

## Photo Description



This image shows snow falling on a brick building surrounded by ivy-covered walls and trees. You can see white snowflakes falling from the sky and covering the roof, courtyard, and ground. Snow is frozen water that falls from clouds when it is very cold outside.

## Scientific Phenomena

Anchoring Phenomenon: Snowfall (precipitation in frozen form)

**Why It Happens:** Water on Earth's surface evaporates and rises into the atmosphere as water vapor. When this vapor reaches cold air high in the sky, it condenses into tiny water droplets that form clouds. If the temperature inside the cloud stays below 32°F (0°C), these droplets freeze into ice crystals. Many ice crystals stick together to form snowflakes, which become heavy enough to fall to the ground as snow. This is part of the water cycle—water continuously moves between Earth's surface and the atmosphere.

## Core Science Concepts

- \* **Water Cycle:** Water moves from Earth's surface (oceans, lakes, rivers) into the air as invisible water vapor, forms clouds, and returns to Earth as precipitation (rain or snow).
- \* **Temperature and States of Matter:** Water can be a liquid (rain), solid (snow, ice), or gas (water vapor). Temperature determines which state water is in. When it's cold enough (below freezing), water becomes ice and snow.
- \* **Precipitation:** This is any form of water that falls from clouds to Earth's surface, including rain, snow, sleet, and hail. Snow is precipitation that forms when it is cold in the clouds and cold at ground level.
- \* **Weather Patterns:** Snow is a seasonal weather event that occurs in winter when temperatures drop. Different places experience snow at different times or not at all, depending on their climate.

### Pedagogical Tip:

Use the "predict-observe-explain" strategy with this image. Before showing it, ask students to predict what happens to water in winter. Show the photo and have them observe the snow. Then explain the water cycle together. This builds scientific thinking skills and helps students connect prior knowledge to new phenomena.

### UDL Suggestions:

Provide multiple means of representation: Show the image alongside a simple illustrated water cycle diagram. Use physical models (like cotton balls for snow, a spray bottle for rain) so kinesthetic learners can engage. For students who need language support, pre-teach vocabulary with picture cards. Allow students to express understanding through drawing, speaking, or writing.

### Discussion Questions

1. Why do you think snow is falling here and not rain? (Bloom's: Explain | DOK: 2)
2. What do you think happens to the snow after it lands on the ground? (Bloom's: Predict | DOK: 2)
3. How is snow different from rain? How are they the same? (Bloom's: Compare/Contrast | DOK: 2)
4. If the temperature got warmer, what would happen to the snow on this building? (Bloom's: Analyze | DOK: 3)

### Extension Activities

1. Snow Observation Chart: Take students outside (if snow is present) or use this photo to observe and record snow for one week. Have them draw and write about what they notice: Is there more or less snow? Did the snow change color? Did puddles form? This builds observational skills and connects to weather patterns.
2. Make a Water Cycle in a Bag: Seal a small amount of water in a clear plastic bag with a marker drawing of the sun, clouds, and mountains. Tape it to a sunny window. Students observe how water "evaporates" (rises to the top of the bag as condensation) and "precipitates" (drips down). This hands-on model makes the water cycle visible and concrete.
3. Comparing Frozen and Liquid Water: Provide ice cubes and cups of water at room temperature. Ask students to predict what will happen if they leave both in the sun for 15 minutes. Observe, measure, and record the results. Discuss why ice melts (temperature causes change of state) and connect to snow melting in spring.

### NGSS Connections

Performance Expectation: 2-ESS1-1: Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

Disciplinary Core Ideas:

- 2-ESS1.A: Earth's materials (water) are constantly changing through fast and slow processes.
- 2-ESS2.A: Water is found in many places on Earth and can be solid or liquid.

Crosscutting Concepts:

- Patterns: Weather patterns change seasonally; snow occurs in winter in many places.
- Cause and Effect: Cold temperatures cause water to freeze and fall as snow.

### Science Vocabulary

- \* Precipitation: Water that falls from clouds to Earth, such as rain, snow, sleet, or hail.
- \* Snow: Frozen water crystals that form in cold clouds and fall to the ground as white, fluffy flakes.
- \* Temperature: How hot or cold something is; when temperature drops below freezing (32°F), water freezes.
- \* Water Cycle: The continuous movement of water from Earth's surface into the air and back down again.
- \* Evaporation: When liquid water (like from oceans or puddles) turns into an invisible gas called water vapor and rises into the air.
- \* Cloud: Tiny water droplets or ice crystals floating high in the sky that form when water vapor cools.

## External Resources

### Children's Books:

- Come On, Rain! by Karen Hesse (explores water and weather)
- The Snowy Day by Ezra Jack Keats (classic winter/snow picture book)
- Water by Manya Stojic (simple water cycle story with illustrations)

### YouTube Videos:

- "The Water Cycle for Kids" by National Geographic Kids—A 3-minute animated explanation of evaporation, condensation, and precipitation. <https://www.youtube.com/watch?v=nPg0pju4o>
- "Snow Formation Explained for Elementary Students" by PBS Learning Media—A short video showing how cold temperatures in clouds turn water vapor into snow. <https://www.pbslearningmedia.org>