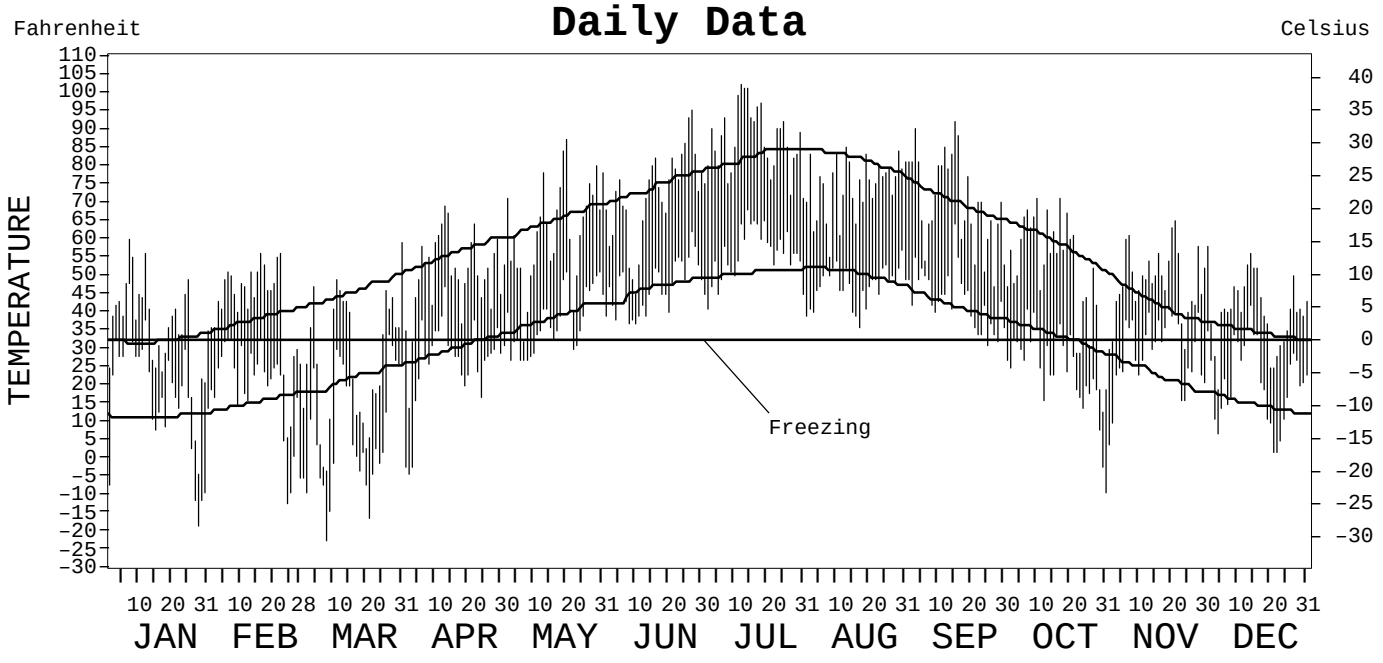
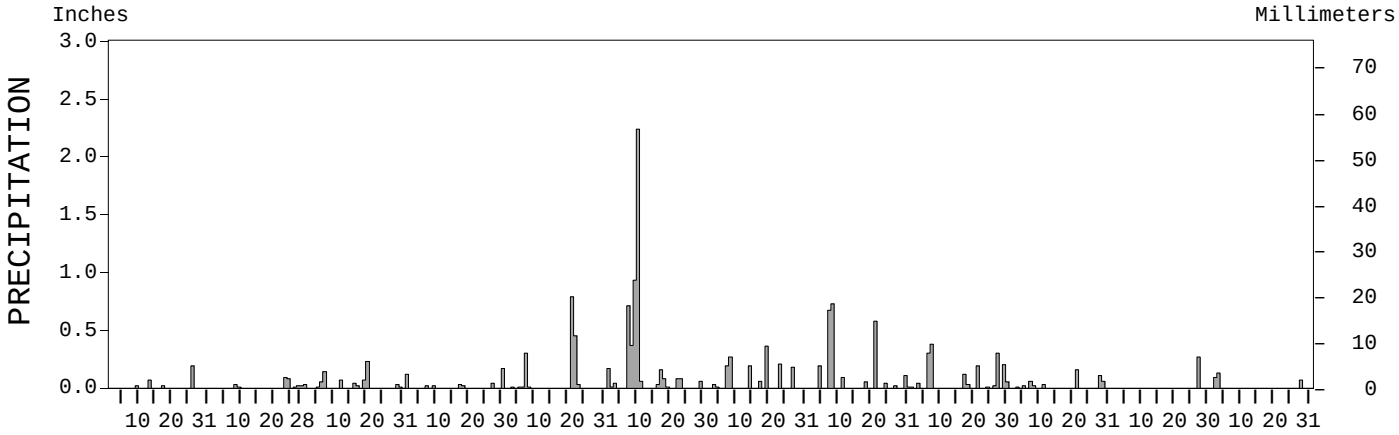
2002 LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA

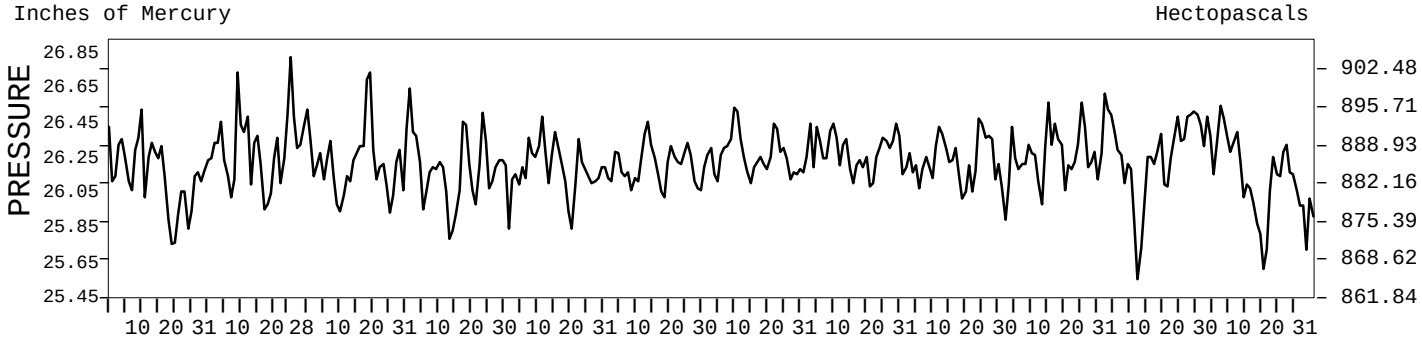
ISSN 0198-2982

GREAT FALLS,
MONTANA (GTF)

Daily Data







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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA

DIRECTOR NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 2002

GREAT FALLS, MT (GTF)

LATITUDE: 47° 28′ 24″ N LONGITUDE: 111° 22′ 56″ W ELEVATION (FT): GRND: 3670 BARO: 3673 TIME ZONE: MOUNTAIN (UTC + 7) WBAN: 24143

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	MEAN DAILY MAXIMUM	35.0	41.3	27.1	50.3	62.3	72.0	86.6	74.3	70.3	50.8	48.2	40.2	54.9
	HIGHEST DAILY MAXIMUM	60	56	59	69	87	95	102	85	92	71	65	58	102
	DATE OF OCCURRENCE	07	22+	31	13	20	27	12	13	15	17+	21	01	JUL 12
	MEAN DAILY MINIMUM	17.3	19.3	7.7	26.1	37.3	46.8	55.7	47.3	43.6	24.4	29.0	21.4	31.3
	LOWEST DAILY MINIMUM	−18	−12	−22	−4	27	37	41	36	31	−9	4	2	−22
	DATE OF OCCURRENCE	28	24	08	02	08+	10+	02	17	25	31	01	22+	MAR 08
	AVERAGE DRY BULB	26.2	30.3	17.4	38.2	49.8	59.4	71.2	60.8	57.0	37.6	38.6	30.8	43.1
	MEAN WET BULB	23.3		15.4	32.2	41.8	51.3	58.0	52.3	47.5	31.9	32.6	26.8	
	MEAN DEW POINT	16.5		10.0	23.2	32.5	44.0	47.9	45.3	39.0	24.3	22.6	19.3	
	NUMBER OF DAYS WITH:													
	MAXIMUM ≥ 90°	0	0	0	0	0	2	13	0	2	0	0	0	17
	MAXIMUM ≤ 32°	11	6	16	2	1	0	0	0	0	6	3	7	52
	MINIMUM ≤ 32°	28	25	30	22	10	0	0	0	2	24	18	25	184
	MINIMUM ≤ 0°	5	3	12	3	0	0	0	0	0	2	0	0	25
H/C	HEATING DEGREE DAYS	1198	963	1466	799	468	199	21	138	261	842	785	1053	8193
	COOLING DEGREE DAYS	0	0	0	0	6	41	222	15	28	0	0	0	312
RH	MEAN (PERCENT)	66	53	73	58	55	60	47	62	58	65	54	64	60
	HOUR 05 LST	69	61	79	71	75	78	66	82	74	77	60	68	72
	HOUR 11 LST	64	48	69	51	47	50	37	52	47	55	46	59	52
	HOUR 17 LST	65	44	65	47	39	43	29	43	40	50	50	62	48
	HOUR 23 LST	68	57	77	65	64	69	54	71	68	72	59	70	66
S	PERCENT POSSIBLE SUNSHINE													
W/O	NUMBER OF DAYS WITH:													
	HEAVY FOG(VISBY ≤ 1/4 MI)	3	0	3	3	2	1	0	0	1	4	0	2	19
	THUNDERSTORMS	0	0	0	0	1	5	8	6	1	0	0	4	25
CLOUDINESS	SUNRISE-SUNSET: (OKTAS)													
	CEILOMETER (≤ 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	MIDNIGHT-MIDNIGHT: (OKTAS)													
	CEILOMETER (≤ 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	NUMBER OF DAYS WITH:													
	CLEAR													
	PARTLY CLOUDY													
	CLOUDY													
PR	MEAN STATION PRESS. (IN.)	26.15	26.29	26.22	26.19	26.18	26.20	26.26	26.28	26.21	26.30	26.25	26.11	26.22
	MEAN SEA-LEVEL PRESS. (IN.)		30.18	30.17	30.01	29.94	29.91	29.92	30.00	29.94	30.14	30.08	29.97	
WINDS	RESULTANT SPEED (MPH)	12.7	12.6	4.5	5.8	5.3	6.2	4.4	2.7	4.2	3.5	12.6		
	RES. DIR. (TENS OF DEGS.)	22	23	25	26	27	26	24	27	24	25	23		
	MEAN SPEED (MPH)	14.7	16.3	11.0	12.4	11.8	10.8	9.9	8.6	10.2	9.2	14.8	12.1	11.8
	PREVAIL.DIR.(TENS OF DEGS.)	22	21	22	23	23	23	24	23	24	24	22	23	22
	MAXIMUM 2-MINUTE WIND:													
	SPEED (MPH)	51	54	46	52	45	40	41	51	36	35	39	35	54
	DIR. (TENS OF DEGS.)	23	24	22	26	31	18	27	32	23	36	24	23	24
	DATE OF OCCURRENCE	12	11	31	13	22	27	14	16	19+	05	17	27+	FEB 11
	MAXIMUM 5-SECOND WIND:													
	SPEED (MPH)	61	66	51	58	53	52	59	60	43	43	47	41	66
	DIR. (TENS OF DEGS.)	24	24	23	27	31	18	26	32	34	32	25	23	24
	DATE OF OCCURRENCE	12	11	31	13	22	27	14	16	24	05	17	27+	FEB 11
PRECIPITATION	WATER EQUIVALENT:													
	TOTAL (IN.)	0.30	0.26	0.70	0.42	1.61	5.03	1.50	2.49	1.65	0.47	0.27	0.29	14.99
	GREATEST 24-HOUR (IN.)	0.19	0.14	0.23	0.17	0.79	2.90	0.46	1.27	0.65	0.16	0.27	0.20	2.90
	DATE OF OCCURRENCE	26	23-24	20	30	21	09-10	07-08	07-08	06-07	21	27	02-03	JUN 09-10
	NUMBER OF DAYS WITH:													
	PRECIPITATION ≥ 0.01	4	7	11	7	8	15	9	10	12	8	1	3	95
	PRECIPITATION ≥ 0.10	1	0	2	2	3	6	6	5	6	2	1	1	35
	PRECIPITATION ≥ 1.00	0	0	0	0	0	1	0	0	0	0	0	0	1
SNOWFALL	SNOW,ICE PELLETS,HAIL:													
	TOTAL (IN.)	7.3	7.6	19.3	5.2	6.7	T	T	0.0	T	5.7	T	7.4	59.2
	GREATEST 24-HOUR (IN.)	5.8	3.8	6.8	4.3	4.2	T	T	0.0	T	2.1	T	5.7	6.8
	DATE OF OCCURRENCE	26	23	20	01	07	10	23		21	29	27+	03	MAR 20
	MAXIMUM SNOW DEPTH (IN.)	4	4	9	3	3	0	0	0	0	4	3	6	9
	DATE OF OCCURRENCE	28+	27+	21	02	08					30	01	04	MAR 21
	NUMBER OF DAYS WITH:													
	SNOWFALL ≥ 1.0	1	2	6	1	2	0	0	0	0	3	0	2	17

NORMALS, MEANS, AND EXTREMES

GREAT FALLS, MT (GTF)

LATITUDE: 47° 28′ 24″ N LONGITUDE: 111° 22′ 56″ W ELEVATION (FT): GRND: 3670 BARO: 3673 TIME ZONE: MOUNTAIN (UTC + 7) WBAN: 24143

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	32.1	37.7	45.3	55.6	64.7	73.9	82.0	81.2	69.6	58.0	42.1	34.2	56.4
	MEAN DAILY MAXIMUM	51	31.4	37.4	43.6	54.5	64.9	73.8	83.2	81.8	70.2	58.6	43.3	35.1	56.5
	HIGHEST DAILY MAXIMUM	65	67	70	78	89	93	101	105	106	98	91	76	69	106
	YEAR OF OCCURRENCE		1992	1992	1978	1980	1980	1990	1973	1969	1980	1992	1999	1939	AUG 1969
	MEAN OF EXTREME MAXS.	55	54.6	58.0	64.9	75.4	83.9	90.7	96.9	96.5	89.2	79.4	64.1	55.0	75.7
	NORMAL DAILY MINIMUM	30	11.3	15.1	21.5	29.7	38.3	46.0	50.4	49.9	41.2	33.0	22.5	14.4	31.1
	MEAN DAILY MINIMUM	51	12.4	17.2	22.2	31.6	40.8	48.5	53.5	52.5	43.9	35.3	24.6	16.8	33.3
	LOWEST DAILY MINIMUM	65	-37	-35	-29	-6	15	31	36	30	16	-11	-25	-43	-43
	YEAR OF OCCURRENCE		1969	1996	1951	1975	1954	1999	1999	1992	2000	1991	1985	1968	DEC 1968
	MEAN OF EXTREME MINS.	55	-17.0	-9.2	-3.5	16.0	28.7	38.1	44.1	41.9	30.4	17.0	-.9	-13.4	14.4
	NORMAL DRY BULB	30	21.2	27.4	33.3	43.6	53.1	61.6	68.2	66.9	56.6	47.5	33.9	23.9	44.8
	MEAN DRY BULB	55	21.2	27.0	32.4	43.0	52.9	61.2	68.3	67.2	57.1	47.0	34.1	25.6	44.8
	MEAN WET BULB	49	18.1	22.9	27.1	35.6	44.0	51.1	55.1	53.7	46.6	38.8	29.0	21.8	37.0
	MEAN DEW POINT	49	10.2	14.8	18.5	25.4	34.2	42.1	44.2	42.2	36.5	28.7	20.1	13.5	27.5
	NORMAL NO. DAYS WITH:														
	MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.0	0.1	2.7	8.1	7.7	1.4	0.0	0.0	0.0	20.0
	MAXIMUM ≤ 32°	30	13.2	8.2	6.0	1.4	0.0	0.0	0.0	0.0	*	0.9	5.1	12.1	46.9
	MINIMUM ≤ 32°	30	26.7	23.7	25.3	15.9	3.3	0.1	0.0	0.0	2.8	10.9	21.5	26.4	156.6
	MINIMUM ≤ 0°	30	9.7	5.0	2.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	2.1	7.1	26.5
H/C	NORMAL HEATING DEG. DAYS	30	1327	1065	964	657	410	183	52	73	291	592	967	1247	7828
	NORMAL COOLING DEG. DAYS	30	0	0	0	1	7	47	105	107	19	2	0	0	288
RH	NORMAL (PERCENT)	30	63	62	60	54	54	52	45	46	52	53	59	63	55
	HOUR 05 LST	30	66	67	68	67	69	69	65	64	67	63	65	66	66
	HOUR 11 LST	30	61	58	55	47	46	43	37	39	46	46	55	60	49
	HOUR 17 LST	30	60	54	49	41	41	38	29	30	38	42	55	61	45
	HOUR 23 LST	30	65	66	65	59	60	59	50	50	58	59	63	65	60
S	PERCENT POSSIBLE SUNSHINE	46	49	56	66	62	62	65	79	76	67	61	46	44	61
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI)	63	1.2	1.7	2.2	1.6	0.8	0.6	0.3	0.4	0.6	1.2	1.9	1.1	13.6
	THUNDERSTORMS	65	0.0	0.1	0.1	0.7	3.3	6.9	7.2	5.9	1.6	0.2	0.0	0.1	26.1
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1			9.6		8.0	4.0							
	MIDNIGHT-MIDNIGHT (OKTAS)	1					8.0	4.0							
	MEAN NO. DAYS WITH:														
	CLEAR	0		1.0	2.0		1.0	8.0		8.0	6.0	2.0		5.0	
	PARTLY CLOUDY	1	1.0	2.0	1.0		6.0	6.0			3.0	8.0		1.0	
	CLOUDY	1	2.5	5.0	12.0		20.0	5.0		1.0	4.0	7.0		2.0	
PR	MEAN STATION PRESSURE(IN)	28	26.20	26.19	26.15	26.18	26.18	26.20	26.26	26.27	26.27	26.25	26.20	26.20	26.21
	MEAN SEA-LEVEL PRES. (IN)	48	30.10	30.07	30.00	29.97	29.93	29.90	29.94	29.94	30.00	30.03	30.05	30.07	30.00
WINDS	MEAN SPEED (MPH)	43	14.5	13.9	12.5	12.5	11.2	11.0	10.0	10.0	10.9	12.6	14.7	15.2	12.4
	PREVAIL.DIR(TENS OF DEGS)	26	22	22	23	23	23	23	23	23	23	23	22	22	23
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	8	51	54	46	52	48	41	45	51	49	54	45	55	55
	DIR. (TENS OF DEGS)		23	24	22	26	24	22	24	32	24	25	23	25	25
	YEAR OF OCCURRENCE		2002	2002	2002	2002	1998	1995	1995	2002	1998	1999	1995	1999	DEC 1999
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	8	64	66	54	58	53	53	59	60	57	62	54	67	67
	DIR. (TENS OF DEGS)		29	24	25	27	31	28	26	32	23	27	23	25	25
	YEAR OF OCCURRENCE		2000	2002	1997	2002	2002	2000	2002	2002	1998	1999	1995	1999	DEC 1999
PRECIPITATION	NORMAL (IN)	30	0.68	0.51	1.01	1.40	2.53	2.24	1.45	1.65	1.23	0.93	0.59	0.67	14.89
	MAXIMUM MONTHLY (IN)	65	2.05	2.16	2.18	4.63	8.13	5.37	4.68	4.90	3.56	3.43	2.27	1.92	8.13
	YEAR OF OCCURRENCE		1969	1958	1967	1975	1953	1965	1993	1985	1941	1975	1955	1977	MAY 1953
	MINIMUM MONTHLY (IN)	65	T	0.01	0.10	0.05	0.51	0.52	0.04	0.03	0.09	T	0.02	T	T
	YEAR OF OCCURRENCE		1944	1950	1986	1981	2001	1960	1959	1969	1990	1965	1954	1954	OCT 1965
	MAXIMUM IN 24 HOURS (IN)	65	0.74	0.88	1.14	2.43	3.42	2.90	2.40	2.74	1.82	1.15	0.97	0.82	3.42
	YEAR OF OCCURRENCE		1966	1951	1977	1951	1980	2002	1983	1989	1982	1954	1946	1972	MAY 1980
	NORMAL NO. DAYS WITH:														
	PRECIPITATION ≥ 0.01	30	9.7	7.5	9.5	9.7	11.9	10.8	7.3	8.0	7.3	5.7	6.8	9.1	103.3
	PRECIPITATION ≥ 1.00	30	0.0	0.0	*	0.1	0.3	0.3	0.2	0.4	0.1	*	0.0	0.0	1.4
SNOWFALL	NORMAL (IN)	30	9.6	7.6	11.5	8.0	2.3	0.*	0.0	0.3	1.4	4.4	7.4	8.4	60.9
	MAXIMUM MONTHLY (IN)	64	22.6	26.1	24.2	35.4	11.6	11.1	T	8.3	10.4	16.6	22.1	25.0	35.4
	YEAR OF OCCURRENCE		1969	1958	1989	1967	1989	1950	1993	1992	1984	1975	1955	1945	APR 1967
	MAXIMUM IN 24 HOURS (IN)	64	10.2	11.0	11.5	16.8	11.6	11.0	T	8.3	8.4	8.3	10.8	9.8	16.8
	YEAR OF OCCURRENCE		1984	1951	1987	1973	1989	1950	1993	1992	1988	1957	1946	1945	APR 1973
	MAXIMUM SNOW DEPTH (IN)	50	17	21	15	24	8	4	0	0	5	6	11	14	24
	YEAR OF OCCURRENCE		1978	1978	1977	1975	1983	1969			1988	1985	1978	1958	APR 1975
	NORMAL NO. DAYS WITH:														
	SNOWFALL ≥ 1.0	30	3.2	2.6	3.3	2.2	0.7	0.0	0.0	0.1	0.3	1.5	2.4	2.9	19.2

PRECIPITATION (inches) 2002 GREAT FALLS, MT (GTF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	0.33	0.26	0.30	2.89	0.95	1.43	0.13	0.88	1.29	0.97	1.36	1.37	12.16
1974	1.44	0.26	1.10	1.03	3.16	1.08	0.48	4.76	0.73	0.36	0.26	0.60	15.26
1975	1.14	0.71	1.34	4.63	3.89	4.47	1.20	2.13	0.74	3.43	1.01	0.55	25.24
1976	0.57	0.53	0.75	2.33	0.88	4.10	2.07	1.91	0.61	0.19	0.65	0.51	15.10
1977	1.04	0.19	1.90	0.26	2.11	0.54	1.87	1.94	2.22	0.51	0.43	1.92	14.93
1978	1.68	1.21	0.41	1.76	3.20	2.56	1.99	1.04	2.56	0.27	1.44	1.05	19.17
1979	0.71	0.57	1.00	2.05	0.69	2.61	0.27	0.29	0.33	0.84	0.29	0.26	9.91
1980	0.67	1.03	0.74	0.62	5.12	3.91	0.27	0.67	0.98	1.75	0.19	0.27	16.22
1981	0.34	0.44	2.09	0.05	5.20	1.32	1.04	1.21	0.39	1.06	0.29	0.43	13.86
1982	1.09	0.99	1.97	1.04	3.63	3.09	0.66	0.41	2.43	0.75	0.63	0.99	17.68
1983	0.10	0.33	1.61	0.26	1.34	3.03	3.78	1.10	1.89	0.77	1.28	0.70	16.19
1984	0.72	0.69	1.31	0.94	1.34	2.10	0.05	1.01	0.71	1.20	0.49	1.25	11.81
1985	0.35	0.22	1.02	0.41	3.28	0.58	0.47	4.90	3.23	1.10	1.16	0.47	17.19
1986	0.57	0.75	0.10	2.83	1.74	1.72	1.67	0.81	1.52	0.90	0.45	0.27	13.33
1987	0.05	0.24	1.81	0.64	2.63	1.33	3.05	2.43	1.30	0.02	0.30	0.24	14.04
1988	0.76	0.47	0.44	0.77	1.60	1.42	1.82	0.26	2.33	0.66	0.30	0.97	11.80
1989	0.96	1.19	1.38	2.41	2.41	1.70	3.03	4.88	1.87	0.41	0.81	1.32	22.37
1990	0.29	0.17	1.69	0.84	3.97	1.23	1.03	3.19	0.09	0.13	0.70	0.73	14.06
1991	0.63	0.21	1.21	1.54	1.54	4.15	0.75	1.35	1.00	0.81	0.77	0.08	14.04
1992	0.48	0.23	0.43	1.32	2.14	3.22	1.81	1.37	0.25	2.61	0.29	0.31	14.46
1993	1.17	0.70	0.86	3.16	2.74	2.58	4.68	3.04	1.71	1.10	0.97	0.30	23.01
1994	0.47	0.53	0.20	1.90	1.81	1.56	0.72	0.61	0.35	1.77	0.42	0.24	10.58
1995	0.05	0.15	0.82	2.17	3.11	2.92	3.36	0.54	1.20	0.78	0.35	0.14	15.59
1996	0.49	0.26	0.83	1.40	2.57	1.14	0.17	0.67	1.47	0.54	0.35	1.25	11.14
1997	0.27	0.32	0.62	1.27	2.89	3.49	1.88	1.61	0.27	0.91	0.18	0.33	14.04
1998	0.72	0.42	1.10	0.42	3.08	5.18	1.73	1.72	1.00	0.80	0.96	0.22	17.35
1999	0.33	0.36	0.53	1.43	2.29	1.67	0.81	2.18	1.72	0.67	0.45	0.03	12.47
2000	0.34	0.69	0.74	0.33	2.10	1.55	1.04	0.12	1.32	1.34	0.49	0.19	10.25
2001	0.65	0.39	0.51	1.10	0.51	1.79	2.74	0.26	1.50	0.33	0.14	0.39	10.31
2002	0.30	0.26	0.70	0.42	1.61	5.03	1.50	2.49	1.65	0.47	0.27	0.29	14.99
POR= 65 YRS	0.75	0.62	0.97	1.26	2.41	2.67	1.38	1.35	1.22	0.84	0.69	0.66	14.82

WBAN : 24143

AVERAGE TEMPERATURE (˚F) 2002 GREAT FALLS, MT (GTF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	24.9	29.6	39.5	40.2	55.4	63.6	71.4	71.2	58.2	49.2	25.2	28.9	46.4
1974	19.8	33.8	33.3	47.1	49.5	66.9	72.9	62.9	54.8	51.4	38.7	32.5	47.0
1975	22.7	13.1	27.4	30.9	50.0	58.8	71.8	64.8	57.3	45.7	32.9	28.6	42.0
1976	26.4	30.5	31.6	46.1	56.9	61.0	70.3	67.9	61.2	46.5	36.6	31.6	47.2
1977	21.6	39.2	34.0	47.1	51.3	65.4	68.0	62.5	56.1	47.8	30.8	16.5	45.0
1978	7.7	14.5	33.6	44.1	51.3	62.5	67.1	66.5	58.8	48.8	23.9	17.4	41.4
1979	6.5	18.8	34.7	40.7	51.5	62.9	69.0	68.5	62.9	49.4	33.4	34.6	44.4
1980	15.2	28.1	32.4	52.9	57.1	60.9	69.4	62.4	58.0	49.0	39.4	23.8	45.7
1981	33.8	30.8	37.2	46.5	52.8	58.1	66.5	69.8	59.8	45.3	40.8	24.6	47.2
1982	6.3	19.5	27.9	37.9	48.4	60.2	66.8	65.0	53.9	46.6	32.1	26.8	41.0
1983	32.2	36.7	35.8	41.7	50.7	60.1	65.8	72.4	53.6	48.9	35.1	4.0	44.8
1984	29.5	36.9	35.3	44.4	51.7	59.8	69.8	71.6	51.8	40.2	35.5	13.0	45.0
1985	19.2	21.6	33.4	48.5	57.3	62.2	73.0	61.8	48.2	44.5	12.3	24.6	42.2
1986	36.6	18.6	43.9	42.4	53.2	66.0	64.9	69.0	51.5	49.6	32.0	33.2	46.7
1987	32.4	36.0	36.2	52.8	57.8	65.4	66.8	61.6	58.9	47.5	40.4	29.6	48.8
1988	23.6	28.9	37.3	46.8	56.4	69.5	69.1	67.1	56.0	49.7	35.7	29.5	47.5
1989	28.0	10.3	29.0	43.4	50.9	60.8	70.2	64.0	56.1	46.2	36.6	27.5	43.6
1990	30.0	28.0	35.7	44.3	49.8	59.8	67.5	68.5	62.4	46.0	37.7	17.8	45.6
1991	19.0	39.2	35.0	43.1	51.2	57.9	68.0	71.7	57.7	42.4	31.7	35.0	46.0
1992	34.7	36.6	40.9	47.1	55.3	62.8	61.6	62.9	56.8	47.6	35.2	18.4	46.7
1993	14.8	19.3	37.6	43.7	55.5	56.5	58.1	60.5	52.5	46.2	28.1	33.6	42.2
1994	27.3	17.2	39.6	44.5	54.7	60.5	68.7	67.2	60.1	44.1	30.4	28.6	45.2
1995	28.2	28.0	30.2	39.8	49.3	56.9	63.9	64.0	56.0	43.2	35.1	26.6	43.4
1996	12.1	26.3	24.5	44.4	46.8	60.7	67.0	67.3	54.1	43.3	20.7	15.3	40.2
1997	17.4	31.3	33.6	36.6	51.8	59.3	65.3	65.3	60.5	45.7	34.3	30.7	44.3
1998	21.6	33.6	31.4	45.1	54.1	55.4	69.2	69.1	63.1	46.2	35.5	24.7	45.8
1999	27.4	34.5	37.8	39.9	49.7	57.8	63.6	68.0	52.5	46.7	43.3	35.2	46.4
2000	25.8	28.0	36.8	45.5	53.1	59.0	69.8	68.4	55.8	45.4	25.1	19.2	44.3
2001	30.5	17.5	36.1	42.2	55.3	60.1	68.6	70.8	60.6	46.1	41.8	25.4	46.3
2002	26.2	30.3	17.4	38.2	49.8	59.4	71.2	60.8	57.0	37.6	38.6	30.8	43.1
POR= 65 YRS	22.1	26.6	32.6	43.5	53.1	60.9	68.6	67.2	57.4	47.5	34.3	26.4	45.0

HEATING DEGREE DAYS (base 65˚F) 2002 GREAT FALLS, MT (GTF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1973–74	6	27	226	483	1191	1111	1397	865	974	530	477	85	7372
1974–75	6	109	311	419	783	1000	1304	1450	1159	1015	460	190	8206
1975–76	12	60	235	592	961	1122	1192	994	1030	565	250	165	7178
1976–77	3	20	144	572	845	1031	1339	715	953	529	419	70	6640
1977–78	37	119	280	527	1021	1502	1776	1410	966	622	421	106	8787
1978–79	54	57	236	496	1228	1473	1808	1292	931	722	417	111	8825
1979–80	19	15	106	482	939	934	1538	1066	1004	370	267	148	6888
1980–81	16	110	225	504	763	1275	960	953	855	548	373	218	6800
1981–82	34	14	201	603	718	1244	1819	1271	1142	806	511	161	8524
1982–83	44	66	342	565	978	1181	1007	786	899	692	437	154	7151
1983–84	59	2	356	490	891	1888	1094	810	915	620	419	183	7727
1984–85	12	18	415	760	879	1611	1415	1212	971	489	249	134	8165
1985–86	4	147	498	629	1581	1246	872	1297	648	672	390	48	8032
1986–87	50	22	400	471	987	979	1004	803	888	372	238	70	6284
1987–88	66	136	189	540	729	1090	1278	1039	852	538	281	65	6803
1988–89	24	39	294	468	876	1090	1140	1529	1109	642	430	150	7791
1989–90	3	96	269	575	845	1155	1079	1031	902	613	462	204	7234
1990–91	34	37	118	583	813	1460	1425	714	922	649	417	209	7381
1991–92	19	5	233	705	992	925	935	819	740	532	307	128	6340
1992–93	130	171	260	538	886	1441	1556	1274	841	634	291	266	8288
1993–94	221	165	372	578	1101	966	1161	1335	780	608	316	162	7765
1994–95	35	48	158	640	1031	1122	1129	1031	1072	749	478	235	7728
1995–96	70	91	285	671	889	1181	1639	1114	1252	609	557	150	8508
1996–97	41	50	323	669	1326	1535	1467	938	967	846	408	177	8747
1997–98	56	66	155	594	915	1055	1336	877	1032	589	335	282	7292
1998–99	8	14	146	573	880	1241	1157	846	839	746	473	222	7145
1999–00	115	30	372	561	642	919	1210	1069	866	579	361	191	6915
2000–01	21	34	289	600	1188	1413	1059	1328	893	680	305	185	7995
2001–02	23	4	166	575	690	1222	1198	963	1466	799	468	199	7773
2002–	21	138	261	842	785	1053							

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COOLING DEGREE DAYS (base 65˚F) 2002 GREAT FALLS, MT (GTF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	0	0	0	0	14	87	213	226	30	0	0	0	570
1974	0	0	0	0	0	148	253	54	11	7	0	0	473
1975	0	0	0	0	0	10	231	62	12	0	0	0	315
1976	0	0	0	0	6	51	174	116	37	5	0	0	389
1977	0	0	0	0	0	86	139	48	20	0	0	0	293
1978	0	0	0	0	0	36	125	111	60	0	0	0	332
1979	0	0	0	0	2	55	152	132	50	5	0	0	396
1980	0	0	0	12	30	31	156	37	21	18	0	0	305
1981	0	0	0	0	3	17	85	168	49	0	0	0	322
1982	0	0	0	0	0	24	104	73	15	0	0	0	216
1983	0	0	0	0	4	14	90	241	19	0	0	0	368
1984	0	0	0	5	15	33	169	229	26	0	0	0	477
1985	0	0	0	0	20	58	260	51	0	0	0	0	389
1986	0	0	0	0	32	85	56	153	0	0	0	0	326
1987	0	0	0	13	23	90	128	36	13	4	0	0	307
1988	0	0	0	0	20	206	160	112	30	0	0	0	528
1989	0	0	0	0	0	31	170	72	8	0	0	0	281
1990	0	0	0	0	0	54	119	157	47	2	0	0	379
1991	0	0	0	0	0	1	119	217	19	13	0	0	369
1992	0	0	0	2	10	70	31	113	21	5	0	0	252
1993	0	0	0	0	4	19	13	30	3	0	0	0	69
1994	0	0	0	0	4	33	156	122	17	0	0	0	332
1995	0	0	0	0	0	1	44	68	24	0	0	0	137
1996	0	0	0	0	0	27	110	129	4	0	0	0	270
1997	0	0	0	0	5	15	71	85	26	2	0	0	204
1998	0	0	0	0	4	0	146	146	95	0	0	0	391
1999	0	0	0	0	4	9	80	131	3	0	0	0	227
2000	0	0	0	0	1	19	175	147	20	0	0	0	362
2001	0	0	0	0	12	42	144	190	43	0	0	0	431
2002	0	0	0	0	6	41	222	15	28	0	0	0	312

SNOWFALL (inches) 2002 GREAT FALLS, MT (GTF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1973–74	0.0	0.0	6.0	3.6	12.2	12.8	13.4	2.8	9.5	6.1	T	T	66.4
1974–75	0.0	0.0	1.3	1.1	1.3	5.9	13.2	7.2	12.4	29.2	5.6	0.0	77.2
1975–76	0.0	0.0	T	16.6	9.7	5.7	6.1	5.6	8.9	16.7	0.0	0.0	69.3
1976–77	0.0	0.0	0.0	0.4	8.8	8.3	13.9	1.8	21.5	1.0	2.1	0.0	57.8
1977–78	0.0	0.0	0.0	3.2	4.8	18.2	19.3	16.8	3.3	5.0	T	0.0	70.6
1978–79	0.0	0.0	0.0	T	16.5	11.5	12.0	8.1	14.8	8.6	2.6	T	74.1
1979–80	0.0	0.0	0.0	0.7	3.1	3.0	7.0	9.2	6.9	4.4	T	0.0	34.3
1980–81	0.0	0.0	0.0	7.7	3.3	5.4	4.1	7.1	11.5	0.1	T	0.0	39.2
1981–82	0.0	0.0	0.0	7.9	1.0	5.9	19.7	16.3	23.4	18.5	7.6	T	100.3
1982–83	0.0	0.0	0.7	1.5	8.8	13.0	0.9	4.1	6.6	1.4	8.6	0.0	45.6
1983–84	0.0	0.0	7.8	T	14.4	11.9	16.2	7.7	19.5	5.2	1.0	0.0	83.7
1984–85	0.0	0.0	10.4	10.9	5.5	16.6	5.4	3.8	11.9	2.4	0.0	0.0	66.9
1985–86	0.0	T	2.5	8.5	18.1	7.9	4.4	15.4	0.5	14.1	2.4	0.0	73.8
1986–87	0.0	0.0	0.1	1.2	7.9	4.5	1.0	1.8	16.5	0.6	5.3	0.0	38.9
1987–88	0.0	0.0	0.0	0.1	2.9	4.7	12.6	9.2	3.9	7.4	0.0	0.0	40.8
1988–89	0.0	0.0	9.1	5.3	6.0	10.9	16.0	18.7	24.2	15.7	11.6	T	117.5
1989–90	T	0.0	1.7	1.3	7.4	19.9	5.1	3.0	16.2	5.4	T	T	60.0
1990–91	T	0.0	0.0	0.4	6.7	8.5	9.2	3.1	23.9	6.0	4.0	T	61.8
1991–92	0.0	T	0.0	11.2	9.1	0.9	6.1	2.2	3.5	3.2	0.9	0.0	37.1
1992–93	0.0	8.3	0.0	8.3	3.3	6.4	14.7	10.1	7.0	4.4	T	T	62.5
1993–94	T	T	T	3.8	13.0	4.2	6.5	10.1	2.1	11.8	T	T	51.5
1994–95	0.0	0.0	T	3.8	10.2	2.7	0.2	4.1	12.9	0.0	0.0		
1995–96			T	4.5	6.3	1.9	8.8	11.5	21.7	8.6	2.8	T	
1996–97		0.0	T	8.3	8.9								
1997–98	0.0	0.0	0.0	0.4	3.3	4.0	11.0	3.4	14.7	0.9	T	0.3	38.0
1998–99	0.0	0.0	0.0	1.0	13.0	5.0	9.6	7.0	9.9	8.4	2.8	0.1	56.8
1999–00	0.0	T	T	5.4	1.7	0.2	5.7	13.2	7.2	2.6	8.3	T	44.3
2000–01	T	0.0	1.6	0.9	9.4	6.6	8.6	12.1	9.3	7.6	1.6	0.0	57.7
2001–02	T	0.0	0.0	3.7	2.6	5.6	7.3	7.6	19.3	5.2	6.7	T	58.0
2002–	T	0.0	T	5.7	T	7.4							
POR= 64 YRS	T	0.1	T	3.4	7.2	8.0	9.5	8.5	10.6	7.1	1.9	0.3	56.6

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REFERENCE NOTES:

PAGE 1:
THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).

PAGE 2 AND 3:
H/C INDICATES HEATING AND COOLING DEGREE DAYS.
RH INDICATES RELATIVE HUMIDITY
W/O INDICATES WEATHER AND OBSTRUCTIONS
S INDICATES SUNSHINE.
PR INDICATES PRESSURE.
CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).

GENERAL:
T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.
+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.
NORMALS ARE 30-YEAR AVERAGES (1961 – 1990).
ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.
PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.
POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING.
WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.
0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.
CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET.
THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.

GENERAL CONTINUED:
CLEAR INDICATES 0 – 2 OKTAS, PARTLY CLOUDY INDICATES 3 – 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED.
WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. ”00” INDICATES CALM. ”36” INDICATES TRUE NORTH.
RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.
AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.
SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL.
A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F.
DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.
DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.
WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE ”METAR” OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.

2002
GREAT FALLS, MONTANA (GTF)

The city of Great Falls is located along the main stem of the Missouri River at its confluence with the Sun River. The Weather Service Office is located at the Municipal Airport on a plateau between the Sun and Missouri Rivers. This plateau is about 200 feet higher than most of the immediate valley area, and the airport is about two miles southwest of the Sun and Missouri River Junction. Except to the north and northeast, the valley is encircled by mountain ranges, which lie about 30 miles away from east to south, 40 miles to the southwest, and 60 to 100 miles distant from west to northwest. Topography plays an important part in the climate of Great Falls. The Continental Divide to the west, and Big and Little Belt Ranges to the south, are primary factors in producing the frequent wintertime chinook winds observed in this part of Montana. The combination of valleys and plateaus in the immediate area, contributes to marked temperature differences between the airport and the city proper, either on calm, clear mornings, or when chinook winds reach the airport before they are felt at the lower elevations in town.

Summertime in the area generally is quite pleasant, with cool nights, moderately warm and sunny days, and very little hot, humid weather. Most of the summer rainfall occurs in showers or thunderstorms, and steady rains may occur during late spring or early summer. At the airport, freezing temperatures do not occur in July or August and very rarely in June. Frost occurs frequently in April and October, but more often in the valleys than on the surrounding hills or plateaus. However, frost may occur on rare occasions in nearby low lying areas at any time of the year.

Winters are not as cold as is usually expected of a continental location at this latitude, largely as a result of the chinook winds for which this area is noted. While sub–zero weather is experienced normally several times during a winter, the coldest weather seldom lasts more than a few days at a time, and is usually terminated by southwest chinook winds which can produce sharp temperature rises of 40 degrees or more in 24 hours.

As a result of recurring chinooks throughout the winter season, snow seldom lies on the ground for more than a few days. In fact, the ground usually is bare, or nearly bare, of snow most of the winter, except in the surrounding mountains and higher foothills. On the other hand, invasions of cold air from the polar regions occur a few times each winter, and sharp temperature falls from above freezing to below zero within 24 hours are observed occasionally.

Precipitation generally falls as snow during late fall, winter, and early spring, although rain can occur in any month. Late spring, summer, and early fall precipitation is almost always rain, but some hail is observed occasionally during summer thunderstorms.

Although average annual precipitation at Great Falls would normally classify the area as semi–arid, it is important to note that about 70 percent of the annual total falls normally during the April to September growing season. The combination of ideal temperatures during the peak of the growing season, long hours of summer sunshine, and adequate precipitation during the six critical months, makes the climate very favorable for dryland farming. Heavy fog occurs about one day per month, but each case lasts only a small part of the day. Although the average windspeed is relatively high, strong winds over 70 mph are seldom observed. Visibility normally is excellent.

STATION LOCATION

GREAT FALLS, MONTANA

LOCATION	Occupied From	Occupied To	Airline Distances and Directions from previous Location	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE SEA LEVEL: GROUND TEMPERATURE SITE	ELEVATION ABOVE GROUND: WIND INSTRUMENT	EXTREME THERMOMETERS	PSYCHROMETER	SUN-SHINE SWITCH	TIPPING BUCKET RAIN GAUGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROTHERMOMETER	AUTOMATIC OBSERVING EQUIPMENT *	REMARKS
*NOTE:																
AIRPORT																
Administration Building Municipal Airport Gore Field+	12/20/39	08/01/94	1500 ft. NNE	47°29′	111°22′	3664 j3662 q3663	63 c75 f22 g22	18 a18 k5 s5	17 d17 k4 s5	b Unk e28 p37 r7	b15 n15 r5	b15 h15 m2 s5	15 a15 n15 r5	i4 t6		Weather Bureau from 1/25/40. a. Minor adjustment 2/22/40. b. Installed 11/21/41. c. Raised 11/21/41. d. Minor adjustment 1/30/57. e. Moved 80′ N 8/1/59. f. Moved 1100′ W 8/1/59. g. Minor adjustment 4/26/60. h. Minor adjustment 5/2/60. i. Commissioned 1100′ W of thermometer site 2/4/61. j. Effective 2/4/61. k. Moved to ground 3/11/76. m. Moved to ground 5/11/76. n. Minor move 5/11/76. p. Relocated 5/12/76. q. Effective 3/11/77. r. Moved to ground 5/31/78. s. Relocated 5/31/78. Station type changed from WSMO to WSCMO 2/1980. t. Minor adjustment and type change 7/8/85.
International Airport	08/01/94	Present	NA	47°28′	111°23′	u3670									S	ASOS commissioned 08/01/94. u. Ground elevation.

* TYPE

M = AMOS
T = AUTOB
S = ASOS
W = AWOS

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*** NOTES: For earlier station history see previous editions.**