

## Photo Description



A big American flag waves in the wind high up on a tall building. The flag moves back and forth because the air is pushing it. We can see the red, white, and blue colors moving in the breeze.

## Scientific Phenomena

The Anchoring Phenomenon is the motion of a flag caused by moving air (wind). This occurs because wind is moving air that pushes against the fabric of the flag, causing it to wave and flutter. The flag's movement demonstrates how invisible air can create visible motion when it interacts with objects. Wind is created by differences in air pressure and temperature, causing air masses to move from high pressure areas to low pressure areas.

## Core Science Concepts

1. Air is real and takes up space - Even though we can't see air, it pushes on things around us
2. Wind is moving air - When air moves, it can push objects and make them move
3. Forces cause motion - The wind (a force) pushes the flag and makes it wave
4. We can observe effects of invisible things - We can't see wind, but we can see what it does to the flag

### Pedagogical Tip:

Use a fan and lightweight materials like scarves, ribbons, or tissue paper to help students directly experience how moving air creates motion. This hands-on experience makes the abstract concept of air more concrete for young learners.

### UDL Suggestions:

Provide multiple ways for students to demonstrate their understanding: they can wave scarves to show flag motion, draw pictures of things that move in wind, or use their bodies to act out being a flag in the breeze.

## Zoom In / Zoom Out

1. Zoom In: Air is made up of tiny invisible particles (molecules) that are constantly moving and bumping into things. When many air molecules move together in the same direction, they push against the flag's fabric fibers.
2. Zoom Out: Wind patterns are part of Earth's weather system. Local winds like the one moving this flag connect to larger air movements across cities, states, and even continents that help create our daily weather.

### Discussion Questions

1. What do you think is making the flag move? (Bloom's: Analyze | DOK: 2)
2. How could we test if air is really pushing the flag? (Bloom's: Create | DOK: 3)
3. What other things have you seen move because of wind? (Bloom's: Remember | DOK: 1)
4. What would happen to the flag if there was no wind? (Bloom's: Apply | DOK: 2)

### Potential Student Misconceptions

1. Misconception: "There's nothing in empty space around us"  
Clarification: Air fills all the space around us, even though we can't see it
2. Misconception: "Wind comes from flags waving"  
Clarification: Wind makes flags wave, not the other way around - moving air pushes the flag
3. Misconception: "We can't touch air"  
Clarification: We feel air when we wave our hands or when wind blows on our skin

### Cross-Curricular Ideas

1. Math - Counting & Patterns: Count the stars on the American flag and look for patterns in the stripes. Students can create their own flag designs using repeating color patterns with paper strips or paint.
2. ELA - Descriptive Language & Movement Words: Read "The Wind Blew" by Pat Hutchins together, then have students act out action words like flutter, wave, blow, and dance. Create a word wall with movement words that describe what the flag does.
3. Social Studies - Symbols & Community: Discuss what the American flag represents and where students see flags in their community (schools, fire stations, parks). Take a neighborhood walk to spot flags and other symbols of community pride.
4. Art - Mixed Media Flag Craft: Create flags using tissue paper, ribbons, and lightweight fabrics. Hang them near a fan or window so students can observe their own flags moving in the air and compare them to the flag in the photo.

### STEM Career Connection

1. Weather Reporter/Meteorologist: Weather reporters study wind, temperature, and weather patterns to tell people what to expect each day. They use special tools to measure how fast and hard the wind is blowing. This helps people know when to bring an umbrella or wear a jacket!  
Average Annual Salary: \$43,000 - \$75,000 USD
2. Wind Engineer: Wind engineers design things like windmills, wind turbines, and buildings so they work well with wind. They study how air moves and pushes on things to make electricity or keep buildings safe in strong storms.  
Average Annual Salary: \$55,000 - \$90,000 USD
3. Flag Designer: Flag designers create flags for countries, cities, and organizations. They think about colors, shapes, and symbols that mean something important. Their flags might wave from tall buildings just like the one in this photo!  
Average Annual Salary: \$48,000 - \$70,000 USD

### NGSS Connections

- Performance Expectation: K-PS2-1 - Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object
- Disciplinary Core Idea: K-PS2.A - Pushes and pulls can have different strengths and directions
- Crosscutting Concept: Cause and Effect - Simple tests can be designed to gather evidence to support or refute student ideas about causes

### Science Vocabulary

- \* Wind: Moving air that we can feel and that pushes things around
- \* Force: A push or pull that can make things move
- \* Motion: When something moves or changes position
- \* Air: The invisible gas all around us that we breathe
- \* Push: Using force to move something away from you

### External Resources

Children's Books:

- The Wind Blew by Pat Hutchins
- Gilberto and the Wind by Marie Hall Ets
- Feel the Wind by Arthur Dorros