

Lesson Two: Tropical Rain Forest Biome

Objectives:

1. Students will explain how abiotic and biotic factors interact to shape and characterize the tropical rain forest biome.
2. Students will identify the characteristics of each of the four earth spheres in the tropical rain forest.
3. Students will use and strengthen internet research skills and computer skills as they create a PowerPoint slide show.
4. Through active communication students will strengthen their abilities to work effectively in a group.
5. Students will organize their research into an effective PowerPoint presentation.

Background:

This lesson reinforces the concept of the four earth spheres. Students will apply the earth spheres to a biome study of the tropical rain forest. Teachers may want to narrow this biome study by focusing on the South American rain forest which will be the focus of the final two lessons. In schools where computer access is limited, students may create a poster presentation instead of using PowerPoint.

Materials:

Computer and internet access

PowerPoint software access/or poster making materials

Copy one per group of Sphere Presentation Requirements (Masters 2.1-2.5)

Copy of Rubric one per group (Master 2.6)

Procedure:

1. Divide the students into 5 groups. Each group will be assigned an earth sphere to research: atmosphere, hydrosphere, lithosphere, biosphere plants, and biosphere animals. Note that the biosphere has been divided into two groups “plants” and “animals” due to amount of information on the diversity of life in the biosphere of a tropical rain forest. If four groups are preferred, teachers may divide students into groups representing each of the earth spheres rather than the five groups indicated here.

We suggest dividing students into groups randomly by using puzzle pieces. To do this the teacher must find five pictures of different aspects of the tropical rain forests and print them onto cardstock or glue pictures to a piece of thin cardboard. Suggestions include: five different nature scenes of the tropical rain forest, five different species that live in the tropical rain forest, or maybe five products we use that are derived from rain forest plants or animals. Next cut each picture into several pieces (depending on the number of students that will be in each group) and mix all the pieces together. Allow students to pick a puzzle piece. Once every student has a piece students must get up and find students with pieces that fit theirs. Once their puzzle is complete, students are now in a group with the people they just created their puzzle with. Each group represents an Earth sphere, with the biosphere being two separate groups.

2. Students will work with their group members to research their earth sphere as it relates to the tropical rain forest. There are 5 masters, (Masters 2.1 - 2.5), which outline the presentation requirements for each of the 5 different sphere groups. Each group must receive the correct requirement sheet for their assigned earth sphere. Each group will also receive a copy of the grading rubric (Master 2.6). Students now have a list of the information they are required to find. Be sure that they keep a list of all resources they use for this assignment. As the handout indicates, students will organize their information into a six slide power-point presentation to be shared with their peers during the next class. Teachers may want to briefly walk their students through the requirements and the rubric to be sure that students understand what is expected of them.

Note: This approach may be extended to all biomes of the world if doing a unit on biomes. Where students learn about and keep track of the characteristics of the atmosphere, biosphere, lithosphere and hydrosphere of all the various world biomes.

Sphere Presentation Requirements

Biosphere Plants

Slide 1: Title (sphere name), group members, date, class

Slide 2: Gound Cover; must include a general definition of ground cover plants, pictures (and names) of a few examples of plants, and 2-3 examples of how ground plants are adapted to life in the tropical rain forest. May want to include a description of what it would be like to walk along the forest floor of a tropical rain forest.

Slide 3: Upperstory; must include a general definition of upperstory plants, pictures (and names) of a few examples of plants, and an example of how upperstory plants are adapted to life in the tropical rain forest.

Slide 4: Canopy; must include a general definition of canopy plants, pictures (and names) of a few examples of plants, and an example of how canopy plants are adapted to life in the tropical rain forest.

Slide 5: How is this sphere important to the tropical rain forest? How is this sphere a significant aspect of this biome? i.e. describe this sphere's niche in this biome

Slide 6: Resources Used

Group Organizational Notes: (Students brainstorm and keep track of who is responsible for what. Be sure that each member is actively involved in production of and presentation of your work)

Name	Responsibilities

Master 2.1

Sphere Presentation Requirements

Biosphere Animals

Slide 1: Title (sphere name), group members, date, class

Slide 2: Reptiles; choose 2-3 different reptiles or reptile groups (frogs, lizards, snakes) and briefly describe them, how they are adapted to life in the rain forest, their importance, and include a picture of these animals

Slide 3: Insects; choose 2-3 different insects or insects groups and briefly describe them, how they are adapted to life in the rain forest, their importance, and include a picture of these animals

Slide 4: Birds; choose 2-3 different birds and briefly describe them, how they are adapted to life in the tropical rainforest, their importance, and include a picture of these animals

Slide 5: Mammals; choose 3 different mammals or mammal groups and briefly describe them, how they are adapted to life in the rain forest, their importance, and include a picture of these animals

Slide 6: Resources Used

Group Organizational Notes: (Students brainstorm and keep track of who is responsible for what. Be sure that each member is actively involved in production of and presentation of your work)

Name	Responsibilities

Master 2.2

Sphere Presentation Requirements

Hydrosphere

Slide 1: Title(sphere name), group members, date, class

Slide 2: Precipitation patterns; show graphs of average yearly rain and summarize

Slide 3: List major lakes, rivers &/or other large bodies of water that are significant to the tropical rain forest biome. You may want to include maps &/or pictures

Slide 4: What is the importance of the hydrosphere to the rain forest?

Slide 5: Diagram of the water cycle particular to the tropical rain forest.

Slide 6: Resources Used

Group Organizational Notes: (Students brainstorm and keep track of who is responsible for what. Be sure that each member is actively involved in production of and presentation of your work)

Name	Responsibilities

Master 2.3

Sphere Presentation Requirements

Atmosphere

Slide 1: Title(sphere name), group members, date, class

Slide 2: Temperature; show graph of average yearly temperatures and summarize

Slide 3: Describe the weather a person may expect on a typical day in a tropical rain forest

Slide 4: What are CO₂/O₂ levels like in the tropical rain forest? Diagram of the CO₂/O₂ cycle specific to the tropical rain forest

Slide 5: What is the importance of the atmosphere to the tropical rain forest? To the world?

Slide 6: Resources Used

Group Organizational Notes: (Students brainstorm and keep track of who is responsible for what. Be sure that each member is actively involved in production of and presentation of your work)

Name	Responsibilities

Master 2.4

Sphere Presentation Requirements

Lithosphere

Slide 1: Title(sphere name), group members, date, class

Slide 2: Location of tropical rain forest indicated on a world map

Slide 3: Topography of the South American tropical rain forest

Slide 4: What is the soil quality and composition like in a tropical rain forest?

Slide 5: What is the importance or impact of soil to the tropical rain forest?

Slide 6: Resources Used

Group Organizational Notes: (Students brainstorm and keep track of who is responsible for what. Be sure that each member is actively involved in production of and presentation of your work)

Name	Responsibilities

Rubric (30pts)

Names _____

Sphere: _____

Title slide one	0	1	2			
Slide two	0	1	2	3	4	5
Slide three	0	1	2	3	4	5
Slide four	0	1	2	3	4	5
Slide five	0	1	2	3	4	5
Resource slide six	0	1	2	3		
Presentation	0	1	2	3	4	5

TOTAL /30

0=missing work

1=does not meet requirements but contains some piece of information relevant to assignment

2=meets a few parts of the requirements but is lacking in several ways or is inaccurate

3=meets many of the required parts; may have an inaccuracy or missing something

4=meets most requirements; may lack detail or have a slight inaccuracy

5=meets all requirements

Master 2.6