At some locations, values of percent sunshine hours (S) are available that can be used to estimate R_s. Fritz and MacDonald (1949) proposed a relationship of the form

$$R_s = (0.35 + 0.61S)\, R_{so} \tag{8}$$

Values of R_s calculated from the above equation are subject to more error than measured values of R_s, but when averaged over several days to a month, should not be in error by more than 5% to 10%.

Where local orographic features do not strongly influence cloud cover, daily measurements of R_s at a single station can be used over large areas for ET estimates over 5 and 10 day periods. In Florida, areas within 5 to 9 km of the coast may have significantly different cloud cover than the central portion of the state. In these coastal areas, R_s values for stations in the center of the state should be used with caution.

Total incoming radiation, R_s, can also be estimated from cloud cover data presented by NOAA for several locations in Florida (or obtained from other methods). Readers are referred to a publication by Doorenbos and Pruitt (1977) for details on the procedure for estimating R_s from cloud cover.

Since wind speed is measured at many different heights above the ground surface, and since the Penman equation requires wind speed at a height of 2 m, wind speed will normally need to be adjusted to a height of 2 m.

$$u_2 = u_z \left(\frac{2}{z}\right)^{0.2} \tag{9}$$

where u_2 = wind speed at height of 2 meters in km/day
u_z = wind speed at height z in km/day
z = height of wind measurement in m.

The working Penman equation for potential ET in mm/day becomes

$$ET_p = \frac{\Delta}{\Delta + \gamma}\left[(1 - \alpha)\, R_s - \sigma\, T^4 (0.56 - 0.08\sqrt{e_d})\left(1.42\frac{R_s}{R_{so}} - 0.42\right)\right]/\lambda + \frac{\gamma}{\Delta + \gamma}[0.263\,(e_a - e_d)(0.5 + 0.0062u_2)] \tag{10}$$

The above equation, along with the discussed procedures for estimating R_s and adjusting wind speed, is considered the most accurate method available for estimating potential ET from a vegetated surface. The other methods which are discussed briefly in the following paragraphs are less accurate and should be used only when data are not available for the Penman equation.