

1998

LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA



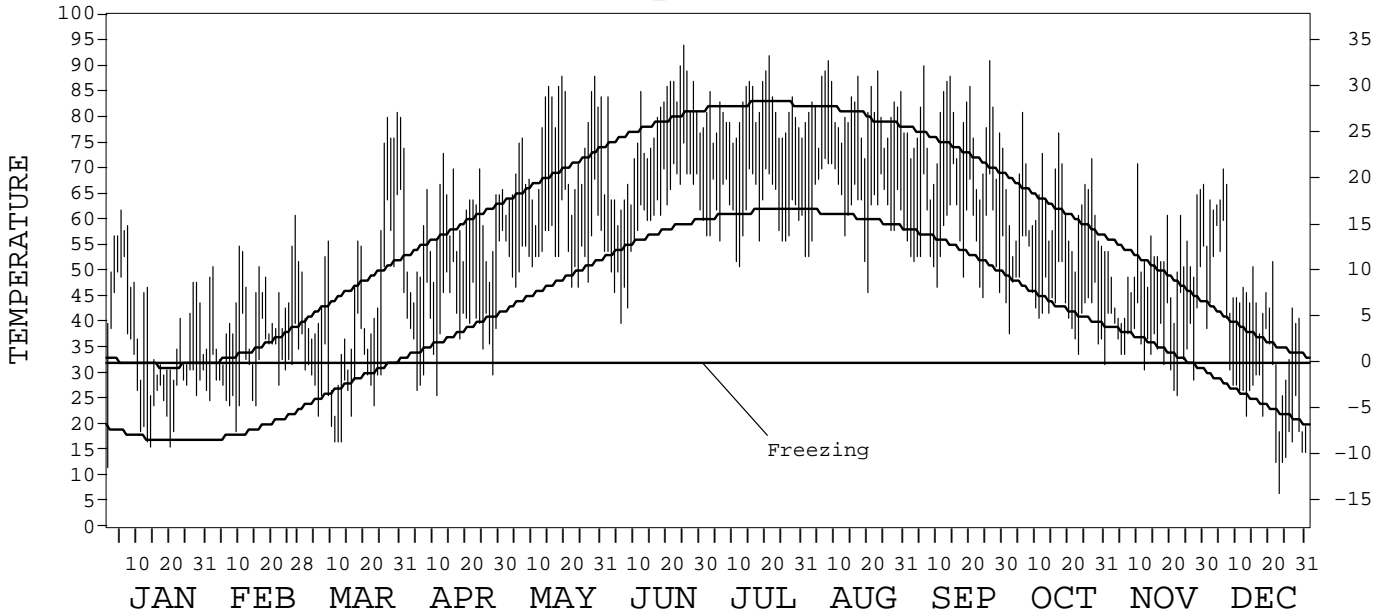
ISSN 0198-3946

CLEVELAND,
OHIO (CLE)

Daily Data

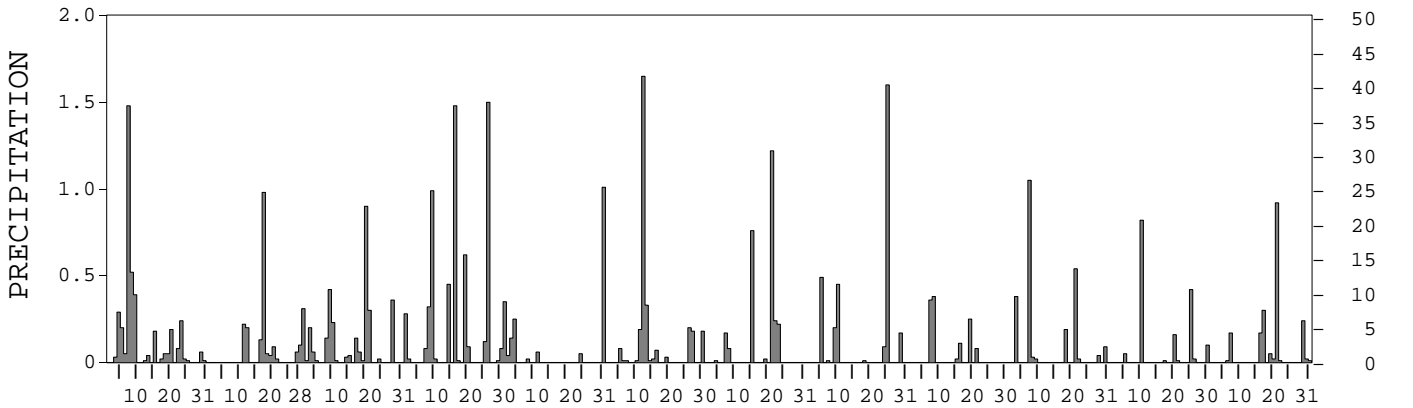
Fahrenheit

Celsius



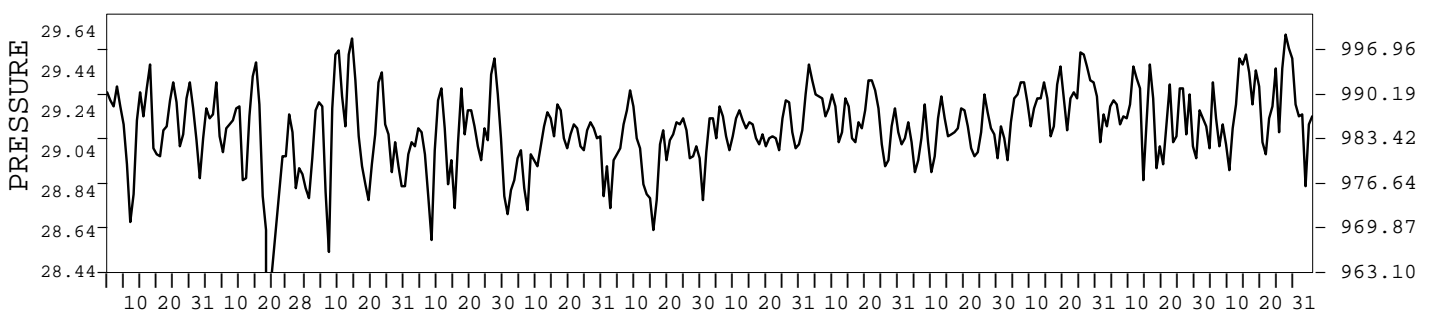
Inches

Millimeters



Inches of Mercury

Hectopascals



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Thomas R. Karl

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL ENVIRONMENTAL AND INFORMATION SERVICE
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 ASHEVILLE, NORTH CAROLINA

METEOROLOGICAL DATA FOR 1998

CLEVELAND, OH (CLE)

LATITUDE: 41° 24' 18" N LONGITUDE: 81° 51' 10" W ELEVATION (FT): GRND: 777 BARO: 779 TIME ZONE: EASTERN (UTC+ 5) WBAN: 14820

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	41.0	44.0	48.1	58.6	74.0	76.9	81.0	81.4	76.9	62.6	52.0	44.4	61.7	
	HIGHEST DAILY MAXIMUM	62	61	81	74	88	94	92	91	91	81	71	70	94	
	DATE OF OCCURRENCE	05	27	30	01	29+	25	21	08	26	06	10	06	JUN 25	
	MEAN DAILY MINIMUM	29.4	31.1	34.2	39.9	54.7	60.0	61.8	62.8	57.0	44.4	37.7	29.5	45.2	
	LOWEST DAILY MINIMUM	12	19	17	26	47	40	51	46	45	32	26	7	7	
	DATE OF OCCURRENCE	01	9	13+	11	24+	06	12	20	24	31	22	23	DEC 23	
	AVERAGE DRY BULB	35.2	37.6	41.2	49.3	64.4	68.5	71.4	72.1	67.0	53.5	44.9	37.0	53.5	
	MEAN WET BULB	33.4		37.3	44.6	59.7	63.1	65.8	66.6	61.5	49.4	41.0	34.0		
	MEAN DEW POINT	30.1		31.8	38.7	55.9	59.7	61.9	63.1	57.2	44.9	35.6	29.3		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	2	1	1	2	0	0	0	0	6
	MAXIMUM ≤ 32°	10	2	4	0	0	0	0	0	0	0	0	6	22	
MINIMUM ≤ 32°	23	15	20	5	0	0	0	0	0	1	6	22	92		
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0		
H/C	HEATING DEGREE DAYS	916	763	758	465	94	73	1	4	52	350	597	863	4936	
	COOLING DEGREE DAYS	0	0	25	0	82	183	207	231	118	4	0	0	850	
RH	MEAN (PERCENT)	83	80	72	69	75	75	72	74	71	74	70	75	74	
	HOUR 01 LST	85	81	76	75	88	86	85	84	80	78	74	78	81	
	HOUR 07 LST	87	85	80	80	85	86	85	86	83	84	79	80	83	
	HOUR 13 LST	78	71	65	58	63	64	59	61	58	64	64	67	64	
	HOUR 19 LST	82	81	69	62	66	65	60	67	65	72	67	75	69	
S	PERCENT POSSIBLE SUNSHINE	15		25				66	62	55	53	31	45		
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	3	0	0	0	4	1	0	0	0	0	0	0	8	
	THUNDERSTORMS	0	1	0	3	4	9	3	4	3	0	0	1	28	
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.)	29.19		29.13	29.11	29.05	29.04	29.16	29.22	29.13	29.31	29.21	29.28		
	MEAN SEA-LEVEL PRESS. (IN.)	30.07		30.01	29.98	29.90	29.88	30.00		29.98	30.18	30.09	30.05		
WINDS	RESULTANT SPEED (MPH)	3.9		3.6	1.9	1.1	3.3	1.9	0.7	2.4	2.6	5.6	6.5		
	RES. DIR. (TENS OF DEGS.)	22		22	01	35	23	26	22	25	23	23	23		
	MEAN SPEED (MPH)	9.8	9.4	12.1	9.5	8.1	8.6	7.6	7.1	8.1	8.3	10.9	10.1	9.1	
	PREVAIL. DIR. (TENS OF DEGS.)	20	03	20	04	03	20	20	21	20	24	19	21	20	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	31	32	38	29	41	41	41	28	34	30	39	32	41	
	DIR. (TENS OF DEGS.)	04	04	20	06	29	28	32	19	28	33	24	26	32	
	DATE OF OCCURRENCE	08+	04	28	22+	31	12	21	25	07	01	10	22	JUL 21	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	38	40	46	45	51	58	52	31	43	34	47	39	58	
DIR. (TENS OF DEGS.)	03	04	21	07	29	31	30	20	29	34	24	25	31		
DATE OF OCCURRENCE	08	04	28	22	31	12	21	25	07	01	11	22	JUN 12		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	3.92	1.89	3.25	6.07	1.92	2.97	2.72	3.02	1.20	2.36	1.59	1.92	32.83	
	GREATEST 24-HOUR (IN.)	1.50	0.99	1.16	1.62	1.01	1.80	1.31	1.62	0.38	1.08	0.82	0.92	1.80	
	DATE OF OCCURRENCE	06-07	17-18	20-21	25-26	31	11-12	21-22	24-25	08-09	07-08	10	21	JUN 11-12	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	20	10	18	15	8	14	8	8	6	9	8	11	135	
PRECIPITATION ≥ 0.10	8	5	9	8	4	6	5	5	4	4	4	5	67		
PRECIPITATION ≥ 1.00	1	0	0	2	1	1	1	1	0	1	0	0	8		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	5.0	0.2	9.5	T	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.9	21.7	
	GREATEST 24-HOUR (IN.)	2.1	0.2	3.7	T	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.4	3.7	
	DATE OF OCCURRENCE	20	12	10	09							21	17	MAR 10	
	MAXIMUM SNOW DEPTH (IN.)	2	0	4	0	0	0	0	0	0	0	0	2	4	
	DATE OF OCCURRENCE	21+		10								29+		MAR 10	
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0	2	0	2	0	0	0	0	0	0	0	0	2	6		

NORMALS, MEANS, AND EXTREMES

CLEVELAND, OH (CLE)

LATITUDE: 41° 24' 18" N LONGITUDE: 81° 51' 10" W ELEVATION (FT): GRND: 777 BARO: 779 TIME ZONE: EASTERN (UTC+ 5) WBAN: 14820

		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	31.9	35.0	46.3	57.9	68.6	78.3	82.4	80.5	73.6	62.1	50.0	37.4	58.7
	MEAN DAILY MAXIMUM	51	33.6	36.3	45.6	58.3	69.3	78.7	82.5	80.9	74.0	63.0	49.6	38.1	59.2
	HIGHEST DAILY MAXIMUM	57	73	70	83	88	92	104	103	102	101	90	82	77	104
	YEAR OF OCCURRENCE		1950	1997	1945	1986	1959	1988	1941	1948	1953	1946	1950	1982	JUN 1988
	MEAN OF EXTREME MAXS.	51	56.1	58.5	72.3	80.4	85.6	91.6	93.4	91.4	88.6	80.2	70.1	59.9	77.3
	NORMAL DAILY MINIMUM	30	17.6	19.3	28.2	37.3	47.3	56.8	61.4	60.3	54.2	43.5	35.0	24.5	40.5
	MEAN DAILY MINIMUM	51	19.3	20.8	28.5	38.4	48.3	57.8	62.3	61.0	54.4	43.9	34.7	24.9	41.2
	LOWEST DAILY MINIMUM	57	-20	-15	-5	10	25	31	41	38	32	19	3	-15	-20
	YEAR OF OCCURRENCE		1994	1963	1984	1964	1966	1972	1968	1982	1942	1988	1976	1989	JAN 1994
	MEAN OF EXTREME MINS.	51	-1.3	0.7	11.1	23.2	33.4	43.2	50.0	48.3	39.2	29.7	19.1	6.1	25.2
	NORMAL DRY BULB	30	24.8	27.2	37.3	47.6	58.0	67.6	71.9	70.4	63.9	52.8	42.6	30.9	49.6
	MEAN DRY BULB	51	26.5	28.6	37.1	48.3	58.8	68.2	72.4	70.9	64.3	53.5	42.2	31.5	50.2
	MEAN WET BULB	15	25.7	26.7	33.8	43.3	53.4	62.1	66.1	65.1	58.6	48.4	38.6	29.8	46.0
	MEAN DEW POINT	15	21.0	21.6	27.8	36.9	47.9	57.4	61.9	61.5	54.6	43.5	33.5	25.2	41.1
	NORMAL NO. DAYS WITH:														
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.0	0.2	1.8	3.9	2.0	0.6	0.0	0.0	0.0	8.5	
MAXIMUM ≤ 32°	30	15.6	12.7	4.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1	10.3	44.8	
MINIMUM ≤ 32°	30	27.9	24.3	21.0	9.3	0.9	*	0.0	0.0	0.0	2.8	12.5	24.8	123.5	
MINIMUM ≤ 0°	30	3.2	2.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.3	
H/C	NORMAL HEATING DEG. DAYS	30	1246	1058	859	522	250	40	0	11	99	387	672	1057	6201
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	33	118	218	178	66	8	0	0	621
RH	NORMAL (PERCENT)	30	73	73	70	66	67	69	70	73	74	71	72	74	71
	HOUR 01 LST	30	75	76	74	73	76	79	81	83	82	77	75	76	77
	HOUR 07 LST	30	77	78	78	76	77	79	81	85	84	80	77	77	79
	HOUR 13 LST	30	69	68	63	57	57	57	57	60	60	59	65	70	62
	HOUR 19 LST	30	72	71	68	61	60	61	61	66	70	69	71	74	67
S	PERCENT POSSIBLE SUNSHINE	55	30	37	45	51	58	65	67	63	60	52	31	26	49
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	57	1.4	1.8	1.9	1.2	1.3	0.7	0.5	0.9	0.6	0.8	0.6	1.2	12.9
	THUNDERSTORMS	57	0.1	0.5	1.7	3.4	4.9	6.6	6.2	5.0	3.2	1.6	1.0	0.2	34.4
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	0			6.4			5.6							8.8
	MIDNIGHT-MIDNIGHT (OKTAS)	0			6.4										
	MEAN NO. DAYS WITH:														
CLEAR	0			7.0		5.0	6.0								
PARTLY CLOUDY	1	2.0	1.0	4.0		3.0	9.0								
CLOUDY	1	9.0	6.0	11.0		11.0	9.0								
PR	MEAN STATION PRESSURE (IN)	26	29.20	29.20	29.20	29.10	29.10	29.10	29.20	29.20	29.20	29.20	29.21	29.20	29.18
	MEAN SEA-LEVEL PRES. (IN)	15	30.10	30.11	30.07	29.99	30.01	29.98	30.02	30.06	30.07	30.10	30.10	30.11	30.06
WINDS	MEAN SPEED (MPH)	47	12.3	11.7	12.1	11.6	10.0	9.3	8.7	8.3	9.0	10.0	11.8	12.0	10.6
	PREVAIL. DIR (TENS OF DEGS)	31	24	23	20	36	36	20	22	22	22	21	24	24	22
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	3	41	45	38	40	41	41	41	31	34	46	39	44	46
	DIR. (TENS OF DEGS)		02	24	04	24	29	28	32	20	28	24	24	25	24
	YEAR OF OCCURRENCE		1996	1997	1996	1997	1998	1998	1998	1997	1998	1996	1998	1996	OCT 1996
	MAXIMUM 5-SECOND:														
SPEED (MPH)	3	52	55	46	53	51	58	52	40	43	57	47	60	60	
DIR. (TENS OF DEGS)		02	25	21	02	29	31	30	22	33	26	24	26	26	
YEAR OF OCCURRENCE		1996	1997	1998	1996	1998	1998	1998	1997	1996	1996	1998	1996	DEC 1996	
PRECIPITATION	NORMAL (IN)	30	2.04	2.19	2.91	3.14	3.49	3.70	3.52	3.40	3.44	2.54	3.17	3.09	36.63
	MAXIMUM MONTHLY (IN)	57	7.01	4.70	6.07	6.61	9.14	9.06	9.12	8.96	11.05	9.50	8.80	8.59	11.05
	YEAR OF OCCURRENCE		1950	1990	1954	1961	1989	1972	1992	1975	1996	1954	1985	1990	SEP 1996
	MINIMUM MONTHLY (IN)	57	0.36	0.48	0.78	1.18	1.00	0.65	1.21	0.53	0.74	0.61	0.80	0.71	0.36
	YEAR OF OCCURRENCE		1961	1978	1958	1946	1963	1988	1982	1969	1964	1952	1976	1958	JAN 1961
	MAXIMUM IN 24 HOURS (IN)	57	2.53	2.33	2.76	2.24	3.73	4.00	2.87	3.65	5.24	3.44	2.73	2.81	5.24
	YEAR OF OCCURRENCE		1995	1959	1948	1961	1955	1972	1969	1994	1996	1954	1985	1992	SEP 1996
NORMAL NO. DAYS WITH:															
PRECIPITATION ≥ 0.01	30	16.3	14.2	15.3	13.8	12.8	11.0	10.2	10.1	10.1	11.7	14.0	16.9	156.4	
PRECIPITATION ≥ 1.00	30	0.1	0.2	0.2	0.3	0.6	0.8	1.2	0.8	0.8	0.2	0.4	0.4	6.0	
SNOWFALL	NORMAL (IN)	30	13.8	12.9	9.7	2.2	0.1	0.0	0.0	0.0	0.7	4.2	12.6	56.2	
	MAXIMUM MONTHLY (IN)	57	42.8	39.1	26.3	14.5	2.1	T	T	0.0	T	8.0	23.4	30.3	42.8
	YEAR OF OCCURRENCE		1978	1993	1954	1943	1974	1996	1993		1993	1962	1996	1962	JAN 1978
	MAXIMUM IN 24 HOURS (IN)	57	10.8	14.8	16.0	11.6	2.1	T	T	0.0	T	6.7	15.0	12.2	16.0
	YEAR OF OCCURRENCE		1996	1993	1987	1982	1974	1996	1993		1993	1962	1950	1974	MAR 1987
	MAXIMUM SNOW DEPTH (IN)	50	21	21	15	14	0	0	0	0	0	6	20	19	21
	YEAR OF OCCURRENCE		1978	1993	1984	1987						1962	1950	1962	FEB 1993
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	4.5	4.0	3.1	0.7	0.*	0.0	0.0	0.0	0.0	0.2	1.5	4.1	18.1	

PRECIPITATION (inches) 1998 CLEVELAND, OH (CLE)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	2.84	0.75	1.82	4.49	5.73	4.61	6.47	0.53	4.92	1.90	2.86	2.46	39.38
1970	1.28	1.35	2.32	2.64	2.95	4.98	4.14	0.92	3.16	3.98	3.69	2.25	33.66
1971	1.35	3.69	2.01	1.24	3.29	3.79	3.72	0.91	4.27	1.61	2.02	3.90	31.80
1972	1.95	2.01	2.97	3.40	3.74	9.06	4.44	6.38	4.91	1.64	4.58	3.26	48.34
1973	1.62	2.40	3.48	3.40	4.79	6.72	2.94	3.11	2.69	3.95	2.62	3.53	41.25
1974	2.56	2.43	3.88	3.64	4.78	3.57	1.90	3.29	3.06	1.19	4.72	4.86	39.88
1975	3.06	3.20	3.47	1.31	3.23	4.10	2.54	8.96	3.35	1.73	2.09	3.77	40.81
1976	3.38	3.97	3.11	2.17	2.94	3.64	3.48	3.50	3.71	2.54	0.80	1.57	34.81
1977	1.29	1.38	4.49	3.56	1.02	4.91	3.94	3.92	2.52	1.93	3.62	3.51	36.09
1978	3.67	0.48	2.17	3.02	3.01	3.30	2.40	3.58	3.68	3.23	1.19	2.96	32.69
1979	2.61	2.74	2.33	3.09	4.77	3.47	3.76	4.46	3.66	1.79	3.16	4.00	39.84
1980	1.18	1.27	3.66	2.65	3.13	2.69	4.77	4.38	3.11	2.38	1.29	2.10	32.61
1981	0.76	2.72	1.61	4.62	2.19	4.68	5.31	2.61	6.75	2.33	1.99	3.44	39.01
1982	4.00	1.41	3.77	1.62	2.65	5.01	1.21	2.66	4.82	0.93	5.17	3.68	36.93
1983	1.08	0.77	3.54	4.48	4.17	3.45	4.16	3.15	2.87	4.14	5.89	2.92	40.62
1984	1.25	3.82	3.80	2.29	5.95	3.40	3.35	5.51	2.43	2.20	3.95	3.38	41.33
1985	1.78	2.60	4.97	1.38	3.45	2.93	3.23	4.01	2.05	3.45	8.80	2.63	41.28
1986	2.23	3.08	2.44	3.90	4.34	2.97	3.10	3.58	6.41	2.83	3.01	2.82	40.71
1987	1.98	0.49	3.84	2.97	2.40	7.94	3.36	5.51	2.07	3.41	1.02	2.96	37.95
1988	1.03	2.84	2.20	3.47	1.33	0.65	3.42	3.35	1.77	2.51	4.63	2.49	29.69
1989	2.07	1.73	3.46	3.73	9.14	5.22	3.02	1.09	4.61	4.50	3.61	1.72	43.90
1990	2.35	4.70	0.86	4.57	6.10	1.72	5.62	4.79	7.33	4.92	2.28	8.59	53.83
1991	2.18	2.31	3.64	4.22	3.24	1.37	1.69	2.79	3.40	2.65	2.92	2.26	32.67
1992	3.32	2.65	3.05	3.77	3.01	2.66	9.12	4.58	3.25	2.27	6.54	4.31	48.53
1993	4.44	2.61	3.85	3.16	1.56	5.18	2.58	1.52	5.94	3.52	4.06	2.21	40.63
1994	2.66	0.83	1.30	3.70	1.67	3.35	2.46	5.35	1.73	1.05	2.52	2.94	29.56
1995	5.81	1.73	1.72	4.33	3.96	3.67	5.39	2.00	1.03	4.08	3.88	1.45	39.05
1996	2.69	1.63	2.81	5.61	2.08	3.89	3.18	0.79	11.05	4.65	5.03	3.03	46.44
1997	1.77	2.93	3.26	2.20	4.21	3.34	1.51	5.26	4.25	1.63	2.58	2.42	35.36
1998	3.92	1.89	3.25	6.07	1.92	2.97	2.72	3.02	1.20	2.36	1.59	1.92	32.83
POR= 128 YRS	2.52	2.32	2.88	2.91	3.20	3.37	3.38	3.00	3.15	2.61	2.71	2.50	34.55

WBAN : 14820

AVERAGE TEMPERATURE (°F) 1998 CLEVELAND, OH (CLE)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	25.4	27.9	34.3	49.4	58.6	65.5	72.4	71.8	63.6	51.9	40.2	27.2	49.0
1970	18.9	27.2	33.8	50.2	62.7	69.8	71.9	69.9	66.0	54.4	41.6	32.2	49.9
1971	21.4	27.9	31.6	43.2	56.5	71.0	69.5	68.9	67.7	59.9	41.4	38.1	49.8
1972	27.3	25.7	34.8	46.0	58.6	62.7	71.4	68.9	63.8	49.1	39.6	34.5	48.5
1973	30.4	27.9	46.5	50.2	56.7	70.4	72.6	73.2	66.3	57.7	44.6	34.3	52.6
1974	32.0	27.8	39.6	51.3	56.4	66.2	72.2	70.4	59.9	51.2	42.9	31.7	50.1
1975	31.9	30.4	34.6	41.8	62.3	69.8	71.3	72.3	58.6	53.8	47.0	32.0	50.5
1976	21.6	36.0	45.0	49.1	55.3	69.5	71.6	68.4	61.1	48.1	33.7	23.3	48.6
1977	11.0	25.0	42.7	51.4	61.8	63.3	73.1	69.6	65.6	52.6	45.4	29.2	49.2
1978	20.1	16.8	32.4	47.0	59.4	69.0	72.2	73.0	69.2	53.2	44.2	33.7	49.2
1979	22.0	19.1	42.9	46.6	56.9	66.9	71.1	71.5	65.0	52.4	42.3	33.7	49.2
1980	25.5	21.9	33.6	46.1	58.5	64.0	72.3	73.2	64.7	47.9	39.4	28.5	48.0
1981	20.1	31.5	36.0	50.6	55.7	68.2	71.3	70.0	62.4	50.0	42.6	30.6	49.1
1982	19.8	25.2	37.1	44.6	64.9	64.1	73.6	67.9	62.7	55.3	45.4	40.5	50.1
1983	30.7	33.9	40.8	47.1	55.7	69.0	75.2	73.7	65.1	53.4	43.9	23.2	51.0
1984	20.7	34.5	28.4	46.8	54.0	69.5	68.7	70.6	61.1	56.3	40.9	36.5	49.0
1985	20.8	25.2	40.3	53.6	60.4	62.7	71.1	68.9	64.9	54.0	46.0	24.3	49.4
1986	26.7	28.8	39.5	49.8	60.8	67.2	73.1	69.0	67.0	54.3	40.3	32.6	50.8
1987	27.4	30.5	39.0	49.1	63.0	70.2	75.2	70.8	63.5	47.5	46.1	34.8	51.4
1988	25.6	25.8	37.5	47.9	59.7	68.9	75.9	74.2	64.0	47.1	43.8	31.3	50.1
1989	35.0	26.1	38.1	45.3	57.6	68.3	73.4	71.0	64.0	54.0	41.0	19.2	49.4
1990	35.8	34.1	42.0	49.4	56.3	67.6	71.2	69.8	63.4	53.7	45.3	35.6	52.0
1991	27.3	32.8	40.7	52.6	66.9	71.1	74.7	72.7	64.5	55.7	40.2	34.8	52.8
1992	30.2	32.7	36.6	47.9	57.9	64.1	70.7	67.6	63.3	49.9	42.0	34.1	49.8
1993	32.3	25.6	33.6	47.6	59.2	67.9	75.0	73.2	62.2	51.3	41.8	30.5	50.0
1994	19.3	26.5	36.3	50.5	54.7	69.7	73.3	69.3	63.9	54.5	47.8	36.9	50.2
1995	30.1	27.0	40.0	46.6	59.3	71.5	75.5	77.8	63.2	56.4	38.5	26.1	51.0
1996	25.9	27.6	30.9	46.3	56.7	69.3	69.6	70.9	64.0	54.0	36.3	34.7	48.9
1997	25.7	34.4	38.8	45.2	52.9	68.2	70.6	67.5	62.6	53.1	39.0	33.4	49.3
1998	35.2	37.6	41.2	49.3	64.4	68.5	71.4	72.1	67.0	53.5	44.9	37.0	53.5
POR= 128 YRS	27.1	28.0	36.2	47.2	58.4	67.8	72.2	70.6	64.5	53.5	41.7	31.3	49.9

WBAN : 14820

HEATING DEGREE DAYS (base 65°F) 1998 CLEVELAND, OH (CLE)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	1	7	121	406	736	1166	1425	1052	960	462	154	39	6529
1970-71	9	12	86	332	696	1009	1344	1032	1031	650	277	16	6494
1971-72	9	13	63	168	704	828	1160	1133	930	564	196	124	5892
1972-73	32	27	95	485	752	937	1067	1033	569	450	254	3	5704
1973-74	3	9	73	234	605	946	1015	1035	777	419	280	49	5445
1974-75	2	5	176	423	660	1026	1021	962	934	691	154	38	6092
1975-76	5	4	187	345	532	1015	1336	836	614	493	309	25	5701
1976-77	0	25	150	519	932	1286	1672	1113	689	423	166	115	7090
1977-78	4	26	60	378	592	1103	1387	1343	1005	534	218	43	6693
1978-79	7	2	43	362	620	965	1328	1281	680	552	290	60	6190
1979-80	20	11	87	403	670	967	1218	1244	967	561	223	103	6474
1980-81	3	2	97	521	763	1125	1385	935	894	430	298	30	6483
1981-82	11	11	145	458	664	1059	1393	1109	860	608	78	75	6471
1982-83	5	42	136	310	586	760	1056	864	742	533	294	56	5384
1983-84	7	0	116	362	628	1291	1366	878	1126	544	347	19	6684
1984-85	16	17	174	270	716	877	1364	1110	757	370	187	99	5957
1985-86	2	7	118	338	565	1255	1180	1009	785	459	172	52	5942
1986-87	3	40	63	332	736	999	1158	958	795	473	170	23	5750
1987-88	3	22	90	535	562	929	1213	1129	848	506	208	60	6105
1988-89	8	5	83	557	629	1040	922	1084	831	585	272	33	6049
1989-90	0	6	108	350	716	1416	898	858	718	492	270	56	5888
1990-91	7	3	121	350	585	906	1163	897	748	379	111	11	5281
1991-92	0	0	123	310	738	930	1074	929	872	513	243	90	5822
1992-93	8	26	118	462	682	952	1009	1097	967	519	192	56	6088
1993-94	0	3	134	420	691	1063	1414	1073	880	443	330	57	6508
1994-95	4	10	83	322	507	865	1077	1061	769	546	190	13	5447
1995-96	3	0	103	271	787	1200	1203	1077	1052	556	297	19	6568
1996-97	8	0	98	333	850	932	1213	849	805	584	368	46	6086
1997-98	11	30	103	404	773	972	916	763	758	465	94	73	5362
1998-	1	4	52	350	597	863							

WBAN : 14820

COOLING DEGREE DAYS (base 65°F) 1998 CLEVELAND, OH (CLE)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1969	0	0	0	10	41	120	237	223	84	10	0	0	725
1970	0	0	0	22	89	189	230	171	121	10	0	0	832
1971	0	0	0	0	22	198	158	143	152	19	0	0	692
1972	0	0	0	1	5	63	239	157	64	0	0	0	529
1973	0	0	0	13	7	168	244	273	119	17	0	0	841
1974	0	0	0	14	18	91	231	180	30	3	2	0	569
1975	0	0	0	0	75	187	206	241	6	5	0	0	720
1976	0	0	3	23	14	167	214	138	39	2	0	0	600
1977	0	0	4	22	74	73	262	175	84	0	9	0	703
1978	0	0	0	0	53	170	237	256	177	3	0	0	896
1979	0	0	0	6	42	122	213	218	93	21	0	0	715
1980	0	0	0	0	27	83	235	263	97	0	0	0	705
1981	0	0	0	4	16	132	214	175	73	0	0	0	614
1982	0	0	0	3	84	54	278	140	73	17	6	6	661
1983	0	0	0	5	12	185	327	277	127	12	0	0	945
1984	0	0	0	3	13	159	139	197	60	5	0	0	576
1985	0	0	0	38	52	34	201	131	122	4	2	0	584
1986	0	0	1	9	48	128	259	168	131	8	0	0	752
1987	0	0	0	0	114	183	322	209	53	0	3	0	884
1988	0	0	0	0	47	185	348	297	58	9	0	0	944
1989	0	0	4	0	46	138	268	199	83	14	0	0	752
1990	0	0	10	31	8	141	208	158	80	8	1	0	645
1991	0	0	1	14	176	200	307	245	114	26	0	0	1083
1992	0	0	0	8	28	68	191	114	74	0	0	0	483
1993	0	0	0	0	17	147	316	262	62	2	0	0	806
1994	0	0	0	15	17	204	269	149	58	5	1	0	718
1995	0	0	0	0	21	216	336	404	58	11	0	0	1046
1996	0	0	0	2	48	155	160	193	76	1	0	0	635
1997	0	0	0	0	0	147	194	113	38	41	0	0	533
1998	0	0	25	0	82	183	207	231	118	4	0	0	850

SNOWFALL (inches) 1998 CLEVELAND, OH (CLE)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1969-70	0.0	0.0	0.0	0.6	6.6	17.4	10.5	6.6	11.5	0.2	T	0.0	53.4
1970-71	0.0	0.0	T	T	5.2	6.0	8.6	14.3	16.6	0.7	0.0	0.0	51.4
1971-72	0.0	0.0	0.0	0.0	5.3	1.9	15.0	14.8	6.3	2.3	0.0	0.0	45.6
1972-73	0.0	0.0	0.0	5.5	7.8	15.2	9.8	20.4	8.3	0.9	0.6	0.0	68.5
1973-74	0.0	0.0	0.0	T	3.3	13.8	8.9	16.9	7.1	6.4	2.1	0.0	58.5
1974-75	0.0	0.0	0.0	1.6	5.3	24.1	9.7	9.9	15.2	1.2	0.0	0.0	67.0
1975-76	0.0	0.0	0.0	0.0	5.6	13.1	21.5	6.8	5.8	1.6	T	0.0	54.4
1976-77	0.0	0.0	T	1.6	8.9	16.3	21.1	9.6	4.2	1.7	0.0	0.0	63.4
1977-78	0.0	0.0	0.0	T	9.7	23.1	42.8	10.8	3.5	0.2	0.0	0.0	90.1
1978-79	0.0	0.0	0.0	0.0	1.9	2.5	15.1	16.0	2.4	0.4	0.0	0.0	38.3
1979-80	0.0	0.0	0.0	0.2	0.5	4.0	11.3	19.2	3.5	T	T	0.0	38.7
1980-81	0.0	0.0	0.0	T	5.4	13.5	15.0	9.7	16.9	T	0.0	0.0	60.5
1981-82	0.0	0.0	0.0	4.0	2.9	27.1	28.1	7.6	17.6	13.2	0.0	0.0	100.5
1982-83	0.0	0.0	0.0	T	2.2	6.3	6.5	8.3	11.3	3.4	0.0	0.0	38.0
1983-84	0.0	0.0	0.0	0.0	7.1	13.0	12.9	27.1	19.3	T	0.0	0.0	79.4
1984-85	0.0	0.0	0.0	0.0	4.0	8.9	25.5	18.2	1.2	5.9	0.0	0.0	63.7
1985-86	0.0	0.0	0.0	0.0	T	23.4	17.2	10.8	6.7	0.2	0.0	0.0	58.3
1986-87	0.0	0.0	0.0	0.0	3.1	1.1	16.4	5.0	26.2	4.0	0.0	0.0	55.8
1987-88	0.0	0.0	0.0	T	1.0	16.4	8.7	22.9	20.4	1.9	0.0	0.0	71.3
1988-89	0.0	0.0	0.0	T	1.7	17.9	6.6	13.8	9.9	4.9	T	0.0	54.8
1989-90	0.0	0.0	0.0	T	9.1	24.0	10.5	9.9	4.4	4.7	0.0	0.0	62.6
1990-91	0.0	0.0	0.0	T	T	7.4	16.6	18.9	4.2	T	0.0	0.0	47.1
1991-92	0.0	0.0	0.0	0.0	3.5	9.4	23.8	6.2	18.4	4.4	0.0	0.0	65.7
1992-93	0.0	0.0	0.0	T	7.1	7.1	8.7	39.1	25.4	1.1	0.0	T	88.5
1993-94	T	0.0	T	0.2	3.0	19.0	27.4	12.3	7.0	3.6	0.0	0.0	72.5
1994-95	0.0	0.0	0.0	0.0	T	1.0	23.4	14.7	4.3	0.2	0.0	0.0	43.6
1995-96	0.0	0.0	0.0	0.0	9.9	29.6	21.9	10.1	19.4	10.2	0.0	T	101.1
1996-97	0.0	0.0	0.0	0.0	23.4	5.0	13.0	8.4	5.3	0.8	0.0	0.0	55.9
1997-98	0.0	0.0	0.0	T	8.6	10.7	5.0	0.2	9.5	T	0.0	0.0	34.0
1998-	0.0	0.0	0.0	0.0	0.1	6.9							
POR= 56 YRS	T	0.0	T	0.6	5.0	11.9	12.9	11.8	10.3	2.4	0.5	T	55.4

WBAN : 14820

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
CLEVELAND,
OHIO (CLE)

Cleveland is on the south shore of Lake Erie in northeast Ohio. The metropolitan area has a lake frontage of 31 miles. The surrounding terrain is generally level except for an abrupt ridge on the eastern edge of the city which rises some 500 feet above the shore terrain. The Cuyahoga River, which flows through a rather deep but narrow north-south valley, bisects the city.

Local climate is continental in character but with strong modifying influences by Lake Erie. West to northerly winds blowing off Lake Erie tend to lower daily high temperatures in summer and raise temperatures in winter. Temperatures at Hopkins Airport which is 5 miles south of the lakeshore average from 2-4 degrees higher than the lakeshore in summer, while overnight low temperatures average from 2-4 degrees lower than the lakefront during all seasons.

In this area, summers are moderately warm and humid with occasional days when temperatures exceed 90 degrees. Winters are relatively cold and cloudy with an average of 5 days with sub-zero temperatures. Weather changes occur every few days from the passing of cold fronts.

The daily range in temperature is usually greatest in late summer and least in winter. Annual extremes in temperature normally occur soon after

late June and December. Maximum temperatures below freezing occur most often in December, January, and February. Temperatures of 100 degrees or higher are rare. On the average, freezing temperatures in fall are first recorded in October while the last freezing temperature in spring normally occurs in April.

As is characteristic of continental climates, precipitation varies widely from year to year. However, it is normally abundant and well distributed throughout the year with spring being the wettest season. Showers and thunderstorms account for most of the rainfall during the growing season. Thunderstorms are most frequent from April through August. Snowfall may fluctuate widely. Mean annual snowfall increases from west to east in Cuyahoga County ranging from about 45 inches in the west to more than 90 inches in the extreme east.

Damaging winds of 50 mph or greater are usually associated with thunderstorms. Tornadoes, one of the most destructive of all atmospheric storms, occasionally occur in Cuyahoga County.

STATION LOCATION

CLEVELAND, OHIO

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										AUGMENTATION	* Type	REMARKS	
						SEA LEVEL	GROUND												H-TYPE
							G	WIND	EMERGENCY	OR	STATION	RAIL	W	8	H				
CITY - - NOTE: For period January 1840 through June 7/1/88	7/1/88	10/13/89	200 ft. S	41° 30'	81° 42'	648	103	71	70										
Water Building Superior & S. Water Sts.																			
Wilshire Building Superior between W. 3rd & W. 6th	10/14/89	4/30/92	800 ft. NE	41° 30'	81° 42'	657	125	98	97										
Western Res. Building Superior and N. Water Sts.	5/1/92	9/30/96	900 ft. SW	41° 30'	81° 42'	648	130	123	122									Poor exposure for wind.	
Society for Savings Bldg., Public Square	10/1/96	6/27/29	1850 ft. NE	41° 30'	81° 42'	653	201	191	190			165						Poor exposure for wind by 1925.	
Engineers National Bank Building, Ontario and St. Clair Streets	6/28/29	5/31/41	400 ft. WNW	41° 30'	81° 42'	651	337	268	267			264						Moved to this location to improve wind instrument exposure. Moved to airport 5/31/41.	
AIRPORT Airport Manager's Office Cleveland Municipal A. P.	8/27/26	8/11/29	NA	41° 24'	81° 51'	787	#25											#Elevation estimated. Temperature records began 1/1/30. Precipitation records began 1/1/38.	
Administration Building Cleveland Municipal A. P.	8/11/29	1/30/56	800 ft. SW	41° 24'	81° 51'	787	56	27	27	b	Unk		a4					a - Added at office consolidation. 6/1/41. b - Added 1943. c - Moved to center field 6/25/59. d - Comm. at center field 3/1/60.	
New Terminal Building Cleveland Hopkins International Airport	1/30/56	7/27/76	200 ft. NE	41° 24'	81° 51'	787	88	28	28			84	i24	i24	d4			e - Effective 3/1/60. f - Effective 8/1969. g - Removed 7/1970. h - Effective 7/1970. i - Obstruction nearby. Exposure deteriorated further due to construction in 1975. j - Not moved 7/27/76. k - Installed on roof 8/1/76. m - Relocated 8/18/76. n - Installed on ground 11/15/78. p - Moved to center field 9/20/79. q - Type change 9/20/79. r - Moved from center field to a point 210' E of WSO 5/1/86, also Hygro type change same date.	
Federal Facilities Bldg Cleveland Hopkins International Airport	7/27/76	Present	1.25 mi. W	41° 25'	81° 52'	777	j20	NA	27	j84	NA	4	4	j4	NA			r ASOS Commissioned 12/01/95	

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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