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# Introduction

Life on Earth is possible only because of the envelope of air covering the planet. We call this envelope *atmosphere*, and it is hundreds of miles thick. The atmosphere protects us from the sun's harmful rays and most meteors which may be pulled toward Earth by gravity. The atmosphere is made of gases, mostly *nitrogen* and *oxygen*, but also small amounts of other gases, such as *carbon dioxide*.

Weather affects our lives in many ways – the clothing we wear, the types of homes we need, how we spend our leisure time and the ways we travel. Weather also often determines our moods – for example, sunshine puts us in a happier mood than overcast skies or rain. It also determines the types of plants and animals that can survive in various areas of the world.

Some parts of the Earth receive more heat from the sun than others. The equator receives the greatest amount of sunlight, the poles the least. This uneven heating of Earth's surface causes air movement – that is, the winds. Warm air at the equator moves toward the poles, and cold air at the poles moves toward the equator. The Earth's rotation deflects the winds to the west. This regular wind pattern is complicated because the Earth's surface is made up of land and water. Land heats up more quickly than water but also loses its heat faster. This sets up pressure differences in the air over various parts of the world. The Earth's motion around the sun, causing the seasons, further complicates matters. As a result of all these influences, masses of air wander about the Earth's surface. It is these wandering air masses that are responsible for changes in weather. They run into each other and rise as they warm or sink as they cool.

The water on Earth is constantly being recycled through the atmosphere. Water on Earth's surface evaporates into water vapour, a gas, and is held in the air. When the air cannot hold any more moisture, the vapour condenses into water droplets and ice crystals. These form clouds which are carried along by the winds. Depending upon the various conditions of temperature and pressure, rain or snow or other forms of precipitation may fall. Fog is a localised cloud which is sitting on the Earth's surface.



The activities in this book enable students to learn about some of the instruments used to measure weather conditions. They will introduce some of the basic concepts of weather patterns, such as the movement of wind and the cloud formations. Most importantly, students will discover that continuous observations are needed to learn about weather conditions where they live.



# Watching the Weather

**Overview:** *Students gather data on daily weather patterns.*

## Materials

- large calendar
- weather symbols for the calendar (page 5)
- videotape of TV weather report for the day previous to the closure activity
- transparency and copy of the Student Weather Calendar for each student (page 6)

## Activity 1

1. Gather students in the morning and explain that they are going to begin a record of the type of weather they have every day for a month. *Note:* This activity works well if begun at the first of the month and incorporated into the daily calendar routine.
2. Have students tell about different kinds of weather they have experienced. List their ideas on the board. Let volunteers come forward to draw a symbol for each type of weather. Be sure to include terms such as *sunny, partly cloudy, rainy* and *foggy*.
3. Show the class the symbols they will use on their weather chart. Compare these to symbols the students drew on the board.
4. Discuss the weather conditions today. If possible, go outside where they can see the sky and help them choose the right symbol to represent the conditions they see. Glue the symbol on today's date on the calendar. Now ask the children to predict tomorrow's weather. Their predictions will be only guesses at this point. On the calendar, pin the symbol which represents the majority predictions for tomorrow's weather.
5. The next morning, have students again report the weather condition and check to see if their predicted symbol was accurate. If not, replace it with the correct one. Repeat this all week until the children feel comfortable using symbols.

## Activity 2

1. After students have posted the weather symbols for the week, distribute a Student Weather Calendar to each student. Use the transparency of the chart to help them complete information such as days of the week and dates. Begin their weather calendar with the first of the month.
2. Have students copy data from the class weather calendar onto their own calendars, drawing the weather symbol for each day.
3. Let students draw the weather symbol for the present day on their calendar and post the correct symbol on the classroom calendar. Continue to do this throughout the month. Include the weather for weekends and holidays on both calendars.
4. At the end of each week, discuss the different types of weather students have recorded.

## Closure

Show a weather report recorded from the previous day's television broadcast. As it is viewed, point out some information being covered in the report. Ask students to watch the weather report that evening and be ready to tell about it tomorrow.