

**MCCLELLAN AFB CA**

Latitude = 38.67 N

WMO No. 724836

Longitude = 121.40 W

Elevation = 75 feet

Period of Record = 1967 to 1996

Average Pressure = 29.88 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                          | 106                 | 71                               | 58                      | 6.1                    | WNW                         |
| 0.4% Occurrence                                  | 101                 | 70                               | 59                      | 5.8                    | W                           |
| 1.0% Occurrence                                  | 99                  | 69                               | 60                      | 6.0                    | SW                          |
| 2.0% Occurrence                                  | 96                  | 68                               | 58                      | 5.9                    | SSW                         |
| Mean Daily Range                                 | 23                  | -                                | -                       | -                      | -                           |
| 97.5% Occurrence                                 | 37                  | 35                               | 28                      | 2.4                    | N                           |
| 99.0% Occurrence                                 | 34                  | 32                               | 24                      | 2.1                    | N                           |
| 99.6% Occurrence                                 | 32                  | 30                               | 22                      | 1.9                    | N                           |
| Median of Extreme Lows                           | 28                  | 27                               | 18                      | 1.9                    | 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                          | 75                  | 100                              | 89                      | 5.7                    | W                           |
| 0.4% Occurrence                                  | 72                  | 97                               | 77                      | 5.9                    | SSW                         |
| 1.0% Occurrence                                  | 70                  | 94                               | 71                      | 5.8                    | SSW                         |
| 2.0% Occurrence                                  | 69                  | 93                               | 68                      | 5.9                    | 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                          | 99                  | 79                               | 0.67                    | 5.0                    | S                           |
| 0.4% Occurrence                                  | 86                  | 74                               | 0.58                    | 5.9                    | S                           |
| 1.0% Occurrence                                  | 81                  | 79                               | 0.54                    | 5.6                    | S                           |
| 2.0% Occurrence                                  | 77                  | 73                               | 0.52                    | 7.2                    | 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      |
|                                                  |                     | 301                              | 1210                    | 24                     | 464                         |

**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 |
|--------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 8                                                | 1.5                                          | 85                                                                 | 0.0 + 1.5                                                                               |
| 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>(#)                                             |
| 64.3                                             | 5                                            | 0                                                                  | 7                                                                                       |

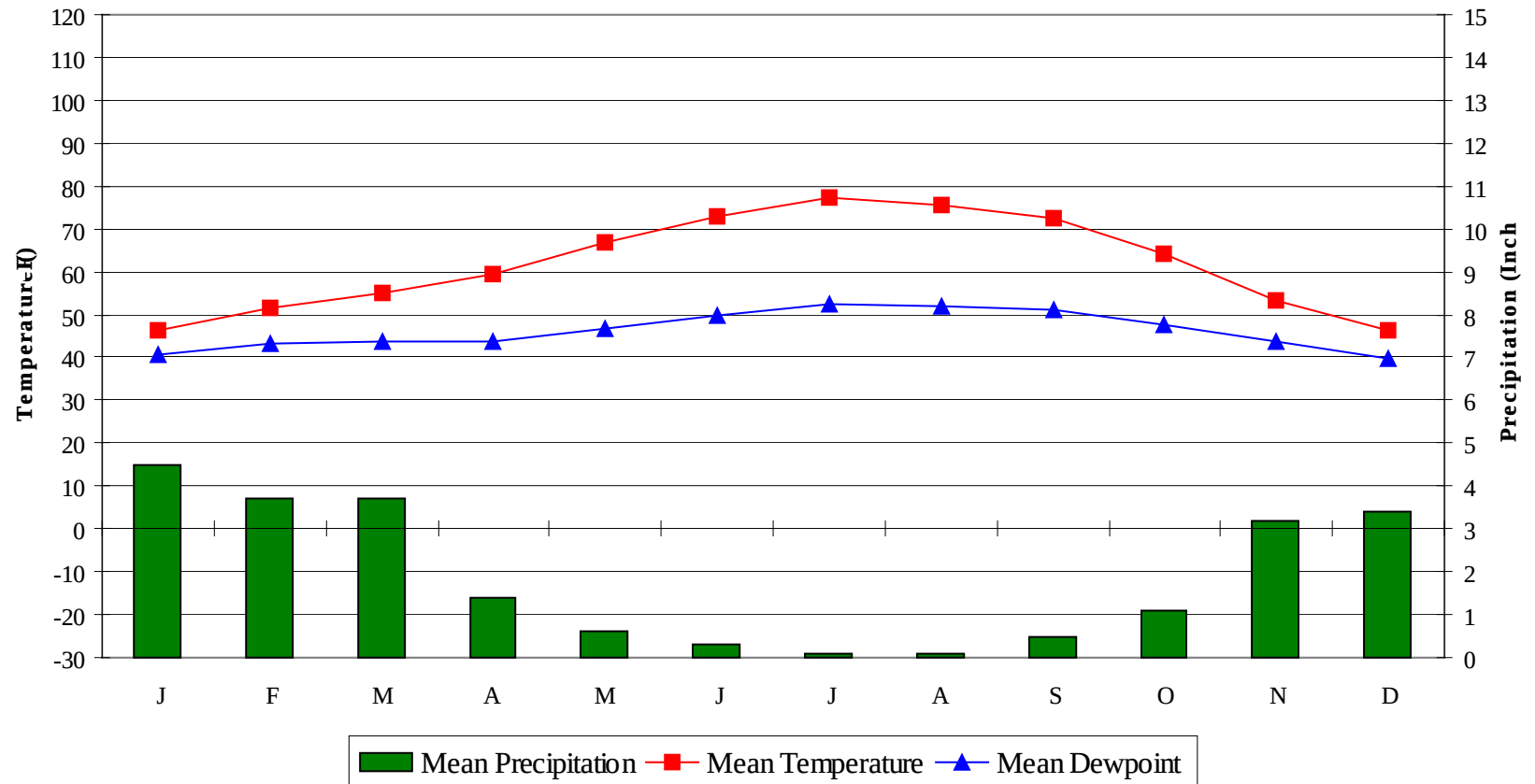
\*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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### Average Annual Climate

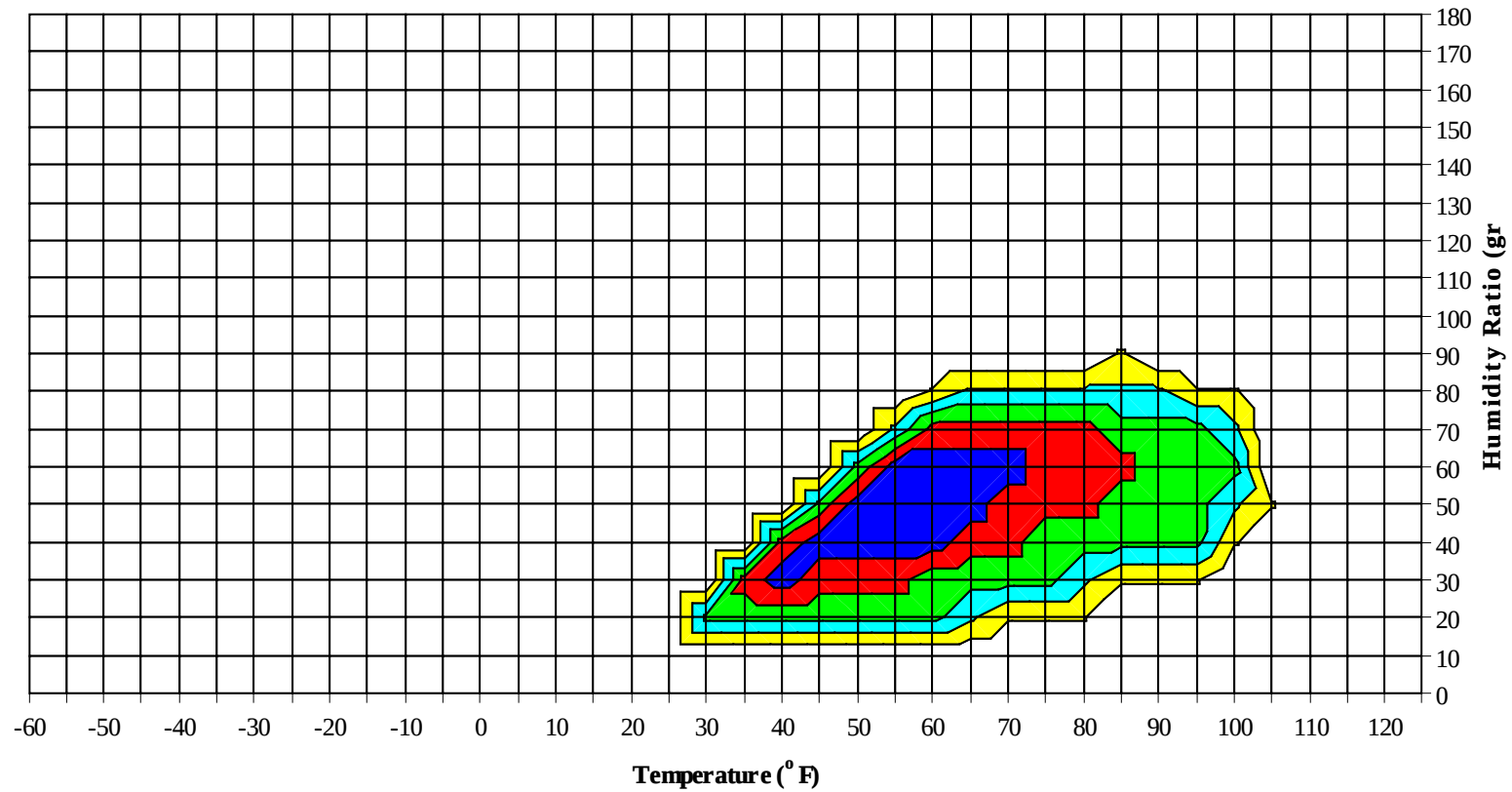


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### Long Term Psychrometric Summary

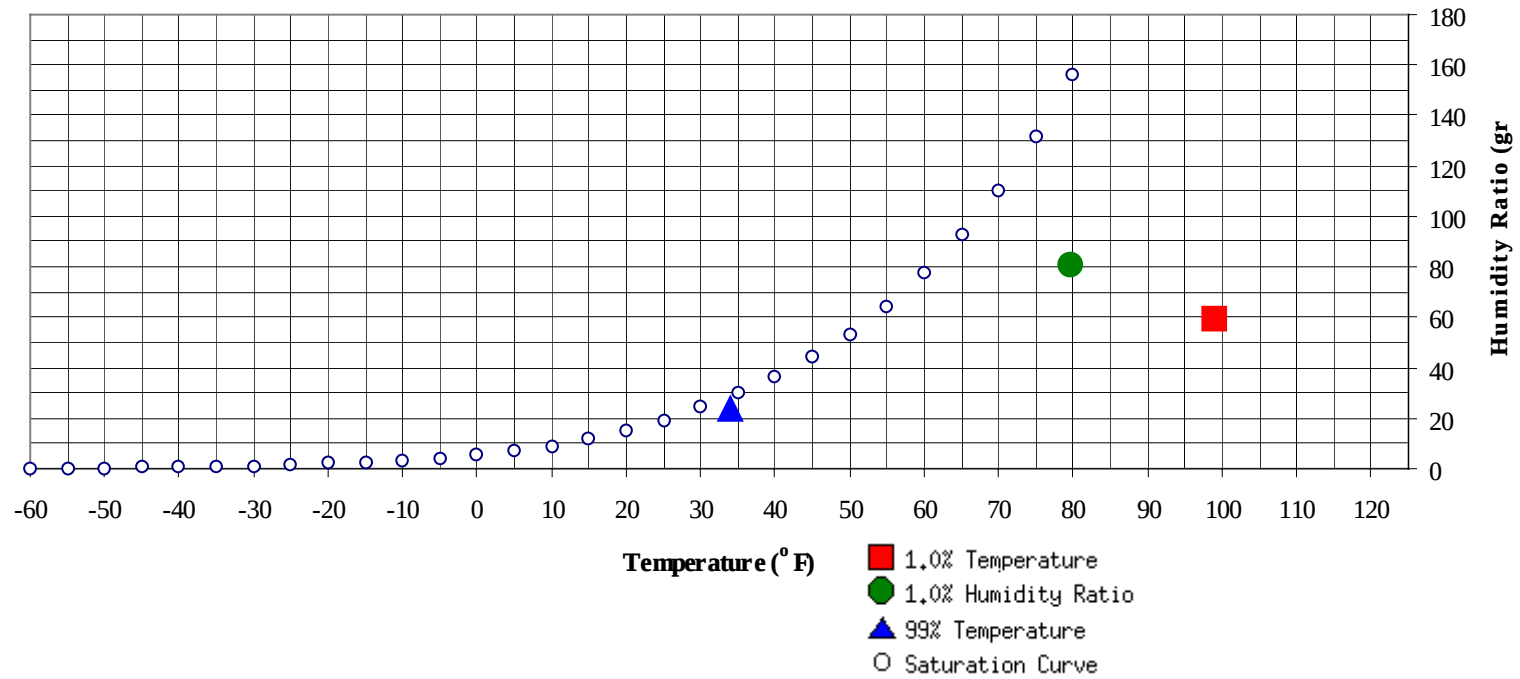


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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**Psychrometric Summary of Peak Design Values**

|              | (°F) | MCHR    | Enthalpy | 1.0% Humidity | (gr/lb) | MCDB | MCWB | MC Dewpt | Enthalpy |
|--------------|------|---------|----------|---------------|---------|------|------|----------|----------|
|              |      | (gr/lb) | (btu/lb) |               |         | (°F) | (°F) | (°F)     | (btu/lb) |
| 99% Dry Bulb | 34   | 24      | 11.8     | Ratio         | 80.5    | 79.6 | 67.2 | 61       | 31.7     |

|               | (°F) | MCHR    | MCWB | Enthalpy |
|---------------|------|---------|------|----------|
|               |      | (gr/lb) | (°F) | (btu/lb) |
| 1.0% Dry Bulb | 99   | 59.6    | 69.3 | 33.2     |

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

Period of Record = 1967 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 |              |                          |
| 110 / 114                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 105 / 109                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 100 / 104                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 95 / 99                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 90 / 94                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 85 / 89                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                | 0              | 0            | 62.7                     |
| 80 / 84                      |                     |                |                |              |                          |                     |                |                |              |                          |                     | 0              | 0              | 1            | 63.7                     |
| 75 / 79                      |                     |                |                |              |                          |                     | 1              | 0              | 1            | 57.2                     |                     | 5              | 1              | 7            | 60.4                     |
| 70 / 74                      |                     | 0              |                | 0            | 51.0                     |                     | 6              | 1              | 7            | 58.8                     |                     | 19             | 8              | 27           | 58.0                     |
| 65 / 69                      |                     | 3              | 0              | 3            | 54.7                     |                     | 19             | 6              | 25           | 56.7                     | 0                   | 38             | 19             | 57           | 55.6                     |
| 60 / 64                      | 1                   | 18             | 6              | 24           | 54.3                     | 2                   | 40             | 22             | 64           | 54.3                     | 3                   | 60             | 42             | 106          | 53.5                     |
| 55 / 59                      | 9                   | 40             | 24             | 73           | 52.0                     | 18                  | 62             | 54             | 134          | 51.6                     | 32                  | 68             | 70             | 170          | 51.2                     |
| 50 / 54                      | 28                  | 67             | 54             | 149          | 48.4                     | 49                  | 57             | 73             | 179          | 48.3                     | 82                  | 41             | 65             | 188          | 48.0                     |
| 45 / 49                      | 49                  | 61             | 78             | 187          | 44.3                     | 70                  | 28             | 48             | 146          | 44.4                     | 78                  | 13             | 34             | 125          | 43.9                     |
| 40 / 44                      | 71                  | 42             | 62             | 175          | 40.4                     | 53                  | 10             | 16             | 79           | 40.1                     | 40                  | 2              | 9              | 50           | 39.7                     |
| 35 / 39                      | 61                  | 15             | 21             | 97           | 35.9                     | 25                  | 1              | 3              | 29           | 35.2                     | 12                  |                | 1              | 13           | 35.4                     |
| 30 / 34                      | 24                  | 2              | 4              | 30           | 31.2                     | 6                   | 0              | 0              | 6            | 30.5                     | 1                   |                |                | 1            | 31.2                     |
| 25 / 29                      | 4                   | 0              | 0              | 5            | 26.9                     | 1                   | 0              |                | 1            | 24.1                     |                     |                |                |              |                          |
| 20 / 24                      | 0                   |                |                | 0            | 23.2                     | 0                   |                |                | 0            | 21.0                     |                     |                |                |              |                          |
| 15 / 19                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |

**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.

MCCLELLAN AFB CA

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**Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)****Period of Record = 1967 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 |              |                          |
| 110 / 114                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 105 / 109                    |                     |                |                |              |                          |                     | 0              |                | 0            | 72.0                     |                     | 1              | 0              | 1            | 70.8                     |
| 100 / 104                    |                     |                |                |              |                          |                     | 1              | 0              | 1            | 69.9                     |                     | 9              | 4              | 13           | 70.2                     |
| 95 / 99                      |                     | 0              | 0              | 0            | 69.0                     |                     | 5              | 2              | 7            | 68.0                     |                     | 19             | 10             | 28           | 68.4                     |
| 90 / 94                      |                     | 1              | 0              | 1            | 68.0                     |                     | 15             | 7              | 22           | 65.8                     |                     | 27             | 14             | 41           | 66.3                     |
| 85 / 89                      |                     | 5              | 2              | 7            | 63.9                     |                     | 24             | 11             | 36           | 63.9                     | 0                   | 36             | 22             | 58           | 64.6                     |
| 80 / 84                      |                     | 13             | 5              | 18           | 61.5                     | 0                   | 34             | 18             | 52           | 61.9                     | 2                   | 46             | 29             | 77           | 63.0                     |
| 75 / 79                      | 0                   | 26             | 12             | 38           | 59.2                     | 2                   | 44             | 26             | 72           | 60.1                     | 9                   | 40             | 35             | 84           | 61.2                     |
| 70 / 74                      | 0                   | 38             | 20             | 59           | 57.1                     | 8                   | 45             | 35             | 88           | 58.1                     | 22                  | 32             | 40             | 94           | 59.3                     |
| 65 / 69                      | 4                   | 49             | 33             | 85           | 55.0                     | 23                  | 41             | 43             | 107          | 56.1                     | 46                  | 20             | 37             | 104          | 57.2                     |
| 60 / 64                      | 14                  | 50             | 47             | 111          | 53.0                     | 47                  | 27             | 48             | 122          | 53.9                     | 73                  | 8              | 35             | 116          | 54.9                     |
| 55 / 59                      | 54                  | 38             | 59             | 151          | 50.7                     | 81                  | 10             | 40             | 131          | 51.1                     | 70                  | 2              | 14             | 86           | 52.3                     |
| 50 / 54                      | 81                  | 17             | 43             | 141          | 47.6                     | 68                  | 2              | 15             | 84           | 48.1                     | 17                  |                | 1              | 18           | 48.9                     |
| 45 / 49                      | 58                  | 3              | 17             | 77           | 43.8                     | 16                  | 0              | 2              | 18           | 44.4                     | 0                   |                |                | 0            | 46.5                     |
| 40 / 44                      | 25                  | 0              | 3              | 28           | 39.8                     | 3                   |                | 0              | 3            | 39.8                     |                     |                |                |              |                          |
| 35 / 39                      | 4                   |                | 0              | 4            | 35.7                     | 0                   |                |                | 0            | 37.7                     |                     |                |                |              |                          |
| 30 / 34                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 25 / 29                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 20 / 24                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 15 / 19                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |

**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.

MCCLELLAN AFB CA

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**Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)**

**Period of Record = 1967 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 |              |                          |
| 110 / 114                    |                     | 0              |                | 0            | 72.0                     |                     | 0              |                | 0            | 75.0                     |                     |                |                |              |                          |
| 105 / 109                    |                     | 3              | 1              | 4            | 71.8                     |                     | 2              | 1              | 3            | 71.3                     |                     | 0              | 0              | 0            | 71.5                     |
| 100 / 104                    |                     | 17             | 8              | 25           | 70.2                     |                     | 12             | 5              | 17           | 69.4                     |                     | 3              | 1              | 4            | 69.5                     |
| 95 / 99                      |                     | 34             | 17             | 51           | 68.9                     |                     | 26             | 12             | 38           | 68.1                     |                     | 14             | 5              | 18           | 67.7                     |
| 90 / 94                      |                     | 45             | 26             | 71           | 67.5                     |                     | 40             | 20             | 60           | 66.7                     |                     | 32             | 12             | 43           | 65.9                     |
| 85 / 89                      | 1                   | 45             | 30             | 76           | 66.1                     | 0                   | 45             | 27             | 72           | 65.4                     | 0                   | 40             | 19             | 60           | 64.8                     |
| 80 / 84                      | 4                   | 40             | 36             | 80           | 64.5                     | 3                   | 46             | 34             | 83           | 64.0                     | 1                   | 43             | 27             | 71           | 63.2                     |
| 75 / 79                      | 17                  | 32             | 41             | 91           | 62.5                     | 12                  | 36             | 42             | 89           | 62.3                     | 4                   | 42             | 38             | 84           | 61.8                     |
| 70 / 74                      | 47                  | 22             | 41             | 110          | 60.4                     | 33                  | 27             | 45             | 105          | 60.3                     | 18                  | 34             | 48             | 100          | 59.9                     |
| 65 / 69                      | 72                  | 8              | 31             | 111          | 58.1                     | 67                  | 13             | 39             | 118          | 58.3                     | 50                  | 21             | 51             | 122          | 58.2                     |
| 60 / 64                      | 81                  | 1              | 14             | 95           | 55.9                     | 96                  | 3              | 20             | 118          | 56.4                     | 96                  | 9              | 32             | 136          | 56.2                     |
| 55 / 59                      | 26                  | 0              | 2              | 28           | 53.4                     | 36                  | 0              | 3              | 39           | 54.2                     | 59                  | 1              | 8              | 67           | 53.1                     |
| 50 / 54                      | 1                   |                | 0              | 1            | 50.2                     | 2                   |                | 0              | 2            | 51.4                     | 12                  | 0              | 0              | 12           | 49.0                     |
| 45 / 49                      |                     |                |                |              |                          |                     |                |                |              |                          | 1                   | 0              | 0              | 2            | 43.0                     |
| 40 / 44                      |                     |                |                |              |                          |                     |                |                |              |                          | 0                   |                |                | 0            | 40.0                     |
| 35 / 39                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 30 / 34                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 25 / 29                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 20 / 24                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 15 / 19                      |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |

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**Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)****Period of Record = 1967 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 |              |                          |
|                              |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 110 / 114                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 105 / 109                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 100 / 104                    |                     |                |                |              |                          |                     |                |                |              |                          |                     |                |                |              |                          |
| 95 / 99                      |                     | 2              | 0              | 3            | 66.2                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 90 / 94                      |                     | 7              | 1              | 8            | 64.8                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 85 / 89                      |                     | 15             | 3              | 18           | 63.2                     |                     |                |                |              |                          |                     |                |                |              |                          |
| 80 / 84                      |                     | 30             | 9              | 40           | 61.5                     |                     | 1              | 0              | 1            | 59.1                     |                     |                |                |              |                          |
| 75 / 79                      | 0                   | 45             | 19             | 65           | 60.0                     |                     | 8              | 0              | 8            | 59.0                     |                     |                |                |              |                          |
| 70 / 74                      | 2                   | 47             | 32             | 81           | 58.6                     |                     | 18             | 3              | 20           | 57.6                     |                     |                |                |              |                          |
| 65 / 69                      | 13                  | 48             | 50             | 110          | 56.7                     |                     | 36             | 11             | 47           | 55.9                     | 0                   | 2              | 0              | 2            | 55.9                     |
| 60 / 64                      | 51                  | 35             | 65             | 150          | 55.2                     | 6                   | 51             | 34             | 91           | 54.2                     | 1                   | 19             | 4              | 25           | 53.8                     |
| 55 / 59                      | 83                  | 16             | 47             | 146          | 52.4                     | 31                  | 56             | 62             | 149          | 51.8                     | 12                  | 49             | 22             | 83           | 51.4                     |
| 50 / 54                      | 62                  | 3              | 19             | 84           | 48.5                     | 61                  | 44             | 66             | 172          | 48.5                     | 30                  | 69             | 55             | 154          | 48.1                     |
| 45 / 49                      | 29                  | 0              | 3              | 32           | 44.0                     | 67                  | 21             | 44             | 131          | 44.3                     | 47                  | 56             | 73             | 176          | 44.2                     |
| 40 / 44                      | 7                   |                | 0              | 8            | 40.1                     | 44                  | 6              | 17             | 67           | 40.1                     | 64                  | 32             | 60             | 156          | 40.2                     |
| 35 / 39                      | 1                   |                |                | 1            | 36.5                     | 24                  | 1              | 3              | 28           | 35.7                     | 61                  | 18             | 27             | 106          | 35.7                     |
| 30 / 34                      |                     |                |                |              |                          | 7                   |                | 0              | 7            | 31.4                     | 26                  | 3              | 5              | 35           | 31.0                     |
| 25 / 29                      |                     |                |                |              |                          | 0                   |                |                | 0            | 26.6                     | 5                   | 0              | 1              | 5            | 26.2                     |
| 20 / 24                      |                     |                |                |              |                          |                     |                |                |              |                          | 1                   | 0              | 0              | 1            | 20.8                     |
| 15 / 19                      |                     |                |                |              |                          |                     |                |                |              |                          | 0                   |                | 0              | 0            | 16.5                     |

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**MCCLELLAN AFB CA**

WMO No. 724836

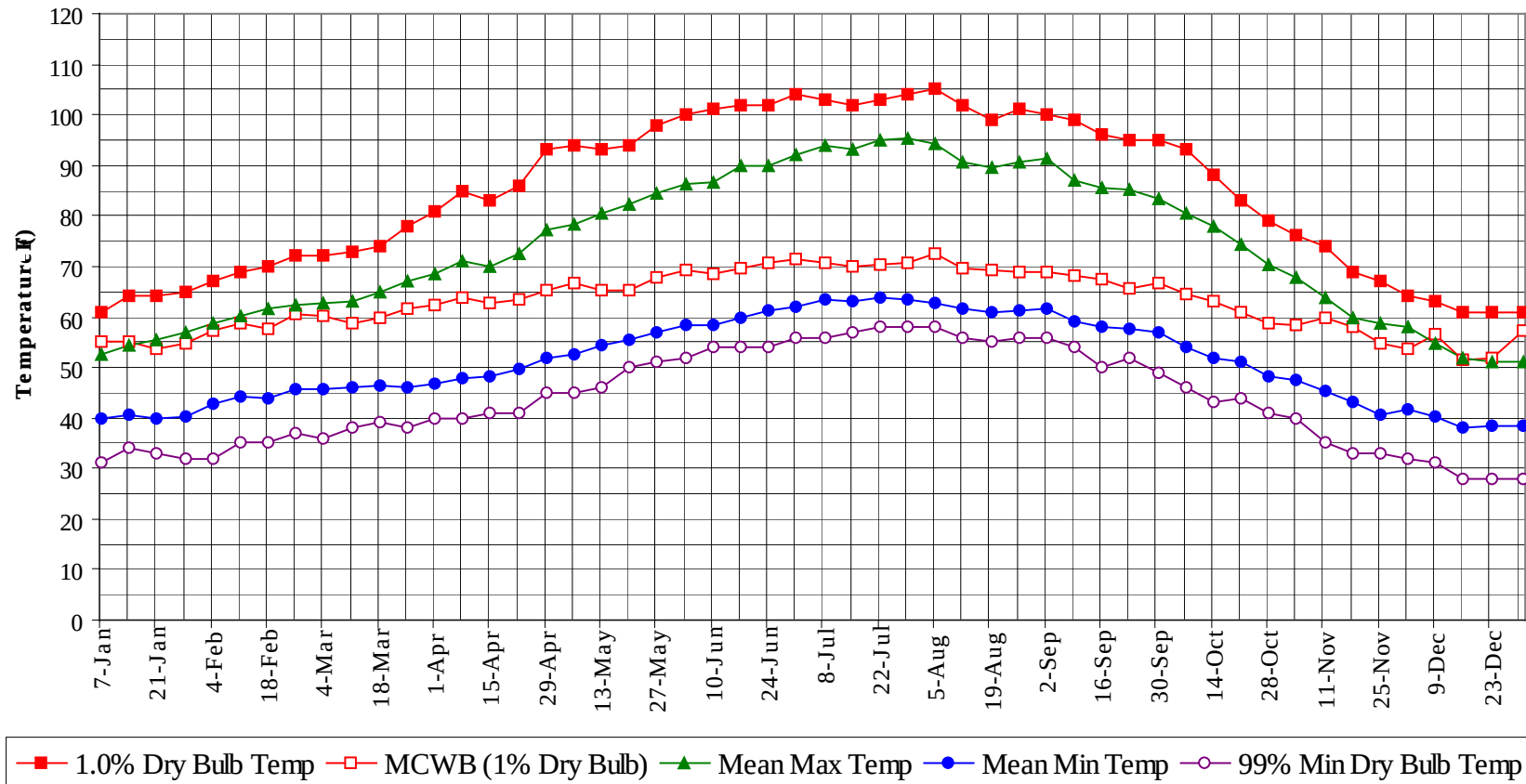
**Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)**

**Period of Record = 1967 to 1996**

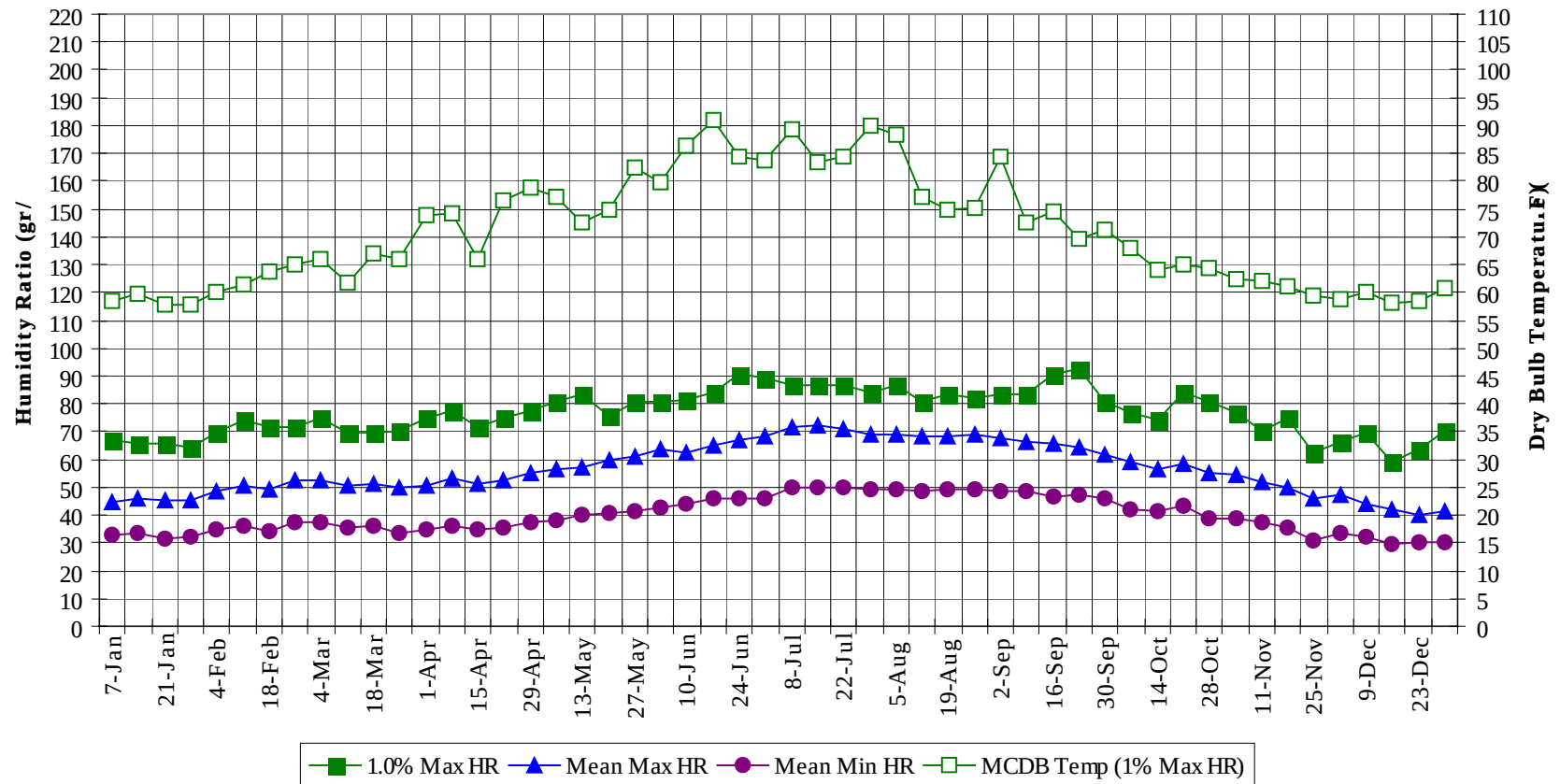
| Annual Totals                |                     |                |                |              |                          |
|------------------------------|---------------------|----------------|----------------|--------------|--------------------------|
| Temperature<br>Range<br>(°F) | Hour<br>Group (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 |              |                          |
| 110 / 114                    |                     | 0              |                | 0            | 73.5                     |
| 105 / 109                    |                     | 6              | 2              | 8            | 71.5                     |
| 100 / 104                    |                     | 41             | 19             | 60           | 69.9                     |
| 95 / 99                      |                     | 100            | 46             | 146          | 68.4                     |
| 90 / 94                      |                     | 167            | 80             | 247          | 66.6                     |
| 85 / 89                      | 1                   | 211            | 115            | 327          | 65.0                     |
| 80 / 84                      | 10                  | 254            | 158            | 422          | 63.2                     |
| 75 / 79                      | 44                  | 279            | 215            | 538          | 61.2                     |
| 70 / 74                      | 129                 | 288            | 275            | 692          | 59.2                     |
| 65 / 69                      | 275                 | 298            | 319            | 892          | 57.0                     |
| 60 / 64                      | 471                 | 320            | 368            | 1159         | 54.8                     |
| 55 / 59                      | 512                 | 342            | 403            | 1257         | 51.8                     |
| 50 / 54                      | 493                 | 300            | 391            | 1184         | 48.2                     |
| 45 / 49                      | 414                 | 182            | 297            | 893          | 44.2                     |
| 40 / 44                      | 308                 | 91             | 166            | 565          | 40.2                     |
| 35 / 39                      | 187                 | 35             | 55             | 277          | 35.7                     |
| 30 / 34                      | 63                  | 6              | 10             | 79           | 31.1                     |
| 25 / 29                      | 10                  | 0              | 1              | 11           | 26.3                     |
| 20 / 24                      | 1                   | 0              | 0              | 1            | 21.2                     |
| 15 / 19                      | 0                   |                | 0              | 0            | 16.5                     |

**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



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

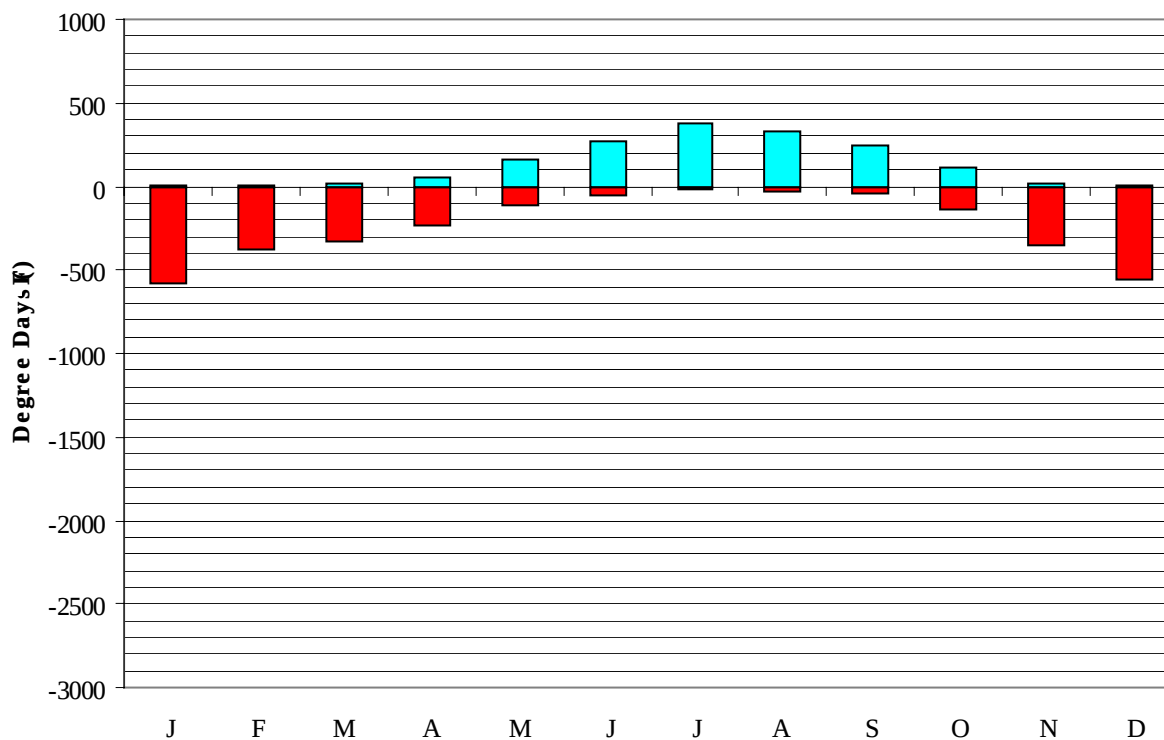
| Week<br>Ending | 1.0%<br>Temp (°F) | MCWB @<br>1% Temp (°F) | Mean Max<br>Temp (°F) | Mean Min<br>Temp (°F) | 99%<br>Temp (°F) | 1.0%<br>HR (gr/lb) | MCDB @<br>1% HR (°F) | Mean Max<br>HR (gr/lb) | Mean Min<br>HR (gr/lb) |
|----------------|-------------------|------------------------|-----------------------|-----------------------|------------------|--------------------|----------------------|------------------------|------------------------|
| 7-Jan          | 61.0              | 55.0                   | 52.7                  | 40.0                  | 31.0             | 67.2               | 58.5                 | 44.8                   | 33.1                   |
| 14-Jan         | 64.0              | 54.9                   | 54.4                  | 40.7                  | 34.0             | 65.8               | 59.6                 | 45.7                   | 33.8                   |
| 21-Jan         | 64.0              | 53.6                   | 55.6                  | 40.0                  | 33.0             | 65.8               | 57.9                 | 45.5                   | 31.6                   |
| 28-Jan         | 65.0              | 54.6                   | 56.8                  | 40.3                  | 32.0             | 64.4               | 57.9                 | 45.4                   | 32.0                   |
| 4-Feb          | 67.0              | 57.1                   | 58.8                  | 42.7                  | 32.0             | 69.3               | 60.3                 | 48.7                   | 35.0                   |
| 11-Feb         | 69.0              | 58.6                   | 60.1                  | 44.3                  | 35.0             | 74.2               | 61.6                 | 50.6                   | 36.3                   |
| 18-Feb         | 70.0              | 57.5                   | 61.8                  | 43.7                  | 35.0             | 71.4               | 63.7                 | 49.6                   | 34.4                   |
| 25-Feb         | 72.0              | 60.4                   | 62.3                  | 45.8                  | 37.0             | 71.4               | 65.1                 | 52.5                   | 37.6                   |
| 4-Mar          | 72.0              | 60.2                   | 62.9                  | 45.9                  | 36.0             | 74.9               | 66.0                 | 52.3                   | 37.6                   |
| 11-Mar         | 73.0              | 58.9                   | 63.1                  | 46.0                  | 38.0             | 69.3               | 61.6                 | 50.8                   | 35.8                   |
| 18-Mar         | 74.0              | 59.8                   | 65.0                  | 46.3                  | 39.0             | 69.3               | 66.9                 | 51.3                   | 36.1                   |
| 25-Mar         | 78.0              | 61.6                   | 67.1                  | 46.2                  | 38.0             | 70.0               | 65.9                 | 49.6                   | 33.7                   |
| 1-Apr          | 81.0              | 62.3                   | 68.4                  | 46.7                  | 40.0             | 74.9               | 73.8                 | 50.8                   | 34.8                   |
| 8-Apr          | 85.0              | 63.9                   | 71.2                  | 47.9                  | 40.0             | 77.7               | 74.1                 | 53.3                   | 36.1                   |
| 15-Apr         | 83.0              | 62.5                   | 70.1                  | 48.2                  | 41.0             | 71.4               | 66.1                 | 51.0                   | 34.9                   |
| 22-Apr         | 86.0              | 63.4                   | 72.5                  | 49.6                  | 41.0             | 74.9               | 76.4                 | 52.8                   | 35.3                   |
| 29-Apr         | 93.0              | 65.4                   | 77.1                  | 51.8                  | 45.0             | 77.7               | 78.9                 | 55.2                   | 37.4                   |
| 6-May          | 94.0              | 66.8                   | 78.4                  | 52.6                  | 45.0             | 80.5               | 77.3                 | 56.3                   | 37.8                   |
| 13-May         | 93.0              | 65.3                   | 80.6                  | 54.3                  | 46.0             | 83.3               | 72.6                 | 57.3                   | 39.9                   |
| 20-May         | 94.0              | 65.4                   | 82.3                  | 55.4                  | 50.0             | 75.6               | 74.8                 | 60.0                   | 40.9                   |
| 27-May         | 98.0              | 67.8                   | 84.6                  | 56.8                  | 51.0             | 80.5               | 82.4                 | 61.2                   | 41.7                   |
| 3-Jun          | 100.0             | 69.1                   | 86.2                  | 58.4                  | 52.0             | 80.5               | 79.9                 | 63.7                   | 42.7                   |
| 10-Jun         | 101.0             | 68.4                   | 86.7                  | 58.4                  | 54.0             | 81.2               | 86.5                 | 62.1                   | 43.7                   |
| 17-Jun         | 102.0             | 69.5                   | 89.9                  | 59.7                  | 54.0             | 84.0               | 90.8                 | 64.9                   | 45.9                   |
| 24-Jun         | 102.0             | 70.5                   | 90.1                  | 61.2                  | 54.0             | 90.3               | 84.4                 | 66.8                   | 46.3                   |
| 1-Jul          | 104.0             | 71.2                   | 92.2                  | 62.1                  | 56.0             | 89.6               | 83.8                 | 68.0                   | 46.3                   |
| 8-Jul          | 103.0             | 70.8                   | 94.0                  | 63.3                  | 56.0             | 86.8               | 89.4                 | 71.6                   | 49.8                   |
| 15-Jul         | 102.0             | 69.8                   | 93.2                  | 63.1                  | 57.0             | 86.8               | 83.4                 | 71.9                   | 50.0                   |
| 22-Jul         | 103.0             | 70.5                   | 94.9                  | 63.8                  | 58.0             | 86.8               | 84.3                 | 71.2                   | 50.1                   |
| 29-Jul         | 104.0             | 70.6                   | 95.3                  | 63.6                  | 58.0             | 84.0               | 90.0                 | 68.7                   | 49.0                   |
| 5-Aug          | 105.0             | 72.7                   | 94.2                  | 62.9                  | 58.0             | 86.8               | 88.4                 | 68.8                   | 49.0                   |
| 12-Aug         | 102.0             | 69.5                   | 90.6                  | 61.6                  | 56.0             | 80.5               | 77.1                 | 68.3                   | 48.9                   |
| 19-Aug         | 99.0              | 69.3                   | 89.7                  | 60.8                  | 55.0             | 83.3               | 75.0                 | 68.1                   | 49.0                   |
| 26-Aug         | 101.0             | 68.9                   | 90.7                  | 61.2                  | 56.0             | 81.9               | 75.2                 | 68.7                   | 49.2                   |
| 2-Sep          | 100.0             | 69.1                   | 91.3                  | 61.5                  | 56.0             | 83.3               | 84.6                 | 67.9                   | 48.8                   |
| 9-Sep          | 99.0              | 68.2                   | 86.9                  | 59.2                  | 54.0             | 83.3               | 72.5                 | 66.1                   | 48.5                   |
| 16-Sep         | 96.0              | 67.6                   | 85.6                  | 58.0                  | 50.0             | 90.3               | 74.7                 | 65.6                   | 46.8                   |
| 23-Sep         | 95.0              | 65.6                   | 85.2                  | 57.8                  | 52.0             | 92.4               | 69.7                 | 64.3                   | 47.0                   |
| 30-Sep         | 95.0              | 66.7                   | 83.4                  | 56.8                  | 49.0             | 80.5               | 71.2                 | 61.8                   | 45.9                   |
| 7-Oct          | 93.0              | 64.6                   | 80.6                  | 53.9                  | 46.0             | 77.0               | 67.8                 | 59.3                   | 42.2                   |
| 14-Oct         | 88.0              | 63.2                   | 77.9                  | 51.9                  | 43.0             | 74.2               | 63.9                 | 56.5                   | 41.6                   |
| 21-Oct         | 83.0              | 60.8                   | 74.4                  | 51.0                  | 44.0             | 84.0               | 65.1                 | 58.6                   | 43.0                   |
| 28-Oct         | 79.0              | 58.7                   | 70.4                  | 48.1                  | 41.0             | 80.5               | 64.3                 | 54.8                   | 38.7                   |
| 4-Nov          | 76.0              | 58.5                   | 68.0                  | 47.6                  | 40.0             | 77.0               | 62.4                 | 54.4                   | 38.9                   |
| 11-Nov         | 74.0              | 60.0                   | 63.7                  | 45.2                  | 35.0             | 70.0               | 62.1                 | 52.0                   | 37.2                   |
| 18-Nov         | 69.0              | 58.2                   | 59.9                  | 43.1                  | 33.0             | 74.9               | 61.1                 | 49.7                   | 35.6                   |
| 25-Nov         | 67.0              | 54.8                   | 58.8                  | 40.7                  | 33.0             | 62.3               | 59.3                 | 45.9                   | 31.2                   |
| 2-Dec          | 64.0              | 53.8                   | 57.9                  | 41.6                  | 32.0             | 66.5               | 58.9                 | 47.0                   | 33.5                   |
| 9-Dec          | 63.0              | 56.5                   | 54.9                  | 40.4                  | 31.0             | 69.3               | 60.2                 | 44.0                   | 31.9                   |
| 16-Dec         | 61.0              | 51.3                   | 51.9                  | 37.9                  | 28.0             | 58.8               | 58.1                 | 41.8                   | 29.8                   |
| 23-Dec         | 61.0              | 52.0                   | 51.0                  | 38.3                  | 28.0             | 63.7               | 58.4                 | 40.1                   | 30.2                   |
| 31-Dec         | 61.0              | 57.2                   | 51.1                  | 38.4                  | 28.0             | 70.0               | 60.7                 | 41.4                   | 30.5                   |

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CA

WMO No. 724836

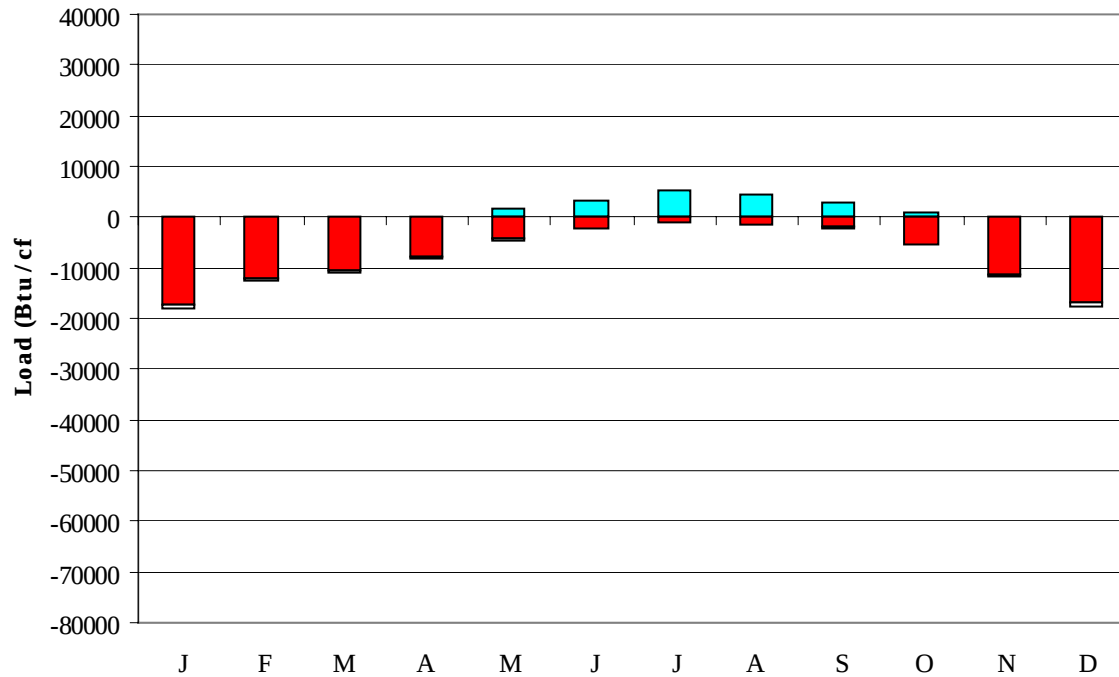
**Degree Days, Heating and Cooling**  
**(Base 65°F)**



■ Mean Cooling Degree Days ■ Mean Heating Degree Days

|     | Mean Cooling<br>Degree Days (°F) | Mean Heating<br>Degree Days (°F) |
|-----|----------------------------------|----------------------------------|
| JAN | 0                                | 578                              |
| FEB | 4                                | 383                              |
| MAR | 14                               | 328                              |
| APR | 58                               | 229                              |
| MAY | 162                              | 119                              |
| JUN | 270                              | 51                               |
| JUL | 377                              | 20                               |
| AUG | 332                              | 27                               |
| SEP | 246                              | 45                               |
| OCT | 112                              | 142                              |
| NOV | 12                               | 358                              |
| DEC | 0                                | 558                              |
| ANN | 1587                             | 2838                             |

**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: black;">■</span> Average Latent Heating (Humidifying) Load |

|     | Average Sensible Cooling Load (Btu/cfm) | Average Sensible Heating Load (Btu/cfm) | Average Latent Cooling Load (Btu/cfm) | Average Latent Heating Load (Btu/cfm) |
|-----|-----------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------|
| JAN | 0                                       | -17389                                  | 0                                     | -549                                  |
| FEB | 0                                       | -12069                                  | 3                                     | -348                                  |
| MAR | 15                                      | -10717                                  | 1                                     | -333                                  |
| APR | 309                                     | -7718                                   | 7                                     | -291                                  |
| MAY | 1566                                    | -4389                                   | 23                                    | -129                                  |
| JUN | 3300                                    | -2170                                   | 68                                    | -47                                   |
| JUL | 5119                                    | -1073                                   | 109                                   | -2                                    |
| AUG | 4294                                    | -1371                                   | 50                                    | -3                                    |
| SEP | 2805                                    | -2028                                   | 85                                    | -33                                   |
| OCT | 844                                     | -5208                                   | 21                                    | -180                                  |
| NOV | 17                                      | -11440                                  | 6                                     | -394                                  |
| DEC | 0                                       | -16778                                  | 0                                     | -680                                  |
| ANN | 18269                                   | -92350                                  | 373                                   | -2989                                 |

## Average Annual Solar Radiation – Nearest Available Site

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

City: SACRAMENTO  
 State: CA  
 WBAN No: 23232  
 Lat(N): 38.52  
 Long(W): 121.5  
 Elev(ft): 26

Stn Type: Secondary  
 SHADING GEOMETRY IN DIMENSIONLESS UNITS

Window: 1  
 Overhang: 0.491  
 Vert Gap: 0.313

| 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  | 610  | 940  | 1370 | 1870 | 2280 | 2490 | 2520 | 2230 | 1810 | 1280 | 760  | 550  | 1560 |
|                                                                               | Std Dev | 64   | 114  | 138  | 167  | 134  | 96   | 56   | 82   | 80   | 70   | 100  | 73   | 36   |
|                                                                               | Minimum | 490  | 730  | 1070 | 1460 | 1970 | 2210 | 2330 | 2010 | 1610 | 1110 | 590  | 440  | 1460 |
|                                                                               | Maximum | 750  | 1200 | 1690 | 2070 | 2460 | 2660 | 2600 | 2350 | 1920 | 1370 | 950  | 730  | 1620 |
|                                                                               | Diffuse | 360  | 450  | 570  | 650  | 650  | 610  | 540  | 520  | 460  | 410  | 360  | 320  | 490  |
| Clear Day                                                                     | Global  | 890  | 1240 | 1740 | 2240 | 2560 | 2690 | 2620 | 2340 | 1900 | 1390 | 960  | 790  | 1780 |
| NORTH                                                                         | Global  | 210  | 280  | 360  | 460  | 580  | 680  | 640  | 490  | 380  | 310  | 230  | 190  | 400  |
|                                                                               | Diffuse | 210  | 280  | 360  | 440  | 500  | 510  | 490  | 440  | 370  | 310  | 230  | 190  | 360  |
| Clear Day                                                                     | Global  | 210  | 270  | 350  | 430  | 590  | 690  | 640  | 480  | 370  | 290  | 220  | 190  | 400  |
| EAST                                                                          | Global  | 370  | 570  | 830  | 1110 | 1300 | 1380 | 1410 | 1300 | 1110 | 810  | 480  | 340  | 920  |
|                                                                               | Diffuse | 250  | 340  | 450  | 560  | 610  | 610  | 600  | 560  | 480  | 390  | 280  | 230  | 450  |
| Clear Day                                                                     | Global  | 620  | 830  | 1100 | 1340 | 1470 | 1500 | 1470 | 1380 | 1180 | 910  | 670  | 570  | 1090 |
| SOUTH                                                                         | Global  | 850  | 1130 | 1220 | 1140 | 960  | 850  | 910  | 1140 | 1430 | 1470 | 1080 | 820  | 1080 |
|                                                                               | Diffuse | 360  | 450  | 530  | 560  | 550  | 530  | 520  | 520  | 510  | 490  | 400  | 330  | 480  |
| Clear Day                                                                     | Global  | 1690 | 1810 | 1730 | 1390 | 1050 | 890  | 940  | 1220 | 1590 | 1790 | 1720 | 1630 | 1450 |
| WEST                                                                          | Global  | 410  | 600  | 840  | 1100 | 1300 | 1380 | 1420 | 1310 | 1120 | 820  | 510  | 370  | 930  |
|                                                                               | Diffuse | 260  | 350  | 460  | 560  | 610  | 610  | 590  | 560  | 480  | 390  | 290  | 230  | 450  |
| Clear Day                                                                     | Global  | 620  | 830  | 1100 | 1340 | 1470 | 1500 | 1470 | 1380 | 1180 | 910  | 670  | 570  | 1090 |

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

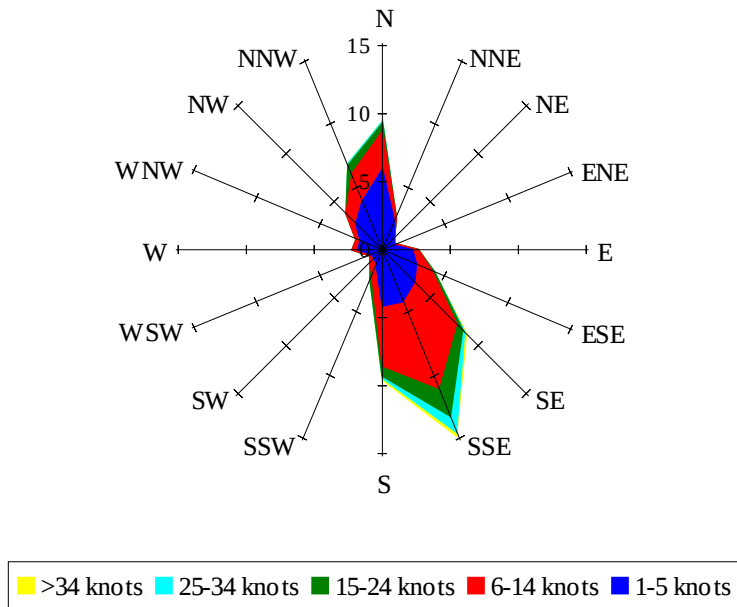
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

| 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 | 410 | 650 | 970 | 1360 | 1670 | 1830 | 1850 | 1630 | 1310 | 890  | 510 | 360 | 1120 |
| NORTH                                                                                               | Unshaded | 140 | 190 | 250 | 310  | 370  | 420  | 400  | 320  | 260  | 210  | 160 | 130 | 260  |
|                                                                                                     | Shaded   | 130 | 170 | 230 | 280  | 340  | 390  | 370  | 300  | 240  | 200  | 140 | 120 | 240  |
| EAST                                                                                                | Unshaded | 250 | 400 | 590 | 790  | 930  | 980  | 1010 | 930  | 790  | 570  | 330 | 230 | 650  |
|                                                                                                     | Shaded   | 220 | 360 | 520 | 700  | 810  | 850  | 880  | 810  | 700  | 510  | 300 | 200 | 570  |
| SOUTH                                                                                               | Unshaded | 640 | 820 | 840 | 730  | 560  | 480  | 520  | 690  | 950  | 1060 | 800 | 620 | 720  |
|                                                                                                     | Shaded   | 610 | 760 | 670 | 480  | 360  | 340  | 340  | 400  | 680  | 940  | 780 | 600 | 580  |
| WEST                                                                                                | Unshaded | 280 | 420 | 590 | 780  | 930  | 990  | 1010 | 930  | 800  | 580  | 350 | 250 | 660  |
|                                                                                                     | Shaded   | 250 | 370 | 530 | 690  | 800  | 850  | 880  | 820  | 710  | 520  | 310 | 230 | 580  |

| 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  | 39    | 73   | 83  | 66  | 28  | 48   | 86   | 105 | 100 | 72  |
|                                                                                                                  | M.Cloudy | 24    | 48   | 56  | 45  | 18  | 35   | 62   | 84  | 80  | 56  |
| NORTH                                                                                                            | M.Clear  | 10    | 15   | 16  | 14  | 8   | 20   | 16   | 16  | 16  | 14  |
|                                                                                                                  | M.Cloudy | 9     | 16   | 17  | 15  | 7   | 16   | 17   | 18  | 18  | 16  |
| EAST                                                                                                             | M.Clear  | 72    | 57   | 16  | 14  | 8   | 81   | 75   | 32  | 16  | 14  |
|                                                                                                                  | M.Cloudy | 30    | 35   | 17  | 15  | 7   | 49   | 51   | 30  | 18  | 16  |
| SOUTH                                                                                                            | M.Clear  | 37    | 71   | 81  | 64  | 26  | 11   | 30   | 45  | 41  | 20  |
|                                                                                                                  | M.Cloudy | 19    | 41   | 49  | 38  | 14  | 12   | 25   | 39  | 36  | 19  |
| WEST                                                                                                             | M.Clear  | 10    | 15   | 22  | 66  | 63  | 11   | 16   | 16  | 52  | 83  |
|                                                                                                                  | M.Cloudy | 9     | 16   | 20  | 38  | 27  | 12   | 17   | 18  | 44  | 59  |
| M.Clear                                                                                                          | (% hrs)  | 43    | 41   | 39  | 40  | 43  | 77   | 78   | 76  | 76  | 76  |
|                                                                                                                  |          | Sept  |      |     |     |     | Dec  |      |     |     |     |
|                                                                                                                  |          | 9am   | 11am | 1pm | 3pm | 5pm | 9am  | 11am | 1pm | 3pm | 5pm |
| HORIZ.                                                                                                           | M.Clear  | 28    | 69   | 89  | 82  | 51  | 13   | 40   | 46  | 29  | 3   |
|                                                                                                                  | M.Cloudy | 19    | 47   | 65  | 61  | 36  | 8    | 23   | 26  | 18  | 2   |
| NORTH                                                                                                            | M.Clear  | 8     | 14   | 16  | 15  | 12  | 5    | 10   | 11  | 9   | 2   |
|                                                                                                                  | M.Cloudy | 8     | 15   | 17  | 17  | 12  | 4    | 10   | 11  | 8   | 1   |
| EAST                                                                                                             | M.Clear  | 65    | 72   | 30  | 15  | 12  | 32   | 37   | 11  | 9   | 2   |
|                                                                                                                  | M.Cloudy | 32    | 44   | 26  | 17  | 12  | 8    | 16   | 11  | 8   | 1   |
| SOUTH                                                                                                            | M.Clear  | 20    | 56   | 76  | 69  | 40  | 29   | 73   | 82  | 56  | 5   |
|                                                                                                                  | M.Cloudy | 13    | 37   | 55  | 50  | 27  | 7    | 24   | 27  | 19  | 2   |
| WEST                                                                                                             | M.Clear  | 8     | 14   | 16  | 54  | 79  | 5    | 10   | 21  | 43  | 7   |
|                                                                                                                  | M.Cloudy | 8     | 15   | 17  | 40  | 47  | 4    | 10   | 13  | 16  | 2   |
| M.Clear                                                                                                          | (% hrs)  | 80    | 81   | 80  | 80  | 78  | 27   | 29   | 32  | 35  | 37  |

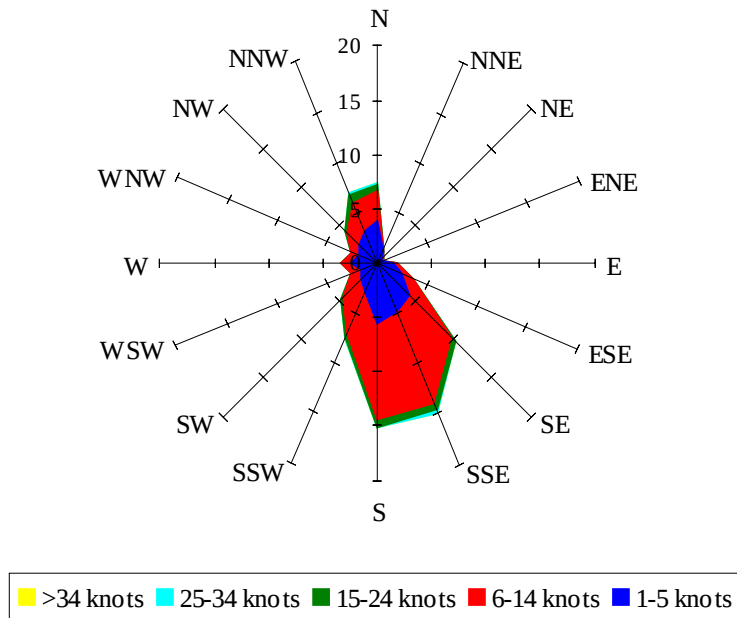


# **Wind Summary - December, January, and February** **Labels of Percent Frequency on North Axis**



Percent Calm = 27.40

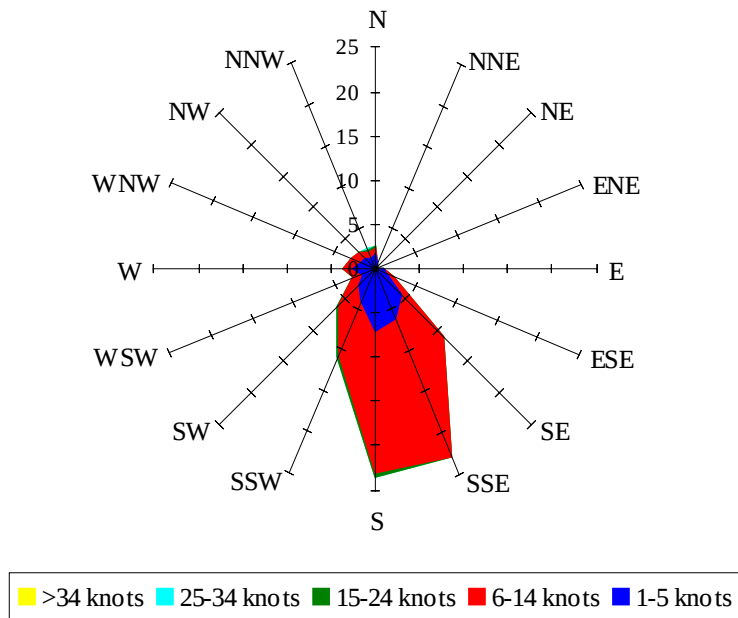
# **Wind Summary - March, April, and May** **Labels of Percent Frequency on North Axis**



Percent Calm = 12.69

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

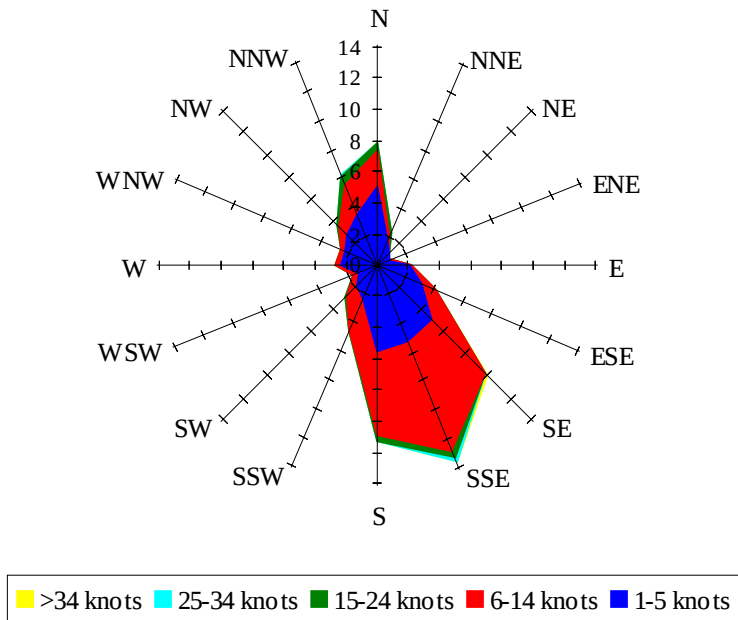
Labels of Percent Frequency on North Axis



Percent Calm = 5.54

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

Labels of Percent Frequency on North Axis



Percent Calm = 23.64