Data Correction

Data Correction

1. Remove out of control points due to sensor failures, using Qry_1_Remove Bad Points.
2. Atmospheric temperature less than – 50 C was removed.
3. Dew point less than – 50 C was removed.
4. PAR less than 0 was removed.
5. CO_2 concentration < 0 ppm was removed.
6. Water contents < -0.1 or > 1.0 were removed.
7. Soil temperatures less than – 50 C and less than < -10 C @ 16 cm were removed.

CO_2 concentration correction

1. Before this change, ideal gas low was assumed:
   Corrected = Uncorrected * 101.3 / [kPa] * (273 + t) / 298
2. This equation was given by VAISALA.
   a. Convert current (mA) to uncorrected conc.:
      Cm (ppm) = 625 * [mA] – 2500
   b. Caluclate Kt for temperature
      $Kt\_2: 0.06*([Cm\_2]*10^{-4})^3-0.125*([Cm\_2]*10^{-4})^2+0.12*[Cm\_2]*10^{-4}+0.003$
   c. Temp correction factor
      $Ct (ppm) = 14000*(-[Kt]^2+[Kt])*(25-[Atmospheric Temp])/25$
   d. Pressure correction factor:
      $Cp (ppm) = 1380*[Cm]*10^{-4}*([kPa]-101.3)/101.3$
   e. Corrected Conc (ppm) = [Cm]-[Ct]-[Cp]