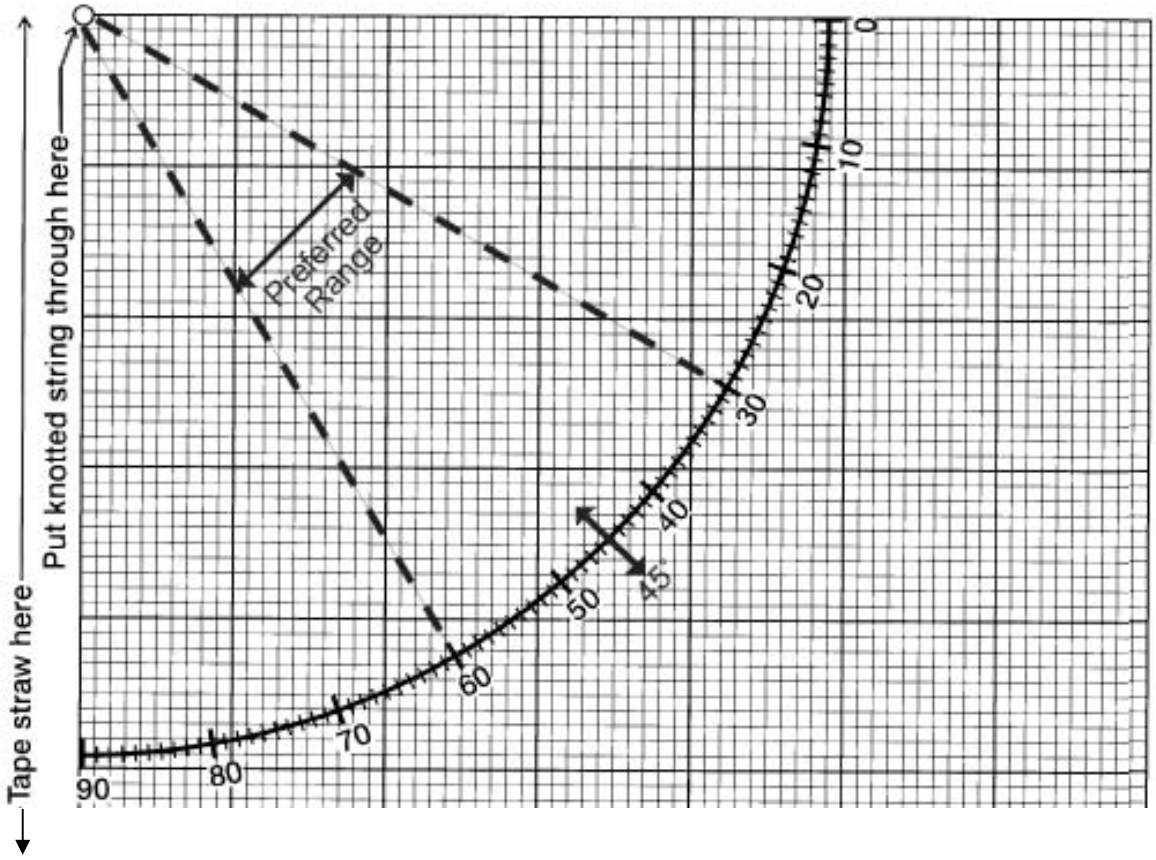
Tree Identity Card

Name:		**Official Photo (Sketch of the tree)**
Zarma Name:	**Hausa Name:**	
Home (field, garden, countryside, house):		
Date and Place of Birth:		
Height:	**Circumference:**	
Size (big, medium, small)		
Trunk:		
Branches:		
Leaves:		
Flowers:		**Imprint / Drawing of the Leaf:**
Fruits:		
Importance for Humans:		
Importance for Animals:		
Importance for the Environment:		
Delivered on:	**By:**	

Clinometer

Trees and Wood in Our Backyard – Appendices

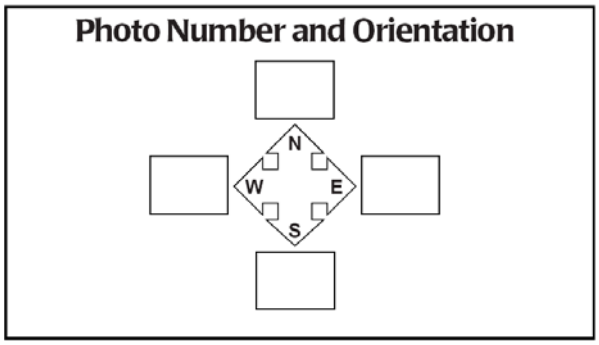


Atmosphere Site Definition Sheet

School Name: _____Class or Group Name: _____
Name(s) of student(s) filling in Site Definition Sheet: _____
_____
Date: _____ Check one: ❒ New Site ❒ Metadata Update
Site name (give your site a unique name):_____

Location: Latitude: _____° ❒ N or ❒ S Longitude: _____° ❒ E or ❒ W
Elevation: ___ meters
Source of Location Data (check one): ❒ GPS ❒ Other _____

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 10m of your instrument shelter (Check one): ❒ No buildings ❒ Buildings
Description of any Buildings:
_____
_____
_____
_____



Other Site Data:
Steepest Slope: _____
Compass Angle (facing up slope): ___-
_____
Height of the top of the rain gauge: _____ cm
Height of the sensor or bulb of your max/min thermometer: _____cm
Height of the clip in your ozone measurement station: _____cm
Surface Cover 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):_____
_____
_____
_____

Digital Max/Min Thermometer Calibration and Reset Data Sheet

School Name: _____ Study Site: ATM-_____

Observer Names:

_____

Date: Year _____ Month _____ Day _____

Time of Reset

Note: The thermometer should be reset only when it is first setup, after the battery is changed, or if the time of local solar noon drifts to more than one hour from your time of reset.

Local time: _____ Universal time _____

Was the reset due to a battery change? _____

Calibration Thermometer Readings

Thermometer readings						
Reading n°	**Date (Day / Month/ Year)**	**Local Time**	**Universal time**	**Calibrating thermometer's temperature (C°)**	**Air sensor's temperature (C°)**	**Soil sensor's temperature (C°)**
1						
2						
3						
4						
5						

Digital Soil Sensor Error Check Data Sheet

Name of School: _____ Date: _____

Thermometer Readings					
Reading n°	**Date (Day / month/ year)**	**Local Time**	**Universal Time**	**Reading from the soil thermometer (C°)**	**Reading from the digital soil sensor (C°)**
1					
2					
3					
4					
5					
Total of the five readings [1] :					
Average of the five readings [2] :					
Soil sensor error [3] : (= average in column 2 – average in column 1)					

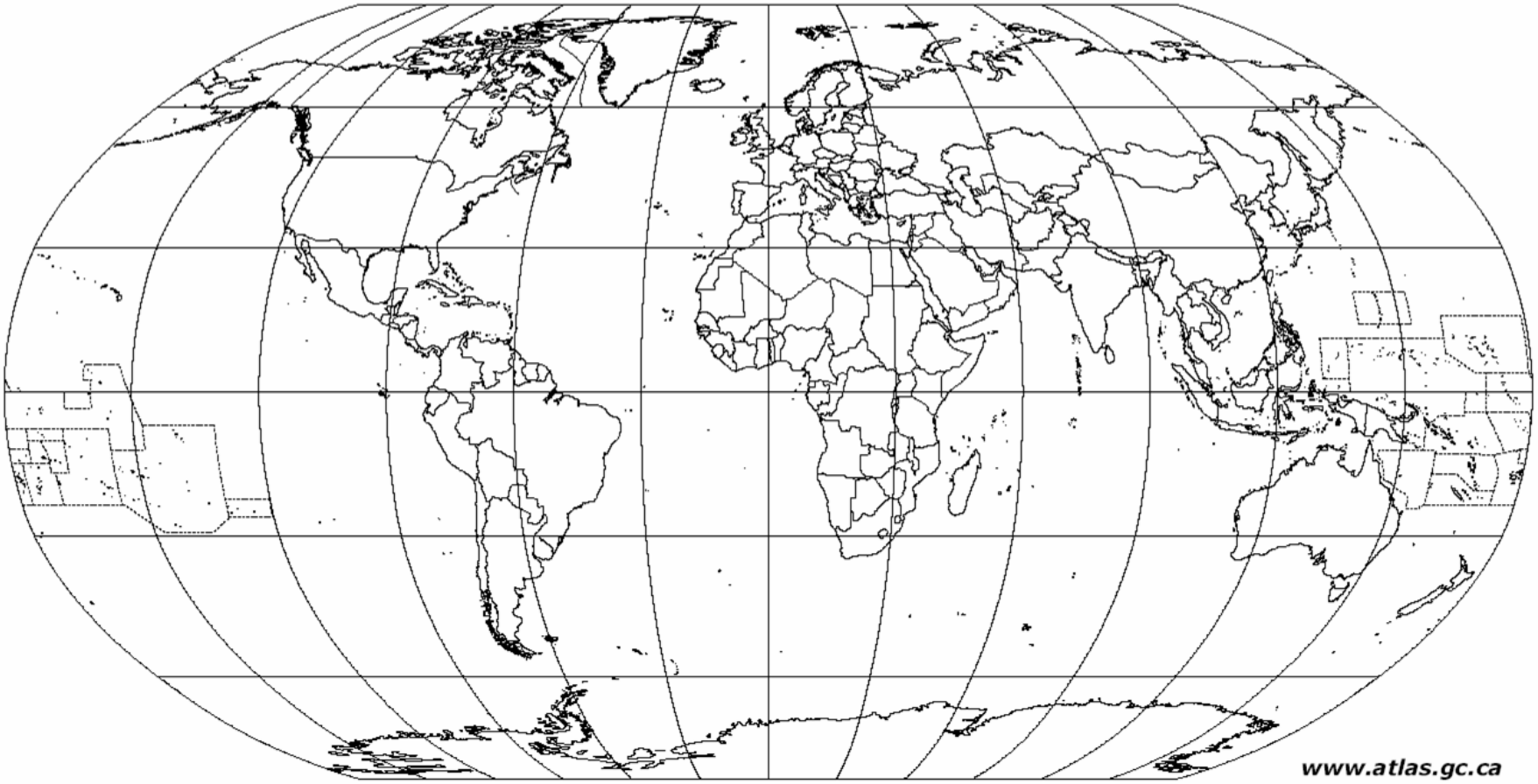
1: Add together the five temperatures taken from each thermometer.

2: Average of the five readings taken from the soil thermometer = the sum of the five readings taken from the soil thermometer divided by five
Average of the five readings taken from the digital soil sensor =the sum of the five reading taken from the digital sensor divided by five.

3: Soil sensor error = the digital soil sensor's average minus the soil thermometer's average

If the absolute value of the soil sensor error (#5) is greater than or equal to 2˚ C, then dig-out the sensor and recalibrate both the air and soil sensor following the instructions for Digital Multi-Day Max/Min Thermometer Sensor Calibration. If the absolute value of the soil sensor error that you calculate is less than 2˚ C then leave the soil sensor buried and proceed to recalibrate just the air sensor.

THE WORLD / LE MONDE



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Temperature Data Sheet

Study site name and location: _____ Month and Year: _____

Time of data collection:

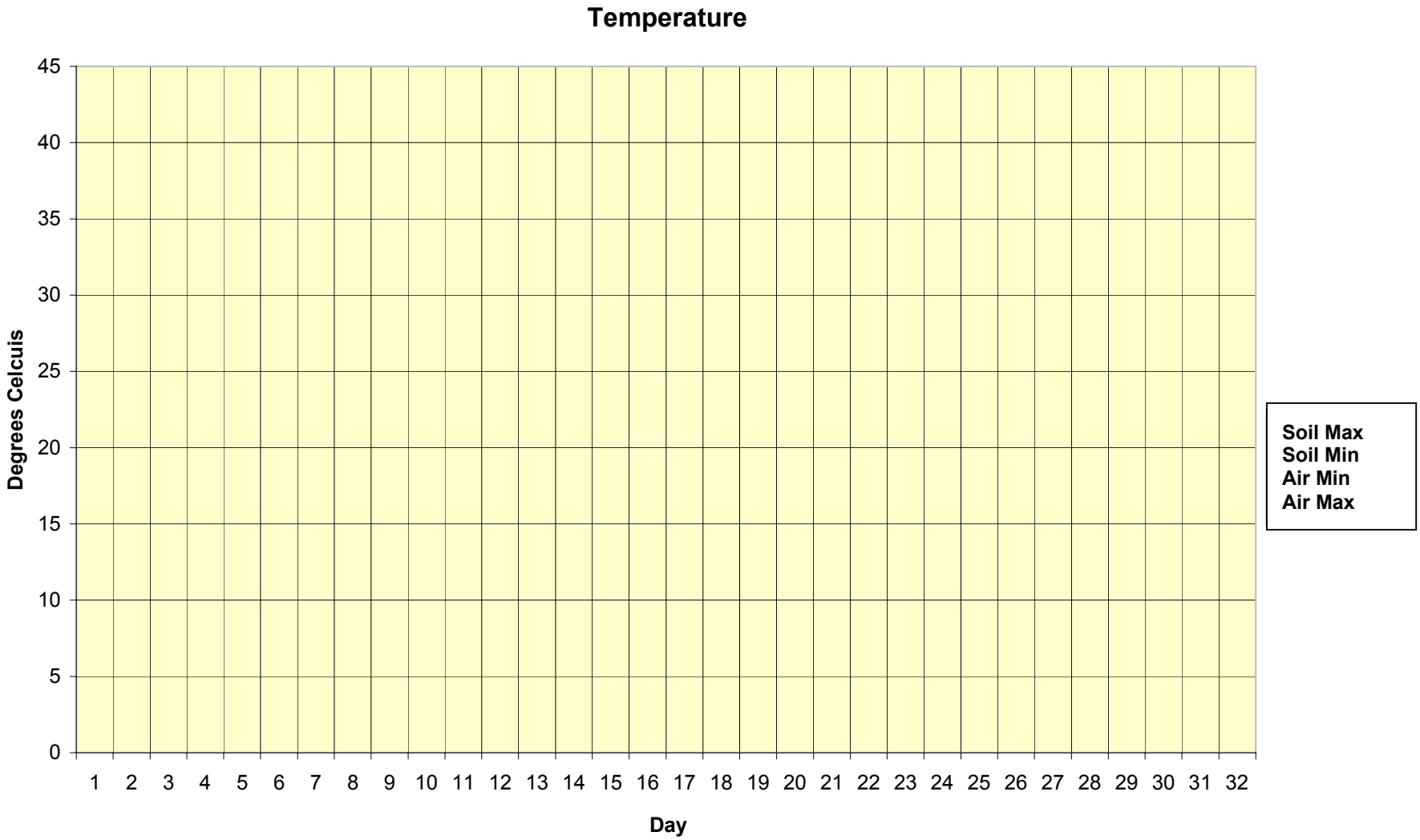
Local time: _____ Universal time: _____

Coordinates:

Altitude: _____ Latitude: _____ Longitude: _____

Note: If you read your thermometer **after** the hour of initialization, D.1 is **today**.
If you read your thermometer **before** the hour of initialization, D.1 is **yesterday**.

	Air		Soil	
Day	**Maximum Temperature**	**Minimum Temperature**	**Maximum Temperature**	**Minimum Temperature**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				


Temperature
Degrees Celcuis
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
Day
Soil Max
Soil Min
Air Min
Air Max

Relative Humidity Data Sheet (Hygrometer)

Study site name and location: _____ Month and Year: _____

Time of data collection:

Local time: _____ Universal time: _____

Coordinates:

Altitude: _____ Latitude: _____ Longitude: _____

Day of the Month	Relative Humidity (%)	Metadata
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Cloud Identification Sheet

High Altitude Clouds

Cirrus

Cirrocumulus

Cirrostratus

Medium Altitude Clouds

Altostratus

Altocumulus

Low Altitude Clouds

Stratus

Stratocumulus

Nimbostratus

Cumulus

Cumulonimbus

Contrails

Cloud Cover Data Sheet

School Name: _____ Study Site: _____

Names of the Observers: _____

Date: _____

Local time of observation: _____ Universal time of observation: _____

Types of Clouds (check all types that are observed)

Cirrus		Altocumulus		Stratus	
Cirrocumulus		Cumulus		Stratocumulus	
Cirrostratus		Nimbostratus		Cumulonimbus	
Altostratus					

Cloud Cover Amount (check 1)

No clouds (0%)		Scattered Clouds (25%-50%)		Obscured sky	
Clear (0%-10%)		Broken clouds (50%-90%)			
Isolated clouds (10%-25%)		Covered sky (>90%)			

Type of cloud contrails (Number of each type observed)

Short-lived contrails	
Persistent non-spreading contrails	
Persistent spreading contrails	

Amount of contrail coverage (check 1)

None		10-25%		>50%	
0-10%		25-50%		Obscured sky	

State of the Sky (Check one per column)

Color	
Deep Blue	
Blue	
Bright blue	
Pale blue	
Milky	

Clarity of the sky	
Exceptionally clear	
Lightly hazy	
Very hazy	
Extremely hazy	

Sky obscured by	
Fog	
Smoke	
Haze	
Volcanic Ash	
Dust	
Sand	
Ocean spray	
Heavy rain	
Snowstorm	
Blizzard	

Current Air Temperature : _____ºC

Relative humidity (if known) : _____%

Commentaries: Describe any conditions that could affect your measurements such as urban pollution, smoke from brush fires, sand storms, dust storms, dust arising from agricultural activities etc:

_____

_____

Words for the Cloud Game (Memory)

CIRRUS	CIRRUS
CIRROCUMULUS	CIRROCUMULUS
CIRROSTRATUS	CIRROSTRATUS
ALTOCUMULUS	ALTOCUMULUS
ALTOSTRATUS	ALTOSTRATUS
CUMULUS	CUMULUS
STRATUS	STRATUS
STRATOCUMULUS	STRATOCUMULUS
CUMULONIMBUS	CUMULONIMBUS
NIMBOSTRATUS	NIMBOSTRATUS
SHORT-LIVED CONTRAILS	SHORT-LIVED CONTRAILS
PERSISTENT NON-SPREADING CONTRAILS	PERSISTENT NON-SPREADING CONTRAILS
PERSISTENT SPREADING CONTRAILS	PERSISTENT SPREADING CONTRAILS

Pictures for the Cloud Game (Memory)

Clouds










Contrails

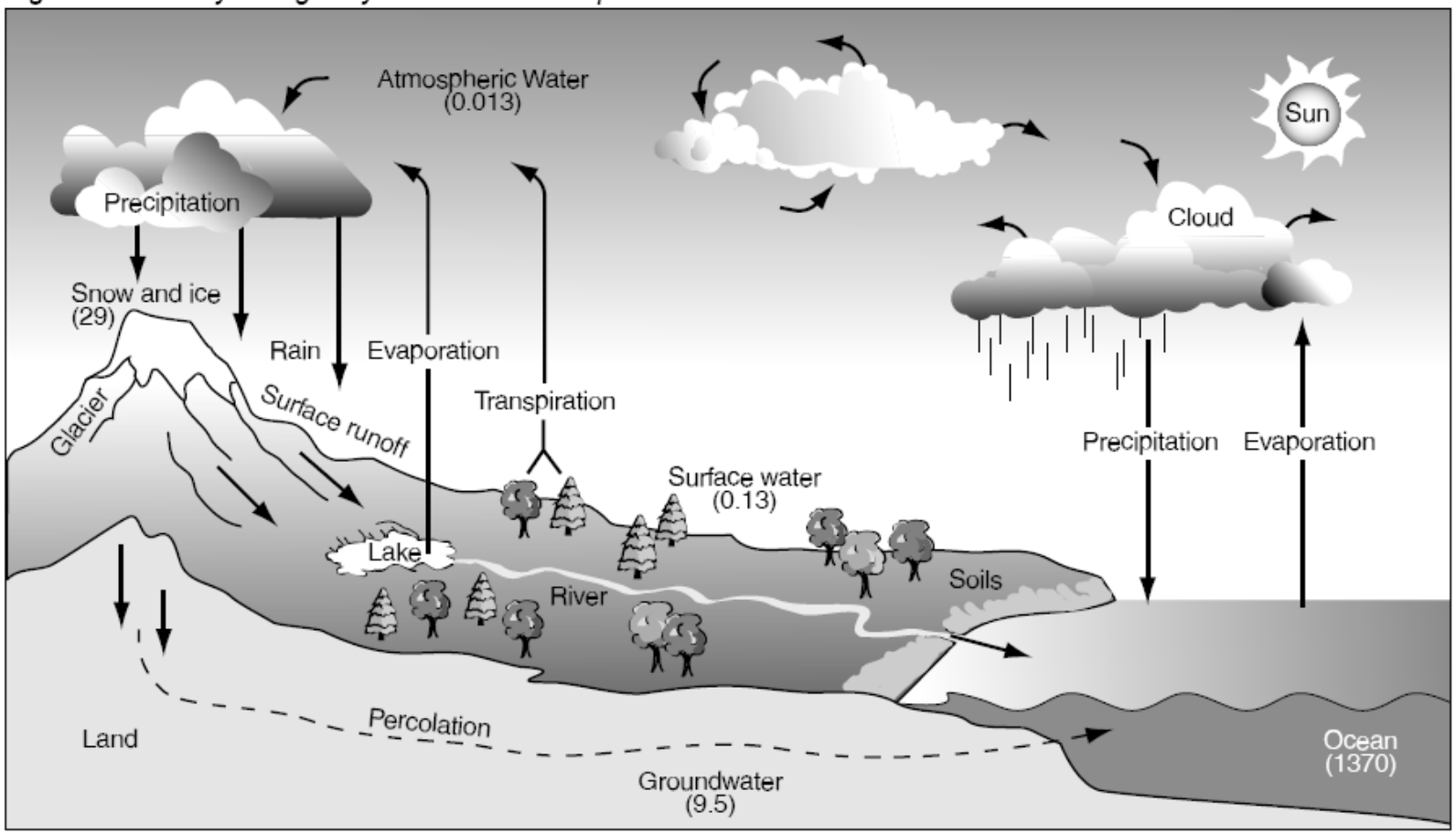
(Use now as an introduction for the following contrails lesson)



Hydrologic Cycle

GLOBE Atmosphere – Water Cycle

Figure HY-I-1: Hydrologic Cycle - Numbers in parentheses are the reservoirs of available water in 10^3 Km^3.



After Mackenzie and Mackenzie 1995, and Graedel and Crutzen, 1993

Precipitation Data Sheet

Study site name and location: _____ Month and Year: _____

Time of Data Collection:

Local time: _____ Universal time: _____

Coordinates:

Altitude: _____ Latitude: _____ Longitude: _____

Day of the Month	Number of days since the last visit to the rain gauge	Millimeters of precipitation	pH (If you are taking it)	Metadata
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

Data Collection Sheet for Precipitation pH

Name of School and Study Site: _____

Date: _____

Time of data collection:

Local Time: _____ Universal Time: _____

Observers' Names: _____

Measurement Method (check one): ❑ pH paper ❑ pH Meter

Trial Number	Observer's Name	Measured pH	Average pH
1			_____
2			
3			

Observations and Metadata: _____

_____

Soil Characterization Site Definition Sheet

Study Site Name: SCS-_____

Location: Latitude: _____° ❒ N or ❒ S Longitude: _____° ❒ E or ❒ W

Elevation: ___ meters **Slope**: _____° Aspect: _____°

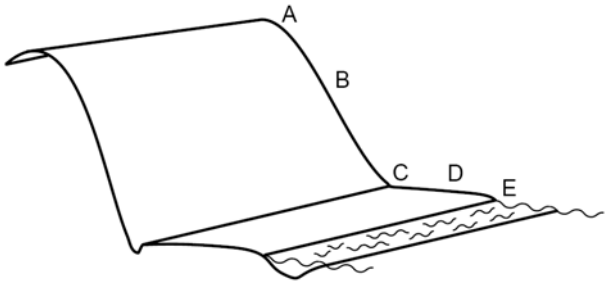
Source of Location Data (check one): ❒ GPS ❒ Other _____

Method (choose one):
- ❑ Pit
- ❑ Auger
- ❑ Near Surface

Is Soil Characterization Site:
- ❑ On school grounds
- ❑ Off school grounds

Site Location (choose one):
- ❑ Near the Soil Moisture Site
- ❑ Near the Soil Moisture and Atmospheric Study Sites
- ❑ Near the Atmosphere Site
- ❑ In the Biology Study Site
- ❑ Other_____

Landscape Position (choose one):
- ❑ A. Summit
- ❑ B. Slope
- ❑ C. Depression
- ❑ D. Large Flat Area
- ❑ E. Stream bank



Cover Type:
- ❑ Bare Soil
- ❑ Rocks
- ❑ Grass
- ❑ Shrubs
- ❑ Trees
- ❑ Other _____ _____

Parent Material:
- ❑ 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

Land Use:
- ❑ Urban
- ❑ Agricultural
- ❑ Recreation
- ❑ Wilderness
- ❑ Other
- ❑ Other _____ _____

Distance from Major Features: _____

Other Distinguishing Characteristics of this Site: _____
_____

Soil Characterization Data Sheet

Date of Characterization: _____ Local Time of Characterization: _____ Universal Time (UT): _____

Study Site: SCS- _____ Method (choose one): ___Pit ___Auger ___Near Surface

Horizon No.	**Top Depth** (cm)	**Bottom Depth** (cm)	**Structure** (granular, blocky, platy, prismatic, columnar, single grained, massive)	**Main Color** (code from color book)	**Second Color** (code from color book)	**Consistence** (loose, friable, firm, extremely firm)	**Texture** (sand, loamy sand, sandy loam, sandy clay loam, sandy clay silt, silt loam, salty clay loam, silty clay, loam, clay loam, clay)	**Rocks** (none, few, many)	**Roots** (none, few, many)	**Carbonates** (none, slight, strong)

Soil Infiltration Data Sheet

Site Name: _____

Name of Collector/Analyst/Recorder: _____

Sample collection date: _____ Time: _____ (hours and minutes) check one: ❑ UT ❑ Local

Distance to Soil Moisture Site: _____ m

Sample set number: _____ Width of your reference (timing) band: _____mm

Diameter: Inner Ring: _____ cm Outer Ring: _____ cm

Heights of reference (timing) band above ground level: Upper: _____ mm Lower: _____mm

Directions:

Take 3 sets of infiltration rate measurements within a 5 m diameter area. Use a different data work sheet for each set. Each set consists of multiple timings of the same water level drop or change until 2 consecutive intervals are within 10 seconds of each other or 45 minutes is up. Record your data below for one set of infiltration measurements. The form below is set up to help you calculate the flow rate. For data analysis with elementary students, skip calculating F and H and plot Trial Number vs. Interval (E). For middle school students, plot the Flow Rate (H) on the y-axis vs. Midpoint Time (F) on the x-axis.

Observations:

Trial	A. Start time		B Start time converted into minutes	C End time		D End time converted into minutes	E Interval (min)	F Midpoint of each measurement (min)	G Water Level Change	H Flow Rate (mm/min)
#	(min)	(sec)	[min + (sec/60)]	(min)	(sec)	[min + (sec/60)]	(D-B)	[B+(E/2)] - B_1 *(for the 1st trial, B and B_1 are the same)*	Width of band (mm)	(G/E)
1			B_1:							
2										
3										
4										
5										
6										
7										
8										
9										

Saturated Soil Water Content below the Rings (test site) after the Experiment:

A. Wet Weight: _____ g B. Dry Weight: _____ g C. Water Weight (A-B): _____ g

D. Container Weight: _____ g E. Dry Soil Weight (B-D): _____ g

F. Soil Water Content (C/E) _____

Daily Metadata/Comments: (optional): _____

Soil pH Data Sheet

Date of sample collection: ________________

Study Site: _______________________

Horizon Number: ___________ Horizon Depth: Top _____cm, Bottom _____cm

Sample Number 1 – *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Sample Number 2 – *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Sample Number 3 - *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Horizon Number: ___________ Horizon Depth: Top _____cm, Bottom _____cm

Sample Number 1 – *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Sample Number 2 – *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Sample Number 3 - *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Horizon Number: ___________ Horizon Depth: Top _____cm, Bottom _____cm

Sample Number 1 – *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Sample Number 2 – *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture _____

Sample Number 3 - *pH Measurement method (check one):* ❒ *paper* ❒ *meter*

A. pH of water before adding soil _____ B. pH of soil and water mixture ____

Soil Temperature Data Sheet

Study Site: _____

Name of Collector/Analyst/Recorder: _____

Date: _____ Soil Thermometer: Dial _____ Digital _____ Other _____

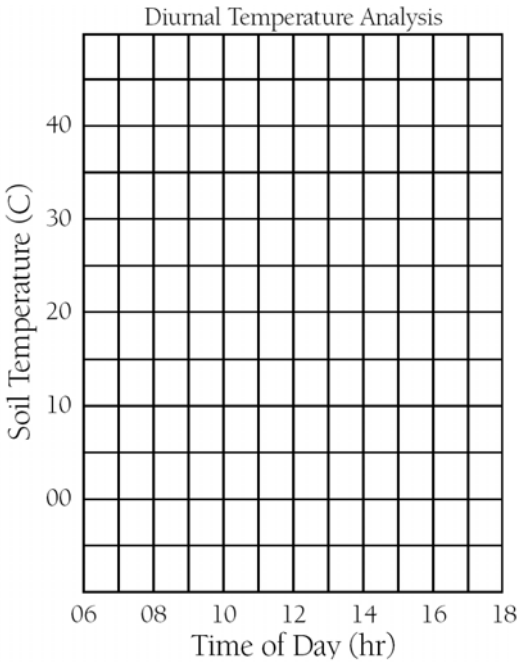
Has there been precipitation within the last 24 hours? Yes _____ No _____

Daily/Weekly Measurements

Sample No.	Local Time	Universal Time	Temp (5 cm) (ºC)	Temp (10 cm) (ºC)
1				
2				
3				

Diurnal/Cycle Measurements

Sample No.	Local Time	Univ. Time	Temp (5 cm) (ºC)	Temp (10 cm) (ºC)
1				
2				
3				
4				
5				
6				
7				
8				



Soil Moisture Site Definition Sheet

Study Site: SMS-_____

Directions from School: _____

_____

Location: Latitude: _____° ❒ N or ❒ S Longitude: _____° ❒ E or ❒ W

Elevation: _____ meters

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

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

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

State of Soil Moisture Study Site:

❒ Natural ❒ Plowed ❒ Graded ❒ Backfill ❒ Compacted ❒ Other _____

Surface Cover:

❒ Bare Soil ❒ Short grass (<10 cm) ❒ Long grass (10 cm) ❒ Other _____

Canopy Cover:

❒ Open ❒ Some Trees within 30 m ❒ Canopy Overhead

Structures within 30 m: ❒ No ❒ Yes (describe size) _____

Soil Characterization: *(Take these values from the Soil Characterization Data Work Sheet for the nearest Soil Characterization Sample Site.)*

	0-5 cm	10 cm	30 cm	60cm	90 cm
Structure					
Color					
Consistence					
Texture					
Rocks					
Roots					
Carbonates					
Bulk Density					

Soil Particle Size Distribution:

	0-5 cm	10 cm	30 cm	60 cm	90 cm
% Sand					
% Silt					
% Clay					

Soil Moisture Data Sheet - Star Pattern

Study Site: SMS-_____

Name of Collector/Analyst/Recorder: _____

Sample collection date: _____

Local Time (Hours: Min): _____ Universal Time: _____

Current Conditions: Is soil saturated? ❒ Yes ❒ No

Drying Method: ❒ in the sun ❒ 95-105° C oven ❒ 75-95° C oven ❒ microwave

Average Drying Time: _____ (hours or minutes)

Bearing from Star Center (optional): _____ Distance from Star Center: _____

Observations: _____

_____

_____

Near-Surface Samples:

Sample Number	Sample Depth	Container Number	A. Wet Weight (g)	B. Dry Weight (g)	C. Water Weight (A-C)	D. Container Weight (g)	E. Dry Soil Weight (B-D)	F. Soil Water Content (C/E)
1.	0-5 cm							
	10 cm							
2.	0-5 cm							
	10 cm							
3.	0-5 cm							
	10 cm							

Soil Moisture Data Sheet - Transect Pattern

Study Site: SMS-_____

Name of Collector/Analyst/Recorder: _____

Sample collection date: _____

Local Time (Hours: Min): _____ Universal Time: _____

Current Conditions: Is soil saturated? ❒ Yes ❒ No

Drying Method: ❒ in the sun ❒95-105° C oven ❒ 75-95° C oven ❒ microwave

Average Drying Time: _____ (hours or minutes)

Daily Metadata: (optional)

Length of Line: _____ m Compass Bearing: _____ Station Spacing: _____ m

Directions:

Transects should be 50 m long, located in an open field. Measurements are made 12 times/yr. during a regular interval of your choice. Enter the data for your samples collected between 0-5 cm (10 single samples plus 1 triple sample):

Sample Number	Offset from end of Transect (m)	Container Number	A. Wet Weight (g)	B. Dry Weight (g)	C. Water Weight (A-C)	D. Container Weight (g)	E. Dry Soil Weight (B-D)	F. Soil Water Content (C/E)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								

Soil Particle Size Distribution Data Sheet

Date of sample collection: _____

Study Site: _____

Horizon Number: _____ Horizon Depth: Top _____ cm Bottom _____ cm

Sample Number 1

Distance from 500 ml mark to base of graduated cylinder: _____cm

Hydrometer Calibration Temperature: _____ °C

A. 2 minute hydrometer reading: _____

B. 2 minute temperature: _____ °C

C. 24 hour hydrometer reading: _____

D. 24 hour temperature: _____ °C

Sample Number 2

Distance from 500 ml mark to base of graduated cylinder: _____ cm

Hydrometer Calibration Temperature: _____ °C

A. 2 minute hydrometer reading: _____

B. 2 minute temperature: _____°C

C. 24 hour hydrometer reading: _____

D. 24 hour temperature: _____ °C

Sample Number 3

Distance from 500 ml mark to base of graduated cylinder: _____ cm

Hydrometer Calibration Temperature: _____ °C

A. 2 minute hydrometer reading: _____

B. 2 minute temperature: _____ °C

C. 24 hour hydrometer reading: _____

D. 24 hour temperature: _____ °C

Calculating the Percentages of Sand, Silt, and Clay in the Sample

1. In A, enter the 2-minute hydrometer reading.	A. 2 minute hydrometer reading _____
2. In B, enter the 2-minute temperature reading.	B. 2 minute temperature reading _____°C
3. In C, enter the grams of soil/L in suspension using the hydrometer reading in A and converting it with Table SO-PA-1 on the following page.	C. Grams/L of soil (silt + clay) from table _____ g
4. In D, multiply the difference between the temperature reading (from B) and 20° C by .36 to correct for temperatures above or below 20° C	D. Temperature correction [0.36 x (B-20° C)] [0.36 x (B_____ - 20)] = _____g
5. In E, enter the sum of grams of soil/L (from C) and the temperature correction (from D).	E. Corrected silt and clay in suspension (C+D) C_____ + D_____ = _____g
6. In F, multiply the value for g/L of soil from E by .5 to correct for the fact that you have used a 500 ml cylinder.	F. Grams of soil (silt + clay) in 500 ml (E_____ x 0.5) = _____g
7. In G, find the grams of sand in your sample, by subtracting grams of silt + clay in suspension (F) from the initial 25 g total soil in the sample.	G. Grams of sand in sample (25 g –F_____) = _____g
8. In H, determine the exact percentage of sand, by dividing grams of sand by the total amount of soil (25 g) and multiplying by 100.	**H. Percent Sand** [(G_____ / 25) x 100]= _____ %
9. In I, enter the hydrometer reading measurement at 24 hours.	I. 24-hour hydrometer reading _____
10. In J, enter the 24-hour temperature reading.	J. 24-hour temperature reading _____°C
11. In K, enter the grams of soil/L in suspension at 24 hours (clay) using the hydrometer reading in I and converting it with Table SO-PA-1 on the following page.	K. Grams/L of soil (clay) from table _____ g

12. In L, multiply the difference between the temperature reading at 24 hours (from J) and 20° C by .36.

13. In M, enter the sum of grams of soil/L (from K) and the temperature correction (from L).

14. In N, multiply the number in M by .5 to correct for the fact that you have used a 500 ml cylinder.

15. In O, determine the exact percentage of clay, by dividing grams of clay in suspension (from N) by the total amount of soil (25 g) and multiplying by 100.

16. In P, determine the grams of silt by adding the grams of sand (from G) and grams of clay (from N) and subtracting the result from 25.

17. In Q, determine the exact percentage of silt, by dividing grams of silt by the total amount of soil (25 g) and multiplying by 100.

18. See the Textural Triangle to determine the Soil Texture

L. Temperature correction [0.36 x (B-20° C)]
[0.36 x (J _____ - 20° C)] = _____g

M. Corrected clay in suspension (C+D)
K_____ + L_____ = _____g

N. Grams of soil (clay) in 500 ml
(M_____ x 0.5) = _____g

O. Percent Clay
[(N_____ / 25) x 100]= _____%

P. Grams of silt
[25 – (G_____ + N_____)] = _____g

Q. Percent Silt
[(P_____ / 25) x 100]= _____%

Hydrology Site Definition Sheet

Basic Information

School Name: _____

Class or Group Name: _____

Date: _____

Name(s) of Student(s) Filling in Site Definition Sheet: _____

_____

Information About Your Water Body

Name of Water Body: _____

(Give the name listed on maps, if applicable)

Water Type: ❑ Salt (> 25 ppt) ❑ Brackish (2-25 ppt) ❑ Fresh (<2 ppt)

Is it Moving Water or Standing Water? ❑ Moving ❑ Standing

If Moving Water: ❑ Stream ❑ River ❑ Other: _____

Approximate Width of Moving Water: _____meters

If Standing Water: ❑ Pond ❑ Lake ❑ Reservoir ❑ Bay ❑ Ditch
❑ Ocean ❑ Estuary ❑ Other: _____

Size of Standing Water:

- ❑ Much smaller than 50m x 100m
- ❑ Roughly 50m x 100m
- ❑ Much larger than 50m x 100m

Approximate Area of Standing Water: _____km^2

Average Depth of Standing Water:_____ meters

Location Where You Take Data: (Check one)
❑ Outlet ❑ Bank ❑ Bridge ❑ Boat ❑ Inlet ❑ Pier

Can You See the Bottom? ❑ Yes ❑ No

What Material(s) Do You See on the Bank? (Check all that apply):
❑ Soil ❑ Rock ❑ Concrete ❑ Vegetated bank

Bedrock (Check all that apply):
❑ Granite ❑ Volcanic ❑ Limestone ❑ Mixed ❑ Don't Know

Freshwater Habitats Present (Check all that apply):
❑ On rocks ❑ On/in mud ❑ On/in sand ❑ Vegetated banks
❑ Submersed vegetation ❑ Logs ❑ Don't Know

Saltwater Habitats Present (Check all that apply):
❑ Rocky shore habitat ❑ Sandy shore habitat ❑ Mud flats/Estuary ❑ Don't Know

General Description of the Site

Note: When you send your site definition data to GLOBE, the following items go under "General description of your study site and metadata (Comments)"

Types of plants observed in and around your body of water: _____
_____

Types of animals observed in and around your body of water: _____
_____

Human uses of the water (for example, fishing, swimming, transporting goods or people, drinking water, irrigation, washing, etc.): _____
_____

Do you know of any upstream discharge into your body of water? _____

Is the flow (streams) or water level (lakes) regulated or natural? (For example, flow is regulated downstream of dams.) _____

GPS Coordinates

Note: If you don't have a GPS unit, skip this part until you can arrange a visit from a GLOBE representative who can loan you one)

Note: Use this opportunity to teach the students about longitude, latitude, elevation, and how a GPS unit works. Involve the students as much as possible.

Latitude: _____ ❑ N or ❑ S
Longitude: _____ ❑ E or ❑ W
Elevation: _____ meters
Source of Location Data (check one): ❑ GPS ❑ Other: _____

Additional Information for You (The Teacher) to Fill Out

Name of Site: _____

(Create a unique name that accurately identifies your site. If this is your first Hydrology Study Site, we suggest SWS-1. If it is your second site, use SWS-2, etc.)

Dissolved Oxygen Kit Manufacturer: ❑ Lamotte ❑ Hach ❑ Other: _____
Model Name: _____

Alkalinity Kit Manufacturer: ❑ Lamotte ❑ Hach ❑ Other: _____
Model Name: _____

Nitrate Kit Manufacturer: ❑ Lamotte ❑ Hach ❑ Other: _____
Method: ❑ Zinc ❑ Cadmium
Model Name: _____

Salinity Titration Kit Manufacturer: ❑ Lamotte ❑ Hach ❑ Other: _____
Model Name: _____

Hydrology Data Sheet

School name: _____ Name of Study Site: _____

Name(s) of Student(s) filling in Site Definition Sheet: _____

Measurement Time:

Year: _____ Month: _____ Day: _____ Time (Local): _____ Time (UT): _____

Water State: (check one)

❑ Normal ❑ Flooded ❑ Dry ❑ Frozen ❑ Unreachable

Cloud Cover (check one):

❑ No clouds ❑ Broken / Partially covered (50%-90%)

❑ Clear (<10%) ❑ Overcast (>90%)

❑ Isolated clouds (10%-24%) ❑ Obscured

❑ Scattered (25%-49%)

Transparency Tube

Trial Number	Observer's Name	Depth (cm)	Greater than depth of transparency tube?	Average
1			❑ Yes ❑ No	_____ **cm**
2			❑ Yes ❑ No	
3			❑ Yes ❑ No	

Note: If the image is still visible when the tube is full, input the length of the tube and then check "Yes" under "Greater than depth of the transparency tube".

Water Temperature

Trial Number	Observer's Name	Temperature (°C)	Average
1			_____ **°C**
2			
3			

Conductivity: Temperature of water sample being tested: _____ °C

Trial Number	Observer's Name	Conductivity (µS/cm)	Average
1			_____ **µS/cm**
2			
3			

Conductivity of the Standard Solution used for calibration: _____ µS/cm

Water pH: Measured with (check one): ❑ paper ❑ meter

Trial Number	Observer's Name	Measured pH	Conductivity if known (µS/cm)	Average pH
1			_____	_____
2				
3				

Value of buffers used to calibrate pH meter: ❑ pH 4 ❑ pH 7 ❑ pH 10
(Check all of the buffers that were used)

Note: Data tables for the measures of salinity, alkalinity, and level of nitrates can be found along with those protocols in the International GLOBE Program Guide or on the web at www.globe.gov.

GPS Investigation

Data Sheet

Data Recorded By: _____

Date Recorded: Year_____ Month:_____ Day:_____

Circle Site type: School Atmosphere Hydrology

Soil_____ Land Cover Phenology

Other_____

Site Name: _____

School Name:_____

School Address:_____

Do not begin recording data until your GPS receiver has "locked in."
Wait at least one minute between recording observations.
Record the following data from the appropriate screens on your GPS unit.

OBS	**Latitude** Decimal Degrees (N/S)	**Longitude** Decimal Degrees (E/W)	**Elevation** Meters	**Time** H:M:S UTC	**# Sats** Satellites	**Messages** Circle if Shown
1						2D 3D
2						2D 3D
3						2D 3D
4						2D 3D
5						2D 3D

			<———Averages

GPS Unit Information

Brand Name: _____

Model Number:_____