

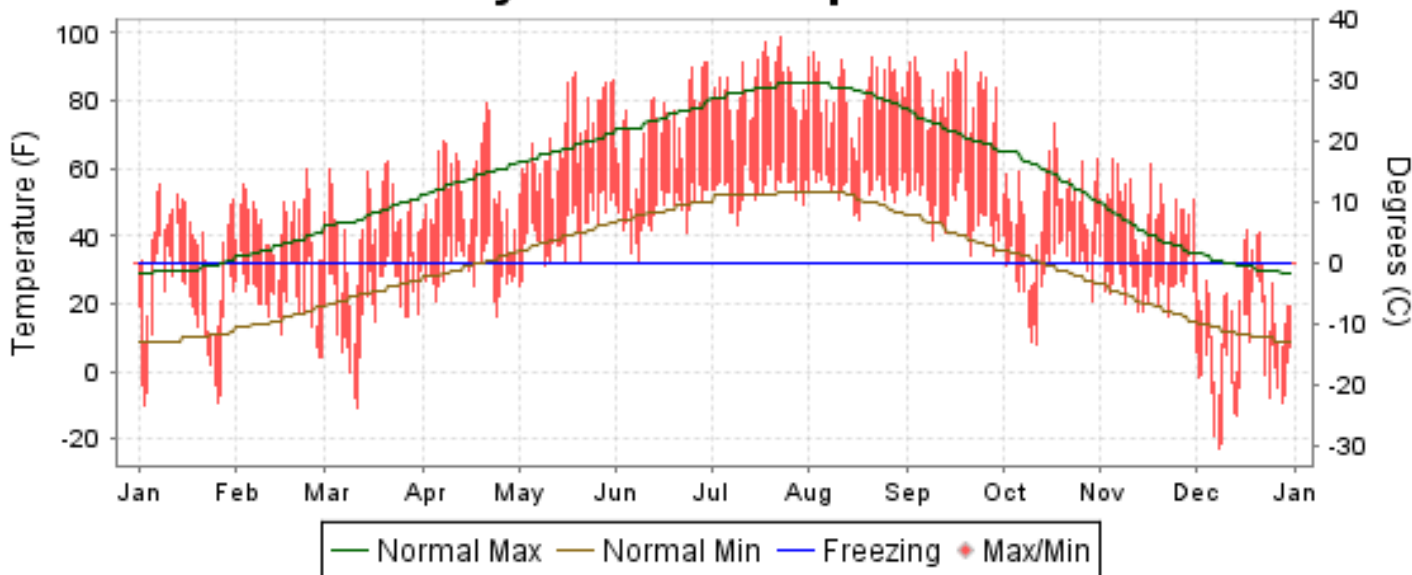


2009 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

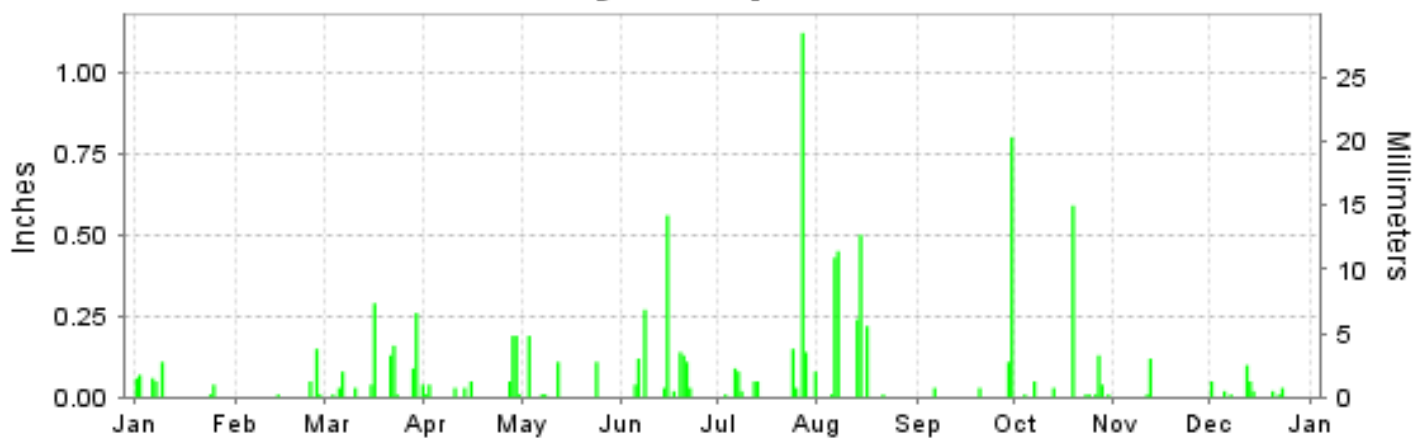
ISSN 0198-3024

HELENA, MONTANA (KHLN)

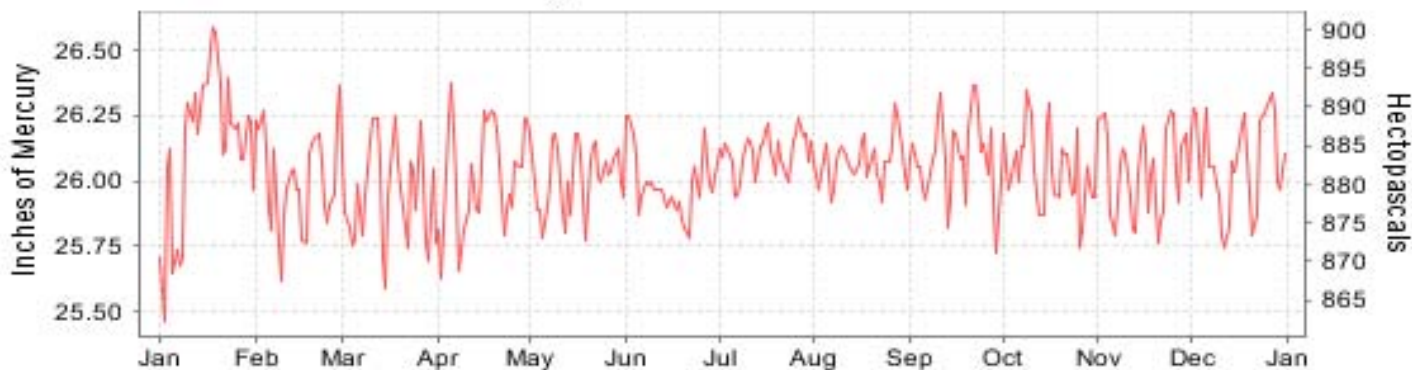
Daily Max/Min Temperature



Daily Precipitation



Daily Station Pressure



I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

NATIONAL
OCEANIC AND
ATMOSPHERIC ADMINISTRATION

NATIONAL
ENVIRONMENTAL SATELLITE, DATA
AND INFORMATION SERVICE

NATIONAL
CLIMATIC DATA CENTER
ASHEVILLE, NORTH CAROLINA

Thomas R. Karl
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 2009

HELENA (KHLN)

LATITUDE: 46° 36'N LONGITUDE: -111° 57'W ELEVATION (FT): GRND: 3828 BARO: 3867 TIME ZONE: MOUNTAIN (UTC -7) WBAN: 24144

| ELEMENT | | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR | |
|--------------------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------|--|
| TEMPERATURE °F | MEAN DAILY MAXIMUM | 36.7 | 42.9 | 42.9 | 54.3 | 69.5 | 73.3 | 84.5 | 82.5 | 81.0 | 49.9 | 47.9 | 19.7 | 57.1 | |
| | HIGHEST DAILY MAXIMUM | 55 | 60 | 62 | 79 | 88 | 91 | 99 | 94 | 94 | 73 | 63 | 42 | 99 | |
| | DATE OF OCCURRENCE | 08 | 23 | 21 | 21 | 19 | 30+ | 23 | 02 | 19 | 17 | 05 | 17 | JUL 23 | |
| | MEAN DAILY MINIMUM | 18.0 | 21.6 | 19.1 | 30.2 | 41.3 | 47.3 | 54.2 | 54.4 | 47.2 | 30.4 | 25.4 | 1.9 | 32.6 | |
| | LOWEST DAILY MINIMUM | -10 | 4 | -11 | 16 | 25 | 33 | 43 | 45 | 34 | 8 | 16 | -23 | -23 | |
| | DATE OF OCCURRENCE | 03 | 28+ | 11 | 24 | 01 | 08 | 09 | 17 | 28+ | 12 | 22 | 08 | DEC 08 | |
| | AVERAGE DRY BULB | 27.4 | 32.3 | 31.0 | 42.3 | 55.4 | 60.3 | 69.4 | 68.5 | 64.1 | 40.2 | 36.7 | 10.8 | 44.9 | |
| | MEAN WET BULB | 23.3 | 26.9 | 26.6 | 35.0 | 44.1 | 49.0 | 54.9 | 55.3 | 49.4 | 34.3 | 30.1 | 9.6 | 36.5 | |
| | MEAN DEW POINT | 15.0 | 18.3 | 19.3 | 24.9 | 31.4 | 38.7 | 43.3 | 45.4 | 36.2 | 26.6 | 20.7 | 5.1 | 27.1 | |
| | NUMBER OF DAYS WITH: | | | | | | | | | | | | | | |
| | MAXIMUM >= 90° | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 7 | 4 | 0 | 0 | 0 | 24 | |
| | MAXIMUM <= 32° | 8 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 26 | 46 | |
| MINIMUM <= 32° | 24 | 24 | 29 | 19 | 5 | 0 | 0 | 0 | 0 | 17 | 27 | 31 | 176 | | |
| MINIMUM <= 0° | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 24 | | |
| H/C | HEATING DEGREE DAYS | 1164 | 909 | 1047 | 675 | 310 | 167 | 17 | 34 | 101 | 763 | 843 | 1673 | 7703 | |
| | COOLING DEGREE DAYS | 0 | 0 | 0 | 0 | 22 | 33 | 157 | 147 | 82 | 0 | 0 | 0 | 441 | |
| RH | MEAN (PERCENT) | 60 | 60 | 64 | 55 | 44 | 50 | 45 | 49 | 41 | 61 | 57 | 76 | 55 | |
| | HOUR 05 LST | 66 | 70 | 75 | 72 | 63 | 66 | 66 | 67 | 61 | 73 | 66 | 81 | 69 | |
| | HOUR 11 LST | 57 | 52 | 53 | 45 | 32 | 40 | 33 | 38 | 29 | 52 | 49 | 74 | 46 | |
| | HOUR 17 LST | 55 | 50 | 54 | 45 | 31 | 37 | 29 | 34 | 26 | 54 | 51 | 73 | 45 | |
| | HOUR 23 LST | 62 | 64 | 72 | 61 | 50 | 57 | 52 | 54 | 46 | 69 | 63 | 79 | 61 | |
| S | PERCENT POSSIBLE SUNSHINE | | | | | | | | | | | | | | |
| W/O | NUMBER OF DAYS WITH: | | | | | | | | | | | | | | |
| | HEAVY FOG(VISBY <= 1/4 MI) | 1 | 1 | 4 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 5 | 16 | |
| | THUNDERSTORMS | 0 | 0 | 0 | 0 | 0 | 4 | 8 | 4 | 0 | 0 | 0 | 0 | 16 | |
| CLOUDNESS | 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.) | 26.14 | 26.01 | 25.95 | 26.02 | 26.02 | 25.99 | 26.10 | 26.07 | 26.08 | 26.04 | 26.04 | 26.08 | 26.05 | |
| | MEAN SEA-LEVEL PRESS. (IN.) | 30.28 | 30.11 | 30.05 | 30.06 | 29.99 | 29.94 | 30.03 | 30.00 | 30.04 | 30.10 | 30.12 | 30.31 | 30.09 | |
| WINDS | RESULTANT SPEED (MPH) | 5.3 | 3.7 | 3.2 | 4.8 | 5.8 | 2.8 | 3.3 | 2.9 | 3.4 | 4.8 | 4.0 | 2.5 | 3.8 | |
| | RES. DIR. (TENS OF DEGS.) | 28 | 28 | 28 | 30 | 27 | 30 | 29 | 29 | 28 | 29 | 26 | 30 | 29 | |
| | MEAN SPEED (MPH) | 6.6 | 5.5 | 6.4 | 7.6 | 8.1 | 6.5 | 6.3 | 5.9 | 5.6 | 7.5 | 6.0 | 3.5 | 6.3 | |
| | PREVAIL.DIR.(TENS OF DEGS.) | 28 | 26 | 27 | 26 | 27 | 27 | 27 | 26 | 27 | 27 | 26 | 29 | 27 | |
| | MAXIMUM 2-MINUTE WIND | | | | | | | | | | | | | | |
| | SPEED (MPH) | 38 | 30 | 37 | 31 | 37 | 43 | 43 | 41 | 33 | 41 | 41 | 26 | 43 | |
| | DIR. (TENS OF DEGS.) | 27 | 30 | 26 | 26 | 27 | 26 | 25 | 27 | 29 | 34 | 28 | 33 | 25 | |
| | DATE OF OCCURRENCE | 31 | 24 | 27 | 19 | 07 | 25 | 12 | 06 | 26 | 08 | 06 | 05 | JUL 12 | |
| | MAXIMUM 3-SECOND WIND: | | | | | | | | | | | | | | |
| | SPEED (MPH) | 52 | 40 | 45 | 37 | 48 | 53 | 54 | 48 | 45 | 53 | 53 | 37 | 54 | |
| DIR. (TENS OF DEGS.) | 25 | 24 | 26 | 27 | 26 | 24 | 26 | 27 | 29 | 34 | 27 | 32 | 26 | | |
| DATE OF OCCURRENCE | 08 | 24 | 27 | 19 | 19 | 25 | 12 | 06 | 26 | 08 | 06 | 05 | JUL 12 | | |
| PRECIPITATION | WATER EQUIVALENT: | | | | | | | | | | | | | | |
| | TOTAL (IN.) | 0.40 | 0.22 | 1.17 | 0.60 | 0.43 | 1.45 | 1.82 | 1.86 | 0.97 | 0.89 | 0.13 | 0.31 | 10.25 | |
| | GREATEST 24-HOUR (IN.) | 0.13 | 0.16 | 0.35 | 0.34 | 0.19 | 0.59 | 1.12 | 0.84 | 0.91 | 0.59 | 0.13 | 0.15 | 1.12 | |
| | DATE OF OCCURRENCE | 01-02 | 26-27 | 28-29 | 28-29 | 03 | 14-15 | 27 | 06-07 | 29-30 | 19 | 11-12 | 12-13 | JUL 27 | |
| | NUMBER OF DAYS WITH: | | | | | | | | | | | | | | |
| | PRECIPITATION 0.01 | 7 | 4 | 12 | 9 | 5 | 10 | 11 | 7 | 4 | 10 | 2 | 9 | 90 | |
| PRECIPITATION 0.10 | 1 | 1 | 4 | 2 | 3 | 6 | 3 | 5 | 2 | 2 | 1 | 1 | 31 | | |
| PRECIPITATION 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | | |
| SNOWFALL | SNOW,ICE PELLETS,HAIL | | | | | | | | | | | | | | |
| | TOTAL (IN.) | 5.7 | 4.7 | 8.3 | 5.7 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 3.7 | 1.2 | 10.4 | 39.9 | |
| | GREATEST 24-HOUR (IN.) | 1.7 | 4.0 | 3.0 | 2.7 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 2.0 | 1.2 | 2.5 | 4.0 | |
| | DATE OF OCCURRENCE | 09 | 26 | 16 | 29+ | | 08 | | | | 28 | 12 | 12 | FEB 26 | |
| | MAXIMUM SNOW DEPTH (IN.) | 4 | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 5 | |
| | DATE OF OCCURRENCE | 03 | 27 | 17 | 30 | | | | | | 28 | | 16+ | DEC 16+ | |
| | NUMBER OF DAYS WITH: | | | | | | | | | | | | | | |
| SNOWFALL >= 1.0 | 4 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 17 | | |

NORMALS, MEANS, AND EXTREMES HELENA (KHLN)

LATITUDE: 46° 36'N **LONGITUDE:** -111° 57'W **ELEVATION (FT):** GRND: 3828 BARO: 3867 **TIME ZONE:** MOUNTAIN (UTC -7) **WBAN: 24144**

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|-----------------------|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| TEMPERATURE °F | NORMAL DAILY MAXIMUM | 30 | 30.5 | 37.3 | 46.8 | 56.9 | 65.9 | 75.0 | 83.4 | 82.5 | 71.0 | 58.4 | 41.5 | 31.5 | 56.7 |
| | MEAN DAILY MAXIMUM | 117 | 29.9 | 33.6 | 43.4 | 54.4 | 64.5 | 71.6 | 83.0 | 81.2 | 68.4 | 57.3 | 41.5 | 32.6 | 55.1 |
| | HIGHEST DAILY MAXIMUM | 69 | 72 | 69 | 78 | 86 | 93 | 100 | 105 | 105 | 99 | 87 | 75 | 64 | 105 |
| | YEAR OF OCCURRENCE | | 2000 | 1995 | 2004 | 1992 | 2001 | 1988 | 2002 | 1969 | 1967 | 2001 | 1999 | 1980 | JUL 2002 |
| | MEAN OF EXTREME MAXS. | 117 | 52.3 | 55.5 | 64.7 | 75.5 | 84.0 | 91.1 | 96.5 | 95.6 | 89.2 | 77.5 | 62.4 | 53.0 | 74.8 |
| | NORMAL DAILY MINIMUM | 30 | 9.9 | 15.6 | 23.5 | 31.2 | 39.8 | 47.5 | 52.3 | 50.8 | 41.2 | 31.2 | 20.3 | 11.3 | 31.2 |
| | MEAN DAILY MINIMUM | 117 | 11.4 | 14.9 | 22.4 | 31.3 | 40.4 | 47.0 | 53.6 | 51.8 | 41.9 | 33.4 | 22.2 | 14.8 | 32.1 |
| | LOWEST DAILY MINIMUM | 69 | -42 | -42 | -30 | 1 | 17 | 30 | 36 | 28 | 18 | -8 | -39 | -38 | -42 |
| | YEAR OF OCCURRENCE | | 1957 | 1996 | 1955 | 1954 | 1954 | 1999 | 1971 | 1992 | 1970 | 1991 | 1959 | 1964 | FEB 1996 |
| | MEAN OF EXTREME MINS. | 117 | -16.8 | -8.0 | 0.4 | 16.8 | 27.9 | 36.3 | 43.3 | 40.8 | 28.5 | 15.5 | -0.0 | -12.2 | 14.4 |
| | NORMAL DRY BULB | 30 | 20.2 | 26.4 | 35.1 | 44.1 | 52.9 | 61.2 | 67.8 | 66.7 | 56.1 | 44.8 | 30.9 | 21.4 | 44.0 |
| | MEAN DRY BULB | 117 | 20.7 | 24.3 | 33.0 | 42.9 | 52.5 | 59.3 | 68.3 | 66.6 | 55.2 | 45.4 | 31.9 | 23.7 | 43.7 |
| | MEAN WET BULB | 26 | 18.4 | 21.8 | 28.3 | 35.5 | 43.1 | 49.8 | 53.6 | 52.2 | 45.2 | 36.6 | 26.4 | 18.1 | 35.8 |
| | MEAN DEW POINT | 26 | 15.2 | 16.9 | 22.8 | 29.0 | 36.8 | 43.8 | 46.4 | 45.2 | 38.9 | 30.5 | 22.0 | 14.6 | 30.2 |
| | NORMAL NO. DAYS WITH: MAXIMUM >= 90 | 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 2.4 | 7.7 | 7.2 | 1.2 | 0.0 | 0.0 | 0.0 | 18.7 |
| | MAXIMUM <= 32 | 30 | 14.2 | 8.1 | 3.3 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 6.1 | 14.5 | 47.3 |
| MINIMUM <= 32 | 30 | 29.5 | 26.7 | 27.4 | 16.9 | 3.6 | 0.2 | 0.0 | * | 3.4 | 16.9 | 26.8 | 29.6 | 181.0 | |
| MINIMUM <= 0 | 30 | 8.6 | 4.5 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 2.0 | 6.3 | 22.5 | |
| H/C | NORMAL HEATING DEG. DAYS | 30 | 1397 | 1093 | 932 | 634 | 384 | 157 | 42 | 56 | 283 | 631 | 1018 | 1348 | 7975 |
| | NORMAL COOLING DEG. DAYS | 30 | 0 | 0 | 0 | 0 | 3 | 39 | 122 | 100 | 13 | 0 | 0 | 0 | 277 |
| RH | NORMAL (PERCENT) | 30 | 71 | 67 | 62 | 55 | 55 | 54 | 48 | 49 | 54 | 60 | 67 | 71 | 59 |
| | HOURLY 05 LST | 30 | 73 | 74 | 74 | 72 | 73 | 73 | 68 | 70 | 73 | 74 | 74 | 74 | 73 |
| | HOURLY 11 LST | 30 | 68 | 63 | 54 | 46 | 45 | 44 | 40 | 42 | 47 | 53 | 63 | 68 | 53 |
| | HOURLY 17 LST | 30 | 63 | 54 | 45 | 38 | 39 | 38 | 31 | 31 | 35 | 42 | 58 | 66 | 45 |
| | HOURLY 23 LST | 30 | 72 | 70 | 67 | 60 | 61 | 59 | 53 | 54 | 59 | 64 | 70 | 73 | 64 |
| S | PERCENT POSSIBLE SUNSHINE | 55 | 47 | 56 | 61 | 59 | 61 | 64 | 78 | 75 | 68 | 60 | 44 | 42 | 60 |
| W/O | MEAN NO. DAYS WITH: HEAVY FOG(VISBY <= 1/4 MI) | 46 | 2.2 | 1.2 | 1.1 | 0.5 | 0.3 | 0.1 | 0.1 | 0.2 | 0.3 | 0.5 | 1.1 | 2.4 | 10.0 |
| | THUNDERSTORMS | 62 | 0.0 | 0.0 | 0.1 | 0.9 | 3.6 | 7.0 | 7.7 | 7.2 | 1.6 | 0.3 | 0.1 | 0.0 | 28.5 |
| CLOUDNESS | MEAN: SUNRISE-SUNSET (OKTAS) | | | | | | | | | | | | | | |
| | MIDNIGHT-MIDNIGHT (OKTAS) | | | | | | | | | | | | | | |
| | MEAN NO. DAYS WITH: CLEAR | 1 | 1.5 | 2.0 | 2.0 | | | 8.0 | 2.0 | 11.0 | 7.0 | 1.0 | | 6.0 | |
| | PARTLY CLOUDY | 1 | 1.0 | 5.0 | 1.0 | | 6.0 | 5.0 | 1.0 | 3.0 | 5.0 | 7.0 | | 2.0 | |
| | CLOUDY | 1 | 3.0 | 3.0 | 12.0 | | 23.0 | 6.0 | | 4.0 | 7.0 | | 3.0 | | |
| PR | MEAN STATION PRESSURE(IN) | 26 | 26.03 | 26.01 | 25.98 | 25.98 | 25.98 | 26.00 | 26.05 | 26.05 | 26.06 | 26.05 | 26.03 | 26.04 | 26.02 |
| | MEAN SEA-LEVEL PRES. (IN) | 26 | 30.19 | 30.14 | 30.06 | 30.00 | 29.95 | 29.94 | 29.97 | 29.99 | 30.03 | 30.09 | 30.13 | 30.20 | 30.06 |
| WINDS | MEAN SPEED (MPH) | 26 | 6.0 | 6.5 | 7.5 | 8.3 | 8.2 | 8.0 | 7.3 | 6.7 | 6.6 | 6.8 | 6.5 | 5.8 | 7.0 |
| | PREVAIL.DIR(TENS OF DEGS) | 29 | 28 | 28 | 28 | 28 | 28 | 28 | 29 | 28 | 28 | 28 | 28 | 28 | 28 |
| | MAXIMUM 2-MINUTE: SPEED (MPH) | 15 | 46 | 51 | 47 | 41 | 44 | 52 | 52 | 46 | 52 | 51 | 43 | 44 | 52 |
| | DIR. (TENS OF DEGS) | | 29 | 26 | 28 | 28 | 29 | 18 | 24 | 26 | 26 | 28 | 25 | 28 | 24 |
| | YEAR OF OCCURRENCE | | 1997 | 1999 | 2001 | 1997 | 1996 | 1999 | 2002 | 1999 | 1999 | 1999 | 2005 | 1995 | JUL 2002 |
| | MAXIMUM 3-SECOND SPEED (MPH) | 15 | 59 | 64 | 58 | 49 | 61 | 60 | 58 | 59 | 64 | 61 | 56 | 62 | 64 |
| | DIR. (TENS OF DEGS) | | 28 | 26 | 26 | 27 | 18 | 19 | 25 | 26 | 26 | 26 | 27 | 26 | 26 |
| | YEAR OF OCCURRENCE | | 2004 | 1999 | 2004 | 1997 | 2008 | 1999 | 2002 | 1999 | 1999 | 1999 | 2003 | 2008 | SEP 1999 |
| PRECIPITATION | NORMAL (IN) | 30 | 0.52 | 0.38 | 0.63 | 0.91 | 1.78 | 1.82 | 1.34 | 1.29 | 1.05 | 0.66 | 0.48 | 0.46 | 11.32 |
| | MAXIMUM MONTHLY (IN) | 69 | 2.78 | 1.20 | 1.62 | 3.00 | 6.09 | 4.74 | 4.70 | 4.23 | 3.37 | 2.68 | 1.50 | 1.48 | 6.09 |
| | YEAR OF OCCURRENCE | | 1969 | 1986 | 1982 | 1975 | 1981 | 1944 | 1993 | 1974 | 1965 | 1975 | 1950 | 1977 | MAY 1981 |
| | MINIMUM MONTHLY (IN) | 69 | T | 0.02 | 0.02 | 0.10 | 0.29 | 0.08 | .07 | 0.02 | 0.08 | 0.02 | 0.04 | 0.01 | T |
| | YEAR OF OCCURRENCE | | 1987 | 1991 | 1959 | 1977 | 1979 | 1985 | 2005 | 1988 | 1972 | 1978 | 1969 | 2007 | JAN 1987 |
| | MAXIMUM IN 24 HOURS (IN) | 69 | 0.77 | 0.58 | 1.01 | 1.57 | 2.31 | 1.78 | 2.26 | 1.86 | 1.61 | 1.01 | 0.82 | 0.51 | 2.31 |
| | YEAR OF OCCURRENCE | | 1969 | 1953 | 1957 | 2006 | 1981 | 1979 | 1983 | 1974 | 1980 | 2000 | 1959 | 1982 | MAY 1981 |
| | NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01 | 30 | 7.5 | 6.3 | 8.1 | 8.6 | 11.4 | 10.4 | 8.1 | 7.7 | 6.3 | 5.7 | 6.7 | 7.3 | 94.1 |
| PRECIPITATION >= 1.00 | 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.5 | |
| SNOWFALL | NORMAL (IN) | 30 | 8.2 | 5.7 | 6.8 | 4.6 | 0.9 | 0.* | 0.* | 0.3 | 1.2 | 2.8 | 5.4 | 7.4 | 43.3 |
| | MAXIMUM MONTHLY (IN) | 62 | 35.6 | 19.7 | 21.6 | 20.6 | 12.7 | 2.7 | T | 6.2 | 13.7 | 11.0 | 32.9 | 22.8 | 35.6 |
| | YEAR OF OCCURRENCE | | 1969 | 1959 | 1955 | 1967 | 1967 | 1969 | 1993 | 1992 | 1965 | 1969 | 1959 | 1967 | JAN 1969 |
| | MAXIMUM IN 24 HOURS (IN) | 62 | 11.5 | 11.7 | 8.7 | 12.9 | 12.5 | 2.7 | T | 6.2 | 13.3 | 7.4 | 21.5 | 10.7 | 21.5 |
| | YEAR OF OCCURRENCE' | | 1969 | 1993 | 1955 | 1960 | 1967 | 1969 | 1993 | 1992 | 1957 | 1969 | 1959 | 1991 | NOV 1959 |
| | MAXIMUM SNOW DEPTH (IN) | 51 | 23 | 15 | 15 | 8 | 8 | T | 0 | 0 | 10 | 6 | 19 | 14 | 23 |
| | YEAR OF OCCURRENCE | | 1969 | 1975 | 1969 | 1986 | 1967 | 1969 | | | 1965 | 1969 | 1978 | 1985 | JAN 1969 |
| | NORMAL NO. DAYS WITH: SNOWFALL >= 1.0 | 30 | 2.7 | 1.7 | 2.1 | 1.4 | 0.3 | 0.0 | 0.0 | 0.1 | 0.4 | 1.0 | 1.6 | 2.0 | 13.3 |

PRECIPITATION (inches) 2009 HELENA (KHLN)

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| 1980 | 0.62 | 0.74 | 0.88 | 0.63 | 4.32 | 3.16 | 1.92 | 0.28 | 2.57 | 1.21 | 0.32 | 0.40 | 17.05 |
| 1981 | 0.15 | 0.10 | 1.10 | 0.75 | 6.09 | 1.15 | 1.78 | 0.10 | 0.90 | 0.82 | 0.54 | 0.33 | 13.81 |
| 1982 | 0.80 | 0.58 | 1.62 | 0.54 | 1.77 | 2.99 | 0.49 | 0.74 | 2.74 | 0.35 | 0.31 | 1.05 | 13.98 |
| 1983 | 0.24 | 0.07 | 0.36 | 0.29 | 1.79 | 2.20 | 3.48 | 2.67 | 1.56 | 0.35 | 0.26 | 0.76 | 14.03 |
| 1984 | 0.17 | 0.15 | 0.49 | 1.45 | 1.03 | 2.14 | 0.11 | 1.11 | 0.73 | 0.74 | 0.47 | 0.41 | 9.00 |
| 1985 | 0.16 | 0.38 | 0.32 | 0.46 | 0.75 | 0.08 | 0.10 | 2.64 | 2.11 | 0.76 | 0.84 | 0.35 | 8.95 |
| 1986 | 0.32 | 1.20 | 0.49 | 1.08 | 0.83 | 1.56 | 1.37 | 1.84 | 2.45 | 0.03 | 0.54 | 0.38 | 12.09 |
| 1987 | T | 0.03 | 1.19 | 0.76 | 1.90 | 1.50 | 2.88 | 0.38 | 0.80 | 0.05 | 0.12 | 0.42 | 10.03 |
| 1988 | 0.27 | 0.50 | 0.45 | 1.32 | 1.82 | 1.50 | 0.36 | 0.02 | 2.09 | 0.69 | 0.69 | 0.32 | 10.03 |
| 1989 | 1.42 | 0.82 | 1.35 | 0.72 | 1.00 | 1.43 | 1.55 | 1.61 | 1.31 | 0.54 | 0.26 | 0.48 | 12.49 |
| 1990 | 0.47 | 0.14 | 0.91 | 0.43 | 1.54 | 0.92 | 0.40 | 2.57 | 0.11 | 0.11 | 0.36 | 0.47 | 8.43 |
| 1991 | 0.27 | 0.02 | 0.90 | 0.75 | 1.71 | 3.27 | 0.72 | 0.70 | 1.26 | 0.65 | 0.88 | 0.79 | 11.92 |
| 1992 | 0.29 | 0.10 | 0.60 | 0.55 | 0.64 | 2.36 | 1.06 | 1.01 | 0.09 | 1.87 | 0.19 | 0.57 | 9.33 |
| 1993 | 0.80 | 1.03 | 0.56 | 1.63 | 1.71 | 3.14 | 4.70 | 2.79 | 1.25 | 0.71 | 0.36 | 0.13 | 18.81 |
| 1994 | 0.20 | 0.40 | 0.32 | 1.45 | 1.23 | 0.84 | 0.71 | 0.47 | 0.09 | 1.14 | 0.55 | 0.07 | 7.47 |
| 1995 | 0.20 | 0.08 | 0.49 | 1.15 | 3.09 | 2.93 | 1.51 | 0.33 | 1.59 | 0.10 | 0.62 | 0.28 | 12.37 |
| 1996 | 0.55 | 0.11 | 0.58 | 0.70 | 2.42 | 1.20 | 1.27 | 0.89 | 0.51 | 0.04 | 0.84 | 0.61 | 9.72 |
| 1997 | 0.28 | 0.10 | 0.10 | 0.20 | 2.35 | 2.43 | 1.25 | 1.79 | 0.31 | 1.62 | 0.13 | 0.01 | 10.57 |
| 1998 | 0.49 | 0.12 | 0.39 | 0.64 | 2.27 | 3.03 | 2.96 | 0.50 | 0.82 | 0.14 | 1.07 | 0.14 | 12.57 |
| 1999 | 0.38 | 0.26 | 0.02 | 1.05 | 2.19 | 2.15 | 0.41 | 1.92 | 0.54 | 0.39 | 0.13 | 0.10 | 9.54 |
| 2000 | 0.26 | 0.32 | 0.26 | 0.73 | 0.98 | 1.42 | 0.73 | 0.43 | 0.54 | 2.12 | 0.36 | 0.23 | 8.38 |
| 2001 | 0.27 | 0.17 | 0.44 | 1.39 | 1.23 | 2.11 | 1.94 | 0.43 | 1.38 | 0.54 | 0.13 | 0.28 | 10.31 |
| 2002 | 0.04 | 0.29 | 0.52 | 0.61 | 1.86 | 4.36 | 1.61 | 1.32 | 1.22 | 0.16 | 0.50 | 0.05 | 12.54 |
| 2003 | 0.41 | 0.29 | 0.74 | 2.27 | 1.25 | 1.49 | 0.23 | 1.03 | 0.74 | 0.34 | 0.20 | 0.35 | 9.34 |
| 2004 | 0.26 | 0.17 | 0.37 | 1.82 | 2.21 | 1.07 | 0.68 | 2.84 | 1.76 | 0.41 | 0.10 | 0.36 | 12.05 |
| 2005 | 0.26 | 0.06 | 0.86 | 0.90 | 2.11 | 4.55 | 0.07 | 0.29 | 0.72 | 0.94 | 0.77 | 0.63 | 12.16 |
| 2006 | 0.22 | 0.24 | 0.60 | 2.95 | 1.77 | 2.69 | 0.39 | 0.25 | 1.17 | 1.32 | 0.55 | 0.38 | 12.53 |
| 2007 | 0.09 | 0.63 | 0.14 | 0.82 | 3.25 | 1.44 | 0.31 | 0.39 | 1.69 | 0.96 | 0.63 | 0.01 | 10.36 |
| 2008 | 0.49 | 0.31 | 0.12 | 0.49 | 2.62 | 1.58 | 0.47 | 0.45 | 0.70 | 0.38 | 0.86 | 0.77 | 9.24 |
| 2009 | 0.40 | 0.22 | 1.17 | 0.60 | 0.43 | 1.45 | 1.82 | 1.86 | 0.97 | 0.89 | 0.13 | 0.31 | 10.25 |
| POR= 117 YRS | 0.60 | 0.46 | 0.72 | 0.99 | 1.91 | 2.11 | 1.10 | 0.99 | 1.11 | 0.73 | 0.63 | 0.59 | 11.94 |

WBAN : 24144

AVERAGE TEMPERATURE (°F) 2009 HELENA (KHLN)

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| 1980 | 14.3 | 25.3 | 31.3 | 49.0 | 55.4 | 59.8 | 67.3 | 62.9 | 56.8 | 45.4 | 34.9 | 26.9 | 44.1 |
| 1981 | 28.4 | 29.7 | 38.0 | 46.4 | 52.8 | 58.9 | 67.7 | 69.5 | 58.8 | 43.8 | 36.4 | 25.3 | 46.3 |
| 1982 | 16.5 | 23.7 | 33.9 | 40.5 | 50.9 | 61.2 | 68.6 | 69.1 | 55.5 | 44.9 | 27.4 | 22.7 | 42.9 |
| 1983 | 30.6 | 35.3 | 38.3 | 43.1 | 51.5 | 60.2 | 66.0 | 70.8 | 53.5 | 46.0 | 34.7 | 5.5 | 44.6 |
| 1984 | 27.3 | 32.4 | 37.2 | 43.5 | 52.8 | 60.0 | 70.0 | 69.8 | 52.3 | 41.7 | 33.1 | 11.6 | 44.3 |
| 1985 | 12.3 | 18.8 | 33.4 | 46.9 | 56.2 | 63.3 | 75.0 | 63.1 | 49.6 | 42.3 | 12.6 | 15.0 | 40.7 |
| 1986 | 25.5 | 21.8 | 42.9 | 43.3 | 53.6 | 66.4 | 64.2 | 68.0 | 51.2 | 45.3 | 29.0 | 18.6 | 44.2 |
| 1987 | 23.3 | 31.9 | 37.0 | 50.2 | 55.9 | 64.4 | 66.2 | 62.8 | 59.9 | 46.8 | 34.7 | 24.7 | 46.5 |
| 1988 | 18.8 | 29.1 | 36.1 | 47.1 | 55.5 | 68.4 | 71.3 | 68.6 | 56.4 | 50.3 | 33.8 | 23.1 | 46.5 |
| 1989 | 24.5 | 6.1 | 27.6 | 44.5 | 51.7 | 62.2 | 72.0 | 64.3 | 55.6 | 45.1 | 36.8 | 23.8 | 42.9 |
| 1990 | 28.8 | 26.9 | 34.9 | 45.8 | 51.0 | 61.5 | 69.4 | 68.4 | 63.6 | 45.3 | 37.4 | 14.0 | 45.6 |
| 1991 | 19.0 | 37.5 | 35.3 | 43.8 | 52.8 | 59.5 | 70.8 | 72.8 | 58.4 | 43.3 | 29.8 | 22.9 | 45.5 |
| 1992 | 23.7 | 34.2 | 42.7 | 47.7 | 57.5 | 64.9 | 64.3 | 64.7 | 56.7 | 46.7 | 32.8 | 14.7 | 45.9 |
| 1993 | 12.3 | 15.0 | 36.4 | 44.3 | 57.3 | 58.5 | 59.5 | 61.5 | 54.0 | 43.8 | 26.8 | 30.0 | 41.6 |
| 1994 | 29.8 | 20.7 | 39.4 | 45.6 | 56.2 | 62.7 | 69.0 | 69.9 | 61.6 | 44.3 | 28.3 | 23.6 | 45.9 |
| 1995 | 22.7 | 30.5 | 30.7 | 42.0 | 49.7 | 57.4 | 65.8 | 65.2 | 55.7 | 42.8 | 34.3 | 22.7 | 43.3 |
| 1996 | 9.9 | 21.1 | 25.7 | 48.2 | 48.2 | 61.3 | 68.3 | 66.6 | 55.5 | 43.8 | 23.1 | 16.6 | 43.3 |
| 1997 | 13.3 | 28.2 | 36.9 | 38.4 | 53.2 | 60.1 | 65.8 | 65.4 | 58.8 | 44.1 | 31.2 | 24.4 | 43.3 |
| 1998 | 21.2 | 31.0 | 32.8 | 44.8 | 53.9 | 55.1 | 69.8 | 68.6 | 61.9 | 43.8 | 34.5 | 24.5 | 45.2 |
| 1999 | 26.8 | 32.4 | 37.1 | 40.8 | 50.2 | 58.8 | 65.3 | 68.4 | 52.9 | 45.8 | 39.2 | 28.1 | 45.5 |
| 2000 | 25.0 | 28.8 | 38.6 | 47.0 | 54.9 | 62.4 | 72.1 | 69.6 | 56.4 | 44.6 | 22.0 | 16.2 | 44.8 |
| 2001 | 20.1 | 17.6 | 35.4 | 44.0 | 59.2 | 64.1 | 72.0 | 74.7 | 64.6 | 48.4 | 39.2 | 24.5 | 47.0 |
| 2002 | 29.6 | 30.3 | 25.2 | 43.0 | 53.4 | 62.8 | 72.4 | 64.0 | 59.1 | 40.4 | 34.6 | 28.1 | 45.2 |
| 2003 | 29.4 | 25.3 | 34.2 | 46.0 | 53.3 | 63.2 | 76.4 | 73.5 | 59.3 | 50.6 | 28.8 | 28.3 | 47.4 |
| 2004 | 15.0 | 29.0 | 43.0 | 47.6 | 51.8 | 60.8 | 70.7 | 66.4 | 56.3 | 46.0 | 35.3 | 29.5 | 46.0 |
| 2005 | 16.5 | 31.3 | 37.1 | 44.9 | 52.4 | 59.8 | 72.5 | 68.6 | 58.0 | 49.1 | 34.6 | 19.9 | 45.4 |
| 2006 | 36.0 | 29.0 | 35.5 | 47.8 | 56.7 | 65.0 | 75.4 | 69.3 | 59.2 | 44.0 | 32.8 | 27.0 | 48.1 |
| 2007 | 25.6 | 27.4 | 43.1 | 46.0 | 56.2 | 65.6 | 78.8 | 69.7 | 58.3 | 47.6 | 34.4 | 27.8 | 48.4 |
| 2008 | 20.3 | 29.9 | 36.2 | 40.7 | 54.0 | 61.8 | 71.9 | 69.7 | 56.8 | 45.7 | 40.4 | 20.0 | 45.6 |
| 2009 | 27.4 | 32.3 | 31.0 | 42.3 | 55.4 | 60.3 | 69.4 | 68.5 | 64.1 | 40.2 | 36.7 | 10.8 | 44.9 |
| POR= 117 YRS | 20.7 | 24.3 | 33.0 | 42.9 | 52.5 | 59.3 | 68.3 | 66.6 | 55.2 | 45.4 | 31.9 | 23.7 | 43.6 |

HEATING DEGREE DAYS (base 65°F) 2009 HELENA (KHLN)

| YEAR | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|---------|-----|-----|-----|-----|------|------|------|------|------|-----|-----|-----|-------|
| 1980-81 | 25 | 81 | 242 | 602 | 899 | 1175 | 1127 | 986 | 832 | 552 | 371 | 191 | 7083 |
| 1981-82 | 21 | 16 | 195 | 650 | 853 | 1227 | 1497 | 1153 | 959 | 726 | 428 | 136 | 7861 |
| 1982-83 | 30 | 16 | 304 | 618 | 1120 | 1306 | 1059 | 828 | 823 | 649 | 417 | 152 | 7322 |
| 1983-84 | 76 | 0 | 351 | 584 | 901 | 1842 | 1164 | 941 | 856 | 640 | 380 | 174 | 7909 |
| 1984-85 | 2 | 7 | 377 | 716 | 954 | 1654 | 1625 | 1291 | 973 | 538 | 266 | 97 | 8500 |
| 1985-86 | 3 | 105 | 455 | 696 | 1571 | 1545 | 1218 | 1202 | 677 | 645 | 380 | 42 | 8539 |
| 1986-87 | 66 | 23 | 409 | 602 | 1077 | 1432 | 1288 | 923 | 862 | 437 | 276 | 77 | 7472 |
| 1987-88 | 75 | 104 | 163 | 556 | 901 | 1241 | 1426 | 1034 | 889 | 529 | 297 | 63 | 7278 |
| 1988-89 | 10 | 13 | 282 | 449 | 934 | 1292 | 1251 | 1650 | 1156 | 610 | 407 | 107 | 8161 |
| 1989-90 | 0 | 92 | 274 | 611 | 839 | 1268 | 1116 | 1058 | 925 | 573 | 426 | 177 | 7359 |
| 1990-91 | 15 | 31 | 78 | 604 | 823 | 1579 | 1420 | 767 | 914 | 630 | 373 | 159 | 7393 |
| 1991-92 | 2 | 0 | 220 | 666 | 1053 | 1297 | 1273 | 884 | 687 | 513 | 237 | 94 | 6926 |
| 1992-93 | 68 | 141 | 246 | 564 | 960 | 1552 | 1631 | 1397 | 879 | 617 | 228 | 214 | 8497 |
| 1993-94 | 179 | 122 | 323 | 652 | 1139 | 1080 | 1080 | 1236 | 783 | 576 | 268 | 128 | 7566 |
| 1994-95 | 18 | 17 | 110 | 633 | 1095 | 1275 | 1307 | 963 | 1059 | 681 | 465 | 222 | 7845 |
| 1995-96 | 37 | 61 | 293 | 683 | 912 | 1303 | 1703 | 1268 | 1210 | | 510 | 127 | |
| 1996-97 | 15 | 53 | 286 | 651 | 1251 | 1494 | 1596 | 1026 | 865 | 793 | 361 | 152 | 8543 |
| 1997-98 | 49 | 53 | 189 | 642 | 1006 | 1252 | 1352 | 942 | 990 | 600 | 336 | 293 | 7704 |
| 1998-99 | 2 | 8 | 158 | 650 | 909 | 1248 | 1176 | 905 | 859 | 718 | 451 | 188 | 7272 |
| 1999-00 | 79 | 20 | 354 | 590 | 767 | 1136 | 1232 | 1043 | 814 | 535 | 308 | 119 | 6997 |
| 2000-01 | 16 | 13 | 279 | 625 | 1283 | 1504 | 1385 | 1319 | 912 | 625 | 212 | 113 | 8286 |
| 2001-02 | 11 | 0 | 66 | 511 | 766 | 1249 | 1093 | 968 | 1229 | 652 | 366 | 126 | 7037 |
| 2002-03 | 1 | 52 | 201 | 755 | 904 | 1138 | 1096 | 1104 | 951 | 562 | 389 | 113 | 7266 |
| 2003-04 | 0 | 8 | 208 | 442 | 1081 | 1128 | 1542 | 1038 | 675 | 513 | 401 | 151 | 7187 |
| 2004-05 | 8 | 53 | 264 | 581 | 883 | 1093 | 1499 | 939 | 860 | 600 | 382 | 177 | 7339 |
| 2005-06 | 7 | 46 | 223 | 487 | 906 | 1395 | 892 | 1004 | 907 | 507 | 282 | 61 | 6717 |
| 2006-07 | 0 | 20 | 202 | 644 | 959 | 1171 | 1215 | 1045 | 673 | 566 | 274 | 69 | 6838 |
| 2007-08 | 0 | 15 | 236 | 529 | 911 | 1145 | 1378 | 1010 | 885 | 726 | 351 | 158 | 7344 |
| 2008-09 | 0 | 32 | 239 | 592 | 732 | 1387 | 1164 | 909 | 1047 | 675 | 310 | 167 | 7254 |
| 2009- | 17 | 34 | 101 | 763 | 843 | 1673 | | | | | | | |

WBAN : 24144

COOLING DEGREE DAYS (base 65°F) 2009 HELENA (KHLN)

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| 1980 | 0 | 0 | 0 | 0 | 14 | 14 | 104 | 25 | 4 | 0 | 0 | 0 | 161 |
| 1981 | 0 | 0 | 0 | 0 | 0 | 15 | 109 | 165 | 16 | 0 | 0 | 0 | 305 |
| 1982 | 0 | 0 | 0 | 0 | 0 | 30 | 147 | 151 | 25 | 0 | 0 | 0 | 353 |
| 1983 | 0 | 0 | 0 | 0 | 4 | 16 | 115 | 186 | 12 | 0 | 0 | 0 | 333 |
| 1984 | 0 | 0 | 0 | 0 | 10 | 31 | 165 | 163 | 4 | 0 | 0 | 0 | 373 |
| 1985 | 0 | 0 | 0 | 0 | 2 | 55 | 318 | 54 | 0 | 0 | 0 | 0 | 429 |
| 1986 | 0 | 0 | 0 | 0 | 35 | 91 | 45 | 123 | 1 | 0 | 0 | 0 | 295 |
| 1987 | 0 | 0 | 0 | 0 | 3 | 66 | 122 | 41 | 15 | 0 | 0 | 0 | 247 |
| 1988 | 0 | 0 | 0 | 0 | 8 | 170 | 211 | 132 | 30 | 0 | 0 | 0 | 551 |
| 1989 | 0 | 0 | 0 | 0 | 0 | 30 | 222 | 82 | 0 | 0 | 0 | 0 | 334 |
| 1990 | 0 | 0 | 0 | 0 | 0 | 77 | 159 | 142 | 42 | 0 | 0 | 0 | 420 |
| 1991 | 0 | 0 | 0 | 0 | 0 | 2 | 188 | 250 | 29 | 0 | 0 | 0 | 469 |
| 1992 | 0 | 0 | 0 | 0 | 10 | 96 | 55 | 140 | 3 | 0 | 0 | 0 | 304 |
| 1993 | 0 | 0 | 0 | 0 | 2 | 24 | 15 | 23 | 0 | 0 | 0 | 0 | 64 |
| 1994 | 0 | 0 | 0 | 0 | 1 | 67 | 146 | 176 | 16 | 0 | 0 | 0 | 406 |
| 1995 | 0 | 0 | 0 | 0 | 0 | 5 | 71 | 73 | 24 | 0 | 0 | 0 | 173 |
| 1996 | 0 | 0 | 0 | 0 | 0 | 25 | 125 | 109 | 9 | 0 | 0 | 0 | |
| 1997 | 0 | 0 | 0 | 0 | 1 | 13 | 81 | 71 | 12 | 0 | 0 | 0 | 178 |
| 1998 | 0 | 0 | 0 | 0 | 0 | 0 | 161 | 124 | 72 | 0 | 0 | 0 | 357 |
| 1999 | 0 | 0 | 0 | 0 | 0 | 10 | 93 | 132 | 0 | 0 | 0 | 0 | 235 |
| 2000 | 0 | 0 | 0 | 0 | 2 | 50 | 245 | 165 | 27 | 0 | 0 | 0 | 489 |
| 2001 | 0 | 0 | 0 | 0 | 41 | 94 | 237 | 308 | 61 | 0 | 0 | 0 | 741 |
| 2002 | 0 | 0 | 0 | 0 | 15 | 71 | 238 | 29 | 30 | 0 | 0 | 0 | 383 |
| 2003 | 0 | 0 | 0 | 0 | 31 | 66 | 359 | 276 | 43 | 2 | 0 | 0 | 777 |
| 2004 | 0 | 0 | 0 | 0 | 0 | 31 | 191 | 102 | 10 | 0 | 0 | 0 | 334 |
| 2005 | 0 | 0 | 0 | 0 | 0 | 28 | 247 | 165 | 21 | 0 | 0 | 0 | 461 |
| 2006 | 0 | 0 | 0 | 0 | 31 | 69 | 332 | 163 | 33 | 0 | 0 | 0 | 628 |
| 2007 | 0 | 0 | 0 | 0 | 8 | 95 | 434 | 167 | 42 | 0 | 0 | 0 | 746 |
| 2008 | 0 | 0 | 0 | 0 | 18 | 69 | 220 | 183 | 0 | 0 | 0 | 0 | 490 |
| 2009 | 0 | 0 | 0 | 0 | 22 | 33 | 157 | 147 | 82 | 0 | 0 | 0 | 441 |

SNOWFALL (inches) 2009 HELENA (KHLN)

| YEAR | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | TOTAL |
|-----------------|-----|-----|-----|-----|------|------|------|------|------|------|-----|-----|-------|
| 1980-81 | 0.0 | 0.0 | 0.0 | 3.7 | 1.2 | 3.8 | 2.7 | 2.1 | 3.3 | 0.1 | T | 0.0 | 16.9 |
| 1981-82 | 0.0 | 0.0 | 0.0 | 5.2 | 3.4 | 6.1 | 18.4 | 4.8 | 13.9 | 4.1 | 0.8 | 0.0 | 56.7 |
| 1982-83 | 0.0 | 0.0 | 6.5 | 0.5 | 4.1 | 11.3 | 3.2 | 0.2 | 2.2 | 1.1 | 9.9 | 0.0 | 39.0 |
| 1983-84 | 0.0 | 0.0 | 6.4 | 0.0 | 1.3 | 13.0 | 1.3 | 1.5 | 5.7 | 2.3 | 0.8 | 0.0 | 32.3 |
| 1984-85 | 0.0 | 0.0 | 6.3 | 9.0 | 5.7 | 7.5 | 3.9 | 6.2 | 4.0 | 0.8 | 0.0 | 0.0 | 43.4 |
| 1985-86 | 0.0 | 0.0 | 2.9 | 8.8 | 10.4 | 8.5 | 4.2 | 15.6 | 1.2 | 11.6 | 0.2 | 0.0 | 63.4 |
| 1986-87 | 0.0 | 0.0 | 0.0 | T | 7.6 | 5.0 | 0.2 | 0.2 | 9.1 | 4.3 | 3.8 | 0.0 | 30.2 |
| 1987-88 | 0.0 | 0.0 | 0.0 | 0.3 | 0.9 | 1.2 | 4.4 | 8.0 | 5.2 | 2.9 | 0.0 | 0.0 | 22.9 |
| 1988-89 | 0.0 | 0.0 | 5.9 | 1.5 | 6.0 | 5.0 | 23.0 | 13.0 | 20.7 | 7.9 | 3.5 | T | 86.5 |
| 1989-90 | 0.0 | T | T | 2.6 | 1.8 | 9.4 | 4.3 | 1.8 | 14.0 | 0.8 | 0.1 | 0.0 | 34.8 |
| 1990-91 | 0.0 | 0.5 | 0.0 | 0.5 | 8.6 | 11.6 | 5.9 | 0.8 | 12.2 | 5.6 | 0.4 | 0.5 | 46.6 |
| 1991-92 | 0.0 | T | 0.0 | 7.3 | 8.8 | 15.7 | 4.7 | 1.3 | T | 2.2 | T | 0.0 | 40.0 |
| 1992-93 | T | 6.2 | T | 8.6 | 1.5 | 11.8 | 10.2 | 17.9 | 2.3 | 2.5 | T | 0.2 | 61.2 |
| 1993-94 | T | 0.0 | T | 4.6 | 7.3 | 1.1 | 4.4 | 5.0 | 4.4 | 8.0 | T | 0.0 | 34.8 |
| 1994-95 | 0.0 | T | 0.0 | T | 8.6 | 2.0 | 0.3 | 1.6 | 8.1 | 0.0 | 0.0 | | |
| 1995-96 | T | 0.0 | T | | 7.4 | 2.7 | 14.2 | | | | | | |
| 1996-97 | | | | | | | | | | | | | |
| 1997-98 | | | | | | | | | | | | | |
| 1998-99 | | | | | | | | | | | | | |
| 1999-00 | | | | T | | | 3.9 | 5.7 | 2.3 | | | | |
| 2000-01 | | | | | | | | | | | | | |
| 2001-02 | | | | | | | | | | | | | |
| 2002-03 | | | | | | | | | | | | | |
| 2003-04 | | | | | | | | | | 4.8 | T | 0.0 | |
| 2004-05 | 0.0 | 0.0 | T | T | 1.3 | 6.7 | 11.2 | 0.4 | 10.9 | T | 0.0 | 0.0 | 30.5 |
| 2005-06 | 0.0 | 0.0 | 0.0 | 0.0 | 3.9 | 6.5 | 1.2 | 0.9 | 6.6 | 0.2 | 0.0 | 0.0 | 19.3 |
| 2006-07 | 0.0 | 0.0 | 0.0 | 1.2 | 6.1 | 0.4 | 1.7 | 8.8 | 0.3 | 0.3 | 0.0 | 0.0 | 18.8 |
| 2007-08 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | T | 12.7 | 6.8 | 1.0 | 7.0 | T | T | 31.3 |
| 2008-09 | 0.0 | 0.0 | 0.0 | 1.2 | 0.2 | 15.9 | 5.7 | 4.7 | 8.3 | 5.7 | 0.0 | 0.2 | 41.9 |
| 2009- | 0.0 | 0.0 | 0.0 | 3.7 | 1.2 | 10.4 | | | | | | | |
| POR= 115 YRS | T | 0.1 | 1.1 | 2.9 | 6.6 | 8.2 | 9.8 | 7.5 | 8.4 | 4.9 | 1.5 | 0.1 | 51.1 |

WBAN : 24144

REFERENCE NOTES :

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| <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. 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.</p> | <p>GENERAL CONTINUED: 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. STATION HISTORY STOPPED WITH THE 2009 ANNUAL. IF YOU NEED HISTORY GO TO "MULTI-NETWORK METADATA SYSTEM", URL IS: https://mi3.ncdc.noaa.gov/mi3qry/login.cfm</p> <p>NOTE: The "Period of Record:(POR) for all "averages" is based on the "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.</p> |
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2009 HELENA MONTANA (KHLN)

Helena is located on the south side of an intermountain valley bounded on the west and south by the main chain of the Continental Divide. The valley is approximately 25 miles in width from north to south and 35 miles long from east to west. The average height of the mountains above the valley floor is about 3,000 feet.

The climate of Helena may be described as modified continental. Several factors enter into modifying the continental climate characteristics. Some of these are invasion by Pacific Ocean air masses, drainage of cool air into the valley from the surrounding mountains, and the protecting mountain shield in all directions.

The mountains to the north and east sometimes deflect shallow masses of invading cold Arctic air to the east. Following periods of extreme cold, when the return circulation of maritime air has brought warming to most of the eastern part of the state, cold air may remain trapped in the valley for several days before being replaced by warmer air. During these periods of transition from cold-to-warm temperatures, inversions are often quite pronounced.

As may be expected in a northern latitude, cold waves may occur from November through February, with temperatures occasionally dropping to zero or lower.

Summertime temperatures are moderate, with maximum readings generally under 90 degrees and very seldom reaching 100 degrees. Like all mountain stations, there is usually a marked change in temperature from day to night. During the summer this tends to produce an agreeable combination of fairly warm days and cool nights.

Most of the precipitation falls from April through July from frequent showers or thunderstorms, but usually with some steady rains in June, the wettest month of the year. Like summer, fall and winter months are relatively dry. During the April to September growing season, precipitation varies considerably.

Thunderstorms are rather frequent from May through August. Snow can be expected from September through May, but amounts during the spring and fall are usually light, and snow on the ground ordinarily lasts only a day or two. During the winter months snow may remain on the ground for several weeks at a time. There is little drifting of snow in the valley, and blizzard conditions are very infrequent.

Severe ice, sleet, and hailstorms are very seldom observed. Since 1880, only a few hailstorms have caused extensive damage in the city of Helena.

In winter, hours of sunshine are more than would be expected at a mountain location.

Due to the sheltering influence of the mountains, Foehn (Chinook) winds are not as pronounced as might be expected for a location on the eastern slopes of the Rocky Mountains. Strong winds can occur at any time throughout the year, but generally do not last more than a few hours at a time.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is September 18 and the average last occurrence in the spring is May 18.

Non-Subscription Request:

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