



# TaHome Nature Education: Spring Snow

## Grades K-2

### Reading: How Snow Affects Spring

Ice, snow, and water are extremely powerful forces of nature. Without the annual snowfall of winters at Tahoe and the subsequent snowmelt of spring, the environment in the Sierra Nevada mountains would be very different. In fact, snowfall and spring snowmelt affect landscapes around the whole world.

Snow is important for helping to cool the Earth, particularly in the spring. Snow is very **reflective** like a mirror, meaning that much of the light that hits snow (80-90%!) shines back into space. This helps keep the planet cool. That reflective power of snow is also why you need lots of sunscreen on a sunny day playing in the snow. While other things in nature, such as trees and soil, can also reflect sunlight and help cool Earth, snow reflects much more than any of these.

At the same time that snow reflects sunlight and heat, it also acts like a warm winter coat to insulate the Earth. You may notice that on a cold, snowless night the windows of your car freeze over with ice. That ice requires lots of scraping to clear the window so you can safely drive. However, if it snows all night, you can sometimes brush the snow off easily without much ice to scrape at all! This is because snow is **insulating**. Like your winter coat, heat is trapped beneath the snow. If you have ever become sweaty in your winter coat, you know that insulation can also trap moisture. The soil underneath snow can store water to help plants grow.

Annual snowfall in Tahoe mountains provides water throughout the year to people, plants, and animals in California and Nevada. You may have noticed that rivers and creeks run faster and fuller in the spring time than in the summer, fall, or winter. Time of day can also change the flow of water, with faster, higher water running in the warmth of the afternoon. That rush of spring water is a result of the melting winter **snowpack**. This water will fill rivers and reservoirs to bring water to all kinds of life forms downstream. Spring snowmelt is also very important to a healthy summer and fall in Tahoe. The melted snow provides water to grow food and other crops, water for humans to drink and use in our homes, and moisture that helps protect us during fire season.

Often, melting snow causes **erosion** by moving dirt and rocks, even if only a barely noticeable bit each spring. Erosion from snowmelt shapes land in Tahoe and around the world. Ancient glaciers around Lake Tahoe and in Truckee created large U-shaped valleys, such as those at Emerald Bay and Donner Lake, as massive fields of ice pushed and shaped the land over thousands of years. Even though these glaciers disappeared long ago, they left behind eroded valleys and built up the mountains and hills around them with that eroded dirt and rock. Rivers also consistently erode away land to create V-shaped valleys that snake through the mountains, such as along the Truckee River between Tahoe City and Truckee.

Rushing creeks, eroding riverbanks, and melting snow are all signs that spring is upon us! But these are only the beginning. What other sign of spring do you expect to see soon?



## Activities for Grades K-2

### Glacier Model

Model how glaciers and rivers move and shape land in the following experiment. You will need these materials:

- Paper cup or similar container
- Dirt, sand, or gravel,
- Water
- Freezer
- Cooking spray
- Flour
- A baking sheet

Follow these instructions:

1. Fill your paper cup or container with a mixture of dirt, sand, or gravel. Cover these materials in water in the cup and put your cup in the freezer overnight or until it is frozen solid. This will represent your “glacier”. You can make one or multiple glaciers.
2. After your glacier is frozen solid, take it from the freezer. Remove the glacier from the cup or container.
3. On a baking sheet sprayed with cooking spray, cover the sheet with a layer of flour. This flour represents your landscape, so pile up some mountains of flour as well to represent the mountains of Tahoe.
4. Line up your glaciers at one end of the baking sheet. Push them almost all the way to the opposite end of the sheet. Lift the glaciers to represent how they have retreated and melted in Tahoe.



Now, make some observations about what happened in your model.

1. What happened to the land (flour) where your glacier passed through?
2. What happened to the land on the sides of the glaciers?
3. What happened to the land at the end of the glaciers path?



Martis Creek 3/3/2021



Martis Creek 3/10/2021

### Photo Time Lapse

Subtle differences in slope, aspect (what direction a slope faces), and protection from sun and wind can have large impacts on both where snow builds up and how long snow can linger. Use photos to watch the snow change through the spring. Find a snowy spot near your home, or a view of snowcapped mountains. Start taking weekly photos of this decided area from the same spot each week. Try doing this for at least four weeks, or try all season long and into the summer!

After you have at least four weeks of photos, view each photo next to each other in order of when you took them. Answer these questions about what you see with a friend or family member:

1. What do you notice about the snow in the first photo? Is there a lot? Are there any spots where there is noticeably more or less snow?
2. Look at each photo in order. Which week had the most snow? Which week had the least snow?
3. Compare your first photo with the last photo you took. What differences in the snow do you see?

### Running Water Observations

1. Walk along a creek, river, or visit a waterfall near your home two different times, once in the morning and once in the late afternoon. These walks could be on the same spring day, or two different days close together.
2. Each time you walk, take a journal or piece of paper and make these observations:
  - a. What is the weather like?
  - b. On a scale of 1-10, how fast is the speed of the water?
  - c. On a scale of 1-10, how high is the water level?
  - d. On a scale of 1-10, how loud is the water?



After you have made both observation creek walks, discuss these questions with a buddy:

1. Describe the water from your morning observation.
2. Describe the water from your afternoon observation.
3. Why do you think the water changes at different times of day?
4. Do you think the water would change as much throughout the day during a different season?



## First Signs of Spring Scavenger Hunt

Changes to snow is only one of the signs of spring in Tahoe. Search for these other signs of spring, and try to add two other signs of spring that you find:

- Wildflowers growing among Aspens or Willows
- A melting pond
- Sounds of frogs
- The mating song of the Chickadee, "Cheeseburger!"
- Woodpeckers drumming on trees and snags
- Buttercups blooming
- Birds migrating overhead
- Bright buds on the tip of tree branches
- A rushing creek
- Another sign of spring: \_\_\_\_\_
- Another sign of spring: \_\_\_\_\_



After your scavenger hunt, draw or paint one or more of the signs of spring that you observed. Send your art to a family member in another town or state to tell them about the first signs of spring in Tahoe. Invite them to create their own signs of spring scavenger hunt for their home.

TINS also wants to see your art! Have your parent post a photo of your art project to Facebook and tag Tahoe Institute for Natural Science. You could also email the photo to us at [kendal@tinsweb.org](mailto:kendal@tinsweb.org).



## Words to Know

Reflective: reflecting light or radiation back

Insulating: preventing the loss of heat by covering it in some material

Snowpack: the mass of accumulated snow

Erosion: the movement of broken-down dirt and rock

## Palabras para conocer

Reflectante

Aislante

Manto de nieve

Erosión

## Further Learning

Learn more about glaciers in [this video](#).

Watch another version of a snow melt time lapse in [this video](#).

[Check](#) the flow of the Truckee River over the past few days.

