

Photo Description



This image shows a bright yellow flower covered with fresh snow and frost. The flower's green leaves and buds are also frosted white. In the background, you can see a wooden fence and more snowy plants. The contrast between the warm yellow flower and the cold white snow makes this a beautiful example of winter weather.

Scientific Phenomena

Anchoring Phenomenon: A flower blooming during a surprise winter snowfall

Why This Happens (Scientific Explanation for Teachers):

This image captures an important seasonal transition moment. The flower is a daffodil (spring bulb) that has emerged early due to mild temperatures. Simultaneously, a cold front moved in, bringing snow and frost. Water vapor in the air froze directly onto the plant surfaces through a process called deposition (water vapor ! ice without becoming liquid first). The flower continues to bloom because the plant tissue contains natural sugars and antifreeze-like compounds that protect it from freezing damage. This phenomenon illustrates the intersection of seasonal weather patterns, plant life cycles, and water state changes—all observable in a single moment.

Core Science Concepts

- 1. Water Changes Forms:** Water exists as snow (solid), water (liquid), and water vapor (gas). When it's cold enough, water vapor in the air freezes directly into ice crystals on the plant—this is called frost.
- 2. Seasons and Temperature:** Winter is cold, but spring flowers can start growing before winter ends. When a warm spell happens, flowers begin to bloom, but sudden cold returns can still frost them.
- 3. Plants Are Resilient:** Many plants, like daffodils, are strong enough to survive frost and snow. Their waxy leaves and special plant chemicals help protect them from freezing.
- 4. Observable Weather Changes:** Students can directly observe how snow and frost change the appearance of plants and landscapes. This builds observation skills and connects to daily weather experiences.

Pedagogical Tip:

Use this image to activate prior knowledge by asking students about their own experiences seeing frost on windows or plants in their neighborhood. Connect the visible frost crystals to the water cycle they may have learned about—water goes up into the air and comes back down as snow or frost. This makes the abstract water cycle concrete and visible.

UDL Suggestions:

Provide multiple means of representation: Show the photo on a screen, print it in color for small groups, and bring in real frost-covered plants if possible so students can touch (gently) and observe textures. For students with visual processing differences, describe the image in rich sensory language: "The snow feels cold and crunchy, the flower looks warm and soft, the frost sparkles like tiny diamonds." Allow students to draw or photograph frosted plants from your school playground as an alternative to verbal responses.

Zoom In / Zoom Out

Zoom In: Microscopic Level

If we could look very, very close with a special microscope, we'd see that frost isn't just a smooth coating—it's made of thousands of tiny ice crystals that look like little sparkly diamonds! Each crystal forms when water vapor in the air touches a cold surface (like a leaf) and freezes solid without turning into water first. Inside the flower's cells, there are special chemicals (like sugars) that act like nature's antifreeze, keeping the plant from freezing solid and dying. These invisible protections are why the flower can survive even when covered in snow!

Zoom Out: Seasonal Weather System

This single flower tells the story of a much bigger weather pattern. Winter snowstorms and spring warm spells are part of Earth's climate system. Daffodils are programmed by nature to bloom in early spring when temperatures usually warm up. But when a cold front (a huge mass of cold air) moves in from far away, it can surprise blooming plants with unexpected snow and frost. This scene shows how local weather (what we see outside) connects to bigger patterns—like how ocean temperatures, air currents, and Earth's tilt all work together to create the seasons we experience in our neighborhood.

Discussion Questions

1. "What do you think happened to make the snow stick to the flower?" (Bloom's: Understand | DOK: 1)
2. "Why do you think the yellow flower didn't turn white like the leaves, even though snow covered it?" (Bloom's: Analyze | DOK: 2)
3. "If you touched the frosted leaves, what do you think they would feel like—soft or hard? Why?" (Bloom's: Analyze | DOK: 2)
4. "What might happen to this flower when the sun comes up and it gets warmer?" (Bloom's: Predict | DOK: 2)

Potential Student Misconceptions

Misconception 1: "Frost is the same as snow—they're both just frozen water."

- Clarification: While both frost and snow are frozen water, they form differently. Snow falls from clouds high in the sky as ice crystals. Frost grows on surfaces (like leaves and windows) when cold water vapor in the air freezes directly onto them. Snow falls down; frost grows on things. You can see frost crystals sparkling on the leaves in this photo!

Misconception 2: "The flower will definitely die because it's covered in snow and ice."

- Clarification: Many plants, like daffodils, are very tough and can survive frost and snow! The flower has waxy leaves and special plant chemicals inside that protect it from freezing damage. When the sun comes up and warms the plant, the flower will be just fine. It's actually one of the reasons daffodils are spring flowers—they're made to handle surprise cold snaps!

Misconception 3: "The frost gets there because someone or something put it there."

- Clarification: Frost forms naturally when the air is very cold and wet. Tiny water droplets floating invisibly in the air freeze solid when they touch a cold surface. It happens all by itself when the temperature drops below freezing at night. We can't see the water in the air, but it's there—and when it gets cold enough, it turns into the sparkly frost we can see on plants and windows!

Extension Activities

1. Frost Hunt: Take students outside on a cold morning to search for frost on grass, leaves, and windows. Have them draw or photograph what frost looks like. Discuss why frost appears in some places but not others (shaded vs. sunny, wet vs. dry surfaces).
2. Flower & Snow Sensory Tub: Fill a sensory bin with artificial snow or shredded white paper. Place plastic flowers (or picture cards of flowers) in the bin. Have students explore what happens when they "bury" flowers in "snow" and then uncover them. Ask: "Do the flowers get hurt? Can they still be pretty?"
3. Ice Crystal Observation: Place water droplets on a cold windowsill or freezer surface overnight. The next day, examine the ice crystals with magnifying glasses. Compare the patterns to the frost crystals in the photograph. Draw detailed observations in a science journal.

Cross-Curricular Ideas

Math: Create a temperature tracking chart over 2-3 weeks. Have students record the daily temperature (in a simplified version: "cold," "very cold," or "freezing") and whether frost or snow appeared. Make a bar graph showing the connection between temperature and frozen precipitation. Question: "When is it cold enough for frost to form?"

ELA / Language Arts: Read *The Snowy Day* by Ezra Jack Keats together, then have students write or dictate their own winter weather story starring the daffodil from the photo. "What adventure does the yellow flower have in the snow?" Create a class book with student illustrations and sentences. This builds narrative skills while reinforcing the science concept.

Art: Create a mixed-media frost art project. Using white glue on blue or dark-colored paper, students draw frost patterns like those in the photo. Then sprinkle white glitter, salt, or fake snow on the wet glue. When dry, display alongside printed photos of real frost. Compare textures and patterns. This makes the science concept tactile and memorable.

Social Studies / Community: Take a "frost walk" around the school grounds on a cold morning. Have students photograph or sketch where they find frost (grass, windows, car windshields, plants). Back in the classroom, create a map showing "frost locations." Discuss: "Where in our community did we find the most frost? Why might it be colder in some spots than others?" This builds local environmental awareness and observation skills.

STEM Career Connection

1. Meteorologist (Weather Scientist)

A meteorologist studies weather and forecasts what the weather will be like. They use special instruments to measure temperature, snow, and frost. They might warn people: "A cold snap is coming tomorrow—frost may hurt your garden flowers!" Meteorologists help keep people safe and help farmers know when to protect their plants.

Average Annual Salary: \$97,000 USD

2. Botanist (Plant Scientist)

A botanist studies plants and how they survive in different weather. They research questions like: "How do daffodils survive frost? What chemicals inside the plant keep it from freezing?" Botanists might work in greenhouses or gardens, helping people grow healthy plants even in cold climates.

Average Annual Salary: \$64,000 USD

3. Climate Scientist

Climate scientists study big weather patterns over months and years. They help us understand why winters are changing and when snow and frost might come. They use computers to track weather around the whole world and help communities prepare for extreme cold or unusual snowstorms.

Average Annual Salary: \$104,000 USD

NGSS Connections

Disciplinary Core Idea:

- K-ESS2.B Weather and Climate — Students observe that weather changes from day to day and that water falls to the earth in different forms (rain, snow).

Crosscutting Concept:

- Patterns — Weather patterns (snow and frost) repeat seasonally and can be predicted and observed.
- Systems and System Models — The flower, snow, air, and temperature work together as an interconnected system.

Performance Expectation:

K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.

Note: This lesson bridges K and 1st Grade standards, making it excellent for developmental review and extension.

Science Vocabulary

- * Frost: Tiny ice crystals that form on surfaces when the air is very cold and wet.
- * Snow: Frozen water that falls from clouds in cold weather.
- * Flower: The colorful part of a plant that grows and makes seeds.
- * Weather: What the air outside is like—hot, cold, rainy, snowy, or windy.
- * Season: A time of year with its own weather patterns (spring, summer, fall, winter).

External Resources

Children's Books:

- The Snowy Day by Ezra Jack Keats — A classic story showing winter exploration and water in different forms.
- Come On, Rain! by Karen Hesse — Explores weather changes and the water cycle through poetic text.
- Stranger in the Woods by Carl R. Sams II and Jean Stoick — Shows how animals and plants survive winter weather.

Teacher Reflection Tip: This photograph is an ideal "teachable moment" image because it combines multiple science concepts (seasons, water states, plant resilience, weather) in one visually striking scene. First graders are naturally drawn to beautiful images and direct observations. Use this image as an anchor for 2–3 weeks of winter weather exploration, circling back to it as students observe real frost and snow in their own environment.