

# Investigation Seven – Interpreting Weather Data

<b>Standard II</b> Students will understand that the elements of weather can be observed, measured and recorded to make predictions and determine simple weather patterns.
<b>Objective 2</b> Interpret recorded weather data for simple patterns.
<b>Intended Learning Outcomes</b> <ol style="list-style-type: none"><li>1. Use science process and thinking skills</li><li>2. Manifest scientific attitudes and interests</li><li>3. Understand science concepts and principles</li><li>4. Communicate effectively using science and language and reasoning</li></ol>

**Standard II**  

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**Objective 2**

## Background Information

This investigation is based on the weather data gathered in Investigation Six. Once weather data is gathered, meteorologists want to interpret the data, looking for patterns. Their interpretations can be very complex. But we are going to be looking for simple patterns. To make the analysis easier, the data needs to be graphed and comparisons made.

When we compare graphs we begin to see the relationship one weather factor has with the others. When we see freezing temperatures, the precipitation will be in the form of snow. Often when a storm is approaching from the north, the barometer will drop, there will be a strong south wind, many clouds will begin to form and the temperature will rise. After a storm, the barometer will rise, the winds will be gentle, most of the clouds will be gone, and the temperature will be colder.

However, the weather patterns in the summer are different from those of winter. When summer data is recorded, the data can be compared with the winter data. In the summer, there are still strong winds preceding a storm, but the storms blow in from the south. The barometer doesn't change much. After a summer storm the temperature may drop a few degrees but not drastically like it does in the winter. We see more cumulus clouds in the summer, and we see thunder, lightning, and hail during all seasons but winter. Understanding patterns helps make predictions.

## Pre-Assessment/Invitation to Learn

Review with the students about graphs and their purposes. Tell them That it is a fast way to analyze information.

Go to the Web site:

<http://www.usoe.k12.ut.us/curr/science/core/4th/4thsciber/weather/html/chart/htm>. Tell the students that at this Web site it will tell us of graphs that can be made with the data that has been gathered. With temperature data we are going to graph the data to show how to make it. Make the graph on the board while they make it on graph paper.

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| <b>Materials</b>                                                    |
| <input type="checkbox"/> Pictures of graphs                         |
| <input type="checkbox"/> Computer                                   |
| <input type="checkbox"/> Internet                                   |
| <input type="checkbox"/> Graph paper                                |
| <input type="checkbox"/> Completed "Weather Forecasting Data Table" |

## Instructional Procedure

1. Have the students (depending on how much time you have), individually or by groups, graph each of the areas data was gathered. Have the students keep the graphs in a safe place so they can be used for the next couple of days.

The students will analyze the graphs to interpret them and look for patterns. They will also compare the graphs with each other to look for relationships.

2. Observe the air temperature graph with the precipitation graph. Observe and record in your journals the effects air temperature has on precipitation.
3. Observe the wind directional graph with the results of the next day's weather. Record in your journals what happened when an east wind, west wind, north wind or south wind was present.
4. Observe the cloud graph with the results of the next day's weather. Record in your journals what happened after cirrus, cumulus, or stratus clouds were seen.
5. Observe the barometer graph with the wind force graph. Record in your journals what you observe about wind when the barometer is either high or low.
6. Observe the barometer graph with the next day's precipitation graph. Record in your journals what you observe about precipitation depth when the barometer is either high or low.
7. Observe the wind force graph with the next day's precipitation graph. Record in your journals what you observe about wind and the precipitation depth.
8. Observe the thermometer graph with the results of the next day's weather after a storm. Record in your journals what the temperature is after a storm.

## Curriculum Extensions

### *Language Arts –*

- Research different areas in the United States or in the world to see what the Data is using the different weather components. Compare it to your data That you have from your specific area. After you have compared the data, Tell why the data is the same or different. (Standard VII, Objective 3)
- There are a few days during a season where the weather components are far from the average, either hotter or colder. Pick three weather components in a particular season and tell what could make them outliers during that season. (Standard VIII, Objective 6)

### *Math –*

- With the data that you have, take an average of each component in each season. Compare the same components of each season. Write the differences you see between the seasons. Write down why there are differences in the weather components from season to season. (Standard V, Objective 1)

## Assessment Suggestions

- Explain why sometimes it snows and sometimes it rains.
- What would the normal temperature be in the winter during the day?
- What would the normal temperature be in the summer during the day?
- What is going to happen when the barometer is low? High?
- Tell what the weather might be like before a storm
- Tell what the weather might be like on a sunny day.
- Name three occasions that are considered severe weather.
- Why is severe weather dangerous?
- Name two seasons. Besides temperature, what else changes from one season to another?

## Resources

### *Newspapers:*

- Students can bring in newspapers with daily weather maps and forecasts.

### *Web sites:*

- [www.ksl.com](http://www.ksl.com) (For current weather conditions and facts.)
- [www.brainpop.com](http://www.brainpop.com)
- [www.digitalcurriculum.com/dcdoor.php4](http://www.digitalcurriculum.com/dcdoor.php4)
- <http://deseretnews.com/weather/weather.htm>
- <http://www.galaxy.net/~k12/weather>
- <http://www.uen.org/weather/html/link2.htm>
- <http://www.earthwatch.com>

### *Videos:*

- Check district media centers for these videos:
  - *Restless Atmosphere*
  - *What Makes Weather?*
  - *Meteorology*
  - *Weather Class with Dr. Niel Frank*
  - *Weather Express*
  - *Weather Station Backyard Science*
- There are also commercial weather videos available.

## Homework & Family Connections

- Students with Internet connections at home can be asked to visit weather Web sites.
  1. [www.brainpop.com](http://www.brainpop.com)
  2. [www.digitalcurriculum.com/dcdoor.php4](http://www.digitalcurriculum.com/dcdoor.php4)
  3. <http://deseretnews.com/weather/weather.htm>
- Students can be assigned to watch the evening weather forecast on one of the TV news channels.
- Have the students set up a weather station at home to continue their investigation about weather.