Local Connections: Earth Systems in the Local Study Site

**LC5: Comparing the Study Site to One in Another Region**

**Purpose**
To deepen students understanding of the Earth as a system, and their appreciation for the value of diagrams as tools for both learning and communication, by having them work with diagrams of study sites from different regions.

**Overview**
Earth’s physical and environmental landscapes are diverse, and different conditions shape the interconnections among the components of a local Earth system in different ways. The class studies a diagram and description of a study site in a biogeographically different region than their own provided in this activity. Students analyze and compare the selected diagram and description with their own class diagram and description.

**Student Outcomes**
Students will be able to:
- Describe the different components and interconnections inherent in diagrams from other regions;
- Compare and contrast Earth system components and interconnections between their local site and a site in a different region.

**Science Concepts**

<table>
<thead>
<tr>
<th>Physical Sciences</th>
<th>Earth and Space Sciences</th>
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<tbody>
<tr>
<td>Heat is transferred by conduction, convection and radiation.</td>
<td>Weather changes from day to day and over the seasons.</td>
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<tr>
<td>Heat moves from warmer to colder objects.</td>
<td>The sun is the major source of energy at Earth’s surface.</td>
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<tr>
<td>Sun is a major source of energy for changes on the Earth’s surface.</td>
<td>Energy is conserved. Chemical reactions take place in every part of the environment.</td>
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<tr>
<td>Energy is conserved.</td>
<td>Solar insolation drives atmospheric and ocean circulation.</td>
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<tr>
<td>Each element moves among different reservoirs (biosphere, lithosphere, atmosphere, hydrosphere).</td>
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**Life Sciences**
Organisms can only survive in environments where their needs are met.
Earth has many different environments that support different combinations of organisms.
Organisms’ functions relate to their environment.
Organisms change the environment in which they live.
Humans can change natural environments.
Plants and animals have life cycles.
Ecosystems demonstrate the complementary nature of structure and function.
All organisms must be able to obtain and use resources while living in a constantly changing environment.
All populations living together and the physical factors with which they interact constitute an ecosystem.
Populations of organisms can be categorized by the function they serve in the ecosystem.
Sunlight is the major source of energy for ecosystems.
The number of animals, plants and microorganisms an ecosystem can support depends on the available resources.
Atoms and molecules cycle among the living and non-living components of the ecosystem.

**Time**
One 45-minute class period

**Level**
Middle, Secondary
Crosswalks to Other GLOBE Learning Activities

All of the following activities build the student’s ability to compare the characteristics of Earth system study sites in different parts of the globe.

Hydrology Investigation: “Water, Water Everywhere! How Does It Compare?”
Students analyze GLOBE student data on the pH and temperature of different bodies of water, looking for trends over time.

Soil Investigation: Soil and My Backyard
Student explore soil and soil properties, discovering the variability of soils and how they are formed.

Soil Investigation: A Field View of Soil - Digging Around
Students discover that variations in the landscape, such as in slope, shade, and plants can affect soil properties, and that every soil is unique on every place on Earth.

Earth as a System Investigation: Seasons and Phenology: What Are Some Factors That Affect Seasonal Patterns?
Students use GLOBE data and graphing tools to compare the influence of latitude, elevation, and geography on seasonal patterns.

Earth as a System Investigation: Seasons and Phenology: How Do Seasonal Temperature Patterns Vary Among Different Regions of the World?
Students use GLOBE visualizations to display student data on maps and explore seasonal changes in regional and global temperature patterns across the Earth. They learn that temperatures vary from one location to another around the world and that local latitude, elevation and geography affect seasonal temperature patterns.

Background
The basic processes that produce the interconnections among the various components of the Earth system are the same in all regions. However, since the geographic and environmental aspects of regions vary so dramatically, the processes that dominate the shaping of the different study sites will vary, as will the rate at which these processes proceed. As a result, the diagrams students develop from different regions may emphasize different portions of the Earth system and the interconnections between components.

One example of this difference is the contrast between a dry and a wet region. The diagram of a dry region with seasonal intense rain may emphasize that part of the hydrologic cycle which involves run-off, erosion, and soil type and soil moisture. The diagram of a wet region may emphasize evaporation, cloud cover and precipitation.

Another example of differences is the contrast between a continental (inland) environment and a maritime (near a large body of water) environment. The diagram from a continental environment may emphasize the interconnections between the land cover and the atmosphere, water and soil; while the diagram from the maritime environment may emphasize the influence of the large body of water on the local environment.

Even diagrams from the same types of regions may differ because of the differing interests of the students creating the diagrams. For example, students at one school might be more interested in the land cover at their study site, and their class diagram might emphasize that, while students at another school may be more interested in water quality, and their class diagram might emphasize that. It is important to keep this possibility in mind when comparing diagrams from different schools.
One can compare diagrams to determine how the environments of two schools are the same and how they are different, and how the components of the Earth system interact to produce those two environments.

**What To Do and How To Do It**

If you did not conduct the LC4: Diagramming the Study Site for Others Learning Activity, begin with Step 1.

If you did conduct this activity, begin with Step 2.

**Step 1. Introduce the activity with a discussion of dramatic events or changes that have occurred in your local area.**

Ask students to suggest events or changes, such as drought, flood, hurricane, fire, or loss of a particular habitat such as a wetland. Have students describe these events. What changed? What do people understand about it? What don’t people understand? What do we still need to find out?

Explain that a new discipline of science has emerged, with which people attempt to understand changes like these by learning more about ways that parts of the Earth interact to make the whole. The discipline of Earth system science integrates all sciences that are concerned with the Earth: geology, hydrology, chemistry, botany and zoology, and meteorology.

People who study the Earth as a system are pioneers in this new discipline, and, as experts on their own local areas, GLOBE students can participate. Every area, every site is unique in certain ways. Ask students: How would you apply Earth system science to one of your study sites? How would you communicate the system aspect of your study site, its parts and how they interact, to another GLOBE school?

**Step 2: Ask students to speculate about the geographic and ecological factors in other regions of the world that might shape an Earth system site differently from their own.**

Introduce the activity by explaining that students will examine a study site diagram and a Study Site Description Form from another region of the world. Ask the students to suggest what might make a site in another region of the world different from their own site, in terms of the way it works as a system.

Prompt them with questions if necessary:

- What about latitude and longitude?
- What about elevation?
- What about wind velocity and direction, topography, rainfall and all the other characteristics of a study site?
- How would each of these factors influence components of the Earth system at that other site?

**Step 3. Have students read the Student Background Reading and review the 4 diagrams from different regions provided by GLOBE.**

Distribute the student background reading, *Study Sites and Diagrams from Different Regions*. Give students 5 minutes to read this material. Discuss any questions students may have.

**Step 4: Distribute student copies and then have students compare a study site diagram from their own study site or a site similar to their own to one from a different geographic region.**

Distribute students copies of:

- Class diagram developed by your students in LC4: Diagramming the Study Site for Others Learning Activity, or the sample diagram that you select from those provided by GLOBE, that best represents your school’s geographic area
- Class diagram from another region provided by GLOBE. Select one that is markedly different than your own. (You will distribute copies of the Study Site Description Form a little later in the activity, in Step 6.)
- Comparing Diagrams from Different Regions Work Sheet
- Assessment rubrics for this activity (You may want to share with students.)

Have the students work individually to compare the diagrams at first. In the next step, have them work together as a class.

On the Comparing Diagrams from Different Regions Work Sheet, ask your students to complete Part 1, Looking at Science Concepts...
Step 5: Conduct a class discussion about differences and similarities between the science concepts in the two diagrams, and what the different concepts reflect about the characteristics of the different regions. What, if any, are the differences in the science concepts that are represented? Have a student list them on the blackboard.

Step 6: Have students explore reasons for any differences in concepts represented by the two diagrams. (Question 2 on the Comparing Diagrams from Different Regions Work Sheet)

Distribute student copies of the Study Site Description Form from the other region different from your own. Explore with them how that description helps to explain any differences between diagrams.

To further understand the diagram from the other region, have students look at GLOBE data from that region, if available. Students may also use atlases and other sources of information about the geography and ecology of the region.

Step 7. Have students compare the styles of the two diagrams. (Question 3 of the Comparing Diagrams from Different Regions Work Sheet)

Do the two diagrams communicate their content equally well? If not, which diagram communicates more clearly? Why?

What do your students like about the style of the other school’s diagram?

Step 8. Ask students to write a comparison of the two diagrams.

The students should compare the diagrams as tools for communication about study sites as systems. They should:

1. describe differences between the content of the two diagrams and suggest explanations for them;
2. describe differences in style and their effectiveness for communication; and
3. identify features of the other region’s diagram that students would recommend that the class incorporate into its own diagram.

Student Assessment

The Comparing Diagrams from Different Regions Work Sheet, can be used for assessment of student learning. An assessment rubrics for this Work Sheet is provided.

Further Investigations

Comparing GLOBE School Study Sites: Further Explorations

Students can obtain and analyze archived GLOBE data on two or more other GLOBE schools having selected study site characteristics that are different from their own. These can be found on the GLOBE website using the Visualization Tools. For example, they can select schools that have:

The same latitude as their own, and an elevation difference of 1,000 or 2,000 meters

The same elevation as their own, and a latitude that differs by 10, 20, 30, or 40 degrees

If your school is near a mountain range, a location on the side of it that is different from their own (east or west, to discover differences in rainfall)

Latitude and elevation the same as their own, but rainfall different

A climate that differs from their own: coastal vs. continental

Students can compare the GLOBE data from these schools and explain similarities and differences. (They should start with similarities, as these will probably be easier to explain.)
Study Sites and Diagrams from Different Regions

Student Background Reading

The place where you live and go to school is different in many ways from everywhere else. It has a special combination of characteristics such as climate, kinds of living things, soils, bodies of water (streams rivers, lakes, etc.), and land cover; elevation, and latitude and longitude. In this activity, you will look at diagrams and descriptions of study sites from other regions, and compare them with your own.

The diagrams in this activity represent the study sites as systems, in other words, as sets of parts, or components, and the processes that connect them. The components should be labeled: air, water, soil, and living things (or atmosphere, hydrosphere, pedosphere, and biosphere). They should be connected by arrows and phrases describing the processes that connect them.

You will also look at descriptions of those sites, on forms developed by GLOBE.

What similarities and differences between the diagrams and study sites will you find?

Looking at Components and Interconnections

The basic components and the interconnections among them are the same at nearly all sites: water, chemicals (such as carbon), and energy (such as heat) move among the four major components of the system (atmosphere, hydrosphere, pedosphere, and biosphere). So you should find a lot of similarities in the components and interconnections represented in the other class’s diagram. However, the amounts of water, chemicals, and energy in each component of the system, and the rate at which they move between the different components vary a lot among different regions of the Earth. Therefore, diagrams of different sites may emphasize different components and interconnections.

One example of differences might be seen in diagrams of study sites in dry vs. wet regions. In a dry region where it may rain during only one season of the year, students might emphasize erosion by wind and water in their diagrams. However, in a wet region where it rains or snows throughout the year, the students might emphasize more of the water cycle, showing evaporation, cloud cover and precipitation in their diagrams.

Another example of differences might be seen in diagrams of study sites in a tropical rain forest vs. a temperate forest. Students diagramming a rain forest site may emphasize the plants and their role as a storage place for nutrients, whereas students diagramming a temperate forest may emphasize the soil as a storage place for nutrients.

Looking at Style

What similarities and differences in style will you find when you compare the other class’s diagram with yours? Diagrams can be more or less abstract (i.e. use realistic drawings or use symbols); they may use different kinds of symbols; and they may be complicated or simple — very decorative, or very plain.

Whatever their styles, all diagrams should be good communicators. In other words, they should be clearly drawn and labeled, and easy to understand.
Comparing Diagrams from Different Regions

Work Sheet

Name: __________________________ Class: ____________________ Date: __________

Name and location of the other GLOBE school, whose diagram you are studying:

_________________________________________________________________

_________________________________________________________________

1. Compare the components and the interconnections among them, that are shown in
the other school’s diagram, with the components and interconnections that are shown
in your class’s diagram.

a. Does the other GLOBE school’s diagram emphasize aspects of the study site that are
different from the aspects emphasized in your diagram? Which aspects?

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

b. Explain why you think the two diagrams emphasize different aspects of
interconnections among components of the study site.

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

2. Now look at the other class’s Study Site Description Form. Does it help you to
understand their diagram? If so, how?
Be specific in your responses. Refer to specific information on the form and how it
helps you to understand specific information in the diagram.

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________
3. Compare the style of the other class’s diagram with the style of your own. In other words, look at how the other class represented their components and interconnections. Does the diagram appear simple, or complicated? Did the other class use realistic drawings, or symbols?

a. What is similar (if anything)?
   
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

b. What is different (if anything)?
   
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

   c. Which of the two styles do you think is better for communicating ideas about components and the interconnections among them, in a study site system? Why?
   
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
Figure EA-LC5-1: Sample class diagrams of study sites in different climatic regions: a) savannah, b) rainforest, c) marine/coastal, d) continental mid-latitudes (Reynolds Jr Sr High School covered bridge study site)

a. Savanna (13.40˚ N, 8.45˚ E)

b. Rainforest (17.00˚ N, 89.50˚ E)
c. Marine/Coastal (41.00° S, 173.5° E)

d. Continental Mid-Latitudes (41.21° N, 80.23° W)
LC5: Comparing the Study Site to One from Another Region

Sample Study Site Description Form
Savannah (Figure EA-LC5-1a)

If you are comparing your class diagram with the sample diagram that represents a GLOBE study site in a savannah location, you can use this form to help you understand and interpret the sample diagram.

This is a sample form. The information on this form is accurate for a savannah location in Africa. It is not from a specific GLOBE school on that continent.

Today’s Date: March 2, 2012 Season Depicted in Class Diagram: Spring

1. School Identification
1. School Name: (No School Name)
2. School Address: Matameye, Niger

3. Teacher Name: (No Teacher Name)
4. Class Identification: (No Class Name)

(Note: Since a school may do this activity over a number of years with multiple classes, it is possible that there will be multiple diagrams for the same study site on the GLOBE web site. Therefore, please include here the name of the teacher who guided the development of the class diagram, and any other distinguishing notes about the class):

2. Study Site Location
5. Latitude: 13.40 degrees N
6. Longitude: 18.45 degrees E
7. Elevation (in meters): 102 m
8. Is your study site in the interior of a continent (more than 200 km from the coast)? Yes No
9. Would you describe your site as urban, suburban, or rural? Please check one:
   __ Urban (city environment, much of the land surface covered with concrete or other man-made material)
   __ Suburban (many man-made structures separated by areas of open land, i.e. land not covered with man-made materials)
   X Rural (farmland, mainly open land with few man-made structures)

3. Climate
10. Please check one:
   __ Polar and subpolar (located between 60˚ latitude and the pole)
   __ Mid-latitude (located between 30˚ and 60˚ latitude)
   X Tropical and subtropical (located between 30˚ latitude and the equator)
11. What is the average precipitation your area gets in a year? Please give your response in cm. (You can get this information from an atlas, your local library, local civil engineer, or local government) ___________ cm

12. Are there months of the year when your area usually gets more precipitation than during other months? ____ Yes ____ No

If yes, during what months does your area usually get more precipitation?
______________________________

4. Weather

13. Does your weather usually come from one particular compass direction during the season represented in your diagram of the study site as an Earth system? ____ Yes ____ No

If yes, what general direction (N, E, S, or W)? ___________

5. Water

14. Does your study site include part of a body of water, or is it within 100 m of one? ____ Yes ____ No

If yes, please indicate what type of water body it is by checking one below

__ Stream
__ Canal
__ River
__ Pond
__ Lake
__ Bay
__ Ocean
__ Reservoir
__ Irrigation ditch
__ None

15. If your study site includes all or part of a body of water, what is its name?
______________________________
______________________________

16. How much of the study site area is covered by your body of water?
Please check one. __ A lot (> 30%) __ Some (10-30%) ___ A little (1-10%) ___ None

17. Does your water body have water present all year, or just some fraction of the year?
Please check one. ___ 100% ___ 75%-99% ___ 50%-74% ___ < 50%

18. Is your study site within 100 km of a very large lake (larger than about 5000 sq km), or a sea or an ocean? ____ Yes ____ No

If yes, in what compass direction is that lake, sea or ocean from your study site (N, E, S, or W)? ___________________________
6. Soil
19. Which of the three traits below best describes your soil? Please check one. (If you are unsure, you may wish to read over the Soil Characterization Protocol (within the Soil (Pedosphere) Investigation)
   X  Sandy (gritty)  ___ Clayey (slippery when wet)  ___ Rocky (rough)

7. Land Cover/Biology
20. Describe the land cover. (If you have already collected this information using the Land Cover protocols (within the Biosphere Investigation), please enter it here.) Please indicate approximately what percentage of the land is
   ________ bare (rocks, sand or other soil with no vegetation)
   ________ paved
   ________ covered with buildings
   ____40%____ covered by grass, trees, and/or shrubs
   If you wish, provide more information about the land cover at your study site here:

21. What animals live at the study site? Note: You may use whatever knowledge you have of the animals, or use any evidence of animals you may have observed at the study site.
   Domestic- goats, cows, sheep, chickens, camels, horses Wild-snakes, pintard, rats, occasional monkeys

22. Please describe here anything that is special or unusual about your study site:
   Sahelian village…. Fairly densely populated zone of Niger…near border with Nigeria, on a main road…area is sandy with red soil, made from weathered rock and heavy erosion and signs of desertification….from overfarming
Sample Study Site Description Form
Tropical Rain Forest Location (Figure EA-LC5-1b)

If you are comparing your class diagram with the sample diagram that represents a GLOBE study site in a savannah location, you can use this form to help you understand and interpret the sample diagram.

This is a sample form. The information on this form is accurate for a savannah location in Africa. It is not from a specific GLOBE school on that continent.

Today's Date: ______________ Season Depicted in Class Diagram: ______________________

1. School Identification
1. School Name: (No School Name)
2. School Address: Belize

3. Teacher Name: (No Teacher Name)
4. Class Identification: (No Class Name)

(Note: Since a school may do this activity over a number of years with multiple classes, it is possible that there will be multiple diagrams for the same study site on the GLOBE web site. Therefore, please include here the name of the teacher who guided the development of the class diagram, and any other distinguishing notes about the class):

2. Study Site Location
5. Latitude: 17.00 degrees N
6. Longitude: 89.50 degrees E
7. Elevation (in meters): 200 m
8. Is your study site in the interior of a continent (more than 200 km from the coast)? __ Yes X No
9. Would you describe your site as urban, suburban, or rural? Please check one:
   __ Urban (city environment, much of the land surface covered with concrete or other man-made material)
   __ Suburban (many man-made structures separated by areas of open land, i.e. land not covered with man-made materials)
   X __ Rural (farmland, mainly open land with few man-made structures)

3. Climate
10. Please check one:
   __ Polar and subpolar (located between 60° latitude and the pole)
   __ Mid-latitude (located between 30° and 60° latitude)
   X __ Tropical and subtropical (located between 30° latitude and the equator)
11. What is the average precipitation your area gets in a year? Please give your response in cm. (You can get this information from an atlas, your local library, local civil engineer, or local government) __130_____ cm

12. Are there months of the year when your area usually gets more precipitation than during other months?  ____Yes  ____No

If yes, during what months does your area usually get more precipitation?

____ May through October ______

4. Weather

13. Does your weather usually come from one particular compass direction during the season represented in your diagram of the study site as an Earth system?  ____Yes  ____No

If yes, what general direction (N, E, S, or W)? _____

5. Water

14. Does your study site include part of a body of water, or is it within 100 m of one?  ____Yes  ____No

If yes, please indicate what type of water body it is by checking one below

_  Stream  
_  Canal  
_  River  
_  Pond  
_  Lake  
_  Bay  
_  Ocean  
_  Reservoir  
_  Irrigation ditch  
_  None

15. If your study site includes all or part of a body of water, what is its name?

______________________________________________________________________
______________________________________________________________________

16. How much of the study site area is covered by your body of water?

Please check one.  ____ A lot (> 30%)  ____ Some (10-30%)  ____ A little (1-10%)  ____ None

17. Does your water body have water present all year, or just some fraction of the year?

Please check one.  ____ 100%  ____ 75%-99%  ____ 50%-74%  ____ < 50%

18. Is your study site within 100 km of a very large lake (larger than about 5000 sq km), or a sea or an ocean?  ____ Yes  ____ No

If yes, in what compass direction is that lake, sea or ocean from your study site (N, E, S, or W)? ________________________
6. Soil
19. Which of the three traits below best describes your soil? Please check one. (If you are unsure, you may wish to read over the Soil Characterization Protocol (within the Soil (Pedosphere) Investigation)
   ___ Sandy (gritty)  ___ Clayey (slippery when wet)  ___ Rocky (rough)

7. Land Cover/Biology
20. Describe the land cover. (If you have already collected this information using the Land Cover protocols (within the Biosphere Investigation), please enter it here.) Please indicate approximately what percentage of the land is
   _______ bare (rocks, sand or other soil with no vegetation)
   _______ paved
   _______ covered with buildings
   _______ covered by grass, trees, and/or shrubs
   [80%] If you wish, provide more information about the land cover at your study site here:

21. What animals live at the study site? Note: You may use whatever knowledge you have of the animals, or use any evidence of animals you may have observed at the study site.
   Too many to list. Many kinds of birds, tree frogs, scorpions, spiders; butterflies, beetles, ants; howler monkeys. Jaguars used to live here, and we think that sometimes a jaguar passes through. Other members of the cat family do live here all the time.

22. Please describe here anything that is special or unusual about your study site:
   We have a rainy season that is May-October, and a drier season November-April.
LC5: Comparing the Study Site to One from Another Region

Sample Study Site Description Form
Marine/Coastal Location (Figure EA-LC5-1c)

If you are comparing your class diagram with the sample diagram that represents a GLOBE study site in a savannah location, you can use this form to help you understand and interpret the sample diagram.

This is a sample form. The information on this form is accurate for a savannah location in Africa. It is not from a specific GLOBE school on that continent.

Today’s Date: ______________ Season Depicted in Class Diagram: ______________________

1. School Identification
1. School Name: __________________________________________________________
2. School Address: _________________________________________________________
3. Teacher Name: _________________________________________________________
4. Class Identification: ___________________________________________________

(Note: Since a school may do this activity over a number of years with multiple classes, it is possible that there will be multiple diagrams for the same study site on the GLOBE web site. Therefore, please include here the name of the teacher who guided the development of the class diagram, and any other distinguishing notes about the class):

2. Study Site Location
5. Latitude: ___________ 41.00 degrees S ___________
6. Longitude: ___________ 173.50 degrees E ___________
7. Elevation (in meters): ___________ 20 m ___________
8. Is your study site in the interior of a continent (more than 200 km from the coast)? __ Yes  X No
9. Would you describe your site as urban, suburban, or rural? Please check one:
   __ Urban (city environment, much of the land surface covered with concrete or other man-made material)
   __ Suburban (many man-made structures separated by areas of open land, i.e. land not covered with man-made materials)
   X  Rural (farmland, mainly open land with few man-made structures)

3. Climate
10. Please check one:
    __ Polar and subpolar (located between 60˚ latitude and the pole)
    X  Mid-latitude (located between 30˚ and 60˚ latitude)
    __ Tropical and subtropical (located between 30˚ latitude and the equator)
11. What is the average precipitation your area gets in a year? Please give your response in cm. (You can get this information from an atlas, your local library, local civil engineer, or local government) _______________ cm

12. Are there months of the year when your area usually gets more precipitation than during other months?  ____Yes  ____No
   If yes, during what months does your area usually get more precipitation?
   __May through August___________

4. Weather
13. Does your weather usually come from one particular compass direction during the season represented in your diagram of the study site as an Earth system?  ____Yes  ____No
   If yes, what general direction (N, E, S, or W)?  ____W____

5. Water
14. Does your study site include part of a body of water, or is it within 100 m of one?  ____Yes  ____No
   If yes, please indicate what type of water body it is by checking one below
   If no, please go to Question 18.
   __ Stream  
   __ Canal  
   __ River  
   __ Pond  
   __ Lake  
   __ Bay  
   __ Ocean  
   __ Reservoir  
   __ Irrigation ditch  
   __ None

15. If your study site includes all or part of a body of water, what is its name?
   __Cook Strait, between Tasman Sea and South Pacific Ocean____________________
   ________________________________________________________________

16. How much of the study site area is covered by your body of water?
   Please check one.  ____A lot (> 30%)  __Some (10-30%)  ____A little (1-10%)  ____None

17. Does your water body have water present all year, or just some fraction of the year?
   Please check one.  ____100%  ____75%-99%  ____50%-74%  ____< 50%

18. Is your study site within 100 km of a very large lake (larger than about 5000 sq km), or a sea or an ocean?  ____Yes  ____No
   If yes, in what compass direction is that lake, sea or ocean from your study site (N, E, S, or W)?  ____N______________________
6. Soil
19. Which of the three traits below best describes your soil? Please check one. (If you are unsure, you may wish to read over the Soil Characterization Protocol (within the Soil (Pedosphere) Investigation)
   ___ Sandy (gritty)   ___ Clayey (slippery when wet)   ___ Rocky (rough)

7. Land Cover/Biology
20. Describe the land cover. (If you have already collected this information using the Land Cover protocols (within the Biosphere Investigation), please enter it here.) Please indicate approximately what percentage of the land is
   ____ bare (rocks, sand or other soil with no vegetation)
   ____ paved
   ____ covered with buildings
   ___ 40% covered by grass, trees, and/or shrubs
   If you wish, provide more information about the land cover at your study site here:
      Our study site is at the beach, so much of it is covered by sand and rocks.

21. What animals live at the study site? Note: You may use whatever knowledge you have of the animals, or use any evidence of animals you may have observed at the study site.
   We have black-backed gulls, Caspian terns, and oystercatchers. On the beach, we have crabs and snails, cockles, urchins, sandhoppers, earwigs, and isopods, and many insects and spiders. Sometimes we see dolphin.

22. Please describe here anything that is special or unusual about your study site:
   The weather can change very quickly here! We are on a small island in a great expanse of ocean. It is usually windy. The climate isn’t extremely warm or cold. We have warm summers and mild winters.
Sample Study Site Description Form
Continental Mid-latitudes Location (Figure EA-LC5-1d)

If you are comparing your class diagram with the sample diagram that represents a GLOBE study site in a savannah location, you can use this form to help you understand and interpret the sample diagram.

This is a sample form. The information on this form is accurate for a savannah location in Africa. It is not from a specific GLOBE school on that continent.

Today's Date: ______________ Season Depicted in Class Diagram: ____________

1. School Identification
1. School Name: __________________________________________________________
2. School Address: _________________________________________________________
________________________________________________________________________
3. Teacher Name: _________________________________________________________
4. Class Identification: ____________________________________________________
   (Note: Since a school may do this activity over a number of years with multiple classes, it is possible that there will be multiple diagrams for the same study site on the GLOBE web site. Therefore, please include here the name of the teacher who guided the development of the class diagram, and any other distinguishing notes about the class):

2. Study Site Location
5. Latitude: ______ 41.21 degrees N ______
6. Longitude: ______ 80.24 degrees W ______
7. Elevation (in meters): ______ 350 m ______
8. Is your study site in the interior of a continent (more than 200 km from the coast)? _X_ Yes __ No
9. Would you describe your site as urban, suburban, or rural? Please check one:
   _X_ Rural (farmland, mainly open land with few man-made structures)
   _ _ Urban (city environment, much of the land surface covered with concrete or other man-made material)
   _ _ Suburban (many man-made structures separated by areas of open land, i.e. land not covered with man-made materials)

3. Climate
10. Please check one:
   _X_ Mid-latitude (located between 30° and 60° latitude)
   _ _ Tropical and subtropical (located between 30° latitude and the equator)
   _ _ Polar and subpolar (located between 60° latitude and the pole)
11. What is the average precipitation your area gets in a year? Please give your response in cm. (You can get this information from an atlas, your local library, local civil engineer, or local government) **94.3 cm/yr** cm

12. Are there months of the year when your area usually gets more precipitation than during other months?  **X** Yes  **No**
   If yes, during what months does your area usually get more precipitation?
   *September through November and April through June*

**4. Weather**

13. Does your weather usually come from one particular compass direction during the season represented in your diagram of the study site as an Earth system?  **X** Yes  **No**
   If yes, what *general direction* (N, E, S, or W)?  **SW-to-NW**

**5. Water**

14. Does your study site include part of a body of water, or is it within 100 m of one?  **X** Yes  **No**
   If yes, please indicate what type of water body it is by checking one below
   If no, please go to Question 18.
   ___ Stream
   ___ Canal
   **X** River
   ___ Pond
   ___ Lake
   ___ Bay
   ___ Ocean
   ___ Reservoir
   ___ Irrigation ditch
   ___ None

15. If your study site includes all or part of a body of water, what is its name?
   ____________________________________________

16. How much of the study site area is covered by your body of water?
   Please check one.  **X** A lot (> 30%)  ___Some (10-30%)  ___A little (1-10%)  ___ None

17. Does your water body have water present all year, or just some fraction of the year?
   Please check one.  **X** 100%  ___ 75%-99%  ___ 50%-74%  ___ < 50%

18. Is your study site within 100 km of a very large lake (larger than about 5000 sq km), or a sea or an ocean?  **X** Yes  **No**
   If yes, in what compass direction is that lake, sea or ocean from your study site (N, E, S, or W)?  ______________________
6. Soil
19. Which of the three traits below best describes your soil? Please check one. (If you are unsure, you may wish to read over the Soil Characterization Protocol (within the Soil (Pedosphere) Investigation)
   ___ Sandy (gritty)   X_ Clayey (slippery when wet)   ___ Rocky (rough)

7. Land Cover/Biology
20. Describe the land cover. (If you have already collected this information using the Land Cover protocols (within the Biosphere Investigation), please enter it here.) Please indicate approximately what percentage of the land is
   ______ bare (rocks, sand or other soil with no vegetation)
   ______ paved
   ______ covered with buildings
   ______ 80% covered by grass, trees, and/or shrubs
   If you wish, provide more information about the land cover at your study site here:
   It’s our Hydrology site, and it’s right on the Shenago River

21. What animals live at the study site? Note: You may use whatever knowledge you have of the animals, or use any evidence of animals you may have observed at the study site.
   Temperate zone forest animals and river animals

22. Please describe here anything that is special or unusual about your study site:
**Assessment Rubric:** LC5: Comparing the Study Site to One from Another Region

<table>
<thead>
<tr>
<th>Comparing Diagrams from Different Regions</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comparison of Components and Interconnections in Diagrams</strong></td>
<td>Compares components and interconnections shown on another GLOBE school diagram and own diagram specifically and with scientifically appropriate comments; comparison reflects careful analysis of diagrams</td>
<td>Adequately describes, explains, and justifies opinions, on the basis of scientific accuracy, completeness, and clarity of communication</td>
<td>Partially describes, explains, and justifies opinions, on the basis of scientific accuracy, completeness, or clarity of communication</td>
<td>Inadequately or incompletely describes and justifies opinions</td>
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<tr>
<td><strong>Revisions to Own Diagram and to Characteristics of Effective Diagrams</strong></td>
<td>Fully describes and justifies revisions</td>
<td>Adequately describes and justifies revisions</td>
<td>Partially describes and justifies revisions</td>
<td>Inadequately or incompletely describes and justifies revisions</td>
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<td><strong>Qualities Desired in Classmates for Collaboration</strong></td>
<td>Describes several appropriate qualities, such as willingness to fully engage in the task ability to contribute constructive ideas, and making constructive responses to the ideas of others</td>
<td>Adequately describes some appropriate qualities</td>
<td>Partially describes some appropriate qualities</td>
<td>Inadequately or incompletely describes appropriate qualities</td>
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