

## Heat Index

From the user, we are given an air temperature ( $T$ ) and a relative humidity ( $rh$ ).

If the air temperature is given in degrees Celsius ( $^{\circ}C$ ) we must convert the temperature value to degrees Fahrenheit ( $^{\circ}F$ ). To do this, check out the temperature conversion formula at:

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

Then, we can calculate the heat index with this complex formula:

$$\begin{aligned}Index_{heat} = & -42.379 + (2.04901523 \times T) \\& + (10.14333127 \times rh) - (0.22475541 \times T \times rh) \\& - (6.83783 \times 10^{-3} \times T^2) - (5.481717 \times 10^{-2} \times rh^2) \\& + (1.22874 \times 10^{-3} \times T^2 \times rh) + (8.5282 \times 10^{-4} \times T \times rh^2) \\& - (1.99 \times 10^{-6} \times T^2 \times rh^2)\end{aligned}$$