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|---|---|-----------------|-------------------------------|----------------------------|-------|--------------------|-------|--|-----------------------|------------|-----------------------|------------|-----------------------|--------------|----------------------|------------|--|
| 2021 ASHRAE Handbook - Fundamentals (SI) | | | | | | | | | | | | | | | | | |
| BASE BELGRANO II, ANTARCTICA (WMO: 890340) | | | | | | | | | | | | | | | | | |
| Lat:77.874S | | | Long:34.626W | | | Elev:256 | | StdP: 98.29 | | | Time zone:-3.00 (W03) | | | Period:94-19 | | WBAN:99999 | |
| Annual Heating, Humidification, and Ventilation Design Conditions | | | | | | | | | | | | | | | | | |
| Coldest Month | Heating DB | | Humidification DP/MCDB and HR | | | | | | Coldest month WS/MCDB | | | | MCWS/PCWD to 99.6% DB | | WSF | | |
| | | | 99.6% | | | 99% | | | 0.4% | | 1% | | | | | | |
| | 99.6% | 99% | DP | HR | MCDB | DP | HR | MCDB | WS | MCDB | WS | MCDB | MCWS | PCWD | | | |
| 7 | -34.6 | -32.1 | -43.8 | 0.1 | -31.4 | -40.9 | 0.1 | -30.8 | 26.7 | -13.5 | 25.7 | -15.6 | 3.0 | 140 | 1.229 | | |
| Annual Cooling, Dehumidification, and Enthalpy Design Conditions | | | | | | | | | | | | | | | | | |
| Hottest Month | Hottest Month DB Range | Cooling DB/MCWB | | | | | | | Evaporation WB/MCDB | | | | | | MCWS/PCWD to 0.4% DB | | |
| | | 0.4% | | 1% | | 2% | | 0.4% | | 1% | | 2% | | | | | |
| | | DB | MCWB | DB | MCWB | DB | MCWB | WB | MCDB | WB | MCDB | WB | MCDB | MCWS | PCWD | | |
| 12 | 5.5 | 3.9 | 0.9 | 2.6 | 0.2 | 1.5 | -0.5 | 1.4 | 3.0 | 0.5 | 2.2 | -0.3 | 1.3 | 3.0 | 140 | | |
| Dehumidification DP/MCDB and HR | | | | | | | | | Enthalpy/MCDB | | | | | | Extreme Max WB | | |
| 0.4% | | | 1% | | | 2% | | | 0.4% | | 1% | | 2% | | | | |
| DP | HR | MCDB | DP | HR | MCDB | DP | HR | MCDB | Enth | MCDB | Enth | MCDB | Enth | MCDB | | | |
| 0.0 | 3.9 | 1.6 | -0.9 | 3.6 | 0.7 | -1.9 | 3.3 | 0.0 | 12.4 | 3.1 | 11.0 | 2.3 | 9.5 | 1.4 | 4.5 | | |
| Extreme Annual Design Conditions | | | | | | | | | | | | | | | | | |
| Extreme Annual WS | | | | Extreme Annual Temperature | | | | n-Year Return Period Values of Extreme Temperature | | | | | | | | | |
| | | | | Mean | | Standard deviation | | n=5 years | | n=10 years | | n=20 years | | n=50 years | | | |
| | | | | 1% | 2.5% | 5% | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | |
| 23.0 | 20.5 | 15.2 | DB | -37.6 | 6.2 | 2.1 | 0.5 | -39.1 | 6.5 | -40.4 | 6.8 | -41.5 | 7.1 | -43.0 | 7.5 | | |
| | | | WB | -38.2 | 2.9 | 3.3 | 1.7 | -40.6 | 4.1 | -42.5 | 5.1 | -44.3 | 6.0 | -46.7 | 7.3 | | |
| Monthly Climatic Design Conditions | | | | | | | | | | | | | | | | | |
| | | | Annual | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | |
| Temperatures, Degree-Days and Degree-Hours | DBAvg | -13.2 | -2.7 | -6.5 | -11.9 | -16.5 | -17.5 | -19.0 | -21.0 | -20.5 | -18.7 | -14.1 | -6.9 | -2.5 | | | |
| | DBStd | 8.17 | 2.56 | 3.67 | 4.99 | 5.97 | 5.45 | 5.06 | 5.43 | 6.10 | 5.86 | 4.84 | 3.47 | 2.77 | | | |
| | HDD10.0 | 8459 | 394 | 463 | 680 | 796 | 852 | 869 | 961 | 944 | 861 | 746 | 506 | 388 | | | |
| | HDD18.3 | 11501 | 652 | 696 | 938 | 1046 | 1110 | 1119 | 1219 | 1203 | 1111 | 1004 | 756 | 646 | | | |
| | CDD10.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | CDD18.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | CDH23.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | CDH26.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Wind | | WSAvg | 5.4 | 4.0 | 5.3 | 5.4 | 5.6 | 5.8 | 5.6 | 6.2 | 5.6 | 6.0 | 5.5 | 5.4 | 4.7 | | |
| Precipitation | PrecAvg | 272 | 14 | 15 | 17 | 19 | 20 | 26 | 27 | 31 | 33 | 26 | 28 | 16 | | | |
| | PrecMax | 420 | 39 | 42 | 41 | 39 | 39 | 94 | 63 | 61 | 78 | 92 | 93 | 49 | | | |
| | PrecMin | 165 | 3 | 1 | 2 | 1 | 1 | 7 | 3 | 2 | 5 | 1 | 3 | 1 | | | |
| | PrecStd | 57 | 9 | 10 | 9 | 11 | 12 | 20 | 16 | 15 | 20 | 20 | 22 | 12 | | | |
| | Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures | 0.4% | DB | 5.0 | 2.8 | -1.8 | -2.0 | -3.3 | -5.0 | -8.7 | -4.8 | -5.5 | -1.3 | 3.4 | 5.6 | | |
| MCWB | | | 1.3 | 0.5 | -3.0 | -2.7 | -4.1 | -6.2 | -9.6 | -6.2 | -6.2 | -3.6 | 0.3 | 2.0 | | | |
| 2% | | DB | 3.6 | 1.1 | -3.2 | -4.6 | -6.0 | -7.4 | -10.1 | -8.3 | -7.4 | -4.0 | 0.8 | 4.3 | | | |
| | | MCWB | 0.7 | -0.5 | -4.4 | -5.2 | -6.8 | -8.4 | -10.9 | -9.1 | -8.4 | -5.3 | -1.0 | 1.2 | | | |
| 5% | | DB | 2.5 | -0.3 | -4.3 | -6.2 | -8.5 | -9.8 | -11.7 | -10.2 | -9.1 | -5.8 | -0.7 | 3.0 | | | |
| | | MCWB | 0.1 | -1.7 | -5.3 | -6.9 | -9.1 | -10.6 | -12.6 | -10.8 | -10.2 | -7.0 | -2.1 | 0.4 | | | |
| 10% | | DB | 1.4 | -1.6 | -5.2 | -8.2 | -10.4 | -11.8 | -13.1 | -12.2 | -10.8 | -7.5 | -2.0 | 1.8 | | | |
| | | MCWB | -0.5 | -2.9 | -6.2 | -8.8 | -11.2 | -12.6 | -13.8 | -12.9 | -11.7 | -8.5 | -3.3 | -0.4 | | | |
| Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures | 0.4% | WB | 2.6 | 1.0 | -2.8 | -2.8 | -4.0 | -6.0 | -9.4 | -5.9 | -6.0 | -3.1 | 1.2 | 2.8 | | | |
| | | MCDB | 3.7 | 2.2 | -2.3 | -2.3 | -3.4 | -5.2 | -8.8 | -4.9 | -5.6 | -2.0 | 1.9 | 4.6 | | | |
| | 2% | WB | 1.2 | -0.2 | -4.1 | -5.1 | -6.6 | -8.4 | -10.9 | -9.0 | -8.2 | -5.2 | -0.6 | 1.6 | | | |
| | | MCDB | 2.8 | 0.8 | -3.4 | -4.7 | -5.9 | -7.5 | -10.2 | -8.4 | -7.5 | -4.3 | 0.6 | 3.5 | | | |
| | 5% | WB | 0.4 | -1.4 | -5.2 | -6.8 | -9.1 | -10.5 | -12.5 | -10.8 | -10.0 | -6.9 | -1.9 | 0.7 | | | |
| | | MCDB | 2.1 | -0.5 | -4.4 | -6.3 | -8.6 | -9.8 | -11.8 | -10.2 | -9.2 | -6.0 | -1.0 | 2.5 | | | |
| | 10% | WB | -0.4 | -2.7 | -6.2 | -8.7 | -11.1 | -12.6 | -13.8 | -12.9 | -11.7 | -8.4 | -3.1 | -0.1 | | | |
| | | MCDB | 1.2 | -1.7 | -5.3 | -8.1 | -10.4 | -11.8 | -13.0 | -12.3 | -10.7 | -7.6 | -2.2 | 1.6 | | | |

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|------------------------------|-------------|-------|---------|--------|---------|-------|-------|-------------|---------|---------|---------|-------|-------|-------|
| Mean Daily Temperature Range | | MDBR | 5.2 | 5.9 | 5.3 | 5.2 | 5.3 | 5.5 | 5.5 | 5.6 | 5.8 | 6.8 | 6.6 | 5.5 |
| | 5% DB | MCDBR | 7.0 | 7.1 | 5.0 | 4.8 | 5.9 | 5.9 | 6.2 | 6.6 | 6.4 | 7.8 | 8.1 | 7.5 |
| | | MCWBR | 5.6 | 6.7 | 4.7 | 4.7 | 5.6 | 5.8 | 5.8 | 6.3 | 5.9 | 7.3 | 7.2 | 5.9 |
| | 5% WB | MCDBR | 6.7 | 7.1 | 4.8 | 4.6 | 5.7 | 5.8 | 6.2 | 6.5 | 5.8 | 7.5 | 7.9 | 7.1 |
| | | MCWBR | 6.0 | 6.8 | 4.7 | 4.5 | 5.6 | 5.8 | 6.1 | 6.3 | 5.9 | 7.3 | 7.2 | 5.9 |
| Clear Sky Solar Irradiance | taub | | 0.240 | 0.222 | 0.181 | 0.116 | N/A | N/A | N/A | 0.118 | 0.175 | 0.201 | 0.219 | 0.238 |
| | taud | | 2.252 | 2.257 | 2.187 | 1.904 | N/A | N/A | N/A | 1.877 | 2.126 | 2.218 | 2.250 | 2.243 |
| | Ebn at noon | | 957 | 890 | 751 | 106 | 0 | 0 | 0 | 80 | 736 | 917 | 983 | 984 |
| | Edn at noon | | 98 | 76 | 46 | 3 | 0 | 0 | 0 | 3 | 47 | 78 | 97 | 105 |
| All-Sky Solar Radiation | RadAvg | | 7.85 | 4.71 | 1.59 | 0.13 | 0.00 | 0.00 | 0.00 | 0.02 | 0.82 | 3.59 | 7.31 | 9.27 |
| | RadStd | | 0.32 | 0.22 | 0.08 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.13 | 0.20 | 0.27 |
| Historical Trends | | | | | | | | | | | | | | |
| | | DBAvg | Heating | | Cooling | | | Degree-Days | | | | | | |
| | | | 99% DB | 99% DP | 1% DB | 1% WB | 1% DP | HDD10.0 | HDD18.3 | CDD10.0 | CDD18.3 | | | |
| Station Only | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | | |
| Regional (0 neighbors) | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | | |

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|----------|--|-------|---|-----------------------|---|
| CDDn | Cooling degree-days base n°C, °C-day | Lat | Latitude, ° | Period | Years used to calculate the design conditions |
| CDHn | Cooling degree-hours base n°C, °C-hour | Long | Longitude, ° | Sd | Standard deviation of daily average temperature, °C |
| DB | Dry bulb temperature, °C | MCDB | Mean coincident dry bulb temperature, °C | StdP | Standard pressure at station elevation, kPa |
| DP | Dew point temperature, °C | MCDBR | Mean coincident dry bulb temp. range, °C | taub | Clear sky optical depth for beam irradiance |
| Ebn,noon | Clear sky beam normal and diffuse horizontal irradiances at solar noon, W/m2 | MCDP | Mean coincident dew point temperature, °C | taud | Clear sky optical depth for diffuse irradiance |
| Edh,noon | | MCWB | Mean coincident wet bulb temperature, °C | Tavg | Average temperature, °C |
| Elev | Elevation, m | MCWBR | Mean coincident wet bulb temp. range, °C | Time Zone | Hours ahead or behind UTC |
| Enth | Enthalpy, kJ/kg | MCWS | Mean coincident wind speed, m/s | WB | Wet bulb temperature, °C |
| HDDn | Heating degree-days base n°C, °C-day | MDBR | Mean dry bulb temp. range, °C | Hours 8/4 & 12.8/20.6 | Number of hours between 8 a.m. and 4 p.m with DB between 12.8 and 20.6 °C |
| PCWD | Prevailing coincident wind direction, °,0 = North, 90 = East | WS | Wind speed, m/s | HR | Humidity ratio, g of moisture per kg of dry air |