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

Physical Sciences

Heat is transferred by conduction, convection and radiation.

Heat moves from warmer to colder objects.

Sun is a major source of energy for changes on the Earth's surface.

Energy is conserved.

Chemical reactions take place in every part of the environment.

Earth and Space Sciences

Weather changes from day to day and over the seasons.

The sun is the major source of energy at Earth's surface.

Solar insolation drives atmospheric and ocean circulation

Each element moves among different reservoirs (biosphere, lithosphere, atmosphere, hydrosphere).

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

Materials and Tools

One of four diagrams and the Site Description form from a region which is different from that of your school (provided, Figure EA-LC5-1a)

Preparation

None

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*

in the Diagrams.

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 (soil), 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 your 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)?

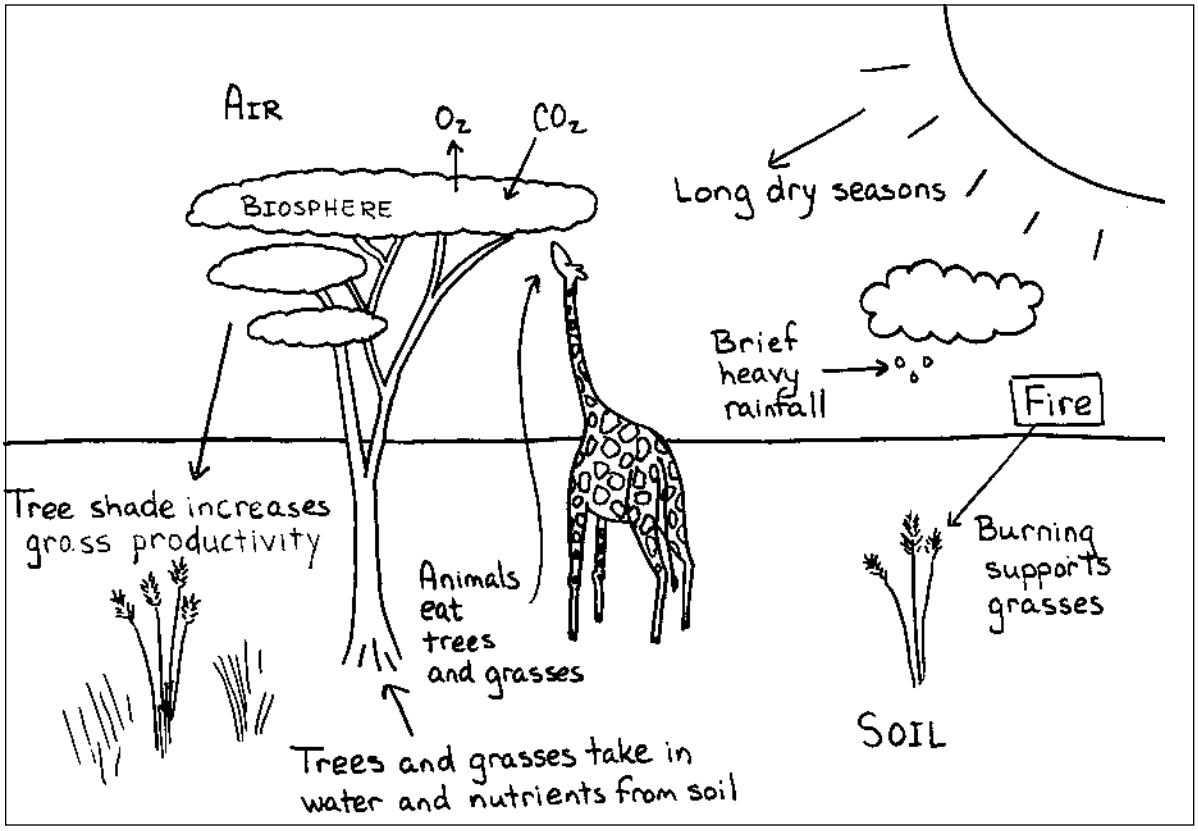
_____
_____
_____
_____
_____

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?

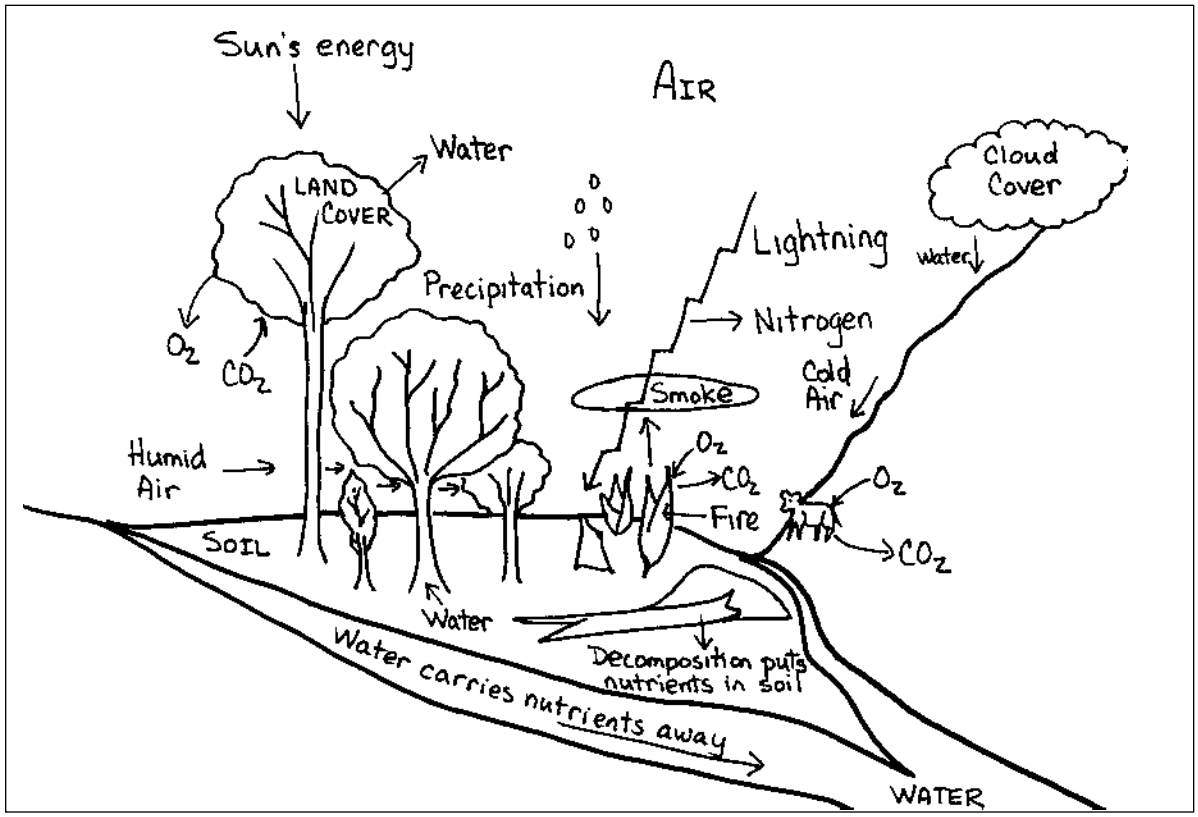
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

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)

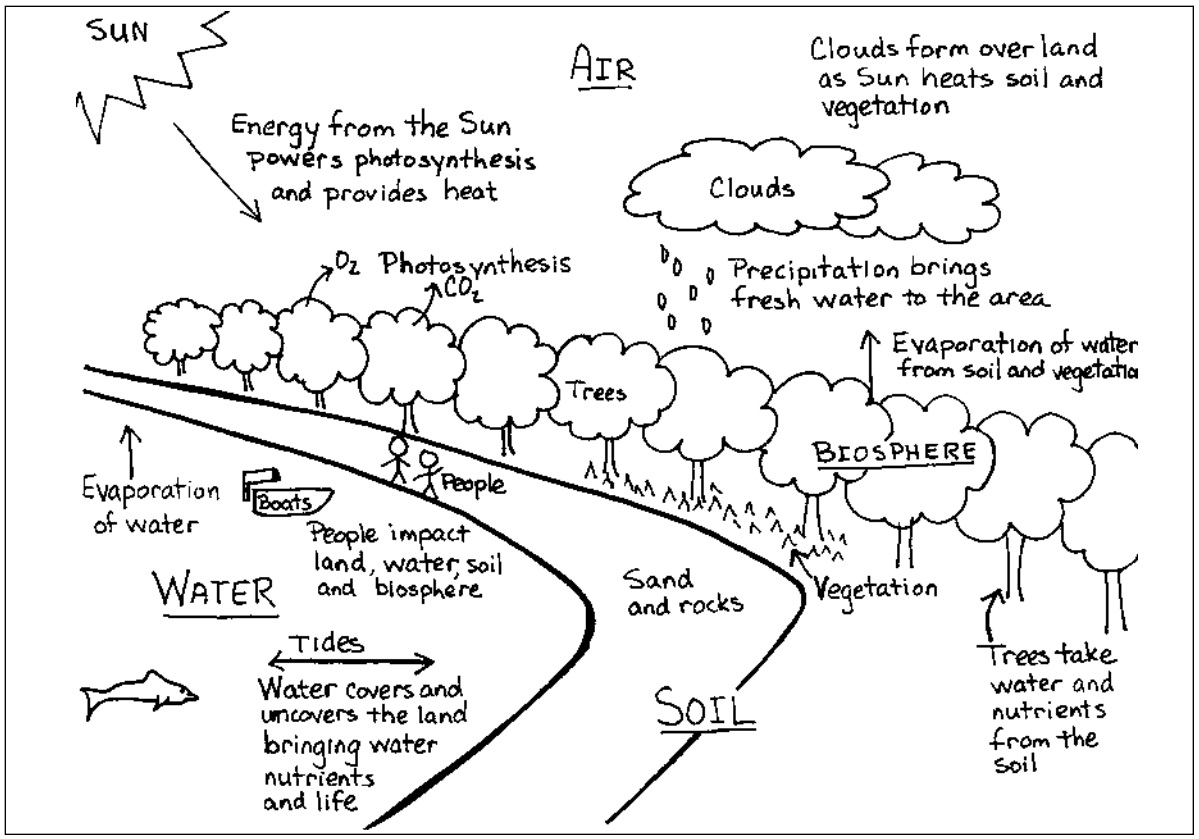
a. Savanna (13.40˚ N, 8.45˚ E)



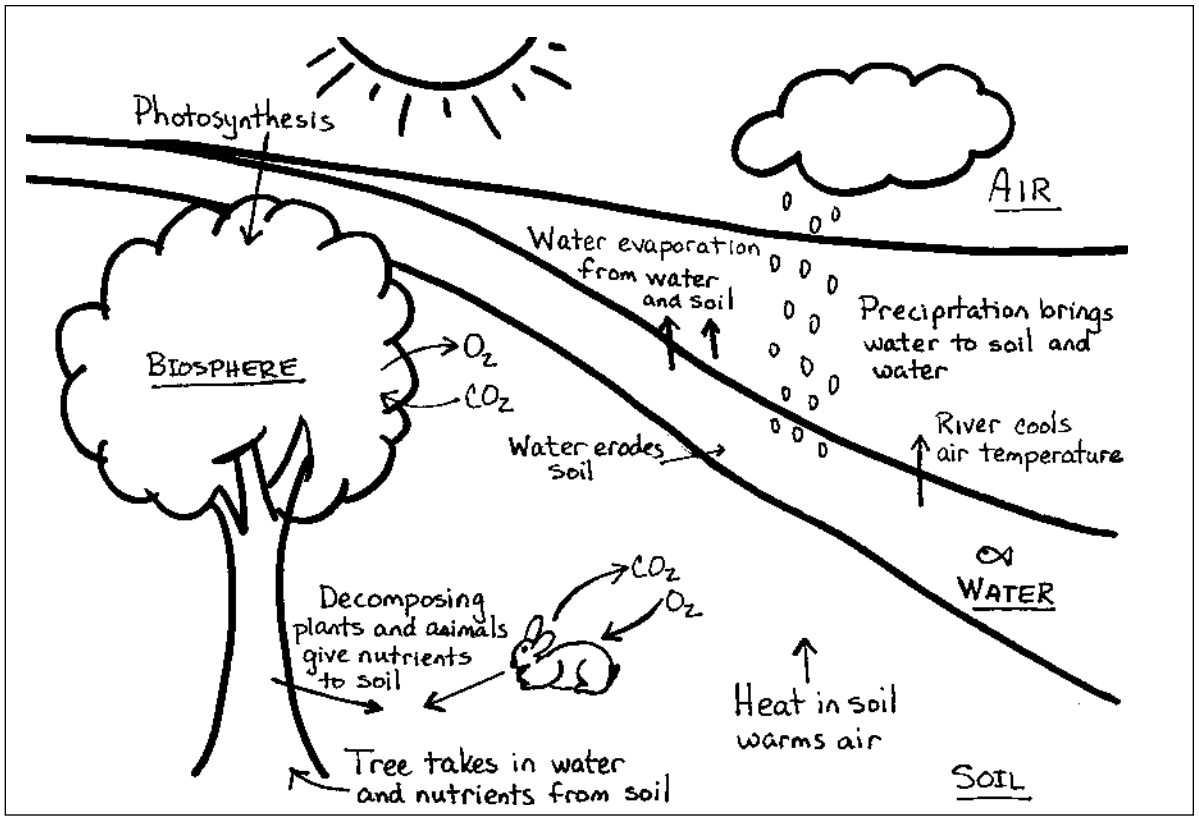
b. Rainforest (17.00˚ N, 89.50˚ E)



c. Marine/Coastal (41.00˚ S, 173.5˚ E)



d. Continental Mid-Latitudes (41.21˚ N, 80.23˚ W



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)? X 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) ___*550*_____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?
    __*June through September*____

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)? _*N*____

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.

    _*X*_ 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?

    __*Kori. The semi-permanent water way where irrigated agriculture is practiced. This year it is dried up.*

16. How much of the study site area is covered by your body of water?
    Please check one. __ A lot (> 30%) __Some (10-30%) _*X*_ 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% _*X*_ < 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 _*X*_ 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: *May 15 2012* Season Depicted in Class Diagram: *Early Rainy Season*

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? _*X*_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? _*X*_Yes ____No

    If yes, what *general* direction (N, E, S, or W)? __*E*____

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.

    X 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?

    __*(No 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%) *X* 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? __ Yes *X* 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:

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.

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: *Nov 20, 2012* Season Depicted in Class Diagram: *Spring*

1. School Identification

1. School Name: *(No School Name)*
2. School Address: *Northern end of South Island, New Zealand*

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: *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? _X_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? _X_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?
    _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
    __ River
    __ Pond
    __ Lake
    __ Bay
    __ Ocean
    _X_ 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%) _X_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)? ___*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*)

_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:

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: *Nov 1, 2008* Season Depicted in Class Diagram: *Fall*

1. School Identification

1. School Name: *Reynolds Jr. Sr. High School*
2. School Address: *Greenville, PA 16154*
3. Teacher Name: *GLOBE Teacher*
4. Class Identification: *4th period Earth Science*

(**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:

__ 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) _*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?
    *Shenango River*

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? __ Yes _*X*_ 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*

Comparing Diagrams from Different Regions				
	4	**3**	**2**	**1**
Comparison of Components and Interconnections in Diagrams	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	Adequately describes, explains, and justifies opinions, on the basis of scientific accuracy, completeness, and clarity of communication	Partially describes, explains, and justifies opinions, on the basis of scientific accuracy, completeness, or clarity of communication	Inadequately or incompletely describes and justifies opinions
Revisions to Own Diagram and to Characteristics of Effective Diagrams	Fully describes and justifies revisions	Adequately describes and justifies revisions	Partially describes and justifies revisions	Inadequately or incompletely describes and justifies revisions
Qualities Desired in Classmates for Collaboration	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	Adequately describes some appropriate qualities	Partially describes some appropriate qualities	Inadequately or incompletely describes appropriate qualities