

Where Will the Wind Take Me?

4-H Project:
Science Discovery

Life Skill:
Acquiring and evaluating information

National Education Standard:
NS.K-4.4 Earth and Space Science

Success Indicator:
Estimate the direction a balloon will travel when launched.

Time Involved:
20–40 minutes. However, this may extend over several days or weeks.

Suggested Group Size:
1–20 children

Using a balloon release (or simulated release), children will learn about the winds that move storms and affect weather and travel.

Getting started

Read through the lesson and gather the necessary materials. If you need more information about the topic, refer to the “Background Information” below. Decide which version of the activity you will do. (See below.)

Do the Activity

1. Discuss the purpose of the activity with the children (to conduct a balloon release to determine how far winds will carry them and in what direction). Use “Background Information” as needed.
2. Fill large balloons with helium and tie them shut. Note: Mylar balloons are more durable and stay aloft longer than regular balloons but they are not biodegradable.
3. Attach a 3.5 in. x 5 in. postcard, made from 20 pound paper laminated on both sides, to each balloon.
4. Apply postage and have them self-addressed to be returned by whoever finds them.
5. On the other side of the post card, ask the finder to state when and where they found the balloon after it landed.
6. Keep one identically-prepared balloon as a control to see how many days it could lift the post card.
7. As the post cards are returned (this could take weeks), plot the sender’s return address on a map. These locations are the balloons’ landing points.



Materials Needed

- Helium-filled balloons
- State, regional, or national maps
- Laminated, self-addressed postcards with postage

Alternative Version of Activity

As an alternative to actually launching the balloons into the atmosphere (environmental concerns or local laws may prohibit such a launch), a simulation can be done instead.

1. Fill numerous balloons with helium (different sizes and materials are acceptable).
2. Record how long each stays aloft inside the building.
3. Ask children to estimate how far each balloon would go if launched, and where the balloons would land.
4. Plot expected landing points on a map.

This online “bonus” activity is part of the *Exploring the Treasures of 4-H* curriculum. © 2005, National 4-H Cooperative Curriculum System.

See www.n4hccs.org/exploring4h for more information.



Where Balloons Land

The air is in constant motion. Even when the wind is calm at the Earth's surface, it can be moving rapidly thousands of feet above the ground. Because of friction from the Earth's surface, the wind at the surface may be blowing in a different direction than aloft. Wind is often the result of storms, but it is also responsible for moving weather from place to place. For much of the continental U.S., the prevailing winds move from west to east. However, weather systems can change the flow, and local terrain (mountains, lakes, oceans) and other environmental conditions (cities, factories, etc.) have influence too.

Here are some clues to determining landing points of balloons:

- How many days does the test balloon stay aloft?
- What is the air speed and direction at the ground when balloons are launched?
- Are there any weather systems (such as storm fronts) that might affect winds aloft?
- Based on the above, hypothetical questions might be asked:

If the balloons averaged 30 miles per hour each day and were in the air for 10 days, how far could they have gone? If they traveled a northeasterly course, where would you expect them to land? (Hint: Distance traveled (miles) equals hours traveled multiplied by wind speed in miles per hour.)



More Challenges

Refer to numerous activities in the "Weatherwise" unit of the Science Discovery Series Volume 2.

Science Discovery Series

Talking it Over

Share What You Did:

- Before launching, ask children how far the balloons might travel before landing.
- What direction will they go? Why?

Process What's Important:

- What does the map with the landing points tell you about the wind? What kind of pattern do you see?
- Did the balloons go the distance and direction expected? Why or why not?

Generalize to Your Life:

- Besides balloons, what other things are affected by the wind? (Speed that airplanes, boats, and birds can travel, how fast storms move, etc.)

Apply What You Learned:

- How far could you travel by walking or riding a bicycle?
- How long would it take you to go 10 miles on foot, on a bicycle, in a car?

Activity Summary

Because of friction from the Earth's surface, the wind at the surface may be blowing in a different direction than aloft. For much of the continental U.S., the prevailing winds move from west to east. However, weather systems can change the flow, and local terrain (mountains, lakes, oceans) and other environmental conditions (cities, factories, etc.) influence winds, too.

"Jet stream" winds miles above the Earth can reach hundreds of miles an hour!

