Calculated Parameters

Potential evapotranspiration and dew point temperatures are calculated hourly using data collected at the Illinois Climate Network (ICN) stations.

Potential Evapotranspiration

Since December 1, 2012, potential evapotranspiration has been calculated using the Food and Agricultural Organization (FAO) of the United Nations Penman-Monteith equation as outlined in FAO Irrigation and Drainage Paper No. 56 “Crop Evapotranspiration” by RG Allen, LS Pereira, D Raes, and M Smith. Additional guidance for the calculation was obtained from The ASCE Reference Evapotranspiration Equation, edited by RG Allen, IA Walter, RL Elliott, TA Howell, D Itenfisu, ME Jensen, and RL Snyder which was published in 2005 by the American Society of Civil Engineers (ASCE).

Prior to that time, the van Bavel method was used.

Dew Point Temperature

Dew point temperature is calculated using the following equation from FAO Irrigation and Drainage Paper No. 56 “Crop Evapotranspiration” by RG Allen, LS Pereira, D Raes, and M Smith

\[
T_{dew} = \frac{116.91 + 237.3 \ln \left[ \left( \frac{RH}{100} \right) \left( 0.6108 \exp \left( \frac{17.27 T}{T + 237.3} \right) \right) \right]}{16.78 - \ln \left[ \left( \frac{RH}{100} \right) \left( 0.6108 \exp \left( \frac{17.27 T}{T + 237.3} \right) \right) \right]}
\]

where \( T_{dew} \) = dew point temperature,

\( RH \) = relative humidity, and

\( T \) = air temperature.