GLOBE Soil Moisture — Star Pattern Method Data Sheets

Print the Soil Moisture Data Sheet:

- Soil Moisture Star Pattern Data Sheet

Or select an alternative data sheet option below:

- Soil Moisture Star Pattern: New Site (2 pages)
  - Use this the first time you visit a sampling site to record site definition data.
- Soil Moisture Star Pattern with field guide (3 pages)
  - This data sheet has the field guide incorporated.
- Soil Moisture Star Pattern: Simplified (2 pages)
  - Use this data sheet when working with those new to GLOBE and collecting data.

GLOBE Soil Moisture Star Pattern Data Sheet

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Soil State: ☐ Measurable ☐ Frozen Ground ☐ Snow on Ground

☐ Frozen water on ground ☐ Hail on ground ☐ Graupel (snow pellets) on ground

If anything except Measurable is selected, stop here!

Drying Method: ☐ 95–105°C oven ☐ 75–95°C oven ☐ Other: _____

Average drying time: _____ hours _____ minutes

OPTIONAL Bearing from Star Center: _____ Distance from Star Center:_____

Record mass to the nearest 0.1 g!

Soil Moisture Measurements

0–5 cm		A	B	C	(A-B)/(B-C)
Sample	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

10 cm		A	B	C	(A-B)/(B-C)
Sample	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

*** Record comments on the back of this page.**

GLOBE Soil Moisture Star Pattern Sheet: New Site (page 1)

Name: _____ Site Name: _____

Date: _____ Time (local): _____

New Site Definition

Latitude: _____ Longitude: _____

Elevation: _____ m

Surface State: ☐ Natural ☐ Plowed ☐ Graded ☐ Backfill ☐ Compacted ☐ Other

Surface Cover: ☐ Bare Ground ☐ Short Grass (under 10 cm) ☐ Long Grass (over 10 cm)

Canopy Cover: ☐ Open ☐ Some Trees (within 20 m) ☐ Canopy Overhead

Soil State: ☐ Measurable ☐ Frozen Ground ☐ Snow on Ground

☐ Frozen water on ground ☐ Hail on ground ☐ Graupel (snow pellets) on ground

If anything except Measurable is selected, stop here!

Soil Moisture Measurements

Record mass to the nearest 0.1 g!

0-5 cm		A	B	C	(A-B)/(B-C)
Sample	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

GLOBE Soil Moisture Star Pattern Sheet: New Site (page 2)

Soil Moisture Measurements Continued

Record mass to the nearest 0.1 g!

10 cm		A	B	C	(A-B)/(B-C)
Sample	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

Drying Method: ☐ 95–105°C oven ☐ 75–95°C oven ☐ Other: _____

Average drying time: _____ hours _____ minutes

Comments:

GLOBE Soil Moisture Star Pattern Data Sheet and Field Guide (page 1)

Name: _____ Site Name: _____

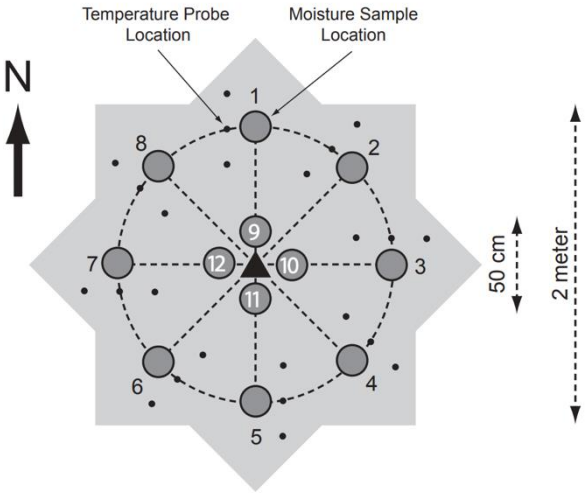
Date: _____ Time (local): _____

Soil State: ☐ Measurable ☐ Frozen Ground ☐ Snow on Ground

☐ Frozen water on ground ☐ Hail on ground ☐ Graupel (snow pellets) on ground

If anything except Measurable is selected, stop here!

Soil Moisture: In the Field



1. Locate your sampling point on the star and cut and pull away any grass or groundcover.
2. With the trowel, dig a hole 10–15 cm in diameter down to 5 cm. Leave this soil loose in the hole.
3. Remove from the loose soil any rocks larger than a pea (about 5 mm), large roots, worms, and other animals.
4. Use your trowel to fill your soil container with at least 100 g of the loose soil.
5. Immediately seal the container to hold in the moisture.
6. Record the container ID number on Data Table 1 (0–5 cm) on page 3 next to Sample 1.
7. Remove all of the soil from the hole down to a depth of 8 cm.
8. In a new container, collect a soil sample that contains the soil between 8 and 12 cm deep. Remove rocks, large roots and animals. Seal the container.
9. Record the container number on the Data Table 2 (10 cm) next to Sample 1.
10. Return the remaining soil to the hole.
11. Repeat steps 2–10 twice in new holes within 25 cm of the original sample point. Record the data on the data tables. You should have six containers of soil taken from three holes.
12. Take your samples back to the lab and follow the In the Lab Field Guide (page 2).

GLOBE Soil Moisture Star Pattern Data Sheet and Field Guide (page 2)

Drying Method: ☐ 95–105°C oven ☐ 75–95°C oven ☐ Other: _____

Average drying time: _____ hours _____ minutes

Soil Moisture: In the Lab

1. Calibrate the balance according to the manufacturer's instructions.
2. Place the sample in the container on the balance. If using a bag, shake it to move the soil to one end of the bag. Fold the bag so the soil occupies as little space as possible and can be placed entirely on the scale.
3. Weigh and record the mass to the nearest 0.1 g as the “Wet mass” next to the appropriate container ID# in the data table (page 3).
4. Repeat this step for all sample containers.
5. Open the containers and dry using one of the following options:
   - A 250-watt heating lamp (Dries in about 2–3 days)
   - A drying oven (Use cans only! Dries overnight)
   - Air drying (Dries in 2–5 days)
6. Determine when the sample is dry by weighing it, drying for a few more hours or another day, and then weighing it again. When the mass of the sample does not change, it can be considered dry.
7. Determine the mass of each dry sample to the nearest 0.1 g and record it as the “Dry mass” next to the appropriate container ID# in the data table.
8. Determine the mass of the empty containers if you have not yet done so. Record the mass in the data table.
9. Dried soil can be returned to fill in the sample holes on site.

GLOBE Soil Moisture Star Pattern Data Sheet and Field Guide (page 3)

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Record mass to the nearest 0.1 gram!

Data Table 1: 0–5 cm Samples

0-5 cm		A	B	C	(A-B)/(B-C)
Sample	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

Data Table 1: 10 cm Samples

10 cm		A	B	C	(A-B)/(B-C)
Sample	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

Comments:

GLOBE Soil Moisture Star Pattern Data Sheet: Simplified (page 1)

Name: _____

Site Name: _____

Date: _____ Time (local): _____

What is the soil like?:

☐ I can collect soil samples (**Measurable**) ☐ Frozen Ground ☐ Snow on Ground

☐ Frozen water on ground ☐ Hail on ground ☐ Graupel (snow pellets) on ground

If anything except **Measurable is selected, stop here!**

Soil Moisture Measurements: 0–5 cm

Record mass to the nearest 0.1 g!

In the field | In the lab

0–5 cm		A	B	C	(A-B)/(B-C)
Soil Depth (cm)	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

GLOBE Soil Moisture Star Pattern Data Sheet: Simplified (page 2)

Soil Moisture Measurements: 10 cm

Record mass to the nearest 0.1 g!

In the field | In the lab

10 cm		A	B	C	(A-B)/(B-C)
Soil Depth (cm)	Container ID#	Wet mass: mass of wet soil and container (g)	Dry mass: mass of dry soil and container (g)	Mass of empty container (g)	Soil water content (g/g)
1					
2					
3					

After you collect your samples and bring them to the lab, fill in this section:

Soil Drying Method:

☐ 95–105°C oven ☐ 75–95°C oven ☐ Other: _____

Average drying time: _____ hours _____ minutes

Record notes here:

