

2000

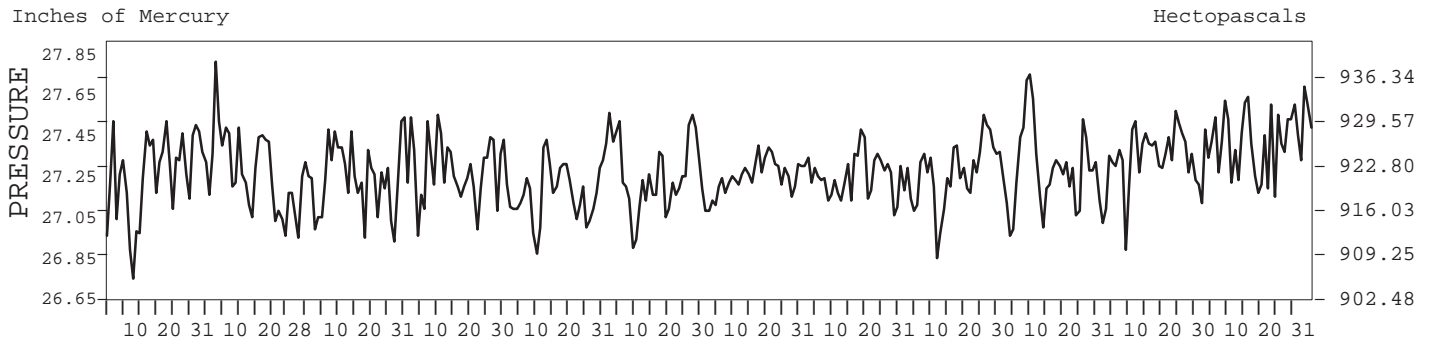
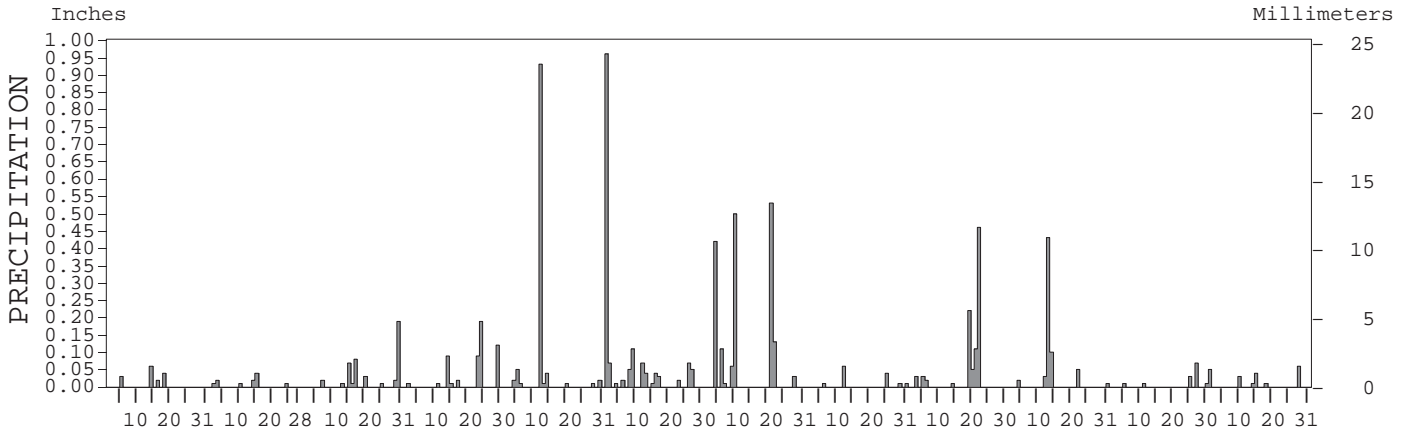
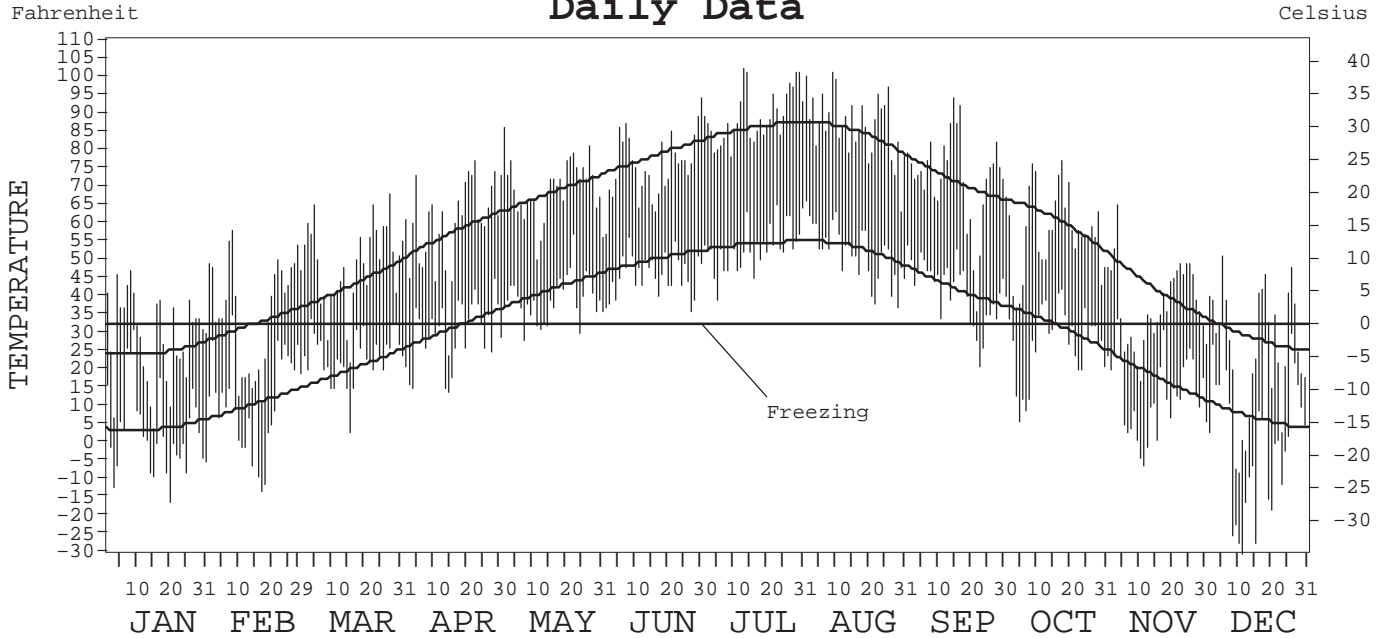
LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-3008

HAVRE,
MONTANA (HVR)

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

HAVRE, MT (HVR)

LATITUDE: 48° 33' 34" N LONGITUDE: 109° 46' 48" W ELEVATION (FT): GRND: 2582 BARO: 2582 TIME ZONE: MOUNTAIN (UTC + 7) WBAN: 94012

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	28.9	35.9	48.6	60.0	69.2	75.5	88.9	86.6	72.2	57.8	38.2	25.4	57.3	
	HIGHEST DAILY MAXIMUM	47	58	68	77	86	94	102	101	94	77	65	51	102	
	DATE OF OCCURRENCE	08	08	27	22	01	30	13	09	15	18	04	06	JUL 13	
	MEAN DAILY MINIMUM	3.2	11.4	23.5	29.9	39.2	45.9	53.4	51.9	41.5	27.7	13.4	1.7	28.6	
	LOWEST DAILY MINIMUM	-16	-13	3	14	28	36	39	37	21	6	-6	-30	-30	
	DATE OF OCCURRENCE	20	17	15	14	07	27	05	29	23	05	12	12	DEC 12	
	AVERAGE DRY BULB	16.1	23.7	36.1	45.0	54.2	60.7	71.2	69.3	56.9	42.8	25.8	13.6	43.0	
	MEAN WET BULB	14.9	21.1	30.8	37.6	44.1	51.2		54.6	47.5		22.4	11.9		
	MEAN DEW POINT	10.4	16.5	23.0	27.8	31.1	41.8		41.8	38.6		16.7	6.3		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	1	11	12	2	0	0	0	0	26
	MAXIMUM ≤ 32°	17	9	3	1	0	0	0	0	0	0	9	18	57	
	MINIMUM ≤ 32°	31	28	28	16	5	0	0	0	4	21	29	31	193	
MINIMUM ≤ 0°	15	6	0	0	0	0	0	0	0	0	3	13	37		
H/C	HEATING DEGREE DAYS	1508	1192	889	593	330	147	9	38	254	683	1170	1585	8398	
	COOLING DEGREE DAYS	0	0	0	0	3	25	205	178	15	0	0	0	426	
RH	MEAN (PERCENT)	77	76	65	56	44	54	47	41	57	67	72	73	61	
	HOUR 05 LST	80	85	82	76	69	81	75	66	78	82	82	74	78	
	HOUR 11 LST	75	70	55	43	33	39	35	32	45	58	67	73	52	
	HOUR 17 LST	71	66	46	36	28	32	27	24	36	50	63	73	46	
	HOUR 23 LST	80	76	71	65	51	64	54	43	67	74	78	74	66	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	3	2	2	2	1	0	0	0	0	3	2	7	22	
	THUNDERSTORMS	1	0	0	2	1	9	18	8	7	2	0	0	48	
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.)	27.26	27.26	27.25	27.29	27.18	27.25	27.26	27.24	27.25	27.29	27.35	27.43	27.28	
	MEAN SEA-LEVEL PRESS. (IN.)	30.08	30.06	30.00	30.01	29.86	29.92		29.89	29.94		30.15	30.28		
WINDS	RESULTANT SPEED (MPH)	3.9	1.7	4.3	1.8	3.6	5.1	1.5	1.3	5.2	1.7	6.1	2.6	2.9	
	RES. DIR. (TENS OF DEGS.)	24	27	27	29	27	28	12	27	25	23	25	26	26	
	MEAN SPEED (MPH)	9.1	8.4	10.4	11.4	11.0	10.6	9.2	10.0	11.2	7.3	10.6	9.3	9.9	
	PREVAIL. DIR. (TENS OF DEGS.)	23	23	23	23	23	23	09	23	23	23	23	23	23	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	39	38	38	49	39	36	43	37	37	30	38	36	49	
	DIR. (TENS OF DEGS.)	29	26	30	28	09	30	22	21	23	26	32	26	28	
	DATE OF OCCURRENCE	10	28+	19	04	31	15	13	11	30+	18	04	17	APR 04	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	46	46	44	58	51	45	52	41	44	35	46	40	58	
DIR. (TENS OF DEGS.)	29	24	32	28	10	33	22	24	23	26	33	26	28		
DATE OF OCCURRENCE	10+	02	31+	04	31	15	13	26+	30	18	04	19+	APR 04		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.15	0.11	0.44	0.54	2.06	0.59	1.79	0.13	0.93	0.64	0.18	0.15	7.71	
	GREATEST 24-HOUR (IN.)	0.06	0.06	0.19	0.28	0.96	0.11	0.66	0.06	0.56	0.45	0.07	0.06	0.96	
	DATE OF OCCURRENCE	14	14-15	29	22-23	31	08	20-21	11	20-21	11-12	26	27	MAY 31	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	4	6	9	8	10	13	8	5	8	6	6	5	88	
PRECIPITATION ≥ 0.10	0	0	1	2	2	1	5	0	3	2	0	0	16		
PRECIPITATION ≥ 1.00	0	0	0	0	0	0	0	0	0	0	0	0	0		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)														
	GREATEST 24-HOUR (IN.)														
	DATE OF OCCURRENCE														
	MAXIMUM SNOW DEPTH (IN.)														
	DATE OF OCCURRENCE														
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0															

NORMALS, MEANS, AND EXTREMES

HAVRE, MT (HVR)

LATITUDE: 48° 33' 34" N LONGITUDE: 109° 46' 48" W ELEVATION (FT): GRND: 2582 BARO: 2582 TIME ZONE: MOUNTAIN (UTC + 7) WBAN: 94012

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	24.7	32.0	42.6	56.7	67.9	77.8	85.4	84.1	71.2	60.0	41.6	28.2	56.0	
	MEAN DAILY MAXIMUM	1	28.9	35.9	49.5	58.1	67.2	74.3	85.8	86.1	70.3	59.3	44.4	34.7	57.9	
	HIGHEST DAILY MAXIMUM	1	47	58	77	77	89	94	102	101	94	77	78	56	102	
	YEAR OF OCCURRENCE		2000	2000	1999	2000	1999	2000	2000	2000	2000	2000	1999	1999	JUL 2000	
	MEAN OF EXTREME MAXS.	1	47.0	58.0	72.5	76.5	87.5	90.5	102.0	100.5	91.5	77.0	71.5	53.5	77.3	
	NORMAL DAILY MINIMUM	30	3.8	10.2	19.7	30.8	41.5	49.5	53.8	52.5	41.9	31.5	17.6	6.6	29.9	
	MEAN DAILY MINIMUM	1	3.2	11.4	24.2	29.5	39.4	46.5	50.8	53.0	40.5	29.2	19.5	11.2	29.9	
	LOWEST DAILY MINIMUM	1	-16	-13	3	14	25	36	39	37	21	6	-6	-30	-30	
	YEAR OF OCCURRENCE		2000	2000	2000	2000	1999	2000	2000	2000	2000	2000	2000	2000	2000	DEC 2000
	MEAN OF EXTREME MINS.	1	-16.0	-13.0	6.5	15.0	26.5	36.0	39.0	40.5	25.0	9.5	3.5	-10.5	13.5	
	NORMAL DRY BULB	30	14.3	21.1	31.1	43.8	54.7	63.7	69.7	68.3	56.5	45.8	29.6	17.4	43.0	
	MEAN DRY BULB	1	16.1	23.7	36.9	43.8	53.3	60.4	68.3	69.6	55.5	44.3	32.0	23.0	43.9	
	MEAN WET BULB	1	14.9	21.1	31.2	37.2	44.5	52.0	53.9	54.6	46.5	38.5	22.4	20.0	36.4	
	MEAN DEW POINT	1	10.4	16.5	23.6	27.5	33.8	43.8	43.8	41.8	37.7	29.8	16.7	13.5	28.2	
	NORMAL NO. DAYS WITH:															
MAXIMUM ≥ 90°	1															
MAXIMUM ≤ 32°	1															
MINIMUM ≤ 32°	1															
MINIMUM ≤ 0°	1															
H/C	NORMAL HEATING DEG. DAYS	30	1572	1229	1051	636	325	117	18	70	296	595	1062	1476	8447	
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	6	78	164	172	461	0	0	0	881	
RH	NORMAL (PERCENT)															
	HOUR 05 LST															
	HOUR 11 LST															
	HOUR 17 LST															
	HOUR 23 LST															
S	PERCENT POSSIBLE SUNSHINE															
W/O	MEAN NO. DAYS WITH:															
	HEAVY FOG(VISBY≤1/4 MI)	1	3.0	2.0	3.5	1.0	0.5	0.0	0.0	1.0	0.0	2.0	3.0	3.5	19.5	
	THUNDERSTORMS	1	1.0	0.0	0.5	2.0	1.5	10.5	12.5	7.0	4.0	1.0	0.0	0.0	40.0	
CLOUDINESS	MEAN:															
	SUNRISE-SUNSET (OKTAS)															
	MIDNIGHT-MIDNIGHT (OKTAS)															
	MEAN NO. DAYS WITH:															
	CLEAR															
	PARTLY CLOUDY															
	CLOUDY															
PR	MEAN STATION PRESSURE(IN)	1	27.26	27.26	27.22	27.28	27.18	27.22	27.26	27.25	27.28	27.31	27.35	27.36	27.27	
	MEAN SEA-LEVEL PRES. (IN)	1	30.08	30.06	30.00	30.01	29.88	29.89	29.93	29.89	29.94	30.07	30.15	30.17	30.01	
WINDS	MEAN SPEED (MPH)	1	9.1	8.4	10.5	10.7	10.8	10.6	10.0	10.1	10.2	9.1	9.8	10.9	10.0	
	PREVAIL.DIR (TENS OF DEGS)															
	MAXIMUM 2-MINUTE:															
	SPEED (MPH)	1	39	38	38	49	39	38	46	39	38	60	39	36	60	
	DIR. (TENS OF DEGS)		29	26	30	28	09	28	29	25	33	27	23	26	27	
	YEAR OF OCCURRENCE		2000	2000	2000	2000	2000	1999	1999	1999	1999	1999	1999	2000	OCT 1999	
	MAXIMUM 5-SECOND:															
SPEED (MPH)	1	46	46	46	58	51	47	55	46	45	69	46	44	69		
DIR. (TENS OF DEGS)		29	24	27	28	10	27	28	25	33	26	33	32	26		
YEAR OF OCCURRENCE		2000	2000	1999	2000	2000	1999	1999	1999	1999	1999	2000	1999	OCT 1999		
PRECIPITATION	NORMAL (IN)	30	0.53	0.36	0.66	0.94	1.66	1.76	1.40	1.23	1.18	0.53	0.38	0.53	11.16	
	MAXIMUM MONTHLY (IN)	1	0.15	0.11	0.44	1.39	2.06	3.27	1.79	1.01	1.21	0.87	0.18	0.15	3.27	
	YEAR OF OCCURRENCE		2000	2000	2000	1999	2000	1999	2000	1999	1999	1999	1999	2000	JUN 1999	
	MINIMUM MONTHLY (IN)	0													0.00	
	YEAR OF OCCURRENCE														DEC	
	MAXIMUM IN 24 HOURS (IN)	1	0.06	0.06	0.19	0.63	0.96	1.51	0.66	0.46	0.79	0.58	0.08	0.06	1.51	
	YEAR OF OCCURRENCE		2000	2000	2000	1999	2000	1999	2000	1999	1999	1999	1999	2000	JUN 1999	
NORMAL NO. DAYS WITH:																
PRECIPITATION ≥ 0.01																
PRECIPITATION ≥ 1.00																
SNOWFALL	NORMAL (IN)															
	MAXIMUM MONTHLY (IN)															
	YEAR OF OCCURRENCE															
	MAXIMUM IN 24 HOURS (IN)															
	YEAR OF OCCURRENCE															
	MAXIMUM SNOW DEPTH (IN)															
YEAR OF OCCURRENCE																
NORMAL NO. DAYS WITH:																
SNOWFALL ≥ 1.0																

PRECIPITATION (inches) 2000 HAVRE, MT (HVR)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1999			0.19	1.39	1.80	3.27	0.39	1.01	1.21	0.87	0.18	0.02	
2000	0.15	0.11	0.44	0.54	2.06	0.59	1.79	0.13	0.93	0.64	0.18	0.15	7.71
POR= 2 YRS	0.08	0.06	0.32	0.97	1.93	1.93	1.09	0.57	1.08	0.76	0.19	0.09	9.07

WBAN : 94012

AVERAGE TEMPERATURE (°F) 2000 HAVRE, MT (HVR)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1999			37.7	42.7	52.5	60.1	65.5	69.8	54.0	45.8	38.2	32.4	
2000	16.1	23.7	36.1	45.0	54.2	60.7	71.2	69.3	56.9	42.8	25.8	13.6	43.0
POR= 2 YRS	8.1	11.9	36.9	43.9	53.4	60.4	68.4	69.6	55.5	44.3	32.0	23.0	42.3

HEATING DEGREE DAYS (base 65°F) 2000 HAVRE, MT (HVR)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1998-99									841	660	389	153	
1999-00	85	17	333	586	799	1002	1508	1192	889	593	330	147	7481
2000-	9	38	254	683	1170	1585							

WBAN : 94012

COOLING DEGREE DAYS (base 65°F) 2000 HAVRE, MT (HVR)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1999			0	0	9	12	108	175	10	0	0	0	
2000	0	0	0	0	3	25	205	178	15	0	0	0	426

SNOWFALL (inches) 2000 HAVRE, MT (HVR)

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

WBAN : 94012

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 HAVRE, MONTANA (HVR)

Havre, Montana, is located in a level valley formed by the Milk River, which courses through the city from west to east. Most of the city lies on the south side of the river. On the north side, hills rise abruptly to about 200 feet above the valley floor. The land mass north to the Canadian border is gently rolling and increases slightly in elevation. During winter months, frequent invasions of cold polar continental air move down across these rolling plains, bringing snow and sub-zero temperatures.

The Bearpaw Mountains extend from 15 to 30 miles south of Havre. Most of the peaks are from 4,000 to 5,000 feet above sea level, and several are above 6,000 feet. The highest is Old Baldy, 6,916 feet above sea level.

Winters are cold in the Havre area, but snow cover is seldom more than a few inches, and usually some ground is bare. Spells of mild weather do occur at least a few times each winter, arriving with sometimes fresh to strong southwest to west foehn winds. During winter months, rain rarely falls. Winter precipitation is almost always in the form of snow. The transition from winter to spring conditions is fairly rapid in the usual year, but cold snaps and snow can occur as late as early May or as early as September.

Summers are characterized by warm weather, seldom exceeding 95 degrees. Daytime warmest readings usually run from the 80s to the mid-90s during most of July and August, but summer relative humidities are seldom as high as 50 percent during afternoon hours. Summertime night temperatures are rarely oppressively warm. Most spring and summer precipitation falls as showers, but occasionally steady rains lasting several hours are observed in May and June, and again in September. Fall seasons are characterized by much clear weather, although cold snaps of a day or two, with some snow, can occur as early as mid-September.

STATION LOCATION

HAVRE, MONTANA

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	TRAINING GAUGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROMETER		
<u>AIRPORT</u> City-County Airport	04/01/94	Present	NA	48° 34'	109° 47'	2582									S	ASOS Commissioned 04/01/94.	

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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