

2003

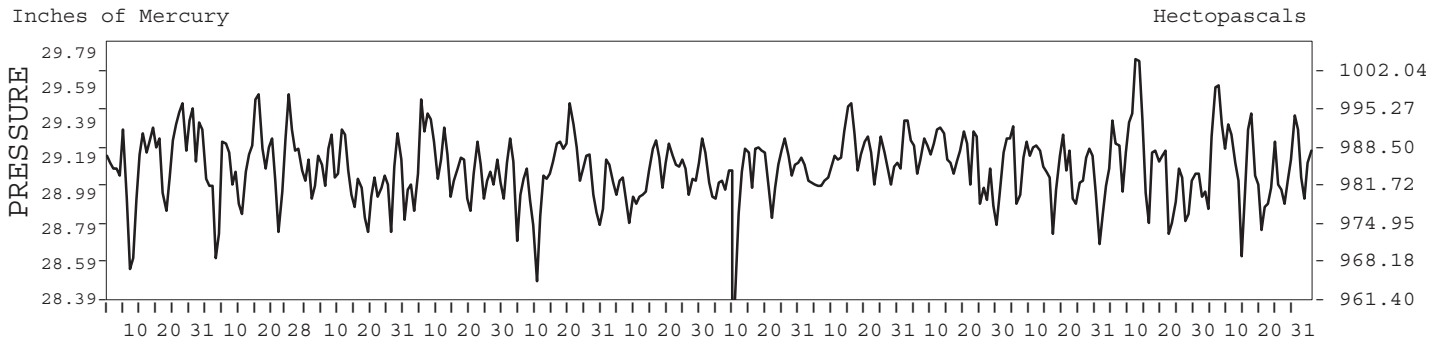
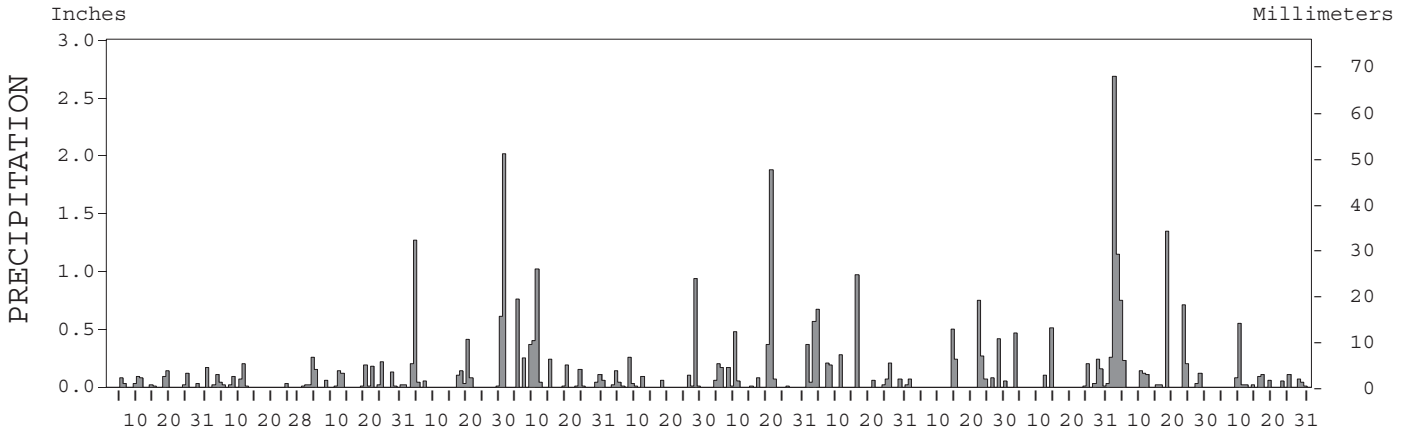
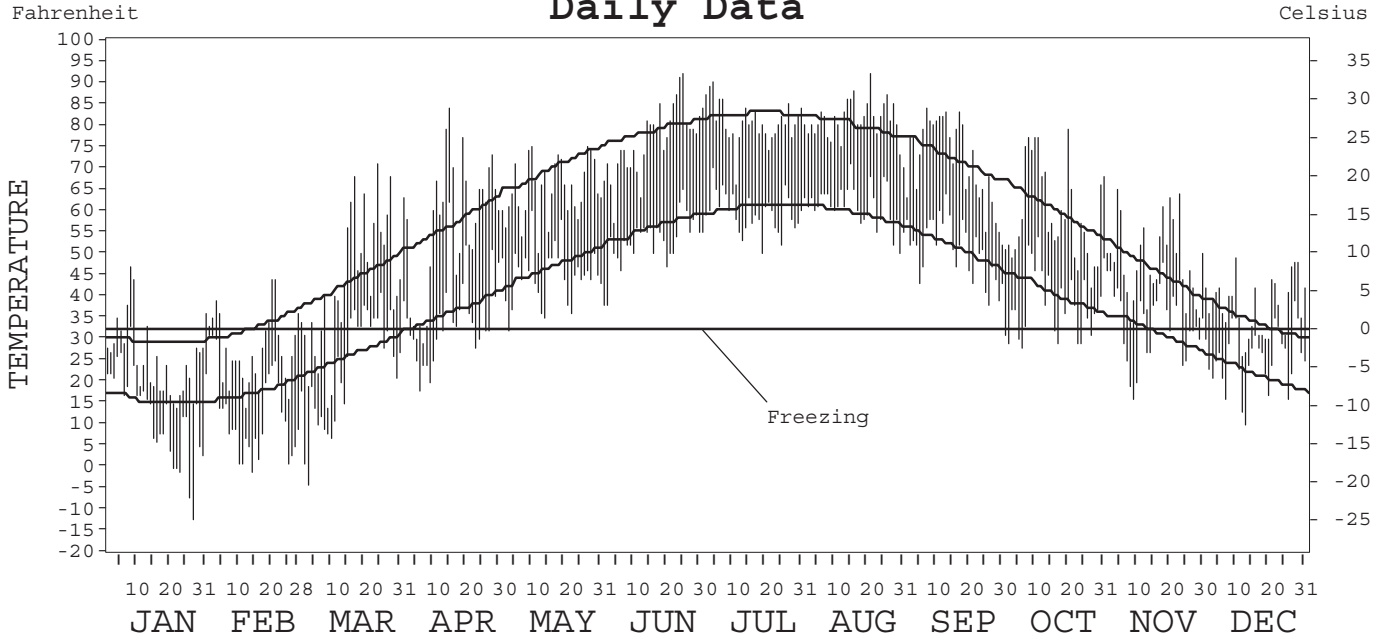
LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-2575

GRAND RAPIDS, MICHIGAN (GRR)

Daily Data



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METEOROLOGICAL DATA FOR 2003

GRAND RAPIDS, MI (GRR)

LATITUDE: 42° 52' 56" N LONGITUDE: 85° 31' 23" W ELEVATION (FT): GRND: 785 BARO: 788 TIME ZONE: EASTERN (UTC + 5) WBAN: 94860

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	25.6	27.6	43.3	56.7	64.9	76.3	80.8	81.2	71.6	59.4	48.2	37.5	56.1	
	HIGHEST DAILY MAXIMUM	47	44	71	84	75	92	90	92	84	79	65	49	92	
	DATE OF OCCURRENCE	08	21+	24	15	27+	25	04	21	07	20	04	10	AUG 21	
	MEAN DAILY MINIMUM	12.6	12.3	23.2	34.7	44.9	53.0	59.3	61.1	50.9	38.3	34.0	25.7	37.5	
	LOWEST DAILY MINIMUM	-12	-1	-4	18	32	38	50	50	38	28	16	10	-12	
	DATE OF OCCURRENCE	27	14	03	06	03	02+	19	30	26	06	09	13	JAN 27	
	AVERAGE DRY BULB	19.1	20.0	33.3	45.7	54.9	64.7	70.1	71.2	61.3	48.9	41.1	31.6	46.8	
	MEAN WET BULB	18.4	18.6	30.6	40.3	51.1	58.1		65.8	56.0	44.9	38.6	29.5		
	MEAN DEW POINT	14.0	13.7	25.7	34.1	47.4	52.9		62.8	52.1	40.4	34.6	24.4		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	2	1	1	0	0	0	0	0	4
MAXIMUM ≤ 32°	25	20	7	2	0	0	0	0	0	0	0	9	63		
MINIMUM ≤ 32°	30	28	20	14	1	0	0	0	0	9	13	25	140		
MINIMUM ≤ 0°	5	1	1	0	0	0	0	0	0	0	0	0	7		
H/C	HEATING DEGREE DAYS	1416	1255	976	579	309	72	3	5	152	495	709	1025	6996	
	COOLING DEGREE DAYS	0	0	0	8	3	69	165	205	46	1	0	0	497	
RH	MEAN (PERCENT)	78	76	75	68	77	68	72	77	75	75	79	74	74	
	HOUR 01 LST	80	78	82	74	87	80	86	87	86	83	83	77	82	
	HOUR 07 LST	80	83	87	80	90	82	85	91	91	89	85	79	85	
	HOUR 13 LST	74	70	63	58	67	55	59	64	59	61	73	68	64	
	HOUR 19 LST	76	72	69	62	67	55	61	69	68	72	75	72	68	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	2	2	5	1	1	1	1	4	2	0	6	0	25	
	THUNDERSTORMS	0	0	2	5	5	2	8	11	1	0	3	0	37	
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	29.15	29.08	29.13	29.08	29.09		29.19	29.18	29.11	29.14	29.16		
	MEAN SEA-LEVEL PRESS. (IN.)	30.09	30.05	29.96	30.01	29.94	29.95		30.04	30.04	29.97	30.02	30.05		
WINDS	RESULTANT SPEED (MPH)	5.0	2.4	1.9	2.9	2.4	1.9		0.2	2.7	4.2	4.1	3.5		
	RES. DIR. (TENS OF DEGS.)	27	27	24	07	05	24		27	22	25	24	26		
	MEAN SPEED (MPH)	10.9	11.2	10.3	11.1	9.8	8.0	7.8	6.6	8.5	8.5	10.9	10.7	9.5	
	PREVAIL. DIR. (TENS OF DEGS.)	21	06	25	07	06	26	25	05	14	21	25	29	29	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	32	46	37	35	41	30	38	35	28	33	41	35	46	
	DIR. (TENS OF DEGS.)	24	30	20	07	25	20	30	19	24	25	26	30	30	
	DATE OF OCCURRENCE	19	11	28	16	11	10	04	01	27	20	12	01	FEB 11	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	39	53	45	43	52	36	48	43	33	41	53	40	53	
DIR. (TENS OF DEGS.)	25	31	21	06	27	20	31	19	30	25	26	23	26		
DATE OF OCCURRENCE	19	11	28	16	11	10	04	01	30+	20	12	16+	NOV 12		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.91	0.61	1.58	2.96	5.68	1.72	3.56	3.75	2.45	1.76	7.90	1.23	34.11	
	GREATEST 24-HOUR (IN.)	0.17	0.20	0.26	1.27	2.02	0.94	1.88	0.97	0.86	0.51	2.69	0.59	2.69	
	DATE OF OCCURRENCE	31	11	04	04	01	28	21	16	22-23	14	02	09-10	NOV 02	
	NUMBER OF DAYS WITH:														
PRECIPITATION ≥ 0.01	13	10	18	12	16	13	13	14	9	10	15	13	156		
PRECIPITATION ≥ 0.10	3	2	8	6	10	4	6	8	5	6	12	3	73		
PRECIPITATION ≥ 1.00	0	0	0	1	2	0	1	0	0	0	3	0	7		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	30.2	18.9	14.4	1.3	T	T	0.0	0.0	T	T	4.3	8.4	77.5	
	GREATEST 24-HOUR (IN.)	7.6	7.4	3.6	1.0	T	T	0.0	0.0	T	T	3.3	2.9	7.6	
	DATE OF OCCURRENCE	25	11	04	07	10	08	0	0	30	01	24	17	JAN 25	
	MAXIMUM SNOW DEPTH (IN.)	8	11	6	1	0	0	0	0	0	0	2	2	11	
DATE OF OCCURRENCE	26	12	05	08							25	26+	FEB 12		
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0	8	7	4	1	0	0	0	0	0	0	2	3	25		

NORMALS, MEANS, AND EXTREMES

GRAND RAPIDS, MI (GRR)

LATITUDE: 42° 52' 56" N LONGITUDE: 85° 31' 23" W ELEVATION (FT): GRND: 785 BARO: 788 TIME ZONE: EASTERN (UTC + 5) WBAN: 94860

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	29.3	32.6	43.3	56.6	69.6	78.4	82.3	79.7	71.7	59.6	45.5	33.7	56.9
	MEAN DAILY MAXIMUM	56	29.7	32.5	42.2	56.8	69.1	78.6	82.6	80.4	72.6	60.8	46.0	34.2	57.1
	HIGHEST DAILY MAXIMUM	40	62	69	78	88	92	98	100	100	93	87	77	69	100
	YEAR OF OCCURRENCE		1967	1999	2000	1970	1978	1995	1988	1964	1973	1975	1975	2001	JUL 1988
	MEAN OF EXTREME MAXS.	56	47.9	50.0	66.9	78.6	85.2	91.4	92.5	89.7	87.4	78.9	66.4	53.1	74.0
	NORMAL DAILY MINIMUM	30	15.6	17.4	25.9	36.1	46.6	55.8	60.5	59.0	51.0	40.2	31.2	21.4	38.4
	MEAN DAILY MINIMUM	56	15.8	17.1	25.1	35.9	46.1	55.9	60.5	59.0	51.0	40.8	31.3	21.4	38.3
	LOWEST DAILY MINIMUM	40	-22	-19	-8	3	22	33	41	39	27	18	5	-18	-22
	YEAR OF OCCURRENCE		1994	1973	1978	1982	1966	1972	1983	1976	1991	1988	1977	1983	JAN 1994
	MEAN OF EXTREME MINS.	56	-6.1	-3.5	5.4	20.7	31.1	41.1	47.7	45.4	35.0	26.2	15.9	1.1	21.7
	NORMAL DRY BULB	30	22.4	25.0	34.6	46.3	58.1	67.1	71.4	69.4	61.3	49.9	38.4	27.6	47.6
	MEAN DRY BULB	56	22.8	24.8	33.7	46.3	57.6	67.2	71.5	69.7	61.9	50.7	38.8	27.8	47.7
	MEAN WET BULB	19	22.8	24.4	31.2	41.6	51.9	60.9	65.1	64.3	56.8	43.6	35.9	27.0	43.8
	MEAN DEW POINT	19	18.9	19.9	25.3	34.9	45.8	55.8	61.0	60.9	53.0	39.5	31.8	23.4	39.2
	NORMAL NO. DAYS WITH: MAXIMUM $\geq 90^\circ$	30	0.0	0.0	0.0	0.0	0.5	2.2	4.3	2.1	0.4	0.0	0.0	0.0	9.5
MAXIMUM $\leq 32^\circ$	30	19.1	14.6	5.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	2.6	13.1	55.1	
MINIMUM $\leq 32^\circ$	30	29.0	25.6	23.2	11.4	1.7	0.0	0.0	0.0	0.4	5.7	17.6	27.8	142.4	
MINIMUM $\leq 0^\circ$	30	3.5	2.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	7.9	
H/C	NORMAL HEATING DEG. DAYS	30	1317	1135	956	571	255	58	10	24	159	471	793	1147	6896
	NORMAL COOLING DEG. DAYS	30	0	0	2	6	38	124	217	165	56	5	0	0	613
RH	NORMAL (PERCENT)	30	79	76	71	66	66	69	71	75	76	74	77	80	73
	HOUR 01 LST	30	81	80	77	74	77	81	84	87	87	82	80	82	81
	HOUR 07 LST	30	82	82	81	79	79	82	85	90	90	86	83	83	84
	HOUR 13 LST	30	73	69	63	56	53	55	56	60	60	62	69	74	62
	HOUR 19 LST	30	78	73	66	58	55	57	58	64	69	72	75	79	67
S	PERCENT POSSIBLE SUNSHINE	36	28	39	46	51	56	61	64	61	54	44	27	23	46
W/O	MEAN NO. DAYS WITH: HEAVY FOG (VISBY $\leq 1/4$ MI)	41	2.3	2.2	2.6	1.7	1.5	1.5	1.4	2.0	2.0	1.9	2.2	3.1	24.4
	THUNDERSTORMS	41	0.2	0.2	1.6	3.4	3.7	5.3	5.9	5.2	3.9	1.7	1.2	0.4	32.7
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH: CLEAR	1			1.0										
	PARTLY CLOUDY	1			1.0		2.0								
CLOUDY	1	1.0		1.0											
PR	MEAN STATION PRESSURE (IN)	30	29.20	29.20	29.11	29.10	29.10	29.10	29.10	29.20	29.20	29.21	29.20	29.19	29.16
	MEAN SEA-LEVEL PRES. (IN)	17	30.05	30.06	30.05	29.96	29.97	30.01	29.98	30.03	30.04	30.06	30.04	30.07	30.03
WINDS	MEAN SPEED (MPH)	28	11.4	10.7	11.2	11.0	9.7	8.8	8.4	7.8	8.1	9.3	10.5	10.5	9.8
	PREVAIL. DIR (TENS OF DEGS)	29	25	24	25	07	25	24	24	24	18	18	25	20	25
	MAXIMUM 2-MINUTE: SPEED (MPH)	8	45	55	47	52	47	38	51	41	40	47	49	38	55
	DIR. (TENS OF DEGS)		24	24	25	19	26	26	26	31	18	24	23	24	24
	YEAR OF OCCURRENCE		1996	1999	2002	1999	1998	2002	1999	2002	2002	1996	1998	2001	FEB 1999
	MAXIMUM 5-SECOND: SPEED (MPH)	8	55	64	58	61	60	52	58	53	49	60	66	47	66
	DIR. (TENS OF DEGS)		24	25	25	25	27	22	29	32	17	25	23	24	23
YEAR OF OCCURRENCE		1996	1999	2002	1997	1998	1998	1999	2002	2002	1996	1998	2001	NOV 1998	
PRECIPITATION	NORMAL (IN)	30	2.03	1.54	2.59	3.48	3.35	3.67	3.56	3.78	4.28	2.80	3.35	2.70	37.13
	MAXIMUM MONTHLY (IN)	40	4.36	4.80	5.12	6.69	10.01	8.21	8.83	8.46	11.85	7.38	7.90	6.63	11.85
	YEAR OF OCCURRENCE		1975	1997	1974	1999	2001	1967	1992	1987	1986	2001	2003	1971	SEP 1986
	MINIMUM MONTHLY (IN)	40	0.47	0.33	0.54	1.70	0.94	0.25	0.81	0.14	T	0.60	0.95	T	T
	YEAR OF OCCURRENCE		1981	1969	2001	1997	1987	1988	1976	1969	1979	1964	1986	1952	SEP 1979
	MAXIMUM IN 24 HOURS (IN)	40	2.16	3.05	1.78	2.66	5.48	4.03	3.68	3.68	4.55	3.19	3.00	2.79	5.48
	YEAR OF OCCURRENCE		1993	1997	1985	1999	1981	1994	1994	1987	1986	1993	1990	1982	MAY 1981
	NORMAL NO. DAYS WITH: PRECIPITATION ≥ 0.01	30	16.7	11.9	12.2	13.2	10.7	9.9	9.4	9.7	10.5	11.3	13.3	15.5	144.3
PRECIPITATION ≥ 1.00	30	0.2	0.1	0.2	0.7	0.7	1.0	0.8	1.0	1.1	0.5	0.6	0.6	7.5	
SNOWFALL	NORMAL (IN)	30	21.1	12.2	9.0	2.8	0.*	0.0	0.0	0.0	0.6	7.7	18.8	72.2	
	MAXIMUM MONTHLY (IN)	40	46.8	29.6	36.0	12.4	0.2	T	T	T	8.4	25.3	59.2	59.2	
	YEAR OF OCCURRENCE		1999	1994	1965	1982	1990	2002	1990	1993	1967	1967	1991	2000	DEC 2000
	MAXIMUM IN 24 HOURS (IN)	40	16.1	9.1	13.6	9.8	0.2	T	T	T	8.4	10.4	15.1	16.1	
	YEAR OF OCCURRENCE		1978	1985	2002	1975	1990	2002	1990	1993	1967	1967	1991	1970	JAN 1978
	MAXIMUM SNOW DEPTH (IN)	55	27	21	15	10	0	0	0	0	5	11	22	27	
	YEAR OF OCCURRENCE		1978	1985	1965	1975					1967	1951	1951	JAN 1978	
NORMAL NO. DAYS WITH: SNOWFALL ≥ 1.0	30	5.9	3.5	2.1	0.8	0.0	0.0	0.0	0.0	0.0	0.2	2.3	5.5	20.3	

PRECIPITATION (inches) 2003 GRAND RAPIDS, MI (GRR)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	3.23	2.09	5.12	2.93	4.01	4.43	0.97	4.61	2.05	2.44	3.11	1.83	36.82
1975	4.36	1.92	2.28	4.07	2.08	5.97	2.31	7.38	2.00	1.04	3.82	4.02	41.25
1976	1.67	2.13	4.99	4.75	6.63	2.79	0.81	1.03	1.21	2.00	1.51	1.05	30.57
1977	1.59	1.35	3.81	4.04	1.33	3.50	5.16	4.77	4.26	2.28	2.34	3.35	37.78
1978	2.22	0.54	2.01	2.55	2.91	4.65	2.83	5.00	5.62	3.05	1.83	3.32	36.53
1979	2.09	0.61	3.72	3.56	1.37	4.16	2.27	4.33	T	2.10	5.46	2.97	32.64
1980	1.76	1.76	1.74	3.64	3.19	4.00	5.90	3.18	4.57	1.99	1.57	3.60	36.90
1981	0.47	2.03	1.29	6.11	8.29	4.22	3.74	2.95	9.52	2.54	2.58	1.10	44.84
1982	2.98	0.36	3.36	2.11	3.63	2.45	3.81	3.07	1.92	1.42	5.36	6.49	36.96
1983	1.33	1.12	3.30	5.06	4.64	2.09	4.76	1.49	4.87	2.66	3.00	2.79	37.11
1984	0.94	1.15	2.77	2.10	4.77	0.62	2.12	1.49	2.16	3.34	2.85	4.37	28.68
1985	1.94	3.26	4.20	2.54	1.36	1.68	3.09	6.48	4.26	4.64	5.45	2.00	40.90
1986	1.07	3.34	2.35	2.58	3.88	7.14	5.27	5.30	11.85	2.76	0.95	1.04	47.53
1987	0.67	0.37	1.15	2.40	0.94	3.56	2.93	8.46	4.47	2.33	2.49	3.29	33.06
1988	2.39	1.14	2.12	3.11	1.07	0.25	3.69	3.04	7.49	5.37	4.82	1.88	36.37
1989	0.95	1.01	2.47	1.79	4.33	5.02	1.29	4.78	4.90	1.53	4.86	0.97	33.90
1990	2.39	2.08	1.96	2.23	4.39	3.00	3.73	3.40	4.22	5.05	7.14	2.97	42.56
1991	1.32	0.64	3.58	5.58	4.44	1.76	6.24	3.79	2.93	5.61	6.41	2.63	44.93
1992	1.52	1.06	3.51	3.98	1.45	1.61	8.83	3.55	5.60	2.34	5.64	3.27	42.36
1993	4.21	1.13	2.31	4.93	2.17	6.05	1.83	7.73	8.20	4.32	2.12	1.47	46.47
1994	2.68	1.70	1.46	3.25	2.64	7.17	8.07	7.39	2.38	3.29	5.44	1.11	46.58
1995	2.73	0.94	1.49	3.85	2.85	3.97	6.11	3.10	1.54	2.78	4.37	1.52	35.25
1996	1.18	0.90	0.96	2.41	4.83	6.33	1.28	0.33	2.72	2.76	1.40	2.45	27.55
1997	2.63	4.80	1.40	1.70	3.05	2.76	1.95	1.99	4.85	2.02	1.49	0.98	29.62
1998	4.09	1.50	4.93	2.75	1.86	2.11	2.49	1.70	2.49	2.98	2.27	1.20	30.37
1999	3.54	1.49	0.96	6.69	2.46	3.81	2.88	3.22	3.21	1.00	0.95	2.31	32.52
2000	1.02	1.09	1.33	3.98	8.65	4.67	4.06	2.31	6.31	1.85	2.82	2.07	40.16
2001	0.71	2.58	0.54	2.05	10.01	3.35	2.00	3.48	3.76	7.38	2.26	2.37	40.49
2002	1.12	1.48	2.65	3.72	4.32	2.06	2.09	4.67	0.97	2.04	2.40	1.97	29.49
2003	0.91	0.61	1.58	2.96	5.68	1.72	3.56	3.75	2.45	1.76	7.90	1.23	34.11
POR= 134 YRS	2.19	1.85	2.48	3.05	3.42	3.56	3.00	2.90	3.52	2.82	2.82	2.38	33.99

WBAN : 94860

AVERAGE TEMPERATURE (°F) 2003 GRAND RAPIDS, MI (GRR)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	25.7	21.1	33.6	47.2	53.2	63.0	71.1	67.3	56.4	46.9	37.6	28.4	46.0
1975	25.2	24.3	28.8	39.8	60.7	67.6	70.6	70.5	57.0	53.0	44.7	27.3	47.5
1976	18.9	31.0	37.9	48.2	53.9	69.5	72.5	68.9	60.2	45.7	31.5	19.1	46.4
1977	12.7	22.8	40.0	52.1	65.8	64.5	74.0	67.9	62.9	48.6	39.5	25.9	48.1
1978	19.3	14.4	27.9	45.3	59.9	66.8	70.4	68.1	63.7	47.2	37.6	26.6	45.6
1979	17.1	15.0	36.9	44.5	57.7	67.6	71.1	68.5	63.4	51.5	40.5	33.0	47.2
1980	25.1	22.7	32.5	47.0	59.9	64.4	72.7	72.6	62.7	45.8	37.5	25.1	47.3
1981	20.8	30.2	35.1	47.3	55.5	68.6	72.1	70.7	60.9	48.2	39.8	28.7	48.2
1982	17.2	22.1	32.5	41.8	65.0	62.8	73.1	68.6	61.9	53.6	40.8	36.2	48.0
1983	27.6	30.9	36.9	42.6	52.8	67.7	74.7	72.2	62.4	50.7	40.7	19.2	48.2
1984	17.1	34.0	28.9	47.3	53.5	70.1	70.1	73.0	60.5	54.2	40.3	32.2	48.4
1985	18.6	21.3	36.2	51.7	60.4	63.8	70.7	67.4	63.6	50.6	38.4	22.3	47.1
1986	22.7	22.5	36.7	49.7	58.8	64.4	72.5	66.0	62.8	50.2	35.0	29.8	47.6
1987	25.4	29.9	37.3	50.1	62.6	71.2	74.1	69.3	62.2	45.0	41.1	31.5	50.0
1988	20.8	20.7	34.1	47.1	60.9	68.5	74.7	73.4	61.3	44.2	40.7	27.3	47.8
1989	30.5	19.7	31.8	43.9	55.8	65.9	71.9	68.4	59.4	51.1	35.7	17.2	45.9
1990	32.1	28.1	37.1	47.7	55.0	67.1	70.3	69.0	62.8	49.9	43.3	30.0	49.4
1991	22.2	29.2	37.9	50.8	64.6	71.2	72.4	70.5	60.1	52.0	35.7	29.4	49.7
1992	27.5	30.3	33.7	44.0	57.4	64.3	67.2	65.0	59.7	48.2	38.2	30.5	47.2
1993	25.9	21.9	32.4	44.0	58.2	65.2	72.7	71.4	56.5	48.0	37.9	27.8	46.8
1994	14.5	19.2	34.1	47.9	56.1	68.6	71.1	66.6	63.8	51.7	42.3	33.2	47.4
1995	26.5	23.2	37.0	42.8	56.4	69.8	72.5	74.8	59.1	51.4	32.0	24.2	47.5
1996	21.7	24.4	28.4	43.0	55.6	67.7	68.2	72.2	62.3	50.2	33.2	28.7	46.3
1997	21.6	27.3	34.6	44.1	50.3	68.3	70.8	66.1	61.1	49.9	35.6	31.1	46.7
1998	29.6	34.1	36.1	48.6	64.3	67.4	72.2	72.2	66.0	52.7	42.1	33.3	51.6
1999	21.2	31.4	32.9	48.8	61.0	69.4	74.7	67.8	62.7	49.5	43.6	30.4	49.5
2000	23.4	31.4	42.2	45.9	59.6	66.1	68.6	69.1	60.4	53.6	37.6	19.0	48.1
2001	25.5	25.9	32.5	50.0	59.6	66.3	71.3	71.6	59.3	50.4	46.8	33.9	49.4
2002	30.2	30.7	31.0	47.0	52.7	69.4	74.9	70.4	65.6	47.0	36.2	28.2	48.6
2003	19.1	20.0	33.3	45.7	54.9	64.7	70.1	71.2	61.3	48.9	41.1	31.6	46.8
POR= 110 YRS	24.1	24.8	34.1	46.6	58.0	67.8	72.5	70.4	62.8	51.5	39.1	28.3	48.3

HEATING DEGREE DAYS (base 65°F) 2003 GRAND RAPIDS, MI (GRR)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1974-75	5	22	275	555	816	1127	1227	1133	1113	750	191	61	7275
1975-76	16	5	242	382	602	1161	1420	980	835	526	342	18	6529
1976-77	0	32	185	591	999	1415	1616	1177	765	401	106	91	7378
1977-78	3	48	99	501	759	1204	1407	1413	1140	584	213	62	7433
1978-79	15	22	124	545	816	1182	1477	1393	863	607	264	42	7350
1979-80	7	31	109	431	731	984	1230	1221	1000	541	189	106	6580
1980-81	0	4	115	588	821	1227	1363	969	919	525	298	8	6837
1981-82	7	5	173	513	749	1116	1475	1196	998	689	91	98	7110
1982-83	6	34	140	361	717	884	1151	949	866	663	373	61	6205
1983-84	16	2	149	440	721	1413	1480	892	1107	532	353	13	7118
1984-85	16	4	189	333	735	1014	1431	1216	886	428	173	81	6506
1985-86	9	17	157	436	790	1316	1302	1186	871	466	214	75	6839
1986-87	11	56	118	452	894	1084	1220	978	849	440	178	20	6300
1987-88	18	36	118	610	712	1032	1364	1277	950	531	169	60	6877
1988-89	3	21	135	639	722	1162	1062	1263	1023	625	297	51	7003
1989-90	2	23	203	424	874	1477	1014	1026	865	549	306	45	6808
1990-91	11	15	139	475	645	1077	1323	997	830	430	157	18	6117
1991-92	5	4	211	404	871	1098	1155	1001	964	626	262	75	6676
1992-93	25	66	197	512	794	1060	1204	1203	1004	624	227	84	7000
1993-94	1	16	259	524	810	1150	1561	1274	950	520	297	42	7404
1994-95	0	46	94	405	675	980	1186	1165	860	659	265	28	6363
1995-96	14	0	212	417	982	1260	1337	1166	1130	653	320	29	7520
1996-97	10	2	147	451	944	1119	1338	1048	935	616	448	24	7082
1997-98	8	43	136	473	876	1046	1091	858	899	486	76	98	6090
1998-99	0	2	58	380	682	975	1353	940	989	481	156	49	6065
1999-00	1	17	116	474	634	1066	1282	971	706	567	213	64	6111
2000-01	15	19	199	348	815	1420	1218	1089	1001	444	189	80	6837
2001-02	20	1	194	449	538	955	1072	955	1048	561	399	43	6235
2002-03	0	4	69	559	857	1132	1416	1255	976	579	309	72	7228
2003-	3	5	152	495	709	1025							

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COOLING DEGREE DAYS (base 65°F) 2003 GRAND RAPIDS, MI (GRR)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	0	0	0	4	6	60	201	103	23	3	0	0	400
1975	0	0	0	0	65	148	199	184	8	15	0	0	619
1976	0	0	0	27	4	158	239	161	49	0	0	0	638
1977	0	0	0	19	137	85	286	143	44	0	0	0	714
1978	0	0	0	0	62	123	188	125	90	0	0	0	588
1979	0	0	0	0	46	129	204	147	69	19	0	0	614
1980	0	0	0	6	34	96	247	245	53	0	0	0	681
1981	0	0	0	0	13	124	236	190	55	0	0	0	618
1982	0	0	0	0	99	40	263	153	55	12	0	0	622
1983	0	0	0	0	2	146	325	234	76	5	0	0	788
1984	0	0	0	7	5	174	179	259	60	6	0	0	690
1985	0	0	0	36	39	52	193	99	119	0	0	0	538
1986	0	0	0	14	26	64	252	94	61	0	0	0	511
1987	0	0	0	2	110	213	306	174	38	0	0	0	843
1988	0	0	0	0	50	170	310	289	29	2	0	0	850
1989	0	0	0	0	19	84	223	135	40	0	0	0	501
1990	0	0	6	37	6	115	185	144	83	13	0	0	589
1991	0	0	0	12	155	211	240	182	71	7	0	0	878
1992	0	0	0	2	36	60	99	74	44	1	0	0	316
1993	0	0	0	0	21	94	244	222	10	5	0	0	596
1994	0	0	0	13	29	159	196	102	65	1	0	0	565
1995	0	0	0	0	5	179	252	315	40	6	0	0	797
1996	0	0	0	0	33	118	116	230	74	0	0	0	571
1997	0	0	0	0	0	131	194	81	26	13	0	0	445
1998	0	0	9	0	62	177	230	233	95	4	0	0	810
1999	0	0	0	3	39	186	308	110	55	0	0	0	701
2000	0	0	2	0	48	102	132	154	66	2	0	0	506
2001	0	0	0	0	27	128	223	212	30	3	0	0	623
2002	0	0	0	29	23	180	316	179	96	10	0	0	833
2003	0	0	0	8	3	69	165	205	46	1	0	0	497

SNOWFALL (inches) 2003 GRAND RAPIDS, MI (GRR)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1974-75	0.0	0.0	0.0	0.4	8.9	16.5	10.7	10.6	11.8	10.0	0.0	0.0	68.9
1975-76	0.0	0.0	0.0	0.0	6.6	23.3	25.0	6.5	3.5	4.2	0.1	0.0	69.2
1976-77	0.0	0.0	0.0	2.0	8.5	17.7	26.1	5.0	9.5	2.0	0.0	0.0	70.8
1977-78	0.0	0.0	0.0	0.0	10.6	23.2	35.8	8.8	6.2	T	0.0	0.0	84.6
1978-79	0.0	0.0	0.0	T	6.2	30.0	45.5	5.3	7.2	1.8	0.0	0.0	96.0
1979-80	0.0	0.0	0.0	T	9.4	2.6	13.3	12.6	6.6	4.0	T	0.0	48.5
1980-81	0.0	0.0	0.0	0.4	5.5	17.3	8.1	18.8	1.4	T	0.0	0.0	51.5
1981-82	0.0	0.0	0.0	T	4.4	8.9	30.3	6.7	11.8	12.4	0.0	0.0	74.5
1982-83	0.0	0.0	0.0	0.0	5.2	8.2	5.7	2.9	13.2	0.7	0.0	0.0	35.9
1983-84	0.0	0.0	0.0	T	4.7	34.8	19.6	1.6	10.6	0.1	T	0.0	71.4
1984-85	0.0	0.0	0.0	0.0	T	15.7	22.6	21.3	6.7	3.3	0.0	0.0	69.6
1985-86	0.0	0.0	0.0	0.0	3.5	30.7	18.4	20.2	6.1	0.2	0.0	0.0	79.1
1986-87	0.0	0.0	0.0	0.0	5.3	12.7	19.2	0.9	5.7	3.8	0.0	0.0	47.6
1987-88	0.0	0.0	0.0	1.6	0.7	18.2	21.9	18.1	3.4	0.3	0.0	0.0	64.2
1988-89	0.0	0.0	0.0	0.2	5.5	14.4	8.7	25.1	6.3	2.2	T	0.0	62.4
1989-90	0.0	0.0	0.0	5.8	19.4	25.2	10.6	23.8	2.7	2.1	0.2	0.0	89.8
1990-91	T	0.0	0.0	T	2.0	18.6	27.7	9.5	2.8	T	0.0	0.0	60.6
1991-92	0.0	0.0	0.0	0.3	25.3	27.9	13.4	3.5	15.1	2.3	0.0	0.0	87.8
1992-93	0.0	0.0	0.0	2.3	4.2	14.2	11.1	18.6	11.6	3.3	0.0	0.0	65.3
1993-94	0.0	T	0.0	T	1.9	17.7	25.3	29.6	1.9	T	0.1	0.0	76.5
1994-95	0.0	0.0	0.0	0.0	0.6	8.9	21.6	18.6	4.4	0.8	0.0	0.0	54.9
1995-96	0.0	0.0	0.0	T	20.8	17.4	13.5	6.9	19.3	1.8	0.0	0.0	79.7
1996-97	0.0	0.0	0.0	0.0	5.6	22.8	45.5	14.0	5.2	3.5	T	0.0	96.6
1997-98	0.0	0.0	0.0	2.4	10.1	11.5	20.3	0.5	13.8	0.0	0.0	0.0	58.6
1998-99	0.0	0.0	0.0	0.0	0.2	7.5	46.8	8.0	14.2	T	T	0.0	76.7
1999-00	0.0	0.0	0.0		0.1	18.4	15.7	11.5	0.6	6.8	T	0.0	
2000-01	0.0	0.0	0.0	0.0	19.0	59.2	4.1	7.4	4.1	0.2	T	0.0	94.0
2001-02	0.0	0.0	0.0	0.5	T	53.9	17.5	7.5	22.6	2.0	T	T	104.0
2002-03	0.0	0.0	0.0	T	7.6	15.6	30.2	18.9	14.4	1.3	T	T	88.0
2003-	0.0	0.0	T	T	4.3	8.4							
POR= 39 YRS	T	T	T	0.8	7.6	19.1	20.7	11.8	9.8	2.5	0.2	0.0	72.5

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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 (1971 - 2000). 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 EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.</p>
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2003 GRAND RAPIDS, MICHIGAN (GRR)

Grand Rapids, Michigan, is located in the west-central part of Kent County, in the picturesque Grand River valley about 30 air miles east of Lake Michigan. The Grand River, the longest stream in Michigan, flows through the city and bisects it into east and west sections. High hills rise on either side of the valley. Elevations range from 602 feet on the valley floor to 1,020 feet in the extreme southern part of Kent County, southwest of the airport.

Grand Rapids is under the natural climatic influence of Lake Michigan. In spring the cooling effect of Lake Michigan helps retard the growth of vegetation until the danger of frost has passed. The warming effect in the fall retards frost until most of the crops have matured. Fall is a colorful time of year in western Michigan, compensating for the late spring. During the winter, excessive cloudiness and numerous snow flurries occur with strong westerly winds. The tempering effect of Lake Michigan on cold waves coming in from the west and northwest is quite evident.

The tempering effect of the lake promotes the growth of a great variety of fruit trees and berries, especially apples, peaches, cherries, and blueberries. The intense cold of winter is modified, thus reducing winter kill of fruit trees. Summer days are pleasantly warm and most summer nights are quite comfortable, although there are about three weeks of hot, humid weather during most summers. Prolonged severe cold waves with below-zero temperatures are infrequent. The temperature usually rises to above zero during the daytime hours regardless of early morning readings.

July is the sunniest month and December is the month with the least sunshine. November through January is usually a period of excessive cloudiness and minimal sunshine.

Precipitation is usually ample for the growth and development of all vegetation. About one-half of the annual precipitation falls during the growing season, May through September. Droughts occur occasionally, but are seldom of protracted length. The snowfall season extends from mid-November to mid-March. Some winters have had continuous snow cover throughout this period, although there is usually a mid-winter thaw. The Grand River flows through the city and reaches critical heights a couple of times each year, generally once in January-February and again in March-April. Overflow is generally limited to the lowlands of the flood plain.

November is one of the windiest months and although violent windstorms are infrequent, gusts have on occasion exceeded 65 mph. Summer thunderstorms occasionally produce gusty winds over 60 mph.

STATION LOCATION

GRAND RAPIDS, MICHIGAN

LOCATION	Occupied From	Occupied To	Airline Distances and Directions from previous Location	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										AUTOMATIC OBSERVING EQUIPMENT *	* TYPE M = AMOS T = AUTOB S = ASOS W = AWOS	REMARKS	
						SEA LEVEL		GROUND											HYGROMETER
						GROUND	SEA LEVEL	WIND INSTRUMENT	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE SWITCH	TIPPING BUCKET	RAIN GAUGE	WINDHOLE	8 INCH RAIN GAUGE				
*NOTES:																			
AIRPORT																			
Kent County Airport 4 miles South of PO	9/1/34	11/21/39	NA	42°54'	85°40'	681	45	5	4								d. Not moved 11/21/39. e. Effective 3/26/46. f. Effective 7/25/47. g. Equipment from city office installed 8/3/50.		
Kent County Airport	11/21/39	11/24/63	50 ft. S	42°54'	85°40'	681	d45 e48 f63 g64	6	5			g4					h. Minor adjustment 11/30/63. i. Installed on roof 12/1/63. j. Minor adjustment 1/24/64. k. Moved to ground 4/11/67. m. Installed 9/1/72. n. Moved 510' SE 11/23/77. p. Type change 11/26/84. q. Moved 574' NW 6/1986.		
Terminal Building Kent County Airport (formerly know as Cascade Airport)	11/24/63	08/01/95	6 mi. ESE	42°53'	85°31'	793	20 n20	4	j4	i44	44 k3	4 h4	m3	5 p5 q5					
Gerald R. Ford Intl. Airport	08/01/95	Present	NA	42°53'	85°31'	r785										S	ASOS Commissioned 08/01/95 r. Ground elevation.		

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* NOTES: For earlier station history see previous editions.