Microclimate data Level 1

Updated 2023-04-05

**Brief description:**

The least processed version of the microclimate data. Rather than being organized by datalogger as the raw files are, these data are organized by tree and station. Every station has its own .csv, and includes all timestamps since the start of data collection.

**Variable names, descriptions, and units:**

These variable names come directly from the dataloggers and have not been edited.

Note: Variables are preceded by the Port and Datalogger location where they were originally recorded. This is not needed for analysis generally, but may be helpful in tracking the data back to its source.

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| --- | --- | --- | --- |
| **Column name** | **Units** | **Instrument** | **Explanation** |
| **Tree** | NA | NA | TreeID, following the naming conventions of this project |
| **Station** | NA | NA | Station Number within a tree. #1-3 are outer canopy stations, clockwise from the north azimuth. #4 is the central station, and #5 is the one that sticks up above the canopy (only present on forest trees) |
| **Timestamp** | “y-m-d h:m:s” | NA | Timestamp of the measurement |
| **Wm2SolarRadiation** | Watts per meter squared | PYR | Solar radiation |
| **degreeCAirTemperature** | Degrees Celsius | ATM14 | Temperature |
| **RHRelativeHumidity** | Proportion, from 0 to 1 | ATM14 | Relative humidity |
| **kPaAtmosphericPressure** | Kilopascals | ATM14 | Atmospheric pressure |
| **kPaVPD** | kilopascals | ATM14 | Vapor pressure deficit |
| **minLeafWetness** | Minutes | LWS | Number of minutes that the “leaf” has been wet in the previous 15-minute interval |
| **minLeafWetnesshigh** | minutes | LWS | Same as previous, but using a higher threshold for wetness |
| **WetnessLevel** | Counts | LWS | A measure of the amount of surface area of the leaf that is wet. Max is around 1100 |
| **degreesWindDirection** | Compass direction (0-360) | ATM22 | Direction from which the sensor is receiving wind |
| **msWindSpeed** | Meters per second | ATM22 | Typical wind speed |
| **msGustSpeed** | Meters per second | ATM22 | Speed of wind gusts |
| **degreeCAnemometerTemp** | Degrees Celsius | ATM22 | Temperature reading from the ATM22 |
| **degreesXaxisLevel** | Degree | ATM22 | x-axis orientation of ATM22 |
| **degreesYaxisLevel** | Degree | ATM22 | y-axis orientation of ATM22 |

**Notes:**

* NA values can appear in cells where the datalogger had zero batteries, and it can be difficult to trace this back to the source. If a station was plugged into a single datalogger instead of spread across multiple, the row will simply be missing. However, if the station has some measurements from a datalogger that did not have zero batteries and some from one that had zero, then a row will be present but it will show NA values for the variables that came from the zero battery datalogger. This is not a problem, but can make things confusing when trying to figure out why a value is NA.
* RH is sometimes greater than 1, which is impossible. This can be changed to 1 in later steps.
* The VPD is often NA where relative humidity is 100% or greater (“calculation exceeds limits”). In later steps, this can be changed to a zero

**Data checking procedures:**

1. From each station within tree, 3 rows were randomly selected for checking. The row contains the “LVL1” value, as well as the original datalogger ID and port number
2. Open the raw file associated with the Tree, datalogger, and month seen in the row from Step 1.
3. Record the value from the raw data sheet
4. Make sure it is the same as the randomly selected LVL1 value