

GLOBE Soil Moisture Campaign

Lab Guide – Gravimetric Sample Drying Protocol

Task

Find the gravimetric soil moisture content of each sample by weighing the wet soil samples, drying them completely, and then weighing the dry samples.

What you need:

- Soil drying oven (conventional or microwave)
- Thermometer capable of measuring to 110° C (if using a conventional drying oven)
- Soil samples in containers suitable for your drying oven
- Balance or scale with 0.1 g sensitivity and at least 400 g capacity (recommended)
- Hot pads or oven mitts
- Soil Moisture Campaign Data Sheet* with field information filled in.
- Pen or pencil

In the Lab

1. Calibrate the balance according to the manufacturer's directions. Record the standard mass used to calibrate the balance in your Science Log Book. If using an electronic balance, check that the balance is measuring in grams and is zeroed properly.
2. Weigh the soil sample with the lid. Record the mass to the nearest 0.1 g as the *wet mass* next to the appropriate sample container number on the *Data Sheet*.
3. Repeat step 2 for each soil sample.
4. Remove the lids, if any, from each soil sample.
5. Dry your samples for 24 hours in your soil-drying oven.
6. When your samples are dry, fill in drying time and drying method on the *Data Sheet*.
7. Carefully remove the samples from the oven using the hot mitts.
8. Replace the lids, if any, to their appropriate container.
9. Weigh the soil sample with its lid. Record the mass to the nearest 0.1 g as the *dry mass* next to the appropriate container number on the *Data Sheet*.
10. Repeat step 9 for each soil sample.
11. Empty soil from the containers into a bucket. Clean and dry each container.
12. If not done earlier, weigh the empty can and record the *can mass* on the *Data Sheet*.

Note: If you are using a lower temperature oven, cool, weigh and re-dry your sample for 24 more hours to confirm that the difference in dry weights is less than 2% of the total dry weight.