

Soil moisture monitor with atmospheric data collection

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GEOSC 597

12/8/16

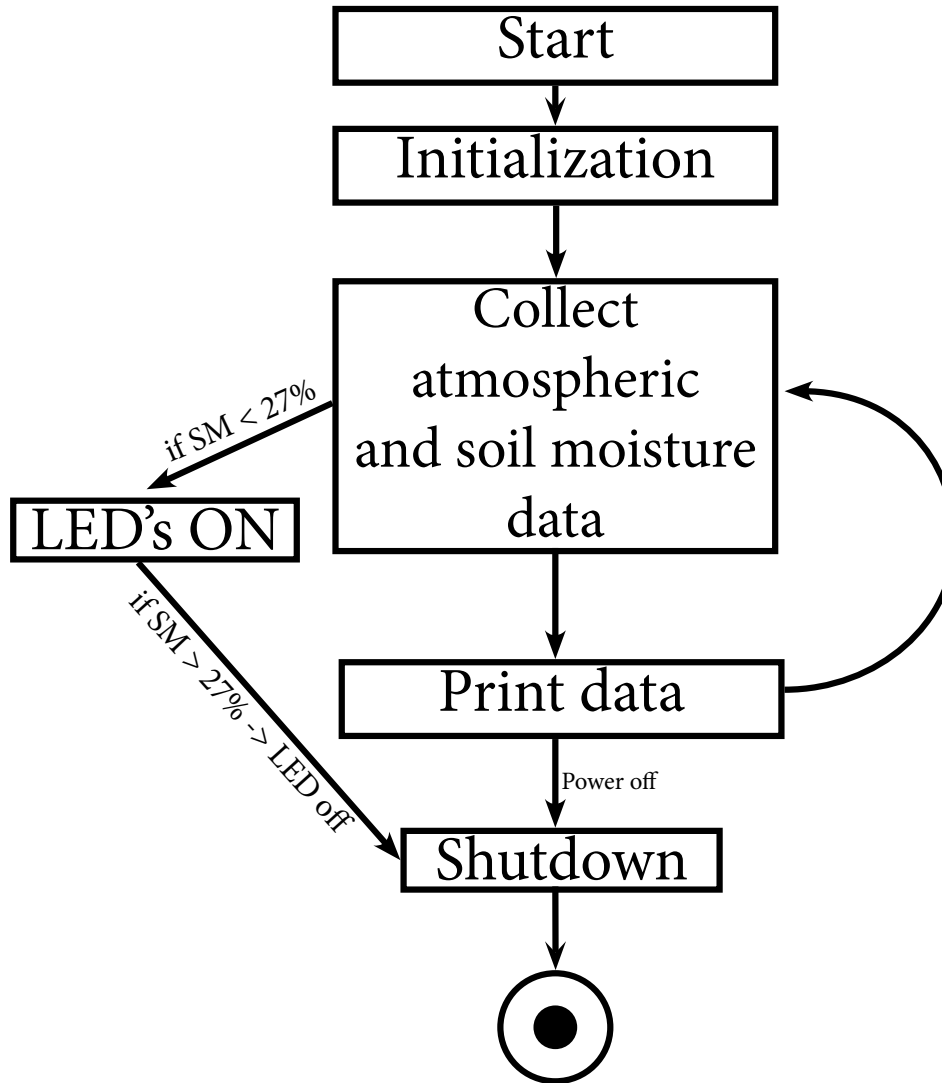
Why do my plants keep dying?



How do I fix this?

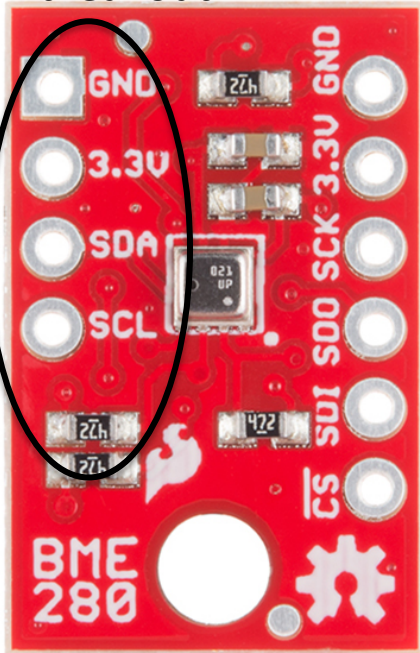
- Monitor the moisture content of the soil for my plants.
- Record and monitor atmospheric conditions (temperature, pressure, humidity etc.).
- Have some sort of alert for when the soil moisture is below a set value.
- THEN WATER! (probably a manual task)

Solution state machine

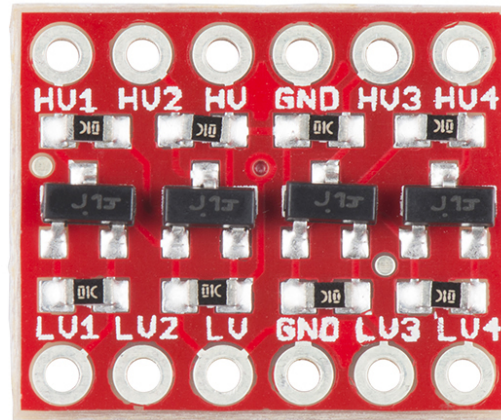


Measurement components

BME280:
Atmospheric
breakout



Bi-directional
logic level
converter



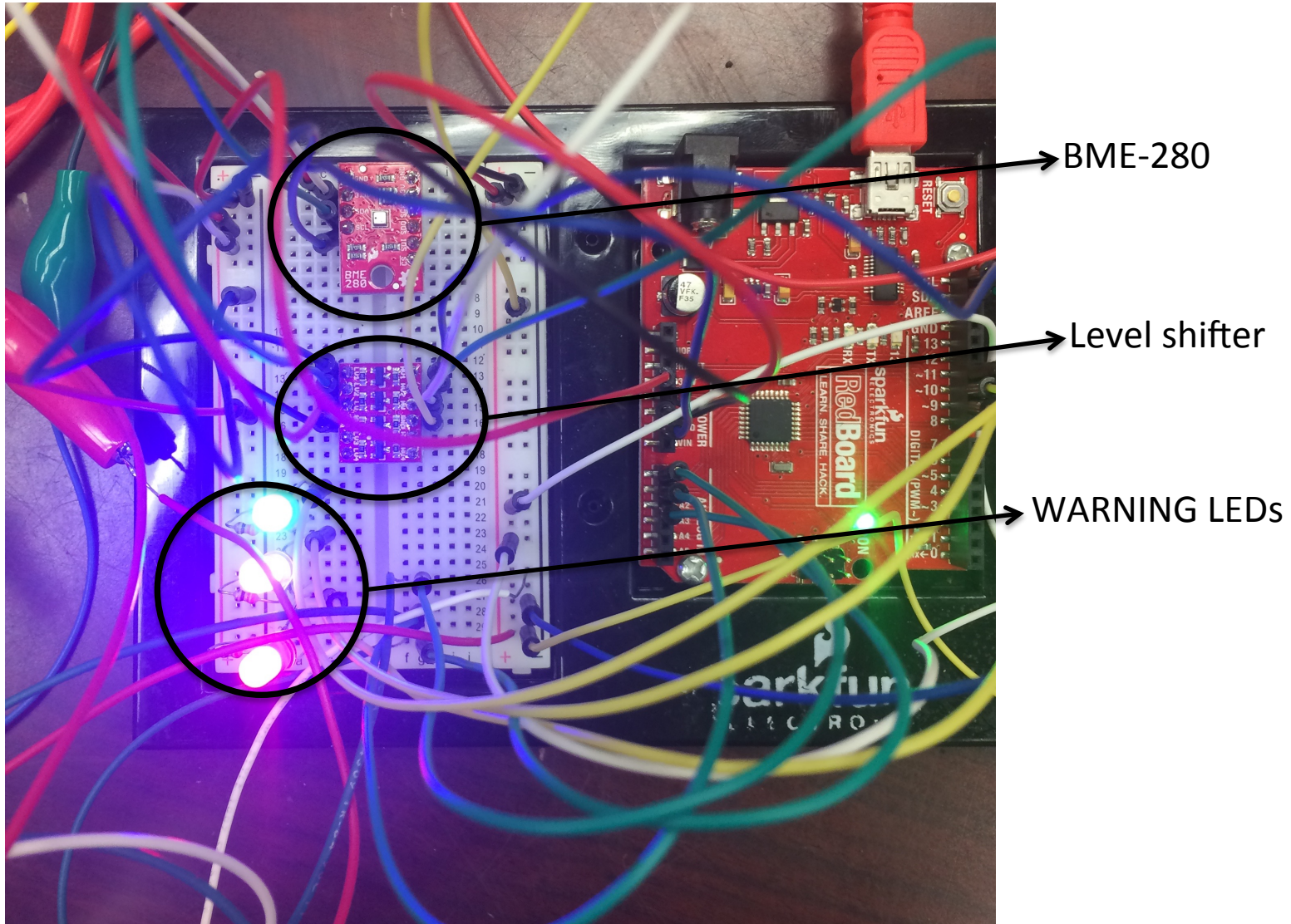
ESP8266:
Wifi module



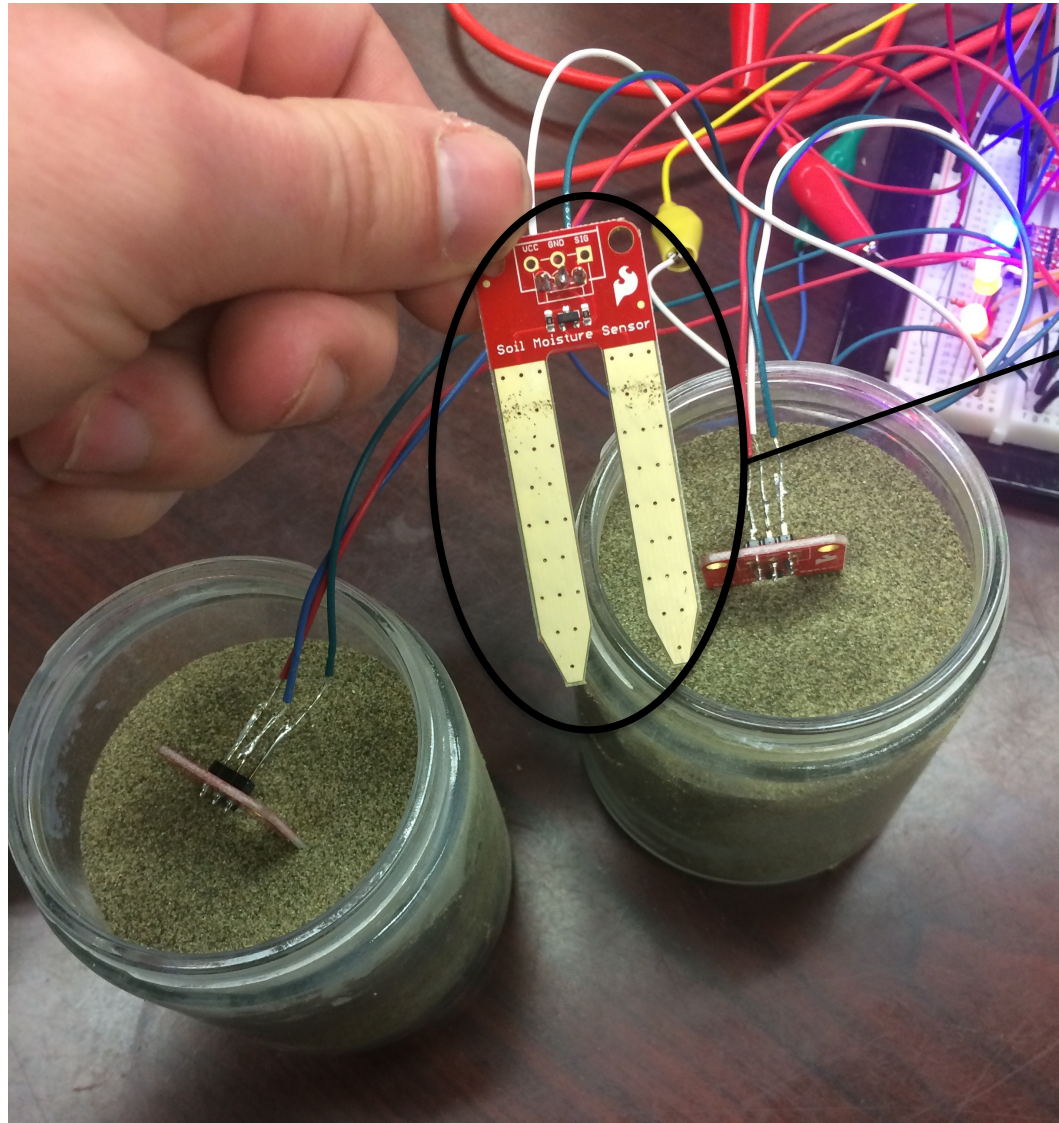
Soil moisture
sensor



The hookup

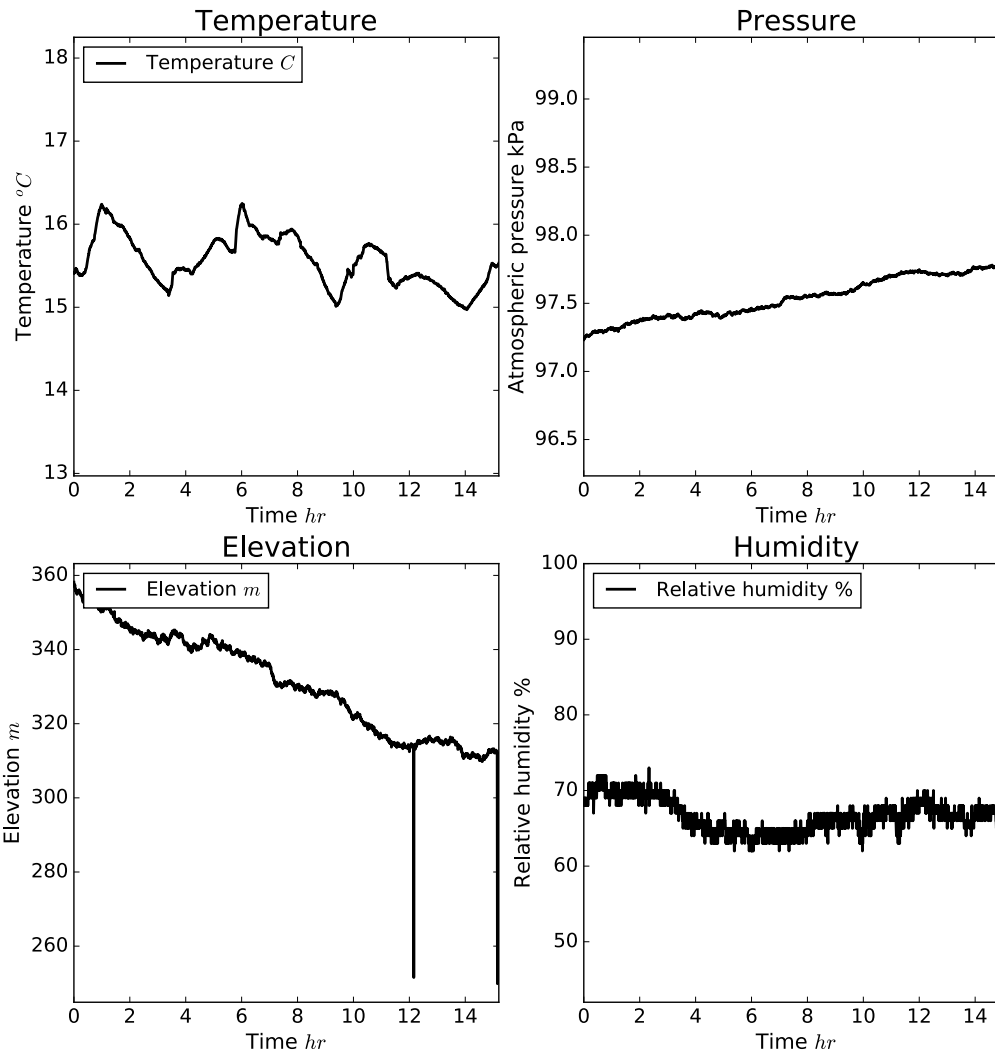


The hookup continued...

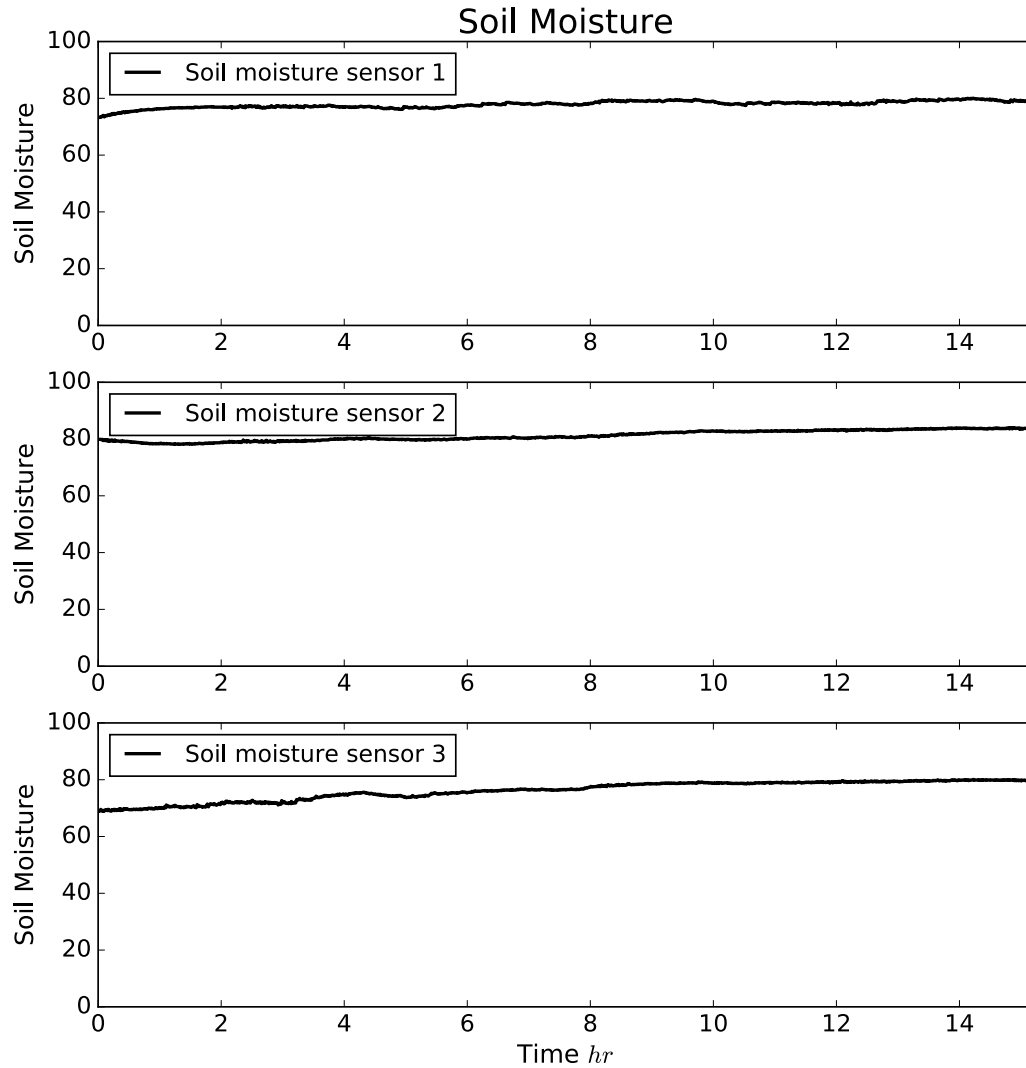


Soil moisture
sensor

Atmospheric data visualization



Soil Moisture



DEMO!!!!

Future work

- Consolidate wiring and modules onto a smaller board so that it will fit into a reasonably small waterproof case. The soil moisture sensors are waterproof and so they are able to function in the environment.
- Fix the program for WiF connectivity. This is close to working but the issue of programmatically sending serial AT commands needs to be fixed and/or circumvented.
- Generate an automated alert system that will either text or email the user when the soil moisture reaches a dangerous level for the plant that is being monitored.