

# Wind Chill

From the user, we are given an air temperature ( $T$ ) and a wind speed ( $Wind_{sfc}$ ).

In order to calculate the Wind Chill, the temperature must be converted to degrees Fahrenheit ( $^{\circ}F$ ). To find out how to convert the temperature, see the link below:

<http://www.wrh.noaa.gov/slc/projects/wxcalc/formulas/tempConvert.pdf>

Also, in order to calculate the Wind Chill, the wind speed must be converted to miles per hour ( $mph$ ). To find out how to convert the wind speed, see the link below:

<http://www.wrh.noaa.gov/slc/projects/wxcalc/formulas/windConversion.pdf>

Then, the Wind Chill can be calculated using this formula:

$$WindChill = 35.74 + (0.6215 \times T) - (35.75 \times Wind_{sfc}^{0.16}) + (0.4275 \times T \times Wind_{sfc}^{0.16})$$

Because the user might need the Wind Chill in Watts per meters squared  $\left(\frac{W}{m^2}\right)$ , it can be calculated using an air temperature in degrees Celsius ( $^{\circ}C$ ) and a wind speed in meters per second ( $m/s$ ):

$$WindChill = (12.1452 + 11.6222 \times \sqrt{Wind_{sfc}} - 1.16222 \times Wind_{sfc}) \times (33 - T)$$