

1998

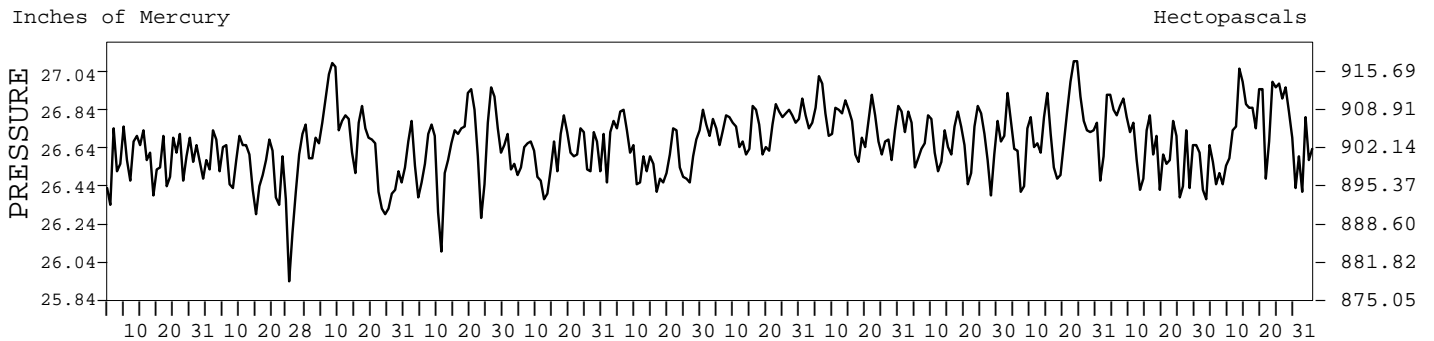
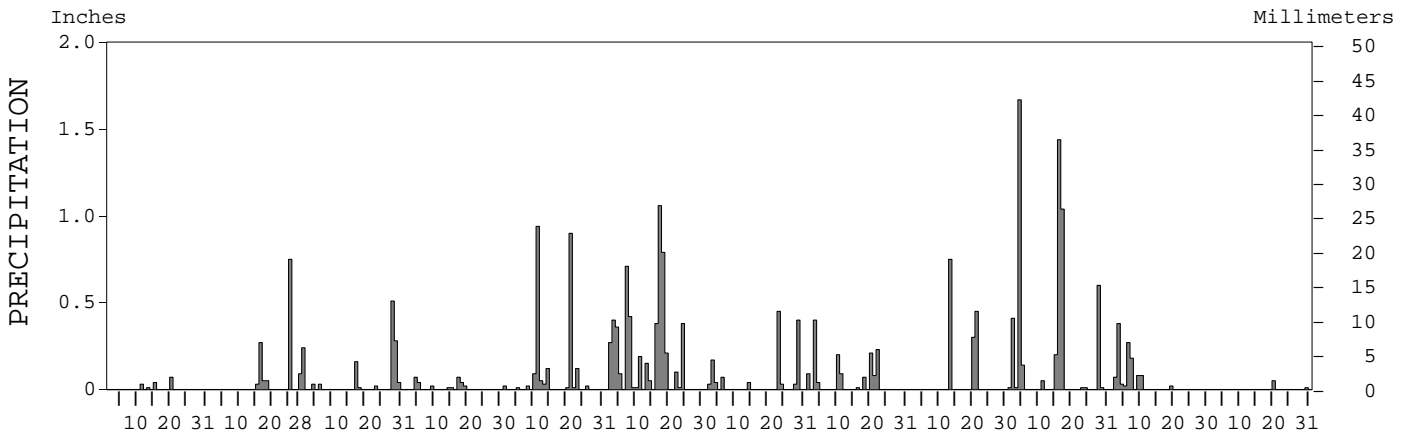
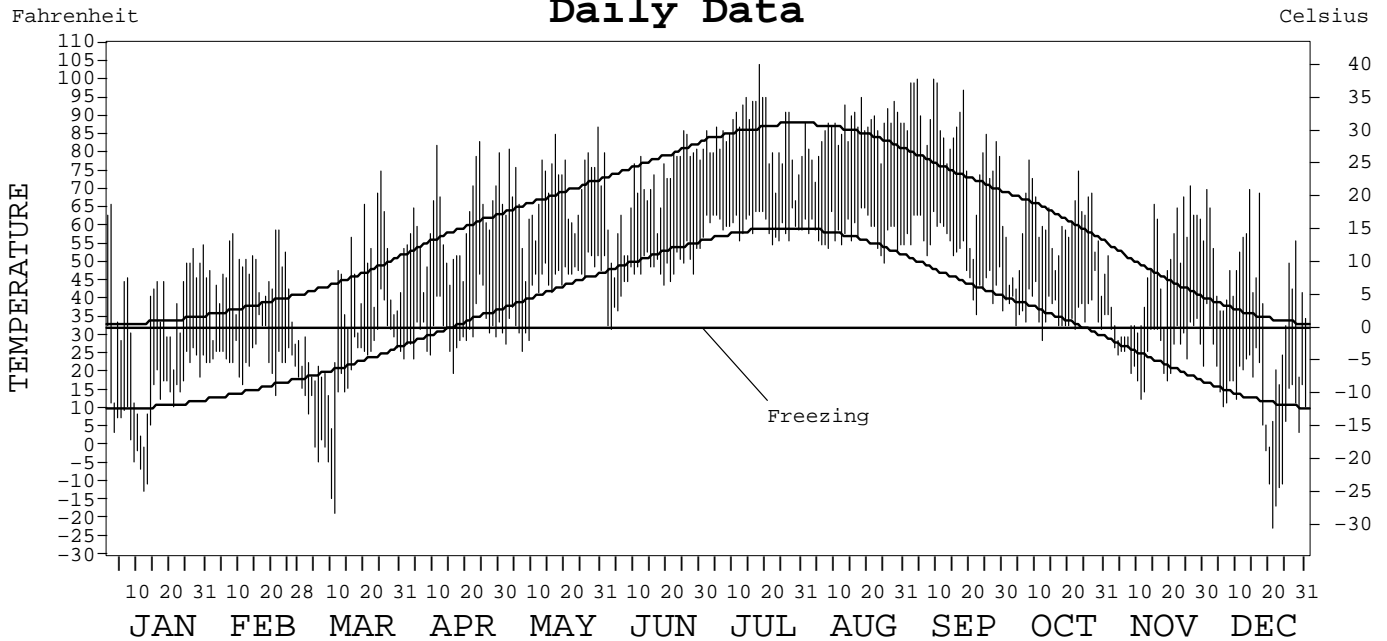
LOCAL CLIMATOLOGICAL DATA  
ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-473X

RAPID CITY,  
SOUTH DAKOTA (RAP)

Daily Data



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*Thomas R. Karl*

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# METEOROLOGICAL DATA FOR 1998

## RAPID CITY, SD (RAP)

LATITUDE: 44° 02' 44" N      LONGITUDE: 103° 03' 14" W      ELEVATION (FT): GRND: 3162      BARO: 3169      TIME ZONE: MOUNTAIN (UTC+ 7)      WBAN: 24090

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	35.9	45.3	38.0	60.7	69.6	70.1	85.1	86.5	82.1	58.7	47.3	40.9	60.0	
	HIGHEST DAILY MAXIMUM	66	59	75	83	87	86	104	95	100	78	71	70	104	
	DATE OF OCCURRENCE	02	22+	25	24	30	25	18	18	09+	08	26	14+	JUL 18	
	MEAN DAILY MINIMUM	12.6	24.4	17.9	31.7	42.7	47.3	60.2	58.1	52.0	36.9	26.4	12.6	35.2	
	LOWEST DAILY MINIMUM	-12	14	-18	20	26	32	55	50	36	29	13	-22	-22	
	DATE OF OCCURRENCE	12	21	11	16	07	03	22	25	22	12	11	21	DEC 21	
	AVERAGE DRY BULB	24.3	34.9	28.0	46.2	56.2	58.7	72.7	72.3	67.1	47.8	36.9	26.8	47.7	
	MEAN WET BULB	20.9	30.8	25.4	39.1	50.0	53.0	64.8	62.7	56.2	43.1	32.9	22.1	41.8	
	MEAN DEW POINT	14.7	26.4	21.6	30.0	42.9	48.3	60.4	57.4	48.8	38.4	27.6	14.3	35.9	
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	0	10	8	8	0	0	0	0	26
	MAXIMUM ≤ 32°	12	3	13	0	0	0	0	0	0	0	6	7	41	
	MINIMUM ≤ 32°	30	25	28	18	6	1	0	0	0	3	25	29	165	
MINIMUM ≤ 0°	5	0	6	0	0	0	0	0	0	0	0	6	17		
H/C	HEATING DEGREE DAYS	1254	837	1143	558	272	198	3	0	91	522	840	1178	6896	
	COOLING DEGREE DAYS	0	0	0	0	8	15	250	232	160	0	0	0	665	
RH	MEAN (PERCENT)	71	77	79	57	63	71	68	64	58	74	74	64	68	
	HOUR 05 LST	77	87	86	75	77	85	84	84	78	84	79	71	81	
	HOUR 11 LST	63	70	73	42	50	58	57	50	45	59	67	54	57	
	HOUR 17 LST	67	67	71	41	51	58	54	47	41	67	73	59	58	
	HOUR 23 LST	79	82	83	68	75	84	78	75	67	83	76	73	77	
S	PERCENT POSSIBLE SUNSHINE								80						
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	2	9	8	0	3	1	3	0	1	2	5	0	34	
	THUNDERSTORMS	0	0	0	0	2	7	10	6	1	0	0	0	26	
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.)	26.60	26.52	26.68	26.66	26.62	26.62	26.77	26.79	26.69	26.74	26.65	26.75	26.67	
	MEAN SEA-LEVEL PRESS. (IN.)	29.98	29.85	30.06	29.95		29.86	29.98	30.00	29.91	30.04	29.99	30.15		
WINDS	RESULTANT SPEED (MPH)	3.2	3.3	3.5	4.2	1.5	4.0	1.4	0.8	1.5	3.3	1.2	4.8	2.5	
	RES. DIR. (TENS OF DEGS.)	36	34	03	35	36	34	09	01	35	35	32	34	35	
	MEAN SPEED (MPH)	7.9	12.9	9.6	10.3	10.3	10.4	7.6	8.3	8.7	10.9	8.7	9.3	9.6	
	PREVAIL. DIR. (TENS OF DEGS.)	36	34	36	34	34	33	16	35	35	33	12	34	34	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	33	59	38	44	41	47	34	37	32	53	57	46	59	
	DIR. (TENS OF DEGS.)	36	33	34	34	35	33	05	20	35	32	33	34	33	
	DATE OF OCCURRENCE	09+	25	01	26	30+	18	18	18	30+	05	22	30	FEB 25	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	44	69	45	52	53	55	43	45	39	63	67	57	69	
DIR. (TENS OF DEGS.)	25	32	35	35	34	32	03	18	35	32	33	34	32		
DATE OF OCCURRENCE	02	25	01	26	30	18	18	21	30	05	22	30	FEB 25		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.15	1.24	1.32	0.28	2.34	5.59	1.26	1.42	1.50	5.60	1.13	0.06	21.89	
	GREATEST 24-HOUR (IN.)	0.07	0.75	0.70	0.11	0.97	1.40	0.45	0.43	0.75	2.46	0.38	0.05	2.46	
	DATE OF OCCURRENCE	20	25	28-29	04-05	10-11	16-17	23	03-04	13	16-17	03	20	OCT 16-17	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	4	6	9	8	13	18	9	10	3	13	9	2	104	
PRECIPITATION ≥ 0.10	0	2	4	0	4	13	3	4	3	7	3	0	43		
PRECIPITATION ≥ 1.00	0	0	0	0	0	1	0	0	0	3	0	0	4		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)								0.0	T	15.9	0.5			
	GREATEST 24-HOUR (IN.)								0.0	T	8.0	0.5			
	DATE OF OCCURRENCE									17+	06	20			
	MAXIMUM SNOW DEPTH (IN.)									0	T	7	1		
	DATE OF OCCURRENCE									17+	07	20			
	NUMBER OF DAYS WITH:														
SNOWFALL ≥ 1.0									0	0	4	0			

# NORMALS, MEANS, AND EXTREMES

## RAPID CITY, SD (RAP)

LATITUDE: 44° 02' 44" N      LONGITUDE: 103° 03' 14" W      ELEVATION (FT): GRND: 3162      BARO: 3169      TIME ZONE: MOUNTAIN (UTC+ 7)      WBAN: 24090

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	33.8	38.2	45.9	57.9	68.1	77.8	86.2	85.1	74.4	62.5	46.7	35.6	59.4
	MEAN DAILY MAXIMUM	50	33.4	38.2	45.2	57.5	67.9	77.7	86.1	85.8	75.1	61.3	46.3	37.0	59.3
	HIGHEST DAILY MAXIMUM	56	76	75	82	93	98	106	110	106	104	94	78	75	110
	YEAR OF OCCURRENCE		1987	1995	1993	1989	1969	1988	1989	1988	1978	1993	1990	1965	JUL 1989
	MEAN OF EXTREME MAXS.	50	60.1	63.0	71.7	81.9	87.4	94.2	100.6	100.0	94.7	83.7	70.9	62.8	80.9
	NORMAL DAILY MINIMUM	30	10.7	15.2	22.2	32.2	42.3	51.7	58.2	56.1	45.5	34.9	22.8	12.7	33.7
	MEAN DAILY MINIMUM	50	10.2	15.1	21.7	32.0	43.0	52.1	58.3	57.0	46.3	34.9	22.8	14.1	34.0
	LOWEST DAILY MINIMUM	56	-27	-31	-21	1	18	31	39	38	18	-2	-19	-30	-31
	YEAR OF OCCURRENCE		1950	1996	1996	1975	1950	1951	1987	1992	1985	1991	1959	1990	FEB 1996
	MEAN OF EXTREME MINS.	50	-13.0	-7.6	0.5	17.2	29.6	40.2	48.1	46.0	30.6	18.9	3.1	-9.6	17.0
	NORMAL DRY BULB	30	22.3	26.7	34.1	45.1	55.2	64.8	72.2	70.6	60.0	48.7	34.8	24.2	46.6
	MEAN DRY BULB	50	21.8	26.6	33.4	44.8	55.4	65.0	72.3	71.3	60.8	48.2	34.5	25.5	46.6
	MEAN WET BULB	15	20.7	23.3	30.2	38.4	49.0	57.2	60.8	59.6	50.6	37.4	28.4	21.4	39.8
	MEAN DEW POINT	15	13.5	15.9	22.7	29.4	42.1	51.2	53.5	51.7	41.7	29.2	21.6	14.1	32.2
	NORMAL NO. DAYS WITH:														
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.1	0.5	3.7	11.4	11.2	3.3	0.2	0.0	0.0	30.4	
MAXIMUM ≤ 32°	30	13.3	9.3	5.7	0.7	0.0	0.0	0.0	0.0	0.0	0.3	5.0	11.8	46.1	
MINIMUM ≤ 32°	30	30.0	26.6	26.8	14.8	2.5	*	0.0	0.0	2.0	10.9	24.9	30.0	168.5	
MINIMUM ≤ 0°	30	8.1	4.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.0	19.6	
H/C	NORMAL HEATING DEG. DAYS	30	1324	1072	958	597	311	103	18	31	211	505	906	1265	7301
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	7	97	241	205	61	0	0	0	611
RH	NORMAL (PERCENT)	30	64	65	64	59	61	62	56	53	54	54	62	65	60
	HOUR 05 LST	30	66	71	74	73	76	77	74	71	70	66	70	69	71
	HOUR 11 LST	30	58	58	55	48	50	51	45	41	42	42	52	59	50
	HOUR 17 LST	30	62	59	52	45	47	47	40	36	39	45	58	64	50
	HOUR 23 LST	30	67	70	71	68	71	72	66	62	63	63	68	68	67
S	PERCENT POSSIBLE SUNSHINE	54	57	60	63	62	60	65	73	74	70	66	55	55	63
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	57	1.7	2.2	2.6	1.7	1.2	1.2	0.5	0.6	0.6	0.8	2.0	2.0	17.1
	THUNDERSTORMS	57	0.0	0.0	0.1	1.2	5.7	10.6	11.5	8.4	3.3	0.4	0.0	0.0	41.2
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1					9.6	3.2		4.8	5.6		5.6		
	MIDNIGHT-MIDNIGHT (OKTAS)	1					9.6	3.2			6.4				
	MEAN NO. DAYS WITH:														
CLEAR	1		7.0	3.0		1.0	10.0								
PARTLY CLOUDY	1	4.0	3.0	6.0		7.0	9.0								
CLOUDY	1	3.0	6.0	9.0		21.0	4.0								
PR	MEAN STATION PRESSURE (IN)	26	26.71	26.71	26.67	26.66	26.67	26.68	26.73	26.74	26.75	26.74	26.70	26.70	26.71
	MEAN SEA-LEVEL PRES. (IN)	15	30.07	30.08	30.01	29.95	29.92	29.90	29.93	29.95	29.98	30.02	30.05	30.11	30.00
WINDS	MEAN SPEED (MPH)	31	10.5	11.1	12.4	12.9	11.9	10.8	10.1	10.0	10.7	11.0	11.1	10.5	11.1
	PREVAIL. DIR (TENS OF DEGS)	19	33	33	33	33	33	33	33	33	33	33	33	33	33
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	3	51	59	49	61	44	54	43	39	40	53	57	52	61
	DIR. (TENS OF DEGS)		33	33	33	32	32	30	28	28	33	32	33	33	32
	YEAR OF OCCURRENCE		1997	1998	1997	1997	1997	1996	1997	1997	1997	1998	1998	1996	APR 1997
	MAXIMUM 5-SECOND:														
SPEED (MPH)	3	60	70	60	69	53	67	53	48	47	63	67	61	70	
DIR. (TENS OF DEGS)		32	31	33	31	34	30	27	32	32	32	33	33	31	
YEAR OF OCCURRENCE		1997	1996	1996	1997	1998	1996	1997	1996	1997	1998	1998	1996	FEB 1996	
PRECIPITATION	NORMAL (IN)	30	0.39	0.52	1.03	1.89	2.68	3.06	2.04	1.67	1.23	1.10	0.56	0.47	16.64
	MAXIMUM MONTHLY (IN)	56	1.77	2.46	3.02	5.16	8.18	7.00	6.13	4.83	3.94	5.60	2.22	1.65	8.18
	YEAR OF OCCURRENCE		1944	1953	1945	1967	1996	1968	1969	1982	1946	1998	1985	1975	MAY 1996
	MINIMUM MONTHLY (IN)	56	0.01	0.06	0.12	0.02	0.33	0.64	0.38	0.10	0.03	T	0.03	0.01	T
	YEAR OF OCCURRENCE		1952	1985	1981	1987	1966	1973	1988	1943	1975	1960	1945	1986	OCT 1960
	MAXIMUM IN 24 HOURS (IN)	56	1.26	1.00	2.19	3.19	3.40	4.01	2.51	2.60	2.13	2.49	1.09	1.04	4.01
	YEAR OF OCCURRENCE		1944	1953	1945	1997	1965	1963	1944	1982	1966	1982	1944	1975	JUN 1963
	NORMAL NO. DAYS WITH:														
PRECIPITATION ≥ 0.01	30	6.7	7.2	8.4	9.6	11.7	11.7	9.3	7.8	7.2	5.2	5.6	6.8	97.2	
PRECIPITATION ≥ 1.00	30	0.0	0.0	0.1	0.2	0.4	0.7	0.4	0.2	0.2	0.2	0.0	*	2.4	
SNOWFALL	NORMAL (IN)	30	4.3	6.5	9.3	6.3	0.7	0.*	0.0	0.0	0.2	1.6	5.2	5.8	39.9
	MAXIMUM MONTHLY (IN)	54	24.0	23.7	30.7	30.6	11.6	3.6	T	T	2.0	10.2	33.6	17.9	33.6
	YEAR OF OCCURRENCE		1949	1953	1950	1970	1950	1951	1993	1994	1970	1995	1985	1975	NOV 1985
	MAXIMUM IN 24 HOURS (IN)	54	16.3	10.0	14.9	16.0	13.4	3.6	T	T	2.0	7.8	9.4	9.8	16.3
	YEAR OF OCCURRENCE		1944	1953	1973	1970	1967	1951	1993	1994	1970	1995	1977	1975	JAN 1944
	MAXIMUM SNOW DEPTH (IN)	47	16	14	16	17	13	2	0	0	1	6	15	11	17
	YEAR OF OCCURRENCE		1993	1987	1977	1970	1967	1951			1965	1954	1985	1985	APR 1970
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	1.3	2.3	2.7	1.8	0.2	0.0	0.0	0.0	0.1	0.5	1.7	1.9	12.5	

PRECIPITATION (inches) 1998 RAPID CITY, SD (RAP)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	0.11	0.73	0.66	1.60	2.20	2.04	6.13	0.31	0.35	0.85	0.35	0.57	15.90
1970	0.73	0.54	1.48	4.63	2.41	2.16	1.04	0.67	1.57	1.23	0.80	0.61	17.87
1971	1.18	1.00	1.25	2.86	3.70	1.92	1.46	0.52	2.32	2.02	0.79	0.15	19.17
1972	0.22	0.44	0.47	2.78	3.28	4.11	1.67	2.49	0.24	0.77	0.38	0.34	17.19
1973	0.11	0.31	2.71	2.69	2.37	0.64	1.46	0.74	1.44	1.38	0.73	0.54	15.12
1974	0.16	0.30	0.34	1.55	1.32	1.10	0.68	1.37	0.88	1.18	0.12	0.12	9.12
1975	1.05	0.35	2.45	1.37	1.23	5.63	1.57	0.87	0.03	0.69	0.57	1.65	17.46
1976	0.28	0.47	0.33	2.70	2.74	4.81	1.05	1.31	0.28	0.21	0.61	0.41	15.20
1977	0.83	0.25	2.63	1.57	2.49	1.76	2.98	1.79	2.86	1.06	0.82	0.36	19.40
1978	0.19	0.84	0.40	2.19	3.12	2.01	4.08	1.42	0.18	0.26	0.63	0.25	15.57
1979	0.49	0.33	0.47	0.31	1.17	3.60	4.11	2.32	0.07	0.90	0.15	0.07	13.99
1980	0.20	0.51	0.86	1.13	1.58	4.75	1.78	2.38	0.48	2.28	0.57	0.66	17.18
1981	0.14	0.09	0.12	0.32	2.81	1.89	4.47	1.74	0.16	1.81	0.23	0.35	14.13
1982	0.39	0.37	1.35	0.69	6.50	2.89	1.81	4.83	2.69	3.82	0.27	0.36	25.97
1983	0.34	0.18	0.84	1.00	2.18	3.01	1.94	2.39	0.33	1.74	1.07	0.47	15.49
1984	0.10	0.18	0.69	3.10	1.57	4.72	1.57	1.00	0.74	0.67	0.51	0.38	15.23
1985	0.46	0.06	1.55	0.32	1.24	1.58	1.03	1.86	1.57	0.98	2.22	0.77	13.64
1986	0.49	0.92	0.88	4.74	1.43	4.56	0.91	1.32	3.14	1.64	1.40	0.01	21.44
1987	0.04	1.71	1.14	0.02	3.39	1.37	0.83	2.37	0.68	0.26	0.30	0.31	12.42
1988	0.17	0.34	0.52	0.60	3.25	1.09	0.38	1.98	0.56	0.76	0.81	0.46	10.92
1989	0.02	0.34	0.96	1.46	1.40	1.04	0.82	1.70	3.09	1.49	0.43	0.82	13.57
1990	0.22	0.37	1.17	0.77	4.87	1.42	1.94	1.87	2.44	0.61	0.44	0.33	16.45
1991	0.32	0.77	0.63	2.99	4.40	3.27	1.97	0.58	0.59	1.00	0.73	0.04	17.29
1992	0.29	0.16	1.92	0.71	2.47	2.17	3.25	0.47	0.42	0.68	0.39	0.57	13.50
1993	0.68	0.61	0.82	3.05	2.16	3.39	4.31	1.18	1.46	0.90	0.70	0.53	19.79
1994	0.45	0.66	0.37	1.20	1.47	0.67	0.64	0.92	0.27	2.84	0.66	0.35	10.50
1995	0.09	0.55	0.79	2.57	4.03	4.50	2.87	0.46	0.82	2.42	0.42	0.13	19.65
1996	0.85	0.10	1.06	1.63	8.18	1.24	0.52	1.85	1.55		0.07		
1997	0.65	0.28	0.20	4.80	5.35	3.43	3.67	3.93	0.78	0.47	0.19	0.08	23.83
1998	0.15	1.24	1.32	0.28	2.34	5.59	1.26	1.42	1.50	5.60	1.13	0.06	21.89
POR= 99 YRS	0.42	0.48	0.98	1.92	3.11	3.20	2.19	1.52	1.20	1.03	0.60	0.49	17.14

WBAN : 24090

AVERAGE TEMPERATURE (°F) 1998 RAPID CITY, SD (RAP)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	16.0	25.4	27.8	49.6	57.5	59.8	71.0	73.8	64.8	40.6	38.7	28.2	46.1
1970	17.8	30.8	27.5	39.2	55.6	65.6	72.7	73.8	59.1	44.1	34.2	21.9	45.2
1971	17.5	22.6	32.6	46.0	53.6	66.4	68.0	73.9	57.4	46.1	34.5	23.3	45.2
1972	17.3	24.0	36.5	43.6	55.2	64.7	65.6	69.1	59.4	43.8	31.0	18.6	44.1
1973	26.8	28.9	37.5	42.9	53.7	64.7	70.7	74.3	57.1	51.3	32.3	25.4	47.1
1974	21.9	32.5	37.6	47.2	53.8	66.6	77.3	67.7	57.6	51.7	36.4	28.9	48.3
1975	23.7	17.6	27.6	40.5	54.0	62.2	74.7	70.3	58.5	49.2	33.8	29.4	45.1
1976	23.9	34.6	34.4	46.9	55.4	64.3	72.8	72.6	63.3	45.4	31.7	26.8	47.7
1977	12.7	34.6	36.4	49.5	60.3	69.0	73.4	66.0	61.0	48.8	33.3	21.9	47.2
1978	11.0	15.3	35.4	45.2	55.1	65.1	71.1	69.7	66.2	50.5	29.2	17.1	44.2
1979	7.4	16.8	35.4	44.4	53.6	65.4	70.4	68.5	66.3	50.9	33.0	33.2	45.4
1980	21.0	27.1	31.5	48.9	57.4	67.1	74.9	68.6	61.6	48.9	39.3	30.3	48.1
1981	32.6	29.4	40.0	51.5	54.9	64.9	72.0	70.0	63.5	47.7	40.4	25.8	49.4
1982	11.9	23.9	33.0	42.1	53.3	59.7	70.7	70.2	58.7	47.2	32.7	28.6	44.3
1983	32.1	37.3	36.4	40.7	52.0	63.1	73.6	78.0	60.8	49.4	34.9	8.1	47.2
1984	28.0	36.1	34.3	43.8	53.6	62.8	72.2	74.8	57.2	47.2	37.5	21.4	47.4
1985	21.6	23.8	35.9	52.0	61.8	62.1	74.6	69.0	55.6	47.3	16.0	21.0	45.1
1986	29.8	21.5	43.0	44.2	54.9	67.6	70.9	69.6	55.0	48.7	30.6	30.5	47.2
1987	31.1	32.4	32.6	51.6	59.5	67.1	75.4	68.1	61.4	47.1	40.3	28.9	49.6
1988	21.7	26.9	35.6	47.1	60.0	75.6	76.1	72.5	60.4	49.7	36.4	28.4	49.2
1989	28.7	14.4	31.1	45.8	55.4	64.0	77.0	73.1	61.0	48.8	36.4	19.4	46.3
1990	32.4	28.9	36.4	45.0	53.2	66.6	71.7	73.8	65.9	48.2	40.5	17.8	48.4
1991	18.4	36.0	38.5	46.3	56.6	67.2	72.9	74.0	61.1	46.4	30.0	32.7	48.3
1992	33.6	36.3	40.9	47.1	57.4	62.6	64.3	65.9	62.6	49.3	32.4	19.0	47.6
1993	16.0	15.2	37.6	43.5	56.1	60.3	65.1	68.6	56.6	48.2	32.4	31.5	44.3
1994	22.4	19.8	40.5	46.0	60.2	68.5	70.7	73.3	65.5	49.7	35.5	30.3	48.5
1995	29.2	31.9	33.2	40.3	51.8	62.9	70.6	73.6	60.1	46.5	33.7	25.4	46.6
1996	14.9	27.3	26.2	43.3	50.6	65.5	70.8	73.2	59.8		24.3	17.9	
1997	18.1	28.8	36.7	38.7	52.8	66.3	70.9	68.7	62.5	48.6	33.2	30.3	46.3
1998	24.3	34.9	28.0	46.2	56.2	58.7	72.7	72.3	67.1	47.8	36.9	26.8	47.7
POR= 99 YRS	22.9	25.6	33.4	44.9	55.1	64.5	72.2	70.8	60.8	48.7	35.6	26.2	46.7

HEATING DEGREE DAYS (base 65°F) 1998 RAPID CITY, SD (RAP)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	0	0	62	750	781	1135	1461	950	1157	767	293	74	7430
1970-71	2	0	245	644	918	1330	1463	1182	996	563	344	35	7722
1971-72	43	2	267	578	909	1284	1473	1182	877	634	322	74	7645
1972-73	74	43	193	649	1010	1436	1181	1008	847	659	350	83	7533
1973-74	16	0	246	416	972	1223	1329	905	840	530	343	87	6907
1974-75	1	42	242	407	849	1112	1274	1318	1151	728	343	119	7586
1975-76	3	16	206	493	929	1096	1269	878	940	535	295	98	6758
1976-77	3	6	132	606	991	1177	1616	846	877	459	165	17	6895
1977-78	1	48	163	494	944	1330	1669	1383	912	588	312	91	7935
1978-79	17	40	111	443	1068	1480	1781	1348	910	614	362	82	8256
1979-80	3	25	64	433	952	982	1359	1094	1032	483	251	54	6732
1980-81	1	18	144	510	763	1070	998	993	765	402	311	65	6040
1981-82	21	7	108	531	730	1209	1646	1146	985	682	358	170	7593
1982-83	7	21	226	545	962	1119	1012	772	880	723	407	113	6787
1983-84	8	0	208	474	896	1762	1139	832	948	626	366	101	7360
1984-85	0	0	268	546	820	1344	1341	1148	895	393	146	144	7045
1985-86	8	27	327	544	1466	1358	1083	1211	672	617	317	35	7665
1986-87	5	12	296	497	1025	1059	1045	907	997	408	199	46	6496
1987-88	10	49	147	545	736	1111	1340	1103	905	533	195	17	6691
1988-89	3	18	163	470	850	1127	1120	1414	1047	586	303	116	7217
1989-90	3	6	182	495	847	1410	1004	1004	880	597	363	68	6859
1990-91	10	5	112	514	730	1462	1440	807	815	556	269	16	6736
1991-92	2	6	183	581	1045	997	964	828	742	539	262	107	6256
1992-93	67	83	138	493	973	1418	1515	1390	841	636	269	158	7981
1993-94	56	26	256	522	972	1035	1312	1260	749	565	171	27	6951
1994-95	9	17	79	468	876	1068	1104	919	983	734	400	130	6787
1995-96	11	5	215	568	933	1221	1551	1087	1200	643	447	66	7947
1996-97	6	0	203		1215	1453	1446	1008	872	783	373	30	
1997-98	23	26	127	510	947	1067	1254	837	1143	558	272	198	6962
1998-	3	0	91	522	840	1178							

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COOLING DEGREE DAYS (base 65°F) 1998 RAPID CITY, SD (RAP)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	0	0	0	0	35	29	193	280	63	0	0	0	600
1970	0	0	0	0	7	96	248	279	78	5	0	0	713
1971	0	0	0	0	0	81	142	284	43	0	0	0	550
1972	0	0	0	0	21	70	98	178	34	0	0	0	401
1973	0	0	0	0	7	80	202	295	15	0	0	0	599
1974	0	0	0	1	3	143	390	132	28	0	0	0	697
1975	0	0	0	0	9	41	314	188	19	12	0	0	583
1976	0	0	0	0	4	83	251	248	87	3	0	0	676
1977	0	0	0	0	25	143	270	85	51	0	0	0	574
1978	0	0	0	0	9	99	214	193	154	0	0	0	669
1979	0	0	0	4	15	99	179	141	110	2	0	0	550
1980	0	0	0	6	25	123	315	136	48	14	0	0	667
1981	0	0	0	3	5	67	243	170	74	0	0	0	562
1982	0	0	0	0	3	18	189	190	41	0	0	0	441
1983	0	0	0	0	9	62	282	407	88	0	0	0	848
1984	0	0	0	0	18	41	234	309	42	2	0	0	646
1985	0	0	0	10	53	64	312	158	51	0	0	0	648
1986	0	0	0	0	11	124	192	164	0	0	0	0	491
1987	0	0	0	13	33	118	341	152	45	0	0	0	702
1988	0	0	0	2	46	341	355	255	33	2	0	0	1034
1989	0	0	0	15	9	95	380	265	70	0	0	0	834
1990	0	0	0	2	4	120	226	282	147	3	0	0	784
1991	0	0	0	3	16	89	256	294	76	15	0	0	749
1992	0	0	0	9	36	41	51	118	72	11	0	0	338
1993	0	0	0	0	0	25	66	146	9	7	0	0	253
1994	0	0	0	0	28	141	193	280	97	0	0	0	739
1995	0	0	0	0	0	72	192	280	72	1	0	0	617
1996	0	0	0	0	5	86	194	262	52	0	0	0	
1997	0	0	0	0	4	76	211	148	58	7	0	0	504
1998	0	0	0	0	8	15	250	232	160	0	0	0	665

SNOWFALL (inches) 1998 RAPID CITY, SD (RAP)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	0.0	0.0	0.0	4.1	2.9	5.7	5.5	6.0	14.8	30.6	T	0.0	69.6
1970-71	0.0	0.0	2.0	5.7	4.5	7.8	13.2	15.7	13.8	5.3	0.0	0.0	68.0
1971-72	0.0	0.0	0.0	10.2	6.9	2.0	2.6	8.0	1.2	1.0	T	0.0	31.9
1972-73	0.0	0.0	0.0	0.7	3.6	6.0	2.0	3.1	16.9	1.9	0.0	0.0	34.2
1973-74	0.0	0.0	0.0	1.4	9.7	5.6	2.0	4.0	1.7	4.7	0.0	0.0	29.1
1974-75	0.0	0.0	0.0	T	1.5	1.4	13.7	6.1	27.4	1.3	0.0	0.0	51.4
1975-76	0.0	0.0	0.0	4.6	8.4	17.9	2.0	6.5	4.3	3.5	0.0	0.0	47.2
1976-77	0.0	0.0	0.0	0.5	7.0	6.1	11.1	2.6	26.0	3.4	0.0	0.0	56.7
1977-78	0.0	0.0	0.0	0.8	10.6	7.4	3.1	15.0	3.0	2.6	T	0.0	42.5
1978-79	0.0	0.0	0.0	T	9.8	4.0	6.1	4.4	2.6	1.8	2.8	0.0	31.5
1979-80	0.0	0.0	0.0	T	1.8	0.3	3.0	10.1	8.6	5.4	0.0	0.0	29.2
1980-81	0.0	0.0	0.0	1.4	6.9	6.1	1.2	1.3	T	T	0.0	0.0	16.9
1981-82	0.0	0.0	0.0	1.6	1.2	3.8	6.2	5.0	11.5	5.5	0.0	0.0	34.8
1982-83	0.0	0.0	0.0	1.4	1.2	4.0	2.9	0.3	6.5	4.3	4.3	0.0	24.9
1983-84	0.0	0.0	0.3	0.9	6.9	7.1	1.9	2.5	6.1	22.1	0.2	0.0	48.0
1984-85	0.0	0.0	1.3	0.7	2.0	4.9	3.8	0.7	16.2	0.4	0.0	T	30.0
1985-86	0.0	0.0	1.4	0.6	33.6	10.2	5.7	10.7	6.0	12.7	0.0	0.0	80.9
1986-87	0.0	0.0	0.0	T	12.6	0.1	0.5	21.5	10.9	0.3	0.0	0.0	45.9
1987-88	0.0	0.0	0.0	1.7	T	4.7	2.7	3.6	10.6	6.1	0.0	0.0	29.4
1988-89	0.0	0.0	0.0	0.0	2.2	9.0	0.4	7.3	10.7	6.4	0.0	0.0	36.0
1989-90	0.0	T	0.0	3.9	4.6	10.9	3.1	5.0	9.2	3.0	0.5	T	40.2
1990-91	0.0	T	0.0	1.5	1.0	6.2	6.3	8.2	3.6	11.1	4.9	T	42.8
1991-92	T	0.0	T	4.0	6.7	0.8	5.2	1.2	8.2	3.5	0.0	0.0	29.6
1992-93	T	0.0	0.0	0.9	5.0	12.4	13.6	9.0	1.0	12.2	0.0	0.0	54.1
1993-94	T	0.0	T	2.4	11.4	5.5	7.5	11.1	5.6	12.8	0.0	T	56.3
1994-95	0.0	T	0.0	0.0	6.8	4.6	0.9	6.3	9.2	10.1	T	T	37.9
1995-96	0.0	0.0	T	10.2	3.1	1.4	19.4	4.4	16.2	10.3	0.9	T	65.9
1996-97	0.0	0.0	T								0.0	T	
1997-98	T	T	0.0	3.1									
1998-			0.0	T	15.9	0.5							
POR= 53 YRS	T	T	0.1	1.7	5.3	4.9	5.1	6.4	8.8	6.2	0.8	0.1	39.4

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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. 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.</p>	<p>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.</p> <p>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.</p>
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1998  
RAPID CITY,  
SOUTH DAKOTA (RAP)

Rapid City, which is not far from the geographical center of North America, experiences the large temperature ranges, both daily and seasonal, that are typical of semi-arid continental climates.

The city is surrounded by contrasting landforms, with the forested Black Hills rising immediately west of the city, and rolling prairie extending out in the other directions. From 40 to 70 miles southeast lie the eroded Badlands. The Black Hills, many of which are more than 5,000 feet above sea level, with a number of peaks above 7,000 feet, exert a pronounced influence on the climate of this area. The rolling land to the east of the city is cut by the valleys of the Box Elder and Rapid Creeks, which flow generally east-southeastward. The station is located on the north slope of the irrigated Rapid Valley. An east-west ridge 200 to 300 feet higher than the airport separates the station from the Box Elder Creek Valley.

The principal agricultural products in the area are cattle and wheat, and ranchers and farmers are dependent on the current weather forecasts, which are at times of vital interest in the protection of livestock.

Although the annual precipitation is light at lower elevations, the distribution is beneficial to agriculture with the greatest amounts occurring during the growing season. The heaviest snows are expected in the spring, which helps to furnish moisture for the early maturing crops such as wheat, while heavy winter snows at the higher elevations provide irrigation water for the fertile valleys.

Summer days are normally warm with cool, comfortable nights. Nearly all of the summer precipitation occurs as thunderstorms. Hail is often associated with the more severe thunderstorms, with resultant damage to vegetation as well as other fragile material in the path of the storms. Autumn, which begins soon after the first of September, is characterized by mild, balmy days, and cool, invigorating mornings and evenings. Autumn weather usually extends into November and often into December.

Temperatures for the winter months of December, January, and February are among the warmest in South Dakota due to the protection of the Black Hills, the frequent occurrence of Chinook winds, and the fact that the winter tracks of arctic air masses usually pass east of Rapid City. Rapid City has become the retirement home for many farmers and ranchers from the western half of the state because of the cool summer nights and the relatively mild winters.

Snowfall is normally light with the greatest monthly average of about 8 inches occurring in March. Cold waves can be expected occasionally, and one or more blizzards may occur each winter.

Spring is characterized by unsettled conditions. Wide variations usually occur in temperatures, and snows may fall as late as May.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is September 29 and the average last occurrence in the spring is May 7.

# STATION LOCATION

RAPID CITY, SOUTH DAKOTA

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE											AUTOMATED STATION * ELEVATION	* Type M = AMOS T = AUTOB S = ASOS W = AWOS	REMARKS
						SEA LEVEL	GROUND												
							WIND	EMERGENCY	EMERGENCY	EMERGENCY	EMERGENCY	EMERGENCY	EMERGENCY	EMERGENCY	EMERGENCY	EMERGENCY			
<u>CITY</u>																			
Sweeney Building 7th & Main	1/01/88	1/31/97		44°04'	103°12'	3240	50	45	45										
Lakota Building St. Joe & 7th Streets	2/01/97	5/31/14	1 block S	44°04'	103°12'	3240	50	46	46			35							
Federal Building St. Joe & 8th Streets	5/14/14	Present	1 block W	44°04'	103°12'	3242	58	50	50			43							Cooperative Station furnishing temperature and precipitation data after 7/29/42.
<u>AIRPORT</u>																			
Old Municipal Airport 8 mi. ENE of Rapid City	1/19/39	10/12/50		44°09'	103°06'	3215	55	5	5			3	3	3					
Administration Building Municipal Airport + + Rapid City Regional Airport effective October 1, 1970	10/12/50	11/02/71	6.5 mi. SSE	44°03'	103°04'	e3162	f21	b6	5			a3	c5	3	d5				a - 15 ft. 9/5/58 to 12/1/65. b - 3 feet to 5/19/59. c - 3 feet to 5/19/59, then 4 feet to 11/28/68. d - Commissioned on field site 11/15/65. e - 3165 feet to 11/15/65. f - 32 feet to 11/15/65.
Federal Service Bldg. Regional Airport	11/02/71	Present	725 ft WSW	44°03'	103°04'	3162	g21	s6	s5	23	3	5		3 i5	g5 h5	NA			f - Same site as prior to 11/2/71. s - Standby status. h - Type change 9/3/85. i - Minor adjustment 2/10/87. S ASOS Commissioned 09/01/95

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