

2000

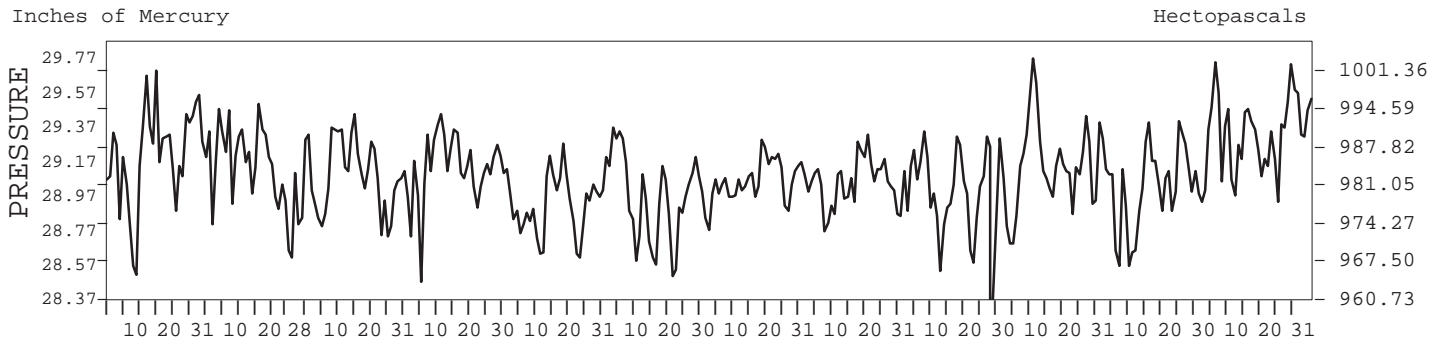
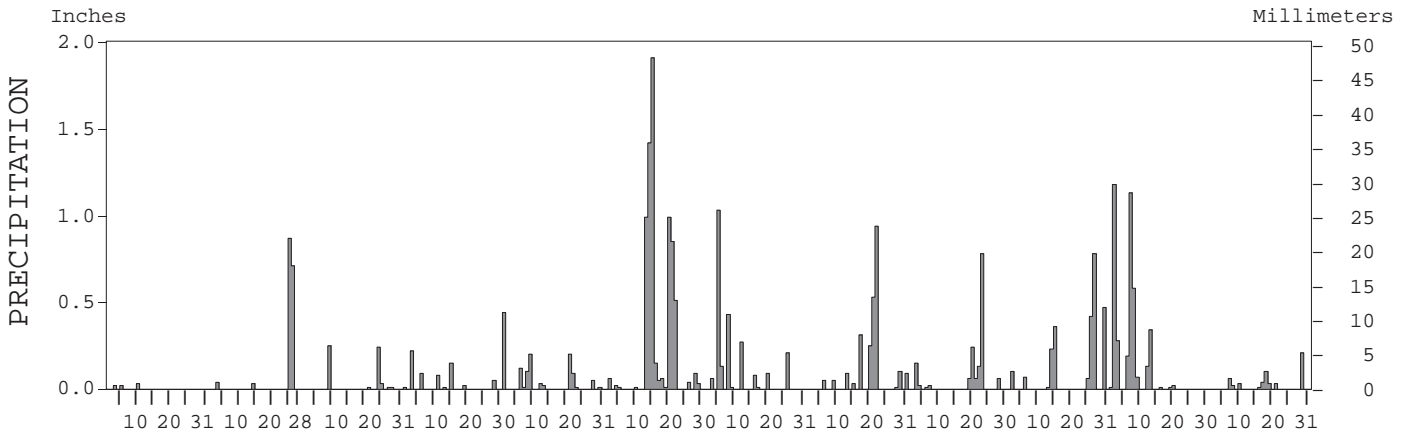
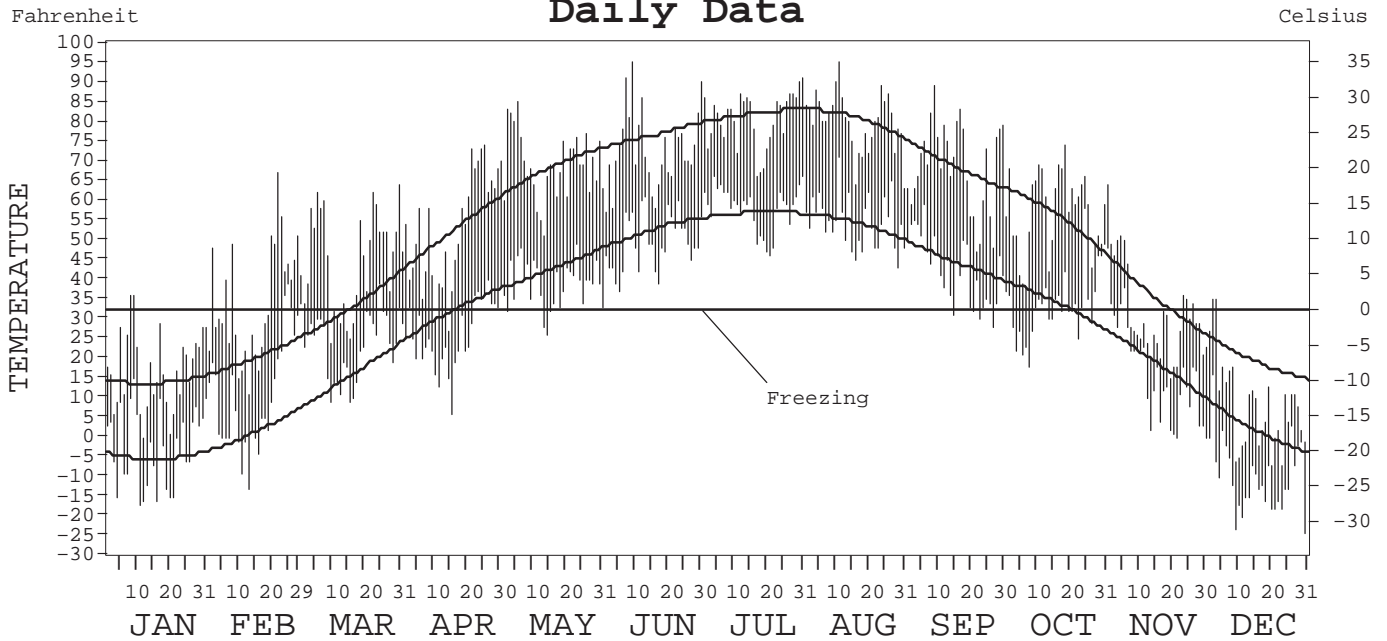
LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 1524-5837

GRAND FORKS, NORTH DAKOTA (GFK)

Daily Data



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE	NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA	DIRECTOR NATIONAL CLIMATIC DATA CENTER
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METEOROLOGICAL DATA FOR 2000

GRAND FORKS, ND (GFK)

LATITUDE: 47° 56' 57" N LONGITUDE: 97° 10' 33" W ELEVATION (FT): GRND: 844 BARO: 844 TIME ZONE: CENTRAL (UTC + 6) WBAN: 14916

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	17.3	34.3	44.8	53.0	69.0	73.1	80.5	79.9	68.6	57.1	31.9	8.7	51.5	
	HIGHEST DAILY MAXIMUM	36	67	64	74	85	95	91	95	89	74	64	35	95	
	DATE OF OCCURRENCE	09+	22	30	25	05	09	31	11	09	19	01	04+	AUG 11	
	MEAN DAILY MINIMUM	-2.5	11.2	23.2	26.2	38.8	49.5	58.0	54.5	42.4	33.5	17.2	-9.6	28.5	
	LOWEST DAILY MINIMUM	-17	-13	9	6	26	37	46	43	28	18	0	-24	-24	
	DATE OF OCCURRENCE	11	13	15+	15	14	05	21	29	27	08	22	31	DEC 31	
	AVERAGE DRY BULB	7.4	22.8	34.0	39.6	53.9	61.3	69.3	67.2	55.5	45.3	24.6	-4	40.0	
	MEAN WET BULB	6.8	19.8	30.7	35.0	48.3	55.9	64.0	61.3	40.9	24.1	-8	-8		
	MEAN DEW POINT	2.3	14.1	25.1	27.5	40.7	51.0	60.6	57.0		35.7	21.6	-5.2		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	3	2	2	0	0	0	0	0	7
MAXIMUM ≤ 32°	29	16	7	2	0	0	0	0	0	0	20	29	103		
MINIMUM ≤ 32°	31	25	29	20	4	0	0	0	4	14	26	31	184		
MINIMUM ≤ 0°	18	9	0	0	0	0	0	0	0	0	1	28	56		
H/C	HEATING DEGREE DAYS	1779	1219	950	754	338	150	29	43	287	604	1209	2023	9385	
	COOLING DEGREE DAYS	0	0	0	0	1	44	169	120	7	0	0	0	341	
RH	MEAN (PERCENT)	78	74	73	65	61	71	76	71	70	73	87	78	73	
	HOUR 00 LST	82	77	82	74	73	84	89	85	80	81	87	79	81	
	HOUR 06 LST	82	83	86	84	81	86	92	90	85	86	89	79	85	
	HOUR 12 LST	73	64	61	51	46	60	61	55	54	60	84	79	62	
	HOUR 18 LST	78	68	61	47	46	57	60	54	55	66	87	78	63	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	0	2	2	1	3	0	3	1	1	2	1	2	18	
	THUNDERSTORMS	0	1	0	0	1	6	7	8	4	1	13	2	43	
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.)	29.20	29.12	29.09	29.13	28.92	28.95	29.06	29.04		29.17	29.03	29.35		
	MEAN SEA-LEVEL PRESS. (IN.)	30.17	30.07	30.03	30.06	29.83	29.85		29.94		30.09		30.33		
WINDS	RESULTANT SPEED (MPH)	1.5	2.4	1.6	2.4	1.8	2.3	0.3	2.0		2.7	3.8	3.0		
	RES. DIR. (TENS OF DEGS.)	27	29	26	01	31	29	18	19		19	31	32		
	MEAN SPEED (MPH)	10.5	10.4	10.5	11.3	10.3	10.7	7.9	9.5		10.2	10.8	11.0	18	
	PREVAIL. DIR. (TENS OF DEGS.)	17	18	16	36	18	29	36	16	15	15	35	35		
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	30	31	37	41	36	33	34	32	34	31	31	36	41	
	DIR. (TENS OF DEGS.)	17	18	36	31	34	07	12	33	15	15	33	33	31	
	DATE OF OCCURRENCE	17	28+	08	05	12	12	11	28	05	21	19	16	APR 05	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	37	39	45	49	45	51	40	38	43	37	37	41	51	
DIR. (TENS OF DEGS.)	17	18	17	31	33	31	12	34	29	36	34	33	31		
DATE OF OCCURRENCE	17	28	17	05	12	12	11	28	09	26+	19	16	JUN 12		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.07	1.65	0.56	1.06	0.84	7.20	2.32	2.45	1.53	2.51	3.94	0.53	24.66	
	GREATEST 24-HOUR (IN.)	0.03	1.54	0.27	0.44	0.30	2.23	1.03	1.47	0.91	0.81	1.18	0.21	2.23	
	DATE OF OCCURRENCE	10	25-26	23-24	30	07-08	12-13	04	20-21	21-22	25-26	01	28	JUN 12-13	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	3	4	7	8	11	17	10	11	10	10	11	9	111	
PRECIPITATION ≥ 0.10	0	2	2	3	4	7	5	5	4	6	7	2	47		
PRECIPITATION ≥ 1.00	0	0	0	0	0	2	1	0	0	0	2	0	5		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	3.1	3.4	0.2	4.4	0.0	T	0.0	0.0	0.0	0.2	11.1	18.7	41.1	
	GREATEST 24-HOUR (IN.)	0.9	1.5	0.1	3.5	0.0	T	0.0	0.0	0.0	0.2	4.1	6.9	6.9	
	DATE OF OCCURRENCE	10	14	27+	14		12				05	12	28	DEC 28	
	MAXIMUM SNOW DEPTH (IN.)	2	1	T	3	0	0	0	0	0	T	6	10	10	
	DATE OF OCCURRENCE	07+	14+	14+	14						05	14+	28	DEC 28	
	NUMBER OF DAYS WITH:														
SNOWFALL ≥ 1.0	0	2	0	1	0	0	0	0	0	0	3	7	13		

NORMALS, MEANS, AND EXTREMES

GRAND FORKS, ND (GFK)

LATITUDE: 47° 56' 57" N LONGITUDE: 97° 10' 33" W ELEVATION (FT): GRND: 844 BARO: 844 TIME ZONE: CENTRAL (UTC + 6) WBAN: 14916

		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	13.8	19.8	32.7	51.6	67.8	76.3	81.6	80.2	68.3	55.4	34.8	19.0	50.1	
	MEAN DAILY MAXIMUM	3	14.6	30.6	37.1	56.0	68.8	73.1	80.9	80.2	69.5	55.7	37.2	20.1	52.0	
	HIGHEST DAILY MAXIMUM	3	37	67	64	82	86	95	93	95	94	77	73	50	95	
	YEAR OF OCCURRENCE		1999	2000	2000	1998	1999	2000	1999	2000	1998	1999	1999	1999	1999	AUG 2000
	MEAN OF EXTREME MAXS.	3	33.7	50.7	59.0	77.3	85.3	90.0	91.0	91.3	89.0	75.3	61.7	42.0	70.5	
	NORMAL DAILY MINIMUM	30	-5.3	1.0	15.3	31.3	42.4	52.0	56.5	53.7	44.1	33.5	18.2	1.5	28.7	
	MEAN DAILY MINIMUM	3	-1.4	13.1	19.2	31.3	42.9	51.0	57.2	54.9	43.3	32.6	19.0	1.4	30.4	
	LOWEST DAILY MINIMUM	3	-29	-19	-10	6	26	33	46	42	28	16	-9	-24	-29	
	YEAR OF OCCURRENCE		1999	1999	1998	2000	2000	1998	2000	1999	2000	1999	1998	2000	2000	JAN 1999
	MEAN OF EXTREME MINS.	3	-23.3	-15.3	-3.3	19.3	29.7	35.3	46.7	44.0	28.7	18.0	-1.3	-21.0	13.1	
	NORMAL DRY BULB	30	4.3	10.4	24.0	41.5	55.1	64.2	69.1	67.0	56.2	44.5	26.5	10.3	39.4	
	MEAN DRY BULB	3	6.6	21.9	28.1	43.7	55.8	62.1	69.0	67.6	56.5	44.2	28.1	10.8	41.2	
	MEAN WET BULB	2	7.7	20.7	26.4	38.9	50.2	57.1	63.7	61.8	49.0	40.4	26.6	10.1	37.7	
	MEAN DEW POINT	2	3.8	17.2	22.6	32.3	44.1	52.6	60.0	57.7	45.0	35.4	22.7	5.9	33.3	
	NORMAL NO. DAYS WITH: MAXIMUM ≥ 90° MAXIMUM ≤ 32° MINIMUM ≤ 32° MINIMUM ≤ 0°															
	H/C	NORMAL HEATING DEG. DAYS	30	1882	1529	1271	705	344	123	38	76	278	636	1155	1696	9733
NORMAL COOLING DEG. DAYS		30	0	0	0	0	37	99	165	138	14	0	0	0	453	
RH	NORMAL (PERCENT)															
	HOUR 00 LST															
	HOUR 06 LST															
	HOUR 12 LST															
	HOUR 18 LST															
S	PERCENT POSSIBLE SUNSHINE															
W/O	MEAN NO. DAYS WITH: HEAVY FOG (VISBY ≤ 1/4 MI)	3	1.3	3.0	4.0	0.3	1.3	0.0	1.7	2.3	1.3	1.7	2.0	2.3	21.2	
	THUNDERSTORMS	3	0.0	0.7	0.0	0.3	3.3	8.0	7.3	6.7	3.3	1.0	4.3	0.7	35.6	
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)															
	MIDNIGHT-MIDNIGHT (OKTAS)															
	MEAN NO. DAYS WITH: CLEAR															
	PARTLY CLOUDY CLOUDY															
PR	MEAN STATION PRESSURE (IN)	3	29.16	29.04	29.16	29.10	28.94	28.94	29.03	29.07	29.01	29.14	29.06	29.19	29.07	
	MEAN SEA-LEVEL PRES. (IN)	3	30.13	29.99	30.10	30.02	29.84	29.84	29.92	29.96	29.94	30.07	30.03	30.16	30.00	
WINDS	MEAN SPEED (MPH)	3	11.0	11.1	10.5	10.6	10.9	10.1	8.3	8.7	9.5	10.5	10.3	10.7	10.2	
	PREVAIL. DIR (TENS OF DEGS)															
	MAXIMUM 2-MINUTE: SPEED (MPH)	3	34	36	43	41	40	40	34	32	34	37	46	36	46	
	DIR. (TENS OF DEGS)		17	17	35	31	15	14	12	33	15	31	31	33	31	
	YEAR OF OCCURRENCE		1999	1999	1999	2000	1999	1998	2000	2000	2000	1999	1999	2000	NOV 1999	
	MAXIMUM 5-SECOND: SPEED (MPH)	3	39	40	48	49	53	51	40	41	43	46	54	45	54	
	DIR. (TENS OF DEGS)		17	33	35	31	15	31	12	26	29	31	31	34	31	
YEAR OF OCCURRENCE		1999	1999	1999	2000	1999	2000	2000	1999	2000	1999	1999	1998	NOV 1999		
PRECIPITATION	NORMAL (IN)	30	0.72	0.49	0.94	1.35	2.05	2.84	2.72	2.41	2.24	1.29	0.65	0.64	18.34	
	MAXIMUM MONTHLY (IN)	3	0.99	1.65	1.04	1.90	5.01	7.20	2.32	4.44	2.55	5.79	3.94	0.53	7.20	
	YEAR OF OCCURRENCE		1999	2000	1999	1999	1999	2000	2000	1999	1999	1998	2000	2000	JUN 2000	
	MINIMUM MONTHLY (IN)	3	0.07	0.23	0.08	1.04	0.84	3.48	1.63	1.68	0.26	0.12	1.73	0.24	0.07	
	YEAR OF OCCURRENCE		2000	1999	1998	1998	2000	1999	1999	1998	1998	1999	1999	1998	JAN 2000	
	MAXIMUM IN 24 HOURS (IN)	3	0.44	1.54	0.33	0.93	1.56	2.96	1.03	1.47	0.91	1.86	1.18	0.21	2.96	
	YEAR OF OCCURRENCE		1999	2000	1999	1999	1999	1998	2000	2000	2000	1998	2000	2000	JUN 1998	
NORMAL NO. DAYS WITH: PRECIPITATION ≥ 0.01 PRECIPITATION ≥ 1.00																
SNOWFALL	NORMAL (IN)															
	MAXIMUM MONTHLY (IN)	3	27.3	7.0	13.5	4.4	T	T	0.0	0.0	0.0	0.2	22.4	18.7	27.3	
	YEAR OF OCCURRENCE		1999	1998	1999	2000	1999	2000				2000	1998	2000	JAN 1999	
	MAXIMUM IN 24 HOURS (IN)	3	6.5	3.3	4.5	3.5	T	T	0.0	0.0	0.0	0.2	12.4	6.9	12.4	
	YEAR OF OCCURRENCE		1999	1998	1999	2000	1999	2000				2000	1998	2000	NOV 1998	
	MAXIMUM SNOW DEPTH (IN)	3	16	13	10	3		0	0	0	0		16	10	16	
YEAR OF OCCURRENCE		1999	1999	1999	2000							1998	2000	NOV 1998		
NORMAL NO. DAYS WITH: SNOWFALL ≥ 1.0																

PRECIPITATION (inches) 2000 GRAND FORKS, ND (GFK)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1998	0.45	1.49	0.08	1.04	2.37	5.31	2.30	1.68	0.26	5.79	1.73	0.24	22.74
1999	0.99	0.23	1.04	1.90	5.01	3.48	1.63	4.44	2.55	0.12	T	0.35	21.74
2000	0.07	1.65	0.56	1.06	0.84	7.20	2.32	2.45	1.53	2.51	3.94	0.53	24.66
POR= 3 YRS	0.51	1.13	0.56	1.34	2.75	5.33	2.09	2.86	1.45	2.81	1.90	0.37	23.10

WBAN : 14916

AVERAGE TEMPERATURE (°F) 2000 GRAND FORKS, ND (GFK)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1998	8.7	25.7	24.4	47.6	58.5	61.4	68.8	70.1	60.4	45.4	25.5	12.2	42.4
1999	3.7	17.1	26.1	43.7	55.2	63.5	69.1	65.4	53.5	41.9	34.2	20.5	41.2
2000	7.4	22.8	34.0	39.6	53.9	61.3	69.3	67.2	55.5	45.3	24.6	-.4	40.0
POR= 3 YRS	6.6	21.9	28.2	43.7	55.9	62.1	69.1	67.6	56.5	44.2	28.1	10.8	41.2

HEATING DEGREE DAYS (base 65°F) 2000 GRAND FORKS, ND (GFK)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1997-98							1740	1093	1252	515	206	150	
1998-99	20	3	178	597	1179	1630	1895	1334	1199	631	306	104	9076
1999-00	18	52	337	708	915	1375	1779	1219	950	754	338	150	8595
2000-	29	43	287	604	1209	2023							

WBAN : 14916

COOLING DEGREE DAYS (base 65°F) 2000 GRAND FORKS, ND (GFK)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1998	0	0	0	0	12	49	144	168	44	0	0	0	417
1999	0	0	0	0	11	61	152	73	2	0	0	0	299
2000	0	0	0	0	1	44	169	120	7	0	0	0	341

SNOWFALL (inches) 2000 GRAND FORKS, ND (GFK)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
POR=													

WBAN : 14916

REFERENCE NOTES :

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).

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).

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.

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.

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.

2000
GRAND FORKS,
NORTH DAKOTA (GFK)

No narrative available.

STATION LOCATION

GRAND FORKS, NORTH DAKOTA

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
						GROUND											
						SEA LEVEL	GROUND	WIND INSTRUMENT	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE SWITCH	RAIN GAUGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROMETER		
International Airport	12/18/97	Present	NA	47° 57'	97° 11'	844								S	ASOS Commissioned 12/18/97		

SUBSCRIPTION:
Price and ordering information available through : National ClimaticDataCenter, Federal building, Asheville, North Carolina 28801.

INQUIRIES/COMMENTS CALL: Toll Free (866) 742-3322

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