

Virtual Temperature

From the user, an air temperature (T), a dewpoint temperature (T_d), and a station pressure (P_{sta}) are given.

To calculate the virtual temperature, the temperatures must be converted to units of degrees Celsius ($^{\circ}C$) and the station pressure (P_{sta}) must be converted to millibars (mb) or hectoPascals (hPa).

To see how to convert these units see the links below:

[Temperature Conversion](#)

[Pressure Conversion](#)

Then, the virtual temperature can be calculated using the formula below:

$$T_v = \frac{T + 273.15}{1 - 0.379 \times \left(\frac{6.11 \times 10^{\left(\frac{7.5 \times T_d}{237.7 + T_d} \right)}}{P_{sta}} \right)}$$

The virtual temperature answer will be in units of Kelvin (K), but virtual temperatures can be converted to other units using the link above.