

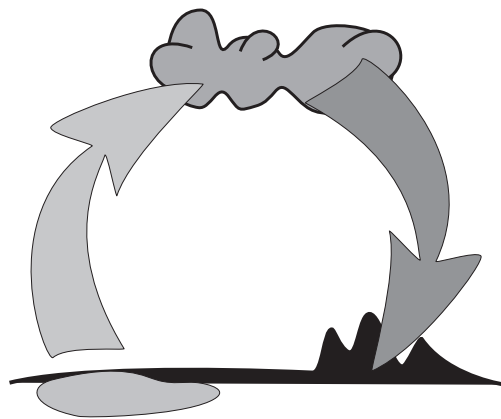
LETTER TO FAMILY

Cut here and paste onto school letterhead before making copies.

Science News

Dear Family,

Our class is beginning a new science unit using the **FOSS Weather on Earth Module**. We will explore the question, What is weather? and learn about the weather variables that meteorologists use to measure the conditions of the atmosphere. We will become familiar with what weather instruments measure (thermometers, barometers, hygrometers, wind meters/anemometers, and wind vanes) and collect local weather data from nearby weather-monitoring stations via the Internet.



We will then turn our attention to heating Earth. We'll place containers of water and dry soil in the sunshine to find out if they heat up equally. We'll use the results of these experiments to consider how uneven heating of Earth's surface produces convection currents. These concepts come together in the water cycle, which continually renews the supply of fresh water. Finally, we'll develop the idea of climate. And we will conduct experiments to design solar water heaters, sorting out the variables that influence the temperature and heating rate of a water-heating system.

You can increase your child's interest in weather by asking him or her to talk about the science investigations. Keep track of the changes in weather together. Check out the weather maps in the daily newspaper or online, or watch the evening news for weather reports. Watch for Home/School Connection sheets that I will be sending home from time to time. These describe ways the whole family can extend our classroom science activities into your home. You can get more information on this module by going to www.FOSSweb.com.

We're looking forward to our study of weather and the atmosphere! If you have questions or comments or have expertise you would like to share, let me know.

Sincerely,

HOME/SCHOOL CONNECTION

Investigation 1: What Is Weather?

1. Choose a weather source that will give you at least a 5-day forecast for your home area. Write your data source at the bottom of the page. Here are some suggested data sources.
 - TV news (List the channel at the bottom of the page.)
 - Daily newspaper (List the newspaper at the bottom of the page.)
 - Internet (Visit FOSSweb for a list of appropriate sites and list the one used.)
2. Record the 5-day forecast for your home area in the forecast table below.
3. Check with your source every day and record the actual weather.
4. Write about whether or not the forecast was true to the actual weather.

5-Day Weather Forecast						
Day	Temp. (°C)	Humidity (%)	Wind speed (km per hour)	Wind direction	Visibility (km)	Observable weather
1						
2						
3						
4						
5						

5-Day Actual Weather						
Day	Temp. (°C)	Humidity (%)	Wind speed (km per hour)	Wind direction	Visibility (km)	Observable weather
1						
2						
3						
4						
5						

HOME/SCHOOL CONNECTION

Investigation 2: Heating Earth

Whales are the biggest animals alive on Earth today. They need a lot to eat. Whales are filter feeders and rely on tiny, floating crustaceans and larvae called krill as the main part of their diet. A blue whale can eat over 3,636 kilograms (kg) of krill a day. Even the krill depend on tinier marine plants for their food. And the plants depend on sunshine for their survival. So if you think carefully, whales depend on a whole lot of sunshine for their survival!

How Many “Sun Days” Do You Use?

Plants depend on solar energy for their survival. They use the Sun’s energy to make food and store the energy in their leaves, seeds, and fruit. When an animal, like you, eats the fruit from a plant or tree, you are eating this stored solar energy. Plants need different amounts of time in the sunshine to produce the fruits and vegetables we use for food. You might think of it this way: one day of sunshine used and stored by a plant equals one “sun day.” For example, it can take up to 73 days for corn to grow from a seed to the stage when you can eat it off the cob. You are using 73 days of stored solar energy in the corn when you eat it.

Find out how many sun days it takes to ripen your favorite fruits and vegetables.

- Write down your favorite fruits and vegetables in the chart below.
- To find the number of sun days for each food, read seed packets or a seed catalog. Some seed catalogs are available on the Internet, or you might try the library or a garden-supply store. For the cereal, you need to find out what type of grain your cereal is made of (for example, oats or corn).

Type of food	Your favorite	Number of sun days
Example	Corn	73
Vegetable		
Fruit		
Cereal		

HOME/SCHOOL CONNECTION

Investigation 3: Water Planet

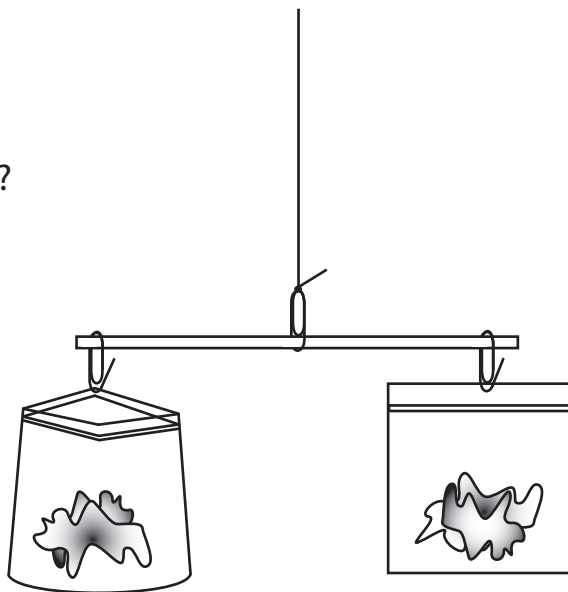
Evaporation at home

How fast does water evaporate in your home?

Set up an evaporation system and find out.

You will need

- 1 Plastic straw
- 3 Paper clips, regular size
- 1 Piece of string about a meter long
- 2 Plastic zip bags
- 2 Paper towels



1. Slide three paper clips on the straw. Open the clips on the ends to make hooks.
2. The middle paper clip is the pivot point. Tie the string here.
3. Moisten the paper towels. Try to get them equally wet. Put one in each bag. Seal one bag and leave the other open.
4. Hang the bags on the two hooks. Slide things around until they balance.
5. Hang the whole system where it can be monitored closely. Observe.

Compare humidity

The amount of water vapor in the air is called humidity. When air contains as much water vapor as it can possibly hold, the humidity is 100%. Warm air can usually hold more water vapor than cool air.

- Follow the humidity in your area and compare it to the humidity in three other locations in the United States. Collect the humidity data from the Internet. On the back of this sheet, make a table of the humidity of each location for a week.

- How could the humidity of the air change the rate of evaporation?

HOME/SCHOOL CONNECTION

Investigation 4: Weather and Climate

People can use different energy sources to heat water for their homes. Often they use gas or electric water heaters. Some people use solar energy collectors on their roofs to heat water for their home use.

What energy source does your family use to heat water?

The chart below shows the estimated cost per month for heating water for a home, depending on the number of people who live in the home.

Cost of a water heater, 160 liter, with insulation blanket		
Number of people in household	Electric water heater	Gas water heater
1	\$17.71	\$ 7.06
2	\$28.93	\$10.21
3	\$40.15	\$13.36
4	\$51.37	\$16.51
5	\$62.59	\$19.66
6	\$73.81	\$22.81
7	\$85.03	\$25.86
8	\$96.03	\$29.11

Ask to look at a copy of the utility bill for your residence. Find the amount of gas and/or electricity your family used for a month and how much it cost. How do these amounts compare with the figures in the chart? How can you tell how much of the total utility cost is for heating water? If your family uses a solar water heater, how does the utility-bill total compare?

Here are some ways your family might reduce hot-water use and conserve water in your home.

- Install low-flow showerheads and put aerators on the faucets.
- Put an insulating blanket on the water heater.
- Lower the thermostat on the water heater to 49°C.
- Wash clothes in warm or cold water, not hot.
- Fix leaky faucets and showerheads.

Check with your local utility company for more energy-saving tips and information about energy sources. List three more ideas for saving energy by cutting down on hot-water use. Write your ideas on the back of this sheet.