

SCIENCE·3D

TIGER REALM

In this packet, sample student answers are provided in **red** and notes to teachers are in **blue**.

In this **Mission Research**, students will use what they learned in the **Mission Reader** to make diagrams that explain how global patterns influence the distribution of climates on Earth. Then, they will explore the biomes that form in different climates.

This activity is designed to get students thinking about why biomes are in particular places, but is more focused on the large-scale processes that influence patterns of precipitation and temperature as well as the Earth's processes that redistribute heat and generate winds.

Alternate Mission Research: Have students each choose a different species of cat and create a presentation or poster that describes: 1) the physical traits of the species (you could assign them to include any differences in traits due to genetic differences); 2) the biome it lives in (include the range of the species and the rainfall, temperature, and dominant plant species of the biome); 3) other species that the cat interacts with (predators, prey, species it may compete with); 4) threats from humans and/or ways people are trying to help the species survive.



Cats are found in almost every biome on Earth, and tigers live in a few of them. Before joining the mission, let's explore what influences biomes! Biomes each have different types of plant life. That plant life is influenced by how much precipitation falls and how temperatures change throughout the year. The map below shows where the major biomes occur on Earth.

Use Figure 1 and other resources to complete the project that your teacher assigns for you.

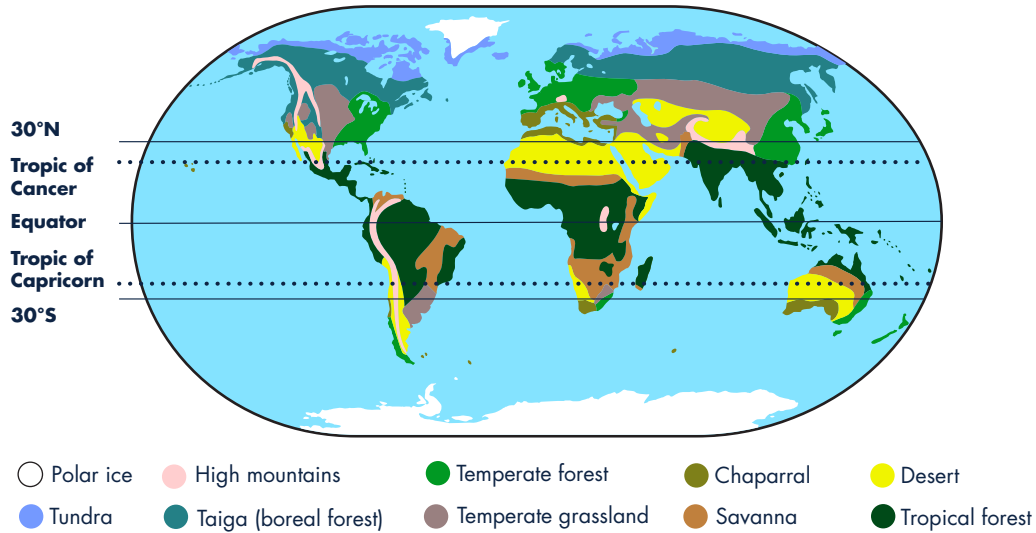
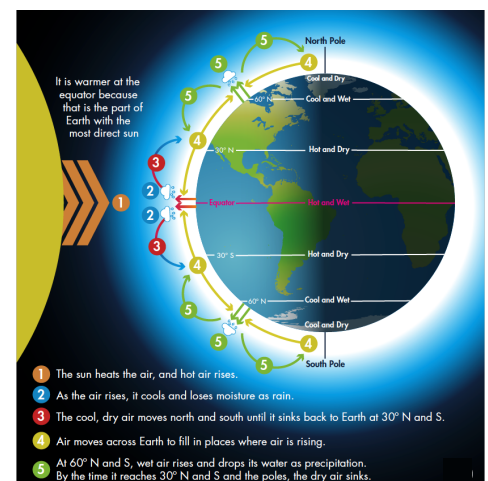
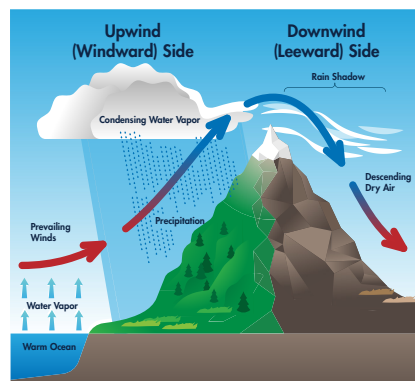
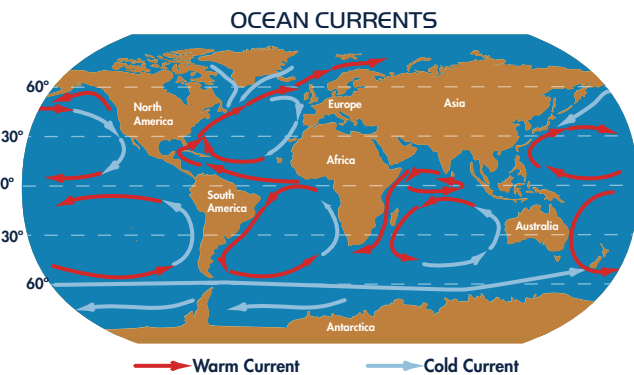


Figure 1. Major Biomes of Earth

- Create** a poster that describes the processes that influence global patterns in temperature and precipitation. Use your **Mission Reader** and other resources to assist you. Be sure to include: 1) the relationship between the Earth and the sun that affects patterns in heating; 2) how the differential heating results in wind patterns and where it is rainy and dry; 3) ocean currents and how they move heat; 4) how winds and mountains cause different patterns of rainfall on the two sides of the mountains.

In this activity, it is acceptable for students to largely recreate figures from other books or resources. Follow up this activity by having students present their posters. Alternatively, have the class look at several posters and ask students to explain why certain phenomena happen. Example figures from the **Mission Reader** are shown below.



2. **Describe** why the processes that you diagrammed in your poster result in the global distribution of biomes shown in the Figure 1 map.

Complete answers should include the following information: Temperatures and patterns of precipitation vary across the globe because of how sunlight hits the Earth. Ocean currents also move heat around the globe. Temperature and the amount of rain affect the types of plants that can live in an area.

3. **Create** a poster or presentation that describes the types of plants in five different biomes. Also include a list of at least five animals that live in these biomes.

To add a technology component to this assignment, have students create a digital presentation for the answer. For each biome, they can create a slide that describes the plants and a second slide that has pictures of at least five animals that live there.

Example answers are given below.

Tropical Forest: Dominant plants are fast-growing evergreens with traits adapted to a lot of rain.
Animal inhabitants: red-eyed tree frogs, spider monkeys, jaguar, tapir, blue morpho butterfly

Taiga: Dominant plants are evergreen conifer trees able to withstand a lot of snow.
Animal inhabitants: porcupine, brown bear, salmon, snowshoe hare, lynx

Desert: Dominant plants are succulents adapted to storing water.
Animal inhabitants: rattlesnakes, hawks, scorpions, javelina, coyote

Temperate Grassland: Dominant plants are expanses of grasses, sedges, and wildflowers.
Animal inhabitants: bison, prairie dogs, black-footed ferrets, golden eagles, pronghorn

Tundra: Dominant plants are very small or short shrubs, sedges, grasses, and mosses. There are no trees.
Animal inhabitants: arctic fox, polar bear, muskox, snowy owls, lemmings

Extended Mission Research: Have students create diagrammatic models of the Earth and sun that explain why there are seasons. Have students locate their school on the globe and describe the times of year that it is winter, spring, summer and autumn. Have them do the same for India. They can use their **Mission Reader** to assist with this activity.