

Aerosols Protocol

Field Guide

Task

Record the maximum voltage reading that can be obtained by pointing your photometer at the sun.

Record the precise time of your measurement.

Observe and record cloud conditions, current air temperature, and relative humidity

What You Need

- Calibrated and aligned GLOBE sun photometer
- Digital voltmeter
- Watch, preferably digital or GPS receiver
- Aerosols Data Sheet*
- GLOBE Cloud Chart
- Barometer (optional)
- Thermometer
- Hygrometer or sling psychrometer
- Field Guides* for cloud, relative humidity and one air temperature protocol
- Pencil or pen

In the Field

1. Connect a digital voltmeter to the output jacks of your sun photometer. (Skip this step if your sun photometer has a built-in digital voltmeter.)
2. Turn the digital voltmeter and sun photometer on.
3. If your sun photometer has a rotary switch on the top of the case, select the “T” setting and record 100 times this voltage.
4. Select the green channel.
5. Face the sun and point the sun photometer at the sun. (Do not look directly at the sun!)
6. Adjust the pointing until you see the maximum voltage in your digital voltmeter. Record this value on your *Data Sheet*.
7. Record the time at which you observed the maximum voltage as accurately as possible, to the nearest 15 seconds.
8. While still pointing your sun photometer at the sun, cover the aperture with your finger to block all light from entering the case. Take a voltage reading and record this dark voltage reading on your *Data Sheet*.
9. Select the red channel (assuming you have started with the green channel) and repeat steps 6-8.
10. Repeat steps 3-9 at least twice and not more than four times.
11. If your sun photometer has a rotary switch on the top of the case, select the “T” setting and record 100 times this voltage.
12. Turn off both the sun photometer and the voltmeter.
13. Note any clouds in the vicinity of the sun in the comments (metadata) section. Be sure to note the types of clouds by using the GLOBE Cloud Chart.
14. Do the *Cloud Protocols* and record your observations on the *Aerosols Data Sheet*.
15. Do the *Relative Humidity Protocol* and record your observations on the *Aerosols Data Sheet*.
16. Read and record the current temperature to the nearest 0.5° C following one of the air temperature protocols.
17. Complete the rest of the *Aerosols Data Sheet*.