Dawn

Earth & Space Science | Lesson Guide

1st Grade

Photo Description

The sun is coming up in the sky. There is white fog floating over the green plants. The sky has pretty colors like pink and orange.

Scientific Phenomena

This image shows the Anchoring Phenomenon of morning fog formation and sunrise. The fog occurs when warm, moist air near the ground cools overnight, causing water vapor to condense into tiny water droplets suspended in the air. The beautiful sunrise colors happen because sunlight travels through Earth's atmosphere, and the air scatters different colors of light, with reds and oranges appearing more prominent when the sun is low on the horizon.

Core Science Concepts

1. Water Cycle in Action: Fog demonstrates water changing from invisible water vapor to visible water droplets in the air
2. Daily Patterns: The sun rises every morning, creating predictable patterns we can observe
3. Light and Color: Sunlight contains many colors that we can see during sunrise and sunset
4. Weather Observation: Fog is a type of weather that happens when conditions are just right

Pedagogical Tip:

Use this image to start a daily weather observation journal where students draw and describe what they see in the sky each morning. This builds scientific observation skills and helps them notice patterns over time.

UDL Suggestions:

Provide multiple ways for students to record observations: drawing pictures, using weather symbols, taking photos, or dictating descriptions to support diverse learners and communication styles.

Zoom In / Zoom Out

1. Zoom In: Inside the fog are millions of tiny water droplets so small we cannot see individual ones. These droplets are floating in the air like invisible balloons made of water.

2. Zoom Out: This morning scene is part of Earth's daily rotation, where our planet spins to create day and night cycles. The water in this fog connects to oceans, rivers, and clouds around the world.

Discussion Questions

1. What do you notice about the colors in the sky? (Bloom's: Observe | DOK: 1)
2. Why do you think the fog is only in some places and not others? (Bloom's: Analyze | DOK: 2)
3. What might happen to the fog as the sun gets higher in the sky? (Bloom's: Predict | DOK: 2)
4. How could we find out if fog happens at the same time every day? (Bloom's: Create | DOK: 3)

Potential Student Misconceptions

1. Misconception: "Fog is smoke or pollution"
   Clarification: Fog is made of tiny water droplets, just like clouds, and is a natural part of weather

2. Misconception: "The sun moves across the sky"
   Clarification: Earth spins like a top, making it look like the sun moves, but the sun stays in the same place

3. Misconception: "Fog only happens when it's cold"
   Clarification: Fog can happen in different temperatures when warm, moist air meets cooler conditions

Cross-Curricular Ideas

1. Math + Science: Create a simple weather data chart where students use tally marks or draw circles to record foggy days versus clear days over 2-3 weeks. Students can count and compare which type of day happens more often, connecting observation to number skills and graphing.

2. ELA + Science: Have students dictate or write simple sentences describing the sunrise using sensory words (colors they see, how it feels outside, what they notice). Create a class "Weather Words" word wall with vocabulary like foggy, pink, misty, and cool.

3. Art + Science: Students create sunrise paintings or collages using warm colors (red, orange, yellow) to show what they observe in the photo. They can use cotton balls to represent fog, helping them visualize how water vapor looks in the air.

4. Social Studies + Science: Discuss how farmers and people in the community use weather observations. Talk about how people dress differently when they see fog in the morning and how this helps us understand why observing weather is important.

STEM Career Connection

1. Meteorologist (Weather Scientist): A meteorologist is a scientist who studies weather and helps predict what the weather will be like. They use special tools to measure fog, rain, wind, and temperature. They watch the sky every day and help people know if they should bring an umbrella or wear a jacket. Average Salary: $97,000/year

2. Hydrologist (Water Scientist): A hydrologist studies water in all its forms—rain, fog, rivers, and oceans. They help us understand where water comes from and where it goes. They explore how fog forms and how water moves through nature as part of the water cycle. Average Salary: $85,000/year

3. Environmental Scientist: An environmental scientist watches nature and helps protect our air, water, and plants. They observe fog, air quality, and weather patterns to understand how to keep our Earth healthy and safe for all living things. Average Salary: $74,000/year

NGSS Connections

- Performance Expectation: 1-ESS1-1: Use observations of the sun, moon, and stars to describe patterns that can be predicted
- Disciplinary Core Ideas: 1-ESS1.A - Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used to describe phenomena

Science Vocabulary

* Fog: A cloud that touches the ground made of tiny water drops floating in the air
* Sunrise: When the sun appears to come up in the morning sky
* Pattern: Something that happens the same way over and over again
* Observe: To look carefully and notice details about something
* Weather: What is happening outside with sun, clouds, wind, or rain

External Resources

Children's Books:
- The Cloud Book by Tomie dePaola
- Sunshine Makes the Seasons by Franklyn M. Branley
- Weather Words and What They Mean by Gail Gibbons