

## Photo Description



People are playing at a beach on a foggy day. There is sand, water, and seagulls. Tall buildings are hard to see because of the thick fog.

## Scientific Phenomena

The Anchoring Phenomenon is fog formation over a coastal area. This occurs when warm, moist air meets cooler surfaces (like cold ocean water or land that has cooled overnight). The water vapor in the warm air condenses into tiny water droplets that remain suspended in the air, creating the thick, gray cloud we see at ground level. Coastal fog is especially common because of the temperature differences between land and sea.

## Core Science Concepts

1. Weather and Sky Changes: Weather can change throughout the day, and fog is one type of weather that makes it hard to see far away.
2. Water in Different Forms: Water can be liquid (ocean), solid (ice), or gas (water vapor that makes fog).
3. Observable Properties: Fog has specific properties - it's gray, thick, and reduces visibility.
4. Daily Weather Patterns: Some weather happens at certain times of day, like morning fog at the beach.

### Pedagogical Tip:

Use concrete, hands-on demonstrations like breathing on a cold window or opening a hot thermos on a cool day to help kindergarteners understand how warm air and cool surfaces create condensation.

### UDL Suggestions:

Provide multiple ways for students to observe and document weather by offering drawing, verbal descriptions, and simple weather symbols. Consider students who may have limited outdoor experiences by showing various weather photos and videos.

## Zoom In / Zoom Out

1. Zoom In: Tiny water droplets floating in the air are so small we can't see individual drops, but millions of them together make the fog cloud we observe.
2. Zoom Out: This coastal fog is part of the larger water cycle, where water evaporates from the ocean, forms clouds and fog, and eventually falls back down as rain.

## Discussion Questions

1. What do you notice about how far you can see in this picture? (Bloom's: Observe | DOK: 1)
2. How is this foggy day different from a sunny day at the beach? (Bloom's: Compare | DOK: 2)
3. What do you think will happen to the fog as the day gets warmer? (Bloom's: Predict | DOK: 2)
4. Why might it be harder to find your family on a foggy beach day? (Bloom's: Analyze | DOK: 3)

## Potential Student Misconceptions

1. Misconception: "Fog is smoke from fires or pollution."  
Clarification: Fog is made of tiny water droplets, just like clouds, but closer to the ground.
2. Misconception: "Fog only happens when it's cold outside."  
Clarification: Fog can happen in different temperatures when warm, moist air meets cooler surfaces.
3. Misconception: "We can blow fog away like smoke."  
Clarification: Fog moves and changes with wind and temperature, but it's not the same as smoke.

## Cross-Curricular Ideas

1. ELA - Descriptive Writing & Vocabulary: Read "The Fog" by Carl Sandburg together. Ask students to use sensory words (soft, gray, thick, damp) to describe fog in their own writing or drawing. Create a class "fog word wall" with pictures and labels.
2. Math - Measurement & Patterns: Have students track daily visibility by marking how far they can see from a window (near tree, far tree, building). Create a simple bar graph showing foggy days vs. clear days over a week. Count seagulls or people visible in the photo.
3. Art - Color & Texture: Mix white paint with gray to create "fog colors." Have students paint a beach scene, then use cotton balls or tissue paper to create a textured fog layer. Discuss how fog changes what we can see and draw.
4. Social Studies - Community Helpers: Discuss how fog affects beach safety and different jobs (lifeguards, weather forecasters, boat captains). Talk about why people still come to the beach on foggy days and what they need to stay safe.

## STEM Career Connection

1. Meteorologist (Weather Scientist): Meteorologists study weather and clouds, including fog! They watch the sky, use special tools to measure temperature and moisture, and tell people what the weather will be like tomorrow. They help keep us safe by warning about bad weather. | Average Annual Salary: \$97,000
2. Oceanographer (Ocean Scientist): Oceanographers study the ocean and how it affects the air and weather nearby. They learn about why fog forms over water and how the ocean stays cool. They explore ocean life and help protect beaches and sea creatures. | Average Annual Salary: \$63,000
3. Photographer/Environmental Scientist: These professionals take pictures of nature and weather to teach people about our world. They document how fog affects ecosystems and beaches. Their photos help scientists and communities understand weather patterns and environmental changes. | Average Annual Salary: \$62,000

## NGSS Connections

- Performance Expectation: K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time
- Disciplinary Core Ideas: K-ESS2.D - Weather and Climate
- Crosscutting Concepts: Patterns

## Science Vocabulary

- \* Fog: A thick cloud that forms close to the ground and makes it hard to see far away.
- \* Weather: What it's like outside, including if it's sunny, rainy, foggy, or windy.
- \* Water vapor: Water that has turned into an invisible gas in the air.
- \* Condensation: When water vapor turns back into tiny water droplets.
- \* Visibility: How far you can see clearly.

## External Resources

Children's Books:

- Weather Words and What They Mean by Gail Gibbons
- The Cloud Book by Tomie dePaola
- What Is Weather? by Robin Johnson