CRA.Clima.Evapotranspiration

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Slope of saturation vapour pressure curve

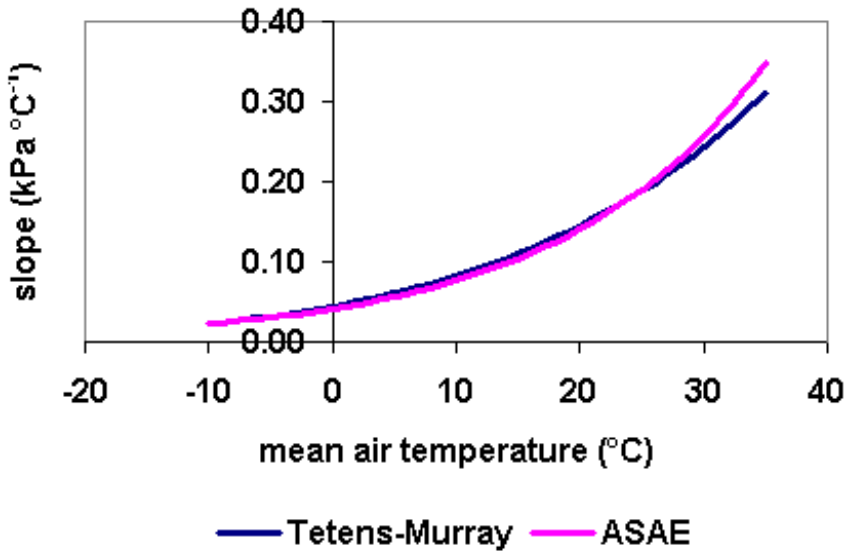
The slope of the relationship between saturation vapour pressure (es, kPa) and air temperature (T, °C), s (kPa °C-1), is given by (Tetens, 1930; Murray, 1967):

$$s = \frac{4098 \cdot \left(0.6108 \cdot e^{\frac{17.27T}{T+237.3}} \right)}{(T + 237.3)^2}$$

This formulation is used with the equations of Penman-Monteith and Priestley-Taylor. An alternative formulation is used with Staghellini equation (ASAE Standards, 1998):

$$s = 0.04145 \cdot e^{0.06088 \cdot T}$$

The two approaches are compared in graph below.



When required for daily time step computations, the slope of the vapour pressure curve is calculated using mean air temperature (equal to the average of maximum and minimum air temperature). Hourly temperatures are used for computation on a hourly basis.