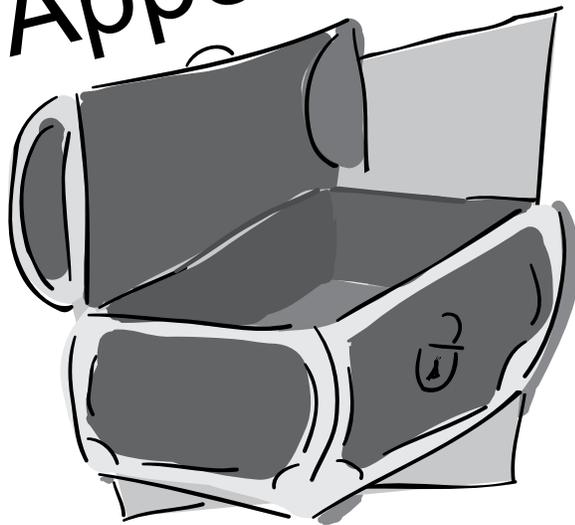


Appendix



[*Site Definition Sheet*](#)

[*Clouds 1-Measurement Data Sheet*](#)

[*Integrated 1-Day Data Sheet*](#)

[*Aerosols Data Sheet*](#)

[*Water Vapor Data Sheet*](#)

[*Digital Multi-Day Min/Max Data Sheet*](#)

[*Surface Temperature Data Sheet*](#)

[*Ozone Data Sheet*](#)

[*Observing Cloud Type*](#)

Site Definition Sheet

*** Required Field**

School Name: _____ Site Name: _____

Choose a unique name based on location,
e.g. "Grassy area - Front of School"

Names of students completing Site Definition Sheet: _____

Date: Year ____ Month ____ Day ____ Check one: New Site Metadata Update

***Coordinates:** Latitude: _____ ° N or S Longitude: _____ ° E or W
Elevation: ____ meters

***Source of Location Data** (check one): GPS Other _____

Comments: _____

Site Type (select all that apply based on intended measurements, then complete the necessary fields below): Atmosphere Surface Temperature Hydrology Land Cover
 Greening Soil Characteristics Soil Moisture and Temperature

Atmosphere

List any obstacles (Check one): No obstacles Obstacles (describe below)
(Obstacles are trees, buildings, etc. that appear above 14° elevation when viewed from the site)

Description: _____

Buildings within 10 meters of instrument shelter (Check one):

No buildings Buildings (describe below)

Description: _____

Other Site Data:

Steepest Slope: _____ Compass Angle (facing up slope): _____

Rain Gauge Height cm Ozone Clip Height cm Thermometer Height cm

***Thermometer Type** (Check one):

- Other, Soil or Air
- Liquid-filled Max/Min (U-tube)
- Liquid-filled, Current Temperature Only
- Digital Single-Day Min/Max
- Digital Multi-Day Min/Max
- Reset Digital Multi-Day Min/Max Thermometer

Note: reset is required before data collection and entry, when batteries are changed or every 6 months

Date: Year ____ Month ____ Day ____ Universal Time (hour:min): _____

Was this reset due to a battery change? Yes No

- AWS WeatherBug Station (Automated Station ID _____)
- Davis Instrument (Davis Thermometer Type _____)
- Data Logger (HOBO)
- Rainwise
- WeatherHawk
- No Thermometer

School Name: _____ Study Site: _____ Date: _____

Surface Cover Description under instrument shelter (Check one): Pavement

Bare ground Short grass (< 10 cm) Long grass (> 10 cm) Sand

Roof (describe below) Other (describe below)

Description: _____

Overall comments on the site (metadata): _____

Surface Temperature

Homogeneous site size (Select one): 90m x 90m 30m x 30m

Smaller than 30 x 30m (specify size: ___ m x ___ m)

Cover type (Select one): Short grass (< 0.5m) Tall grass (> 0.5m) Barren land

Shrubs Dwarf shrubs Concrete Asphalt Open water Other

Land Cover site

Type of IRT Instrument: Raytech ST20 Other (specify instrument manufacturer and model) _____)

Overall comments on the site (metadata): _____

Hydrology

***Name of Body of Water:** _____ (the name commonly used on maps; if the body of water does not have a common name, provide a description of the water body it comes from or flows into or both.)

***Water Body Type** (Select one): Unknown Saltwater Freshwater Brackish

Water Body Source (Select one):

Pond (Area of standing water ___ km²; Average Depth of Standing Water ___ m)

Lake (Area of standing water ___ km²; Average Depth of Standing Water ___ m)

Reservoir (Area of standing water ___ km²; Average Depth of Standing Water ___ m)

Bay (Area of standing water ___ km²; Average Depth of Standing Water ___ m)

Ditch (Area of standing water ___ km²; Average Depth of Standing Water ___ m)

Ocean

Estuary (Area of standing water ___ km²; Average Depth of Standing Water ___ m)

Stream (Width of Moving water ___ m)

River (Width of Moving water ___ m)

Other (Width of Moving water ___ m; Area of standing water ___ km²; Average Depth of Standing Water ___ m)

School Name: _____ Study Site: _____ Date: _____

Can you see the bottom? Yes No

Channel/Bank Material: Soil Rock Concrete Vegetated Bank

Bedrock: Granite Limestone Volcanics Mixed Sediments Unknown

Freshwater Habitats Present: Rocky Substrate Vegetated Banks Mud Substrate

Sand Substrate Submersed Vegetation Logs

Saltwater Habitats Present: Rocky Shore Sandy Shore Mud Flats/Estuary

Overall comments on the site (metadata): _____

Land Cover

MUC Description: Level 1: _____ Level 2: _____

Level 3: _____ Level 4: _____

Note: Use the MUC Guide to determine the greatest level possible within the MUC system

***MUC Code:** _____

Overall comments on the site (metadata): _____

Greening

Are there multiple dominant species? Yes No

Primary Plant

Is this plant in the understory? Yes No

Vegetation Type (Select one): Grass Genus: _____

Tree Genus: _____ Species: _____

Shrub Genus: _____ Species: _____

Label: _____

Secondary Plant

Is this plant in the understory? Yes No

Vegetation Type (Select one): Grass Genus: _____

Tree Genus: _____ Species: _____

Shrub Genus: _____ Species: _____

Label: _____

School Name: _____ Study Site: _____ Date: _____

Tertiary Plant

Is this plant in the understory? Yes No

Vegetation Type (Select one): Grass Genus: _____
 Tree Genus: _____ Species: _____
 Shrub Genus: _____ Species: _____

Label: _____

If additional plants will be monitored record the information on another sheet or in your Science Log.

Overall comments on the site (metadata): _____

Soil Characteristics

Slope angle (North, Northeast, etc.): _____

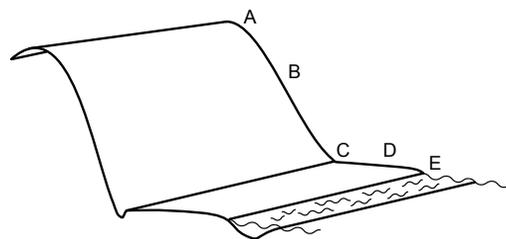
Method (select one): Soil Pit Auger Hole Near Surface Excavation
 Road Cut Erosion Cut

Soil Characterization Site Location (Select one): Off School Grounds
 On School Grounds

Land Use (Select one): Urban Agricultural Recreation Wilderness
 Other _____

Landscape Position (Select one):

- A. Summit
- B. Slope
- C. Depression
- D. Large Flat Area
- E. Stream Bank



Cover Type (Select one): Bare Soil Rocks Grass Shrubs Trees
 Other _____

Parent Material (Select one): Bedrock Organic Material Construction Material
 Marine Deposits Lake Deposits Stream Deposits (Alluvium) Wind Deposits (Loess)
 Glacial Deposits (Glacial Till) Volcanic Deposits Loose Materials on Slope (Colluvium)
 Don't Know Other _____

Distance from Major Features: _____

School Name: _____ Study Site: _____ Date: _____

Soil Moisture and Temperature

Surface State (Select one): Natural Plowed Graded Backfill Compacted
 Other _____

Surface Cover (Select one): Bare Ground Short Grass (Under 10 cm) Long Grass (Over 10 cm)

Canopy Cover (Select one): Open Some Trees (within 30m) Canopy Overhead

SMAP Site Metadata

Distance to nearest rain gauge or instrument shelter: _____ m; Direction _____

Distance to nearest Soil Characterization Site: _____ m; Direction _____

Overall comments on the site (metadata): _____

Site Photos

(record the appropriate photo number for easy identification during data entry)

<p>North</p> <p>Photo number _____</p>	<p>South</p> <p>Photo number _____</p>	<p>East</p> <p>Photo number _____</p>	<p>West</p> <p>Photo number _____</p>
---	---	--	--

Overall comments on the site (metadata): _____

Atmosphere Investigation

Clouds 1-Measurement Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

Sky Conditions (Check one):

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

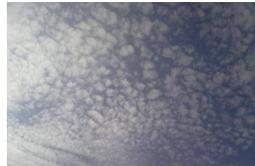
If Clouds are Visible select all Cloud Types Seen

High (in the sky):

(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):

(Check all types seen)



Altostratus



Altocumulus

Low (in the sky):

(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:

(Check all types seen)



Nimbostratus



Cumulonimbus

Study Site: _____ Date: _____ Time (UT): _____

What Percent of the Sky is Covered by Clouds? (Check One) *Three-quarters or More of the Sky is Visible:*

Cloud Cover (Check One)



No Clouds
 0%



Clear
 >0 to 10%



Isolated
 10 to 25%



Scattered
 25 to 50%



Broken
 50 to 90%



Overcast
 >90%

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

What Percent of the Sky is Covered by Contrails? (Check one):

0 to 10% 10 to 25% 25 to 50% >50%

If you Selected Obscured (> 25% of the Sky is not Visible) (Check all that apply):



Blowing Snow



Heavy Snow



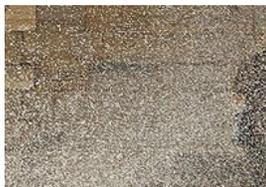
Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

Atmosphere Investigation

Integrated 1-Day Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

Air Temperature

Current Temperature (°C): _____

Maximum Temperature (°C): _____ (record only when collected at Local Solar Noon)

Minimum Temperature (°C): _____ (record only when collected at Local Solar Noon)

Comments: _____

Barometric Pressure

(Check one): Sea Level Pressure Station Pressure

Pressure (mb): _____

Comments: _____

Relative Humidity

(Select instrument used):

<input type="checkbox"/> Sling Psychrometer	<input type="checkbox"/> Digital Hygrometer
Dry bulb temperature (°C): _____	Ambient air temperature (°C): _____
Wet bulb temperature (°C): _____	Relative Humidity (%): _____

Comments: _____

Precipitation (record only when collected at Local Solar Noon)

Days of accumulation: _____

Rainfall select one: Measurable Trace Missing

(if measurable is selected, complete the following fields)

Accumulation (mm): _____

Rain pH Measured With (select one): pH Paper pH Meter

pH of Rain: _____ (pH measurements only allowed when liquid amount is 3.5 mm or more)

Comments: _____

Study Site: _____ Date: _____ Time (UT): _____

New Snowfall

Sample 1	Sample 2	Sample 3
Select one: <input type="checkbox"/> Measurable <input type="checkbox"/> Trace <input type="checkbox"/> Missing	Select one: <input type="checkbox"/> Measurable <input type="checkbox"/> Trace <input type="checkbox"/> Missing	Select one: <input type="checkbox"/> Measurable <input type="checkbox"/> Trace <input type="checkbox"/> Missing
If measurable, record amount (mm): _____	If measurable, record amount (mm): _____	If measurable, record amount (mm): _____

Rain Equivalent of New Snow

Select one: Measurable Trace Missing

If measurable, record amount (mm): _____

Snowfall pH Measured with (select one): pH Paper pH Meter

pH of New Snowfall: _____ (pH measurements only allowed when liquid amount is 3.5 mm or more)

Comments: _____

Snowpack

Sample 1	Sample 2	Sample 3
Select one: <input type="checkbox"/> Measurable <input type="checkbox"/> Trace <input type="checkbox"/> Missing	Select one: <input type="checkbox"/> Measurable <input type="checkbox"/> Trace <input type="checkbox"/> Missing	Select one: <input type="checkbox"/> Measurable <input type="checkbox"/> Trace <input type="checkbox"/> Missing
If measurable, record amount (mm): _____	If measurable, record amount (mm): _____	If measurable, record amount (mm): _____

Rain Equivalent of Snowpack

Select one: Measurable Trace Missing

If measurable, record amount (mm): _____

Snowpack pH Measured with (select one): pH Paper pH Meter

Snowpack pH: _____ (pH measurements only allowed when liquid amount is 3.5 mm or more)

Comments: _____

Study Site: _____ Date: _____ Time (UT): _____

Clouds

Sky Conditions (Check one):

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

If Clouds are Visible select all Cloud Types Seen

High (in the sky):
(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):
(Check all types seen)



Altostratus

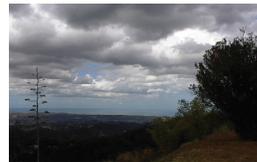


Altocumulus

Low (in the sky):
(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:
(Check all types seen)



Nimbostratus



Cumulonimbus

What Percent of the Sky is Covered by Clouds? (Check One) *Three-quarters or More of the Sky is Visible: Cloud Cover (Check One)*



No Clouds

0%



Clear

>0 to 10%



Isolated

10 to 25%



Scattered

25 to 50%



Broken

50 to 90%



Overcast

>90%

Study Site: _____ Date: _____ Time (UT): _____

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

What Percent of the Sky is Covered by Contrails? (Check one):

- 0 to 10%
- 10 to 25%
- 25 to 50%
- >50%

If you Selected Obscured (> 25% of the Sky is not Visible) Check all that apply:



Blowing Snow



Heavy Snow



Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

Atmosphere Investigation

Aerosols Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

*Sun Photometer Instrument Type (Check One):

Measures Voltage Only (Serial Number): _____ Displays AOT (Model) _____

*If known, Satellite overflights on date of measurements:

Satellite/instrument name: _____ Time of overflight (UT): _____ Max elevation angle (deg): _____

Sky Color (Check One):

Deep Blue Blue Light Blue Pale Blue Milky

Sky Clarity (Check One):

Unusually Clear Clear Somewhat Hazy Very Hazy Extremely Hazy

If Your Photometer Only Measures Voltages:

Case Temperatures

Before taking measurements (multiply voltage reading by 100) (°C) _____

After taking measurements (multiply voltage by 100) (°C) _____

¹ At least 3 sets of measurements are required.

² Always report voltages with 3 digits to the right of the decimal point (e.g., 1.733 rather than 1.77).

Measurement Number ¹	Universal Time (hour:minute:second)	Maximum Voltage in Sunlight ² (volts)	Dark Voltage ² (volts)
1 (green)			
1 (red)			
2 (green)			
2 (red)			
3 (green)			
3 (red)			
4 (green)			
4 (red)			
5 (green)			
5 (red)			

Study Site: _____ Date: _____ Time (UT): _____

If Your Photometer Displays AOT:

¹ At least 3 sets of measurements are required.

² At least two different channel wavelengths must have been used among the 3 to 5 measurements.

Measurement Number ¹	Channel Wavelength ² (nanometers)	Universal Time (hour:minute:second)	AOT reading
1			
2			
3			
4			
5			

Comments: _____

***Sky Conditions (Check one):**

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

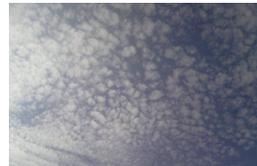
Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

If Clouds are Visible select all Cloud Types Seen

High (in the sky):
(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):
(Check all types seen)



Altostratus



Altocumulus

Low (in the sky):
(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:
(Check all types seen)



Nimbostratus



Cumulonimbus

* Required Field

Study Site: _____ Date: _____ Time (UT): _____

What Percent of the Sky is Covered by Clouds? (Check One) *Three-quarters or More of the Sky is Visible: Cloud Cover* (Check One)



No Clouds

0%



Clear

>0 to10%



Isolated

10 to 25%



Scattered

25 to 50%



Broken

50 to 90%



Overcast

>90%

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

What Percent of the Sky is Covered by Contrails? (Check one):

0 to10% 10 to 25% 25 to 50% >50%

If you Selected Obscured (> 25% of the Sky is not Visible) Check all that apply:



Blowing Snow



Heavy Snow



Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

Study Site: _____ Date: _____ Time (UT): _____

Air Temperature

Current Temperature (°C): _____

Comments: _____

Relative Humidity

(Select instrument used):

<input type="checkbox"/> Sling Psychrometer	<input type="checkbox"/> Digital Hygrometer
Dry bulb temperature (°C): _____	Ambient air temperature (°C): _____
Wet bulb temperature (°C): _____	Relative Humidity (%): _____

Comments: _____

***Barometric Pressure**

(Check one): Sea Level Pressure Station Pressure

Pressure (mb): _____

Comments: _____

Atmosphere Investigation

Water Vapor Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

*Sun Photometer Instrument Type (Check One):

Measures Voltage Only (Serial Number): _____

*If known, Satellite overflights on date of measurements:

Satellite/instrument name: _____ Time of overflight (UT): _____ Max elevation angle (deg): _____

Case Temperatures

Before taking measurements (multiply voltage reading by 100) (°C) _____

After taking measurements (multiply voltage by 100) (°C) _____

¹ At least 3 sets of measurements (including IR1 and IR2) are required.

² Always report voltages with 3 digits to the right of the decimal point (e.g., 1.733 rather than 1.77).

Measurement Number ¹	Universal Time (hour:minute:second)	Maximum Voltage in Sunlight ² (volts)	Dark Voltage ² (volts)
1 (IR1)			
1 (IR2)			
2 (IR1)			
2 (IR2)			
3 (IR1)			
3 (IR2)			
4 (IR1)			
4 (IR2)			
5 (IR1)			
5 (IR2)			

Comments: _____

Study Site: _____ Date: _____ Time (UT): _____

***Sky Conditions (Check one):**

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

If Clouds are Visible select all Cloud Types Seen

High (in the sky):
(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):
(Check all types seen)



Altostratus



Altocumulus

Low (in the sky):
(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:
(Check all types seen)



Nimbostratus



Cumulonimbus

What Percent of the Sky is Covered by Clouds? (Check One) Three-quarters or More of the Sky is Visible: Cloud Cover (Check One)



No Clouds

0%



Clear

>0 to 10%



Isolated

10 to 25%



Scattered

25 to 50%



Broken

50 to 90%



Overcast

>90%

Study Site: _____ Date: _____ Time (UT): _____

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

What Percent of the Sky is Covered by Contrails? (Check one):

- 0 to 10%
- 10 to 25%
- 25 to 50%
- >50%

If you Selected Obscured (> 25% of the Sky is not Visible) Check all that apply:



Blowing Snow



Heavy Snow



Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

Air Temperature

Current Temperature (°C): _____

Comments: _____

* Required Field

Study Site: _____ Date: _____ Time (UT): _____

Relative Humidity

(Select instrument used):

<input type="checkbox"/> Sling Psychrometer	<input type="checkbox"/> Digital Hygrometer
Dry bulb temperature (°C): _____	Ambient air temperature (°C): _____
Wet bulb temperature (°C): _____	Relative Humidity (%): _____

Comments: _____

***Barometric Pressure**

(Check one): Sea Level Pressure Station Pressure

Pressure (mb): _____

Comments: _____

Digital Multi-Day Minimum/ Maximum Thermometer

Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

Your *Time of Reset* in Universal Time (hour:min): _____

Note: If Min/Max Air and Soil Temperatures are being collected after your *Time of Reset* (e.g., if your *Time of Reset* is 12:00 and you are reading the thermometer at 12:15) then the date of D1 will be the same as the date you read your thermometer.

If Min/Max Air and Soil Temperatures are being collected before your *Time of Reset* (e.g., if your *Time of Reset* is 12:00 and you are reading the thermometer at 11:50) then the date of D1 will be the same as the date prior to when you read your thermometer.

Multi-Day Min/Max Air Temperature

Label on Thermometer Display	Corresponding Date	Minimum Temperature (°C)	Maximum Temperature (°C)
D1			
D2			
D3			
D4			
D5			
D6			

Multi-Day Min/Max Soil Temperature

Label on Thermometer Display	Corresponding Date	Minimum Temperature (°C)	Maximum Temperature (°C)
D1			
D2			
D3			
D4			
D5			
D6			

Study Site: _____ Date: _____ Time (UT): _____

Current Air Temperature

_____ (°C)

Current Soil Temperature

_____ (°C)

Comments: _____

Atmosphere Investigation

Surface Temperature Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

*Surface Temperature

Site's Overall Surface Condition (Select One): Wet Dry Snow

Sample	Temperature Measurement (°C)	Snow Depth (mm) (*if snow selected above)
1		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
2		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
3		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
4		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
5		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
6		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
7		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
8		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm
9		<input type="checkbox"/> zero <input type="checkbox"/> Trace (<10 mm) <input type="checkbox"/> Measureable (>10mm) _____ mm

Comments: _____

*Sky Conditions (Check one):

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured sky section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

Study Site: _____ Date: _____ Time (UT): _____

If Clouds are Visible select all Cloud Types Seen

High (in the sky):
(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):
(Check all types seen)



Altostratus



Altostratus

Low (in the sky):
(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:
(Check all types seen)



Nimbostratus



Cumulonimbus

What Percent of the Sky is Covered by Clouds? (Check One) *Three-quarters or More of the Sky is Visible: Cloud Cover* (Check One)



No Clouds

0%



Clear

>0 to 10%



Isolated

10 to 25%



Scattered

25 to 50%



Broken

50 to 90%



Overcast

>90%

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

Study Site: _____ Date: _____ Time (UT): _____

What Percent of the Sky is Covered by Contrails? (Check one):

- 0 to 10%
- 10 to 25%
- 25 to 50%
- >50%

If you Selected Obscured (> 25% of the Sky is not Visible) Check all that apply:



Blowing Snow



Heavy Snow



Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

Atmosphere Investigation

Surface Ozone Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer names: _____

Ozone Strip Exposed at:

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

Ozone Strip Measured at:

Date: Year _____ Month _____ Day _____ Universal Time (hour:min): _____

***Surface Ozone** _____ (ppb)

Comments: _____

***Data (When Ozone Strip was Exposed)**

***Air Temperature (°C):** _____

Relative Humidity

(Select instrument used):

<input type="checkbox"/> Sling Psychrometer	<input type="checkbox"/> Digital Hygrometer
Dry bulb temperature (°C): _____	Ambient air temperature (°C): _____
Wet bulb temperature (°C): _____	Relative Humidity (%): _____

Comments: _____

***Sky Conditions (Check one):**

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

Study Site: _____ Date: _____ Time (UT): _____

If Clouds are Visible select all Cloud Types Seen

High (in the sky):
(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):
(Check all types seen)



Altostratus



Altocumulus

Low (in the sky):
(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:
(Check all types seen)



Nimbostratus



Cumulonimbus

What Percent of the Sky is Covered by Clouds? (Check One) *Three-quarters or More of the Sky is Visible: Cloud Cover* (Check One)



No Clouds

0%



Clear

>0 to 10%



Isolated

10 to 25%



Scattered

25 to 50%



Broken

50 to 90%



Overcast

>90%

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

Study Site: _____ Date: _____ Time (UT): _____

What Percent of the Sky is Covered by Contrails? (Check one):

- 0 to 10% 10 to 25% 25 to 50% >50%

If you Selected Obscured (> 25% of the Sky is not Visible) Check all that apply:



Blowing Snow



Heavy Snow



Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

***Wind**

*Instrument (Check one): GLOBE Instrument Automated Instrument

- 0 to 10% 10 to 25% 25 to 50% >50%

*Direction (Check One):

North

Northwest Northeast

West  East

Southwest Southeast

South

Comments: _____

Study Site: _____ Date: _____ Time (UT): _____

***Data (When Ozone Strip was Measured)**

*Air Temperature (°C): _____

Relative Humidity

(Select instrument used):

<input type="checkbox"/> Sling Psychrometer	<input type="checkbox"/> Digital Hygrometer
Dry bulb temperature (°C): _____	Ambient air temperature (°C): _____
Wet bulb temperature (°C): _____	Relative Humidity (%): _____

Comments: _____

***Sky Conditions (Check one):**

- Clear (no Clouds Visible)
- Clouds Visible (1% to 100% Covered by Clouds or Contrails)
- Obscured (More than 25% of the Sky is not Visible)

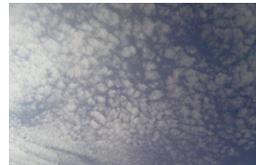
Note: selecting **Obscured** will prevent data entry on clouds and contrails; therefore skip the cloud type and cover and the contrail type and cover sections and proceed to the Obscured section. If clouds and contrails are visible in non-obscured areas of the sky, these data can be entered in the Metadata field.

If Clouds are Visible select all Cloud Types Seen

High (in the sky):
(Check all types seen)



Cirrus



Cirrocumulus



Cirrostratus

Middle (of the sky):
(Check all types seen)



Altostratus



Altocumulus

Low (in the sky):
(Check all types seen)



Stratus



Stratocumulus



Cumulus

Rain or Snow Producing Clouds:
(Check all types seen)



Nimbostratus



Cumulonimbus

Study Site: _____ Date: _____ Time (UT): _____

What Percent of the Sky is Covered by Clouds? (Check One) *Three-quarters or More of the Sky is Visible: Cloud Cover* (Check One)



No Clouds

0%



Clear

>0 to 10%



Isolated

10 to 25%



Scattered

25 to 50%



Broken

50 to 90%



Overcast

>90%

Are There Contrails in the Sky? (Check One) No Contrails Contrails are Visible

If Contrails are Visible Record the Number of Each Type Seen

Short-lived



Number Observed

Persistent Non-Spreading



Number Observed

Persistent Spreading



Number Observed

What Percent of the Sky is Covered by Contrails? (Check one):

0 to 10%

10 to 25%

25 to 50%

>50%

If you Selected Obscured (> 25% of the Sky is not Visible) Check all that apply:



Blowing Snow



Heavy Snow



Heavy Rain



Fog



Sand



Spray



Volcanic Ash



Smoke



Dust



Haze

Comments: _____

Study Site: _____ Date: _____ Time (UT): _____

***Wind**

*Instrument (Check one): GLOBE Instrument Automated Instrument
0 to 10% 10 to 25% 25 to 50% >50%

*Direction (Check One):

North Northeast

Northwest  East

West

Southwest South Southeast

The diagram features a central compass rose with eight points. The cardinal directions are labeled: North at the top, South at the bottom, West on the left, and East on the right. The intercardinal directions are labeled: Northwest (top-left), Northeast (top-right), Southwest (bottom-left), and Southeast (bottom-right). Each label is accompanied by a small square checkbox. A faint watermark 'Train Site' is visible over the compass rose.

Comments: _____

Observing Cloud Type

There are five descriptive terms for the various types of clouds:

CIRRO or high clouds

ALTO or middle clouds

CUMULUS or white puffy clouds

STRATUS or layered clouds

NIMBUS or clouds from which precipitation is falling

The following ten types of clouds, named using the above terms, are to be used when reporting the cloud type for your area:



High Clouds

Cirrus

These clouds look like white delicate feathers. They are generally white wispy forms. They contain ice crystals.



Cirrocumulus

These clouds are thin white layers with a texture giving them the look of patches of cotton or ripples without shadows. They contain primarily ice crystals and perhaps some very cold water droplets.



Cirrostratus

These clouds are a thin, almost transparent, whitish layer made up of ice crystals. They may totally or partly cover the sky and can create a halo appearance around the sun.



Contrails

Short-lived Contrail

Note the short line of cloud above the lightpole. The airplane is barely visible in this photo but is at the front of the contrail



Persistent Contrails

These are very distinct contrails, and show a range from persistent non-spreading on the right to persistent spreading on the left. The most likely explanation for this photo is that all three airplanes followed about the same path, but that the winds high in the atmosphere are blowing from right to left, moving the older contrails to the left. The spreading of the leftmost contrail indicates there is a fair amount of water vapor in the upper atmosphere.



Persistent, Spreading Contrails

This photo shows persistent, spreading contrails in an area of high air traffic. As above, it is likely that the planes are mostly following a similar path, but the contrails are being spread out by the wind. Note that all the contrails in this photo appear as wide or wider than those above, indicating that the presence of abundant water vapor in the atmosphere is allowing the contrails to spread. Also note the cloud near the middle of the photo, which looks like a regular cirrus cloud, but whose position makes it likely that this cloud actually originated from a contrail.



Middle Clouds

Altostratus

These clouds form a bluish or grayish veil that totally or partially covers the sky. The light of the sun can be seen through them but there is no halo effect.



Altocumulus

These clouds look like waves of the sea with white and gray coloring and shadows. They contain mostly water droplets and perhaps some ice crystals.



Low Clouds

Stratus

These clouds are gray and lie very close to the surface of the Earth. They usually look like a sheet layer but sometimes are found in patches. They rarely produce precipitation.



Stratocumulus

These clouds are a gray or whitish color. The bases of these clouds tend to be more round than flat. They can be formed from old stratus clouds or from cumulus clouds that are spreading out. Their tops also tend to be mostly flat.



Nimbostratus

This is a very dark and gray-colored cloud layer that blots out the light of the sun. It is massive and has a continuous fall of precipitation.



Cumulus

These clouds have a flat base and a dense, mound-shaped top that resembles a large cauliflower. Where the sun hits these clouds they are a brilliant white. The base tends to be a darker gray. They generally do not produce precipitation.



Cumulonimbus

These are large, heavy, and dense clouds. They have a generally flat, dark surface with very tall and large tops like the shape of a massive mountain or anvil. These clouds are often associated with lightning, thunder and sometimes hail. They may also produce tornados.