SCIENCE·3D

GILA MONSTER

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

This **Explore Your Backyard** activity will take students on an exploration of biomes. They will use online resources to access local climate and weather data and compare it to data from other locations. They will use these data to predict the biome presented. There are several good resources for students to investigate biomes around the world:
http://www.blueplanetbiomes.org/world_biomes.htm
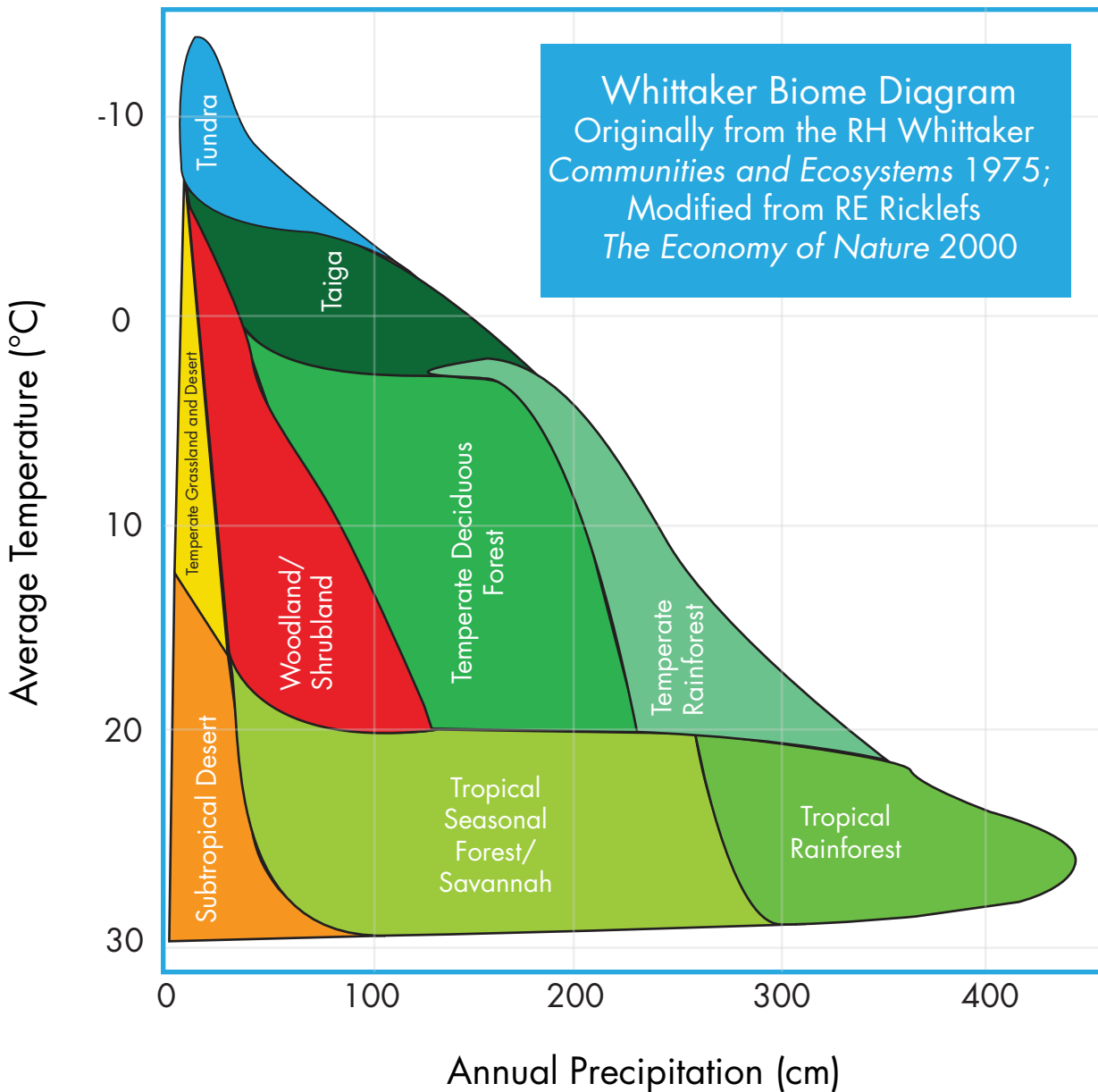https://earthobservatory.nasa.gov/experiments/biome

The NASA website has various games which students can practice and test their knowledge about climates.

Do you ever wonder why particular species live in your area? Have you thought about why there is a desert in Arizona instead of a tropical rainforest? The kinds of plants in an area determine the type of biome. And, yearly precipitation, average temperatures, and other plant life determine the kinds of plants that live in an area. For example, a saguaro cactus might be able to live in the temperatures and precipitation that are found in grasslands. But, if there is enough water to support grasses, the grasses will soak up the water quicker than the cactus, and the cactus will die. This is the reason saguaro cactus are only found in deserts.

The diagram below shows the combinations of average temperature and average precipitation for each biome type. This is called a **Whittaker's Biome Diagram**. Use this information to complete the questions on the following page.

Whittaker Biome Diagram
Originally from the RH Whittaker
Communities and Ecosystems 1975;
Modified from RE Ricklefs
The Economy of Nature 2000

1. In the table below, label the biome that occurs at the combination of each average temperature and precipitation.

Average temperature (°C)	Average precipitation (cm)	Biome
25	320	Tropical Rainforest
25	30	Subtropical Desert
10	150	Temperate Deciduous Forest
-10	20	Tundra
15	100	Woodland/Shrubland

2. Using online or other resources, fill out the table below for the location where you live. A good place to start is https://www.usclimatedata.com/
Remember to select the °C button to get metric numbers!

Average temperature (°C)	Average precipitation (cm)	Biome
Data should match local conditions.	Data should match local conditions.	Data should match local conditions.

3. Create a drawing in the space below that shows the organisms that are found in your local biome. Be sure to include both plants and animals.
Drawing should match local conditions.

Climate graphs can provide even more information on biomes and the challenges organisms face at different times of the year. These graphs, called **Walter's Climate Graphs**, show the average monthly temperature and the average monthly precipitation on the same graph. These graphs show that when the precipitation line is above the temperature line, there is plenty of water. But, when the temperature is below 0°C or the precipitation line is below the temperature line, plants are stressed due to lack of water. Here is an example:
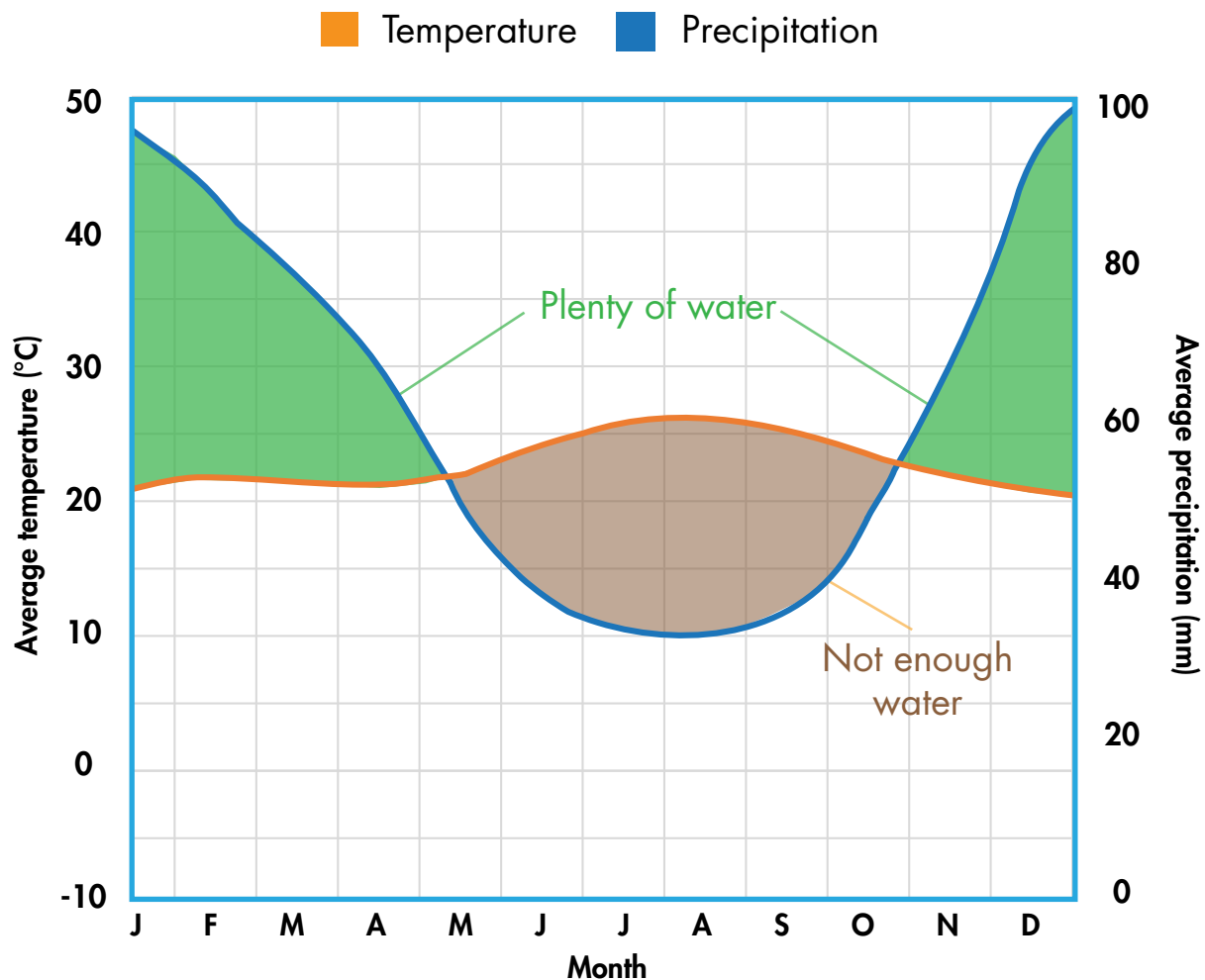

Figure 1. Walter Climate Graph for a mediterranean climate
Times of the year when plants have enough water are shaded green and times when there is water stress are shaded brown.

4. Use the data in the table below to fill in the graph below it. Be sure to use different colors for precipitation and temperature data. If you don't have different colored pens use a dotted line for precipitation and a solid line for temperature. Include a key for your graph.

| Month	J	F	M	A	M	J	J	A	S	O	N	D
Av. precipitation (mm)	2.4	2.2	1.9	0.8	0.6	0.5	5.7	6.1	3.3	2.3	1.4	2.4
Av. temperature (°C)	11	14	16	20	25	30	31	31	28	23	16	12
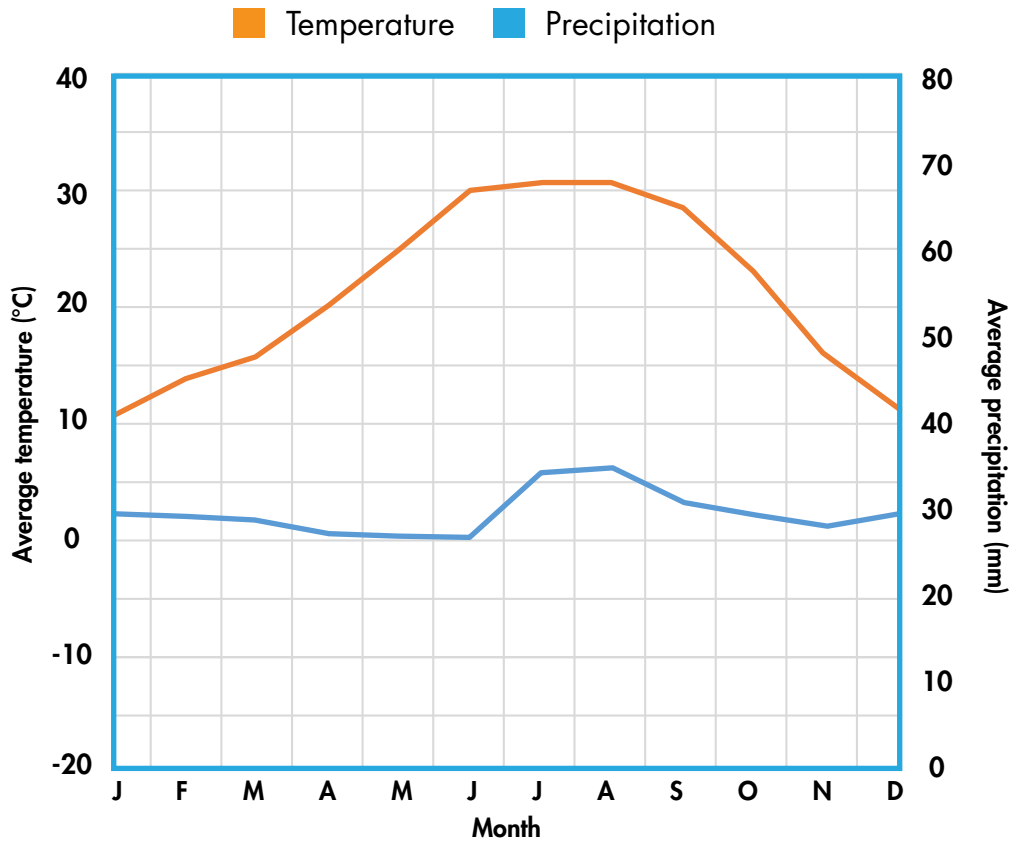
5. What type of biome do you think is represented by the data? Which months is water abundant and in which months is it scarce? What kinds of plants do you think live in this biome?

This is a desert. The plants are stressed for water in every month. I would expect that there would be few plants, but maybe some cactuses or plants that are good at retaining water.

6. Use the data you find at https://www.usclimatedata.com/ to fill in the table below for your area. Be sure to select the °C button to get metric numbers! To find the average temperature, calculate the average of the average high and average low temperatures for a month. Then, use the data in the table to make a Walter's Climate Graph for your area. Be sure to use different colors for precipitation and temperature data. If you don't have different colored pens use a dotted line for precipitation and a solid line for temperature. Include a key for your graph.

Data should match local conditions.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Av. precipitation (mm)												
Av. temperature (°C)												
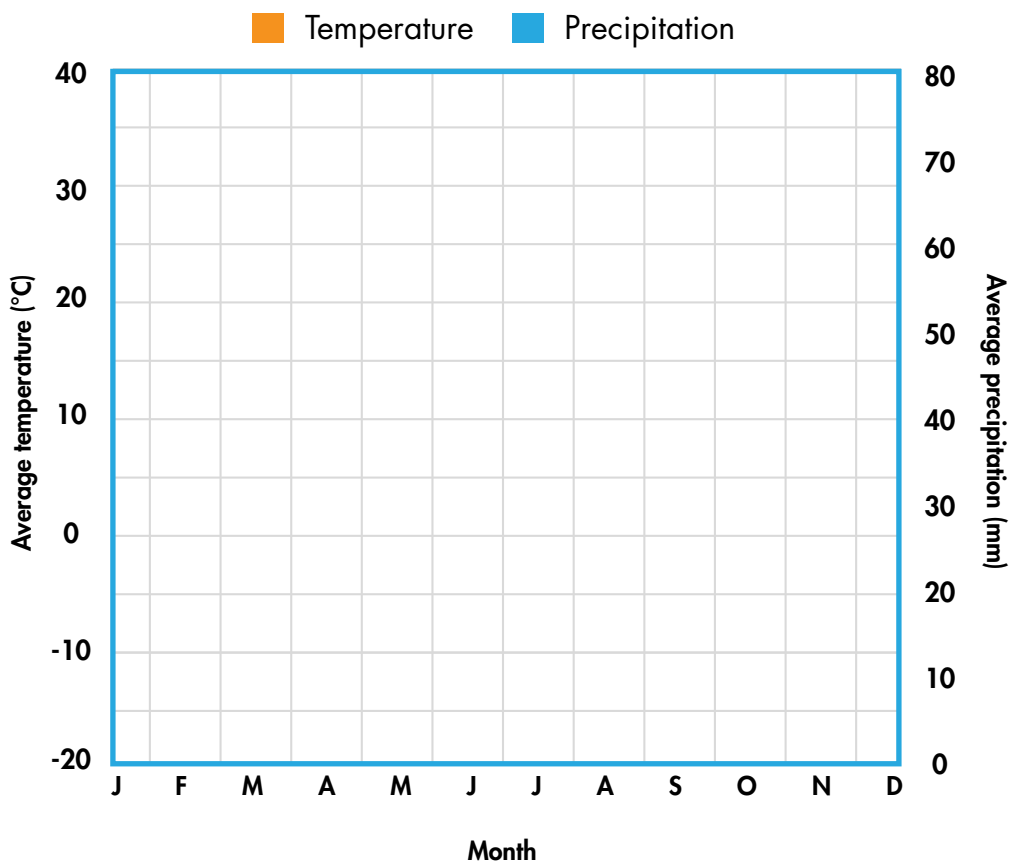
7. What type of biome do you think is represented by the data? In which months is water abundant and in which months is it scarce? What kinds of plants do you think live in this biome?

Data should match local conditions.