Harvard Forest Data Archive HF421-08

Data File:

Name = hf421-08-photosynthesis-light-response.csv
Description = light response curves
Rows = 240 Columns = 46
MD5 checksum = f7fea3d6d8490667f71979e40bc6cb73

Variables:

FTime = flow time (second)
photosynthetic.rate = measurement of photosynthetic rate
                   (micromolePerMeterSquaredPerSecond)
conductance = conductance to H2O (molePerMeterSquaredPerSecond)
ci = intercellular CO2 concentration
       (micromolePerMeterSquaredPerSecond)
tr.mmol = transpiration CO2 rate (millimolePerMeterSquaredPerSecond)
vpd = vapour pressure deficit based on leaf temperature (kilopascal)
ct.leaf = temperature of leaf thermocouple (celsius)
area = in-chamber leaf area on which the measurement was performed
       (centimeterSquared)
BLC_1 = one-side boundary layer conductance
       (molePerMeterSquaredPerSecond)
StmRat = stomatal ratio estimate (dimensionless)
BLCond = total boundary layer conductance
       (molePerMeterSquaredPerSecond)
t.air = air temperature (celsius)
t.leaf = leaf temperature (celsius)
t.bulk = bulk temperature (celsius)
co2.r = CO2 concentration in the reference cell (micromolePerMole)
co2.s = CO2 concentration in the sample cell (micromolePerMole)
h2o.r = H2O concentration in the reference cell (micromolePerMole)
h2o.s = H2O concentration in the sample cell (micromolePerMole)
rh.r = relative humidity in the reference cell (dimensionless)
rh.s = relative humidity in the sample cell (dimensionless)
flow = flow rate (millimolePerSecond)
par.i = photosynthetically active radiation inside the chamber
        (micromolePerMeterSquaredPerSecond)
par.o = photosynthetically active radiation outside the chamber
        (micromolePerMeterSquaredPerSecond)
press = atmospheric pressure photosynthetically active radiation
        inside the chamber (kilopascal)
CsMch = sample CO2 offset (micromolePerMole)
HsMch = sample H2O offset (millimolePerSecond)
StableF = flag whether the feed flow is stable (dimensionless)
BLCslope = slope of the boundary layer conductance of the leaf
           (dimensionless)
BLCoffst = offset of the boundary layer conductance of the leaf
           (micromolePerMeterSquaredPerSecond)
t.air.k = air temperature (kelvin)
t.wall.k = wall temperature (kelvin)
rad = flag whether radians are used for trigonometric functions (dimensionless)
Tl.Ta = difference in leaf and air temperature (celsius)
CndTotal = total conductance (micromolePerMeterSquaredPerSecond)
vp_kPa = vapour pressure (kilopascal)
vpd.a = vapour pressure deficit based on air temperature (kilopascal)
CndCO2 = CO2 conductance (micromolePerMeterSquaredPerSecond)
ci.Pa = intercellular CO2 concentration (micromolePerMole)
Ci.Ca = ratio of intercellular over ambient CO2 concentration (micromolePerMole)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Median</th>
<th>Mean</th>
<th>Max</th>
<th>NAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTime</td>
<td>226.000</td>
<td>3582.000</td>
<td>3699.875</td>
<td>8519.500</td>
<td>0</td>
</tr>
<tr>
<td>photosynthet</td>
<td>-1.349</td>
<td>5.895</td>
<td>6.133</td>
<td>18.594</td>
<td>0</td>
</tr>
<tr>
<td>conductance</td>
<td>0.001</td>
<td>0.070</td>
<td>0.089</td>
<td>0.369</td>
<td>0</td>
</tr>
<tr>
<td>ci</td>
<td>115.999</td>
<td>253.746</td>
<td>282.622</td>
<td>915.022</td>
<td>1</td>
</tr>
<tr>
<td>tr.mmol</td>
<td>0.006</td>
<td>0.981</td>
<td>1.205</td>
<td>4.342</td>
<td>0</td>
</tr>
<tr>
<td>vpd</td>
<td>0.973</td>
<td>1.373</td>
<td>1.397</td>
<td>2.020</td>
<td>0</td>
</tr>
<tr>
<td>ct.leaf</td>
<td>21.819</td>
<td>24.983</td>
<td>24.735</td>
<td>28.056</td>
<td>0</td>
</tr>
<tr>
<td>area</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
<td>6.000</td>
<td>0</td>
</tr>
<tr>
<td>BLC_1</td>
<td>1.420</td>
<td>1.420</td>
<td>1.420</td>
<td>1.420</td>
<td>0</td>
</tr>
<tr>
<td>StmRat</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0</td>
</tr>
<tr>
<td>BLCond</td>
<td>1.420</td>
<td>1.420</td>
<td>1.420</td>
<td>1.420</td>
<td>0</td>
</tr>
<tr>
<td>t.air</td>
<td>18.644</td>
<td>23.133</td>
<td>22.660</td>
<td>24.526</td>
<td>0</td>
</tr>
<tr>
<td>t.leaf</td>
<td>21.819</td>
<td>24.983</td>
<td>24.735</td>
<td>28.056</td>
<td>0</td>
</tr>
<tr>
<td>t.bulk</td>
<td>16.842</td>
<td>21.751</td>
<td>21.388</td>
<td>24.087</td>
<td>0</td>
</tr>
<tr>
<td>co2.r</td>
<td>396.812</td>
<td>400.000</td>
<td>399.983</td>
<td>404.431</td>
<td>0</td>
</tr>
<tr>
<td>co2.s</td>
<td>369.594</td>
<td>390.539</td>
<td>390.092</td>
<td>401.981</td>
<td>0</td>
</tr>
<tr>
<td>h2o.r</td>
<td>8.302</td>
<td>16.667</td>
<td>16.124</td>
<td>20.185</td>
<td>0</td>
</tr>
<tr>
<td>h2o.s</td>
<td>13.906</td>
<td>18.345</td>
<td>17.899</td>
<td>20.248</td>
<td>0</td>
</tr>
<tr>
<td>rh.r</td>
<td>35.440</td>
<td>57.772</td>
<td>56.481</td>
<td>66.792</td>
<td>0</td>
</tr>
<tr>
<td>rh.s</td>
<td>57.454</td>
<td>62.913</td>
<td>62.854</td>
<td>67.221</td>
<td>0</td>
</tr>
<tr>
<td>flow</td>
<td>399.653</td>
<td>399.768</td>
<td>400.100</td>
<td>400.736</td>
<td>0</td>
</tr>
<tr>
<td>par.i</td>
<td>0.463</td>
<td>398.946</td>
<td>581.479</td>
<td>2001.510</td>
<td>0</td>
</tr>
<tr>
<td>par.o</td>
<td>12.274</td>
<td>68.091</td>
<td>91.477</td>
<td>1223.488</td>
<td>0</td>
</tr>
<tr>
<td>press</td>
<td>96.842</td>
<td>97.127</td>
<td>97.253</td>
<td>97.765</td>
<td>0</td>
</tr>
<tr>
<td>CsMch</td>
<td>2.593</td>
<td>3.880</td>
<td>3.923</td>
<td>4.946</td>
<td>0</td>
</tr>
<tr>
<td>HsMch</td>
<td>-0.290</td>
<td>-0.179</td>
<td>-0.189</td>
<td>-0.107</td>
<td>0</td>
</tr>
<tr>
<td>StableF</td>
<td>0.000</td>
<td>1.000</td>
<td>0.875</td>
<td>1.000</td>
<td>0</td>
</tr>
<tr>
<td>BLCslope</td>
<td>-0.220</td>
<td>-0.220</td>
<td>-0.220</td>
<td>-0.220</td>
<td>0</td>
</tr>
<tr>
<td>BLCoffst</td>
<td>2.737</td>
<td>2.737</td>
<td>2.737</td>
<td>2.737</td>
<td>0</td>
</tr>
<tr>
<td>t.air.k</td>
<td>294.969</td>
<td>298.133</td>
<td>297.885</td>
<td>301.206</td>
<td>0</td>
</tr>
<tr>
<td>t.wall.k</td>
<td>291.794</td>
<td>296.283</td>
<td>295.810</td>
<td>297.676</td>
<td>0</td>
</tr>
<tr>
<td>rad</td>
<td>0.074</td>
<td>63.831</td>
<td>93.037</td>
<td>320.242</td>
<td>0</td>
</tr>
<tr>
<td>Tl.Ta</td>
<td>-0.808</td>
<td>-0.153</td>
<td>0.195</td>
<td>2.716</td>
<td>0</td>
</tr>
<tr>
<td>CndTotal</td>
<td>0.001</td>
<td>0.066</td>
<td>0.081</td>
<td>0.293</td>
<td>0</td>
</tr>
<tr>
<td>vp_kPa</td>
<td>1.350</td>
<td>1.785</td>
<td>1.741</td>
<td>1.963</td>
<td>0</td>
</tr>
<tr>
<td>vpd.a</td>
<td>0.946</td>
<td>1.219</td>
<td>1.207</td>
<td>1.479</td>
<td>0</td>
</tr>
<tr>
<td>CndCO2</td>
<td>0.000</td>
<td>0.042</td>
<td>0.051</td>
<td>0.189</td>
<td>0</td>
</tr>
<tr>
<td>ci.Pa</td>
<td>11.324</td>
<td>24.721</td>
<td>28.039</td>
<td>160.570</td>
<td>0</td>
</tr>
<tr>
<td>Ci.Ca</td>
<td>0.291</td>
<td>0.666</td>
<td>0.736</td>
<td>4.131</td>
<td>0</td>
</tr>
</tbody>
</table>
HF421-08 Plot 8