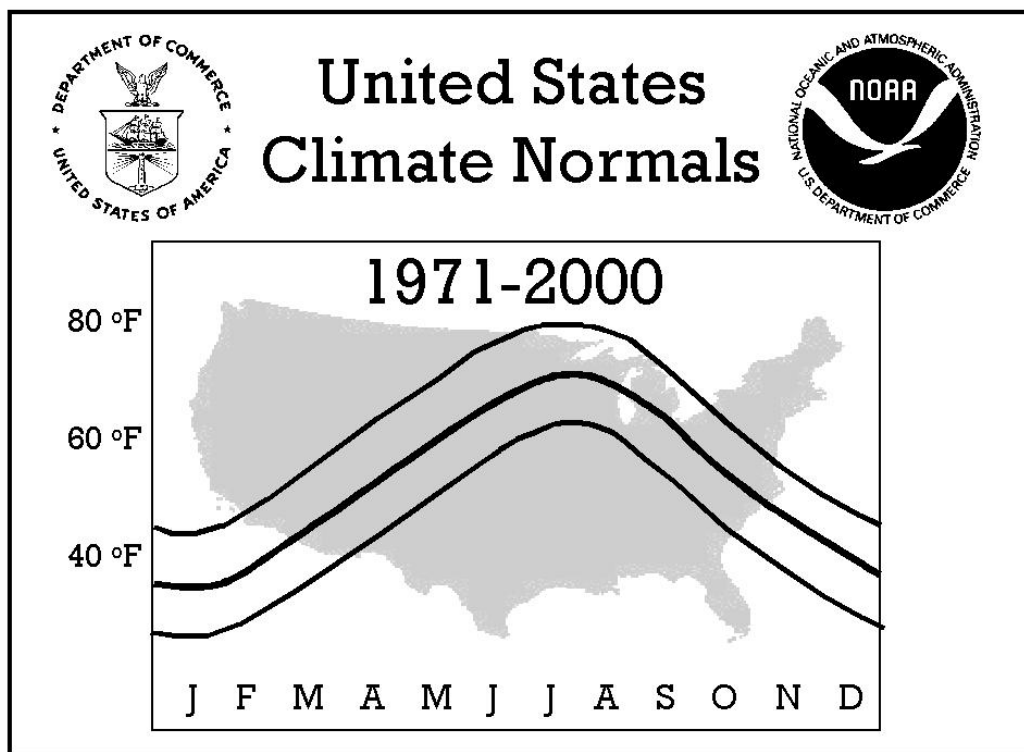
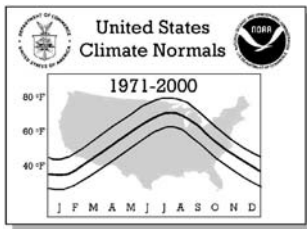




Monthly Precipitation Probabilities and Quintiles 1971 – 2000



NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NC



Monthly Precipitation Probabilities and Quintiles, 1971-2000

CLIMATOGRAPHY OF THE UNITED STATES NO. 81, Supplement No. 1

NOTES

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Product Description:

This Climatography includes selected precipitation probabilities derived from the 1971-2000 normals. Precipitation quintiles, divided into six classes by the five probability levels 0.2, 0.4, 0.6, and 0.8, are also provided. Precipitation probabilities at the 0.1, 0.5, and 0.9 levels are also presented. This publication includes precipitation probabilities and quintiles for first-order stations; all other stations are available through an accompanying digital data set associated with *Climatography of the United States, No. 81*.

The precipitation probabilities are the monthly precipitation totals that correspond to the indicated probability levels. The probability levels are based on the 1971-2000 historical sequential monthly precipitation. The historical precipitation data are the adjusted values from the monthly normals as presented in *Climatography of the United States No. 81*.

Abbreviations:

Station Description = Description of Station

Line 1: COOP ID = Cooperative Network ID (1:2=State ID, 3:6=Station Index), Call = 3-Letter Station Call Sign for First-Order Stations

Line 2: Station Name

Line 3: State 2-Letter Postal Abbreviation (e.g., AL for Alabama)

Quin = Maximum Value for Quintile Range (e.g., Q1 provides maximum value for 0-20% quintile range); Q0 provides minimum value.

Prob = Selected Probability Level

Jan, Feb, Mar, ..., Oct, Nov, Dec, ANN = Monthly and annual precipitation probability values (to hundredths of an inch of precipitation)

Computational Procedures:

When historical climate data are accumulated and examined, they generally follow a certain pattern called a statistical distribution. While temperature usually follows a Gaussian or bell-shaped distribution, precipitation does not because it is zero-bounded. Precipitation generally follows a Gamma distribution, where most values are near zero with rapidly diminishing higher values. Thus, the Gamma distribution was used to estimate the precipitation probability and quintile statistics. Probabilities are computed for the amount of precipitation expected at fifteen probability levels (0.005, 0.01, 0.05, 0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, 0.90, 0.95, 0.99, and 0.995) for each month of the year and for the annual total. For example, if 1.77 inches corresponds to the 0.20 probability level, that means that on average, 2 out of 10 years will have 1.77 inches *or less* of precipitation in that month. It also means that, on average, 8 out of 10 years will have *more than* 1.77 inches of precipitation in that month. A selection from these 15 probability levels are included in this publication.

The precipitation quintiles show the expected precipitation values at the five quintile levels shown for each of the twelve months: 1. First Quintile (0-20%); 2. Second Quintile (20-40%); 3. Third Quintile (40-60%); 4. Fourth Quintile (60-80%); 5. Fifth Quintile (80-100%). For example, if 2.91 and 4.07 inches are the bounds for the second quintile (level 2), then a monthly total precipitation amount for that month falling in the range 2.91 to 4.07 would be classified as a second quintile precipitation amount and that month would be considered relatively dry. The first line (Q0) shows the minimum precipitation value derived from the historical record. This would be used if a future precipitation observation is less than the 1971-2000 minimum. At the opposite end, Quintile level 5 (indicated with Q5) would be used if the observed value is more than the 1971-2000 maximum.

Missing Values

Missing values are indicated with a -99.99.

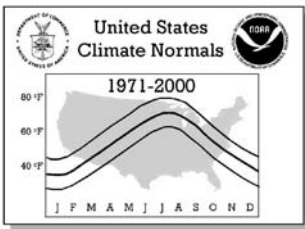
References:

Crutcher, H.L., G.F. McKay, and D.C. Fulbright, 1977: "A note on a gamma distribution computer program and computer produced graphs", [NOAA Technical Report EDS 24](#).

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National Climatic Data Center/NESDIS/NOAA, Asheville, North Carolina



Monthly Precipitation Probabilities and Quintiles, 1971-2000
CLIMATOGRAPHY OF THE UNITED STATES NO. 81, Supplement No. 1

Monthly Precipitation (inches)

Station Description	Quin	Prob	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANN
320819 BIS BISMARCK MUNICIPAL AP ND	Q0	MIN	0.07	0.03	0.09	0.12	0.28	0.50	0.46	0.03	0.23	0.02	0.00	0.02	
		0.1	0.13	0.11	0.21	0.22	0.58	1.00	0.60	0.30	0.31	0.12	0.07	0.13	11.02
	Q1	0.2	0.19	0.19	0.34	0.41	0.90	1.37	0.97	0.58	0.54	0.26	0.17	0.20	12.70
		0.4	0.31	0.33	0.57	0.84	1.52	2.00	1.70	1.20	1.00	0.62	0.38	0.32	15.21
		0.5	0.38	0.41	0.70	1.09	1.85	2.33	2.11	1.58	1.27	0.86	0.51	0.38	16.38
	Q3	0.6	0.46	0.51	0.85	1.39	2.24	2.69	2.58	2.04	1.58	1.15	0.66	0.45	17.62
	Q4	0.8	0.67	0.78	1.28	2.30	3.32	3.66	3.92	3.42	2.49	2.08	1.13	0.65	20.71
		0.9	0.87	1.03	1.67	3.19	4.33	4.52	5.17	4.77	3.36	3.02	1.59	0.83	23.25
	Q5	MAX	1.13	1.74	3.19	5.46	6.96	5.10	13.75	9.29	6.93	4.30	2.09	0.84	
	322859 FAR FARGO HECTOR AP ND	Q0	MIN	0.11	0.13	0.19	0.01	0.46	0.58	0.46	0.18	0.13	0.05	0.00	0.07
		0.1	0.18	0.16	0.46	0.14	0.84	0.87	0.78	0.75	0.54	0.19	0.13	0.17	14.39
Q1		0.2	0.29	0.24	0.63	0.29	1.22	1.38	1.20	1.12	0.86	0.41	0.28	0.25	16.38
		0.4	0.51	0.41	0.91	0.69	1.90	2.36	1.99	1.80	1.47	0.97	0.60	0.41	19.32
		0.5	0.63	0.50	1.06	0.94	2.27	2.90	2.43	2.16	1.80	1.33	0.79	0.49	20.69
Q3		0.6	0.77	0.60	1.22	1.24	2.67	3.52	2.92	2.57	2.19	1.78	1.02	0.58	22.13
Q4		0.8	1.16	0.88	1.65	2.20	3.80	5.30	4.31	3.72	3.29	3.18	1.69	0.84	25.71
		0.9	1.52	1.15	2.04	3.17	4.82	6.94	5.59	4.76	4.31	4.59	2.34	1.08	28.63
Q5		MAX	1.85	1.74	2.62	5.28	7.34	11.72	7.71	6.46	6.50	7.03	4.58	1.51	
323376 N60 GARRISON 1 NNW ND		Q0	MIN	0.00	0.00	0.00	0.00	0.27	0.69	0.10	0.00	0.18	0.01	0.03	0.00
		0.1	0.05	0.03	0.08	0.14	0.78	1.39	0.56	0.28	0.39	0.10	0.08	0.00	11.26
	Q1	0.2	0.12	0.07	0.17	0.32	1.08	1.81	0.94	0.58	0.60	0.24	0.15	0.14	12.67
		0.4	0.25	0.18	0.36	0.71	1.61	2.52	1.68	1.16	1.00	0.58	0.32	0.28	14.75
		0.5	0.32	0.24	0.47	0.94	1.88	2.87	2.11	1.49	1.21	0.81	0.42	0.35	15.71
	Q3	0.6	0.40	0.33	0.61	1.21	2.18	3.26	2.60	1.88	1.46	1.09	0.54	0.42	16.71
	Q4	0.8	0.62	0.58	1.01	2.03	2.99	4.28	4.02	3.01	2.16	1.98	0.90	0.62	19.20
		0.9	0.83	0.84	1.40	2.83	3.71	5.17	5.35	4.09	2.80	2.89	1.26	0.78	21.21
	Q5	MAX	0.89	2.42	1.95	4.17	5.16	6.98	8.78	6.37	5.38	6.48	1.87	1.39	
	323616 GFK GRAND FORKS INTL AP ND	Q0	MIN	0.07	0.09	0.04	0.00	0.47	0.81	0.49	0.96	0.26	0.08	0.00	0.07
		0.1	0.19	0.14	0.23	0.17	0.84	1.13	0.97	1.36	0.51	0.19	0.11	0.14	14.88
Q1		0.2	0.29	0.22	0.36	0.40	1.16	1.57	1.42	1.71	0.79	0.39	0.25	0.22	16.33
		0.4	0.47	0.39	0.60	0.80	1.70	2.32	2.23	2.28	1.34	0.88	0.55	0.37	18.41
		0.5	0.58	0.48	0.74	1.01	1.98	2.71	2.66	2.55	1.64	1.19	0.73	0.46	19.35
Q3		0.6	0.69	0.58	0.90	1.25	2.29	3.14	3.14	2.85	1.98	1.57	0.94	0.55	20.33
Q4		0.8	1.02	0.89	1.34	1.92	3.13	4.31	4.46	3.64	2.95	2.73	1.58	0.82	22.73
		0.9	1.32	1.17	1.75	2.55	3.87	5.34	5.67	4.31	3.84	3.90	2.19	1.07	24.64
Q5		MAX	1.71	1.65	2.27	3.62	5.01	7.20	9.08	5.10	5.02	5.79	3.94	1.96	
324413 JMS JAMESTOWN MUNICIPAL AP ND		Q0	MIN	0.12	0.02	0.00	0.00	0.25	0.95	0.63	0.26	0.01	0.09	0.00	0.01
		0.1	0.16	0.06	0.19	0.07	0.57	1.29	0.80	0.57	0.25	0.13	0.06	0.06	12.50
	Q1	0.2	0.25	0.12	0.33	0.27	0.89	1.72	1.27	0.90	0.48	0.29	0.19	0.11	14.25
		0.4	0.42	0.27	0.60	0.70	1.51	2.43	2.17	1.56	0.99	0.69	0.41	0.24	16.84
		0.5	0.52	0.37	0.74	0.96	1.84	2.78	2.66	1.92	1.29	0.95	0.55	0.32	18.04
	Q3	0.6	0.62	0.48	0.90	1.28	2.23	3.18	3.23	2.34	1.65	1.27	0.70	0.41	19.30
	Q4	0.8	0.93	0.84	1.36	2.23	3.32	4.23	4.85	3.53	2.74	2.26	1.14	0.69	22.45
		0.9	1.20	1.20	1.79	3.16	4.33	5.14	6.35	4.64	3.81	3.27	1.56	0.97	25.02
	Q5	MAX	2.17	2.15	3.48	6.61	5.98	7.64	11.06	5.73	5.26	4.92	2.43	1.21	
	329425 ISN WILLISTON SLOULIN AP ND	Q0	MIN	0.03	0.04	0.02	0.03	0.15	0.46	0.31	0.07	0.15	0.09	0.01	0.02
		0.1	0.11	0.07	0.19	0.18	0.50	0.95	0.53	0.35	0.30	0.11	0.08	0.12	9.82
Q1		0.2	0.19	0.13	0.30	0.32	0.78	1.29	0.86	0.57	0.50	0.22	0.17	0.20	11.10
		0.4	0.34	0.24	0.50	0.63	1.30	1.85	1.50	0.98	0.88	0.47	0.35	0.37	12.98
		0.5	0.43	0.30	0.62	0.81	1.58	2.14	1.86	1.22	1.09	0.63	0.47	0.46	13.85
Q3		0.6	0.53	0.38	0.75	1.02	1.90	2.46	2.28	1.48	1.34	0.82	0.61	0.56	14.76
Q4		0.8	0.82	0.60	1.12	1.64	2.82	3.31	3.46	2.24	2.06	1.39	1.03	0.87	17.03
		0.9	1.10	0.82	1.46	2.24	3.66	4.06	4.58	2.94	2.73	1.96	1.45	1.16	18.86
Q5		MAX	1.76	1.75	2.26	2.81	4.17	6.16	6.62	4.66	3.11	3.56	3.31	1.43	
330058 CAK AKRON CANTON AP OH		Q0	MIN	0.80	0.31	1.27	0.91	1.15	0.37	0.67	1.13	0.61	0.85	0.62	1.42
		0.1	1.12	0.94	1.82	1.52	1.73	1.34	1.37	1.46	1.24	1.07	1.23	1.76	29.83
	Q1	0.2	1.46	1.26	2.19	1.98	2.27	1.85	1.96	1.98	1.74	1.42	1.66	2.10	32.49
		0.4	2.02	1.80	2.75	2.74	3.18	2.73	2.99	2.85	2.60	2.01	2.38	2.61	36.31
		0.5	2.30	2.07	3.02	3.12	3.64	3.18	3.54	3.30	3.05	2.31	2.75	2.86	38.04
	Q3	0.6	2.60	2.37	3.30	3.54	4.14	3.68	4.14	3.79	3.55	2.64	3.16	3.12	39.82
	Q4	0.8	3.41	3.17	4.04	4.64	5.47	5.03	5.81	5.12	4.91	3.52	4.25	3.79	44.18
		0.9	4.12	3.88	4.65	5.59	6.63	6.24	7.30	6.29	6.11	4.29	5.22	4.34	47.63
	Q5	MAX	4.87	5.01	5.68	6.46	7.28	8.42	10.94	8.19	9.02	7.10	9.39	6.72	
	331576 LUK CINCINNATI LUNKEN AP OH	Q0	MIN	0.49	0.31	1.39	0.67	0.81	0.77	0.59	1.09	0.50	0.74	0.63	0.42
		0.1	1.15	0.86	1.90	1.51	1.89	2.05	1.59	1.83	0.81	0.95	1.40	1.31	33.22
Q1		0.2	1.55	1.25	2.40	2.05	2.55	2.60	2.14	2.37	1.26	1.37	1.86	1.75	36.00
		0.4	2.25	1.93	3.19	2.96	3.68	3.47	3.05	3.24	2.12	2.10	2.64	2.47	39.96
		0.5	2.60	2.29	3.57	3.43	4.26	3.90	3.51	3.68	2.59	2.48	3.03	2.84	41.75
Q3		0.6	2.99	2.69	3.99	3.95	4.90	4.36	4.02	4.15	3.13	2.91	3.46	3.24	43.59
Q4		0.8	4.03	3.80	5.09	5.35	6.61	5.58	5.39	5.40	4.64	4.09	4.62	4.31	48.08
		0.9	4.95	4.80	6.02	6.58	8.12	6.62	6.58	6.49	6.04	5.14	5.62	5.25	51.63
Q5		MAX	7.31	6.54	6.68	8.29	10.46	7.97	7.85	7.25	8.50	8.45	7.00	8.04	