Test Name: M-TEMP Sensor Quality Assurance Testing - Outdoors

Date: 9/16/24

People involved: Andrew, Ruudy

Description:

To validate the accuracy of the data from our cart sensors, we conducted a field test with each cart placed side by side outdoors. This setup allows us to closely monitor and compare the sensor data from both carts, identifying any anomalies and ensuring data consistency between them. The testing was performed behind the 1155 building.

Sensors and Set Up:

\*\*\*\*\*\*\*\*Cart 1 - USB-TEMP DAQ {AI0: 1.8 ft (°C), AI1: 5.4 ft (°C), AI2: 0.0 ft (°C), AI3: 3.6 ft (°C),

AI4: 7.2 ft (°C), AI5: 9.0 ft (°C), AI6: 3.6 ft b (°C), AI7: 5.4 ft b (°C)}

USB-1208FS-PLUS DAQ {AI0: IR Raw (V)}

\*\*\*\*\*\*\*\*Cart 2 - USB-TEMP DAQ {AI0: 5.4 ft (°C), AI1: 1.8 ft (°C), AI2: 0.0 ft (°C), AI3: 3.6 ft (°C),

AI4: 3.6 ft b (°C), AI5: 5.4 ft b (°C), AI6: 7.2 ft (°C), AI7: 9.0 ft (°C)}

USB-1208FS-PLUS DAQ {AI0: IR Raw (V)}

Location of Stored Data:

[Can be found here in the uc.environmental.frontiers google drive](https://drive.google.com/drive/folders/1-YcXnK4qS8VLDx8oaGt37wq07O2nTOdi?usp=sharing)

Code Used for Processing Data:

[Code for processing the data can be found here](https://colab.research.google.com/drive/1tFTUjNy6ZqXY79iQd8tMzmBY1kzuo6Ht?usp=sharing)

Problems or Concerns:

\* When preparing to go out and test, the temperature DAQ on cart 2 stopped working, as of now we are unable to figure out why. We have used multiple laptops with DAQAmi that worked on cart 1 with cart 2 and it did not work. The humidity/IR DAQ still works. DAQAmi crashes whenever trying to run with the cart 2 temperature DAQ.

\* Testing was conducted only with cart 1

Other Notes:

\* Start Time - 1:09 PM

\* Sunny day out, no clouds, wind blowing East to West

\* Thermocouple was situated next to the 5.4 ft sensor:

\* at 1:11 it read 27.9

\* at 1:41 it read 28.4

\* at 1:51 it read 29.7

\* at 1:54 it read 29.0

\* Handheld IR also was used:

\* at 1:11 it read 32.6 (in partial shade)

\* at 1:27 it read 35.1 (Moved to make sure it read unshaded ground)

\* at 1:41 it read 34.6

\* at 1:51 it read 32.3

\* at 1:54 it read 33.0

\* Nothing too remarkable happened throughout the duration of the test

\* End Time - 1:54 PM

Conclusions About the Data:

Sensors seem to be working, no incredible spikes, seem to be in working order. The a vs b comparisons are a bit concerning, one would think they would be more similar.

