

The concept of wind chill (or the apparent temperature you feel in cold weather due to the wind) is very familiar to people who live in cold climates. The original formula for wind chill that was used for many years is given by

$$WC_{old} = 0.081(3.71\sqrt{V} + 5.81 - 0.25V) \cdot (T - 91.4) + 91.4, \quad V \geq 5 \text{ mph},$$

where  $T$  is the temperature in Fahrenheit and  $V$  is the wind speed in miles per hour.

About 15 years ago, this formula was changed. The formula used to determine wind chill is now given by

$$WC_{new} = 35.74 + 0.6215T + V^{0.16}(0.4275T - 35.75), \quad V \geq 3 \text{ mph}.$$

For this assignment, you should use one or more surface plots (along with anything else you have learned in the class) to answer the question: *Does the new formula for wind chill generally make you warmer or colder than the old formula?* For uniformity, you should use the ranges  $T \in [-45, 40]$  and  $V \in [5, 60]$ . You can use either MATLAB or Python to do this assignment.

You should hand in any plots you use to justify your conclusion in addition to a brief discussion indicating how you reach your conclusion.