GLOBE Aerosols Data Sheets

Print the Aerosols Data Sheet:

Choose the data sheet that matches what your photometer measures.

- Aerosols Data Sheet: Voltages
- Aerosols Data Sheet: AOT

Also print the data sheets to record other protocols required with Aerosol measurement.

- Aerosols: Other Required Protocols Data Sheet
- Clouds Data Sheet

Or print the data sheet with field guide incorporated:

- Aerosols (Voltages) with field guide
  - You will also need to print the Clouds data sheet linked above.

Find the field guides for the other required protocols here:

- Relative Humidity
- Barometric Pressure
- Current Air Temperature
- Clouds

GLOBE Aerosols Data Sheet: Voltages

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Photometer Serial number: _____

If you know satellite overflights on measurement date:

Instrument name: _____

Time of overflight (24 hr): _____ Maximum elevation angle: _____°

Aerosols Measurement: Photometer Measures Voltages Only

Case Temperature: BEFORE measurements: _____ °C

AFTER measurements: _____ °C

Report voltages with 3 digits to the right of the decimal point (e.g., 1.733)

Sample #	**Local Time (24 hr)** (hour:minute:second)	**Max Sunlight Voltage** (volts)	**Dark Voltage** (volts)
1 Green (505nm)	: :		
1 Red (625 nm)	: :		
2 Green (505nm)	: :		
2 Red (625 nm)	: :		
3 Green (505nm)	: :		
3 Red (625 nm)	: :		
Optional 4 Green (505nm)	: :		
4 Red (625 nm)	: :		
5 Green (505nm)	: :		
5 Red (625 nm)	: :		

Comments:

GLOBE Aerosols Data Sheet: AOT

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Photometer Model: ☐ Shade ☐ Calitoo ☐ Other | Serial number: _____

If you know satellite overflights on measurement date:

Instrument name: _____

Time of overflight (24 hr): _____ Maximum elevation angle: _____°

Aerosols Measurement: Photometer Measures AOT

At least three trials are required • For each trial use at least two different channel wavelengths

Trial #	**Local Time (24 hr)** (hour:minute:second)	**Channel Wavelength** (nm)	**AOT Reading**
1	: :		
1	: :		
1	: :		
2	: :		
2	: :		
2	: :		
3	: :		
3	: :		
3	: :		
4	: :		
4	: :		
4	: :		
5	: :		
5	: :		
5	: :		

GLOBE Aerosols Data Sheet: Other Required Protocols

clouds and barometric pressure required for data entry; others optional

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Barometric Pressure Measurement

Is the pressure reading: ☐ Sea level pressure ☐ Station pressure

Pressure: _____ mb

Record barometric pressure to the nearest 0.1 millibar (or hectopascal).

Relative Humidity Measurement

Select instrument used and record the appropriate data.

☐ Sling Psychometer	OR	☐ Digital Hygrometer
Dry bulb temperature: _____°C		Air temperature: _____°C
Wet bulb temperature: _____°C		Relative Humidity: _____ %
Relative Humidity*: _____ % **GLOBE data entry calculates this for you* Record the temperature to the nearest 0.5°C		Record relative humidity to the nearest 1%

If there is fog, rain or snow, the relative humidity is 100%; write "condensation occurring" in comments.

Current Air Temperature Measurement

Current Temperature: _____°C

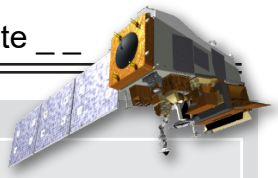
Record temperature to the nearest 0.5°C (liquid) or 0.1°C (digital).

Comments:

School/Observer Name:_____ Study Site:_____

Date (ex. 2017 01 13): Year: _ _ _ _ Month: _ _ Day: _ _

Time (ex. 24 Hour Clock: 14 26): Local: Hour _ _ Minute _ _ Universal: Hour _ _ Minute _ _



1. What is in Your Sky?

Total Cloud/Contrail Cover:

- ○ Sky is Obscured →
  - ○ Fog
  - ○ Heavy Rain
  - ○ Heavy Snow
  - ○ Blowing Snow
  - ○ Sand
  - ○ Spray
  - ○ Smoke
  - ○ Dust
  - ○ Haze
  - ○ Volcanic Ash

  Go to box 6
- ○ None (Go to box 2)
- ○ Few(<10%)
- ○ Isolated (10-25%)
- ○ Scattered (25-50%)
- ○ Broken (50-90%)
- ○ Overcast (90-100%)

*If you can observe sky color or visibility, complete box 2

2. Sky Color and Visibility

Color (Look Up): ○ Cannot Observe ○ Deep Blue ○ Blue ○ Light Blue ○ Pale Blue ○ Milky

Visibility (Look Across): ○ Cannot Observe ○ Unusually Clear ○ Clear ○ Somewhat Hazy ○ Very Hazy ○ Extremely Hazy

3. High Level Clouds

○ No High Level Clouds Observed (Go to box 4)

Cloud Type:

- ○ Contrails (number of): → #
- ○ Cirrus #
- ○ Cirrocumulus #
- ○ Cirrostratus #

short-lived

persistent

persistent spreading

Cloud Cover:

- ○ Few (<10%)
- ○ Isolated (10%-25%)
- ○ Scattered (25%-50%)
- ○ Broken (50%-90%)
- ○ Overcast (>90%)

Visual Opacity:

- ○ Opaque
- ○ Translucent
- ○ Transparent

4. Mid Level Clouds

○ No Mid Level Clouds Observed (Go to box 5)

Cloud Type:

- ○ Altostratus
- ○ Altocumulus

Cloud Cover:

- ○ Few (<10%)
- ○ Isolated (10%-25%)
- ○ Scattered (25%-50%)
- ○ Broken (50%-90%)
- ○ Overcast (>90%)

Visual Opacity:

- ○ Opaque
- ○ Translucent
- ○ Transparent

5. Low Level Clouds

○ No Low Level Clouds Observed (Go to box 6)

Cloud Type:

- ○ Fog
- ○ Nimbostratus
- ○ Cumulonimbus
- ○ Stratus
- ○ Cumulus
- ○ Stratocumulus

Cloud Cover:

- ○ Few (<10%)
- ○ Isolated (10%-25%)
- ○ Scattered (25%-50%)
- ○ Broken (50%-90%)
- ○ Overcast (>90%)

Visual Opacity:

- ○ Opaque
- ○ Translucent
- ○ Transparent

6. Surface Conditions

Mandatory:

	Yes	No		Yes	No
Snow/Ice	○	○	Dry Ground	○	○
Standing Water	○	○	Leaves on Trees	○	○
Muddy	○	○	Raining/Snowing	○	○

Optional:
You may submit any or all

Temperature: ___°C
Barometric Pressure: ___mb
Relative Humidity: ___%

Comments:

GLOBE Aerosols Data Sheet and Field Guide: Voltages (page 1)

Name: _____ Site Name: _____

Date: _____ Time (local): _____

Aerosols Measurement

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. Multiply this voltage times 100 to get the case temperature before measurements.

   Case Temperature *before* measurements: _____ °C

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 voltmeter. Record this value.

   Max Sunlight Voltage (Green): _____ volts

7. Record the time at which you observed the maximum voltage to the nearest 15 seconds.

   Local Time (24 hr): _____ hr _____ min _____ sec

8. While still pointing the 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 the dark voltage.

   Dark Voltage (Green): _____ volts

9. Select the red channel and repeat steps 6–8. Record the values on the data table on page 3.
10. Repeat steps 4–9 at least twice more. Record measurements on the data table on page 3.
11. If your sun photometer has a rotary switch on the top of the case, select the "T" setting. Multiple this voltage times 100 to get the case temperature after measurements.

    Case Temperature *after* measurements: _____ °C

GLOBE Aerosols Data Sheet and Field Guide: Voltages (page 2)

Other Protocol Measurements

12. Turn off the sun photometer and the voltmeter.

13. Complete the GLOBE Clouds Protocol and record your data on the Clouds data sheet*.

14. Complete the Relative Humidity Protocol and record the data below in the appropriate column depending on your instrument. *If there is fog, rain or snow, the relative humidity is 100%; write "condensation occurring" in comments.*

☐ Sling Psychometer	OR	☐ Digital Hygrometer
Dry bulb temperature: _____°C Wet bulb temperature: _____°C Relative Humidity*: _____ % **GLOBE data entry calculates this for you* Record the temperature to the nearest 0.5°C		Air temperature: _____°C Relative Humidity: _____ % Record relative humidity to the nearest 1%

15. Complete the Barometric Pressure protocol and record pressure*.

Pressure: _____ mb

16. Complete the Current Air Temperature Protocol and record the temperature.

Current Temperature: _____ °C

Record temperature to the nearest 0.5°C (liquid) or 0.1°C (digital).

Comments:

*required for data entry.

GLOBE Aerosols Data Sheet and Field Guide: Voltages (page 3)

Photometer Serial number: _____

If you know satellite overflights on measurement date:

Instrument name: _____

Time of overflight (24 hr): _____ Maximum elevation angle: _____°

Aerosols Measurement: Photometer Measures Voltages Only

The "Sample 1 Green" row is the data you recorded on page 1.

Report voltages with 3 digits to the right of the decimal point (e.g., 1.733)

Sample #	**Local Time (24 hr)** (hour:minute:second)	**Max Sunlight Voltage** (volts)	**Dark Voltage** (volts)
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1 Red (625 nm)	: :		
2 Green (505nm)	: :		
2 Red (625 nm)	: :		
3 Green (505nm)	: :		
3 Red (625 nm)	: :		
Optional 4 Green (505nm)	: :		
Optional 4 Red (625 nm)	: :		
Optional 5 Green (505nm)	: :		
Optional 5 Red (625 nm)	: :		

Comments: