

Frozen Land I:

The Tundra Biome

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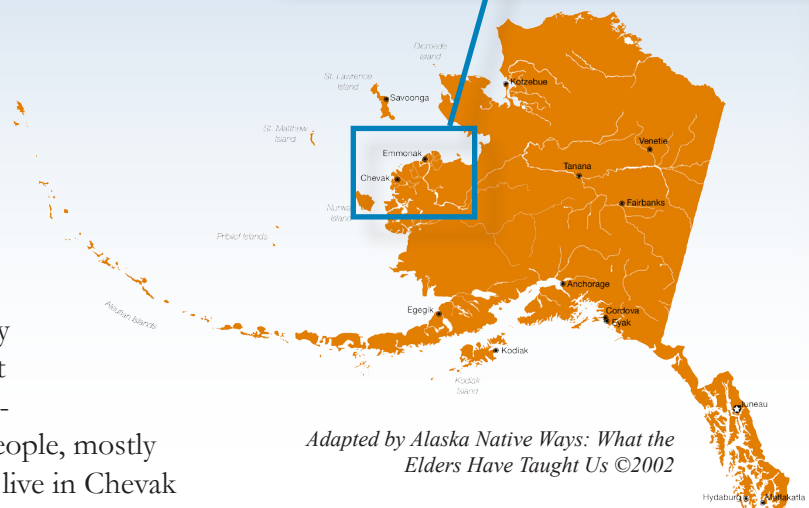
Aim: What are the characteristics of the tundra biome?

Engage



www.Alaskool.org

The village of Chevak and the surrounding lands are in western Alaska. Chevak is located between the Yukon and Kuskokwim (pronounced KUSK-ock-wim) River deltas. It is about 32 kilometers (~20 miles) from the Bering Sea and approximately 210 kilometers (~130 miles) west of Bethel, the hub of the Yukon-Kuskokwim Delta. About 750 people, mostly Cup'ik [pronounced CHUP-pik] live in Chevak [pronounced CHEE-vak].

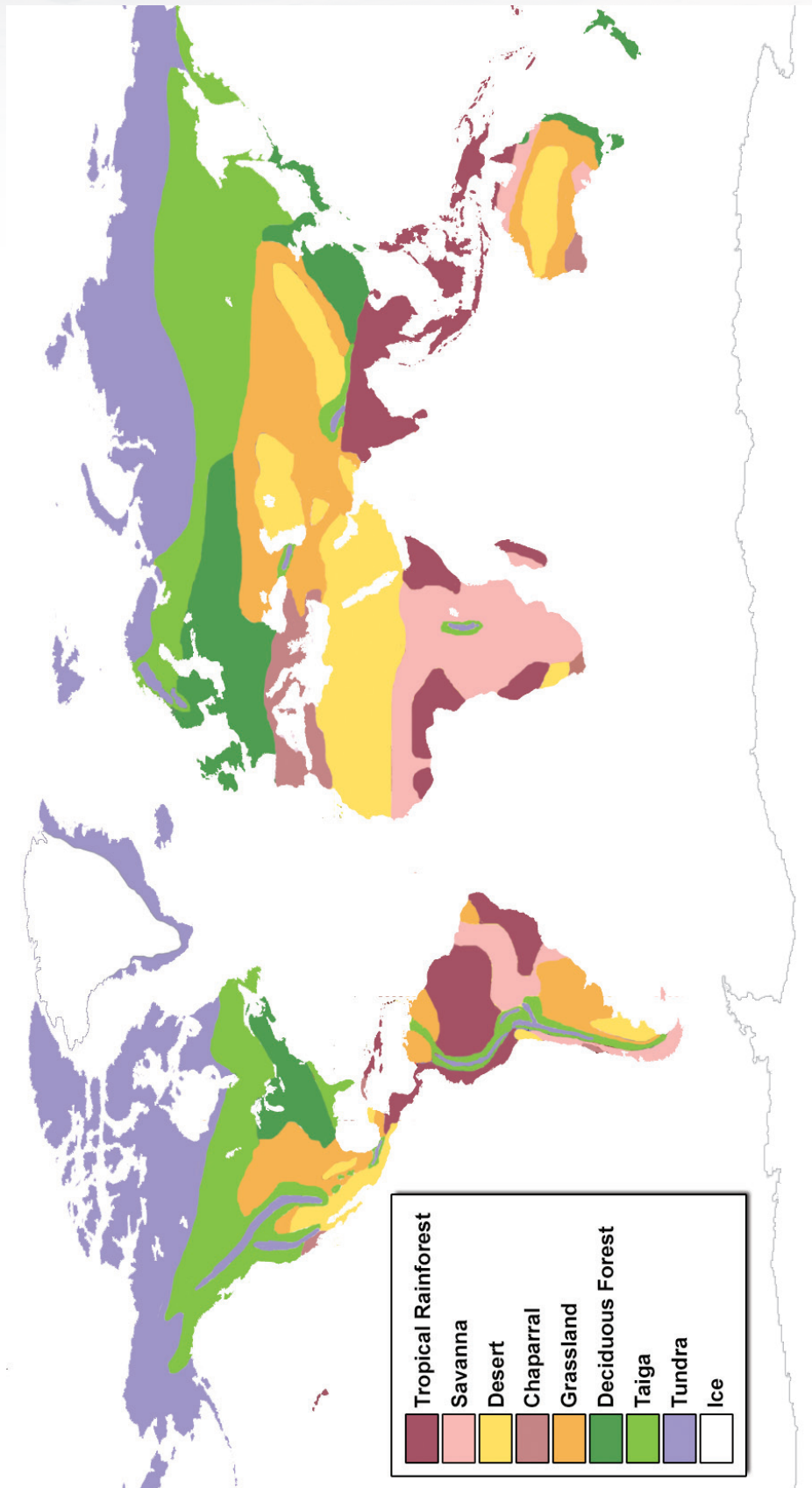


Adapted by Alaska Native Ways: What the Elders Have Taught Us ©2002

The land around Chevak is vast tundra and looks flat to people traveling by boat or nowmachine. From the air, travelers can see thousands of lakes. During winter, the tundra is still, like a sleeping giant, and in spring it comes to life with millions of nesting birds that migrate here from other parts of the country. When the sun comes up in the morning, the land is cast with many emerging colors. At twilight, colors illuminate the rolling hills and the clouds high in the atmosphere.

During winter, from October to March, ice and snow cover the country, allowing people to travel by snowmachine. All the lakes, rivers, and parts of the Bering Sea freeze during this time. Between March and May spring arrives. With the snow and ice melting, the tundra comes to life once again. There are rapid water run-offs from the low tundra lands. When the weather becomes extremely warm, the snow melts rapidly and forms deep pools of water on the tundra. These pools then will run off to the sloughs and rivers. The water flows into the ice cracks on the still-frozen rivers. Travelers must be wary of these dangerous conditions, which create large holes on the ice of the lakes and rivers.





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Examine the map of Earth's land biomes. Some of them may be new to you. Others you will know. This lesson will focus on specific details about some of the land biomes.

1. In the chart below, write what you know about each of the biomes shown on the map.

Biomes	What We Know
Tundra	
Taiga	
Deciduous Forest	
Grassland	
Desert	
Tropical Rainforest	
Savanna	
Chapparal	

Explore



- Go to <http://www.us-satellite.net/sprint/>
- Go to Resources and login
- Select **Phase I**
- Select **Frozen Land**
- Select **Lesson I: The Tundra Biome**
- Select **Biome Videos/Photographs**

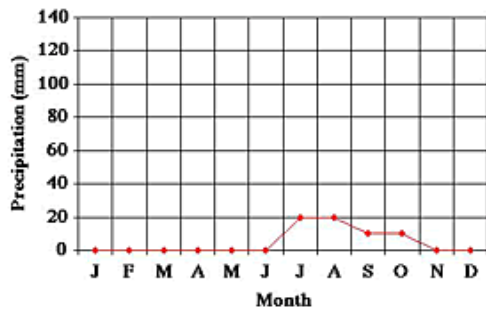
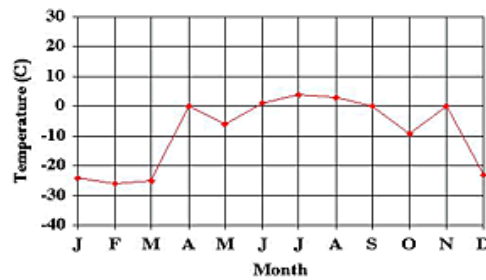


Tundra



Some 400 wildflower species live in the tundra. In summer they provide unexpected explosions of color, like this fireweed grove near a roadside in Denali, Alaska.

Credit: National Geographic, Photograph by Rich Reid



Barrow, Alaska, United States
Credit: NASA Earth Observatory



As Arctic ice begins to melt, polar bears leave the tundra and venture onto the frozen ocean in search of seals to prey on. Their sharp claws and the fur on the bottoms of their feet give them traction on the slippery surface.

Credit: National Geographic, Photograph by Ralph Lee Hopkins



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2. As you watch the videos and view the photographs, record the tundra biome characteristics that you observe in the chart below.

The Tundra—a Comparison between the Arctic and Antarctic

Area	Physical Characteristics (land, water, air, temperature, ice, etc.)	Plants	Animals
Arctic			
Antarctic			

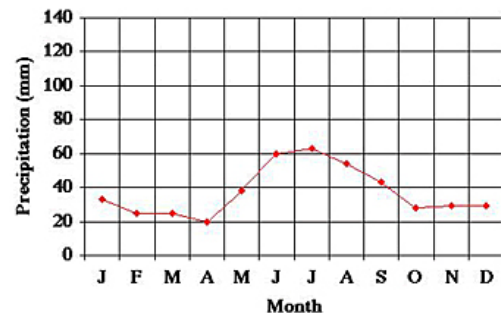
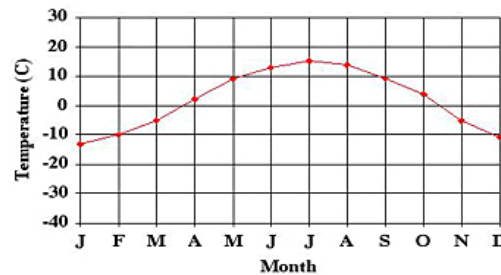
Explain

Earth's Land Biomes

A large region that shares similar climate and living things is called a Biome. Although there are water biomes, this lesson focuses on Earth's land biomes.

You thoroughly explored the tundra, which is characterized by extremely cold winter temperatures, little precipitation, and living things that can withstand these cold, dry conditions. Plants are generally short shrubs with large, wide root systems since the ground deep beneath is frozen. Animals have fur or feathers to retain body heat.

Taiga is the biome characterized by coniferous (evergreen) trees. Although the biome experiences differences in seasons, these trees hold on to their needles all year long. They must save moisture during the colder, drier winter months. There are many seed eaters including birds and small mammals in the biome.



Beaverlodge, Alberta, Canada
Credit: NASA Earth Observatory

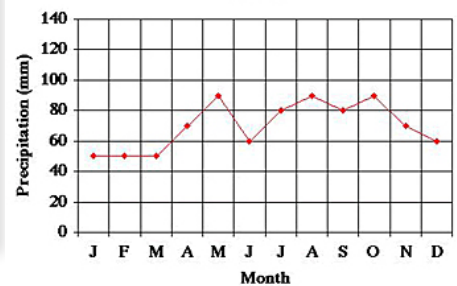
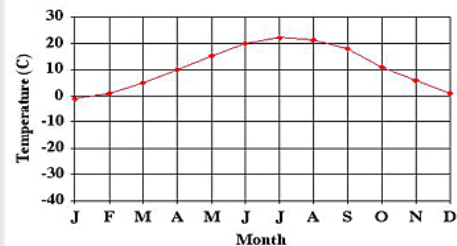


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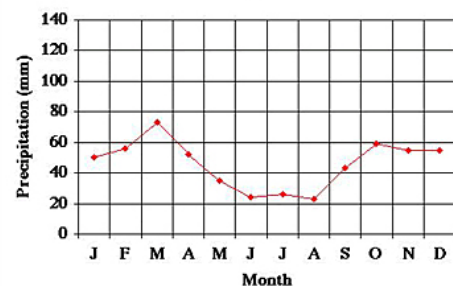
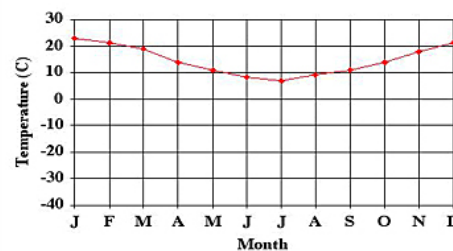
Deciduous Forests are made up of trees that lose their leaves during autumn. The biome has fertile soil that helps plant growth. It experiences seasonal changes. The deciduous forest includes many birds, and insects, as well as small and large mammals. Many animals hibernate to survive the winter.



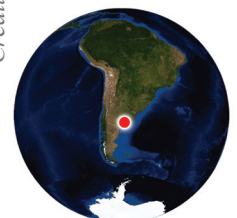
Staunton, Virginia, United States
Credit: NASA Earth Observatory



Grasslands are dominated by grasses of different heights. This biome has few trees. Grasslands experience seasonal changes, including wet and dry seasons, and are home to many birds and burrowing mammals.

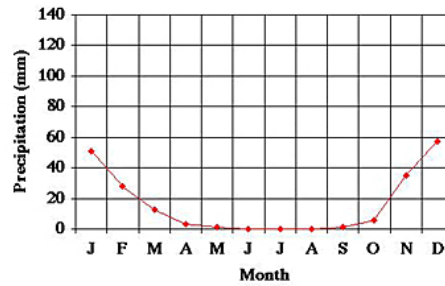


Ingeniero White, Argentina
Credit: NASA Earth Observatory





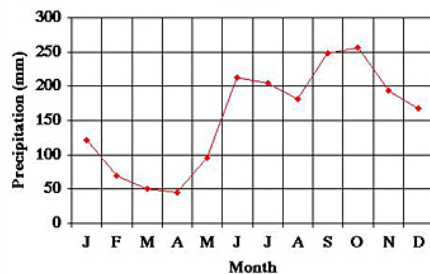
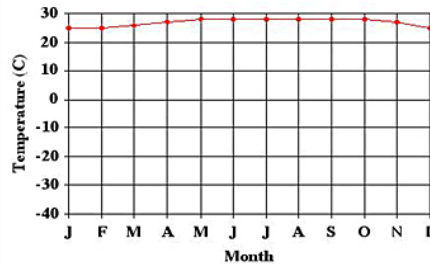
Deserts have extremely dry conditions with hot daytime temperatures and cool nights. Cacti and other plants retain water; animals such as lizards, snakes and small rodents are generally active at night or at dawn or dusk.



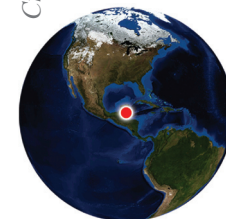
El-Oasar el-Akhdar, Egypt
Credit: NASA Earth Observatory



Tropical Rainforests are hot, humid, rainy areas with very thick trees and the greatest diversity of species of any land biome. There are essentially no seasonal changes.



Campa Pita, Belize
Credit: NASA Earth Observatory

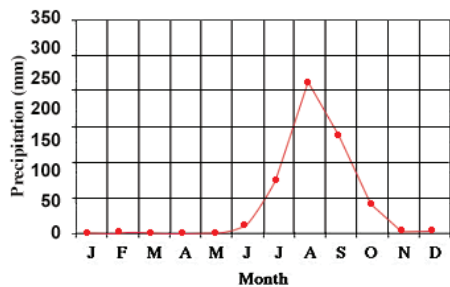
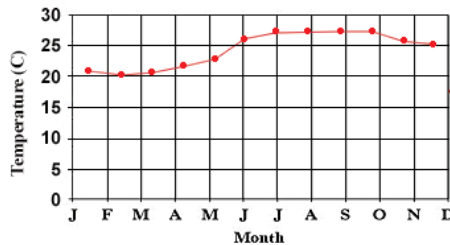


Frozen Land I:

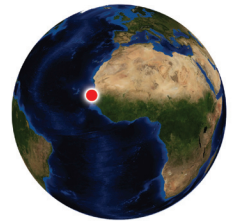
The Tundra Biome



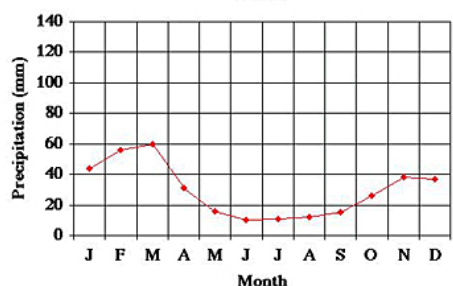
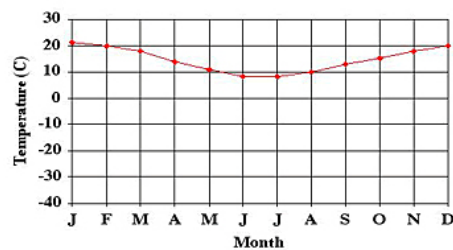
Savannas have tall grasses and scattered trees like the Acacia that are tolerant to the limited seasonal rainfall and high heat. Lions, giraffes, zebras, elephants and wild dogs are some of the diverse organisms that roam the savanna.



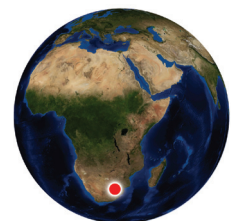
Dakar, Senegal
 Credit: Office of the
 Director of Central Intelligence



The Chaparral biome is generally a very hot and dry area. Small plants have strong, hard leaves that store moisture, like cacti and yucca plants. Animals like the coyotes, lizards, and jack rabbits can survive long periods of drought and heat.



Shrubland Middelburg, South Africa
 Credit: NASA Earth Observatory



Credit: Fish and Wildlife Service



3. Which biome is the least like the tundra? Why?

4. Compare and contrast the tundra and the taiga.

5. In which biome do you live? How does this biome compare with the tundra?

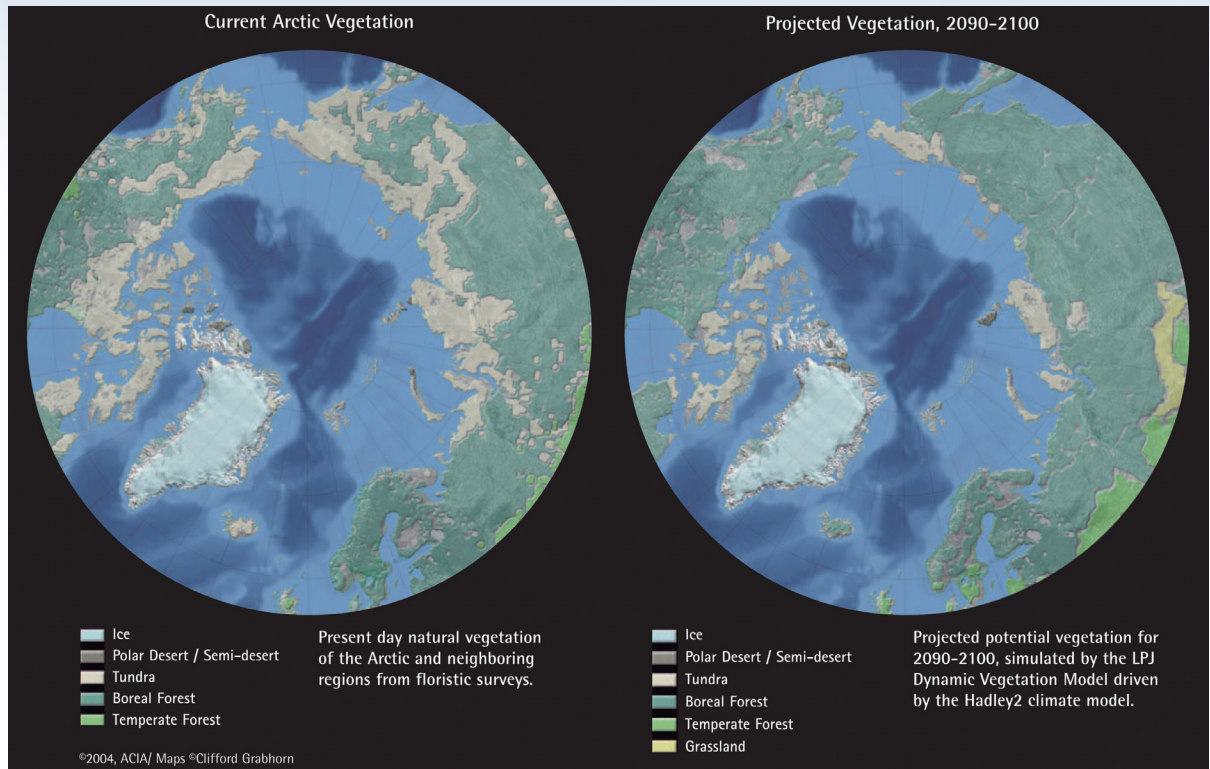
Elaborate

Many scientists believe that as Earth's climate changes, there will be changes to Earth's biomes. In fact, changes are already taking place in the tundra.

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The images below show the current Arctic vegetation and the projected Arctic vegetation.



Credit: ACIA/ Maps ©Clifford Grabhorn

Observe the changes between current and projected vegetation shown in the images. Answer the following questions based on the images and your understanding of Earth's land biomes.

6. What are the predicted changes to the tundra and taiga biomes?

7. If these changes are to occur, how will living things in the tundra be affected?



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- Select **Video - Excerpt from 'Through Arctic Eyes'**



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Evaluate

1. What are the climatic conditions in the Arctic tundra biome?

2. Where is the tundra biome located in the world?

3. What are some examples of the plants and animals located in the tundra?
