

## Photo Description



This image shows a peaceful lake surrounded by trees displaying autumn colors—brilliant oranges, reds, and browns mixed with remaining greens. A fallen tree trunk stretches into the water at the shoreline, and the sandy beach is covered with fallen leaves. The calm water reflects the sky and forest, creating a natural landscape that changes with the seasons.

## Scientific Phenomena

Anchoring Phenomenon: Seasonal changes in a landscape and the role of water bodies in shaping Earth's landforms.

This image represents how lakes form in depressions on Earth's surface where water collects from rainfall, streams, and groundwater. Lakes are natural landforms that support diverse ecosystems. The visible seasonal changes (fall foliage, leaf drop, bare branches) demonstrate how Earth's surface and living things respond to predictable seasonal patterns driven by Earth's position and tilt relative to the sun. The fallen tree entering the water shows how erosion and weathering continuously reshape landforms over time.

## Core Science Concepts

1. Landforms and Water Bodies: Lakes are natural depressions in Earth's surface where water collects. They are important landforms that can be formed by glaciers, river erosion, or tectonic activity. Lakes provide habitats for plants and animals and influence local weather patterns.
2. Weathering and Erosion: The fallen tree and exposed shoreline demonstrate how water, wind, and weather break down and move materials on Earth's surface. Over time, these processes reshape landforms and create new features like beaches and banks.
3. Seasonal Cycles: The autumn colors visible in the trees show how Earth's tilt and position around the sun create predictable seasonal changes. These cycles affect plant growth, animal behavior, and water levels in lakes.
4. Ecosystems and Habitats: The lake and its shoreline form a specific ecosystem where organisms interact with each other and their physical environment (water, soil, rocks, and sunlight).

### Pedagogical Tip:

When teaching with this image, invite students to observe and sketch the visible features before providing explanations. Fourth graders are concrete thinkers, so having them identify "what they see" first (trees, water, fallen wood, colors) before explaining "why" (seasons, erosion, landforms) builds stronger conceptual understanding and maintains engagement.

### UDL Suggestions:

To support diverse learners: (1) Provide a labeled diagram of the lake and its features for visual learners; (2) Create a tactile "shoreline model" using sand, water, and sticks so kinesthetic learners can physically explore erosion; (3) Offer a recorded audio description of the scene for students who benefit from auditory input; (4) Use vocabulary word cards with images to support English Language Learners.

## Discussion Questions

1. Why do you think the tree fell into the lake, and what might happen to it over many years? (Bloom's: Analyze | DOK: 2)
2. How do you think this lake might look different in winter, spring, and summer compared to what we see here in fall? (Bloom's: Predict | DOK: 2)
3. What clues in the photo tell us that erosion is happening at this shoreline? (Bloom's: Evaluate | DOK: 3)
4. If we visited this same spot 100 years from now, how might the shoreline and the fallen tree have changed? (Bloom's: Synthesize | DOK: 3)

## Extension Activities

1. Create a Seasonal Lake Journal: Over several weeks (or months, if possible), have students photograph or sketch the same outdoor water location during different seasons. Have them record observations about water level, ice formation (if applicable), leaf colors, animal activity, and shoreline changes. Compare sketches to discuss how the same place changes predictably through the year.
2. Erosion in a Pan Experiment: Fill shallow pans with sand and tilt them slightly. Have students pour water down the slope to simulate rainfall and observe how the sand moves and is deposited, mimicking how real shorelines erode. Discuss where the "eroded" material goes and how it might reshape the lake bottom or shoreline over time.
3. Landform Map and Model: Provide local or regional maps showing the lake(s) in your area. Have students identify the lake, research how it formed (glacier, river, tectonic), and build a 3D model using clay, sand, and water. Display models with labels explaining the landform's origin and features.

## NGSS Connections

Performance Expectation:

4-ESS1-1: Identify evidence from patterns in local collected data and from media to support an explanation for changes in Earth's surface.

Disciplinary Core Ideas:

- 4-ESS1.A (Erosion and Weathering)
- 4-ESS2.A (Earth Materials and Systems)

Crosscutting Concepts:

- Patterns (Seasonal cycles and erosion patterns)
- Stability and Change (How landforms change over time)
- Scale, Proportion, and Quantity (Size and timescale of erosion processes)

## Science Vocabulary

- \* Landform: A natural feature of Earth's surface, such as a mountain, valley, hill, or lake.
- \* Erosion: The slow wearing away and movement of rocks and soil by water, wind, or ice.
- \* Weathering: The breaking down of rocks and soil by rain, wind, freezing, and other natural forces.
- \* Ecosystem: A community of living things and their physical environment all working together.
- \* Seasonal Change: The predictable shifts in weather, daylight, and plant/animal behavior that happen each year.
- \* Shoreline: The edge where water meets the land along a lake, ocean, or river.

## External Resources

### Children's Books:

- How Do Lakes Form? by Rebecca Steffoff (Exploring Earth's Landforms series) — Explains lake formation in accessible language with helpful diagrams.
- The Busy Tree by Jennifer Ward — A poetic exploration of how seasons change a tree and its ecosystem throughout the year.
- Erosion: Wearing Away Earth's Surface by Rebecca L. Johnson — Clearly explains weathering and erosion with real-world examples.

### YouTube Videos:

- "Landforms for Kids | Geography Lesson" by Crash Course Kids — A 5-minute overview of lakes, mountains, and valleys.  
<https://www.youtube.com/watch?v=WL-2-96bYxs>
- "Seasons and the Earth's Tilt" by National Geographic Kids — Demonstrates how Earth's tilt causes seasonal changes (4 minutes). <https://www.youtube.com/watch?v=xcc6dVJcMLo>

---

Implementation Note: This image works best as an anchoring phenomenon at the beginning of a unit on landforms or Earth's surface changes. Encourage students to return to the photo throughout the unit to deepen their explanations and build connections across concepts.