

Name: _____

Period: _____

Station 1: Mean Temperatures of Biomes

Tropical rainforest

Average temperature: 30 °C (80°F)

Annual Precipitation: 262 cm. (103 in.)

Latitude Range: 10° S to 25° N

Global Position: Amazon Basin; Congo Basin of equatorial Africa; East Indies, from Sumatra to New Guinea.

Wet-Dry Tropical Climates (Aw) Savanna

Average temperature: 16 °C

Annual Precipitation: 0.25 cm. (0.1 in.). All months less than 0.25 cm. (0.1 in.)

Latitude Range: 15° to 25° N and S

Global Range: India, Indochina, West Africa, southern Africa, South America and the north coast of Australia

Desert biome

Average Temperature: 22.5° C

Annual Precipitation: 0.25 cm (0.1 in). All months less than 0.25 cm (0.1 in).

Latitude Range: 15° - 25° N and S.

Global Range: southwestern United States and northern Mexico; Argentina; north Africa; south Africa; central part of Australia.

Mediterranean Climate (Cs) Chaparral biome

Average temperature: 7 °C (12 °F)

Annual Precipitation: 42 cm (17 in).

Latitude Range: 30° - 50° N and S

Global Position: central and southern California; coastal zones bordering the Mediterranean Sea; coastal Western Australia and South Australia; Chilean coast; Cape Town region of South Africa.

Dry Midlatitude Climates (Bs) Grasslands biome

Average temperature: 31 °C (56°F).

Annual Precipitation: 81 cm. (32 in.).

Latitude Range: 30° - 55° N and S

Global Position: western North America (Great Basin, Columbia Plateau, Great Plains); Eurasian interior.

Temperate Deciduous Forest biome

Average temperature: 24 °C (75 ° F)

Average Annual Precipitation: 81 cm (32 in).

Latitude Range: 30° - 55° N and S (Europe: 45° - 60° N).

Global Position: eastern parts of the United States and southern Canada; northern China; Korea; Japan; central and eastern Europe.

Boreal forest Climate (Dfc) Taiga biome

Temperature Range: 41 °C (74 °F), lows; -25 °C (-14 °F), highs; 16 °C (60 °F).

Average Annual Precipitation: 31 cm (12 in).

Latitude Range: 50° - 70° N and S.

Global Position: central and western Alaska; Canada, from the Yukon Territory to Labrador; Eurasia, from northern Europe across all of Siberia to the Pacific Ocean.

Tundra biome

Average temperature: -22 °C to 6 °C (-10 °F to 41 °F).

Average Annual Precipitation: 20 cm (8 in).

Latitude Range: 60° - 75° N.

Global Position: arctic zone of North America; Hudson Bay region; Greenland coast; northern Siberia bordering the Arctic Ocean.

Name: _____

Period: _____

Station 2: Mean Precipitation Levels

Tropical Moist Climates (Af) rainforest

Average temperature: 30 °C (80°F)

Annual Precipitation: 262 cm. (103 in.)

Latitude Range: 10° S to 25° N

Global Position: Amazon Basin; Congo Basin of equatorial Africa; East Indies, from Sumatra to New Guinea.

Wet-Dry Tropical Climates (Aw) Savanna

Average temperature: 16 °C

Annual Precipitation: 0.25 cm. (0.1 in.). All months less than 0.25 cm. (0.1 in.)

Latitude Range: 15° to 25° N and S

Global Range: India, Indochina, West Africa, southern Africa, South America and the north coast of Australia

Dry Tropical Climate (BW) Desert biome

Average Temperature: 22.5° C

Annual Precipitation: 0.25 cm (0.1 in). All months less than 0.25 cm (0.1 in).

Latitude Range: 15° - 25° N and S.

Global Range: southwestern United States and northern Mexico; Argentina; north Africa; south Africa; central part of Australia.

Mediterranean Climate (Cs) Chaparral biome

Average temperature: 7 °C (12 °F)

Annual Precipitation: 42 cm (17 in).

Latitude Range: 30° - 50° N and S

Global Position: central and southern California; coastal zones bordering the Mediterranean Sea; coastal Western Australia and South Australia; Chilean coast; Cape Town region of South Africa.

Dry Midlatitude Climates (Bs) Grasslands biome

Average temperature: 31 °C (56°F).

Annual Precipitation: 81 cm. (32 in.).

Latitude Range: 30° - 55° N and S

Global Position: western North America (Great Basin, Columbia Plateau, Great Plains); Eurasian interior.

Moist Continental Climate (Cf) Deciduous Forest biome

Average temperature: 24 °C (75 °F)

Average Annual Precipitation: 81 cm (32 in).

Latitude Range: 30° - 55° N and S (Europe: 45° - 60° N).

Global Position: eastern parts of the United States and southern Canada; northern China; Korea; Japan; central and eastern Europe.

Boreal forest Climate (Dfc) Taiga biome

Temperature Range: 41 °C (74 °F), lows; -25 °C (-14 °F), highs; 16 °C (60 °F).

Average Annual Precipitation: 31 cm (12 in).

Latitude Range: 50° - 70° N and S.

Global Position: central and western Alaska; Canada, from the Yukon Territory to Labrador; Eurasia, from northern Europe across all of Siberia to the Pacific Ocean.

Tundra Climate (E) Tundra biome

Average temperature: -22 °C to 6 °C (-10 °F to 41 °F).

Average Annual Precipitation: 20 cm (8 in).

Latitude Range: 60° - 75° N.

Global Position: arctic zone of North America; Hudson Bay region; Greenland coast; northern Siberia bordering the Arctic Ocean.

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Station 3: Adaptations to the Biomes

Tundra: Some common adaptations of resident animals in the arctic and alpine tundra:

- short and stocky arms and legs.
- thick, insulating cover of feathers or fur.
- color changing feathers or fur: brown in summer, and white in winter.
- thick fat layer gained quickly during spring in order to have continual energy and warmth during winter months.
- many tundra animals have adapted especially to prevent their bodily fluids from freezing solid.
- resident animals like the ptarmigan and the ground squirrel use solar heating to stay warm and save energy. Both animals stay out in the sun to warm up and during the summer when the weather is warm, seek shade to cool off.

Desert: Animals need to be well adapted to the arid climate of the desert. They need to regulate their body temperature all day and all night. Mammals and birds have it the easiest when it comes to body heat regulation. Their body heat remains stable as long as they are not in the heat for prolonged periods of time. In the cold night weather, they remain warm as long as they eat enough food to produce energy. Reptiles and amphibians body temperatures mirror that of the deserts. They have no internal way to regulate their body temperature.

To prevent over heating, both reptiles and animals make burrows to escape the heat. Burrows can remain at a much cooler temperature during the day and a much warmer temperature during the night. Some animals come out of their burrows in the early morning and afternoon, before the heat gets too overwhelming. Other animals only come out during the night, which is one reason why the daytime in the desert can seem so lifeless.

During the hottest, driest times of the year, some animals estivate. Estivation is like hibernation except these animals are not avoiding the cold, but the sweltering heat. By estivating, animals conserve more moisture.

Tropical Rain Forest: The most abundant creatures in the rainforest are insects. To avoid predators, many of these insects have developed camouflage. One example is the Leafhopper which looks like thorns. Walking sticks, katydids, and moths resemble twigs, leaves, or bark. When the dead leaf camouflage that the butterfly uses does not work, they use a startling mechanism. Sometimes when a predator gets too close, the butterfly opens and flashes its bright color topped wings. Hopefully, this action startles the predator enough that the butterfly has time to escape.

Usually, poisonous animals and insects also display bright colors, to warn predators that they are deadly when eaten. The poison arrow frog has bright red, yellow, or blue colored skin that intimidates most animals. Heliconid butterflies have brightly colored wings and a bitter taste to remind birds not to eat them.

Predators also use camouflage so they can sneak up on their prey. The clouded leopard's coat has black spots so it can hide in the shadows. The fer-de-lance snake is easily hidden in decaying leaves with its mottled, brown skin. The matamata, which resembles a turtle, can snatch up fish with its leaf-like shape and appearance.

Temperate Deciduous Forest: Animals that live during the day have to be trickier to hide themselves. Some animals live in burrows, trees, or the forest floor. Living in burrows is a safe refuge for small animals that need to hide from bigger animals. Many animals also have camouflaged fur, plumage, or skin. Spring peepers, which usually reside near muddy banks or up in trees, have brown and black striped skin. This allows them to blend into their environment. Some animals build their homes in the trees so that predators cannot reach or see them. This strategy is usually used by birds who live and raise their young in nests.

Other animals stay active during the winter. Many animals coats change color from brown to white in the fall. An example of this is the coat transition of a snowshoe hare. In the fall its mousy brown fur begins to grow patches of white so that it can blend with the spots of snow that might be on the ground. As winter nears, the snowshoe hares coat gets thicker and whiter. Fur also grows on its feet to keep it mobile and warm on the snow.

Other animals, like beavers and squirrels, make burrows scattered throughout the forest. During the summer and fall seasons they collect berries, fruit, twigs, nuts, and bark to fill their burrows. Later in the winter, when their food supply is dwindling, they will go back to these burrows and find plenty of food stored for the winter.

Although many animals seek refuge from the cold winter and are not very active, the temperate forest is still busy with activity. Deer are often seen searching for food under the snow. They dig with their sharp hooves and feed on shoots of green plants under the snow. During the winter the great horned owl builds a nest and lays its eggs in late January. The snowy winter does not seem to affect the great horned owl.