# CZO Metadata Worksheet

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| Data File Name | SAP\_ten\_min.dat |
| Date Prepared | 12/13/2010 |
| Descriptive Title | Shale Hills Susquehanna Critical Zone Observatory Real-Time Sap Flow Data |
| Update Frequency | 10 min |
| Abstract |  |
| InvestigatorContact Info | Dr. David Eissenstat, Professor of Horticulture, The Pennsylvania State University, 218 Tyson Building, University Park, PA, 16802, 814.863.3371, dme9@psu.edu. |
| Data Value Descriptions | **Additional information can be found here:** [**Sapflow Tree Metadata**](http://www.czo.psu.edu/downloads/Metadataworksheets/ShaleHills/ShaleHills_sapflow_trees_metadata.xls)**2009 Data: Sap 1 (North Ridge Station) – Data Column, Tree species, Tree ID #, Sensor depth (cm)*** **data recorded as delta temperatures (C) between probe thermocouples, low or negative values or “NAN” imply probe failure**

 1 QUPR 699 1.5  2 QUPR 699 2.0 3 QUPR 701 1.54 QUPR 701 2.05 QURU 707 1.56 QURU 707 2.07 QURU 705 1.5 8 QURU 705 2.0 9 ACSA 704 1.510 ACSA 704 3.011 ACSA 689 1.512 ACSA 689 3.013 ACSA 689 5.014 ACSA 704 5.0**2009 Data: Sap 3 (South Ridge Station) – Data Column, Tree species, Tree ID #, Sensor depth (cm)*** **data recorded as delta temperatures (C) between probe thermocouples low or negative values or “NAN” imply probe failure**

1 PIVI 1179 1.52 PIVI 1179 3.03 PIVI 1179 5.04 PIVI 1179 7.05 PIVI 938 1.56 PIVI 938 3.07 PIVI 938 5.0 8 PIVI 938 7.0 9 QURU 934 1.510 QURU 934 2.011 QURU 1178 1.512 QURU 1178 2.013 QUPR 1051 1.514 QUPR 1051 2.515 QUPR 915 1.516 QUPR 915 2.517 ACSA 1173 1.518 ACSA 1173 3.019 ACSA 1173 5.020 ACSA 1173 7.021 ACSA 1053 1.5 22 ACSA 1053 3.023 ACSA 1053 5.024 ACSA 1053 7.0**2009 Data: Sap 2 Multiplexer #1 (Creek Side Station)** **- Data Column, Tree species, Tree ID #, Sensor depth (cm)*** **data recorded as delta temperatures (C) between probe thermocouples low or negative values or “NAN” imply probe failure**

1 LITU 1121 1.52 LITU 1121 3.03 LITU 1121 5.04 LITU 1125 1.55 LITU 1125 3.06 LITU 1125 5.07 TSCA 1136 1.58 TSCA 1136 3.0 9 TSCA 1136 5.010 TSCA 1106 1.511 TSCA 1106 3.012 TSCA 1106 5.013 TSCA 1117 1.514 TSCA 1117 3.015 TSCA 1117 5.016 TSCA 1129 1.517 TSCA 1129 3.018 TSCA 1129 5.019 QURU 1130 1.520 QURU 1130 1.521 QURU 1130 2.022 QURU 1130 2.0**2009 Data: Sap 2 Multiplexer #2 (Creek Side Station)** **- Data Column, Tree species, Tree ID #, Sensor depth (cm)****- data recorded as delta temperatures (C) between probe thermocouples** **low or negative values or “NAN” imply probe failure**1 QURU 1107 1.52 QURU 1107 1.53 QURU 1107 2.04 QURU 1107 2.05 QUPR 1111 2.56 QUPR 1111 2.57 QURU 1109 1.58 QURU 1109 1.59 QURU 1109 2.010 QURU 1109 2.011 ACSA 1113 1.512 ACSA 1113 3.013 ACSA 1133 1.514 ACSA 1133 3.015 ACSA 1133 5.016 ACSA 1113 5.017 QUPR 1111 1.518 QUPR 1111 1.5**2010 Data: Sap 1 (North Ridge Station) – Data Column, Tree species, Tree ID #, Sensor depth (cm)*** **data recorded as delta temperatures (C) between probe thermocouples, low or negative values or “NAN” imply probe failure, All *Quercus* (QUXX) species had 2cm fixed depth probes and LITU switched from 4 variable depth probes to 2 2cm fixed depth probes mid season**

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | QUPR | 914 | 2 |
| 2 | QUPR | 914 | 2 |
| 3 | QURU | 917 | 2 |
| 4 | QURU | 917 | 2 |
| 5 | QURU | 936 | 2 |
| 6 | QURU | 936 | 2 |
| 7 | QURU | 1177 | 2 |
| 8 | QURU | 1177 | 2 |
| 9 | PIVI | 929 | 1.5 |
| 10 | PIVI | 929 | 3 |
| 11 | PIVI | 929 | 5 |
| 12 | PIVI | 939 | 1.5 |
| 13 | PIVI | 939 | 3 |
| 14 | PIVI | 939 | 5 |
| 15 | ACSAC | 1054 | 1.5 |
| 16 | ACSAC | 1054 | 3 |
| 17 | ACSAC | 1054 | 5 |
| 18 | ACSAC | 1183 | 1.5 |
| 19 | ACSAC | 1183 | 3 |
| 20 | ACSAC | 1183 | 5 |
| 21 | PIVI  | none | 1.5 |
| 22 | PIVI  | none | 3 |
| 23 | PIVI  | none | 5 |
| 24 | PIVI  | none | 1.5 |
| 25 | PIVI  | none | 3 |
| 26 | PIVI  | none | 5 |

**2010 Data: Sap 3 (South Ridge Station) - Data Column, Tree species, Tree ID #, Sensor depth (cm)*** **data recorded as delta temperatures (C) between probe thermocouples, low or negative values or “NAN” imply probe failure, All *Quercus* (QUXX) species had 2cm fixed depth probes and LITU switched from 4 variable depth probes to 2 2cm fixed depth probes mid season**

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | QUPR | 703 | 2 |
| 2 | QUPR | 703 | 2 |
| 3 | QUPR | 700 | 2 |
| 4 | QUPR | 700 | 2 |
| 5 | QURU | 707 | 2 |
| 6 | QURU | 707 | 2 |
| 7 | QUPR | 694 | 2 |
| 8 | QUPR | 694 | 2 |
| 9 | ACSA | none | 1.5 |
| 10 | ACSA | none  | 3 |
| 11 | ACSA | none | 5 |
| 12 | ACSA | none | 1.5 |
| 13 | ACSA | none | 3 |
| 14 | ACSA | none | 5 |

**2010 Data: Sap 2 Multiplexer #1 (Creek Side Station)** **- Data Column, Tree species, Tree ID #, Sensor depth (cm)****- data recorded as delta temperatures (C) between probe thermocouples, low or negative values or “NAN” imply probe failure, All *Quercus* (QUXX) species had 2cm fixed depth probes and LITU switched from 4 variable depth probes to 2 2cm fixed depth probes mid season**

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | QUAL | 1007 | 2 |
| 2 | QUAL | 1007 | 2 |
| 3 | QUAL | 895 | 2 |
| 4 | QUAL | 895 | 2 |
| 5 | QUAL | 820 | 2 |
| 6 | QUAL | 820 | 2 |
| 7 | QUAL | 892 | 2 |
| 8 | QUAL | 892 | 2 |
| 9 | TSCA | 1030 | 1.5 |
| 10 | TSCA | 1030 | 3 |
| 11 | TSCA | 1030 | 5 |
| 12 | TSCA | 1023 | 1.5 |
| 13 | TSCA | 1023 | 3 |
| 14 | TSCA | 1023 | 5 |
| 15 | TSCA | 1029 | 1.5 |
| 16 | TSCA | 1029 | 3 |
| 17 | TSCA | 1029 | 5 |
| 18 | TSCA | 1024 | 1.5 |
| 19 | TSCA | 1024 | 3 |
| 20 | TSCA | 1024 | 5 |

**2010 Data: Sap 2 Multiplexer #1 (Creek Side Station)** **- Data Column, Tree species, Tree ID #, Sensor depth (cm)****- data recorded as delta temperatures (C) between probe thermocouples, low or negative values or “NAN” imply probe failure, All *Quercus* (QUXX) species had 2cm fixed depth probes and LITU switched from 4 variable depth probes to 2 2cm fixed depth probes mid season**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | LITU | 1033 | 1.5 | 2 |
| 2 | LITU | 1033 | 3 | 2 |
| 3 | LITU | 1033 | 5 |  |
| 4 | LITU | 1033 | 7 |  |
| 5 | LITU | 1034 | 1.5 | 2 |
| 6 | LITU | 1034 | 3 | 2 |
| 7 | LITU | 1034 | 5 |  |
| 8 | LITU | 1034 | 7 |  |
| 9 | LITU | 1031 | 1.5 | 2 |
| 10 | LITU | 1031 | 3 | 2 |
| 11 | LITU | 1031 | 5 |  |
| 12 | LITU | 1031 | 7 |  |
| 13 | LITU | 1032 | 1.5 | 2 |
| 14 | LITU | 1032 | 3 | 2 |
| 15 | LITU | 1032 | 5 |  |
| 16 | LITU | 1032 | 7 |  |

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| Keywords | Sap flow, transpiration |
| Methods | * Granier, A. 1987. Evaluation of Transpiration in a Douglas-fir stand by means of sap flow measurements. Tree Physiology 3, 309-320
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| Citation | The following acknowledgment should accompany any publication or citation of these data: Logistical support and/or data were provided by the NSF-supported Shale Hills Susquehanna Critical Zone Observatory. |
| Publications | None |
| Data Use Notes | The user of Shale Hills Susquehanna CZO data agrees to provide proper acknowledgment with each usage of the data. Citation of the name(s) of the investigator(s) responsible for the data set, in addition to the generic statement above, constitutes proper acknowledgment. Author(s) (including Shale Hills Susquehanna CZO investigators) of published material that makes use of previously unpublished Shale Hills Susquehanna CZO data agree to provide the Shale Hills Susquehanna CZO data manager with four (4) copies (preferably reprints) of that material for binding as soon as it becomes available. The user of Shale Hills Susquehanna CZO data agrees not to resell or redistribute shared data. The user of these data should be aware that these data are largely in a “raw form” and have only been minimally processed for quality. There is no guarantee of perfection for the data contained herein and the possibility of errors exists. These data are defined as either public or private, such that a password may be required for access. |