The following exercises correspond to the lecture “Turbulent fluxes I: evapotranspiration”:

1. Calculate the potential ET using the Priestley-Taylor approach.

2. Take daily readings of the water column (i) in the evaporation pan and (ii) the Piché evaporimeter.

3. Compare your measurements with the calculated potential ET from the Botanical garden. How do they differ and why?

Regarding exercise 1:

The Priestley-Taylor equation for potential evapotranspiration is defined as follows:

$$PET = 1.26 \frac{s}{s+g}\left(R_N - G\right)$$

with s the slope of the saturation vapor pressure (kPa/K)

$$s = \frac{4098\left[0.6108 \exp\left(\frac{17.27 * T}{T+237.3}\right)\right]}{\left(T+237.3\right)^2}$$

T = mean air temperature in °C for one day (your 24 hours between the two readings)
R_N = net radiation (MJ / m² d) (here you use the sum of net radiation data over one day)
G = ground heat flux (MJ / m² d) (here you use the sum of net radiation data over one day)
g = psychrometric constant (0.067 kPa K -1)