# SSHCZO Metadata Worksheet

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| Data File Name | **COSMOS\_GR.txt** |
| Date Prepared | 11/06/2019 |
| Descriptive Title | Garner Run COSMOS Level 0 data |
| Update Frequency | Hourly |
| Abstract | Hydroinnova Cosmic-Ray Soil Moisture/Snow Sensing System (COSMOS), Model CRS-1000/B, non-invasively measures moderated neutron count among an averaged area (around 700 meters in diameter (Franz et al., 2013)), which can indirectly represent soil moisture in the top 50 cm of soil. This file includes level 1 data measured directly from COSMOS. The neutron count can be affected various elements in surroundings, where hydrogen is often the dominant one (Zreda et al., 2012). |
| InvestigatorContact Info | Dr. Li Li, Associate Professor, Department of Energy and Mineral Engineering, The Pennsylvania State University, 154 Hosler Building, University Park, PA 16802, (814)867-3547 lili@eme.psu.eduDacheng Xiao, PhD student, Department of Energy and Mineral Engineering, The Pennsylvania State University, 228 Hosler Building, University Park, PA 16802, (814)777-6006dzx102@psu.edu |
| Data Value Descriptions | Level 0* COL1: label = TmStamp; Time zone=UTC, neutron count interval.
* COL2: label = N1 [cph];
* COL3: label = N2 [cph]
* COL4: label = T1\_C; Unit = degree centigrade, the temperature inside the logger.
* COL5: label = H1 [%]; Unit = %, the relative humidity inside the logger.
* COL6: label = P1 [mb]; Unit = mb, the atmospheric pressure inside the logger.
* COL7: label = Batt [V]; Battery level in volts
* COL8: label = P4 [mb]
* COL9:label = NMcounts;
* COL10:label = fbar;
* COL11:label = fsol;
* COL12:label = CR VWC;
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| Keywords | COSMOS, Soil Moisture |
| Methods | Data collected using Hydroinnova Cosmic-Ray Soil Moisture/Snow Sensing System. Prepared to be corrected and be used to determine soil moisture.

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| Calibration |   |   |   |   |
| SM | a0 | a1 | a2 | N | N0 |
| 0.1771 | 0.0808 | 0.372 | 0.115 | 1963.23 | 3026.79 |

Pressure correction parameterL = 133PO = 956Equation to calculate soil moisture based on neutron counts: |
| Sites | COSMOS GR: WGS84, Lat 40.695831; Lon -77.920969 |
| Publications | The data has not yet been published. Please embargo public access.  |
| 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. |
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