# SSHCZO Metadata Worksheet

|  |  |
| --- | --- |
| Data File Name | **SSHCZO\_CFWMS\_SM\_ST\_Level\_1.csv** |
| Date Prepared | 2017-08-23 |
| Descriptive Title | Soil Moisture & Soil Temperature Data |
| Update Frequency | Quarterly |
| Abstract | The Ground Hydrological Observation Gear (GroundHOG) sites in the Susquehanna Shale Hills Critical Zone Observatory provide integrated observation of water, energy, and temperature in the Shale Hills and Garner Run field sites within the greater Shavers Creek watershed. Soil moisture and soil temperature are measured at 4 depths at 4 sites. Each of these measurements is made using HydraProbes from Stevens Instruments. This dataset was collected at the Cole Farm West Mid-Slope location and is quality controlled.  Dates: 2017-08-23 to present |
| Investigator  Contact Info | Dr. Henry Lin, Crop and Soil Science, The Pennsylvania State University, 444 Agricultural Sciences and Industries Building, University Park, PA. 814-865-6726 [henry.lin@psu.edu](mailto:henry.lin@psu.edu)  Dr. Susan Brantley, Professor of Geosciences, The Pennsylvania State University, 2217 Earth and Environmental Systems Institute, University Park, PA, 16802, 814.865.1619, [sxb7@psu.edu](mailto:sxb7@psu.edu). |
| Data Value Descriptions | * COL1: label = TmStamp, TimeZone=UTC. * COL2: label = SoilMoist\_10, Units=m3/m3, TimeSupport= 10 min, Offset = -10 cm * COL3: label = Flag\_sm10, data evaluation codes * COL4: label = SoilMoist\_20, Units=m3/m3, TimeSupport= 10 min, Offset = -20 cm * COL5: label = Flag\_sm20,, data evaluation codes * COL6: label = SoilMoist\_40, Units = degC, TimeSupport = 10 min, Offset = -40 cm * COL7: label = Flag\_sm40, data evaluation codes * COL8: label = SoilMoist\_90, Units = m3/m3, TimeSupport = 10 min, Offset = -90 cm * COL9: label = Flag\_sm90, data evaluation codes * COL10: label = SoilT\_C\_10, Units = degC, TimeSupport = 10 min, Offset = -10 cm; soil temperature * COL11: label = Flag\_TC10, data evaluation codes * COL12: label = SoilT\_C\_20, Units = degC, TimeSupport = 10 min, Offset = -20 cm: soil temperature * COL13: label = Flag\_TC20, data evaluation codes * COL14: label = SoilT\_C\_40, Units = degC, TimeSupport = 10 min, Offset = -40 cm: soil temperature * COL15: label = Flag\_TC40 , data evaluation codes * COL16: label = SoilT\_C\_90, Units = degC, TimeSupport = 10 min, Offset = -90 cm: soil temperature * COL17: label = Flag\_TC90, data evaluation codes |
| Keywords | Soil, water, hydrology, hydropedology, soil science, soil moisture, soil temperature |
| Methods | Soil moisture, soil electrical conductivity, and soil temperature are measured at each site with Stevens Hydra Probe II ([www.stevenswater.com](http://www.stevenswater.com)). These are automated sensors wired to a Campbell Scientific CR1000 or a CR3000 data logger recording with a 10 minute interval.  Quality Control:   |  |  |  | | --- | --- | --- | | Mark | Meaning | Explanation | | NR | No reading | sensor doesn’t read data, it looks like ‘-999’ or ‘-9999’ or left it blank;  (And for soil moisture, value under 0 is a non-reading data, because it is based on volumetric water content);  For soil temperature, values like ‘-999’ or ‘-9999’ were marked as non-reading data;   * For Hydra Probe, Soil moisture and soil temperature have no definite relationship with each other (e.g. A good soil moisture reading doesn’t mean soil temperature at this depth is good), so double-check is needed for the soil moisture and soil temperature; | | LR | Low reading | Sensor reading lower than what it should be, we mark it as LR (low value);  Usually the method is based upon referring soil moisture records over different periods to find inconsistency; | | HR | High reading | Sensor reads data higher than what it should be, we mark it with HR (High Value); |  1. One column after each soil moisture, soil conductivity and soil temperature column, namely Flag\_#### ; column to above data codes; No change is put on the original data; 2. **Explanation** is needed for “low value” and “high value” every time. |
| Sites | Sites:  Cole Farm:   |  |  | | --- | --- | | Name | Cole Farm West Mid-Slope | | Latitude | 40.636138 | | Longitude | -77.942354 | |
| Publications | none |
| Citation | The following acknowledgment should accompany any publication or citation of these data: Logistical support and/or data were provided by the NSF-supported Susquehanna Shale Hills Critical Zone Observatory. |
| Data Use Notes | The user of Susquehanna Shale Hills 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 Susquehanna Shale Hills CZO investigators) of published material that makes use of previously unpublished Susquehanna Shale Hills CZO data agree to provide the Susquehanna Shale Hills CZO data manager with four (4) copies (preferably reprints) of that material for binding as soon as it becomes available. The user of Susquehanna Shale Hills CZO data agrees not to resell or redistribute shared data. The user of these data should be aware that, while efforts have been taken to ensure that these data are of the highest 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. |