

# Calibration of Soil Moisture Sensors

## Field Guide

### Task

To calibrate the soil moisture sensors.

### What You Need

- Soil Auger
- Meter stick
- Pen or pencil
- Properly installed soil moisture sensors
- Soil moisture meter
- Materials for the *Gravimetric Soil Moisture Protocol* (i.e., cans, oven, trowel, marking pen)
- Biannual Soil Moisture Sensor Calibration Data Sheet(s)*

### In the Field

1. Complete the top portion of your *Biannual Soil Moisture Sensor Calibration Data Sheet*.
2. Take readings from the soil moisture sensors following the process outlined in the *Reading the Soil Moisture Meter Field Guide*. Record this reading in column G, Corresponding Soil Moisture Meter Reading, of the *Biannual Soil Moisture Sensor Calibration Data Sheet(s)*.
3. Select a random location within 5 m of the sensor holes.
4. Clear away any surface debris.
5. Use the auger to collect samples for the *Gravimetric Soil Moisture Protocol* from each depth for which you are developing a calibration curve. Place each soil sample in a container and number the container.
6. Backfill the hole (last out, first in) and replace the surface cover.
7. Record the date, time, depth(s) and container number(s) in your science notebooks.
8. Determine the soil water content of each sample following the *Gravimetric Soil Moisture Protocol Lab Guide*.
9. Record the date and time of your measurement, the wet, dry, and container weights on the *Biannual Soil Moisture Sensor Calibration Data Sheet*. Calculate the water mass, dry soil mass and soil water content and record their values on the *Data Sheet*.
10. Report your gravimetric soil moisture data to GLOBE.
11. Repeat steps 2 – 10 about fourteen times as the soil moves through one or two complete drying cycles. Wait until your meter reading changes significantly before collecting another gravimetric sample.
12. Report your calibration data to GLOBE and a calibration curve will be created, used to convert your meter readings to soil water content and sent to your school.