

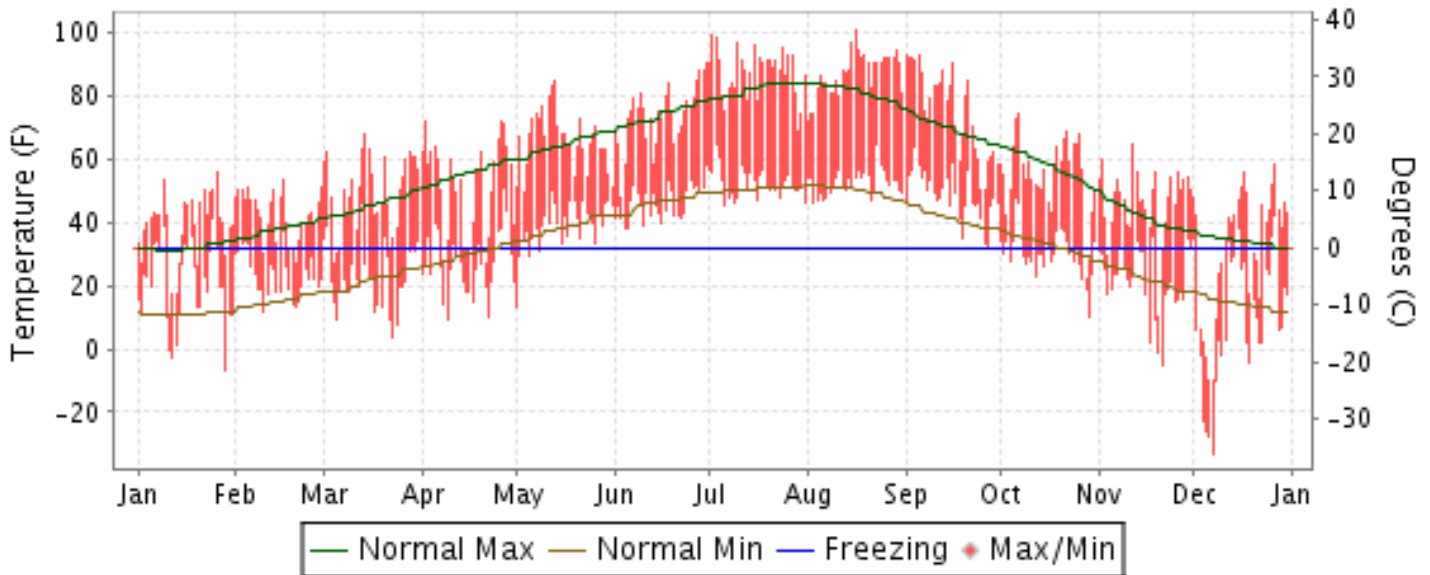


2013 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

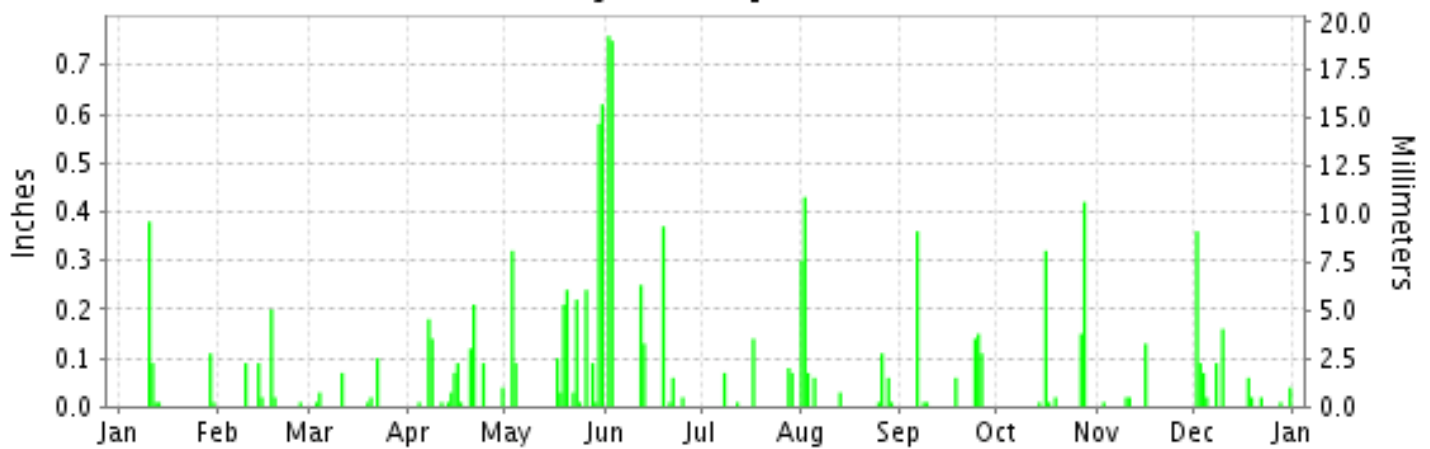
ISSN 0198-2982

GREAT FALLS, MONTANA (KGTF)

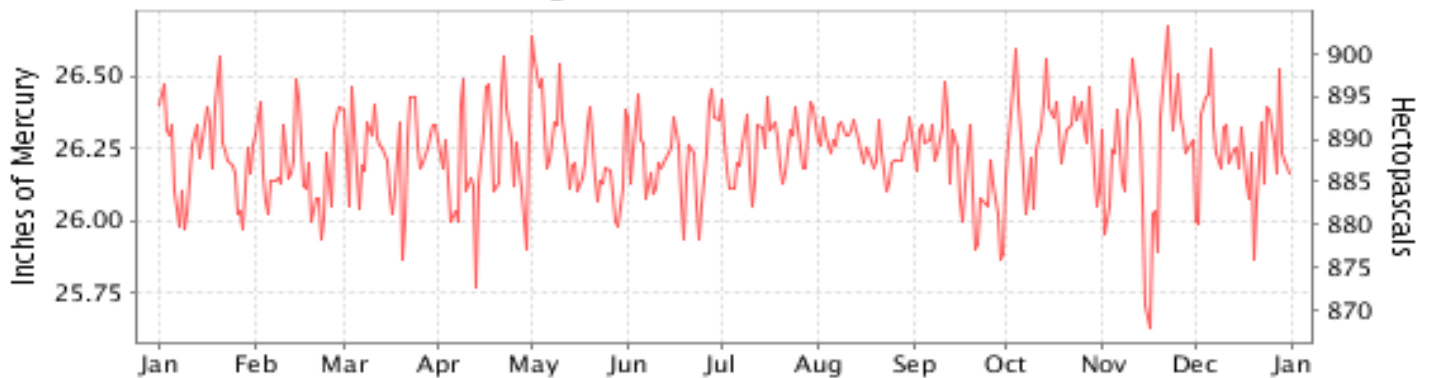
Daily Max/Min Temperature



Daily Precipitation



Daily Station Pressure



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ASHEVILLE, NORTH CAROLINA

Thomas R. Karl
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 2013

GREAT FALLS (KGTF)

LATITUDE: 47° 28'N LONGITUDE: 111° 22'W ELEVATION (FT): GRND: 3664 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	38.4	42.5	49.5	51.8	66.0	73.6	87.3	87.0	75.3	55.2	46.4	32.1	58.8	
	HIGHEST DAILY MAXIMUM	56	53	68	72	85	90	99	101	93	74	65	58	101	
	DATE OF OCCURRENCE	26	16	14	26+	13	30	02	16	05+	07	12	27	AUG 16	
	MEAN DAILY MINIMUM	20.4	23.2	22.5	27.0	39.0	46.1	52.3	52.5	48.5	30.3	21.2	10.0	32.8	
	LOWEST DAILY MINIMUM	-7	12	4	9	13	38	45	46	32	10	-5	-33	-33	
	DATE OF OCCURRENCE	29	10	23	09	01	05+	06	03	27	29	21	07	DEC 07	
	AVERAGE DRY BULB	29.4	32.9	36.0	39.4	52.5	59.9	69.8	69.7	61.9	42.7	33.8	21.1	45.8	
	MEAN WET BULB	24.5	28.2	29.5	32.8	45.3	51.9	57.1	56.0	50.9	36.5	28.9	20.1	38.5	
	MEAN DEW POINT	16.0	19.8	19.4	23.6	37.1	44.6	47.2	45.1	41.8	28.4	20.1	13.2	29.7	
	NUMBER OF DAYS WITH:														
	MAXIMUM >= 90°	0	0	0	0	0	1	15	15	6	0	0	0	0	37
	MAXIMUM <= 32°	7	4	4	5	0	0	0	0	0	2	3	12	37	
MINIMUM <= 32°	25	24	26	21	4	0	0	0	1	21	27	26	175		
MINIMUM <= 0°	3	0	0	0	0	0	0	0	0	0	2	8	13		
H/C	HEATING DEGREE DAYS	1097	893	892	761	384	172	16	8	166	681	929	1354	7353	
	COOLING DEGREE DAYS	0	0	0	0	3	27	174	165	80	0	0	0	449	
RH	MEAN (PERCENT)	60	60	55	58	60	60	50	48	54	62	60	67	58	
	HOUR 05 LST	63	65	67	71	78	77	76	74	70	76	68	68	71	
	HOUR 11 LST	56	50	42	47	46	45	33	30	40	47	46	62	45	
	HOUR 17 LST	60	58	44	45	48	46	29	28	45	56	59	69	49	
	HOUR 23 LST	62	67	65	69	71	72	62	60	63	73	65	69	67	
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	1	2	1	1	1	0	0	1	1	1	1	2	12	
	THUNDERSTORMS	0	0	0	0	1	2	1	3	0	0	0	0	7	
PR	MEAN STATION PRESS. (IN.)	26.23	26.18	26.24	26.21	26.25	26.21	26.26	26.26	26.16	26.30	26.24	26.25	26.23	
	MEAN SEA-LEVEL PRESS. (IN.)	30.11	30.04	30.08	30.04	30.01	29.93	29.94	29.94	29.87	30.12	30.10	30.17	30.03	
WINDS	RESULTANT SPEED (MPH)	10.9	11.1	5.8	6.9	2.6	3.3	0.7	1.6	4.8	5.0	8.9	10.9	5.8	
	RES. DIR. (TENS OF DEGS.)	23	23	24	26	24	24	36	22	23	24	22	23	24	
	MEAN SPEED (MPH)	14.6	13.4	11.5	12.8	9.0	8.5	8.4	7.7	10.2	10.1	11.4	14.0	11.0	
	PREVAIL.DIR.(TENS OF DEGS.)	22	22	22	22	23	22	22	23	22	22	22	22	22	
	MAXIMUM 2-MINUTE WIND														
	SPEED (MPH)	36	38	41	44	36	37	39	37	53	32	37	37	53	
	DIR. (TENS OF DEGS.)	23	28	31	28	22	09	34	18	23	24	24	34	23	
	DATE OF OCCURRENCE	17	13	03	29	24	19	08	26	30	07	19	28	SEP 30	
	MAXIMUM 3-SECOND WIND:														
	SPEED (MPH)	45	44	53	55	48	48	56	53	64	40	44	46	64	
DIR. (TENS OF DEGS.)	23	28	32	25	30	24	32	19	23	23	23	26	23		
DATE OF OCCURRENCE	18	13	03	29	13	19	08	26	30	07	19	27	SEP 30		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.61	0.43	0.24	1.01	2.79	2.35	0.37	1.08	0.84	0.93	0.18	0.94	11.77	
	GREATEST 24-HOUR (IN.)	0.41	0.22	0.10	0.33	0.73	1.33	0.15	0.73	0.36	0.57	0.13	0.36	1.33	
	DATE OF OCCURRENCE	10-11	17-18	22	20-21	30-31	02-03	28-29	01-02	06	27-28	16	02	JUN 02-03	
	NUMBER OF DAYS WITH:														
PRECIPITATION 0.01	6	6	6	13	14	8	5	9	7	6	4	11	95		
PRECIPITATION 0.10	2	1	1	4	8	5	1	3	4	3	1	2	35		
PRECIPITATION 1.00	0	0	0	0	0	0	0	0	0	0	0	0	0		
SNOWFALL	SNOW,ICE PELLETS,HAIL														
	TOTAL (IN.)	13.9	9.6	4.0	16.4	0.0	0.0	0.0	0.0	T	6.9	2.8	13.2	66.8	
	GREATEST 24-HOUR (IN.)	5.9	4.8	1.9	4.6	0.0	0.0	0.0	0.0	T	5.9	1.7	4.0	5.9	
	DATE OF OCCURRENCE	10	17	22	21					26	28	16	02	OCT 28	
	MAXIMUM SNOW DEPTH (IN.)	6	4	1	5	0	0	0	0	0	6	2	5	6	
	DATE OF OCCURRENCE	14+	18	23+	21						29	17	11	OCT 29	
	NUMBER OF DAYS WITH:														
SNOWFALL >= 1.0	3	3	1	7	0	0	0	0	0	2	1	5	22		

NORMALS, MEANS, AND EXTREMES GREAT FALLS (KGTF)

LATITUDE: 47° 28'N **LONGITUDE:** 111° 22'W **ELEVATION (FT):** GRND: 3664 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	35.5	38.3	45.9	55.6	64.8	73.3	83.4	82.3	70.3	57.7	43.3	34.6	57.1
	MEAN DAILY MAXIMUM	66	31.8	37.3	43.7	54.7	64.8	73.3	83.6	82.0	70.5	58.3	43.7	35.0	56.6
	HIGHEST DAILY MAXIMUM	76	67	70	78	89	93	101	105	106	98	91	76	69	106
	YEAR OF OCCURRENCE		1992	1992	2004	1980	1980	1990	1973	1969	1980	1992	1999	1939	AUG 1969
	MEAN OF EXTREME MAXS.	66	55.1	57.7	65.3	75.3	83.8	90.8	97.2	96.6	89.4	79.4	64.7	55.1	75.9
	NORMAL DAILY MINIMUM	30	14.9	16.4	22.6	30.5	38.6	46.1	51.4	50.4	42.0	32.8	23.4	14.9	32.0
	MEAN DAILY MINIMUM	66	12.9	17.4	22.3	31.5	40.4	48.1	53.6	52.4	43.9	35.1	25.0	16.7	33.3
	LOWEST DAILY MINIMUM	76	-37	-35	-29	-8	12	31	36	30	16	-11	-25	-43	-43
	YEAR OF OCCURRENCE		1969	1996	1951	2008	2009	2009	1999	1992	2000	1991	1985	1968	DEC 1968
	MEAN OF EXTREME MINS.	66	-16.1	-8.1	-2.8	15.9	27.8	37.5	43.9	41.8	30.7	16.8	-0.7	-12.2	14.5
	NORMAL DRY BULB	30	25.2	27.3	34.2	43.1	51.7	59.7	67.4	66.3	56.1	45.2	33.4	24.8	44.5
	MEAN DRY BULB	66	22.4	27.4	33.0	43.1	52.6	60.8	68.6	67.2	57.2	46.7	34.4	25.9	44.9
	MEAN WET BULB	30	19.8	21.5	26.8	34.5	41.8	49.0	52.2	50.4	43.9	35.8	26.2	20.2	35.2
	MEAN DEW POINT	30	16.7	16.8	23.1	29.4	37.6	45.3	47.6	45.8	40.1	31.3	22.7	16.1	31.0
	NORMAL NO. DAYS WITH: MAXIMUM >= 90	30	0.0	0.0	0.0	0.0	0.1	1.4	8.0	6.9	1.1	0.0	0.0	0.0	17.5
	MAXIMUM <= 32	30	9.6	7.6	4.6	0.9	0.0	0.0	0.0	0.0	0.1	1.2	5.2	10.4	39.6
MINIMUM <= 32	30	26.7	24.7	25.2	17.6	5.6	0.2	0.0	0.1	2.4	13.4	22.3	27.2	165.4	
MINIMUM <= 0	30	6.4	4.6	2.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	2.2	5.4	21.0	
H/C	NORMAL HEATING DEG. DAYS	30	1234	1054	953	659	418	191	50	71	286	613	949	1248	7726
	NORMAL COOLING DEG. DAYS	30	0	0	0	1	6	32	124	113	21	1	0	0	298
RH	NORMAL (PERCENT)	30	65	63	62	55	56	56	49	48	54	56	62	62	57
	HOURLY 05 LST	30	68	68	70	69	72	73	69	68	69	67	67	66	69
	HOURLY 11 LST	30	62	58	55	47	47	45	39	40	45	48	56	59	50
	HOURLY 17 LST	30	61	54	49	41	41	41	32	31	37	45	57	60	46
	HOURLY 23 LST	30	66	67	67	61	63	63	54	54	59	62	65	65	62
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)	50	1.4	1.8	2.5	1.9	0.6	0.4	0.1	0.3	0.6	1.3	2.0	1.3	14.2
	THUNDERSTORMS	66	0.0	0.1	0.1	0.6	2.8	6.1	6.1	5.3	1.3	0.2	0.0	0.1	22.7
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)				9.6		8.0	4.0							
	MIDNIGHT-MIDNIGHT (OKTAS)						8.0	4.0							
	MEAN NO. DAYS WITH: CLEAR			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)	30	26.20	26.20	26.17	26.17	26.18	26.19	26.25	26.25	26.25	26.24	26.19	26.20	26.21
	MEAN SEA-LEVEL PRES. (IN)	30	30.09	30.09	30.02	29.97	29.93	29.91	29.93	29.94	29.99	30.03	30.04	30.09	30.00
WINDS	MEAN SPEED (MPH)	30	14.1	12.2	11.8	11.5	10.7	10.0	9.1	9.1	10.0	11.9	13.7	14.1	11.5
	PREVAIL.DIR.(TENS OF DEGS)	37	23	23	23	24	24	24	24	23	23	23	23	23	23
	MAXIMUM 2-MINUTE: SPEED (MPH)	19	56	54	51	52	48	52	47	51	53	54	58	55	58
	DIR. (TENS OF DEGS)		24	24	28	26	24	25	26	32	23	25	23	25	23
	YEAR OF OCCURRENCE		2012	2002	2012	2002	1998	2006	2012	2002	2013	1999	2003	1999	NOV 2003
	MAXIMUM 3-SECOND SPEED (MPH)	19	74	66	63	58	83	64	59	83	64	62	72	67	83
	DIR. (TENS OF DEGS)		24	24	28	27	33	25	26	17	23	27	23	25	33
YEAR OF OCCURRENCE		2012	2002	2012	2002	2008	2006	2002	2003	2013	1999	2003	1999	MAY 2008	
PRECIPITATION	NORMAL (IN)	30	0.51	0.47	0.91	1.42	2.42	2.53	1.50	1.57	1.42	0.86	0.59	0.55	14.75
	MAXIMUM MONTHLY (IN)	76	2.05	2.16	2.18	4.63	8.13	6.85	4.68	4.90	3.56	3.43	2.27	1.92	8.13
	YEAR OF OCCURRENCE		1969	1958	1967	1975	1953	2005	1993	1985	1941	1975	1955	1977	MAY 1953
	MINIMUM MONTHLY (IN)	76	T	0.01	0.10	0.05	0.51	0.52	0.04	0.03	T	T	0.02	T	0.01
	YEAR OF OCCURRENCE		1944	1950	1986	1981	2001	1960	1959	1969	2012	1965	2009	1954	FEB 1950
	MAXIMUM IN 24 HOURS (IN)	76	0.74	11.87	1.14	2.43	3.42	2.90	2.40	2.74	1.82	1.15	1.00	0.82	11.87
	YEAR OF OCCURRENCE		1966	2008	1977	1951	1980	2002	1983	1989	1982	1954	2012	1972	FEB 2008
	NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01	30	6.8	7.0	9.3	9.4	11.7	11.7	7.5	7.9	7.8	6.6	6.7	7.5	99.9
PRECIPITATION >= 1.00	30	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.3	0.1	0.0	0.0	0.0	1.3	
SNOWFALL	NORMAL (IN)	30	8.6	8.2	11.9	8.6	2.7	0.3	0.0	0.3	1.2	4.1	8.1	9.5	63.5
	MAXIMUM MONTHLY (IN)	75	22.6	32.6	27.8	35.4	11.6	11.1	T	8.3	10.4	16.6	24.9	30.5	35.4
	YEAR OF OCCURRENCE		1969	2011	1989	2009	1989	1950	1993	1992	1984	1975	1955	2008	APR 2009
	MAXIMUM IN 24 HOURS (IN)	75	10.2	11.0	11.5	16.8	11.6	11.0	T	8.3	8.4	8.3	10.8	11.0	16.8
	YEAR OF OCCURRENCE		1984	1951	1987	1973	1989	1950	1993	1992	1988	1957	1946	2010	APR 1973
	MAXIMUM SNOW DEPTH (IN)	61	17	21	15	24	12	6	0	0	5	6	12	14	24
	YEAR OF OCCURRENCE		1978	1978	1977	1975	2009	2008			1988	2013	2005	1958	APR 1975
NORMAL NO. DAYS WITH: SNOWFALL >= 1.0	30	3.0	3.1	3.5	2.3	0.8	0.0	0.0	0.1	0.3	1.5	2.5	3.1	20.2	

PRECIPITATION (inches) 2013 GREAT FALLS (KGTF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
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
2003	0.12	0.61	0.49	1.78	2.11	1.85	0.18	1.31	1.13	0.27	0.18	0.11	10.14
2004	0.23	0.06	0.29	1.06	2.91	2.82	0.42	2.55	1.99	1.05	0.16	0.43	13.97
2005	0.16	0.01	0.94	1.20	1.07	6.85	0.10	0.97	1.68	0.69	1.69	0.29	15.65
2006	0.71	0.44	1.70	2.88	2.64	4.24	0.27	1.33	1.82	1.48	0.43	0.59	18.53
2007	0.28	1.53	0.25	2.35	2.81	1.00	0.13	0.24	1.71	0.68	0.76	0.12	11.86
2008	0.84	0.43	0.35	1.51	3.82	3.08	1.25	1.31	1.87	0.53	0.74	1.43	17.16
2009	0.45	0.44	0.98	2.35	0.95	1.49	3.60	1.01	0.91	1.49	0.02	0.76	14.45
2010	1.24	0.55	0.23	2.72	2.75	2.65	1.18	2.05	2.25	0.46	1.74	1.56	19.38
2011	0.46	1.77	0.42	2.83	4.12	2.58	0.87	0.36	0.20	2.24	0.35	0.20	16.40
2012	0.30	0.31	1.10	2.37	2.27	1.06	2.02	0.36	T	1.37	1.42	0.55	13.13
2013	0.61	0.43	0.24	1.01	2.79	2.35	0.37	1.08	0.84	0.93	0.18	0.94	11.77
POR= 66 YRS	0.76	0.61	0.93	1.45	2.50	2.63	1.33	1.39	1.15	0.85	0.66	0.66	14.92

WBAN : 24143

AVERAGE TEMPERATURE (°F) 2013 GREAT FALLS (KGTF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
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
2003	29.3	24.4	31.2	46.0	51.1	60.8	72.4	71.0	56.4	48.9	27.2	30.4	45.8
2004	20.5	31.1	40.2	45.0	48.0	56.3	68.1	64.5	54.9	44.1	37.1	31.3	45.1
2005	20.3	31.7	34.6	43.9	50.3	58.3	69.1	65.8	56.5	48.2	36.8	25.0	45.0
2006	37.1	27.0	31.9	46.5	54.3	62.8	73.5	67.2	58.3	43.2	31.9	32.0	47.1
2007	27.5	23.6	41.9	42.0	53.8	62.4	76.8	67.6	56.4	48.5	33.5	26.7	46.7
2008	22.5	29.6	34.2	38.6	52.0	58.4	67.9	68.1	55.0	46.6	40.6	16.5	44.2
2009	26.3	29.3	30.9	40.4	51.3	57.9	66.9	65.3	63.6	38.9	39.7	14.3	43.7
2010	27.9	26.6	42.0	42.5	47.5	58.2	65.3	65.0	55.2	51.1	27.6	23.2	44.3
2011	23.5	16.9	31.3	38.7	49.8	56.6	68.2	69.5	62.3	48.0	34.2	31.6	44.2
2012	28.6	28.7	40.8	47.7	50.6	61.3	73.0	69.2	60.9	43.9	38.4	25.8	47.4
2013	29.4	32.9	36.0	39.4	52.5	59.9	69.8	69.7	61.9	42.7	33.8	21.1	45.8
POR= 66 YRS	22.4	27.4	33.0	43.1	52.6	60.8	68.6	67.2	57.2	46.7	34.4	25.9	44.9

HEATING DEGREE DAYS (base 65°F) 2013 GREAT FALLS (KGTF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
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
2002-03	21	138	261	842	785	1053	1099	1132	1045	562	435	163	7536
2003-04	7	25	301	496	1128	1066	1375	976	759	596	521	263	7513
2004-05	41	88	306	639	834	1036	1377	924	934	625	448	216	7468
2005-06	33	77	265	513	839	1234	858	1058	1017	548	337	103	6882
2006-07	3	50	220	668	987	1015	1156	1153	709	684	346	117	7108
2007-08	2	42	280	507	935	1179	1310	1020	947	786	403	214	7625
2008-09	19	45	295	567	725	1497	1194	998	1052	728	427	224	7771
2009-10	34	59	125	803	753	1562	1144	1071	706	668	536	218	7679
2010-11	64	82	291	427	1119	1290	1278	1340	1037	780	462	255	8425
2011-12	17	23	136	520	916	1028	1120	1049	744	516	442	132	6643
2012-13	4	36	137	648	792	1206	1097	893	892	761	384	172	7022
2013-	16	8	166	681	929	1354							

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COOLING DEGREE DAYS (base 65°F) 2013 GREAT FALLS (KGTF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
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
2003	0	0	0	0	13	46	245	216	49	5	0	0	574
2004	0	0	0	0	0	9	142	75	9	0	0	0	235
2005	0	0	0	0	0	19	167	108	15	0	0	0	309
2006	0	0	0	0	15	46	272	128	25	0	0	0	486
2007	0	0	0	0	3	47	376	131	29	0	0	0	586
2008	0	0	0	0	6	24	118	149	1	0	0	0	298
2009	0	0	0	0	8	16	100	73	90	0	0	0	287
2010	0	0	0	0	0	20	79	89	8	3	0	0	199
2011	0	0	0	0	0	11	124	169	61	0	0	0	365
2012	0	0	0	3	2	29	258	172	20	0	0	0	484
2013	0	0	0	0	3	27	174	165	80	0	0	0	449

SNOWFALL (inches) 2013 GREAT FALLS (KGTF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
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
2002-03	T	0.0	T	5.7	T	7.4	2.9	12.9	12.9	2.8	4.3	0.0	48.9
2003-04	0.0	0.0	0.0	5.6	8.5	7.8	8.5	2.6	5.3	5.3	5.0	0.0	48.6
2004-05	0.0	0.0	0.0	2.2	0.9	11.3	8.3	0.7	27.8	4.4	T	0.0	55.6
2005-06	0.0	0.0	0.0	0.4	24.9	5.1	3.9	5.5	14.2	3.0	1.8	0.0	58.8
2006-07	0.0	0.0	1.3	7.4	9.8	9.1	5.7	22.4	2.1	13.1	0.0	0.0	70.9
2007-08	0.0	0.0	0.0	T	12.7	1.9	14.1	6.9	5.9	21.7	0.2	6.8	70.2
2008-09	0.0	0.0	0.0	6.7	2.7	30.5	12.3	9.1	12.0	35.4	1.5	0.5	110.7
2009-10	0.0	0.0	0.0	6.9	0.2	12.9	20.9	8.5	1.6	23.8	2.4	0.0	77.2
2010-11	0.0	0.0	0.7	T	19.5	24.6	6.1	32.6	4.1	20.7	0.3	0.0	108.6
2011-12	0.0	0.0	0.0	0.1	5.4	4.5	5.6	3.2	10.5	7.2	3.5	0.0	40.0
2012-13	0.0	0.0	0.0	5.1	16.5	10.6	13.9	9.6	4.0	16.4	0.0	0.0	76.1
2013-	0.0	0.0	T	6.9	2.8	13.2							
POR= 66 YRS	T	0.1	1.1	3.8	7.5	8.7	9.9	8.5	10.7	9.0	2.1	0.4	61.8

WBAN : 24143

REFERENCE NOTES :

<p>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).</p> <p>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).</p> <p>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. 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 CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS.</p> <p>GENERAL CONTINUED: 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</p>	<p>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 EIGHTHS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER. STATION HISTORY STOPPED WITH THE 2009 ANNUAL. IF YOU NEED STATION HISTORY INFORMATION GO TO "Historical Observing Metadata Repository", URL IS: http://www.ncdc.noaa.gov/homr/ SNOWFALL STOPPED MONTH & YEAR INDICATED ABOVE. NO FURTHER YEARS INCLUDED UNLESS RESTARTED.</p> <p>NOTE: The "Period of Record:(POR)" for all "averages" is based on "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.</p>
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2013 GREAT FALLS MONTANA (KGTF)

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 History

GREAT FALLS, MT

NAME	Begin Date	End Date	Latitude	Longitude	Elevation Feet	Relocation	Platform
GREAT FALLS INTL AP	1969-01-01	1976-01-01	47° 28'	-111° 22'	3688		COOP, USHCN, WXSVC
GREAT FALLS GORE FIELD	1941-01-01	1948-01-01	47° 28'	-111° 21'			AIRWAYS
GREAT FALLS INTL AP	1957-12-01	1967-01-01	47° 28'	-111° 21'	3688		AIRWAYS, COOP, USHCN
GREAT FALLS INTL AP	2011-01-05	Present	47° 28'	-111° 22'	3664		ASOS, COOP, USHCN
GREAT FALLS INTL AP	1967-01-01	1969-01-01	47° 28'	-111° 22'	3688		AIRWAYS, COOP, USHCN
GREAT FALLS INTL AP	1977-01-01	1981-12-31	47° 28'	-111° 22'	3662		COOP, USHCN, WXSVC
GREAT FALLS INTL AP	1976-01-01	1977-01-01	47° 28'	-111° 22'	3665		COOP, USHCN, WXSVC
GREAT FALLS INTL AP	1994-08-01	2011-01-05	47° 28'	-111° 22'	3664	1.8 MI SW	ASOS, COOP, USHCN
GREAT FALLS GORE FIELD	1937-03-01	1940-04-30	47° 28'	-111° 21'			AIRWAYS
GREAT FALLS GORE FIELD	1948-01-01	1957-12-01	47° 28'	-111° 21'	3688		AIRWAYS, COOP, USHCN
GREAT FALLS INTL AP	1981-12-31	1994-08-01	47° 28'	-111° 22'	3662		COOP, USHCN

Element History

Element	Begin Date	End Date	Frequency	Time Of Observation	Equipment *	Equipment * Modifications	Equipment Exposure
PRECIP	1937-03-01	1981-04-01	DAILY	2400	UNIV	RCRD	
PRECIP	1994-08-01	2011-01-05	HOURLY	2400	TB	RCRD	
PRECIP	1994-08-01	2011-01-05	DAILY	2400	TB	RCRD	
PRECIP	2011-01-05	Present	HOURLY	2400	AWPAG	RCRD;HTD	
TEMP	2011-01-05	Present	DAILY	2400	ATEMP		
PRECIP	1981-04-01	1994-08-01	DAILY	2400	UNIV	RCRD	
PRECIP	2011-01-05	Present	DAILY	2400	PCPNX		
TEMP	1981-04-01	1994-08-01	DAILY	2400			
TEMP	1994-08-01	2011-01-05	DAILY	2400	HYGR		
WIND	2011-01-05	Present	DAILY	2400	WINDX		
TEMP	1937-03-01	1981-04-01	DAILY	2400			
PRECIP	1981-04-01	1994-08-01	HOURLY	2400			
DEWPNTTEMP	2011-01-05	Present	DAILY	2400	TEMPX		

* For explanation of codes and abbreviations see Station Metadata link below.

Other Station Information can be found at:

ASOS Implementation by NWS: <http://www.nws.noaa.gov/ops2/Surface/asosimplementation.htm>

Station Metadata website: <http://www.ncdc.noaa.gov/homr>

INQUIRES/COMMENTS CALL: (828) 271-4800, option 2

Fax Number : (828) 271-4876

TDD : (828) 271-4010

Email : ncdc.orders@noaa.gov

NOAA/National Climatic Data Center

Attn: User Engagement & Services Branch

151 Patton Avenue

Asheville, NC 28801-5001

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