

Soil Moisture Probe and Logger Installation

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Materials:

Split Wire Loom
Small trowel
Compass
U-style fence post
Transect tape
Zip-ties
Numbered metal tag
18 gauge wire (~8cm)
Wire cutters
Sledge Hammer (3-5 lbs.)
Water tight storage case (Tupperware works well)
Hardware for connecting the case to the U-post
Industrial Velcro (~8cm/logger)
Decagon Em5b Logger
Decagon 10HS probes
GPS
Data sheet
Pocket knife
Decagon data transfer cord
Tablet PC

Data Logger/Box Preparation:

1. Prepare the Data logger box so that it will tightly connect to the U-post. This can be done by drilling the boxes and securing wire to hang the box between screws and washers.
2. Install Velcro in the box and to the back of the data logger.
3. Pre-drill holes in the box for the probe cables, make sure cable ends fit through holes.
4. Connect the logger to computer using the Decagon USB cord
5. Open the ECH2O Utility software and push the "connect" button.
6. Select the 10HS probe for all ports.
7. Select the proper sampling frequency. Either 60min or 90min depending on how often the loggers can be serviced.

Micro-site Selection:

Trees:

1. Logger is installed under the tree canopy mid-way between the tree stem and the drip-line. Using a compass, install the probe in the direction 045° True from the tree stem.
2. For treed areas, the probe should be installed horizontally 10cm below the mineral soil surface. Do not include any duff or litter as the surface of the soil. However this material should be replaced once the probe is properly installed.

N. Facing Interspace: See diagram.

Interspace: Probe should be installed in an undisturbed interspace area ~5m from any trees. See diagram.

Tree Islands: Instrumenting beneath a tree canopy within the bullhog, lop, and pile burn will be in the remaining tree islands if there are any. Once a tree island is located the same protocol should be followed for instrumenting treed sites. Probe should be placed on the 045° True from stem. See diagram.

Mulch Pile: Probe should be installed in the middle of mulch pile. Minimum pile size = 1 m.

Pile Burn: Probe should be installed in the middle of a burn pile. Minimum pile size = 1m. See diagram.

Lop Burn: Probe should be installed in the middle of a burned area. Minimum pile size = 1 m.

Hog track: Locate a hog track near one of the other sites. Place probe within the middle of a bullhog track.

Installation:

1. Locate the appropriate microsite location. See specific instructions above.
2. Flag the microsites with *white flags* and chose a location at least a meter from the instrumented microsites, but central to all microsites to install the data logger.
3. With sledge hammer pound the U-post into the ground with the hooks facing upward.
4. Fit the soil moisture enclosure over the post and secure with hooks.
5. Starting at probe end, cover probe cords with 1/4 inch split loom. Extra cord can be coiled inside the Tupperware, so it is not always necessary to cover the entire length of the cord.
6. Probes should be installed in the center of each microsite. For example, in the center of a burn pile.
7. Dig a rectangular hole in microsite location ~15cm long and 12cm deep. Do not disturb soil in area where probe will be installed.
8. Insert probe horizontally into undisturbed column of soil at **10cm depth**. Forks should be flat (horizontal). Probe will not work correctly if it is buried too shallow. Avoid putting probe in contact with rocks or voids in the soil column.
9. Backfill hole once probe is properly installed. If installing probe under a tree make sure to first backfill with mineral soil and then cover with duff or litter. Do not backfill the hole with only litter.
10. Trench a line from the microsite to the logger installation and bury the probe cords. Cord should run along the ground and make a right angle up to the logger. Backfill trench to cover cords.
11. Plug in the cord to the logger and secure split loom inside drilled hole.
12. Secure all cords to U-post with zip-ties.
13. GPS location of logger and give the GPS point the same number as metal tag.
14. Fill out data sheet with probe and logger information.

Data Retrieval:

1. Open the Logger box. Insert the Decagon USB cord end into Port #1 on logger. Open the ECH2O Utility software and connect to the logger. There are two options for downloading data, either you can download NEW data only or download ALL data. It is probably best to download all data.

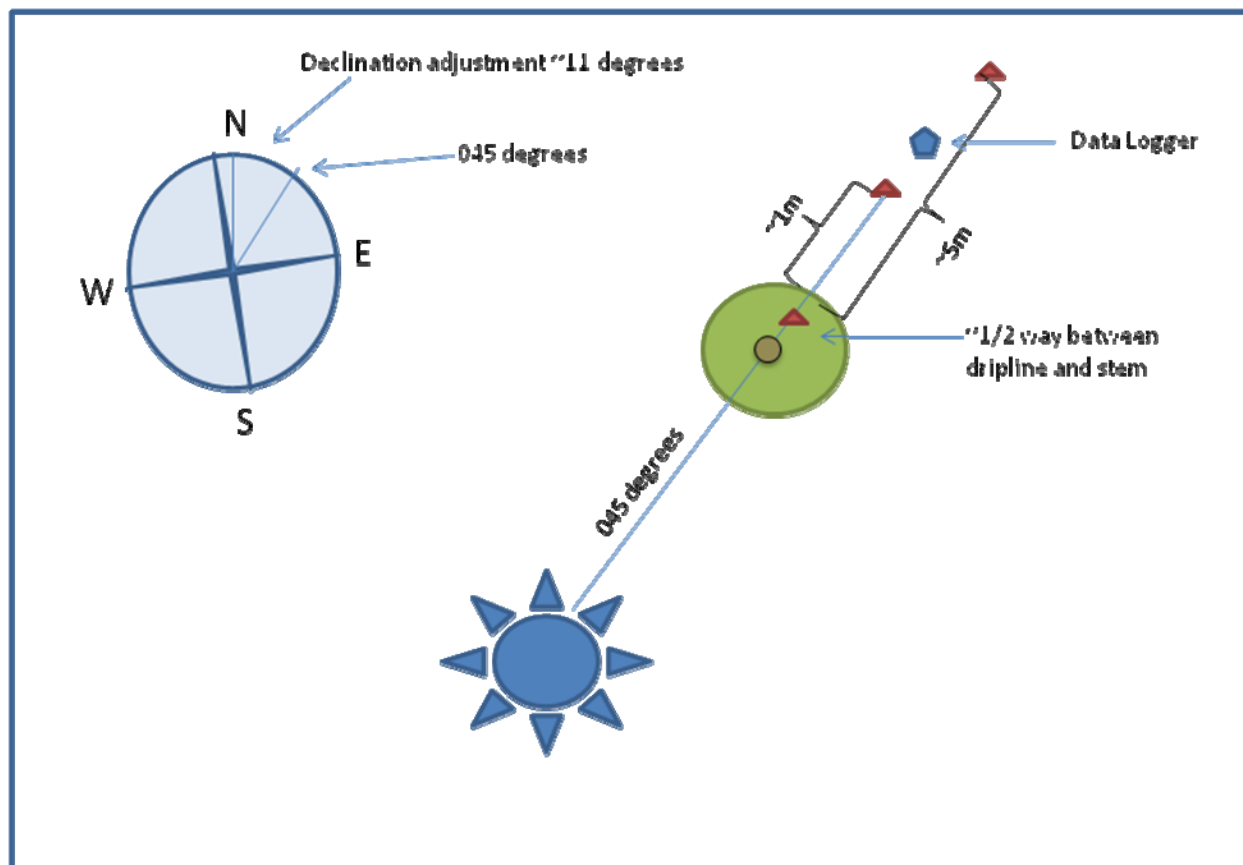
Modified: 2009.09.21, S. Castle

- ### Microsites for soil moisture:

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TOTALS Probes	3	4	3	3	5	4	4	4	30 x2 = 60 probes
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Logger Installation for Control Sites:



Logger Installation for Treatments, Pile Burn example:

