

**WACO-MADISON COOPER TX**

Latitude = 31.62 N

WMO No. 722560

Longitude = 97.22 W

Elevation = 509 feet

Period of Record = 1973 to 1996

Average Pressure = 29.45 inches Hg

**Design Criteria Data**

|                                                  | <b>Design Value</b> | Mean Coincident (Average) Values |                         |                        |                             |
|--------------------------------------------------|---------------------|----------------------------------|-------------------------|------------------------|-----------------------------|
|                                                  |                     | Wet Bulb Temperature (°F)        | Humidity Ratio (gr/lb)  | Wind Speed (mph)       | Prevailing Direction (NSEW) |
| <b>Dry Bulb Temperature (T)</b>                  | <b>(°F)</b>         |                                  |                         |                        |                             |
| Median of Extreme Highs                          | 103                 | 75                               | 89                      | 10.3                   | S                           |
| 0.4% Occurrence                                  | 101                 | 75                               | 93                      | 11.2                   | S                           |
| 1.0% Occurrence                                  | 99                  | 75                               | 96                      | 11.2                   | S                           |
| 2.0% Occurrence                                  | 97                  | 75                               | 99                      | 11.6                   | S                           |
| Mean Daily Range                                 | 21                  | -                                | -                       | -                      | -                           |
| 97.5% Occurrence                                 | 31                  | 29                               | 19                      | 9.5                    | N                           |
| 99.0% Occurrence                                 | 26                  | 24                               | 14                      | 10.6                   | N                           |
| 99.6% Occurrence                                 | 21                  | 19                               | 11                      | 11.8                   | N                           |
| Median of Extreme Lows                           | 17                  | 15                               | 9                       | 12.3                   | N                           |
|                                                  | <b>Design Value</b> | Mean Coincident (Average) Values |                         |                        |                             |
|                                                  |                     | Dry Bulb Temperature (°F)        | Humidity Ratio (gr/lb)  | Wind Speed (mph)       | Prevailing Direction (NSEW) |
| <b>Wet Bulb Temperature (T<sub>wb</sub>)</b>     | <b>(°F)</b>         |                                  |                         |                        |                             |
| Median of Extreme Highs                          | 81                  | 94                               | 141                     | 12.0                   | S                           |
| 0.4% Occurrence                                  | 79                  | 93                               | 129                     | 11.8                   | S                           |
| 1.0% Occurrence                                  | 78                  | 92                               | 124                     | 11.7                   | S                           |
| 2.0% Occurrence                                  | 77                  | 91                               | 120                     | 11.8                   | S                           |
|                                                  | <b>Design Value</b> | Mean Coincident (Average) Values |                         |                        |                             |
|                                                  |                     | Dry Bulb Temperature (°F)        | Vapor Pressure (in. Hg) | Wind Speed (mph)       | Prevailing Direction (NSEW) |
| <b>Humidity Ratio (HR)</b>                       | <b>(gr/lb)</b>      |                                  |                         |                        |                             |
| Median of Extreme Highs                          | 144                 | 87                               | 0.94                    | 13.3                   | S                           |
| 0.4% Occurrence                                  | 135                 | 84                               | 0.88                    | 12.5                   | S                           |
| 1.0% Occurrence                                  | 133                 | 81                               | 0.88                    | 9.1                    | S                           |
| 2.0% Occurrence                                  | 130                 | 82                               | 0.85                    | 11.2                   | S                           |
| <b>Air Conditioning/<br/>Humid Area Criteria</b> | <b># of Hours</b>   | T ≥ 93°F                         | T ≥ 80°F                | T <sub>wb</sub> ≥ 73°F | T <sub>wb</sub> ≥ 67°F      |
|                                                  |                     | 446                              | 2062                    | 1889                   | 3503                        |

**Other Site Data**

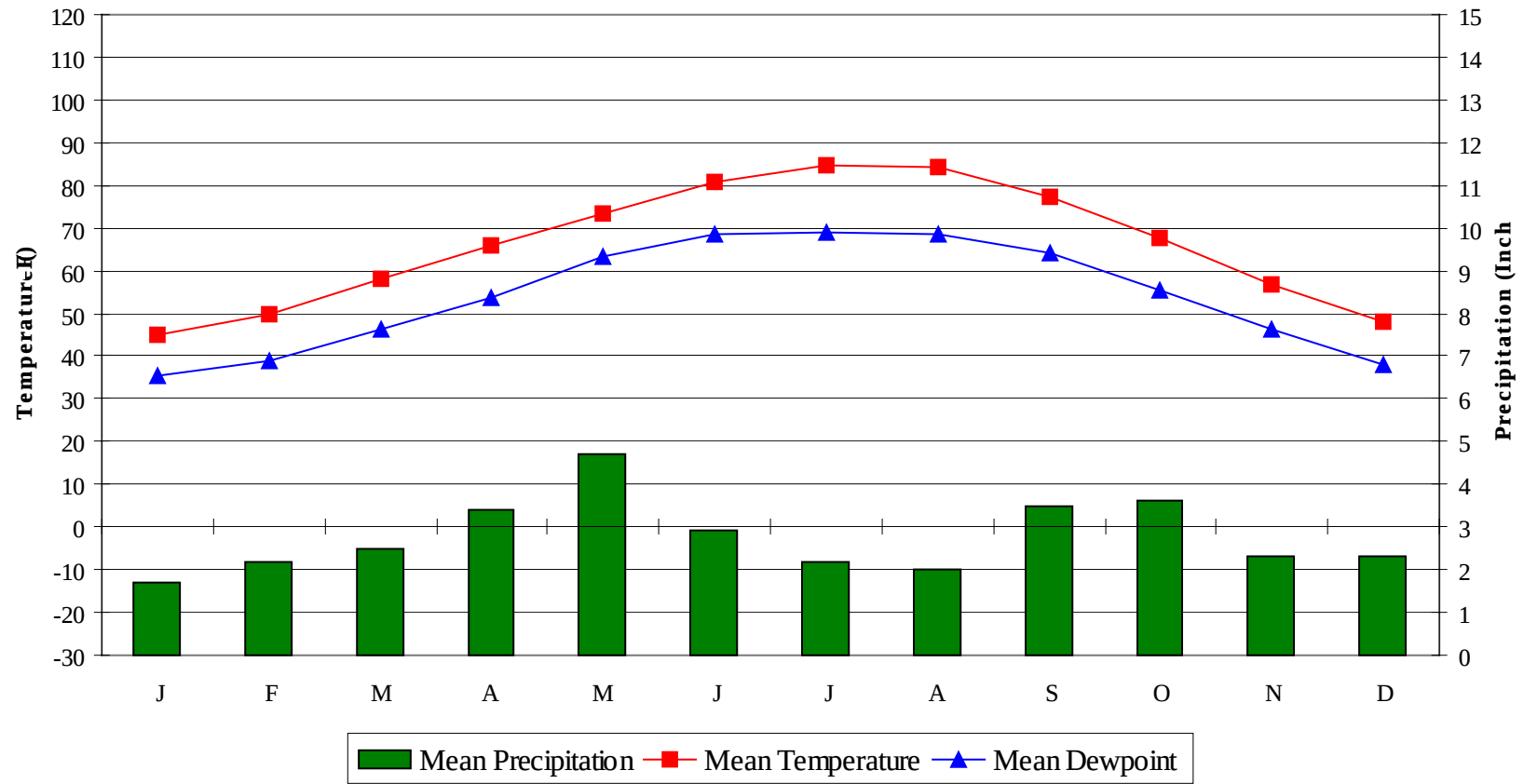
| Weather Region                                   | Rain Rate<br>100 Year Recurrence<br>(in./hr) | Basic Wind Speed<br>3 sec gust @ 33 ft<br>50 Year Recurrence (mph) | Ventilation Cooling Load Index<br>(Ton-hr/cfm/yr) Base 75°F-RH 60%<br>Latent + Sensible |
|--------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 11                                               | 4.0                                          | 90                                                                 | 5.5 + 2.5                                                                               |
| Ground Water Temperature (°F)<br>50 Foot Depth * | Frost Depth<br>50 Year Recurrence<br>(in.)   | Ground Snow Load<br>50 Year Recurrence<br>(lb/ft <sup>2</sup> )    | Average Annual<br>Freeze-Thaw Cycles<br>(#)                                             |
| 68.5                                             | 6                                            | 2                                                                  | 22                                                                                      |

\*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

WACO-MADISON COOPER TX

WMO No. 722560

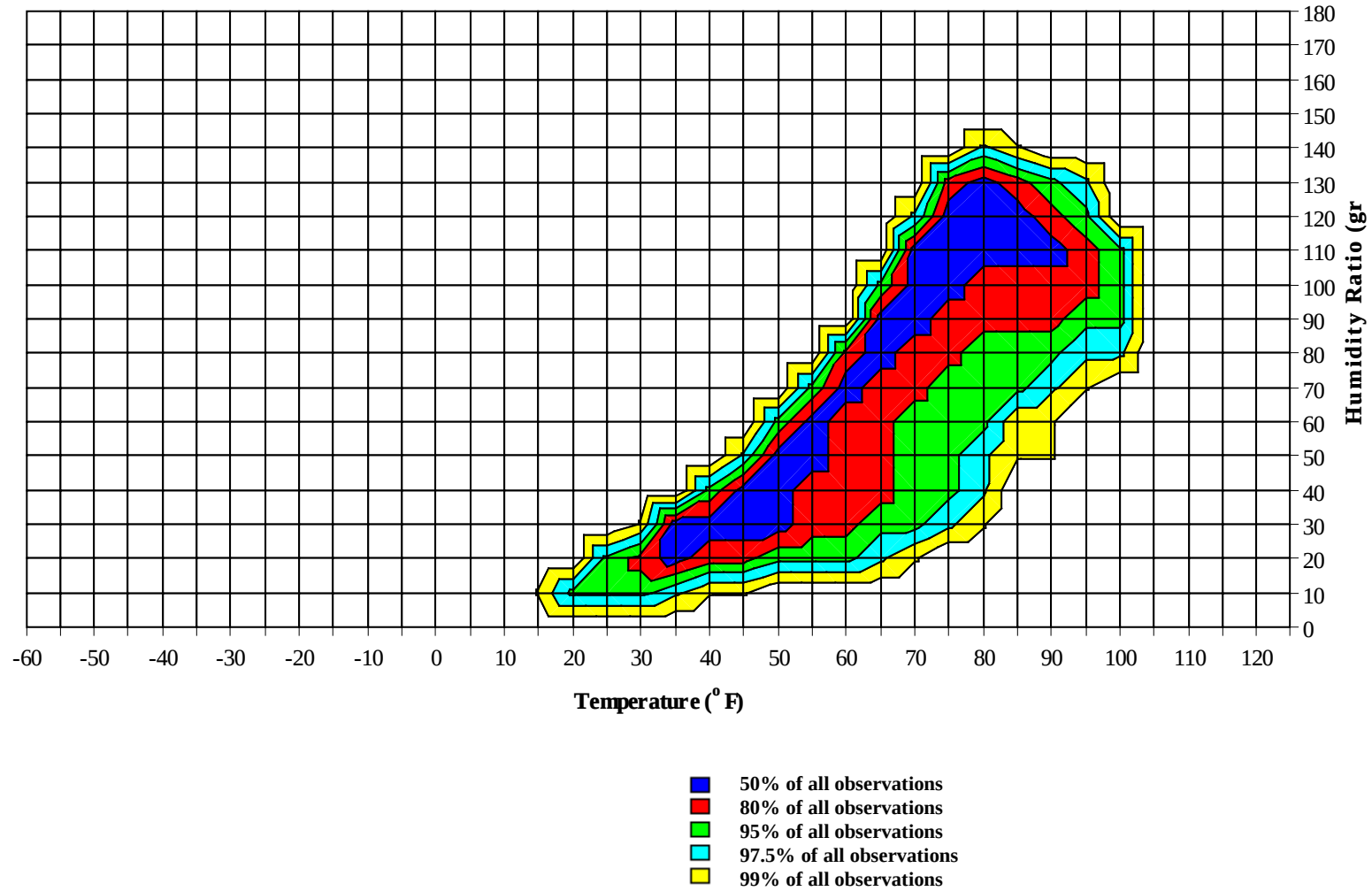
### Average Annual Climate



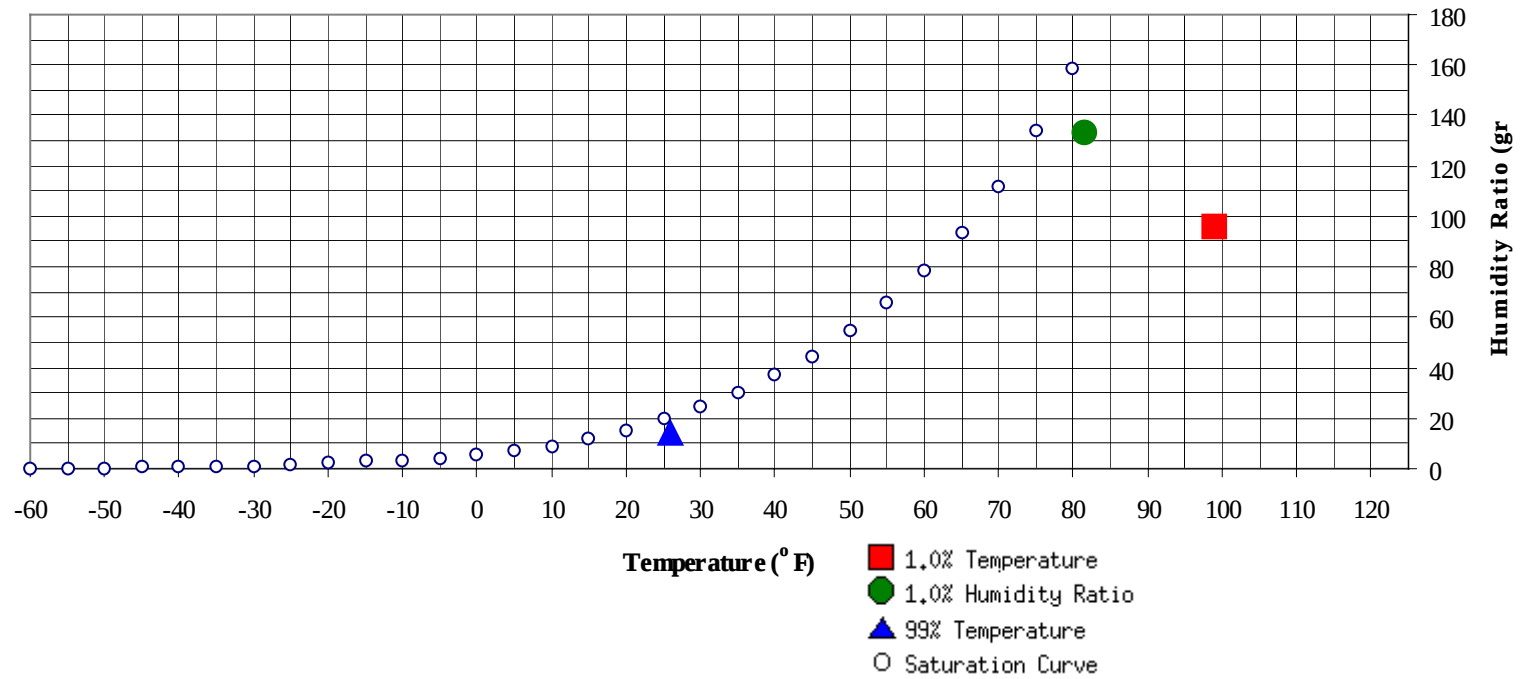
WACO-MADISON COOPER TX

WMO No. 722560

### Long Term Psychrometric Summary



## Psychrometric Summary of Peak Design Values



|              | (°F) | MCHR<br>(gr/lb) | Enthalpy<br>(btu/lb) | 1.0% Humidity<br>Ratio | (gr/lb) | MCDB<br>(°F) | MCWB<br>(°F) | MC Dewpt<br>(°F) | Enthalpy<br>(btu/lb) |
|--------------|------|-----------------|----------------------|------------------------|---------|--------------|--------------|------------------|----------------------|
| 99% Dry Bulb | 26   | 14.2            | 8.4                  |                        | 133     | 81.5         | 76.7         | 75               | 40.4                 |

|               | (°F) | MCHR<br>(gr/lb) | MCWB<br>(°F) | Enthalpy<br>(btu/lb) |
|---------------|------|-----------------|--------------|----------------------|
| 1.0% Dry Bulb | 99   | 95.9            | 75.4         | 38.9                 |

**WACO-MADISON COOPER TX**

WMO No. 722560

**Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)**

Period of Record = 1973 to 1996

| Temperature<br>Range<br>(°F) | January             |                |                |              |                          | February            |                |                |              |                          | March               |                |                |              |                          |
|------------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|
|                              | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) |
|                              | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          |
| 105 / 109                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 100 / 104                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 95 / 99                      |                     |                |                |              |                          |                     | 0              |                | 0            | 63.5                     |                     | 0              |                | 0            | 62.5                     |
| 90 / 94                      |                     |                |                |              |                          |                     | 0              | 0              | 0            | 62.6                     |                     | 1              | 0              | 1            | 64.5                     |
| 85 / 89                      |                     |                |                |              |                          |                     | 1              | 0              | 2            | 61.3                     |                     | 3              | 1              | 3            | 64.2                     |
| 80 / 84                      |                     | 0              |                | 0            | 60.2                     |                     | 3              | 1              | 4            | 60.9                     |                     | 12             | 3              | 16           | 64.6                     |
| 75 / 79                      |                     | 4              | 0              | 5            | 60.1                     |                     | 11             | 3              | 14           | 60.3                     |                     | 26             | 14             | 40           | 63.8                     |
| 70 / 74                      |                     | 11             | 3              | 13           | 58.6                     | 0                   | 18             | 9              | 27           | 59.2                     | 7                   | 39             | 31             | 77           | 62.1                     |
| 65 / 69                      | 3                   | 18             | 10             | 32           | 57.8                     | 6                   | 25             | 20             | 51           | 57.9                     | 25                  | 42             | 43             | 110          | 59.8                     |
| 60 / 64                      | 8                   | 23             | 18             | 50           | 55.3                     | 14                  | 28             | 27             | 69           | 55.0                     | 33                  | 39             | 39             | 111          | 55.8                     |
| 55 / 59                      | 13                  | 29             | 26             | 68           | 51.1                     | 20                  | 27             | 32             | 80           | 51.6                     | 36                  | 34             | 39             | 110          | 51.4                     |
| 50 / 54                      | 19                  | 30             | 36             | 85           | 47.1                     | 29                  | 29             | 32             | 90           | 47.1                     | 44                  | 23             | 33             | 100          | 47.5                     |
| 45 / 49                      | 32                  | 37             | 39             | 107          | 42.8                     | 35                  | 25             | 34             | 94           | 43.2                     | 37                  | 13             | 20             | 71           | 43.5                     |
| 40 / 44                      | 38                  | 33             | 40             | 110          | 38.5                     | 39                  | 22             | 27             | 87           | 38.9                     | 32                  | 9              | 14             | 55           | 39.0                     |
| 35 / 39                      | 51                  | 29             | 38             | 119          | 34.4                     | 36                  | 15             | 22             | 73           | 34.3                     | 21                  | 4              | 6              | 31           | 34.5                     |
| 30 / 34                      | 46                  | 19             | 23             | 88           | 30.1                     | 26                  | 9              | 10             | 44           | 29.9                     | 9                   | 2              | 3              | 13           | 29.8                     |
| 25 / 29                      | 23                  | 8              | 10             | 41           | 25.1                     | 12                  | 4              | 6              | 22           | 25.3                     | 4                   | 1              | 1              | 6            | 24.6                     |
| 20 / 24                      | 9                   | 4              | 4              | 17           | 20.5                     | 5                   | 2              | 2              | 10           | 20.7                     | 1                   | 0              | 0              | 1            | 19.8                     |
| 15 / 19                      | 5                   | 1              | 1              | 7            | 15.9                     | 2                   | 1              | 1              | 4            | 16.4                     | 0                   |                |                | 0            | 16.3                     |
| 10 / 14                      | 1                   | 0              | 0              | 1            | 10.8                     | 0                   |                |                | 0            | 11.3                     |                     |                |                |              |                          |
| 5 / 9                        | 0                   |                |                | 0            | 6.7                      | 0                   |                |                | 0            | 5.8                      |                     |                |                |              |                          |
| 0 / 4                        |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| -5 / -1                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |

**Caution:** This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

**WACO-MADISON COOPER TX**

WMO No. 722560

**Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)**
**Period of Record = 1973 to 1996**

| Temperature<br>Range<br>(°F) | April               |                |                |              |                          | May                 |                |                |              |                          | June                |                |                |              |                          |
|------------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|
|                              | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) |
|                              | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          |
| 105 / 109                    |                     |                |                |              |                          |                     |                |                |              |                          |                     | 0              | 0              | 0            | 77.2                     |
| 100 / 104                    |                     |                |                |              |                          |                     | 0              | 0              | 0            | 76.3                     |                     | 2              | 1              | 3            | 77.1                     |
| 95 / 99                      |                     | 0              |                | 0            | 76.0                     |                     | 2              | 0              | 2            | 76.6                     |                     | 22             | 7              | 29           | 76.6                     |
| 90 / 94                      |                     | 3              | 0              | 3            | 70.1                     |                     | 17             | 5              | 22           | 74.5                     |                     | 64             | 28             | 93           | 75.7                     |
| 85 / 89                      |                     | 12             | 3              | 15           | 68.7                     |                     | 46             | 18             | 63           | 72.8                     | 0                   | 68             | 44             | 112          | 74.2                     |
| 80 / 84                      |                     | 33             | 14             | 47           | 67.5                     | 2                   | 63             | 39             | 104          | 71.1                     | 22                  | 47             | 65             | 134          | 73.2                     |
| 75 / 79                      | 1                   | 51             | 34             | 87           | 65.9                     | 31                  | 58             | 60             | 148          | 69.7                     | 96                  | 22             | 53             | 171          | 72.1                     |
| 70 / 74                      | 26                  | 52             | 55             | 133          | 64.4                     | 71                  | 35             | 56             | 162          | 67.4                     | 76                  | 10             | 30             | 116          | 69.2                     |
| 65 / 69                      | 52                  | 36             | 47             | 135          | 61.4                     | 63                  | 17             | 39             | 119          | 63.7                     | 33                  | 2              | 11             | 46           | 65.2                     |
| 60 / 64                      | 44                  | 25             | 37             | 107          | 56.9                     | 44                  | 7              | 20             | 72           | 59.6                     | 10                  | 0              | 1              | 12           | 60.0                     |
| 55 / 59                      | 41                  | 16             | 25             | 82           | 52.4                     | 25                  | 2              | 8              | 36           | 54.8                     | 4                   |                | 0              | 4            | 55.8                     |
| 50 / 54                      | 37                  | 7              | 15             | 60           | 48.3                     | 10                  | 1              | 2              | 13           | 50.6                     |                     |                |                |              |                          |
| 45 / 49                      | 22                  | 2              | 7              | 31           | 43.9                     | 3                   |                |                | 3            | 46.0                     |                     |                |                |              |                          |
| 40 / 44                      | 10                  | 1              | 2              | 13           | 39.6                     | 0                   |                | 0              | 0            | 41.7                     |                     |                |                |              |                          |
| 35 / 39                      | 4                   | 0              | 1              | 5            | 35.3                     | 0                   |                |                | 0            | 37.0                     |                     |                |                |              |                          |
| 30 / 34                      | 1                   |                | 0              | 1            | 30.5                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 25 / 29                      | 0                   |                |                | 0            | 26.0                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 20 / 24                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 15 / 19                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 10 / 14                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 5 / 9                        |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 0 / 4                        |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| -5 / -1                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |

**Caution:** This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

**WACO-MADISON COOPER TX**

WMO No. 722560

**Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)**
**Period of Record = 1973 to 1996**

| Temperature<br>Range<br>(°F) | July                |                |                |              |                          | August              |                |                |              |                          | September           |                |                |              |                          |
|------------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|
|                              | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) |
|                              | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          |
| 105 / 109                    |                     | 1              | 0              | 1            | 74.6                     |                     | 1              | 0              | 1            | 76.2                     |                     |                |                |              |                          |
| 100 / 104                    |                     | 20             | 6              | 26           | 75.0                     |                     | 22             | 6              | 28           | 75.5                     |                     | 2              | 0              | 3            | 75.7                     |
| 95 / 99                      |                     | 63             | 26             | 89           | 75.5                     |                     | 63             | 25             | 88           | 75.3                     |                     | 21             | 5              | 26           | 74.9                     |
| 90 / 94                      |                     | 74             | 45             | 119          | 75.3                     | 0                   | 66             | 40             | 106          | 74.8                     |                     | 48             | 17             | 65           | 74.3                     |
| 85 / 89                      | 4                   | 51             | 59             | 114          | 74.4                     | 3                   | 52             | 60             | 114          | 74.0                     | 0                   | 54             | 32             | 86           | 72.8                     |
| 80 / 84                      | 64                  | 25             | 62             | 151          | 73.7                     | 62                  | 28             | 63             | 153          | 73.4                     | 12                  | 47             | 50             | 109          | 71.8                     |
| 75 / 79                      | 128                 | 10             | 38             | 176          | 72.7                     | 118                 | 12             | 40             | 170          | 72.3                     | 72                  | 31             | 57             | 160          | 71.0                     |
| 70 / 74                      | 45                  | 2              | 10             | 57           | 70.1                     | 52                  | 3              | 14             | 69           | 69.4                     | 71                  | 19             | 39             | 129          | 67.9                     |
| 65 / 69                      | 7                   | 0              | 1              | 8            | 64.7                     | 10                  | 0              | 1              | 12           | 64.4                     | 33                  | 8              | 19             | 60           | 62.4                     |
| 60 / 64                      | 1                   |                |                | 1            | 60.4                     | 3                   |                | 0              | 3            | 60.2                     | 25                  | 5              | 13             | 43           | 58.1                     |
| 55 / 59                      |                     |                |                |              |                          | 0                   |                |                | 0            | 56.2                     | 16                  | 2              | 6              | 25           | 53.7                     |
| 50 / 54                      |                     |                |                |              |                          | 0                   |                |                | 0            | 53.0                     | 9                   | 0              | 2              | 11           | 49.5                     |
| 45 / 49                      |                     |                |                |              |                          |                     |                |                |              |                          | 3                   | 0              | 0              | 4            | 45.4                     |
| 40 / 44                      |                     |                |                |              |                          |                     |                |                |              |                          | 0                   |                |                | 0            | 41.3                     |
| 35 / 39                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 30 / 34                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 25 / 29                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 20 / 24                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 15 / 19                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 10 / 14                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 5 / 9                        |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 0 / 4                        |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| -5 / -1                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |

**Caution:** This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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WMO No. 722560

**Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)**
**Period of Record = 1973 to 1996**

| Temperature<br>Range<br>(°F) | October             |                |                |              |                          | November            |                |                |              |                          | December            |                |                |              |                          |
|------------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|---------------------|----------------|----------------|--------------|--------------------------|
|                              | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) |
|                              | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          |
| 105 / 109                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 100 / 104                    |                     | 0              |                | 0            | 72.3                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 95 / 99                      |                     | 2              | 0              | 2            | 71.9                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 90 / 94                      |                     | 11             | 2              | 12           | 70.8                     |                     | 0              |                | 0            | 66.0                     |                     |                |                |              |                          |
| 85 / 89                      |                     | 30             | 7              | 37           | 70.2                     |                     | 3              | 0              | 3            | 69.0                     |                     | 0              |                | 0            | 61.0                     |
| 80 / 84                      | 1                   | 45             | 18             | 65           | 68.2                     |                     | 12             | 1              | 14           | 67.1                     |                     | 1              | 0              | 1            | 61.7                     |
| 75 / 79                      | 13                  | 46             | 40             | 100          | 67.0                     | 1                   | 24             | 9              | 34           | 66.4                     |                     | 6              | 1              | 7            | 62.5                     |
| 70 / 74                      | 34                  | 41             | 51             | 126          | 64.8                     | 13                  | 35             | 26             | 74           | 64.6                     | 0                   | 18             | 5              | 23           | 61.5                     |
| 65 / 69                      | 47                  | 32             | 48             | 127          | 61.6                     | 21                  | 32             | 33             | 86           | 60.9                     | 10                  | 23             | 16             | 50           | 60.2                     |
| 60 / 64                      | 47                  | 20             | 36             | 103          | 57.4                     | 23                  | 33             | 35             | 91           | 56.2                     | 12                  | 30             | 24             | 67           | 55.8                     |
| 55 / 59                      | 37                  | 11             | 24             | 73           | 53.0                     | 32                  | 32             | 37             | 101          | 51.7                     | 16                  | 32             | 30             | 79           | 51.2                     |
| 50 / 54                      | 36                  | 4              | 13             | 53           | 48.6                     | 42                  | 30             | 38             | 109          | 47.7                     | 24                  | 38             | 39             | 101          | 47.1                     |
| 45 / 49                      | 20                  | 2              | 7              | 29           | 44.7                     | 34                  | 19             | 29             | 82           | 43.4                     | 35                  | 32             | 44             | 111          | 43.0                     |
| 40 / 44                      | 10                  | 1              | 2              | 12           | 40.4                     | 29                  | 10             | 18             | 58           | 39.1                     | 45                  | 28             | 38             | 111          | 38.8                     |
| 35 / 39                      | 2                   | 0              | 1              | 3            | 35.0                     | 26                  | 4              | 9              | 40           | 34.7                     | 45                  | 20             | 26             | 91           | 34.4                     |
| 30 / 34                      | 1                   |                | 0              | 1            | 29.5                     | 13                  | 2              | 5              | 20           | 30.4                     | 33                  | 9              | 15             | 57           | 29.7                     |
| 25 / 29                      | 0                   |                | 0              | 0            | 26.2                     | 4                   | 1              | 1              | 6            | 25.8                     | 14                  | 3              | 5              | 23           | 24.7                     |
| 20 / 24                      |                     |                |                |              |                          | 1                   |                | 0              | 1            | 21.1                     | 7                   | 2              | 3              | 12           | 20.0                     |
| 15 / 19                      |                     |                |                |              |                          | 0                   |                |                | 0            | 17.5                     | 3                   | 2              | 2              | 7            | 15.1                     |
| 10 / 14                      |                     |                |                |              |                          |                     |                |                |              |                          | 2                   | 0              | 0              | 3            | 9.9                      |
| 5 / 9                        |                     |                |                |              |                          |                     |                |                |              |                          | 0                   | 0              | 0              | 0            | 5.6                      |
| 0 / 4                        |                     |                |                |              |                          |                     |                |                |              |                          | 0                   | 0              |                | 0            | 1.3                      |
| -5 / -1                      |                     |                |                |              |                          |                     |                |                |              |                          | 0                   |                |                | 0            | -3.3                     |

**Caution:** This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

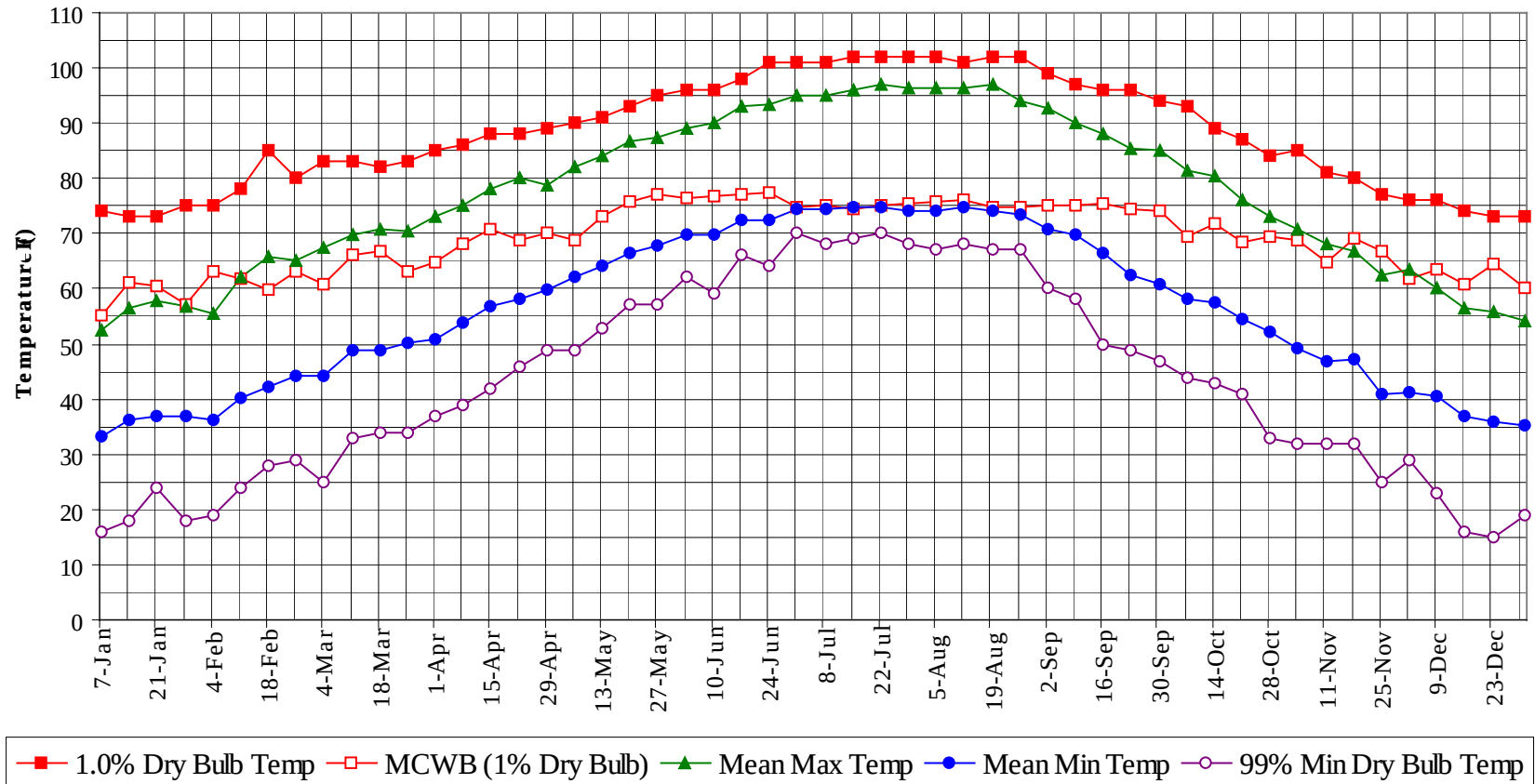


**WACO-MADISON COOPER TX WMO No. 722560**  
**Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)**  
**Period of Record = 1973 to 1996**

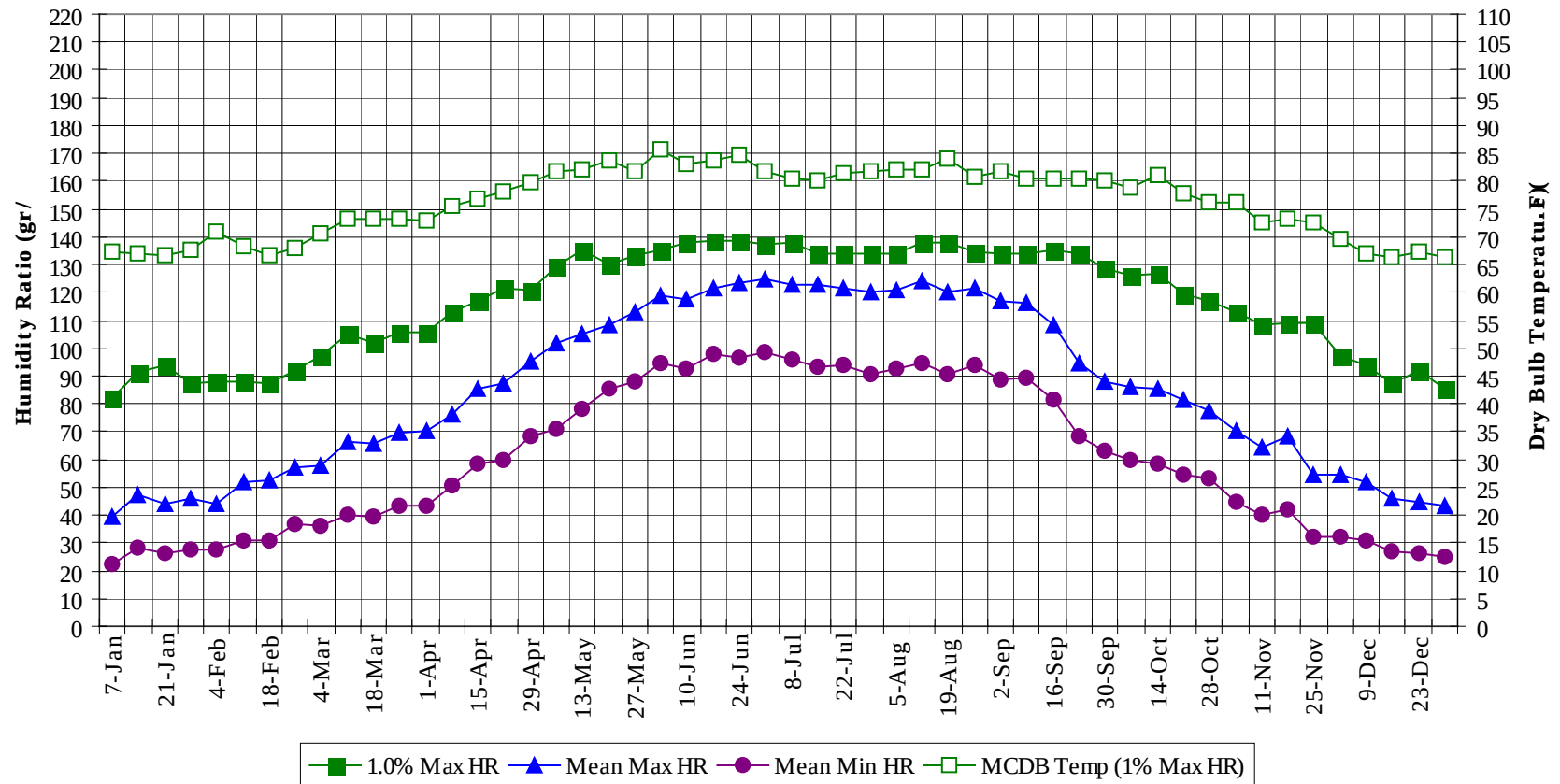
| Annual Totals                |                     |                |                |              |                          |
|------------------------------|---------------------|----------------|----------------|--------------|--------------------------|
| Temperature<br>Range<br>(°F) | Hour<br>Group (LST) |                |                | Total<br>Obs | M<br>C<br>W<br>B<br>(°F) |
|                              | 01<br>To<br>08      | 09<br>To<br>16 | 17<br>To<br>00 |              |                          |
| 105 / 109                    |                     | 2              | 1              | 3            | 75.7                     |
| 100 / 104                    |                     | 48             | 14             | 61           | 75.4                     |
| 95 / 99                      |                     | 173            | 64             | 237          | 75.5                     |
| 90 / 94                      | 0                   | 282            | 139            | 422          | 74.9                     |
| 85 / 89                      | 7                   | 317            | 224            | 548          | 73.3                     |
| 80 / 84                      | 164                 | 315            | 317            | 797          | 71.8                     |
| 75 / 79                      | 462                 | 300            | 348            | 1110         | 70.1                     |
| 70 / 74                      | 393                 | 281            | 327            | 1002         | 66.1                     |
| 65 / 69                      | 307                 | 237            | 287            | 831          | 61.4                     |
| 60 / 64                      | 264                 | 212            | 252            | 728          | 56.7                     |
| 55 / 59                      | 242                 | 187            | 229            | 658          | 52.0                     |
| 50 / 54                      | 251                 | 164            | 210            | 624          | 47.6                     |
| 45 / 49                      | 222                 | 131            | 181            | 535          | 43.3                     |
| 40 / 44                      | 203                 | 104            | 142            | 450          | 38.9                     |
| 35 / 39                      | 187                 | 73             | 104            | 364          | 34.4                     |
| 30 / 34                      | 130                 | 41             | 55             | 226          | 30.0                     |
| 25 / 29                      | 58                  | 17             | 23             | 98           | 25.1                     |
| 20 / 24                      | 24                  | 9              | 10             | 43           | 20.4                     |
| 15 / 19                      | 11                  | 4              | 5              | 19           | 15.7                     |
| 10 / 14                      | 3                   | 0              | 1              | 4            | 10.3                     |
| 5 / 9                        | 1                   | 0              | 0              | 1            | 6.0                      |
| 0 / 4                        | 0                   | 0              |                | 0            | 1.3                      |
| -5 / -1                      | 0                   |                |                | 0            | -3.3                     |

**Caution:** This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

## Annual Summary of Temperatures



## Long Term Humidity and Dry Bulb Temperature Summary



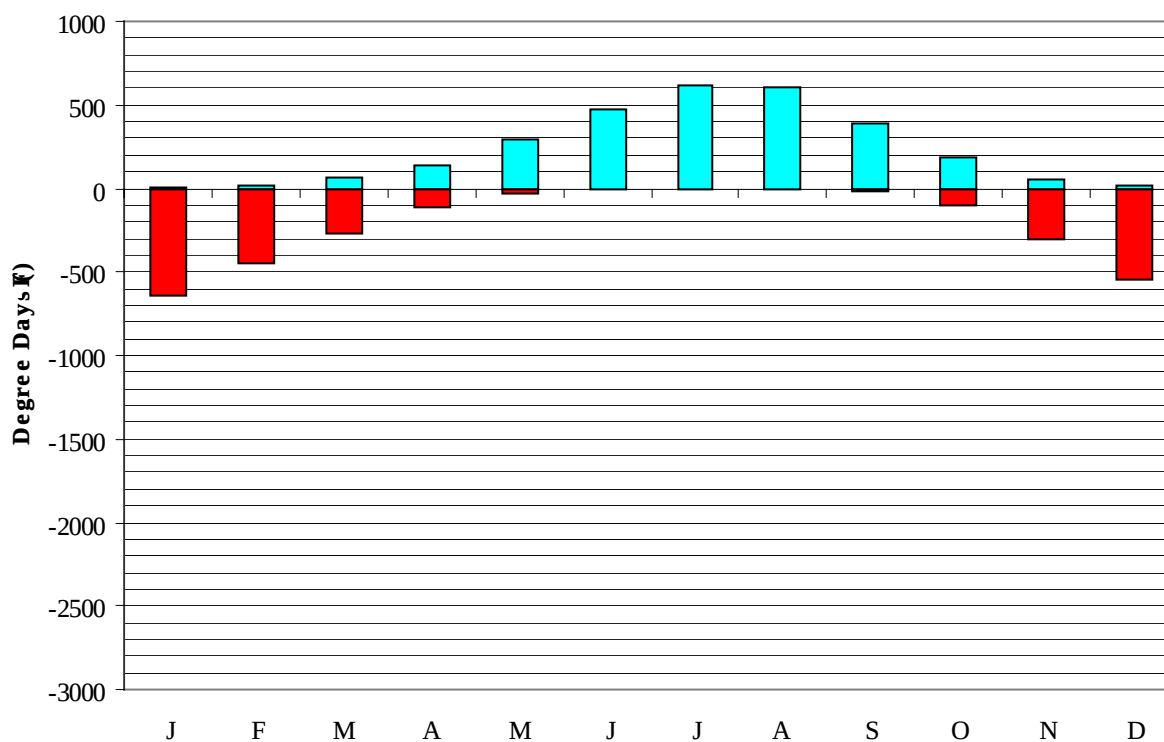
**WACO-MADISON COOPER TX**

WMO No. 722560

**Long Term Dry Bulb Temperature and Humidity Summary**

| Week Ending | 1.0% Temp (°F) | MCWB @ 1% Temp (°F) | Mean Max Temp (°F) | Mean Min Temp (°F) | 99% Temp (°F) | 1.0% HR (gr/lb) | MCDB @ 1% HR (°F) | Mean Max HR (gr/lb) | Mean Min HR (gr/lb) |
|-------------|----------------|---------------------|--------------------|--------------------|---------------|-----------------|-------------------|---------------------|---------------------|
| 7-Jan       | 74.0           | 55.3                | 52.4               | 33.3               | 16.0          | 81.9            | 67.2              | 39.4                | 22.4                |
| 14-Jan      | 73.0           | 61.0                | 56.7               | 36.4               | 18.0          | 91.0            | 67.1              | 47.2                | 28.3                |
| 21-Jan      | 73.0           | 60.5                | 57.9               | 36.7               | 24.0          | 93.8            | 66.5              | 44.1                | 26.2                |
| 28-Jan      | 75.0           | 57.2                | 57.0               | 36.8               | 18.0          | 87.5            | 67.5              | 46.3                | 27.8                |
| 4-Feb       | 75.0           | 63.0                | 55.4               | 36.3               | 19.0          | 88.2            | 71.0              | 44.3                | 27.3                |
| 11-Feb      | 78.0           | 61.8                | 62.0               | 40.3               | 24.0          | 88.2            | 68.4              | 51.7                | 31.1                |
| 18-Feb      | 85.0           | 59.8                | 65.7               | 42.3               | 28.0          | 87.5            | 66.8              | 52.8                | 31.1                |
| 25-Feb      | 80.0           | 63.0                | 65.2               | 44.0               | 29.0          | 91.7            | 68.0              | 57.1                | 36.7                |
| 4-Mar       | 83.0           | 60.7                | 67.6               | 44.3               | 25.0          | 97.3            | 70.7              | 58.0                | 35.9                |
| 11-Mar      | 83.0           | 66.2                | 69.9               | 48.7               | 33.0          | 105.0           | 73.4              | 66.4                | 40.3                |
| 18-Mar      | 82.0           | 66.9                | 70.9               | 48.8               | 34.0          | 101.5           | 73.3              | 65.4                | 39.6                |
| 25-Mar      | 83.0           | 63.0                | 70.4               | 50.2               | 34.0          | 105.7           | 73.3              | 69.8                | 43.2                |
| 1-Apr       | 85.0           | 64.9                | 73.1               | 50.9               | 37.0          | 105.7           | 73.0              | 70.3                | 43.6                |
| 8-Apr       | 86.0           | 68.0                | 75.2               | 53.9               | 39.0          | 112.7           | 75.4              | 76.1                | 50.7                |
| 15-Apr      | 88.0           | 70.7                | 78.2               | 56.8               | 42.0          | 116.9           | 76.8              | 85.3                | 58.2                |
| 22-Apr      | 88.0           | 68.8                | 80.1               | 58.1               | 46.0          | 121.8           | 78.0              | 87.3                | 59.4                |
| 29-Apr      | 89.0           | 70.2                | 78.9               | 59.9               | 49.0          | 121.1           | 79.9              | 95.5                | 68.0                |
| 6-May       | 90.0           | 68.8                | 82.2               | 62.3               | 49.0          | 129.5           | 81.6              | 101.5               | 71.1                |
| 13-May      | 91.0           | 73.0                | 84.1               | 64.1               | 53.0          | 135.1           | 82.2              | 105.0               | 78.2                |
| 20-May      | 93.0           | 75.9                | 86.6               | 66.4               | 57.0          | 130.2           | 83.7              | 108.3               | 85.4                |
| 27-May      | 95.0           | 77.0                | 87.3               | 67.7               | 57.0          | 133.0           | 81.8              | 113.0               | 88.0                |
| 3-Jun       | 96.0           | 76.5                | 89.2               | 69.9               | 62.0          | 135.1           | 85.8              | 119.0               | 94.4                |
| 10-Jun      | 96.0           | 76.9                | 90.1               | 69.9               | 59.0          | 137.9           | 83.0              | 117.6               | 92.7                |
| 17-Jun      | 98.0           | 77.1                | 92.9               | 72.6               | 66.0          | 138.6           | 83.6              | 121.7               | 98.0                |
| 24-Jun      | 101.0          | 77.5                | 93.2               | 72.3               | 64.0          | 138.6           | 84.7              | 123.2               | 96.7                |
| 1-Jul       | 101.0          | 74.9                | 95.1               | 74.5               | 70.0          | 137.2           | 81.7              | 124.7               | 98.4                |
| 8-Jul       | 101.0          | 75.2                | 95.1               | 74.6               | 68.0          | 137.9           | 80.5              | 122.8               | 96.1                |
| 15-Jul      | 102.0          | 74.5                | 96.1               | 74.7               | 69.0          | 133.7           | 80.3              | 122.7               | 93.5                |
| 22-Jul      | 102.0          | 75.1                | 97.2               | 74.7               | 70.0          | 133.7           | 81.5              | 121.6               | 94.1                |
| 29-Jul      | 102.0          | 75.3                | 96.4               | 74.2               | 68.0          | 133.7           | 81.7              | 120.3               | 90.3                |
| 5-Aug       | 102.0          | 75.9                | 96.3               | 74.0               | 67.0          | 133.7           | 82.1              | 121.2               | 92.3                |
| 12-Aug      | 101.0          | 76.2                | 96.3               | 74.9               | 68.0          | 137.9           | 82.0              | 124.1               | 94.3                |
| 19-Aug      | 102.0          | 74.8                | 97.0               | 74.0               | 67.0          | 137.9           | 84.2              | 120.5               | 90.3                |
| 26-Aug      | 102.0          | 74.9                | 94.2               | 73.4               | 67.0          | 134.4           | 80.7              | 121.5               | 93.6                |
| 2-Sep       | 99.0           | 75.0                | 92.6               | 70.9               | 60.0          | 133.7           | 81.7              | 116.6               | 88.8                |
| 9-Sep       | 97.0           | 75.2                | 89.9               | 69.7               | 58.0          | 133.7           | 80.5              | 116.3               | 89.6                |
| 16-Sep      | 96.0           | 75.5                | 88.1               | 66.6               | 50.0          | 135.1           | 80.6              | 108.5               | 81.6                |
| 23-Sep      | 96.0           | 74.5                | 85.4               | 62.4               | 49.0          | 133.7           | 80.4              | 94.5                | 68.6                |
| 30-Sep      | 94.0           | 74.2                | 85.0               | 60.8               | 47.0          | 128.8           | 80.1              | 87.7                | 63.1                |
| 7-Oct       | 93.0           | 69.6                | 81.5               | 58.1               | 44.0          | 126.0           | 78.8              | 85.8                | 60.1                |
| 14-Oct      | 89.0           | 71.7                | 80.3               | 57.4               | 43.0          | 126.7           | 81.1              | 85.7                | 58.6                |
| 21-Oct      | 87.0           | 68.6                | 76.0               | 54.6               | 41.0          | 119.7           | 77.9              | 81.5                | 54.6                |
| 28-Oct      | 84.0           | 69.5                | 73.1               | 52.3               | 33.0          | 116.9           | 76.0              | 77.7                | 52.9                |
| 4-Nov       | 85.0           | 68.7                | 70.9               | 49.3               | 32.0          | 112.7           | 76.3              | 70.4                | 44.8                |
| 11-Nov      | 81.0           | 64.8                | 68.2               | 46.9               | 32.0          | 108.5           | 72.6              | 64.0                | 40.2                |
| 18-Nov      | 80.0           | 69.1                | 66.8               | 47.3               | 32.0          | 109.2           | 73.2              | 68.2                | 42.3                |
| 25-Nov      | 77.0           | 66.7                | 62.6               | 40.9               | 25.0          | 109.2           | 72.4              | 54.4                | 32.3                |
| 2-Dec       | 76.0           | 61.7                | 63.4               | 41.3               | 29.0          | 97.3            | 69.7              | 54.2                | 32.2                |
| 9-Dec       | 76.0           | 63.6                | 60.1               | 40.5               | 23.0          | 93.8            | 67.1              | 52.0                | 31.2                |
| 16-Dec      | 74.0           | 60.8                | 56.6               | 37.0               | 16.0          | 87.5            | 66.2              | 46.2                | 27.1                |
| 23-Dec      | 73.0           | 64.3                | 56.0               | 36.0               | 15.0          | 91.7            | 67.3              | 44.5                | 26.3                |
| 31-Dec      | 73.0           | 60.2                | 54.1               | 35.1               | 19.0          | 85.4            | 66.4              | 43.7                | 25.2                |

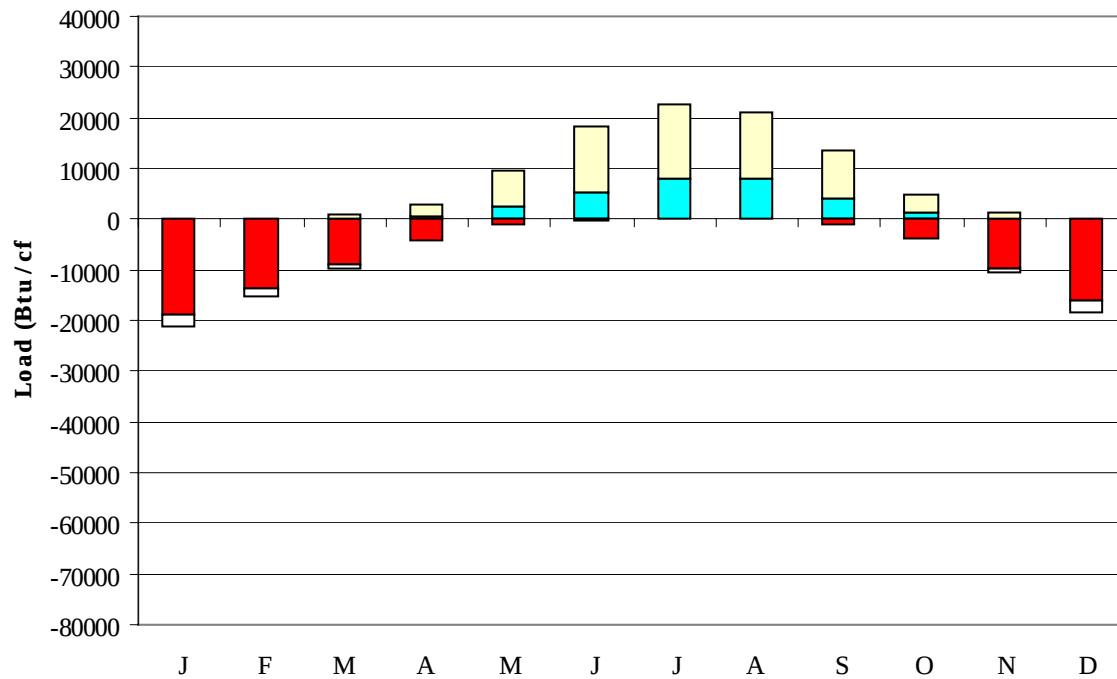
**Degree Days, Heating and Cooling**  
(Base 65°F)



■ Mean Cooling Degree Days
 ■ Mean Heating Degree Days

|     | Mean Cooling<br>Degree Days (°F) | Mean Heating<br>Degree Days (°F) |
|-----|----------------------------------|----------------------------------|
| JAN | 8                                | 635                              |
| FEB | 22                               | 449                              |
| MAR | 63                               | 275                              |
| APR | 140                              | 114                              |
| MAY | 291                              | 27                               |
| JUN | 470                              | 2                                |
| JUL | 614                              | 0                                |
| AUG | 601                              | 0                                |
| SEP | 389                              | 21                               |
| OCT | 189                              | 102                              |
| NOV | 56                               | 305                              |
| DEC | 14                               | 541                              |
| ANN | 2859                             | 2471                             |

**Average Ventilation and Infiltration Loads**  
**(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)**



|                                                                            |                                                                                |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <span style="color: cyan;">■</span> Average Sensible Cooling Load          | <span style="color: red;">■</span> Average Sensible Heating Load               |
| <span style="color: yellow;">■</span> Average Latent Cooling (Drying) Load | <span style="color: white;">■</span> Average Latent Heating (Humidifying) Load |

|     | Average Sensible<br>Cooling Load<br>(Btu/cfm) | Average Sensible<br>Heating Load<br>(Btu/cfm) | Average Latent<br>Cooling Load<br>(Btu/cfm) | Average Latent<br>Heating Load<br>(Btu/cfm) |
|-----|-----------------------------------------------|-----------------------------------------------|---------------------------------------------|---------------------------------------------|
| JAN | 7                                             | -18747                                        | 82                                          | -2466                                       |
| FEB | 76                                            | -13602                                        | 102                                         | -1605                                       |
| MAR | 226                                           | -8892                                         | 756                                         | -706                                        |
| APR | 715                                           | -4100                                         | 2308                                        | -147                                        |
| MAY | 2332                                          | -1212                                         | 7456                                        | -4                                          |
| JUN | 5249                                          | -142                                          | 12946                                       | 0                                           |
| JUL | 8080                                          | -10                                           | 14397                                       | 0                                           |
| AUG | 7847                                          | -29                                           | 13277                                       | 0                                           |
| SEP | 4077                                          | -886                                          | 9651                                        | -3                                          |
| OCT | 1383                                          | -3717                                         | 3444                                        | -88                                         |
| NOV | 185                                           | -9666                                         | 1187                                        | -765                                        |
| DEC | 20                                            | -16238                                        | 229                                         | -2004                                       |
| ANN | 30197                                         | -77241                                        | 65835                                       | -7788                                       |

## Average Annual Solar Radiation – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

City: WACO  
 State: TX  
 WBAN No: 13959  
 Lat(N): 31.62  
 Long(W): 97.22  
 Elev(ft): 509

Stn Type: Secondary  
 SHADING GEOMETRY IN DIMENSIONLESS UNITS

Window: 1  
 Overhang: 0.942  
 Vert Gap: 0.657

| AVERAGE INCIDENT SOLAR RADIATION (Btu/sq.ft./day), Percentage Uncertainty = 9 |         | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Year |
|-------------------------------------------------------------------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| HORIZ                                                                         | Global  | 920  | 1170 | 1500 | 1730 | 1910 | 2130 | 2200 | 2020 | 1660 | 1360 | 1020 | 860  | 1540 |
|                                                                               | Std Dev | 77   | 95   | 113  | 156  | 154  | 136  | 139  | 107  | 110  | 110  | 88   | 65   | 34   |
|                                                                               | Minimum | 770  | 970  | 1250 | 1470 | 1490 | 1890 | 1830 | 1780 | 1390 | 1120 | 800  | 720  | 1490 |
|                                                                               | Maximum | 1080 | 1350 | 1750 | 2160 | 2210 | 2330 | 2480 | 2210 | 1910 | 1500 | 1180 | 1020 | 1630 |
|                                                                               | Diffuse | 390  | 480  | 610  | 740  | 810  | 790  | 730  | 680  | 620  | 480  | 400  | 350  | 590  |
| Clear Day                                                                     | Global  | 1270 | 1590 | 2000 | 2360 | 2560 | 2630 | 2580 | 2390 | 2070 | 1670 | 1310 | 1160 | 1970 |
| NORTH                                                                         | Global  | 260  | 320  | 390  | 470  | 560  | 650  | 620  | 500  | 410  | 330  | 270  | 240  | 420  |
|                                                                               | Diffuse | 260  | 320  | 390  | 450  | 500  | 520  | 510  | 460  | 410  | 330  | 270  | 240  | 390  |
| Clear Day                                                                     | Global  | 230  | 290  | 360  | 430  | 590  | 700  | 650  | 490  | 370  | 310  | 240  | 220  | 410  |
| EAST                                                                          | Global  | 560  | 690  | 830  | 910  | 960  | 1060 | 1170 | 1120 | 930  | 790  | 620  | 540  | 850  |
|                                                                               | Diffuse | 310  | 380  | 470  | 550  | 590  | 610  | 610  | 570  | 510  | 410  | 330  | 280  | 470  |
| Clear Day                                                                     | Global  | 860  | 1030 | 1210 | 1350 | 1390 | 1400 | 1380 | 1340 | 1220 | 1060 | 880  | 800  | 1160 |
| SOUTH                                                                         | Global  | 1230 | 1230 | 1120 | 880  | 690  | 620  | 670  | 850  | 1070 | 1290 | 1270 | 1240 | 1010 |
|                                                                               | Diffuse | 410  | 460  | 520  | 540  | 530  | 520  | 520  | 530  | 530  | 480  | 420  | 380  | 490  |
| Clear Day                                                                     | Global  | 2050 | 1950 | 1630 | 1140 | 780  | 650  | 700  | 970  | 1400 | 1800 | 1970 | 2020 | 1420 |
| WEST                                                                          | Global  | 610  | 740  | 920  | 1020 | 1080 | 1180 | 1180 | 1110 | 980  | 860  | 660  | 570  | 910  |
|                                                                               | Diffuse | 320  | 390  | 480  | 560  | 610  | 630  | 620  | 580  | 510  | 420  | 330  | 290  | 480  |
| Clear Day                                                                     | Global  | 860  | 1030 | 1210 | 1350 | 1390 | 1400 | 1380 | 1340 | 1220 | 1060 | 880  | 800  | 1160 |

## Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

| AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9 |          |          |     |      |      |      |      |      |      |      |     |     |     |      |
|-----------------------------------------------------------------------------------------------------|----------|----------|-----|------|------|------|------|------|------|------|-----|-----|-----|------|
|                                                                                                     |          | Jan      | Feb | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct | Nov | Dec | Year |
| HORIZ                                                                                               | Unshaded | 630      | 820 | 1070 | 1260 | 1390 | 1560 | 1610 | 1470 | 1200 | 970 | 700 | 580 | 1110 |
|                                                                                                     | NORTH    | Unshaded | 180 | 220  | 270  | 320  | 360  | 410  | 390  | 330  | 280 | 230 | 190 | 160  |
|                                                                                                     | Shaded   | 150      | 190 | 240  | 270  | 310  | 350  | 340  | 290  | 250  | 210 | 160 | 140 | 240  |
|                                                                                                     | EAST     | Unshaded | 390 | 490  | 590  | 650  | 680  | 750  | 830  | 800  | 660 | 560 | 430 | 370  |
|                                                                                                     | Shaded   | 330      | 410 | 480  | 520  | 550  | 600  | 660  | 650  | 540  | 460 | 370 | 320 | 490  |
|                                                                                                     | SOUTH    | Unshaded | 910 | 880  | 750  | 540  | 420  | 380  | 390  | 500  | 690 | 900 | 930 | 930  |
|                                                                                                     | Shaded   | 860      | 710 | 410  | 320  | 320  | 320  | 320  | 320  | 340  | 620 | 850 | 900 | 520  |
|                                                                                                     | WEST     | Unshaded | 420 | 520  | 650  | 730  | 770  | 840  | 840  | 800  | 700 | 610 | 460 | 400  |
|                                                                                                     | Shaded   | 370      | 440 | 540  | 590  | 620  | 680  | 680  | 650  | 580  | 520 | 390 | 340 | 530  |

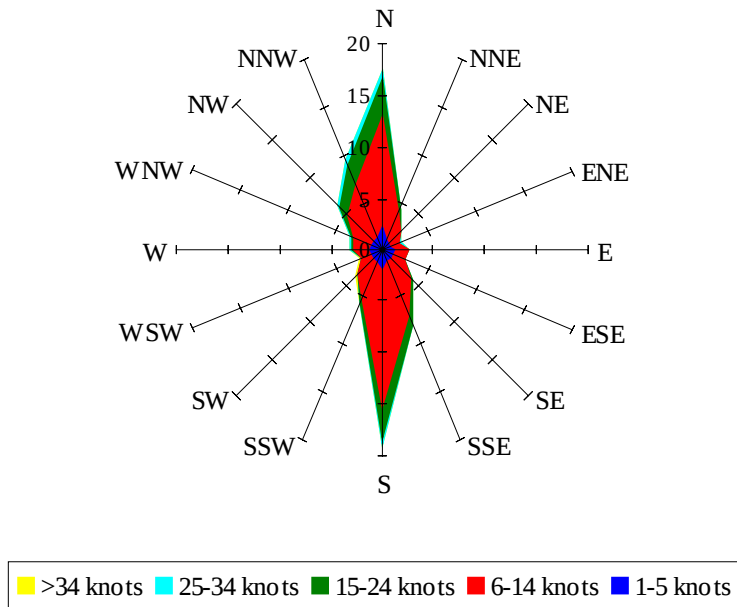
| AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9 |          |       |      |     |     |     |      |      |     |     |     |
|------------------------------------------------------------------------------------------------------------------|----------|-------|------|-----|-----|-----|------|------|-----|-----|-----|
|                                                                                                                  |          | March |      |     |     |     | June |      |     |     |     |
|                                                                                                                  |          | 9am   | 11am | 1pm | 3pm | 5pm | 9am  | 11am | 1pm | 3pm | 5pm |
| HORIZ.                                                                                                           | M.Clear  | 36    | 77   | 94  | 81  | 42  | 36   | 79   | 103 | 102 | 76  |
|                                                                                                                  | M.Cloudy | 19    | 46   | 59  | 51  | 27  | 23   | 56   | 77  | 80  | 58  |
| NORTH                                                                                                            | M.Clear  | 9     | 14   | 16  | 15  | 10  | 24   | 16   | 17  | 17  | 16  |
|                                                                                                                  | M.Cloudy | 8     | 17   | 19  | 17  | 10  | 14   | 18   | 19  | 19  | 17  |
| EAST                                                                                                             | M.Clear  | 77    | 68   | 20  | 15  | 10  | 68   | 78   | 43  | 17  | 16  |
|                                                                                                                  | M.Cloudy | 21    | 34   | 21  | 17  | 10  | 30   | 50   | 35  | 19  | 17  |
| SOUTH                                                                                                            | M.Clear  | 30    | 62   | 76  | 65  | 35  | 11   | 17   | 31  | 31  | 17  |
|                                                                                                                  | M.Cloudy | 12    | 32   | 43  | 37  | 19  | 9    | 18   | 28  | 29  | 18  |
| WEST                                                                                                             | M.Clear  | 9     | 14   | 16  | 63  | 79  | 11   | 16   | 17  | 43  | 77  |
|                                                                                                                  | M.Cloudy | 8     | 17   | 19  | 36  | 33  | 9    | 18   | 19  | 37  | 54  |
| M.Clear                                                                                                          | (% hrs)  | 35    | 38   | 40  | 41  | 45  | 36   | 40   | 44  | 46  | 55  |

|         |          | Sept |      |     |     |     | Dec |      |     |     |     |
|---------|----------|------|------|-----|-----|-----|-----|------|-----|-----|-----|
|         |          | 9am  | 11am | 1pm | 3pm | 5pm | 9am | 11am | 1pm | 3pm | 5pm |
| HORIZ.  | M.Clear  | 21   | 66   | 92  | 90  | 61  | 17  | 51   | 64  | 49  | 13  |
|         | M.Cloudy | 13   | 44   | 65  | 66  | 42  | 10  | 30   | 39  | 29  | 9   |
| NORTH   | M.Clear  | 7    | 14   | 17  | 17  | 14  | 6   | 11   | 12  | 11  | 5   |
|         | M.Cloudy | 6    | 15   | 19  | 19  | 15  | 4   | 12   | 14  | 11  | 4   |
| EAST    | M.Clear  | 56   | 77   | 41  | 17  | 14  | 50  | 52   | 12  | 11  | 5   |
|         | M.Cloudy | 19   | 42   | 32  | 19  | 15  | 12  | 23   | 14  | 11  | 4   |
| SOUTH   | M.Clear  | 12   | 45   | 65  | 63  | 41  | 39  | 82   | 95  | 79  | 32  |
|         | M.Cloudy | 7    | 28   | 44  | 45  | 27  | 10  | 31   | 41  | 31  | 10  |
| WEST    | M.Clear  | 7    | 14   | 17  | 46  | 77  | 6   | 11   | 15  | 55  | 44  |
|         | M.Cloudy | 6    | 15   | 19  | 35  | 44  | 4   | 12   | 15  | 24  | 13  |
| M.Clear | (% hrs)  | 46   | 46   | 47  | 48  | 51  | 37  | 39   | 39  | 44  | 45  |

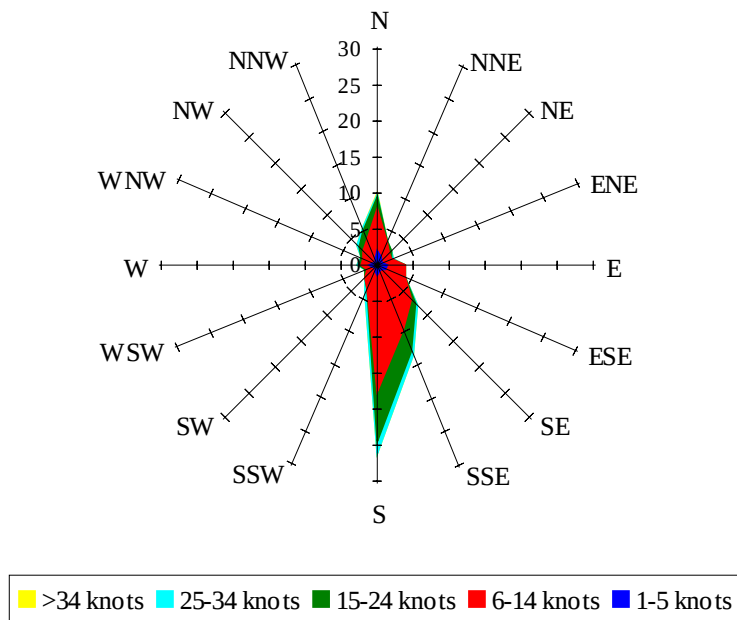


# **Wind Summary - December, January, and February** **Labels of Percent Frequency on North Axis**



Percent Calm = 4.70

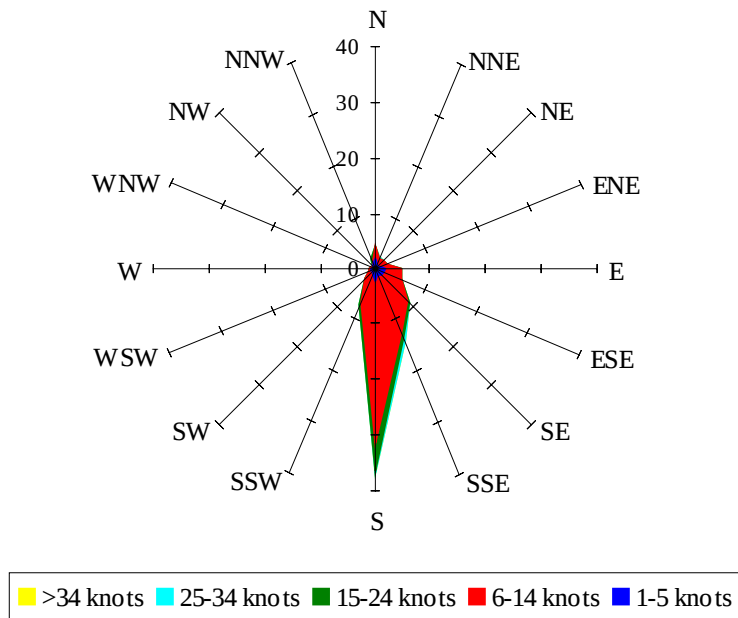
# **Wind Summary - March, April, and May** **Labels of Percent Frequency on North Axis**



Percent Calm = 3.70

### Wind Summary - June, July, and August

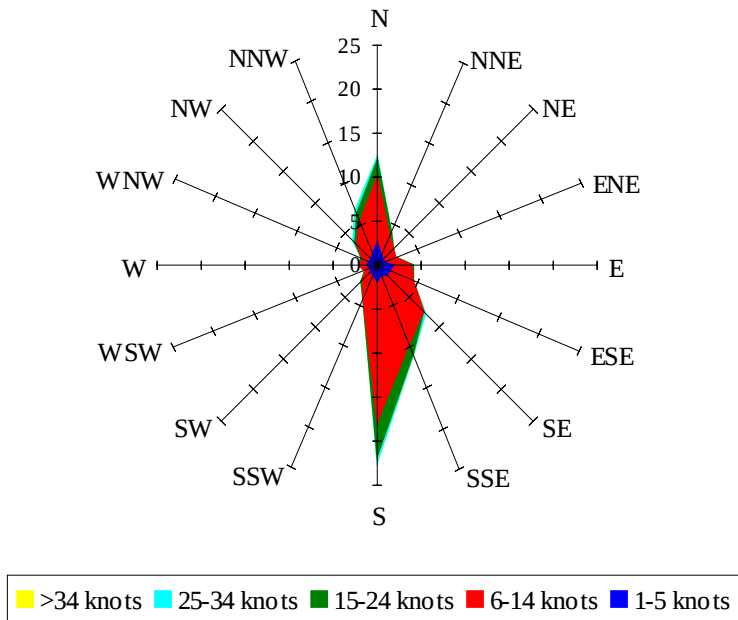
Labels of Percent Frequency on North Axis



Percent Calm = 4.67

### Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 6.01