| | |
|---|---|
| **CASTLE AFB/MERCED CA** | |
| Latitude = 37.38 N | WMO No. 724810 |
| Longitude =120.50 W | Elevation = 187 feet |
| Period of Record = 1967 to 1995 | Average Pressure = 29.75 inches Hg |

## Design Criteria Data

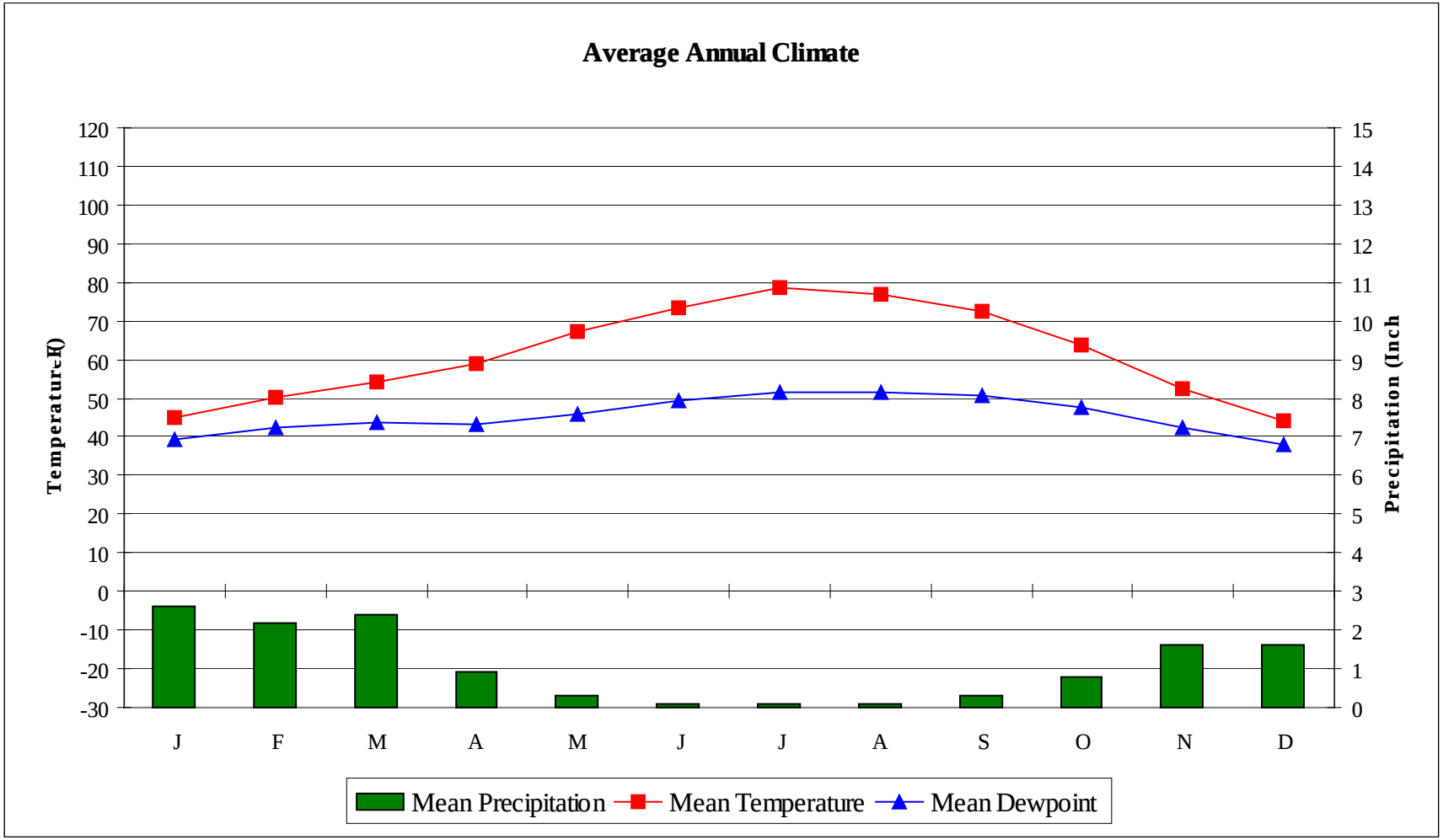
| | | Mean Coincident (Average) Values | | | |
|---|---|---|---|---|---|
| **Dry Bulb Temperature (T)** | **Design Value ($^oF$)** | Wet Bulb Temperature ($^oF$) | Humidity Ratio (gr/lb) | Wind Speed (mph) | Prevailing Direction (NSEW) |
| Median of Extreme Highs | 104 | 71 | 62 | 8.5 | NW |
| 0.4% Occurrence | 100 | 70 | 63 | 8.5 | NW |
| 1.0% Occurrence | 98 | 69 | 61 | 7.9 | NW |
| 2.0% Occurrence | 95 | 68 | 61 | 7.9 | NW |
| Mean Daily Range | 24 | - | - | - | - |
| 97.5% Occurrence | 35 | 34 | 26 | 1.3 | ESE |
| 99.0% Occurrence | 32 | 31 | 23 | 1.3 | ESE |
| 99.6% Occurrence | 30 | 29 | 20 | 1.3 | ESE |
| Median of Extreme Lows | 27 | 25 | 16 | 1.4 | E |
| | | Mean Coincident (Average) Values | | | |
| **Wet Bulb Temperature ($T_{wb}$)** | **Design Value ($^oF$)** | Dry Bulb Temperature ($^oF$) | Humidity Ratio (gr/lb) | Wind Speed (mph) | Prevailing Direction (NSEW) |
| Median of Extreme Highs | 74 | 96 | 90 | 7.9 | NNW |
| 0.4% Occurrence | 72 | 96 | 80 | 7.9 | NW |
| 1.0% Occurrence | 71 | 94 | 77 | 7.6 | NNW |
| 2.0% Occurrence | 69 | 92 | 70 | 7.5 | NW |
| | | Mean Coincident (Average) Values | | | |
| **Humidity Ratio (HR)** | **Design Value (gr/lb)** | Dry Bulb Temperature ($^oF$) | Vapor Pressure (in. Hg) | Wind Speed (mph) | Prevailing Direction (NSEW) |
| Median of Extreme Highs | 99 | 74 | 0.67 | 3.5 | N |
| 0.4% Occurrence | 88 | 88 | 0.58 | 6.1 | NW |
| 1.0% Occurrence | 81 | 84 | 0.54 | 6.0 | NNW |
| 2.0% Occurrence | 78 | 81 | 0.52 | 6.0 | NNW |
| **Air Conditioning/** | | $T \geq 93^oF$ | $T \geq 80^oF$ | $T_{wb} \geq 73^oF$ | $T_{wb} \geq 67^oF$ |
| **Humid Area Criteria** | # of Hours | 285 | 1313 | 26 | 521 |

**Other Site Data**

| Weather Region | Rain Rate 100 Year Recurrence (in./hr) | Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph) | Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base $75^oF$-RH 60% Latent + Sensible |
|---|---|---|---|
| 8 | 1.5 | 85 | 0.0 + 1.5 |
| **Ground Water Temperature ($^oF$) 50 Foot Depth *** | **Frost Depth 50 Year Recurrence (in.)** | **Ground Snow Load 50 Year Recurrence ($lb/ft^2$)** | **Average Annual Freeze-Thaw Cycles (#)** |
| 63.9 | 9 | 0 | 12 |

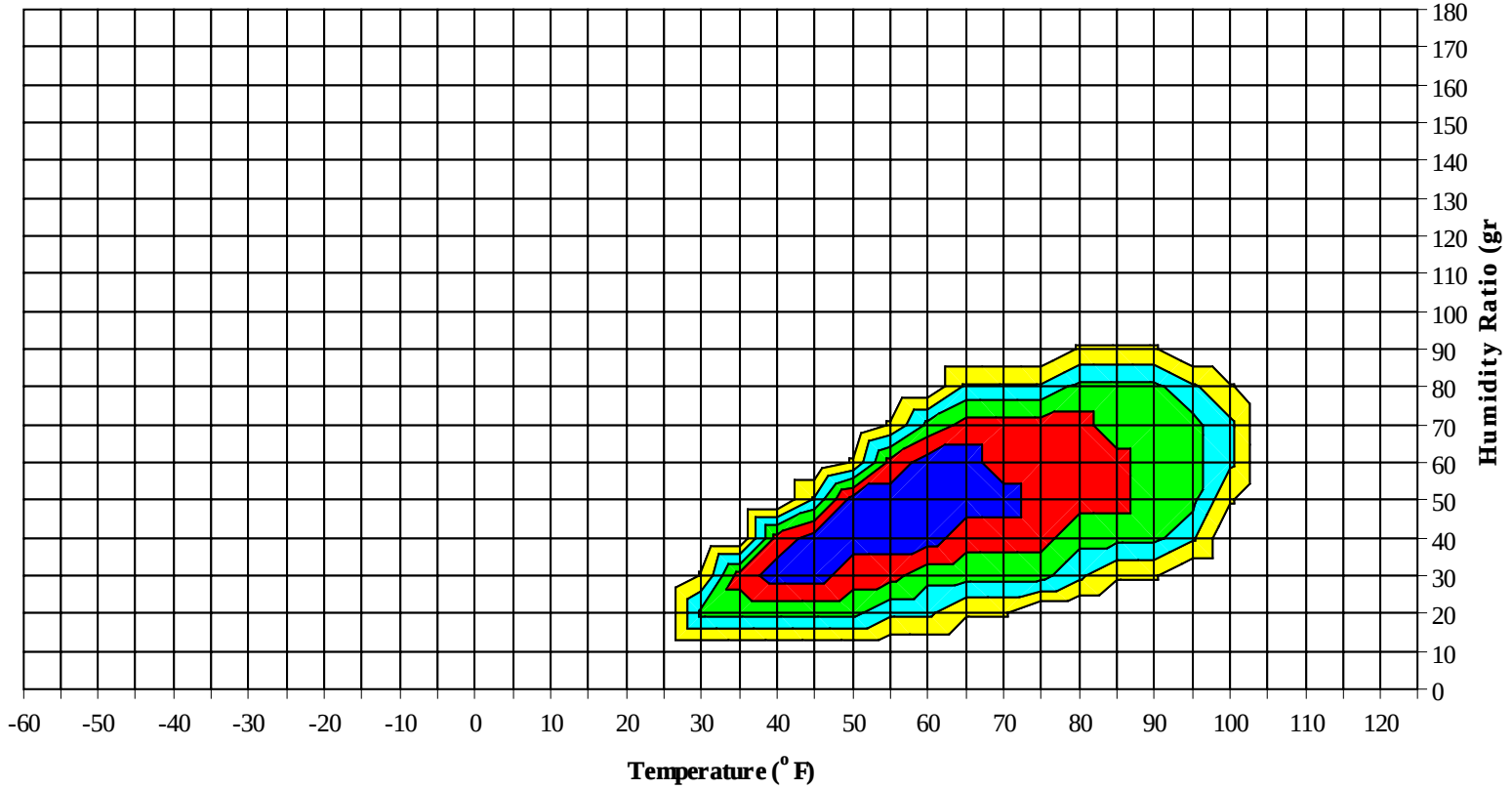
*Note: Temperatures at greater depths can be estimated by adding $1.5^oF$ per 100 feet additional depth.

**CASTLE AFB/MERCED CA** WMO No. 724810



**CASTLE AFB/MERCED CA** WMO No. 724810

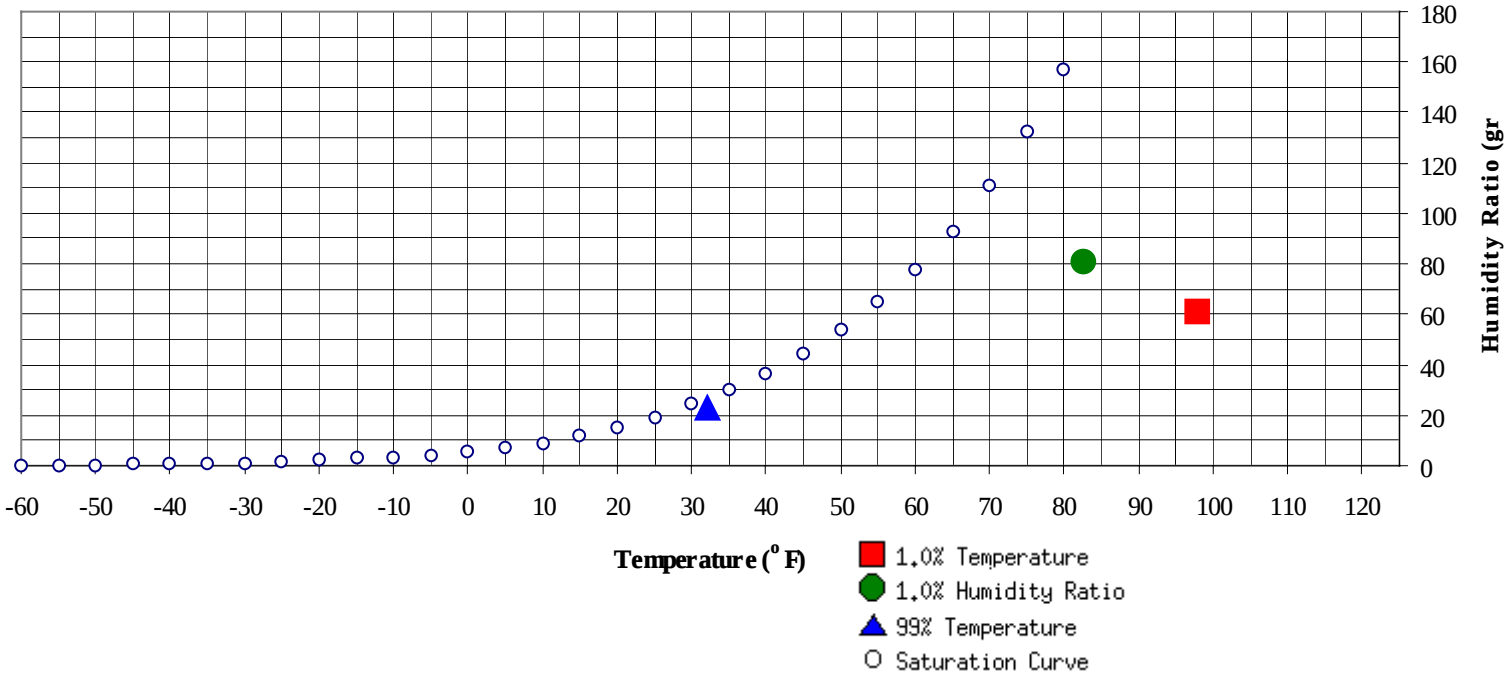
## Long Term Psychrometric Summary




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

**CASTLE AFB/MERCED CA** WMO No. 724810

## Psychrometric Summary of Peak Design Values




| | (°F) | MCHR (gr/lb) | Enthalpy (btu/lb) |
|---|---|---|---|
| **99% Dry Bulb** | 32 | 22.6 | 11.2 |

| | (gr/lb) | MCDB (°F) | MCWB (°F) | MC Dewpt (°F) | Enthalpy (btu/lb) |
|---|---|---|---|---|---|
| **1.0% Humidity Ratio** | 81.2 | 82.6 | 68.2 | 61 | 32.6 |

| | (°F) | MCHR (gr/lb) | MCWB (°F) | Enthalpy (btu/lb) |
|---|---|---|---|---|
| **1.0% Dry Bulb** | 98 | 61.4 | 69 | 33.2 |

**CASTLE AFB/MERCED CA** WMO No. 724810

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

**Period of Record = 1967 to 1995**

| Temperature Range (°F) | January Hour Group (LST) 01 To 08 | January 09 To 16 | January 17 To 00 | January Total Obs | January MCWB (°F) | February Hour Group (LST) 01 To 08 | February 09 To 16 | February 17 To 00 | February Total Obs | February MCWB (°F) | March Hour Group (LST) 01 To 08 | March 09 To 16 | March 17 To 00 | March Total Obs | March MCWB (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **105 / 109** | | | | | | | | | | | | | | | |
| **100 / 104** | | | | | | | | | | | | | | | |
| **95 / 99** | | | | | | | | | | | | | | | |
| **90 / 94** | | | | | | | | | | | | | | | |
| **85 / 89** | | | | | | | | | | | | | | | |
| **80 / 84** | | | | | | | | | | | | 0 | 0 | 0 | 62.0 |
| **75 / 79** | | | | | | | 1 | 0 | 1 | 61.7 | | 5 | 1 | 6 | 60.1 |
| **70 / 74** | | 0 | | 0 | 56.1 | | 5 | 1 | 6 | 58.5 | | 19 | 5 | 25 | 58.4 |
| **65 / 69** | | 3 | 0 | 3 | 57.3 | | 18 | 5 | 23 | 56.6 | | 41 | 16 | 57 | 56.4 |
| **60 / 64** | 1 | 14 | 4 | 19 | 54.6 | 0 | 38 | 17 | 55 | 54.1 | 2 | 61 | 33 | 95 | 53.8 |
| **55 / 59** | 7 | 39 | 19 | 65 | 51.6 | 11 | 60 | 44 | 115 | 51.4 | 21 | 69 | 65 | 154 | 51.1 |
| **50 / 54** | 23 | 58 | 44 | 125 | 48.2 | 33 | 56 | 61 | 150 | 48.2 | 62 | 42 | 67 | 171 | 47.9 |
| **45 / 49** | 43 | 58 | 61 | 161 | 44.2 | 60 | 35 | 57 | 152 | 44.4 | 82 | 14 | 44 | 140 | 44.1 |
| **40 / 44** | 60 | 49 | 72 | 181 | 40.2 | 64 | 12 | 29 | 105 | 40.1 | 60 | 2 | 13 | 74 | 40.1 |
| **35 / 39** | 70 | 25 | 38 | 133 | 36.0 | 40 | 3 | 6 | 50 | 35.6 | 17 | 0 | 1 | 19 | 35.6 |
| **30 / 34** | 35 | 3 | 8 | 46 | 30.9 | 12 | 0 | 1 | 14 | 31.0 | 2 | | | 2 | 30.6 |
| **25 / 29** | 9 | 0 | 1 | 10 | 26.6 | 1 | 0 | | 1 | 25.5 | | | | | |
| **20 / 24** | 1 | | 0 | 1 | 22.0 | 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.**

**CASTLE AFB/MERCED CA** WMO No. 724810

## Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

## Period of Record = 1967 to 1995

| Temperature Range (°F) | April Hour Group (LST) 01 To 08 | April 09 To 16 | April 17 To 00 | April Total Obs | April MCWB (°F) | May Hour Group (LST) 01 To 08 | May 09 To 16 | May 17 To 00 | May Total Obs | May MCWB (°F) | June Hour Group (LST) 01 To 08 | June 09 To 16 | June 17 To 00 | June Total Obs | June MCWB (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **105 / 109** | | | | | | | 0 | | 0 | 70.7 | | 1 | 0 | 1 | 69.0 |
| **100 / 104** | | | | | | | 1 | 0 | 1 | 69.2 | | 6 | 2 | 9 | 69.7 |
| **95 / 99** | | | | | | | 6 | 2 | 7 | 67.3 | | 17 | 7 | 24 | 68.4 |
| **90 / 94** | | 1 | 0 | 2 | 65.5 | | 17 | 6 | 24 | 65.9 | 0 | 31 | 14 | 46 | 66.5 |
| **85 / 89** | | 5 | 2 | 7 | 63.5 | 0 | 28 | 12 | 40 | 64.1 | 1 | 46 | 25 | 71 | 64.9 |
| **80 / 84** | | 15 | 5 | 20 | 61.1 | 1 | 39 | 20 | 60 | 61.9 | 3 | 49 | 34 | 86 | 63.0 |
| **75 / 79** | 0 | 28 | 10 | 38 | 59.1 | 3 | 44 | 28 | 74 | 59.8 | 12 | 41 | 38 | 90 | 60.9 |
| **70 / 74** | 1 | 41 | 18 | 60 | 57.1 | 10 | 45 | 37 | 93 | 57.7 | 28 | 30 | 39 | 97 | 58.9 |
| **65 / 69** | 2 | 48 | 29 | 79 | 55.0 | 25 | 35 | 42 | 101 | 55.6 | 49 | 16 | 36 | 101 | 56.6 |
| **60 / 64** | 12 | 50 | 43 | 106 | 52.7 | 47 | 24 | 43 | 115 | 53.3 | 67 | 4 | 28 | 99 | 54.4 |
| **55 / 59** | 37 | 35 | 53 | 126 | 50.3 | 66 | 9 | 34 | 108 | 50.7 | 60 | 1 | 12 | 73 | 51.8 |
| **50 / 54** | 80 | 15 | 52 | 146 | 47.5 | 65 | 1 | 20 | 85 | 47.5 | 19 | 0 | 2 | 21 | 48.6 |
| **45 / 49** | 71 | 3 | 21 | 95 | 43.9 | 27 | | 3 | 30 | 44.2 | 2 | | 0 | 2 | 45.7 |
| **40 / 44** | 32 | 0 | 5 | 37 | 39.8 | 4 | | 0 | 4 | 40.0 | | | | | |
| **35 / 39** | 5 | | 0 | 6 | 35.8 | 0 | | | 0 | 36.0 | | | | | |
| **30 / 34** | 0 | | | 0 | 32.4 | | | | | | | | | | |
| **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.**

**CASTLE AFB/MERCED CA** WMO No. 724810

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

## Period of Record = 1967 to 1995

| | July | | | | | August | | | | | September | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hour Group (LST) | | | | MCWB | Hour Group (LST) | | | | MCWB | Hour Group (LST) | | | | MCWB |
| Temperature Range (°F) | 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | (°F) | 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | (°F) | 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | (°F) |
| **105 / 109** | | 1 | 0 | 2 | 72.4 | | 1 | 0 | 1 | 71.3 | | | | | |
| **100 / 104** | | 14 | 4 | 18 | 70.5 | | 10 | 2 | 12 | 70.4 | | 2 | 0 | 3 | 70.4 |
| **95 / 99** | | 40 | 18 | 58 | 69.3 | | 27 | 11 | 37 | 68.8 | | 13 | 3 | 17 | 68.6 |
| **90 / 94** | 0 | 57 | 28 | 85 | 67.6 | | 50 | 21 | 70 | 67.3 | | 35 | 9 | 44 | 67.0 |
| **85 / 89** | 1 | 54 | 34 | 89 | 65.9 | 0 | 57 | 32 | 90 | 65.9 | 0 | 45 | 18 | 64 | 65.2 |
| **80 / 84** | 8 | 44 | 43 | 95 | 64.0 | 6 | 49 | 41 | 96 | 64.1 | 1 | 48 | 29 | 78 | 63.7 |
| **75 / 79** | 26 | 25 | 47 | 98 | 61.9 | 18 | 31 | 47 | 96 | 61.9 | 6 | 43 | 41 | 90 | 61.8 |
| **70 / 74** | 58 | 12 | 38 | 108 | 59.7 | 43 | 19 | 48 | 111 | 59.7 | 22 | 32 | 52 | 106 | 59.8 |
| **65 / 69** | 73 | 4 | 23 | 99 | 57.4 | 72 | 5 | 31 | 108 | 57.5 | 53 | 17 | 49 | 119 | 57.6 |
| **60 / 64** | 56 | 0 | 8 | 64 | 54.8 | 78 | 1 | 11 | 90 | 55.3 | 87 | 4 | 27 | 118 | 55.2 |
| **55 / 59** | 24 | | 1 | 25 | 52.0 | 30 | 0 | 1 | 31 | 53.0 | 57 | 1 | 8 | 66 | 52.1 |
| **50 / 54** | 2 | | 0 | 2 | 48.8 | 1 | | | 1 | 50.2 | 14 | | 1 | 15 | 48.1 |
| **45 / 49** | | | | | | | | | | | 1 | | | 1 | 43.6 |
| **40 / 44** | | | | | | | | | | | 0 | | | 0 | 39.5 |
| **35 / 39** | | | | | | | | | | | | | | | |
| **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.**

**CASTLE AFB/MERCED CA** WMO No. 724810

## Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

## Period of Record = 1967 to 1995

| Temperature Range (°F) | October Hour Group (LST) 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | MCWB (°F) | November Hour Group (LST) 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | MCWB (°F) | December Hour Group (LST) 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | MCWB (°F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **105 / 109** | | | | | | | | | | | | | | | |
| **100 / 104** | | | | | | | | | | | | | | | |
| **95 / 99** | | 1 | 0 | 1 | 69.0 | | | | | | | | | | |
| **90 / 94** | | 7 | 1 | 8 | 66.9 | | | | | | | | | | |
| **85 / 89** | | 15 | 3 | 18 | 64.6 | | | | | | | | | | |
| **80 / 84** | | 32 | 7 | 39 | 62.4 | | 0 | | 0 | 60.7 | | | | | |
| **75 / 79** | 0 | 47 | 17 | 64 | 60.7 | | 6 | 0 | 6 | 59.4 | | | | | |
| **70 / 74** | 2 | 50 | 30 | 82 | 58.9 | 0 | 18 | 2 | 20 | 57.6 | | | | | |
| **65 / 69** | 11 | 47 | 49 | 106 | 56.8 | 0 | 35 | 9 | 44 | 55.7 | | 3 | 0 | 3 | 55.2 |
| **60 / 64** | 38 | 33 | 60 | 131 | 54.6 | 3 | 51 | 24 | 77 | 53.6 | 0 | 16 | 2 | 18 | 53.0 |
| **55 / 59** | 74 | 14 | 50 | 138 | 51.9 | 18 | 56 | 51 | 126 | 51.3 | 5 | 40 | 14 | 58 | 50.6 |
| **50 / 54** | 74 | 4 | 23 | 101 | 48.2 | 48 | 47 | 66 | 161 | 48.1 | 20 | 60 | 41 | 121 | 47.6 |
| **45 / 49** | 41 | 0 | 5 | 46 | 44.4 | 74 | 20 | 55 | 148 | 44.2 | 35 | 59 | 62 | 156 | 44.2 |
| **40 / 44** | 8 | | 0 | 9 | 39.9 | 55 | 7 | 25 | 87 | 39.9 | 62 | 44 | 69 | 175 | 40.2 |
| **35 / 39** | 1 | | 0 | 1 | 35.3 | 32 | 1 | 7 | 40 | 35.5 | 67 | 21 | 43 | 132 | 35.7 |
| **30 / 34** | | | | | | 10 | | 1 | 10 | 31.1 | 45 | 7 | 14 | 65 | 31.1 |
| **25 / 29** | | | | | | 0 | | | 0 | 26.9 | 12 | 1 | 2 | 14 | 26.1 |
| **20 / 24** | | | | | | | | | | | 1 | 0 | 0 | 2 | 20.5 |
| **15 / 19** | | | | | | | | | | | 0 | | | 0 | 16.8 |

**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.**

**CASTLE AFB/MERCED CA** WMO No. 724810

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

**Period of Record = 1967 to 1995**

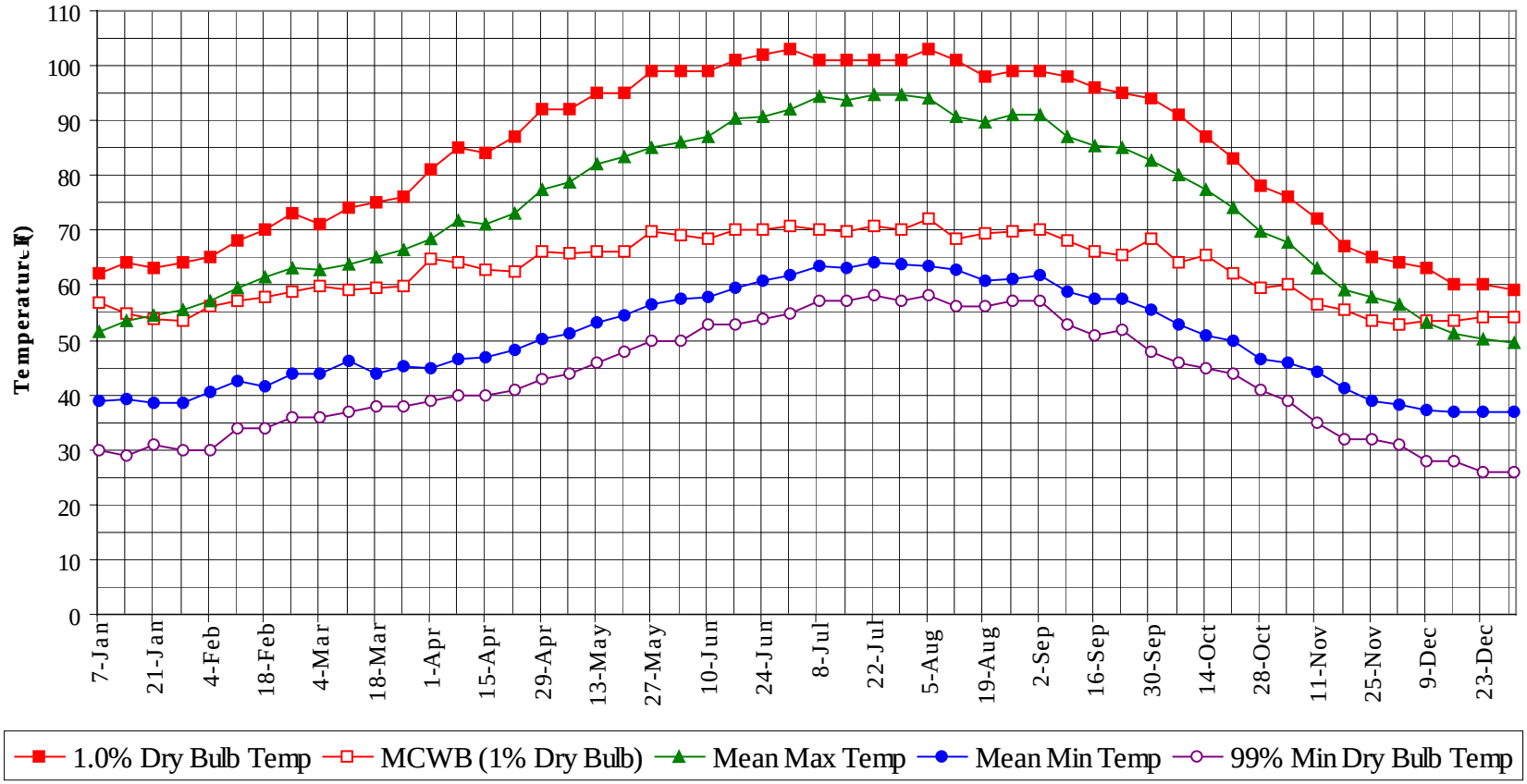
**Annual Totals**

| Temperature Range (°F) | Hour Group (LST) 01 To 08 | 09 To 16 | 17 To 00 | Total Obs | MCWB (°F) |
|---|---|---|---|---|---|
| **105 / 109** | | 3 | 1 | 4 | 70.9 |
| **100 / 104** | | 33 | 9 | 42 | 70.3 |
| **95 / 99** | | 104 | 40 | 144 | 68.8 |
| **90 / 94** | 0 | 197 | 80 | 277 | 67.1 |
| **85 / 89** | 2 | 248 | 126 | 376 | 65.3 |
| **80 / 84** | 18 | 276 | 177 | 471 | 63.3 |
| **75 / 79** | 64 | 271 | 227 | 562 | 61.1 |
| **70 / 74** | 162 | 271 | 270 | 703 | 58.9 |
| **65 / 69** | 282 | 271 | 288 | 841 | 56.6 |
| **60 / 64** | 388 | 297 | 301 | 986 | 54.2 |
| **55 / 59** | 410 | 326 | 352 | 1088 | 51.3 |
| **50 / 54** | 441 | 284 | 378 | 1104 | 48.0 |
| **45 / 49** | 438 | 190 | 309 | 937 | 44.2 |
| **40 / 44** | 347 | 115 | 214 | 676 | 40.1 |
| **35 / 39** | 235 | 51 | 96 | 382 | 35.8 |
| **30 / 34** | 104 | 11 | 23 | 138 | 31.0 |
| **25 / 29** | 22 | 1 | 2 | 26 | 26.3 |
| **20 / 24** | 3 | 0 | 0 | 3 | 21.1 |
| **15 / 19** | 0 | | | 0 | 16.8 |

**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.**

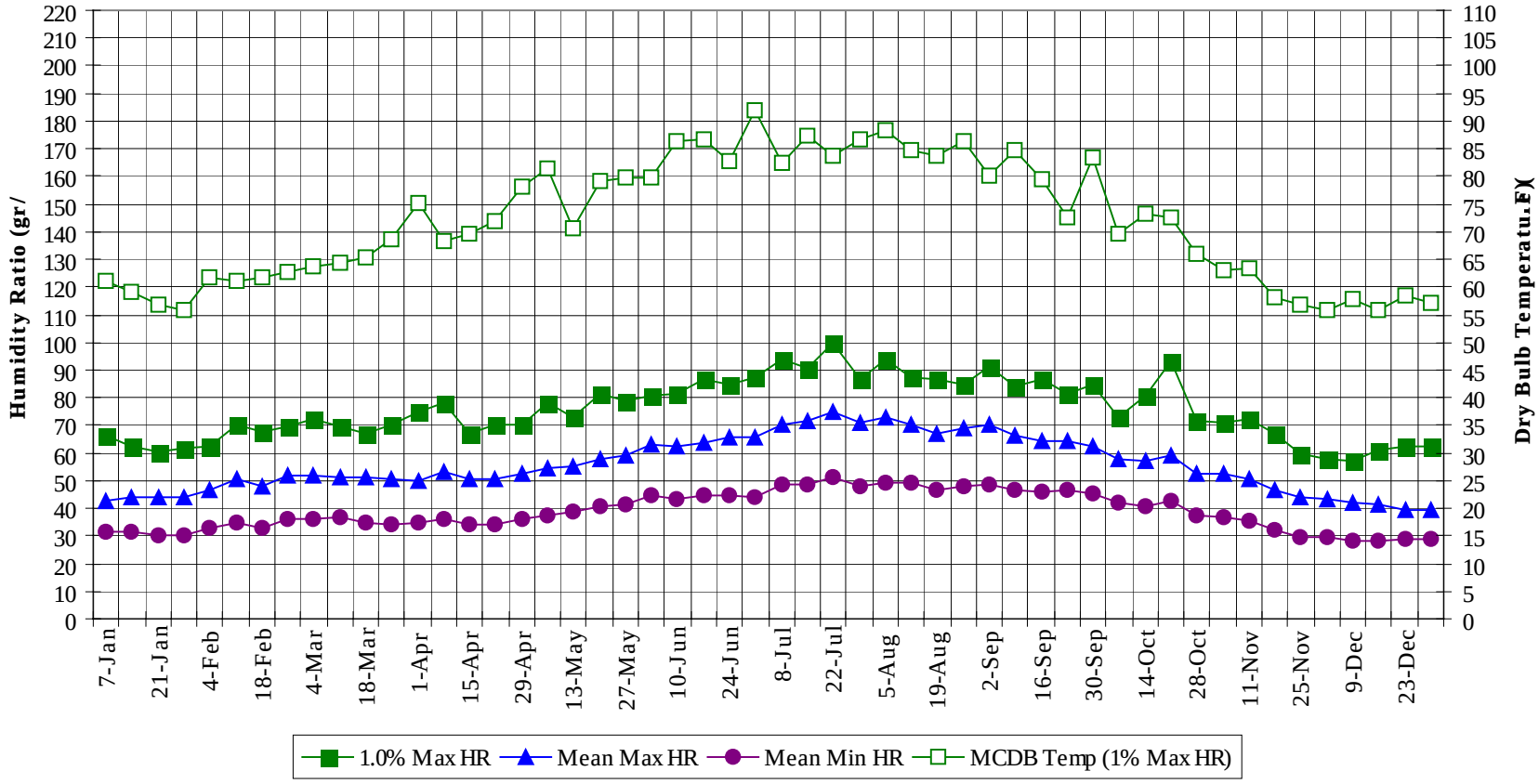
**CASTLE AFB/MERCED CA** WMO No. 724810

## Annual Summary of Temperatures




**CASTLE AFB/MERCED CA** WMO No. 724810

## Long Term Humidity and Dry Bulb Temperature Summary



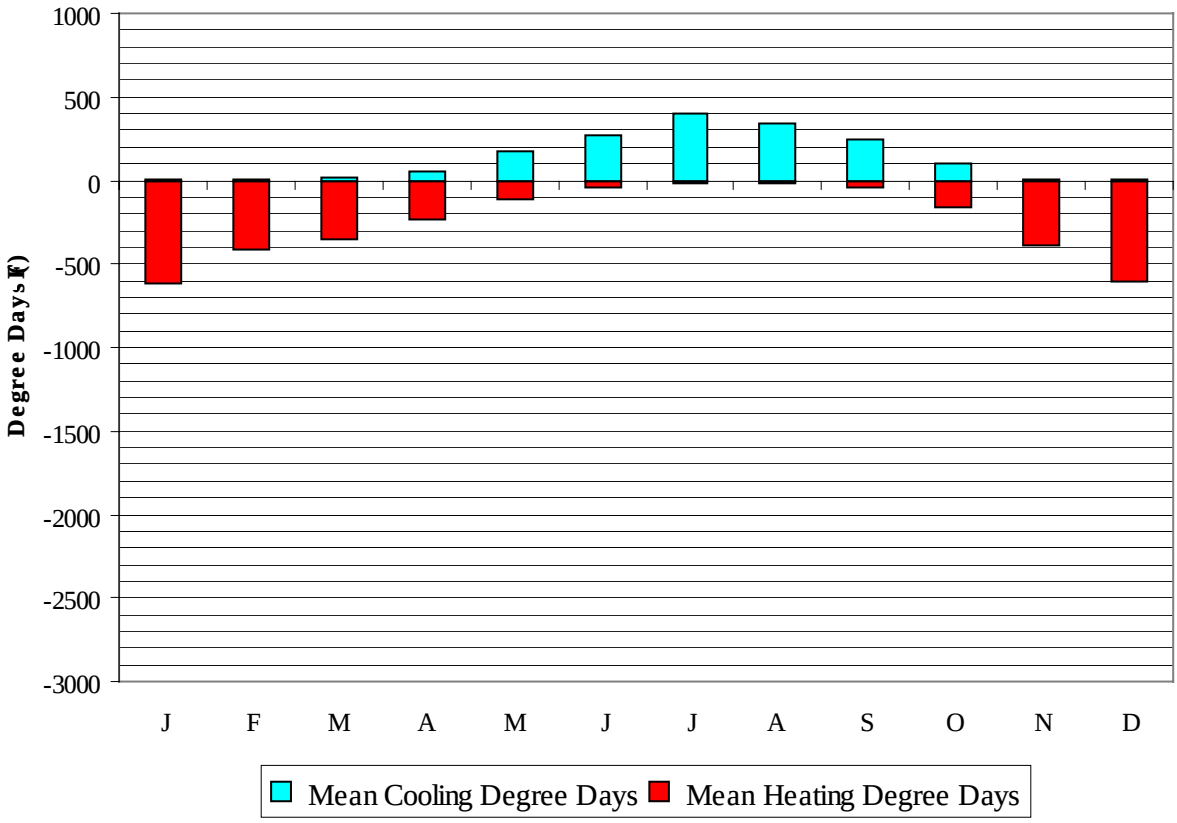
**CASTLE AFB/MERCED CA** WMO No. 724810

## 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 | 62.0 | 56.7 | 51.4 | 38.8 | 30.0 | 66.5 | 61.2 | 42.9 | 31.3 |
| 14-Jan | 64.0 | 54.9 | 53.5 | 39.4 | 29.0 | 62.3 | 59.0 | 44.0 | 31.7 |
| 21-Jan | 63.0 | 53.7 | 54.7 | 38.7 | 31.0 | 60.2 | 56.8 | 44.1 | 30.5 |
| 28-Jan | 64.0 | 53.5 | 55.5 | 38.4 | 30.0 | 61.6 | 55.9 | 43.8 | 30.2 |
| 4-Feb | 65.0 | 56.1 | 57.1 | 40.5 | 30.0 | 62.3 | 61.8 | 46.9 | 32.8 |
| 11-Feb | 68.0 | 57.3 | 59.5 | 42.4 | 34.0 | 70.0 | 61.1 | 50.5 | 35.0 |
| 18-Feb | 70.0 | 57.9 | 61.5 | 41.7 | 34.0 | 67.9 | 61.8 | 48.3 | 32.7 |
| 25-Feb | 73.0 | 58.9 | 63.0 | 44.0 | 36.0 | 69.3 | 62.8 | 52.0 | 36.3 |
| 4-Mar | 71.0 | 59.7 | 63.0 | 44.0 | 36.0 | 72.1 | 63.6 | 51.8 | 36.3 |
| 11-Mar | 74.0 | 59.2 | 63.8 | 46.0 | 37.0 | 69.3 | 64.4 | 51.0 | 36.7 |
| 18-Mar | 75.0 | 59.6 | 65.1 | 44.0 | 38.0 | 67.2 | 65.3 | 51.0 | 34.8 |
| 25-Mar | 76.0 | 59.8 | 66.5 | 45.1 | 38.0 | 70.0 | 68.5 | 50.6 | 34.3 |
| 1-Apr | 81.0 | 64.7 | 68.4 | 44.9 | 39.0 | 74.9 | 75.1 | 49.8 | 34.5 |
| 8-Apr | 85.0 | 64.1 | 71.8 | 46.4 | 40.0 | 78.4 | 68.3 | 53.1 | 36.0 |
| 15-Apr | 84.0 | 62.8 | 71.2 | 46.8 | 40.0 | 67.2 | 69.7 | 50.7 | 34.3 |
| 22-Apr | 87.0 | 62.4 | 73.1 | 48.1 | 41.0 | 70.0 | 71.9 | 50.3 | 34.4 |
| 29-Apr | 92.0 | 66.3 | 77.3 | 50.1 | 43.0 | 70.0 | 78.1 | 52.2 | 35.9 |
| 6-May | 92.0 | 65.7 | 78.8 | 51.3 | 44.0 | 78.4 | 81.4 | 54.6 | 37.6 |
| 13-May | 95.0 | 66.2 | 82.0 | 53.1 | 46.0 | 72.8 | 70.6 | 55.0 | 38.8 |
| 20-May | 95.0 | 66.1 | 83.5 | 54.7 | 48.0 | 81.2 | 79.1 | 57.9 | 40.6 |
| 27-May | 99.0 | 69.7 | 85.0 | 56.4 | 50.0 | 79.1 | 79.8 | 59.2 | 41.3 |
| 3-Jun | 99.0 | 69.2 | 86.0 | 57.6 | 50.0 | 80.5 | 79.8 | 62.9 | 44.4 |
| 10-Jun | 99.0 | 68.5 | 87.1 | 57.8 | 53.0 | 81.2 | 86.5 | 62.4 | 43.0 |
| 17-Jun | 101.0 | 70.1 | 90.3 | 59.4 | 53.0 | 86.8 | 86.7 | 63.9 | 44.8 |
| 24-Jun | 102.0 | 70.0 | 90.6 | 60.9 | 54.0 | 84.7 | 82.7 | 65.5 | 44.9 |
| 1-Jul | 103.0 | 70.9 | 92.2 | 61.9 | 55.0 | 87.5 | 92.0 | 65.7 | 44.2 |
| 8-Jul | 101.0 | 70.2 | 94.3 | 63.3 | 57.0 | 93.8 | 82.6 | 70.5 | 48.8 |
| 15-Jul | 101.0 | 69.9 | 93.6 | 63.2 | 57.0 | 90.3 | 87.3 | 71.3 | 48.5 |
| 22-Jul | 101.0 | 70.8 | 94.9 | 64.2 | 58.0 | 100.1 | 83.8 | 75.0 | 50.9 |
| 29-Jul | 101.0 | 70.2 | 94.7 | 63.7 | 57.0 | 86.8 | 86.6 | 71.1 | 47.8 |
| 5-Aug | 103.0 | 72.2 | 94.1 | 63.5 | 58.0 | 93.8 | 88.4 | 72.8 | 49.3 |
| 12-Aug | 101.0 | 68.6 | 90.7 | 62.7 | 56.0 | 87.5 | 84.7 | 70.2 | 48.9 |
| 19-Aug | 98.0 | 69.5 | 89.6 | 60.9 | 56.0 | 86.8 | 83.6 | 67.2 | 46.8 |
| 26-Aug | 99.0 | 69.8 | 91.0 | 61.2 | 57.0 | 84.7 | 86.4 | 68.8 | 48.2 |
| 2-Sep | 99.0 | 70.0 | 91.0 | 61.9 | 57.0 | 91.0 | 80.3 | 70.0 | 48.9 |
| 9-Sep | 98.0 | 68.0 | 87.1 | 58.7 | 53.0 | 84.0 | 84.7 | 66.2 | 46.9 |
| 16-Sep | 96.0 | 66.2 | 85.4 | 57.4 | 51.0 | 86.8 | 79.4 | 64.3 | 46.1 |
| 23-Sep | 95.0 | 65.6 | 85.0 | 57.4 | 52.0 | 81.2 | 72.6 | 64.4 | 46.7 |
| 30-Sep | 94.0 | 68.6 | 82.9 | 55.5 | 48.0 | 84.7 | 83.5 | 62.4 | 45.6 |
| 7-Oct | 91.0 | 64.2 | 80.2 | 52.9 | 46.0 | 72.8 | 69.6 | 57.9 | 41.9 |
| 14-Oct | 87.0 | 65.3 | 77.4 | 50.8 | 45.0 | 80.5 | 73.3 | 57.4 | 40.9 |
| 21-Oct | 83.0 | 62.1 | 74.2 | 49.9 | 44.0 | 93.1 | 72.4 | 59.0 | 42.4 |
| 28-Oct | 78.0 | 59.4 | 69.8 | 46.6 | 41.0 | 71.4 | 66.0 | 52.8 | 37.1 |
| 4-Nov | 76.0 | 60.0 | 67.7 | 45.7 | 39.0 | 70.7 | 63.0 | 52.7 | 36.7 |
| 11-Nov | 72.0 | 56.6 | 63.2 | 44.1 | 35.0 | 72.1 | 63.3 | 50.6 | 35.7 |
| 18-Nov | 67.0 | 55.5 | 59.0 | 41.2 | 32.0 | 67.2 | 58.3 | 46.8 | 32.2 |
| 25-Nov | 65.0 | 53.5 | 58.0 | 38.9 | 32.0 | 59.5 | 56.9 | 43.7 | 29.3 |
| 2-Dec | 64.0 | 52.8 | 56.4 | 38.4 | 31.0 | 58.1 | 55.9 | 43.4 | 29.5 |
| 9-Dec | 63.0 | 53.5 | 53.3 | 37.1 | 28.0 | 57.4 | 57.8 | 41.8 | 28.2 |
| 16-Dec | 60.0 | 53.4 | 51.1 | 36.7 | 28.0 | 60.9 | 55.7 | 41.1 | 28.5 |
| 23-Dec | 60.0 | 54.3 | 50.2 | 36.8 | 26.0 | 62.3 | 58.3 | 39.4 | 28.8 |
| 31-Dec | 59.0 | 54.0 | 49.4 | 36.7 | 26.0 | 62.3 | 57.2 | 39.5 | 28.7 |

**CASTLE AFB/MERCED CA** WMO No. 724810

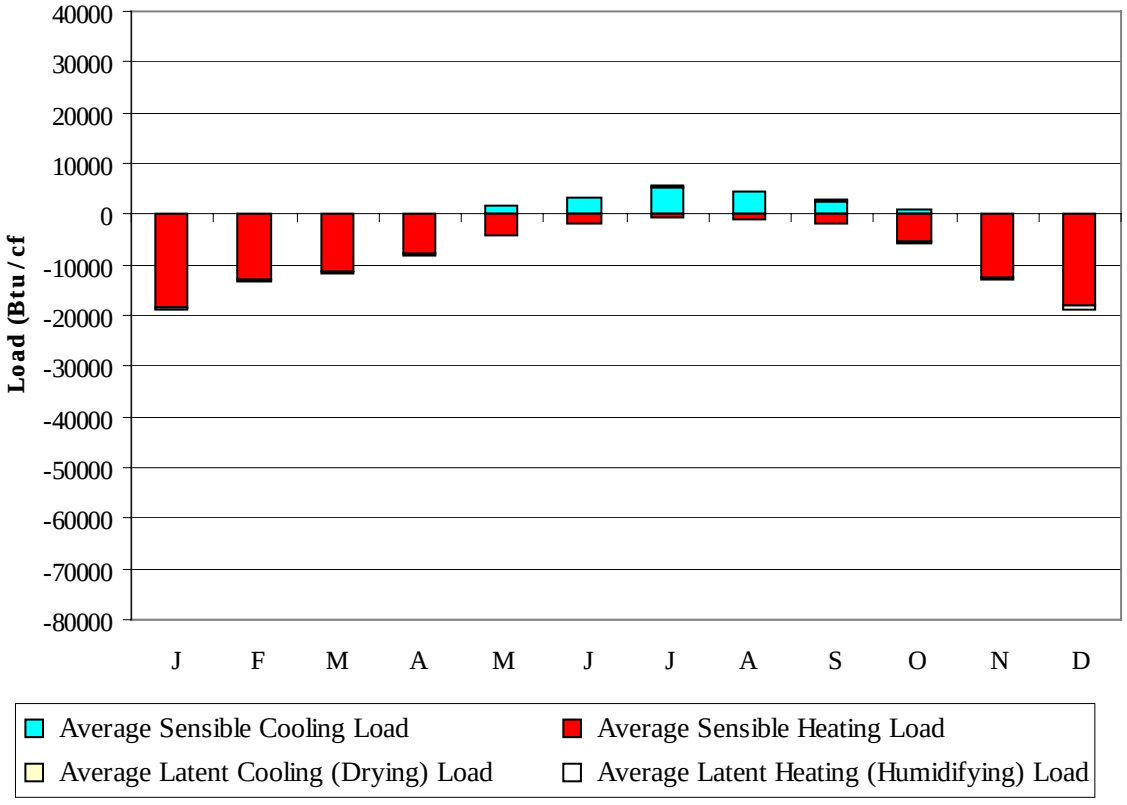
## Degree Days, Heating and Cooling
## (Base 65°F)




| | Mean Cooling Degree Days (°F) | Mean Heating Degree Days (°F) |
|---|---|---|
| JAN | 0 | 614 |
| FEB | 3 | 419 |
| MAR | 13 | 350 |
| APR | 57 | 238 |
| MAY | 169 | 118 |
| JUN | 275 | 46 |
| JUL | 396 | 15 |
| AUG | 347 | 20 |
| SEP | 240 | 42 |
| OCT | 104 | 157 |
| NOV | 10 | 392 |
| DEC | 0 | 609 |
| ANN | 1615 | 3020 |

**CASTLE AFB/MERCED CA** WMO No. 724810

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




| | 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 | -18299 | 0 | -697 |
| FEB | 1 | -12997 | 0 | -346 |
| MAR | 11 | -11286 | 0 | -299 |
| APR | 309 | -7905 | 3 | -268 |
| MAY | 1660 | -4253 | 10 | -113 |
| JUN | 3303 | -1922 | 46 | -25 |
| JUL | 5325 | -795 | 198 | -6 |
| AUG | 4421 | -1014 | 107 | -11 |
| SEP | 2674 | -1846 | 66 | -24 |
| OCT | 776 | -5581 | 56 | -94 |
| NOV | 10 | -12347 | 1 | -405 |
| DEC | 0 | -18091 | 0 | -846 |
| ANN | 18490 | -96336 | 487 | -3134 |

# Average Annual Solar Radiation – Nearest Available Site

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

City: FRESNO
State: CA
WBAN No: 93193
Lat(N): 36.77
Long(W): 119.72
Elev(ft): 328

Stn Type: Primary
SHADING GEOMETRY IN DIMENSIONLESS UNITS
Window: 1
Overhang: 0.442
Vert Gap: 0.301

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 | 670 | 1020 | 1480 | 1980 | 2390 | 2560 | 2550 | 2280 | 1860 | 1370 | 850 | 590 | 1640 |
| | Std Dev | 82 | 115 | 143 | 150 | 108 | 79 | 67 | 84 | 93 | 59 | 104 | 84 | 49 |
| | Minimum | 530 | 810 | 1180 | 1610 | 2090 | 2350 | 2410 | 2000 | 1660 | 1240 | 620 | 440 | 1500 |
| | Maximum | 860 | 1240 | 1740 | 2190 | 2550 | 2740 | 2650 | 2400 | 1990 | 1450 | 1010 | 820 | 1720 |
| | Diffuse | 400 | 490 | 600 | 670 | 670 | 630 | 540 | 530 | 490 | 450 | 400 | 350 | 520 |
| Clear Day | Global | 970 | 1320 | 1800 | 2280 | 2590 | 2700 | 2630 | 2360 | 1950 | 1450 | 1040 | 870 | 1830 |
| NORTH | Global | 230 | 300 | 380 | 470 | 600 | 690 | 650 | 490 | 390 | 330 | 250 | 200 | 420 |
| | Diffuse | 230 | 300 | 380 | 460 | 510 | 520 | 500 | 450 | 390 | 330 | 250 | 200 | 380 |
| Clear Day | Global | 220 | 280 | 360 | 440 | 590 | 690 | 650 | 480 | 370 | 300 | 230 | 200 | 400 |
| EAST | Global | 390 | 610 | 900 | 1150 | 1340 | 1410 | 1420 | 1310 | 1110 | 860 | 530 | 350 | 950 |
| | Diffuse | 270 | 370 | 480 | 580 | 620 | 620 | 590 | 560 | 500 | 420 | 310 | 240 | 460 |
| Clear Day | Global | 670 | 870 | 1130 | 1340 | 1460 | 1480 | 1470 | 1370 | 1190 | 940 | 710 | 610 | 1100 |
| SOUTH | Global | 880 | 1170 | 1270 | 1150 | 940 | 810 | 860 | 1100 | 1400 | 1510 | 1160 | 830 | 1090 |
| | Diffuse | 390 | 480 | 560 | 580 | 560 | 540 | 510 | 520 | 530 | 520 | 430 | 360 | 500 |
| Clear Day | Global | 1750 | 1820 | 1710 | 1340 | 980 | 820 | 880 | 1160 | 1550 | 1780 | 1760 | 1690 | 1440 |
| WEST | Global | 440 | 640 | 890 | 1140 | 1300 | 1390 | 1400 | 1300 | 1110 | 850 | 550 | 400 | 950 |
| | Diffuse | 280 | 370 | 490 | 580 | 630 | 630 | 590 | 570 | 500 | 420 | 310 | 250 | 470 |
| Clear Day | Global | 670 | 870 | 1130 | 1340 | 1460 | 1480 | 1470 | 1370 | 1190 | 940 | 710 | 610 | 1100 |

# 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 | 450 | 710 | 1060 | 1440 | 1750 | 1890 | 1880 | 1670 | 1350 | 960 | 580 | 390 | 1180 |
| NORTH | Unshaded | 160 | 210 | 270 | 320 | 380 | 430 | 400 | 320 | 270 | 230 | 170 | 140 | 270 |
| | Shaded | 140 | 190 | 240 | 300 | 350 | 400 | 370 | 300 | 250 | 210 | 160 | 130 | 250 |
| EAST | Unshaded | 270 | 420 | 630 | 820 | 960 | 1000 | 1020 | 930 | 790 | 600 | 360 | 240 | 670 |
| | Shaded | 240 | 380 | 570 | 730 | 850 | 880 | 900 | 830 | 710 | 550 | 330 | 220 | 600 |
| SOUTH | Unshaded | 650 | 850 | 870 | 720 | 550 | 460 | 480 | 650 | 920 | 1080 | 860 | 620 | 730 |
| | Shaded | 630 | 790 | 710 | 490 | 360 | 350 | 340 | 400 | 680 | 970 | 840 | 600 | 590 |
| WEST | Unshaded | 310 | 450 | 630 | 810 | 930 | 990 | 1000 | 930 | 790 | 600 | 380 | 270 | 670 |
| | Shaded | 280 | 410 | 570 | 730 | 820 | 870 | 880 | 820 | 710 | 540 | 350 | 250 | 600 |

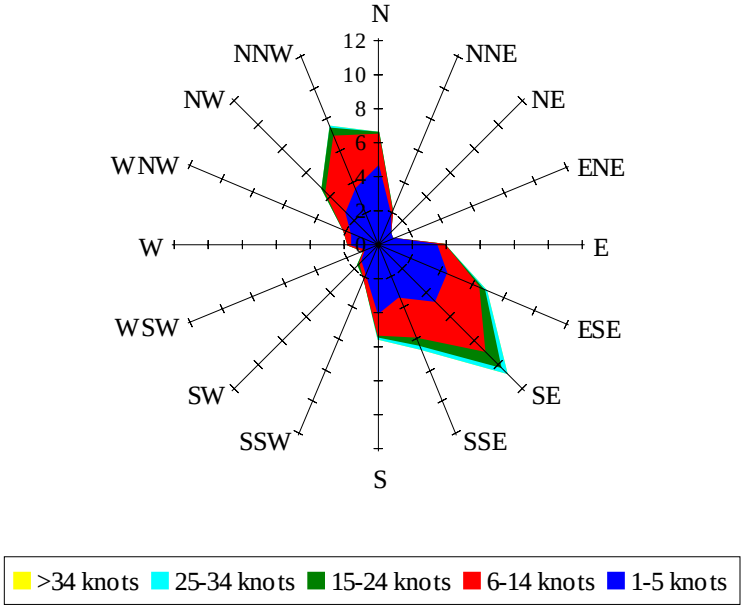
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9

| | | March | | | | | June | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9am | 11am | 1pm | 3pm | 5pm | 9am | 11am | 1pm | 3pm | 5pm |
| HORIZ. | M.Clear | 43 | 77 | 86 | 67 | 26 | 50 | 88 | 107 | 101 | 71 |
| | M.Cloudy | 28 | 54 | 61 | 48 | 18 | 38 | 73 | 89 | 82 | 56 |
| NORTH | M.Clear | 11 | 15 | 16 | 14 | 8 | 20 | 16 | 17 | 17 | 15 |
| | M.Cloudy | 10 | 17 | 18 | 15 | 7 | 17 | 18 | 19 | 19 | 16 |
| EAST | M.Clear | 73 | 56 | 16 | 14 | 8 | 82 | 73 | 30 | 17 | 15 |
| | M.Cloudy | 35 | 37 | 18 | 15 | 7 | 51 | 58 | 29 | 19 | 16 |
| SOUTH | M.Clear | 39 | 71 | 79 | 61 | 23 | 12 | 29 | 43 | 38 | 16 |
| | M.Cloudy | 22 | 45 | 51 | 40 | 14 | 12 | 27 | 39 | 34 | 17 |
| WEST | M.Clear | 11 | 15 | 26 | 68 | 60 | 12 | 16 | 17 | 55 | 83 |
| | M.Cloudy | 10 | 17 | 23 | 43 | 29 | 12 | 18 | 19 | 47 | 60 |
| M.Clear | (% hrs) | 48 | 45 | 41 | 42 | 45 | 80 | 78 | 81 | 80 | 79 |

| | | Sept | | | | | Dec | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 9am | 11am | 1pm | 3pm | 5pm | 9am | 11am | 1pm | 3pm | 5pm |
| HORIZ. | M.Clear | 31 | 72 | 91 | 83 | 49 | 17 | 44 | 50 | 29 | 2 |
| | M.Cloudy | 22 | 55 | 69 | 63 | 34 | 10 | 25 | 29 | 19 | 2 |
| NORTH | M.Clear | 9 | 15 | 16 | 16 | 12 | 6 | 12 | 12 | 9 | 1 |
| | M.Cloudy | 8 | 16 | 18 | 17 | 12 | 5 | 11 | 12 | 8 | 1 |
| EAST | M.Clear | 67 | 71 | 27 | 16 | 12 | 37 | 37 | 12 | 9 | 1 |
| | M.Cloudy | 34 | 49 | 25 | 17 | 12 | 9 | 17 | 12 | 8 | 1 |
| SOUTH | M.Clear | 21 | 57 | 74 | 67 | 36 | 35 | 75 | 82 | 53 | 4 |
| | M.Cloudy | 14 | 42 | 54 | 50 | 24 | 9 | 26 | 31 | 21 | 2 |
| WEST | M.Clear | 9 | 15 | 16 | 57 | 77 | 6 | 12 | 24 | 44 | 6 |
| | M.Cloudy | 8 | 16 | 18 | 43 | 43 | 5 | 11 | 15 | 18 | 2 |
| M.Clear | (% hrs) | 82 | 81 | 82 | 82 | 82 | 25 | 25 | 29 | 35 | 37 |

## Wind Summary - December, January, and February

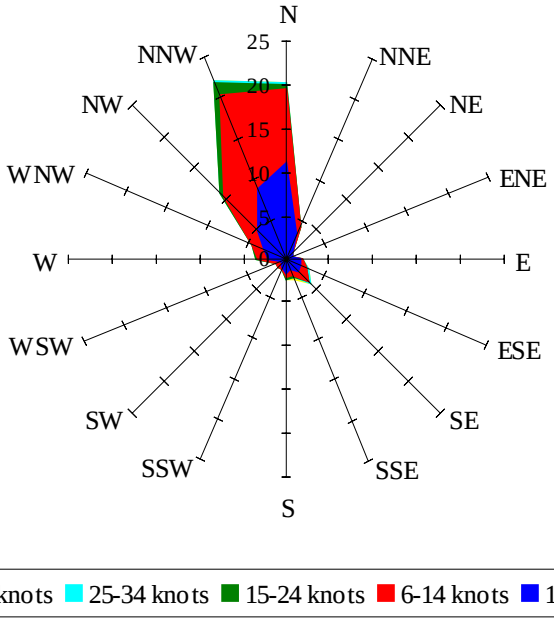
**Labels of Percent Frequency on North Axis**




Percent Calm = 35.59

## Wind Summary - March, April, and May

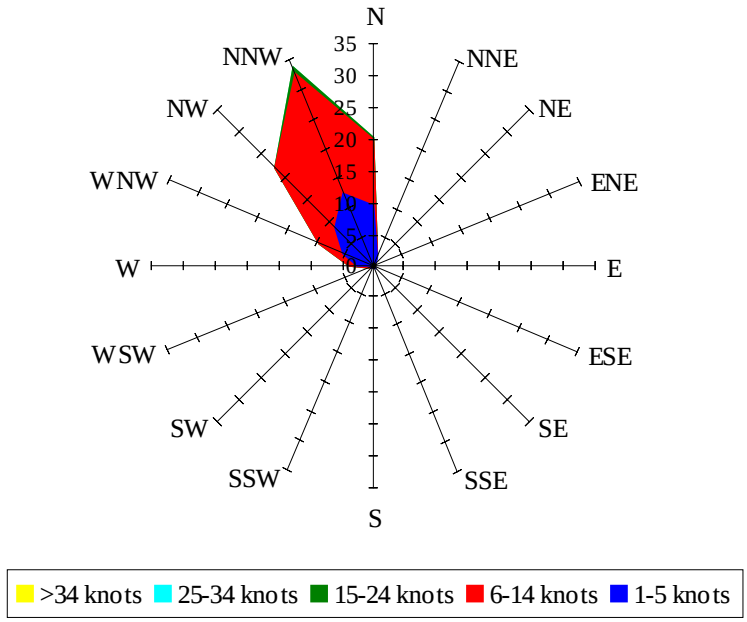
**Labels of Percent Frequency on North Axis**




Percent Calm = 17.61

## Wind Summary - June, July, and August

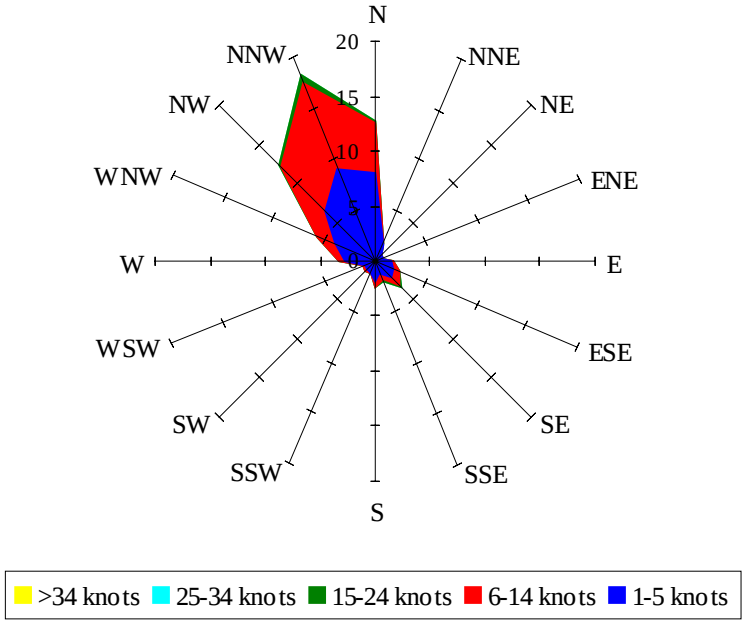
**Labels of Percent Frequency on North Axis**




Percent Calm = 6.56

## Wind Summary - September, October, and November

**Labels of Percent Frequency on North Axis**




Percent Calm = 29.32