**Geog288CL Atmospheric Boundary Layer W2020**

**Homework #5 Due 4 March 2020**

1. For the dataset provided in Gaucho Space, calculate the correlation coefficients between the following quantities:

(u, w) (w, T), (u, T), (u, v)

Discuss the magnitudes and signs of the calculated correlation coefficients in relation to those expected for the atmospheric surface layer; see page 74 of the ABL notes for an example of a correlation coefficient.

Express the vertical heat flux and Reynolds stress in appropriate units. Take ρ= 1.15 kg m-3, Cp = 1004 J kg-1 K-1. Also express these fluxes in kinematic units. What is the value of the friction velocity?

It is normal to find that in the near-neutral surface layer, the friction velocity and the standard deviation of the vertical velocity are proportional to each other such that σw / U\* = 1.25

Compare this with the value of the ratio you calculate from the data provided. Comment on the result, noting that a typical (u, w) correlation coefficient for the surface layer is of the order of -0.3; see page 74 of the ABL notes.