# CZO Metadata Worksheet

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| Data File Name | CZO\_TracerStudy.xls |
| Date Prepared | January 7, 2013 |
| Descriptive Title | Deuterium tracer study in trees conducted in 2012 |
| Update Frequency | N/A |
| Abstract | Water residence time of ridge-top trees was studied using the deuterium tracer technique combined with sap flow in 2012. Trees were injected with deuterium tracer and the tracer was measured in leaf condensate on subsequent days. Leaves were sampled regularly by climbing trees and 50 foot tall scaffolding. |
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| Data Value Descriptions | |  |  |  | | --- | --- | --- | | Sheet | Column Name | Description | | Tree\_info | Tower | Number of scaffolding tower that tree is accessed from (tower 1, 2, or 3) | |  | TreeID | Tree identification number | |  | Gr | Tree group (group A or B) which determined when it was injected with deuterium | |  | Sapflux ID | Identification number for sapflux cables | |  | Spp | Tree species | |  | DBH (cm) | Diameter at breast height (cm) | |  | Circumference (cm) | circumference (cm) used to determine dosage of D2O | |  | X-coordinate | GIS X-coordinate in meters, State Plane PA S projection | |  | Y-coordinate | GIS Y-coordinate in meters, State Plane PA S projection | |  | Deuterium (g) | Grams of deuterium based on dosage of 0.5g/cm circumference | |  | Amt D injected (g) | Amount of deuterium injected (g) since not all trees would take up full amount | |  | Data logger ID A | Which port number cable hooked up to on datalogger - each tree had two sap flow sensors | |  | Data logger ID B | Which port number cable hooked up to on datalogger - each tree had two sap flow sensors (A and B) | |  | Injection Date | What date tree injected | |  | Injection Start | What time injection began | |  | Injection Finish | What time injection ended | | Sapflux\_raw | TIMESTAMP | Time | |  | RECORD | Record identification number for data logger | |  | battery\_V\_Min | Battery voltage | |  | diff1\_Avg(1) | Temperature differential (used to calculate rate of sap flux) in degrees C from reference and heated probe | | Results | Sample Number | Sample number for analysis | |  | Sampling Date | Date tree sampled | |  | Tree ID | Tree identification number | |  | Spp | Species name | |  | D2H Reportable Value (permil) | Hydrogen isotope ratio value (permil) | |  | D2H Standard Deviation (permil) | Hydrogen isotope ratio standard deviation (permil) | |  | D18O Reportable Value (permil) | Oxygen isotope ratio value (permil) | |  | D18O Standard Deviation (permil) | Oxygen isotope ratio standard deviation (permil) | |
| Keywords | Ecohydrology, vegetation, isotopes, tracer, tree water, deuterium, residence time, transit time |
| Methods | Leaves were placed in sealed plastic bags under lamps in greenhouse upon returning to the lab each day and condensate was removed from bags and stored in sealed vials. Condensate was run on a Los Gatos water isotopic analyzer in the lab of Christopher Duffy ([cxd11@psu.edu](mailto:cxd11@psu.edu)). Fixed depth sap flow probes were used (2 pairs in each tree) and sap flow was monitored from April to November. |
| 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 | Manuscript in progress. |
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