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OCN 418

<div align="center">Soil Moisture Project Discussion</div>

My goal is to eventually be able to turn off an automated sprinkler system for a watering cycle depending on whether or not there a rain event had occurred during a water cycle. If the Soil moisture gauge reached a certain level then the automated sprinkler system would not run for that particular watering cycle. To date, I am still in the testing stage. In the past week I have attempted to better understand the data that is received by the soil moisture gauge. In this effort I failed to get the script working in the field. For this reason the final plot is a collection of three test done at home. You will see in my field notes that I attempted to get a more inclusive collection of data. I tried to take soil moisture samples from the Lyon Arboretum in Manoa Valley. I took a sample from soil next to the stream under the assumption that the soil there would be an example of soil containing a maximum amount of moisture. I also took samples next to two different stream gauge stations and one weather stations. My plan was to collect the station data to see what recent rain event had occurred the previous night. Obviously this attempt would have been more inclusive than the "at-home" test and in the future if I continue this project I will redo this test.

The current plot that I have submitted shows three different samples. I sampled tap water, dry soil, and wet sand. The best thing that I can recover from this work is what the soil moisture gauge interprets to be completely "wet" and completely "dry". This gives me a ranges of "wetness" and "dryness". Without doing the research here, I am assuming that tap water will read in higher values than saturated dirt. This will be answered if I redo the field work.

Although, my project was not much a success in terms of accomplishing anything, the practice of actually doing the project was invaluable. This best part of this class for me was the ground-up nature of the project. I think it was a good practice of scientific process. I took away useful skills in python and working with different physical components of monitoring equipment. It served as a useful introduction to the possibilities when it comes to monitoring earth systems in a cheap and effective manner.

1 hour   every   5 min   sample   for   1 min

2 min   sample   time   =   90 lines of data

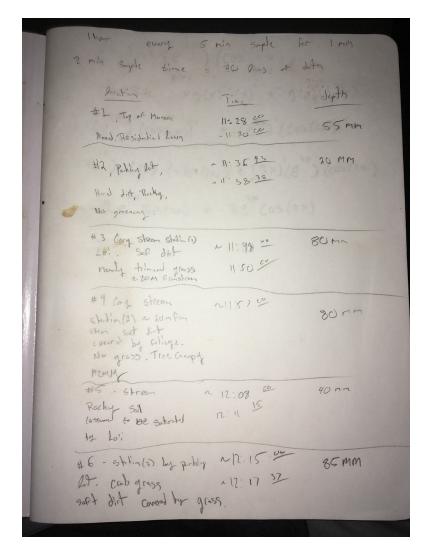| Location	Time	depth
#1 Top of Manoa Road. Residential Lawn	11:28 °° - 11:30 °°	55 mm
#2, Pebbly lot, Hard dirt, Rocky, No greenery.	~11:36 ⁴³ ~11:38 ³⁵	20 mm
#3 Cory Stream station (1) Lo'i. Soft dirt newly trimmed grass ~20m from stream	~11:48 °° 11:50 °°	80 mm
#4 Cory Stream station (2) ~20m from stream soft dirt covered by foliage. No grass. Tree canopy measured	~11:57 °°	80 mm
#5 - Stream Rocky Soil (assumed to be saturated by Lo'i	~12:08 °° 12:11 ¹⁵	40 mm
#6 - station (3) by pebbly lot. crab grass soft dirt covered by grass.	~12:15 °° ~12:17 ³⁷	85 mm

Fig. Field notes from Manoa Valley testing.

SOIL Test

Soil Moisture Reading(Raw)

MaxValue=19476 volts
Time= 2018-12-05 20:33:17
MinValue=105 volts(air)
Time= 018-12-05 20:06:27

Water

Dry Soil

Wet Sand

Soil Moisture Reading(Volts)

MaxValue= 2.43407 volts
Time= 2018-12-05 20:33:17
MinValue= 0.0133754 volts(air)
Time= 018-12-05 20:06:27

Water

Dry Soil

Wet Sand

05 20:10   05 20:15   05 20:20   05 20:25   05 20:30

Time