97	8.85	9.86	10.63	12.73	14.75	17.20	19.48
200	0.74	1.15	1.45	2.21	3.07	3.89	4.19	5.19	6.51	8.00	9.05	10.03	11.09	11.82	13.87	15.92	18.30	20.55
500	0.81	1.26	1.58	2.46	3.49	4.49	4.86	6.05	7.66	9.47	10.62	11.73	12.86	13.49	15.40	17.46	19.67	21.86
1000	0.87	1.33	1.68	2.65	3.83	4.99	5.40	6.75	8.63	10.71	11.93	13.14	14.32	14.86	16.57	18.62	20.66	22.79

* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.

** These precipitation frequency estimates are based on a [partial duration maxima series](#). ARI is the Average Recurrence Interval. Please refer to the [documentation](#) for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

Data Source: Precipitation Depth

<http://hdsc.nws.noaa.gov/cgi-bin/hdsc/buildout.perl?type=pf&series=pd&units=us&statename=VIRGINIA&stateabv=va&study=orb&season=All&intype=5&plat=39.035&plon=-77.732&liststation=0&slat=lat&slon=lon&mplat=39.035&mplon=-77.732&elev=380&xy0=lat&xy1=-lon&xy2=lat&xy3=-lon&xy4=lat&xy5=-lon&xy6=lat&xy7=-lon&xy8=lat&xy9=-lon&xy10=lat&xy11=-lon&xy12=lat&xy13=-lon&xy14=lat&xy15=-lon&xy16=lat&xy17=-lon&xy18=lat&xy19=-lon&xy20=lat&xy21=-lon&xy22=lat&xy23=-lon>

Rainfall Intensity Duration

For storm planning purposes, the 24-hour rainfall data for Loudoun in the Blue Book, page 70 of 115 http://www.dcr.virginia.gov/soil_&_water/documents/Chapter_4.pdf and the rainfall-duration-intensity curve (use Fauquier County on page 103).

USGS Precipitation Web Download

This spreadsheet contains hyperlink to execute web queries from USGS NWIS web sites for the precipitation gages in Loudoun. The process includes a complete download of all **daily** data, approved and provisional.

The spreadsheet offers the option to uses data "as is" from last update or update all stations. The update process will takes several minutes to process.

NOTE: There are many, many periods of incomplete records! Use this data with caution. Suggest using NCDC data files instead.

D Ward 12/27/2006

Last revised 8/15/07

Cummulative Daily Precipitation

