

1998

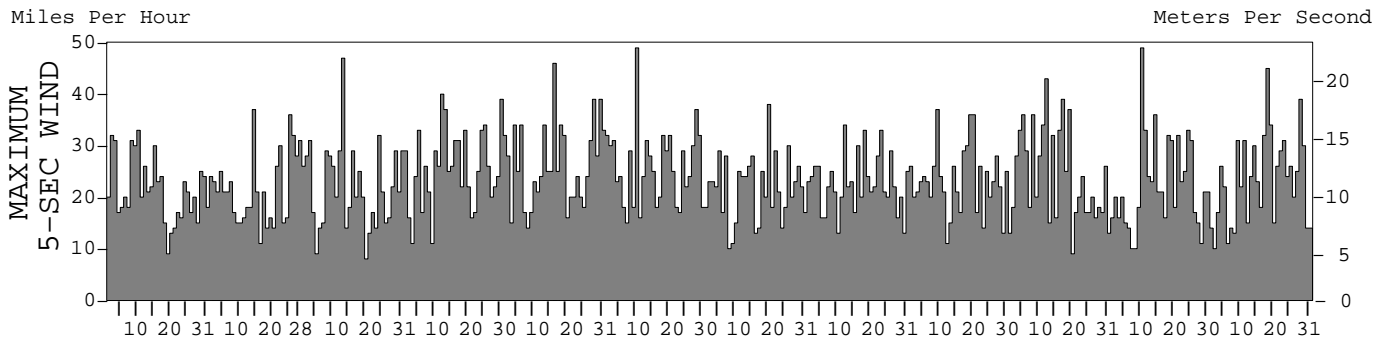
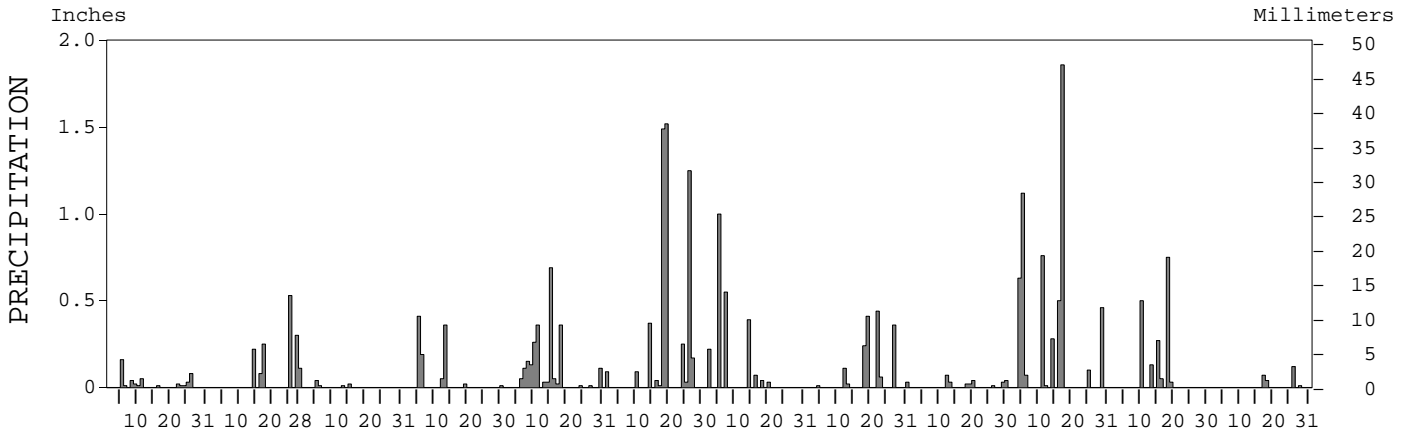
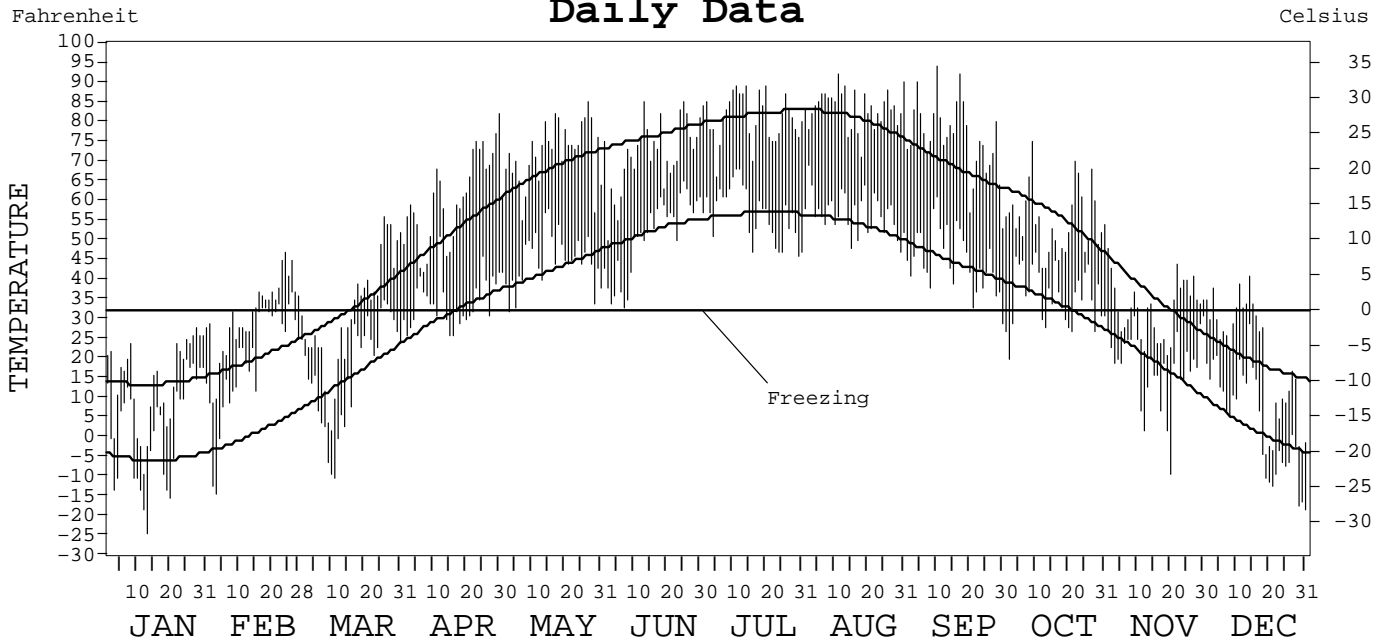
# LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



GRAND FORKS,  
NORTH DAKOTA (GFK)

ISSN -

## Daily Data



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# METEOROLOGICAL DATA FOR 1998

## 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            | 14.8  | 31.2  | 31.7  | 60.7  | 72.0  | 71.7  | 81.0  | 83.4  | 75.8  | 55.1  | 32.9  | 20.1   | 52.5      |   |
|                      | HIGHEST DAILY MAXIMUM         | 28    | 47    | 56    | 82    | 85    | 85    | 89    | 92    | 94    | 75    | 48    | 41     | 94        |   |
|                      | DATE OF OCCURRENCE            | 31+   | 24    | 26    | 30    | 27    | 25+   | 20+   | 11    | 10    | 09    | 01    | 14     | SEP 10    |   |
|                      | MEAN DAILY MINIMUM            | 2.6   | 20.2  | 17.1  | 34.4  | 44.9  | 51.1  | 56.5  | 56.7  | 44.9  | 35.7  | 18.1  | 4.3    | 32.2      |   |
|                      | LOWEST DAILY MINIMUM          | -24   | -14   | -10   | 26    | 32    | 33    | 46    | 47    | 29    | 20    | -9    | -18    | -24       |   |
|                      | DATE OF OCCURRENCE            | 13    | 03    | 11    | 16+   | 03    | 07    | 30    | 30    | 30    | 02    | 20    | 31     | JAN 13    |   |
|                      | AVERAGE DRY BULB              | 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      |   |
|                      | MEAN WET BULB                 | 8.6   | 25.1  | 22.8  | 41.7  | 51.9  | 56.8  | 63.3  | 63.2  |       | 43.0  | 25.6  | 12.0   |           |   |
|                      | MEAN DEW POINT                | 5.4   | 23.2  | 19.5  | 34.4  | 45.5  | 52.5  | 59.4  | 58.8  |       | 40.1  | 23.0  | 8.3    |           |   |
|                      | NUMBER OF DAYS WITH:          |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | MAXIMUM ≥ 90°                 | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 2     | 3     | 0     | 0      | 0         | 5 |
|                      | MAXIMUM ≤ 32°                 | 31    | 14    | 16    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 12    | 23     | 96        |   |
|                      | MINIMUM ≤ 32°                 | 31    | 23    | 28    | 15    | 1     | 0     | 0     | 0     | 1     | 11    | 30    | 31     | 171       |   |
| MINIMUM ≤ 0°         | 13                            | 3     | 4     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 1     | 13    | 34     |           |   |
| H/C                  | HEATING DEGREE DAYS           | 1740  | 1093  | 1252  | 515   | 206   | 150   | 20    | 3     | 178   | 597   | 1179  | 1630   | 8563      |   |
|                      | COOLING DEGREE DAYS           | 0     | 0     | 0     | 0     | 12    | 49    | 144   | 168   | 44    | 0     | 0     | 0      | 417       |   |
| RH                   | MEAN (PERCENT)                | 84    | 89    | 82    | 64    | 65    | 73    | 74    | 70    | 67    | 83    | 85    | 82     | 76        |   |
|                      | HOUR 06 LST                   | 85    | 92    | 90    | 84    | 83    | 88    | 92    | 92    | 88    | 93    | 89    | 83     | 88        |   |
|                      | HOUR 12 LST                   | 82    | 87    | 75    | 48    | 52    | 61    | 56    | 54    | 49    | 73    | 81    | 77     | 66        |   |
|                      | HOUR 18 LST                   | 83    | 89    | 77    | 48    | 51    | 61    | 55    | 50    | 49    | 82    | 85    | 82     | 68        |   |
|                      | HOUR 24 LST                   | 85    | 90    | 88    | 74    | 78    | 84    | 89    | 83    | 82    | 90    | 88    | 84     | 85        |   |
| S                    | PERCENT POSSIBLE SUNSHINE     |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
| W/O                  | NUMBER OF DAYS WITH:          |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | HEAVY FOG (VISBY ≤ 1/4 MI)    | 1     | 7     | 3     | 0     | 1     | 0     | 2     | 1     | 2     | 3     | 5     | 4      | 29        |   |
|                      | THUNDERSTORMS                 | 0     | 1     | 0     | 1     | 5     | 8     | 5     | 7     | 3     | 2     | 0     | 0      | 32        |   |
| 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.)     | 29.11 | 28.99 | 29.19 | 29.04 | 28.94 | 28.89 | 29.07 | 29.09 | 29.00 | 29.13 | 29.06 | 29.15  | 29.06     |   |
|                      | MEAN SEA-LEVEL PRESS. (IN.)   | 30.08 | 29.94 | 30.14 | 29.96 | 29.84 | 29.79 | 29.97 | 29.99 |       |       | 30.01 | 30.12  |           |   |
| WINDS                | RESULTANT SPEED (MPH)         | 1.4   | 2.2   | 3.8   | 2.2   | 2.3   | 1.0   | 1.9   | 0.7   | 1.3   | 0.7   | 1.6   | 4.1    | 1.0       |   |
|                      | RES. DIR. (TENS OF DEGS.)     | 27    | 15    | 34    | 06    | 32    | 24    | 28    | 20    | 26    | 02    | 34    | 29     | 31        |   |
|                      | MEAN SPEED (MPH)              | 10.5  | 10.0  | 10.5  | 10.2  | 10.0  | 9.7   | 7.9   | 7.8   | 9.1   | 10.8  | 10.5  | 10.2   | 9.8       |   |
|                      | PREVAIL. DIR. (TENS OF DEGS.) | 35    | 18    | 34    | 36    | 36    | 34    | 18    | 16    | 18    | 17    | 36    | 28     | 35        |   |
|                      | MAXIMUM 2-MINUTE WIND:        |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | SPEED (MPH)                   | 29    | 31    | 41    | 36    | 39    | 40    | 25    | 29    | 31    | 33    | 39    | 36     | 41        |   |
|                      | DIR. (TENS OF DEGS.)          | 28    | 17    | 33    | 15    | 28    | 14    | 28    | 22    | 10    | 29    | 33    | 35     | 33        |   |
|                      | DATE OF OCCURRENCE            | 08    | 14    | 13    | 12    | 16    | 10    | 20+   | 12    | 19    | 12    | 10    | 18     | MAR 13    |   |
|                      | MAXIMUM 5-SECOND WIND:        |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | SPEED (MPH)                   | 33    | 37    | 47    | 40    | 46    | 49    | 38    | 34    | 37    | 43    | 49    | 45     | 49        |   |
| DIR. (TENS OF DEGS.) | 28                            | 17    | 33    | 15    | 29    | 14    | 32    | 22    | 18    | 30    | 34    | 34    | 34     |           |   |
| DATE OF OCCURRENCE   | 10                            | 14    | 13    | 12    | 16    | 10    | 20    | 12    | 09    | 12    | 10    | 18    | NOV 10 |           |   |
| PRECIPITATION        | WATER EQUIVALENT:             |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | TOTAL (IN.)                   | 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     |   |
|                      | GREATEST 24-HOUR (IN.)        | 0.16  | 0.53  | 0.04  | 0.59  | 0.69  | 2.96  | 1.00  | 0.44  | 0.07  | 1.86  | 0.75  | 0.12   | 2.96      |   |
|                      | DATE OF OCCURRENCE            | 05    | 25    | 05    | 05-06 | 15    | 18-19 | 05    | 22    | 29-30 | 17    | 18    | 26     | JUN 18-19 |   |
|                      | NUMBER OF DAYS WITH:          |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | PRECIPITATION ≥ 0.01          | 12    | 6     | 4     | 6     | 15    | 11    | 7     | 9     | 8     | 10    | 6     | 4      | 98        |   |
| PRECIPITATION ≥ 0.10 | 1                             | 5     | 0     | 3     | 8     | 6     | 4     | 5     | 0     | 8     | 4     | 1     | 45     |           |   |
| PRECIPITATION ≥ 1.00 | 0                             | 0     | 0     | 0     | 0     | 3     | 1     | 0     | 0     | 2     | 0     | 0     | 6      |           |   |
| SNOWFALL             | SNOW, ICE PELLETS, HAIL:      |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
|                      | TOTAL (IN.)                   | 12.7  | 7.0   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 22.4  | 5.6    | 50.4      |   |
|                      | GREATEST 24-HOUR (IN.)        | 3.1   | 3.3   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 12.4  | 2.9    | 12.4      |   |
|                      | DATE OF OCCURRENCE            | 05    | 27    | 05    |       |       |       |       |       |       |       | 18    | 26     | NOV 18    |   |
|                      | MAXIMUM SNOW DEPTH (IN.)      | 12    | 10    | 4     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 16    | 7      | 16        |   |
|                      | DATE OF OCCURRENCE            | 27+   | 15    | 01    |       |       |       |       |       |       |       | 20+   | 31+    | NOV 20+   |   |
| NUMBER OF DAYS WITH: |                               |       |       |       |       |       |       |       |       |       |       |       |        |           |   |
| SNOWFALL ≥ 1.0       | 4                             | 3     | 1     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 3     | 3     | 14     |           |   |

# 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

| ELEMENT                                 |  | POR  | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   | OCT   | NOV   | DEC   | YEAR     |          |
|---|--|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----------|
| TEMPERATURE °F                          | NORMAL DAILY MAXIMUM   | 0    | .0    | .0    | .0    | .0    | .0    | .0    | .0    | .0    | .0    | .0    | .0    | .0    | 0.0      |          |
|   | MEAN DAILY MAXIMUM   | 1    | 14.8  | 31.2  | 31.7  | 60.7  | 72.0  | 71.7  | 81.0  | 83.4  | 75.8  | 55.1  | 32.9  | 20.1  | 52.5     |          |
|   | HIGHEST DAILY MAXIMUM  | 1    | 28    | 47    | 56    | 82    | 85    | 85    | 89    | 92    | 94    | 75    | 48    | 41    | 94       |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998     | SEP 1998 |
|   | MEAN OF EXTREME MAXS.  | 1    | 28.0  | 47.0  | 56.0  | 82.0  | 85.0  | 85.0  | 89.0  | 92.0  | 94.0  | 75.0  | 48.0  | 41.0  | 68.5     |          |
|   | NORMAL DAILY MINIMUM   | 0    |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | MEAN DAILY MINIMUM   | 1    | 2.6   | 20.2  | 17.1  | 34.4  | 44.9  | 51.1  | 56.5  | 56.7  | 44.9  | 35.7  | 18.1  | 4.3   | 32.2     |          |
|   | LOWEST DAILY MINIMUM   | 1    | -24   | -14   | -10   |       |       |       |       |       |       |       | -9    | -18   |          |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  |       |       |       |       |       |       |       | 1998  | 1998  |          | JAN 1998 |
|   | MEAN OF EXTREME MINS.  | 1    | -24.0 | -14.0 | -10.0 | 26.0  | 32.0  | 33.0  | 46.0  | 47.0  | 29.0  | 20.0  | -9.0  | -18.0 |          | 13.2     |
|   | NORMAL DRY BULB  | 30   |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | MEAN DRY BULB  | 1    | 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     |          |
|   | MEAN WET BULB  | 1    | 8.6   | 25.1  | 22.8  | 41.7  | 51.9  | 56.8  | 63.3  | 63.2  |       | 43.0  | 25.6  | 12.0  |          |          |
|   | MEAN DEW POINT   | 1    | 5.4   | 23.2  | 19.5  | 34.4  | 45.5  | 52.5  | 59.4  | 58.8  |       | 40.1  | 23.0  | 8.3   |          |          |
|   | NORMAL NO. DAYS WITH:<br>MAXIMUM ≥ 90°<br>MAXIMUM ≤ 32°<br>MINIMUM ≤ 32°<br>MINIMUM ≤ 0° |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
| H/C                                     | NORMAL HEATING DEG. DAYS   | 30   |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | NORMAL COOLING DEG. DAYS   | 30   |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
| RH                                      | NORMAL (PERCENT)   |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | HOUR 06 LST  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | HOUR 12 LST  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | HOUR 18 LST  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | HOUR 24 LST  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
| S                                       | PERCENT POSSIBLE SUNSHINE  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
| W/O                                     | MEAN NO. DAYS WITH:<br>HEAVY FOG (VISBY ≤ 1/4 MI)  | 1    | 1.0   | 7.0   | 3.0   | 0.0   | 1.0   | 0.0   | 2.0   | 1.0   | 2.0   | 3.0   | 5.0   | 4.0   | 29.0     |          |
|   | THUNDERSTORMS  | 1    | 0.0   | 1.0   | 0.0   | 1.0   | 5.0   | 8.0   | 5.0   | 7.0   | 3.0   | 2.0   | 0.0   | 0.0   | 32.0     |          |
| CLOUDINESS                              | MEAN:<br>SUNRISE-SUNSET (OKTAS)  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | MIDNIGHT-MIDNIGHT (OKTAS)  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | MEAN NO. DAYS WITH:<br>CLEAR   |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | PARTLY CLOUDY<br>CLOUDY  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
| PR                                      | MEAN STATION PRESSURE (IN)   | 1    | 29.11 | 28.99 | 29.19 | 29.04 | 28.94 | 28.89 | 29.07 | 29.09 | 29.00 | 29.13 | 29.06 | 29.15 | 29.06    |          |
|   | MEAN SEA-LEVEL PRES. (IN)  | 1    | 30.08 | 29.94 | 30.14 | 29.96 | 29.84 | 29.79 | 29.97 | 29.99 |       |       | 30.01 | 30.12 |          |          |
| WINDS                                   | MEAN SPEED (MPH)   | 1    | 10.5  | 10.0  | 10.5  | 10.2  | 10.0  | 9.7   | 7.9   | 7.8   | 9.1   | 10.8  | 10.5  | 10.2  | 9.8      |          |
|   | PREVAIL. DIR (TENS OF DEGS)  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | MAXIMUM 2-MINUTE:<br>SPEED (MPH)   | 1    | 29    | 31    | 41    | 36    | 39    | 40    | 25    | 29    | 31    | 33    | 39    | 36    | 41       |          |
|   | DIR. (TENS OF DEGS)  |      | 28    | 17    | 33    | 15    | 28    | 14    | 28    | 22    | 10    | 29    | 33    | 35    | 33       |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998     | MAR 1998 |
|   | MAXIMUM 5-SECOND:<br>SPEED (MPH)   | 1    | 33    | 37    | 47    | 40    | 46    | 49    | 38    | 34    | 37    | 43    | 49    | 45    | 49       |          |
|   | DIR. (TENS OF DEGS)  |      | 28    | 17    | 33    | 15    | 29    | 14    | 32    | 22    | 18    | 30    | 34    | 34    | 34       |          |
| YEAR OF OCCURRENCE                      |  | 1998 | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | NOV 1998 |          |
| PRECIPITATION                           | NORMAL (IN)  | 30   |       |       |       |       |       |       |       |       |       |       |       |       | 0.00     |          |
|   | MAXIMUM MONTHLY (IN)   | 1    | 0.45  | 1.49  | 0.08  | 1.04  | 2.37  | 5.31  | 2.30  | 1.68  | 0.26  | 5.79  | 1.73  | 0.24  | 5.79     |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998     | OCT 1998 |
|   | MINIMUM MONTHLY (IN)   | 0    |       |       |       |       |       |       |       |       |       |       |       |       | 0.00     |          |
|   | YEAR OF OCCURRENCE   |      |       |       |       |       |       |       |       |       |       |       |       |       |          | DEC      |
|   | MAXIMUM IN 24 HOURS (IN)   | 1    | 0.16  | 0.53  | 0.04  | 0.59  | 0.69  | 2.96  | 1.00  | 0.44  | 0.07  | 1.86  | 0.75  | 0.12  | 2.96     |          |
| YEAR OF OCCURRENCE                      |  | 1998 | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | 1998  | JUN 1998 |          |
| SNOWFALL                                | NORMAL (IN)  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |
|   | MAXIMUM MONTHLY (IN)   | 1    | 12.7  | 7.0   | 2.7   |       |       |       |       |       |       |       | 22.4  | 5.6   | 22.4     |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  |       |       |       |       |       |       |       | 1998  | 1998  | 1998     | NOV 1998 |
|   | MAXIMUM IN 24 HOURS (IN)   | 1    | 3.1   | 3.3   | 1.0   |       |       |       |       |       |       |       | 12.4  | 2.9   | 12.4     |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  |       |       |       |       |       |       |       | 1998  | 1998  | 1998     | NOV 1998 |
|   | MAXIMUM SNOW DEPTH (IN)  | 1    | 12    | 10    | 4     |       |       |       |       |       |       |       | 16    | 7     | 16       |          |
|   | YEAR OF OCCURRENCE   |      | 1998  | 1998  | 1998  |       |       |       |       |       |       |       | 1998  | 1998  | 1998     | NOV 1998 |
| NORMAL NO. DAYS WITH:<br>SNOWFALL ≥ 1.0 |  |      |       |       |       |       |       |       |       |       |       |       |       |       |          |          |

PRECIPITATION (inches) 1998 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  |
| POR=<br>1 YRS | 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  |

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AVERAGE TEMPERATURE (°F) 1998 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   |
| POR=<br>1 YRS | 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   |

HEATING DEGREE DAYS (base 65°F) 1998 GRAND FORKS, ND (GFK)

| YEAR             | JUL | AUG | SEP | OCT | NOV  | DEC  | JAN  | FEB  | MAR  | APR | MAY | JUN | TOTAL |
|------------------|-----|-----|-----|-----|------|------|------|------|------|-----|-----|-----|-------|
| 1997-98<br>1998- | 20  | 3   | 178 | 597 | 1179 | 1630 | 1740 | 1093 | 1252 | 515 | 206 | 150 |       |

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COOLING DEGREE DAYS (base 65°F) 1998 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    |

SNOWFALL (inches) 1998 GRAND FORKS, ND (GFK)

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

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REFERENCE NOTES :

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| <p>PAGE 1:<br/>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:<br/>H/C INDICATES HEATING AND COOLING DEGREE DAYS.<br/>RH INDICATES RELATIVE HUMIDITY<br/>W/O INDICATES WEATHER AND OBSTRUCTIONS<br/>S INDICATES SUNSHINE.<br/>PR INDICATES PRESSURE.<br/>CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).</p> <p>GENERAL:<br/>T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.<br/>+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.<br/>BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.<br/>NORMALS ARE 30-YEAR AVERAGES (1961 - 1990).<br/>ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.<br/>PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.<br/>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.<br/>WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.<br/>0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.<br/>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.<br/>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:<br/>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.<br/>WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH.<br/>RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.<br/>AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.<br/>SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL.<br/>A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F.<br/>DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.<br/>DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.<br/>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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1998  
GRAND FORKS,  
NORTH DAKOTA (GFK)

No narrative available

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