

1998

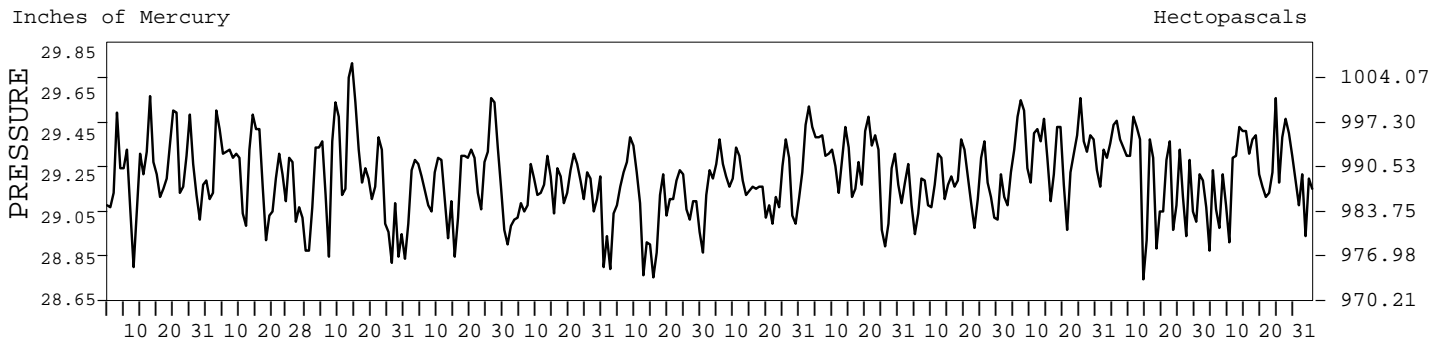
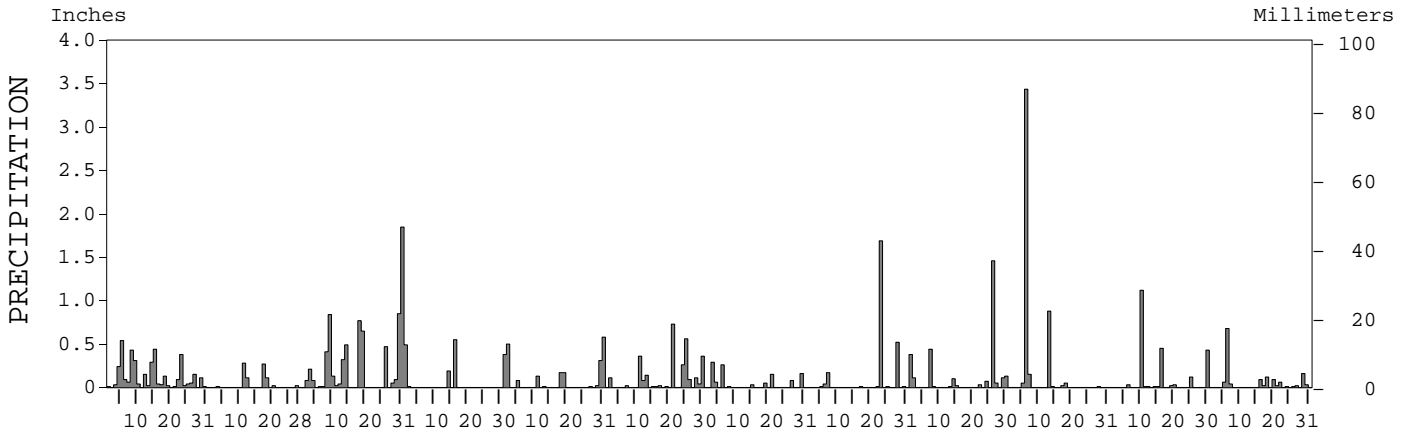
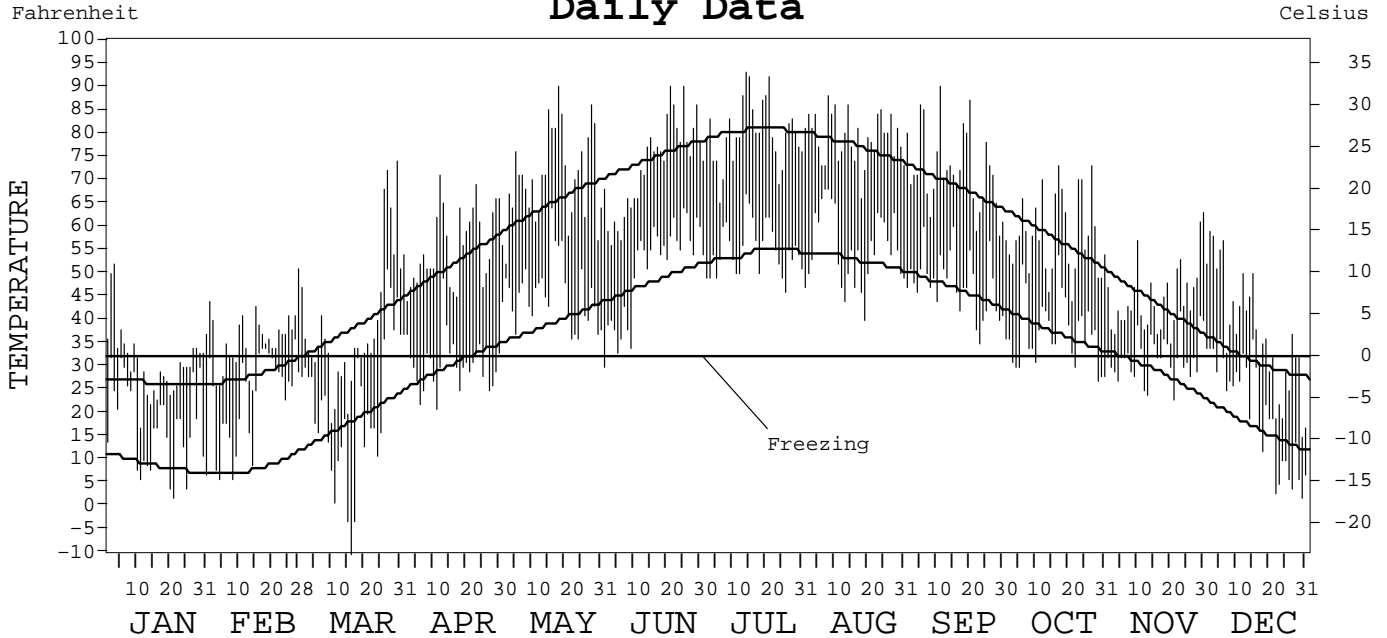
LOCAL CLIMATOLOGICAL DATA  
ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-2508

ALPENA,  
MICHIGAN (APN)

Daily Data



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
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# METEOROLOGICAL DATA FOR 1998

## ALPENA, MI (APN)

LATITUDE: 45° 04' 18" N      LONGITUDE: 83° 34' 52" W      ELEVATION (FT): GRND: 689      BARO: 692      TIME ZONE: EASTERN (UTC+ 5)      WBAN: 94849

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	31.1	35.8	38.8	55.8	70.6	73.1	79.7	79.0	72.0	58.3	44.7	37.5	56.4	
	HIGHEST DAILY MAXIMUM	52	51	74	71	90	90	93	88	90	73	63	59	93	
	DATE OF OCCURRENCE	03	28	30	12	18	25	14	08	11	27+	30	02	JUL 14	
	MEAN DAILY MINIMUM	17.4	23.6	21.0	30.9	45.5	50.9	55.1	55.4	47.8	37.4	32.0	20.5	36.5	
	LOWEST DAILY MINIMUM	2	6	-10	21	36	30	46	40	35	27	23	2	-10	
	DATE OF OCCURRENCE	21	08+	16	11	24+	01	26	19	23	29	21	30	MAR 16	
	AVERAGE DRY BULB	24.3	29.7	29.9	43.4	58.1	62.0	67.4	67.2	59.9	47.9	38.4	29.0	46.4	
	MEAN WET BULB	23.9	28.3	28.6	38.0	52.8	57.3	60.7	61.7	55.6	44.8	35.9	27.9	43.0	
	MEAN DEW POINT	21.2	25.4	24.5	29.7	48.1	53.6	55.9	57.8	51.9	41.1	31.6	23.5	38.7	
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	1	2	3	0	1	0	0	0	0	7
	MAXIMUM ≤ 32°	18	8	10	0	0	0	0	0	0	0	0	12	48	
	MINIMUM ≤ 32°	31	23	25	19	0	1	0	0	0	8	20	25	152	
	MINIMUM ≤ 0°	0	0	3	0	0	0	0	0	0	0	0	0	3	
H/C	HEATING DEGREE DAYS	1255	984	1081	640	235	156	24	36	171	525	790	1109	7006	
	COOLING DEGREE DAYS	0	0	0	0	28	71	105	111	26	0	0	0	341	
RH	MEAN (PERCENT)	85	84	79	63	73	77	70	74	76	78	77	77	76	
	HOUR 01 LST	87	87	84	78	87	92	86	89	88	86	80	81	85	
	HOUR 07 LST	87	88	86	78	84	87	84	89	92	90	82	84	86	
	HOUR 13 LST	82	77	69	45	58	61	49	52	59	62	70	68	63	
	HOUR 19 LST	86	84	77	52	63	67	60	65	72	77	77	76	71	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	4	6	7	1	6	1	0	4	2	4	2	3	40	
	THUNDERSTORMS	0	0	6	0	6	9	5	3	5	1	0	0	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.)	29.27	29.27	29.23	29.23	29.16	29.10	29.23	29.31	29.19	29.38	29.23	29.28	29.24	
	MEAN SEA-LEVEL PRESS. (IN.)	30.05	30.04		29.99	29.91	29.84	29.97	30.05	29.94	30.13	29.99	30.05		
WINDS	RESULTANT SPEED (MPH)	0.8	1.6	2.9	1.9	1.4	0.8	1.9	0.2	2.6	1.9	3.3	4.8	1.1	
	RES. DIR. (TENS OF DEGS.)	01	06	36	04	04	03	29	17	29	27	26	26	31	
	MEAN SPEED (MPH)	7.8	6.6	9.0	7.6	6.8	7.1	6.3	5.9	6.0	7.2	8.4	8.1	7.2	
	PREVAIL. DIR. (TENS OF DEGS.)	23	31	33	11	03	34	24	12	28	25	30	23	28	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	26	29	31	29	28	29	25	24	30	28	38	28	38	
	DIR. (TENS OF DEGS.)	03	07	35	34	23	26	34	32	01	25	20	34	20	
	DATE OF OCCURRENCE	08	17	09	24+	16	25	09	23	26+	18	10	29	NOV 10	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	36	38	44	36	32	37	32	39	46	38	56	37	56	
DIR. (TENS OF DEGS.)	05	07	34	34	29	26	34	33	30	25	22	33	22		
DATE OF OCCURRENCE	08	17	10	24	17+	25	09	23	26	18	10	29	NOV 10		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	3.73	0.82	7.37	1.24	2.36	2.91	1.09	2.47	2.92	4.61	2.24	1.41	33.17	
	GREATEST 24-HOUR (IN.)	0.72	0.38	1.97	0.55	0.89	0.73	0.31	1.69	1.51	3.56	1.12	0.72	3.56	
	DATE OF OCCURRENCE	08-09	11-12	30-31	16	30-31	21	03-04	23	26-27	06-07	10	06-07	OCT 06-07	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	26	7	19	4	11	16	9	9	13	8	11	14	147	
PRECIPITATION ≥ 0.10	11	4	11	3	7	8	4	3	7	3	4	3	68		
PRECIPITATION ≥ 1.00	0	0	1	0	0	0	0	1	1	1	1	0	5		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)											4.7			
	GREATEST 24-HOUR (IN.)											4.3			
	DATE OF OCCURRENCE											16			
	MAXIMUM SNOW DEPTH (IN.)														
	NUMBER OF DAYS WITH:														
SNOWFALL ≥ 1.0											1				

# NORMALS, MEANS, AND EXTREMES

## ALPENA, MI (APN)

LATITUDE: 45° 04' 18" N      LONGITUDE: 83° 34' 52" W      ELEVATION (FT): GRND: 689      BARO: 692      TIME ZONE: EASTERN (UTC+ 5)      WBAN: 94849

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	26.4	28.2	37.9	51.6	64.8	74.5	80.2	76.9	68.3	56.8	43.0	30.9	53.3
	MEAN DAILY MAXIMUM	39	26.6	28.6	37.6	51.5	64.8	74.7	79.6	76.9	68.4	56.7	42.6	31.6	53.3
	HIGHEST DAILY MAXIMUM	40	52	65	76	90	94	103	102	102	94	88	76	65	103
	YEAR OF OCCURRENCE		1998	1984	1990	1990	1962	1995	1983	1988	1983	1971	1978	1982	JUN 1995
	MEAN OF EXTREME MAXS.	39	43.2	46.0	60.5	75.8	85.3	91.1	92.8	90.1	84.7	76.8	61.7	49.7	71.5
	NORMAL DAILY MINIMUM	30	8.8	8.3	18.0	30.1	39.2	48.0	54.0	52.6	46.3	37.0	28.4	16.5	32.3
	MEAN DAILY MINIMUM	39	9.3	8.9	17.8	30.0	39.6	48.4	54.1	52.7	45.7	36.5	27.5	17.2	32.3
	LOWEST DAILY MINIMUM	40	-28	-37	-27	0	20	28	34	30	25	16	-6	-18	-37
	YEAR OF OCCURRENCE		1994	1979	1962	1965	1966	1966	1965	1982	1993	1997	1995	1985	FEB 1979
	MEAN OF EXTREME MINS.	39	-13.4	-14.7	-5.8	15.0	26.2	34.5	40.8	39.1	30.3	22.3	10.3	-5.4	14.9
	NORMAL DRY BULB	30	17.6	18.3	28.0	40.9	52.0	61.3	67.1	64.8	57.3	46.9	35.7	23.7	42.8
	MEAN DRY BULB	39	17.9	18.8	27.8	40.8	52.2	61.4	66.8	64.8	57.1	46.6	35.0	24.3	42.8
	MEAN WET BULB	15	19.0	19.2	26.1	36.7	47.3	56.6	61.4	60.9	53.6	43.0	32.6	22.7	39.9
	MEAN DEW POINT	15	14.9	14.3	20.4	30.0	41.1	51.8	57.5	57.5	50.4	39.0	28.7	18.9	35.4
	NORMAL NO. DAYS WITH:														
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	*	0.4	1.7	2.9	1.3	0.3	0.0	0.0	0.0	6.6	
MAXIMUM ≤ 32°	30	22.1	18.3	9.0	0.8	0.0	0.0	0.0	0.0	0.0	*	3.8	17.1	71.1	
MINIMUM ≤ 32°	30	30.5	27.3	28.1	18.7	7.5	0.7	0.0	0.1	2.2	11.3	21.9	28.9	177.2	
MINIMUM ≤ 0°	30	8.2	8.2	3.1	*	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.2	22.8	
H/C	NORMAL HEATING DEG. DAYS	30	1469	1308	1147	723	411	146	43	80	237	561	879	1280	8284
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	8	35	108	74	6	0	0	0	231
RH	NORMAL (PERCENT)														
	HOUR 01 LST	30	80	78	78	77	79	85	86	89	88	84	82	82	82
	HOUR 07 LST	30	80	79	82	80	78	81	84	90	91	86	84	83	83
	HOUR 13 LST	30	69	65	61	53	51	53	53	58	61	62	69	74	61
	HOUR 19 LST	30	74	71	67	60	56	60	60	69	77	76	78	79	69
S	PERCENT POSSIBLE SUNSHINE	37	36	45	53	53	59	63	63	57	50	41	27	27	48
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	38	1.4	1.6	2.8	2.5	2.4	2.7	2.1	2.9	2.6	2.8	2.2	1.4	27.4
	THUNDERSTORMS	38	0.1	0.0	1.0	2.2	3.8	5.3	6.9	5.9	3.8	1.5	0.3	0.1	30.9
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	37	6.2	5.9	5.4	5.4	5.0	4.7	4.4	4.5	5.1	5.5	6.4	6.5	5.4
	MIDNIGHT-MIDNIGHT (OKTAS)	32	6.3	5.8	5.2	5.0	4.6	4.4	4.2	4.1	4.6	5.3	6.2	6.4	5.2
	MEAN NO. DAYS WITH:														
	CLEAR	38	3.1	4.1	6.4	6.3	7.5	7.6	7.6	8.4	6.0	4.8	2.3	1.8	65.9
PARTLY CLOUDY	38	7.3	7.1	7.9	7.6	9.6	10.6	12.9	10.5	9.3	8.1	5.8	6.3	103.0	
CLOUDY	38	20.6	17.1	16.6	16.2	14.0	11.7	9.7	11.4	13.8	17.3	21.0	22.0	191.4	
PR	MEAN STATION PRESSURE (IN)	26	29.20	29.30	29.20	29.20	29.20	29.20	29.20	29.30	29.30	29.21	28.21	29.15	
	MEAN SEA-LEVEL PRES. (IN)	15	30.01	30.06	30.05	29.96	29.98	29.94	29.97	30.03	30.01	30.03	30.02	28.03	29.84
WINDS	MEAN SPEED (MPH)	22	9.1	8.8	9.2	9.4	8.4	7.9	7.3	7.0	7.4	8.3	9.1	8.6	8.4
	PREVAIL. DIR (TENS OF DEGS)	23	24	30	30	30	12	12	24	24	24	18	24	23	30
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	2	28	29	31	38	32	31	34	29	30	30	38	28	38
	DIR. (TENS OF DEGS)		31	07	35	16	33	01	18	01	18	20	34	20	20
	YEAR OF OCCURRENCE		1997	1998	1998	1997	1997	1997	1997	1997	1998	1997	1998	1998	NOV 1998
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	2	39	38	44	49	40	39	41	39	46	38	56	37	56
DIR. (TENS OF DEGS)		31	07	34	17	06	01	18	33	30	25	22	33	22	
YEAR OF OCCURRENCE		1997	1998	1998	1997	1997	1997	1997	1998	1998	1998	1998	1998	NOV 1998	
PRECIPITATION	NORMAL (IN)	30	1.64	1.29	2.11	2.25	2.74	3.04	2.92	3.40	3.11	2.10	2.20	2.03	28.83
	MAXIMUM MONTHLY (IN)	40	4.12	3.88	7.37	4.15	8.29	8.37	7.17	6.26	7.12	6.53	7.45	5.07	8.37
	YEAR OF OCCURRENCE		1997	1997	1998	1980	1983	1969	1975	1994	1986	1991	1966	1996	JUN 1969
	MINIMUM MONTHLY (IN)	40	0.16	0.12	0.34	1.18	0.99	0.20	0.22	0.92	0.28	0.61	0.61	0.39	0.12
	YEAR OF OCCURRENCE		1961	1982	1993	1978	1988	1991	1989	1970	1979	1971	1986	1994	FEB 1982
	MAXIMUM IN 24 HOURS (IN)	40	1.83	1.51	1.97	1.20	2.50	2.65	3.15	3.18	3.02	3.56	1.93	1.63	3.56
	YEAR OF OCCURRENCE		1978	1997	1998	1991	1973	1969	1974	1968	1968	1998	1966	1971	OCT 1998
	NORMAL NO. DAYS WITH:														
PRECIPITATION ≥ 0.01	30	13.9	11.2	12.6	11.4	11.3	10.9	9.6	11.1	12.4	12.5	13.2	16.1	146.2	
PRECIPITATION ≥ 1.00	30	0.1	*	0.1	*	0.4	0.6	0.8	0.6	0.6	0.2	0.2	0.2	3.8	
SNOWFALL	NORMAL (IN)	30	21.9	15.3	14.2	4.7	0.3	0.0	0.0	0.0	T	0.6	8.5	21.4	86.9
	MAXIMUM MONTHLY (IN)	38	43.5	33.4	35.8	12.7	3.7	0.0	0.0	T	T	4.3	34.8	46.3	46.3
	YEAR OF OCCURRENCE		1978	1967	1971	1992	1974			1996	1995	1969	1995	1970	DEC 1970
	MAXIMUM IN 24 HOURS (IN)	38	16.3	13.7	17.3	12.2	4.2	0.9	T	T	T	3.8	16.1	16.4	17.3
	YEAR OF OCCURRENCE		1978	1994	1985	1992	1994	1994	1996	1991	1995	1969	1966	1989	MAR 1985
	MAXIMUM SNOW DEPTH (IN)	36	610	632	566	59	3	0	0	0	0	3	111	451	632
	YEAR OF OCCURRENCE		1979	1985	1962	1972	1994					1969	1995	1989	FEB 1985
	NORMAL NO. DAYS WITH:														
SNOWFALL ≥ 1.0	30	6.8	4.7	3.9	1.6	0.1	0.0	0.0	0.0	0.0	0.2	2.3	6.5	26.1	

PRECIPITATION (inches) 1998 ALPENA, MI (APN)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	2.23	0.34	1.48	1.71	3.11	8.37	1.82	2.50	2.18	4.78	1.64	1.26	31.42
1970	1.81	0.27	2.03	2.00	1.99	1.96	4.41	0.92	4.76	1.47	2.18	3.32	27.12
1971	2.42	3.17	2.75	1.71	2.87	5.88	4.00	4.08	1.00	0.61	2.30	4.44	35.23
1972	0.47	1.08	3.35	1.69	2.18	1.44	3.51	4.85	2.60	2.03	1.14	3.83	28.17
1973	1.02	0.60	1.82	2.31	4.83	2.31	5.16	5.67	2.97	4.03	1.70	2.17	34.59
1974	3.04	1.38	0.64	2.97	2.61	3.15	5.17	2.03	2.18	1.43	1.42	1.04	27.06
1975	2.14	1.26	2.26	1.70	4.45	3.23	7.17	5.76	1.97	0.91	2.51	0.93	34.29
1976	1.73	2.24	4.44	1.33	2.43	2.82	2.03	2.54	1.30	2.14	0.79	0.61	24.40
1977	0.72	2.19	2.49	2.15	1.85	1.38	3.38	4.75	4.01	1.22	2.33	2.28	28.75
1978	3.31	0.60	1.07	1.18	2.69	1.13	2.96	2.65	6.09	1.26	1.55	2.26	26.75
1979	1.79	1.06	2.13	3.02	2.50	2.76	4.54	2.14	0.28	2.58	1.94	2.09	26.83
1980	0.95	0.47	1.22	4.15	1.87	3.34	2.11	3.29	2.51	0.99	1.03	2.19	24.12
1981	0.46	1.93	1.01	3.41	1.14	2.11	1.50	2.20	2.38	2.98	1.12	1.17	21.41
1982	2.06	0.12	2.33	1.62	1.68	3.37	1.65	3.07	3.61	1.45	2.73	2.81	26.50
1983	1.80	1.48	2.82	2.70	8.29	1.76	2.48	2.62	3.50	3.90	1.74	1.92	35.01
1984	0.89	0.81	2.22	2.89	1.89	2.88	2.35	5.92	3.76	2.79	2.01	2.22	30.63
1985	1.71	2.77	2.77	2.63	2.70	1.00	3.80	4.74	3.07	2.80	3.24	2.60	33.83
1986	1.04	1.06	2.30	1.86	2.41	3.36	5.28	1.83	7.12	2.83	0.61	0.95	30.65
1987	0.94	0.87	0.94	1.20	1.75	3.38	1.17	4.77	3.29	2.00	2.21	2.17	24.69
1988	1.51	1.04	2.72	3.25	0.99	0.84	2.61	4.48	1.50	3.43	3.54	1.24	27.15
1989	1.42	0.61	2.68	2.20	1.89	2.67	0.22	2.29	1.90	2.20	2.27	1.53	21.88
1990	2.44	1.17	2.89	2.32	2.88	4.18	3.69	2.35	1.58	3.07	2.89	1.79	31.25
1991	0.96	0.49	3.04	2.57	6.26	0.20	5.16	3.38	2.24	6.53	1.50	1.44	33.77
1992	1.70	1.70	1.50	2.61	1.10	1.69	3.37	2.65	2.53	2.34	4.01	1.24	26.44
1993	1.33	0.81	0.34	3.16	2.49	4.00	1.71	5.67	1.51	1.98	2.56	0.41	25.97
1994	1.95	1.04	1.29	2.64	1.58	3.23	5.53	6.26	1.61	1.38	2.90	0.39	29.80
1995	1.77	0.84	0.99	3.16	1.29	2.01	2.96	2.34	1.72	1.89	4.17	1.36	24.50
1996	1.42	1.51	0.49	2.78	1.20	2.29	4.06	1.75	6.16	2.37	0.76	5.07	29.86
1997	4.12	3.88	2.49	1.77	2.66	0.42	3.05	5.83	2.86	1.82	1.31	0.73	30.94
1998	3.73	0.82	7.37	1.24	2.36	2.91	1.09	2.47	2.92	4.61	2.24	1.41	33.17
POR= 126 YRS	1.83	1.50	1.97	2.29	2.85	2.97	2.70	3.01	3.03	2.51	2.28	1.92	28.86

WBAN : 94849

AVERAGE TEMPERATURE (°F) 1998 ALPENA, MI (APN)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	20.3	20.6	24.4	41.6	50.3	56.8	65.7	68.2	56.9	44.3	34.2	22.6	42.2
1970	13.6	16.5	24.3	41.9	51.7	61.3	69.0	65.9	58.0	49.4	36.2	23.1	42.6
1971	15.1	18.5	23.9	38.3	50.2	63.9	62.8	62.3	60.2	54.0	35.7	27.5	42.7
1972	18.5	16.4	21.9	35.4	52.7	57.4	65.6	63.2	55.1	42.4	34.3	23.3	40.5
1973	22.7	16.9	35.3	41.2	49.1	63.5	65.9	68.5	56.6	51.9	36.1	22.9	44.2
1974	20.8	14.1	27.8	41.7	48.2	60.5	67.1	64.8	53.1	44.5	36.5	28.0	42.3
1975	22.4	21.9	25.0	35.8	58.0	63.7	68.7	65.7	53.6	49.0	40.7	23.8	44.0
1976	12.6	23.6	30.6	45.0	50.9	65.8	67.5	66.1	57.0	43.4	30.4	15.0	42.3
1977	10.2	19.4	35.9	43.3	56.5	59.2	67.2	61.3	58.2	45.7	34.7	22.4	42.8
1978	16.2	14.1	24.5	36.0	55.4	60.7	65.9	65.6	58.5	46.3	36.0	23.7	41.9
1979	13.9	8.6	31.3	41.1	50.8	60.8	66.9	63.1	59.0	44.7	33.9	28.4	41.9
1980	19.8	16.8	26.1	40.4	53.7	56.8	67.6	68.6	57.2	43.7	33.6	18.6	41.9
1981	14.7	24.5	32.1	44.3	52.0	62.4	67.5	64.9	54.1	41.4	35.8	26.3	43.3
1982	11.2	17.3	25.4	37.5	56.9	56.4	67.9	61.6	57.4	48.7	36.0	31.4	42.3
1983	22.2	25.1	30.8	39.8	47.0	61.9	72.2	68.5	59.8	45.6	35.0	18.7	43.9
1984	13.1	28.4	24.6	43.3	48.5	63.2	66.4	67.5	54.4	48.6	35.3	27.9	43.4
1985	16.3	17.6	30.5	44.8	53.7	58.5	65.8	63.9	59.1	46.8	35.3	19.6	42.7
1986	18.3	19.3	30.1	45.0	54.6	58.7	68.2	62.4	57.2	45.9	33.3	29.2	43.5
1987	23.2	22.4	32.5	44.9	55.5	65.3	70.4	65.6	59.8	43.4	38.0	29.4	45.9
1988	18.6	15.4	27.6	41.6	56.0	64.8	71.6	68.1	58.0	43.1	37.4	23.9	43.8
1989	25.7	16.8	23.9	39.2	53.7	60.8	68.7	64.8	56.2	47.8	31.1	12.5	41.8
1990	26.9	22.1	31.1	44.3	50.4	61.9	66.8	65.8	57.1	45.4	38.5	26.7	44.8
1991	18.6	26.2	31.2	45.4	58.4	65.6	67.7	68.3	55.5	47.9	33.9	25.0	45.3
1992	22.3	23.5	26.8	38.5	52.6	58.5	61.3	62.0	55.7	44.3	34.1	27.9	42.3
1993	21.5	16.1	26.8	39.1	51.4	59.8	69.5	67.8	52.2	43.7	34.6	25.9	42.4
1994	8.1	11.6	28.9	43.1	53.1	64.1	66.9	63.5	59.9	49.0	38.9	32.1	43.3
1995	24.0	16.8	32.0	37.9	53.1	65.6	68.6	68.5	55.2	49.0	29.4	20.6	43.4
1996	15.8	17.5	24.7	36.9	48.4	62.0	64.2	66.4	59.6	46.5	31.4	26.0	41.6
1997	17.4	20.7	26.1	39.1	46.0	64.4	66.1	62.0	57.6	46.0	33.0	29.4	42.3
1998	24.3	29.7	29.9	43.4	58.1	62.0	67.4	67.2	59.9	47.9	38.4	29.0	46.4
POR= 124 YRS	19.2	18.8	26.9	39.8	51.1	61.0	66.6	64.8	57.1	47.2	35.3	24.8	42.7

## HEATING DEGREE DAYS (base 65°F) 1998 ALPENA, MI (APN)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	63	32	260	633	916	1306	1589	1354	1256	687	417	161	8674
1970-71	27	64	230	478	855	1294	1541	1298	1269	796	450	112	8414
1971-72	93	122	193	353	871	1154	1433	1403	1329	883	376	232	8442
1972-73	72	108	292	694	911	1287	1306	1338	913	709	486	86	8202
1973-74	42	35	304	406	866	1298	1364	1421	1146	697	517	151	8247
1974-75	46	63	358	628	849	1140	1312	1198	1234	868	251	103	8050
1975-76	43	72	334	488	724	1267	1621	1197	1061	612	430	68	7917
1976-77	27	70	270	663	1031	1547	1696	1270	892	643	294	206	8609
1977-78	49	156	206	587	902	1317	1506	1421	1245	860	331	191	8771
1978-79	63	48	212	577	862	1270	1580	1576	1038	712	443	164	8545
1979-80	45	107	217	630	929	1128	1396	1390	1201	729	352	281	8405
1980-81	25	15	248	652	937	1430	1551	1129	1013	616	397	115	8128
1981-82	43	62	325	725	868	1193	1663	1330	1219	819	249	250	8746
1982-83	29	145	258	501	864	1034	1319	1112	1053	748	551	154	7768
1983-84	24	32	216	600	893	1427	1605	1054	1247	644	505	105	8352
1984-85	42	39	314	502	884	1144	1502	1321	1060	613	353	197	7971
1985-86	50	88	217	554	885	1401	1441	1272	1075	594	338	209	8124
1986-87	43	105	240	588	945	1100	1289	1188	1002	594	332	75	7501
1987-88	45	64	164	660	805	1096	1431	1433	1151	697	290	112	7948
1988-89	8	77	213	673	824	1269	1211	1342	1268	769	345	147	8146
1989-90	16	90	272	525	1010	1621	1173	1194	1045	639	443	131	8159
1990-91	39	38	259	600	787	1181	1433	1080	1040	595	262	63	7377
1991-92	34	40	304	525	927	1233	1317	1197	1177	784	392	213	8143
1992-93	123	136	286	639	919	1144	1341	1362	1178	772	418	170	8488
1993-94	9	39	378	655	902	1207	1767	1491	1114	655	376	105	8698
1994-95	37	90	177	488	774	1014	1264	1344	1018	805	369	74	7454
1995-96	25	21	303	490	1059	1369	1518	1373	1243	839	521	137	8898
1996-97	53	32	191	564	1004	1202	1469	1231	1198	771	584	85	8384
1997-98	73	125	225	583	952	1097	1255	984	1081	640	235	156	7406
1998-	24	36	171	525	790	1109							

WBAN : 94849

## COOLING DEGREE DAYS (base 65°F) 1998 ALPENA, MI (APN)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	0	0	0	0	18	23	93	137	24	0	0	0	295
1970	0	0	0	2	11	59	158	97	26	2	0	0	355
1971	0	0	0	0	0	86	33	43	57	19	0	0	238
1972	0	0	0	0	1	9	98	57	0	0	0	0	165
1973	0	0	0	0	0	50	72	150	60	5	0	0	337
1974	0	0	0	4	3	24	118	64	8	0	0	0	221
1975	0	0	0	0	39	71	167	102	1	0	0	0	380
1976	0	0	0	18	0	96	113	112	36	0	0	0	375
1977	0	0	0	0	36	39	125	48	9	0	0	0	257
1978	0	0	0	0	39	68	99	73	26	0	0	0	305
1979	0	0	0	0	10	47	112	55	41	7	0	0	272
1980	0	0	0	0	9	43	114	133	19	0	0	0	318
1981	0	0	0	3	1	44	124	65	3	0	0	0	240
1982	0	0	0	0	6	1	125	43	37	0	0	0	212
1983	0	0	0	0	0	68	254	144	67	3	0	0	536
1984	0	0	0	0	0	58	92	123	5	0	0	0	278
1985	0	0	0	14	9	8	81	61	46	0	0	0	219
1986	0	0	0	0	24	26	150	34	10	0	0	0	244
1987	0	0	0	0	46	91	218	88	13	0	0	0	456
1988	0	0	0	0	18	113	217	179	9	0	0	0	536
1989	0	0	0	0	1	26	134	89	16	0	0	0	266
1990	0	0	0	25	0	45	101	70	30	0	0	0	271
1991	0	0	0	11	65	88	125	150	25	2	0	0	466
1992	0	0	0	0	13	25	14	51	16	4	0	0	123
1993	0	0	0	0	3	21	153	130	5	0	0	0	312
1994	0	0	0	2	17	83	107	51	30	0	0	0	290
1995	0	0	0	0	7	99	146	136	15	2	0	0	405
1996	0	0	0	0	10	51	36	82	36	0	0	0	215
1997	0	0	0	0	0	75	114	41	9	1	0	0	240
1998	0	0	0	0	28	71	105	111	26	0	0	0	341

SNOWFALL (inches) 1998 ALPENA, MI (APN)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	0.0	0.0	0.0	4.3	5.8	25.4	28.6	5.7	20.0	4.2	0.2	0.0	94.2
1970-71	0.0	0.0	0.0	T	11.8	46.3	43.2	25.0	35.8	4.2	T	0.0	166.3
1971-72	0.0	0.0	0.0	0.0	12.0	18.3	8.6	15.9	27.3	3.3	0.0	0.0	85.4
1972-73	0.0	0.0	0.0	0.2	4.7	42.5	9.6	8.3	9.6	8.8	T	0.0	83.7
1973-74	0.0	0.0	0.0	T	4.2	24.2	13.9	17.4	6.8	2.8	3.7	0.0	73.0
1974-75	0.0	0.0	T	0.3	7.7	12.6	14.0	13.0	17.7	1.1	0.0	0.0	66.4
1975-76	0.0	0.0	0.0	T	10.9	16.0	34.3	18.0	18.9	3.5	0.1	0.0	101.7
1976-77	0.0	0.0	0.0	2.5	8.0	13.8	17.3	11.3	3.4	4.6	0.0	0.0	60.9
1977-78	0.0	0.0	0.0	T	19.5	26.1	43.5	16.8	8.5	0.1	T	0.0	114.5
1978-79	0.0	0.0	0.0	T	7.8	29.1	23.3	13.5	4.8	9.1	2.2	0.0	89.8
1979-80	0.0	0.0	0.0	0.2	6.2	20.0	12.0	11.8	15.7	12.3	0.0	0.0	78.2
1980-81	0.0	0.0	0.0	1.5	4.6	32.2	14.0	20.5	9.3	T	0.0	0.0	82.1
1981-82	0.0	0.0	0.0	0.3	3.9	18.0	39.8	3.6	20.1	3.6	0.0	0.0	89.3
1982-83	0.0	0.0	0.0	0.2	4.7	4.7	22.4	18.3	16.3	7.1	0.0	0.0	73.7
1983-84	0.0	0.0	0.0	T	5.5	22.1	21.2	8.8	9.2	7.4	0.3	0.0	74.5
1984-85	0.0	0.0	T	0.0	4.5	15.3	40.6	30.7	26.8	4.8	0.0	0.0	122.7
1985-86	0.0	0.0	0.0	T	15.4	27.7	17.2	16.0	12.6	3.6	T	0.0	92.5
1986-87	0.0	0.0	0.0	0.1	4.1	11.1	12.3	17.2	3.5	7.9	0.0	0.0	56.2
1987-88	0.0	0.0	0.0	0.7	6.6	16.2	13.6	22.7	21.5	5.2	0.0	0.0	86.5
1988-89	0.0	0.0	0.0	0.9	3.3	15.3	17.0	12.7	29.8	8.0	0.1	0.0	87.1
1989-90	0.0	0.0	T	0.7	19.1	41.3	25.0	16.4	2.8	10.3	0.3	0.0	115.9
1990-91	0.0	T	0.0	0.3	10.2	19.7	17.1	12.8	6.5	1.7	0.0	0.0	68.3
1991-92	0.0	T	T	T	2.7	26.6	16.5	21.3	5.3	12.7	0.0	0.0	85.1
1992-93	0.0	0.0	0.0	2.8	10.2	8.1	16.3	19.3	7.9	12.5	T	0.0	77.1
1993-94	0.0	0.0	T	0.2	2.7	4.7	43.0	21.3	9.4	4.8	0.2	0.0	86.3
1994-95	0.0	0.0	0.0	T	11.9	1.8	18.1	18.5	8.7	2.9	0.0	0.0	61.9
1995-96	0.0	0.0	T	0.2	34.8	25.0	20.8	15.8	8.4	8.1	0.9	0.0	114.0
1996-97	T	T	0.0	0.2	6.6								
1997-98													
1998-					4.7								
POR= 37 YRS	0.0	T	T	0.6	8.8	20.1	21.8	16.0	12.7	4.9	0.5	0.0	85.4

WBAN : 94849

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  
ALPENA,  
MICHIGAN (APN)

The city of Alpena lies on the northwest shore of Thunder Bay, 8 miles from the open waters of Lake Huron. Lake Huron and Thunder Bay lie at an elevation of 580 feet above sea level. Generally, the land slopes up westward from the lakeshore to 689 feet at the airport. Farther to the west and southwest the land becomes higher and more rolling. A range of hills with tops 1,000 to 1,350 feet lies northwest to southeast about 25 miles southwest of the station.

Summer showers moving from the southwest weaken and sometimes dissipate as they approach Alpena. Winter storms often bring winds with an easterly component. Precipitation from these is increased by moisture and instability picked up from Lake Huron and by forced upslope flow.

The climate of Alpena is influenced by its location with respect to major storm tracks and the effects of the Great Lakes. The normal wintertime storm track is south of the city, and most passing storms bring snow. Rain, freezing rain, and sleet are uncommon, but not unknown, in winter. In summer, most storms pass to the north, often bringing brief showers to the area, but occasionally, heavy thunderstorms with damaging winds occur. The Great Lakes modify most climatic extremes. Precipitation amounts are distributed evenly throughout the year. The lake effect is most pronounced in early winter, before ice forms. Minimum temperatures during this season are higher than would be expected at this latitude. But as nearby waters, particularly the Straits of Mackinac, freeze over, sub-zero temperatures become fairly common by February.

Summers in Alpena are warm and sunny. Brief showers usually occur every few days, often falling on only part of the area. Hailstorms average less than one a year. During prolonged heat waves the highest temperatures in Michigan often occur in the forest area southwest of Alpena. Winter months are cloudy and marked by frequent snow flurries. Storms bring heavier snowfall. Snow cover is sufficiently deep and persistent to provide good protection for grasses and winter grains.

The climate along the immediate Lake Huron shore is semi-maritime and lacks the temperature extremes experienced just a few miles inland. Maximum temperatures near the lake shore average 1.6 degrees lower than those at the airport, minimum temperatures average 5 degrees higher. Afternoon lake breezes which are strongest in the late spring and early summer cause lake shore maximum temperatures to average 3.6 degrees lower during the month of May.

Freezing temperatures have occurred as late as late June and as early as late August. Principal crops in the area are hay, potatoes, berries, and apples.

Prevailing winds are from the northwest except during May and June when southeast winds predominate. Southeast winds are common in the afternoon during all the summer months.

STATION LOCATION

ALPENA, MICHIGAN

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										AUGUST 1950	* Type M = AMOS T = AUTOB S = ASOS W = AWOS	REMARKS	
						SEA LEVEL	GROUND												
							G	W	E	P	S	T	R	W	8				H
<u>CITY</u>																			
Bolton & McRae Block Fletcher & Dock Streets	9/10/72	4/26/73	NA	45°04'	83°26'	589	53	31	31										
Bolton & McRae Block	4/26/73	6/10/73	NA	45°04'	83°26'	589	53	55	54										
Bolton & McRae Block	6/10/73	12/1/86	NA	45°04'	83°26'	589	67	55	55										Psychrometer moved 9/10/86. Rain gage changed from 49' to 52' about 1880 & 54' on 9/10/86.
Bolton & McRae Block	12/1/86	3/20/05	NA	45°04'	83°26'	589	80	65	63			55		54					Wind instruments 71' listed in 1892, 63' 1895-1899, raised to 80' 12/22/00. Tipping bucket gage installed 6/6/00.
1st Fl. Hazell Cottage S corner 1st & Chisholm	3/20/05	4/28/13	1100 ft. SSW	45°04'	83°26'	587	92	13	13				4	4					Wind instruments on storm warning tower.
Federal Building, N. Corner First and Water Streets	4/28/13	8/25/59	700 ft. NE	45°04'	83°26'	587	92 a89	13 c5	13 c5				4 d42 e5	4 b42 e4					a - Lowered 9/28/31. b - Moved to roof 4/6/35. c - Effective 9/30/40. d - Added 11/1/40 e - Relocated 7/14/52.
<u>AIRPORT</u>																			
Terminal Building Phelps Collins Field	8/25/59	Present	7 mi. W	45°04'	83°34'	689	33 g22	5 j5	NA	18		3 f4 i4 j5	5 f4 j5	3 j4	h5 k5	NA			f - Effective 6/20/62. g - Effective 7/26/74. h - Commissioned 950' NE of thermometer site 10/2/75. i - Minor move 7/25/78. j - Relocated 5/22/80. k - Type change 11/16/84.
																S			ASOS Commissioned 04/01/96

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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