

1998

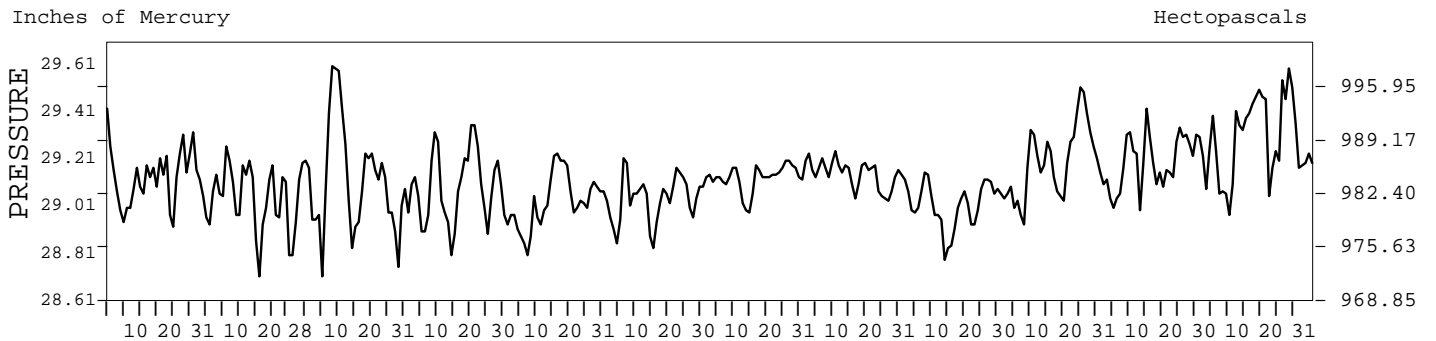
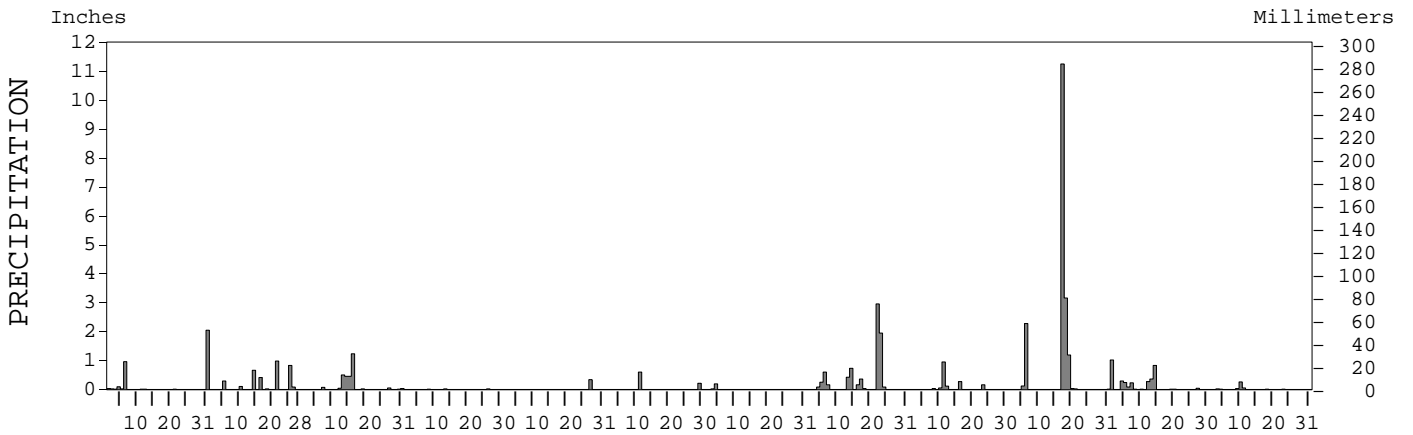
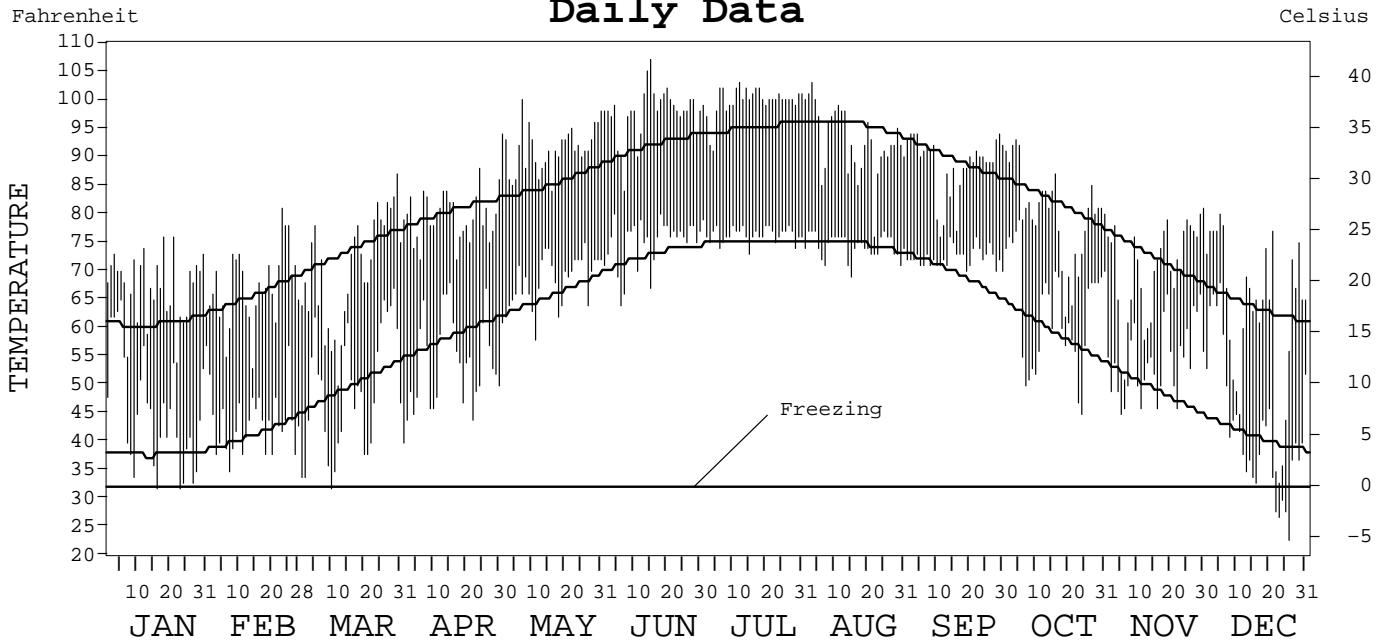
# LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-5191

SAN ANTONIO,  
TEXAS (SAT)

## Daily Data



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
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# METEOROLOGICAL DATA FOR 1998

## SAN ANTONIO, TX (SAT)

LATITUDE: 29° 31' 58" N      LONGITUDE: 98° 27' 49" W      ELEVATION (FT): GRND: 809      BARO: 809      TIME ZONE: CENTRAL (UTC+ 6)      WBAN: 12921

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	67.1	67.3	70.5	79.5	91.4	97.7	99.7	92.8	88.5	80.0	70.5	62.8	80.7	
	HIGHEST DAILY MAXIMUM	76	81	87	88	100	107	103	103	94	93	81	80	107	
	DATE OF OCCURRENCE	21+	23	30	24	07	15	12	03	29+	04	30	05	JUN 15	
	MEAN DAILY MINIMUM	45.7	43.3	49.0	53.9	68.2	74.9	76.4	74.3	72.4	62.8	54.2	42.6	59.8	
	LOWEST DAILY MINIMUM	32	35	32	40	58	64	73	69	70	45	45	23	23	
	DATE OF OCCURRENCE	23+	07	10	01	11	06	15	15	30+	24	05	26	DEC 26	
	AVERAGE DRY BULB	56.4	55.3	59.8	66.7	79.8	86.3	88.1	83.6	80.5	71.4	62.4	52.7	70.3	
	MEAN WET BULB	51.6	49.7	52.5	58.3	69.8	74.2	74.8	74.3	73.4	65.7	58.3	48.2	62.6	
	MEAN DEW POINT	47.0	44.4	45.6	50.8	64.7	69.2	69.4	70.6	70.2	62.6	55.2	43.7	57.8	
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	22	29	31	23	16	4	0	0	0	125
	MAXIMUM ≤ 32°	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MINIMUM ≤ 32°	2	0	1	0	0	0	0	0	0	0	0	5	8	
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0		
H/C	HEATING DEGREE DAYS	269	270	214	30	0	0	0	0	22	120	404	1329		
	COOLING DEGREE DAYS	11	3	56	84	467	645	724	582	470	227	49	32	3350	
RH	MEAN (PERCENT)	75	71	65	60	66	64	61	71	74	78	80	74	70	
	HOUR 06 LST	87	88	77	82	86	85	87	91	91	91	88	85	86	
	HOUR 12 LST	66	58	53	47	55	50	47	58	64	66	70	63	58	
	HOUR 18 LST	63	56	52	41	45	43	36	59	60	66	74	64	55	
	HOUR 24 LST	83	80	73	70	78	75	73	80	85	86	89	82	80	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	6	0	0	0	1	0	0	0	2	6	1	16		
	THUNDERSTORMS	2	7	3	0	1	2	2	10	1	4	2	35		
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.)	29.13	29.04	29.12	29.09	29.02	29.04	29.13	29.14	29.01	29.19	29.20	29.30	29.12	
	MEAN SEA-LEVEL PRESS. (IN.)	29.96	29.87	29.95	29.91	29.83	29.84	29.94	29.95	29.82	30.03	30.14			
WINDS	RESULTANT SPEED (MPH)	0.7	1.6	3.0	2.6	1.8	3.6	2.3	3.3	2.5	3.2	1.2	2.3	1.8	
	RES. DIR. (TENS OF DEGS.)	10	02	13	13	14	03	04	09	10	09	08	04	08	
	MEAN SPEED (MPH)	7.4	7.7	10.1	8.7	9.1	11.5	10.1	7.1	6.9	8.7	7.3	7.9	8.5	
	PREVAIL. DIR. (TENS OF DEGS.)	16	05	16	15	16	16	16	16	05	14	04	02	16	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	25	32	36	26	33	31	25	38	26	29	30	30	38	
	DIR. (TENS OF DEGS.)	33	26	30	13	32	12	11	02	06	33	31	01	02	
	DATE OF OCCURRENCE	26	21	16+	12+	27	28	27+	13	09	06	01	22+	AUG 13	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	31	40	47	37	39	36	30	44	33	40	34	39	47	
DIR. (TENS OF DEGS.)	33	26	32	17	34	12	17	03	03	35	32	03	32		
DATE OF OCCURRENCE	26+	21	16	12	27	28	29	13	10	06	01	22+	MAR 16		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	3.21	3.37	2.85	0.05	0.34	0.81	0.21	7.78	1.57	18.07	3.40	0.39	42.05	
	GREATEST 24-HOUR (IN.)	2.05	0.98	1.59	0.02	0.34	0.60	0.20	3.53	1.00	13.35	1.04	0.29	13.35	
	DATE OF OCCURRENCE	31	21	15-16	26-27	27	11	03-04	22-23	10-11	17-18	13-14	09-10	OCT 17-18	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	10	8	10	3	1	2	2	12	6	8	13	7	82	
PRECIPITATION ≥ 0.10	2	6	4	0	1	2	1	9	4	5	7	1	42		
PRECIPITATION ≥ 1.00	1	0	1	0	0	0	0	2	0	4	1	0	9		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)														
	GREATEST 24-HOUR (IN.)														
	DATE OF OCCURRENCE														
	MAXIMUM SNOW DEPTH (IN.)														
	DATE OF OCCURRENCE														
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0															

# NORMALS, MEANS, AND EXTREMES

## SAN ANTONIO, TX (SAT)

LATITUDE: 29° 31' 58" N      LONGITUDE: 98° 27' 49" W      ELEVATION (FT): GRND: 809      BARO: 809      TIME ZONE: CENTRAL (UTC+ 6)      WBAN: 12921

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	60.8	65.7	73.5	80.3	85.3	91.8	95.0	95.3	89.3	81.7	71.9	63.5	79.5
	MEAN DAILY MAXIMUM	51	61.8	66.2	73.4	80.4	86.0	91.9	95.1	95.2	89.9	82.0	71.2	64.4	79.8
	HIGHEST DAILY MAXIMUM	57	89	100	100	101	103	107	106	108	103	99	94	90	108
	YEAR OF OCCURRENCE		1971	1996	1991	1996	1989	1998	1989	1986	1985	1991	1988	1955	AUG 1986
	MEAN OF EXTREME MAXS.	51	79.6	83.4	88.3	91.6	94.4	98.1	100.1	100.3	97.3	92.0	85.3	80.3	90.9
	NORMAL DAILY MINIMUM	30	37.9	41.3	49.7	58.4	65.7	72.6	75.0	74.5	69.2	58.8	48.8	40.8	57.7
	MEAN DAILY MINIMUM	51	39.3	43.0	50.0	58.1	66.0	72.1	74.4	73.8	69.2	59.3	48.6	41.7	58.0
	LOWEST DAILY MINIMUM	57	0	6	19	31	43	53	62	61	41	27	21	6	0
	YEAR OF OCCURRENCE		1949	1951	1980	1987	1984	1964	1967	1992	1942	1993	1976	1989	JAN 1949
	MEAN OF EXTREME MINS.	51	22.2	26.2	31.1	40.7	52.0	62.2	68.8	67.4	55.8	42.2	30.8	24.4	43.6
	NORMAL DRY BULB	30	49.3	53.5	61.7	69.3	75.5	82.2	85.0	84.9	79.3	70.2	60.4	52.2	68.6
	MEAN DRY BULB	51	50.6	54.7	61.7	69.2	76.1	82.0	84.8	84.5	79.6	70.6	59.9	53.0	68.9
	MEAN WET BULB	15	45.5	49.0	54.4	60.6	68.6	73.0	73.9	73.7	70.2	63.1	50.7	48.1	60.9
	MEAN DEW POINT	15	38.8	42.3	47.4	54.2	64.2	68.9	69.0	68.9	65.3	57.8	45.5	42.1	55.4
	NORMAL NO. DAYS WITH:														
MAXIMUM ≥ 90°	30	0.0	0.2	0.8	2.1	7.7	20.7	27.4	28.0	16.8	4.1	0.1	0.0	107.9	
MAXIMUM ≤ 32°	30	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	
MINIMUM ≤ 32°	30	9.5	5.7	1.7	*	0.0	0.0	0.0	0.0	0.0	0.0	1.8	6.6	25.3	
MINIMUM ≤ 0°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
H/C	NORMAL HEATING DEG. DAYS	30	494	332	167	32	0	0	0	0	0	30	180	409	1644
	NORMAL COOLING DEG. DAYS	30	8	10	64	161	326	516	620	617	429	191	42	12	2996
RH	NORMAL (PERCENT)	30	67	65	63	66	70	69	65	65	68	67	68	68	67
	HOUR 06 LST	30	74	74	72	75	80	79	74	74	78	77	78	76	76
	HOUR 12 LST	30	79	80	79	82	87	87	87	86	86	84	82	80	83
	HOUR 18 LST	30	58	56	54	57	60	58	53	52	56	55	56	57	56
	HOUR 24 LST	30	55	50	47	50	55	52	46	46	52	52	56	56	51
S	PERCENT POSSIBLE SUNSHINE	53	47	50	57	56	56	67	74	74	67	64	54	48	60
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	57	5.0	2.8	2.4	1.3	0.8	0.1	0.1	0.1	0.2	1.4	3.0	4.3	21.5
	THUNDERSTORMS	57	1.0	1.6	2.7	4.0	6.6	4.8	3.5	4.3	4.1	2.7	1.7	0.9	37.9
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1					5.0	3.0							
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
CLEAR	1	4.0	5.0	8.0		6.0	12.0								
PARTLY CLOUDY	1	1.0	4.0	2.0		11.0	5.0								
CLOUDY	1	1.0		6.0		3.0	2.0								
PR	MEAN STATION PRESSURE (IN)	26	29.28	29.24	29.14	29.11	29.07	29.11	29.16	29.15	29.15	29.20	29.23	29.27	29.18
	MEAN SEA-LEVEL PRES. (IN)	15	30.12	30.06	30.00	29.92	29.89	29.91	29.97	29.96	29.96	30.02	30.07	30.11	30.00
WINDS	MEAN SPEED (MPH)	36	8.5	9.0	9.6	9.7	9.6	9.6	9.1	8.2	8.0	8.2	8.4	8.1	8.8
	PREVAIL. DIR (TENS OF DEGS)	21	36	36	14	14	14	14	16	16	14	16	36	36	16
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	56	30	32	36	38	46	31	39	38	43	29	30	32	46
	DIR. (TENS OF DEGS)		33	21	01	31	28	12	30	02	25	35	31	26	28
	YEAR OF OCCURRENCE		1996	1997	1996	1997	1997	1998	1996	1998	1996	1996	1998	1997	MAY 1997
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	56	38	40	47	51	55	37	54	44	71	40	37	40	71
DIR. (TENS OF DEGS)		34	26	32	29	29	19	29	03	26	35	02	36	26	
YEAR OF OCCURRENCE		1996	1998	1998	1997	1997	1997	1996	1998	1996	1998	1997	1996	SEP 1996	
PRECIPITATION	NORMAL (IN)	30	1.71	1.81	1.52	2.50	4.22	3.81	2.16	2.54	3.41	3.17	2.62	1.51	30.98
	MAXIMUM MONTHLY (IN)	56	8.52	6.43	6.12	9.32	12.85	11.95	8.29	11.14	15.78	18.07	6.01	13.96	18.07
	YEAR OF OCCURRENCE		1968	1965	1992	1957	1987	1986	1990	1974	1946	1998	1977	1991	OCT 1998
	MINIMUM MONTHLY (IN)	56	T	0.03	0.03	0.05	0.17	0.01	T	0.00	0.06	T	T	0.03	0.00
	YEAR OF OCCURRENCE		1996	1954	1961	1998	1961	1967	1993	1952	1947	1952	1966	1950	AUG 1952
	MAXIMUM IN 24 HOURS (IN)	56	3.18	2.44	3.59	4.88	6.53	6.30	6.97	5.57	7.28	13.35	4.87	6.90	13.35
	YEAR OF OCCURRENCE		1968	1986	1992	1977	1972	1986	1958	1950	1973	1998	1977	1991	OCT 1998
	NORMAL NO. DAYS WITH:														
PRECIPITATION ≥ 0.01	30	7.7	7.0	7.1	7.3	8.9	6.4	4.8	5.1	7.2	6.8	6.6	7.1	82.0	
PRECIPITATION ≥ 1.00	30	0.4	0.4	0.4	0.8	1.2	1.2	0.7	0.8	0.8	1.1	0.7	0.3	8.8	
SNOWFALL	NORMAL (IN)	30	0.6	0.3	T	0.0	0.0	0.0	0.0	0.0	0.0	T	0.*	0.9	
	MAXIMUM MONTHLY (IN)	54	15.9	3.5	T	T	T	T	0.0	0.0	0.0	T	0.3	15.9	
	YEAR OF OCCURRENCE		1985	1966	1994	1993	1993	1989				1993	1957	1964	JAN 1985
	MAXIMUM IN 24 HOURS (IN)	54	13.2	3.5	T	T	T	T	0.0	0.0	0.0	T	0.3	0.2	13.2
	YEAR OF OCCURRENCE		1985	1966	1994	1993	1993	1989				1993	1957	1964	JAN 1985
	MAXIMUM SNOW DEPTH (IN)	48	9	3	0	0	0	0	0	0	0	0	0	0	9
	YEAR OF OCCURRENCE		1985	1966											JAN 1985
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	

PRECIPITATION (inches) 1998 SAN ANTONIO, TX (SAT)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	1.76	2.90	2.35	2.46	4.61	2.32	0.36	4.19	1.32	5.85	1.02	2.28	31.42
1970	1.10	2.66	1.98	1.13	7.30	0.89	0.91	0.95	4.35	1.31	0.01	0.15	22.74
1971	0.04	0.81	0.04	1.39	1.52	2.74	1.05	9.42	4.57	4.62	2.74	2.86	31.80
1972	1.35	0.40	0.13	1.94	11.24	2.86	3.13	4.24	1.40	1.99	2.37	0.44	31.49
1973	2.77	2.76	1.58	5.41	2.73	10.44	6.91	1.29	13.09	4.85	0.29	0.16	52.28
1974	1.36	0.04	0.94	2.18	4.28	1.02	1.28	11.14	3.85	4.09	5.39	1.43	37.00
1975	1.04	3.30	0.52	2.69	6.91	4.60	1.06	1.28	0.51	2.25	0.03	1.48	25.67
1976	0.56	0.13	1.20	5.67	5.80	1.61	5.39	2.09	3.79	8.48	2.46	1.95	39.13
1977	3.10	0.91	0.88	8.80	1.62	2.26	0.10	0.06	2.11	3.47	6.01	0.32	29.64
1978	0.68	1.76	1.71	3.62	2.45	3.96	1.43	4.97	8.86	0.55	4.91	1.09	35.99
1979	4.07	1.38	3.55	5.34	1.98	5.59	7.38	2.09	0.86	0.11	1.43	2.86	36.64
1980	0.72	0.74	0.98	1.67	6.42	0.52	0.26	2.64	5.05	1.09	3.53	0.61	24.23
1981	2.06	0.96	1.96	2.21	6.43	8.71	0.25	2.41	1.36	8.61	0.72	0.69	36.37
1982	0.72	1.28	0.69	1.23	6.42	1.37	0.14	0.55	0.87	2.84	4.54	2.31	22.96
1983	1.48	1.54	3.89	0.18	4.37	1.27	2.43	2.00	3.86	1.64	3.06	0.39	26.11
1984	1.87	0.54	1.91	0.11	3.76	1.40	T	3.04	1.06	5.94	2.91	3.41	25.95
1985	2.68	1.91	2.85	3.27	2.47	8.20	5.80	0.45	4.80	3.91	5.00	0.09	41.43
1986	0.76	2.52	0.35	0.60	6.29	11.95	0.05	1.86	2.83	6.58	1.83	7.11	42.73
1987	1.13	4.78	1.10	1.48	12.85	7.69	1.21	0.33	2.24	0.44	2.53	2.18	37.96
1988	0.39	0.92	0.86	1.23	0.41	5.50	5.58	1.98	0.83	0.62	0.02	0.67	19.01
1989	2.96	0.29	1.24	2.55	0.33	3.96	0.69	0.48	1.54	5.81	1.93	0.36	22.14
1990	1.17	2.68	5.17	4.52	3.28	1.18	8.29	1.30	3.70	3.71	3.11	0.20	38.31
1991	5.08	2.34	1.06	4.91	5.30	2.28	2.23	2.84	1.42	0.87	0.47	13.96	42.76
1992	5.64	6.37	6.12	3.03	8.15	5.67	1.28	2.56	1.12	0.92	3.47	2.16	46.49
1993	1.31	3.72	1.56	1.81	12.47	6.43	T	0.01	0.52	3.07	0.66	0.44	32.00
1994	1.55	0.64	5.06	2.21	7.01	1.66	0.50	2.54	5.52	9.75	0.71	3.28	40.43
1995	0.28	1.19	1.58	1.07	5.36	4.81	0.71	2.03	4.49	0.23	0.82	0.09	22.66
1996	T	0.70	0.30	0.89	1.26	2.12	1.31	2.86	3.66	0.36	2.79	1.56	17.81
1997	0.44	2.44	2.24	5.72	3.91	7.30	T	0.62	1.86	4.08	1.76	3.55	33.92
1998	3.21	3.37	2.85	0.05	0.34	0.81	0.21	7.78	1.57	18.07	3.40	0.39	42.05
POR= 114 YRS	1.63	1.74	0.57	1.42	3.51	2.45	1.64	0.86	2.30	1.29	0.39	0.09	17.89

WBAN : 12921

AVERAGE TEMPERATURE (°F) 1998 SAN ANTONIO, TX (SAT)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	52.5	53.6	54.9	69.0	73.5	81.2	86.8	85.7	79.6	69.8	58.1	55.1	68.3
1970	45.6	54.8	56.8	70.2	72.9	80.7	84.0	85.7	81.1	67.7	58.0	60.1	68.1
1971	56.0	57.4	64.6	69.4	78.1	83.6	85.9	81.2	80.1	73.9	63.2	57.2	70.9
1972	52.8	56.7	66.3	73.7	72.8	80.3	82.2	82.1	82.0	71.9	54.0	50.3	68.8
1973	47.2	51.9	66.1	66.0	74.7	79.2	83.2	82.1	79.3	72.5	65.8	52.2	68.4
1974	51.0	56.5	67.9	69.7	77.3	79.4	83.0	81.2	72.3	68.2	57.3	50.9	67.9
1975	53.2	53.5	61.4	68.4	73.5	80.0	80.9	81.7	76.0	71.1	60.3	53.1	67.8
1976	49.6	61.2	63.8	68.9	71.3	79.8	79.8	81.6	77.5	61.1	52.1	49.9	66.4
1977	44.1	52.8	61.8	66.9	74.8	81.5	84.9	84.7	82.3	71.2	61.4	53.4	68.3
1978	43.4	46.4	59.6	68.9	77.1	82.7	86.1	83.1	78.5	69.3	62.4	51.7	67.4
1979	43.7	52.4	63.3	69.7	73.9	80.9	84.7	83.1	78.7	74.7	58.2	55.4	68.2
1980	52.6	53.7	61.5	67.6	76.1	85.1	88.1	85.3	83.7	70.7	58.3	55.0	69.8
1981	50.8	53.7	60.7	72.9	75.3	81.5	84.2	84.7	78.9	71.9	62.4	53.0	69.2
1982	50.8	49.7	63.1	66.9	74.5	81.6	85.5	86.0	80.1	69.3	59.4	52.4	68.3
1983	48.9	52.1	58.7	65.2	73.6	79.2	82.9	84.5	78.5	70.9	62.5	43.0	66.7
1984	46.7	54.1	64.2	69.7	77.1	82.8	85.0	84.7	77.6	71.2	58.8	59.6	69.3
1985	44.2	50.5	64.1	69.4	76.7	80.2	82.2	85.5	79.4	71.7	64.4	49.9	68.2
1986	53.4	58.0	62.9	72.6	74.6	81.5	85.8	85.7	83.7	69.7	59.4	51.6	69.9
1987	50.7	55.9	57.8	66.1	75.8	80.5	83.8	86.0	79.2	71.2	60.6	54.2	68.5
1988	47.6	54.3	61.3	69.1	76.1	81.2	84.6	86.4	80.7	73.2	65.1	56.0	69.6
1989	56.2	51.6	61.9	70.4	81.7	83.3	86.6	86.0	79.1	71.3	61.8	43.4	69.4
1990	56.4	58.9	61.5	69.7	79.3	87.5	83.4	85.3	80.0	69.3	63.0	51.9	70.5
1991	48.9	56.6	64.0	72.4	77.7	82.8	84.5	85.8	77.8	73.3	57.4	55.5	69.7
1992	50.8	59.1	63.3	69.0	73.7	82.5	84.7	82.2	81.7	73.4	57.3	56.3	69.5
1993	51.2	55.5	61.5	67.3	73.9	81.6	86.1	87.3	81.5	70.7	56.3	55.1	69.0
1994	52.3	56.2	63.9	69.8	76.0	84.5	87.9	86.1	78.4	72.7	64.8	57.0	70.8
1995	53.5	57.4	61.9	69.8	78.6	79.3	84.3	85.5	80.1	69.8	59.5	55.6	69.6
1996	51.0	57.9	57.6	69.5	81.9	84.1	87.3	84.4	78.4	71.1	61.3	54.5	69.9
1997	49.2	53.1	63.3	63.9	74.0	79.8	85.1	86.1	82.2	70.2	57.4	50.2	67.9
1998	56.4	55.3	59.8	66.7	79.8	86.3	88.1	83.6	80.5	71.4	62.4	52.7	70.3
POR= 114 YRS	51.6	55.2	62.1	69.3	75.5	81.6	84.0	84.2	79.4	70.9	60.4	53.6	69.0

HEATING DEGREE DAYS (base 65°F) 1998 SAN ANTONIO, TX (SAT)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	0	0	0	52	253	299	599	282	266	45	7	0	1803
1970-71	0	0	1	72	247	201	282	239	134	52	1	0	1229
1971-72	0	0	1	0	129	266	382	263	61	7	0	0	1109
1972-73	0	0	0	29	334	457	551	362	29	94	1	0	1857
1973-74	0	0	0	4	85	391	437	257	74	39	0	0	1287
1974-75	0	0	2	19	260	433	389	316	152	41	0	0	1612
1975-76	0	0	1	21	214	394	472	166	143	11	2	0	1424
1976-77	0	0	0	160	382	461	643	336	144	32	0	0	2158
1977-78	0	0	0	19	138	360	667	521	192	27	4	0	1928
1978-79	0	0	0	12	152	413	657	356	109	20	4	0	1723
1979-80	0	0	0	15	243	306	386	333	163	42	0	0	1488
1980-81	0	0	0	62	245	331	437	332	157	10	0	0	1574
1981-82	0	0	2	52	112	368	445	430	171	77	2	0	1659
1982-83	0	0	0	49	237	404	490	356	208	99	1	0	1844
1983-84	0	0	5	20	154	681	563	315	120	21	2	0	1881
1984-85	0	0	9	28	228	203	635	406	109	26	0	0	1644
1985-86	0	0	10	9	112	467	354	232	106	8	1	0	1299
1986-87	0	0	0	14	204	413	443	254	233	98	0	0	1659
1987-88	0	0	0	1	194	339	538	323	179	38	0	0	1612
1988-89	0	0	0	0	122	291	292	392	187	55	0	0	1339
1989-90	0	0	0	42	165	663	283	190	154	32	0	0	1529
1990-91	0	0	0	50	142	422	494	240	96	7	0	0	1451
1991-92	0	0	5	30	271	306	435	188	91	31	5	0	1362
1992-93	0	0	0	0	260	287	421	269	147	42	0	0	1426
1993-94	0	0	0	85	287	323	391	273	130	28	10	0	1527
1994-95	0	0	0	19	99	267	359	215	180	29	0	0	1168
1995-96	0	0	9	12	187	324	435	280	277	63	0	0	1587
1996-97	0	0	0	27	165	325	498	338	108	84	0	0	1545
1997-98	0	0	0	44	251	449	269	270	214	30	0	0	1527
1998-	0	0	0	22	120	404							

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COOLING DEGREE DAYS (base 65°F) 1998 SAN ANTONIO, TX (SAT)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	11	5	8	133	273	494	683	652	448	207	53	2	2969
1970	3	3	20	208	259	478	592	651	493	163	40	57	2967
1971	14	36	130	189	414	564	658	509	459	281	81	31	3366
1972	11	31	105	276	252	465	542	539	515	249	12	6	3003
1973	8	0	69	129	310	431	570	536	437	242	114	0	2846
1974	11	22	171	188	387	439	568	506	229	124	34	5	2684
1975	29	1	51	151	273	457	502	524	337	217	80	30	2652
1976	3	62	113	136	202	451	467	521	383	45	0	0	2383
1977	0	3	52	98	311	502	620	618	525	218	38	5	2990
1978	3	7	30	152	384	537	660	567	410	154	79	11	2994
1979	3	13	65	166	285	482	619	570	418	322	42	13	2998
1980	11	14	61	127	355	614	725	635	567	245	51	26	3431
1981	3	24	30	255	324	502	603	619	424	273	41	3	3101
1982	11	5	117	142	304	504	645	659	459	191	72	19	3128
1983	0	0	21	111	276	435	560	611	417	207	84	8	2730
1984	0	8	101	169	383	541	625	618	394	230	46	44	3159
1985	0	8	85	165	368	462	539	641	450	223	101	5	3047
1986	2	45	49	244	304	500	652	646	568	166	40	4	3220
1987	4	5	17	135	340	471	589	658	434	199	67	12	2931
1988	6	19	71	166	352	492	617	671	480	264	131	20	3289
1989	24	23	99	222	524	557	678	656	429	244	75	0	3531
1990	22	26	53	177	450	681	578	635	459	192	91	23	3387
1991	0	10	70	234	402	541	612	654	396	295	49	20	3283
1992	0	23	47	158	281	531	618	542	508	267	34	24	3033
1993	1	7	45	117	283	503	660	698	503	267	31	22	3137
1994	8	34	102	183	357	593	715	659	410	261	97	27	3446
1995	7	9	90	177	429	436	603	644	467	167	28	40	3097
1996	9	79	57	203	530	578	700	610	411	220	60	8	3465
1997	12	11	61	60	286	449	628	660	522	212	27	0	2928
1998	11	3	56	84	467	645	724	582	470	227	49	32	3350

SNOWFALL (inches) 1998 SAN ANTONIO, TX (SAT)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	0.0	0.0	0.0	0.0	0.0	T	T	T	0.0	0.0	0.0	0.0	T
1970-71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1971-72	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1972-73	0.0	0.0	0.0	0.0	0.0	T	0.8	2.1	0.0	0.0	0.0	0.0	2.9
1973-74	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1974-75	0.0	0.0	0.0	0.0	0.0	T	T	0.0	0.0	0.0	0.0	0.0	T
1975-76	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1976-77	0.0	0.0	0.0	0.0	T	T	0.0	0.0	0.0	0.0	0.0	0.0	T
1977-78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	T
1978-79	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1979-80	0.0	0.0	0.0	0.0	T	0.0	0.0	T	0.0	0.0	0.0	0.0	T
1980-81	0.0	0.0	0.0	0.0	T	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1981-82	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5
1982-83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983-84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984-85	0.0	0.0	0.0	0.0	0.0	0.0	15.9	T	0.0	0.0	0.0	0.0	15.9
1985-86	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.3
1987-88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
1988-89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	T	T
1989-90	0.0	0.0	0.0	0.0	0.0	T	0.0	T	T	T	0.0	0.0	T
1990-91	0.0	0.0	0.0	0.0	0.0	T	0.0	T	0.0	T	T	0.0	T
1991-92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	0.0	0.0	0.0	T
1992-93	0.0	0.0	0.0	0.0	T	0.0	T	0.0	0.0	T	T	0.0	T
1993-94	0.0	0.0	0.0	T	0.0	0.0	T	T	T	0.0	0.0	0.0	T
1994-95	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1995-96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T
1996-97													
1997-98													
1998-													
POR= 53 YRS	0.0	0.0	0.0	T	0.0	0.0	0.5	0.2	T	T	T	T	0.7

WBAN : 12921

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  
SAN ANTONIO,  
TEXAS (SAT)

The city of San Antonio is located in the south-central portion of Texas on the Balcones escarpment. Northwest of the city, the terrain slopes upward to the Edwards Plateau and to the southeast it slopes downward to the Gulf Coastal Plains. Soils are blackland clay and silty loam on the Plains and thin limestone soils on the Edwards Plateau.

The location of San Antonio on the edge of the Gulf Coastal Plains is influenced by a modified subtropical climate, predominantly continental during the winter months and marine during the summer months. Temperatures range from 50 degrees in January to the middle 80s in July and August. While the summer is hot, with daily temperatures above 90 degrees over 80 percent of the time, extremely high temperatures are rare. Mild weather prevails during much of the winter months, with below-freezing temperatures occurring on an average of about 20 days each year.

San Antonio is situated between a semi-arid area to the west and the coastal area of heavy precipitation to the east. The normal annual rainfall of nearly 28 inches is sufficient for the production of most crops. Precipitation is fairly well distributed throughout the year with the heaviest amounts occurring during May and September. The precipitation from April through September usually occurs from thunderstorms. Large amounts of precipitation may fall during short periods of time. Most of the winter precipitation occurs as light rain or drizzle. Thunderstorms and heavy rains have occurred in all months of the year. Hail of damaging intensity seldom occurs but light hail is frequent with the springtime thunderstorms. Measurable snow occurs only once in three or four years. Snowfall of 2 to 4 inches occurs about every ten years.

Northerly winds prevail during most of the winter, and strong northerly winds occasionally occur during storms called northers. Southeasterly winds from the Gulf of Mexico also occur frequently during winter and are predominant in summer.

Since San Antonio is located only 140 miles from the Gulf of Mexico, tropical storms occasionally affect the city with strong winds and heavy rains. One of the fastest winds recorded, 74 mph, occurred as a tropical storm moved inland east of the city in August 1942.

Relative humidity is above 80 percent during the early morning hours most of the year, dropping to near 50 percent in the late afternoon.

San Antonio has about 50 percent of the possible amount of sunshine during the winter months and more than 70 percent during the summer months. Skies are clear to partly cloudy more than 60 percent of the time and cloudy less than 40 percent. Air carried over San Antonio by southeasterly winds is lifted orographically, causing low stratus clouds to develop frequently during the later part of the night. These clouds usually dissipate around noon, and clear skies prevail a high percentage of the time during the afternoon.

The first occurrence of 32 degrees Fahrenheit is in late November and the average last occurrence is in early March.

# STATION LOCATION

SAN ANTONIO, TEXAS

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										REMARKS	
						SEA LEVEL	GROUND										AUCI
							WIND	TEMP	REL	MO	OR	H	OR	H	OR		
<b>CITY</b> Headquarters Building Fort Sam Houston, Texas	3/07/85	7/15/91		29° 27'	98° 28'												Station established by Signal Corps.
Dulling Building Commerce & Alamo Sts.	7/15/91	2/01/92	2.3 mi. SW	29° 27'	98° 28'												Records taken over by Weather Bureau.
Alamo Insurance Bldg. Navarro Street	2/01/92	7/01/95	0.2 mi. WNW	29° 27'	98° 28'		75	66	66								
Maverick Building Alamo Plaza & Houston Streets	7/01/95	5/01/00	0.1 mi. E	29° 27'	98° 28'	667	104	95	95								
Hicks Building Avenue C & East Houston Street	5/01/00	6/30/14	0.2 mi. E	29° 27'	98° 28'	660	91	80	80		72						Tipping Bucket rain gage and sunshine recorder installed 11/7/02.
State Bank & Trust Bldg 313 East Houston Street	6/30/14	7/01/30	0.3 mi. N	29° 27'	98° 28'	649	132	119	119		122						Thermometers and rain gages 10 ft. lower prior to 5/12/16.
Alamo Nat'l. Bank Bldg. 306 West Commerce St.	7/01/30	10/24/37	0.5 mi. WSW	29° 27'	98° 28'	646	301	243	243		235						
Federal Building Alamo Plaza & Houston St.	10/24/37	1/02/41	0.6 mi. ENE	29° 27'	98° 28'	652	301	111	111		103						Wind instruments left on roof of Alamo National Bank Building.
<b>AIRPORT</b> Administration Building Stinson Field 7 miles SE of PO	12/27/38	1/02/41		29° 20'	98° 28'	567	59	b28	28								a - 27 ft. to 7/1/39. b - Installed 7/1/39. Record observations transferred to Airport 7/1/39.
Administration Building Stinson Field	1/02/41	7/14/42		29° 20'	98° 28'	567	63	7	7		28						WBO and WBAS consolidated at Airport.
East Lean-To, Hangar #2 San Antonio Airport	7/14/42	8/15/53	12.8 mi. N	29° 32'	98° 28'	782	51	8	8		4						
Feeder Lines Terminal Building, San Antonio International Airport	8/15/53	5/24/72	1200 ft. NW	29° 32'	98° 28'	c788	a23	5	5		4						a - 33 ft. to 9/1/61. b - Telesychrometer (4') 10/17/48 - removed 1/20/69. Hygro. comm. 1000' NE of thermometer site 4/1/64. c - 792 ft. to 4/1/64.
North Crown Building 830 N.E. Loop 410 International Airport	5/24/72	Present	1.1 mi. SE	29° 32'	98° 28'	788	23 g23	NA	NA	80	74	f74	74	d4 h5	NA		d - Same site as prior to 5/24/72. f - Added 9/1/76. g - Minor adjustment 5/1/86. h - Minor move & type change 5/1/86.
																	S ASOS Commissioned 06/01/95

SUBSCRIPTION: Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801.  
INQUIRIES/COMMENTS CALL: (828) 271-4800

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