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My Dad, the Weatherman

"Are you nervous?" I asked Dad before school.

"No, Lucy," he said. "Remember—I speak in front of a TV camera to thousands of people every night!"

That week at school, we were learning about different jobs people do. On Tuesday, some of the parents came to class to tell about their work. Joel's mom talked about working at a power plant. That sounded pretty exciting. Katya's dad told us about selling machine parts. I don't think I want to sell machine parts when I grow up.

When it was Dad's turn to talk, he first set up his magnetic weather map. Then he opened a box of cut-out magnetic weather symbols.

"I'm a TV meteorologist," Dad said. "I study changes in the weather so I can tell people what to expect. Then they can plan their day. Or, if necessary, they can prepare for an emergency such as the fast-swirling winds of a tornado or the strong winds and rain of a hurricane."

When Dad said *tornado*, he picked up a symbol that showed a twisting tail of wind and put it over the land on the weather map. When he said *hurricane*, he placed a symbol that showed whirling winds over the ocean.

Dad explained that weather is the state of the atmosphere. "Weather includes temperature, precipitation, cloud cover, and air pressure," he said. "Wind and storms change the weather from day to day. Earth's journey around the sun changes the weather from season to season."

Then Dad told the class that precipitation is water that falls to Earth in the form of rain, hail, sleet, or snow. He added four more symbols to the chart. "Who can tell me what rain is?" he asked.

No one answered. The question was so simple everyone thought there must be a catch. Finally, Tim, the class funny guy, said, "Rain is wet stuff!"

Dad smiled and said that Tim had a bright future as a meteorologist. Then he explained that rain is made of small water droplets that stick together to form bigger drops. These get heavy and fall from clouds. "By the way," he added, "did you know that most raindrops are shaped like hamburger buns—not teardrops?"

Then Dad told us how hail forms during thunderstorms, which are rainstorms with thunder and lightning. He said that strong winds blow up through the clouds during these storms. "Cold temperatures in the tops of clouds freeze the rain into hailstones. More rain freezes, adding layers of ice to the hail. Then the hailstones fall to the ground."

"Has anyone experienced a hailstorm?" Dad asked.

Raul raised his hand. "We were in a hailstorm once while we were visiting my grandmother in Texas. The hailstones looked as big as golf balls! The storm caused a lot of damage."

Dad nodded. "That's right. Hailstones can be as small as peas or as big as baseballs! The larger hailstones can break windows, dent cars, and even ruin farmers' crops."

Dad pointed to another symbol. "Does anyone know what sleet is?" he asked.

"Frozen raindrops?" asked Kaneisha.

"That's right—frozen or mostly frozen raindrops," answered Dad. "Sleet can also be partly melted or refrozen snowflakes. And we all know about snow in this part of the country! Snow forms when cold air in the atmosphere freezes droplets of water into ice crystals. The crystals join other crystals to form snowflakes."

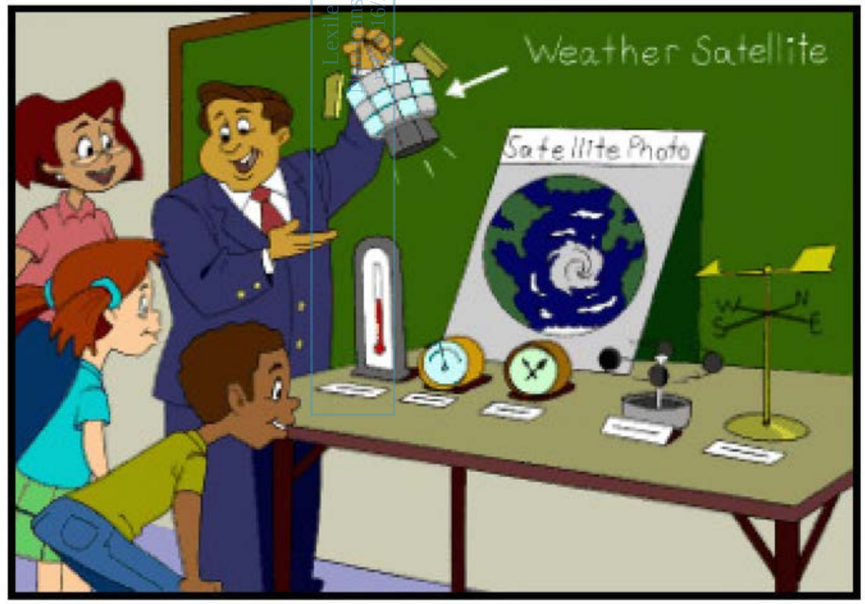
Darien raised his hand. "You said weather includes air pressure—what's that?" he asked.

"That's a good question," said Dad. "Let me explain. When you take off or land in an airplane, your ears may hurt. This is because your eardrums can feel changes in air pressure as the airplane goes higher during takeoff or lower during landing. But what is air pressure? It is the weight of all the gases in the atmosphere pressing down on Earth and everything on Earth—like us. Air pressure changes as you go up or down in the atmosphere. It also changes when air warms up or cools down. Changes in air pressure cause changes in weather."

Julie had another good question. "Why do you need to know about air pressure in your work?"

Dad explained that air pressure helps him know what kind of weather to expect. "With high pressure, we can predict clear skies," he said. "With low pressure, we might look for storms and rain."

Next, Dad talked about different tools for measuring weather, including satellites that take pictures of Earth and computer models that put together a lot of weather information. "Each day something different is going on in the atmosphere. That's why I love my job!"



Kim raised her hand. "Um, well . . . my parents say sometimes you tell people it's going to be sunny, but then it rains."

Dad chuckled. "Yes, even with all our skills and tools, we can be wrong," he said. Then he said something surprising. "How about if you kids make a guess about the weather?"

"You can use some of the tools I use," he said. "Then you can choose someone from the class to appear on TV with me and tell what the weather will do. The rest of you can come to the TV station and see how we give a weather report."

We all liked this idea. Our teacher, Mrs. Cabe, liked it, too. Then Dad picked up a piece of chalk and wrote this question on the board: *What weather can we expect for the week of April 3rd?*

The room became very quiet. All of us seemed to be thinking the same thing. "How in the world will we ever answer that question?"

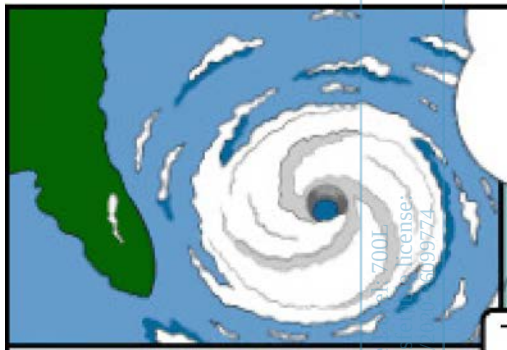
JUNIOR METEOROLOGIST HANDBOOK

PART A

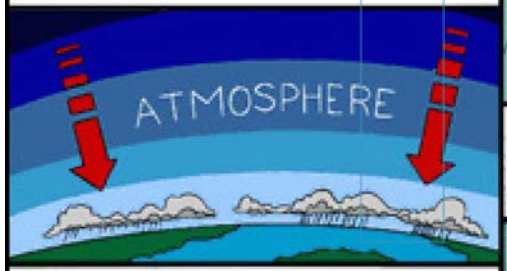
A **meteorologist** is a scientist who studies the atmosphere and weather.

Weather is the state of the atmosphere at a certain place and time.

A **tornado** has dangerous winds that spin in a funnel-shaped cloud over land.

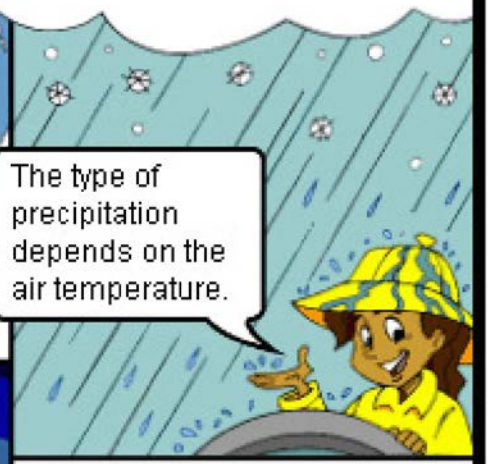


A **hurricane** is a storm of strong, rotating winds that forms over the ocean.

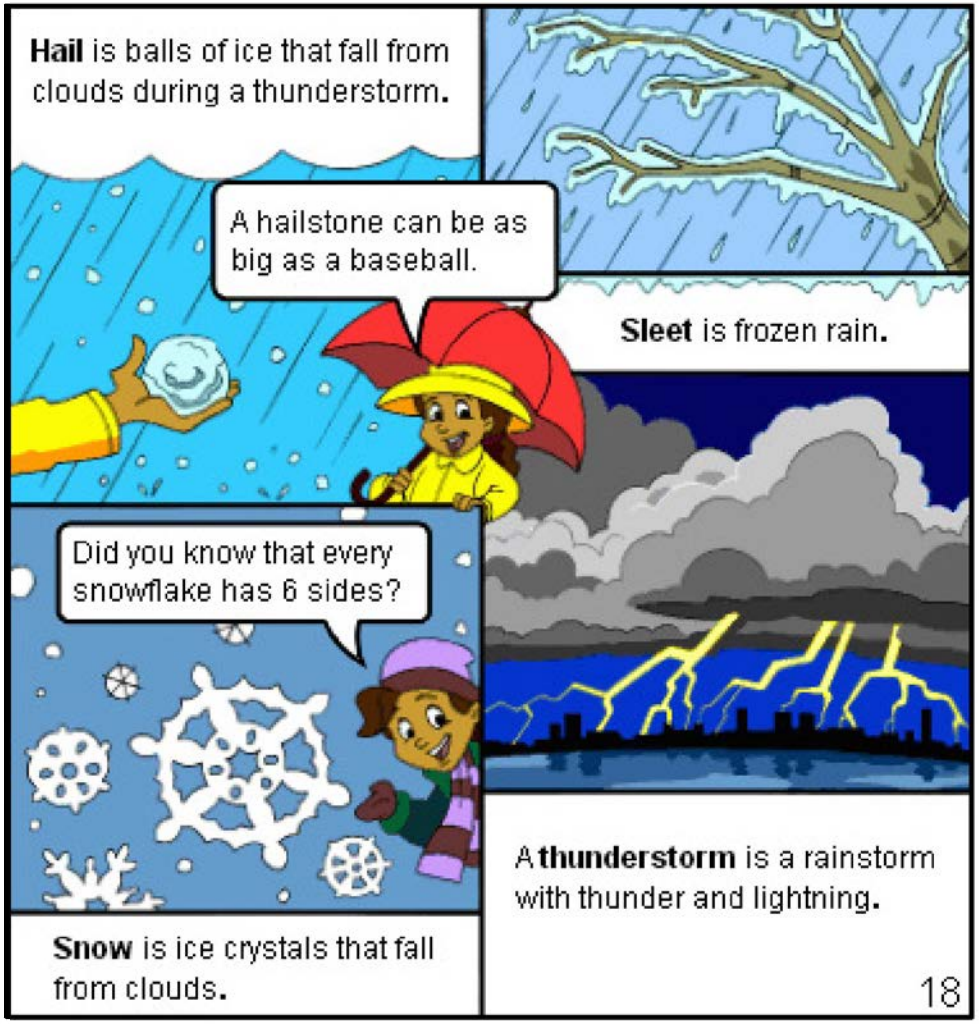


Air pressure is the weight of gases in the atmosphere pressing down on the surface of the Earth.

Precipitation is water that falls to the earth in the form of rain, hail, sleet, or snow.



Rain is water that falls from clouds.



Rain or Shine?

Our class had 12 days to figure out the weather for the week of April 3rd. Mrs. Cabe borrowed weather tools from a science teacher. Dad gave me a list of Web sites. The rest was up to us.

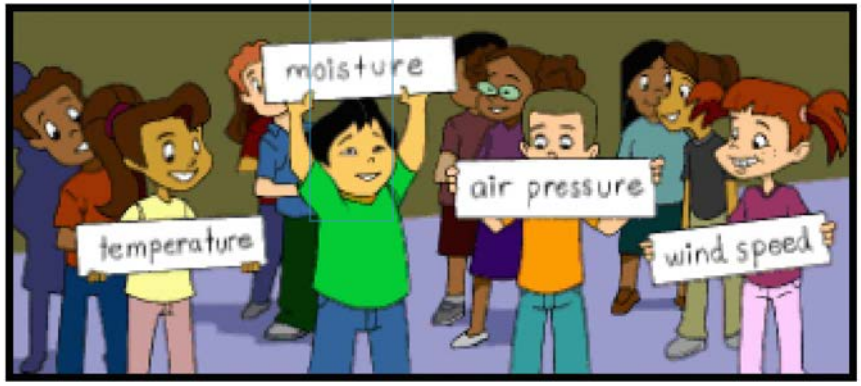
"Why do we need these?" Cecilia asked when Mrs. Cabe placed the tools on a table in the classroom. "My parents are farmers. They can tell what the weather's going to do just by watching how our animals behave and by looking at the clouds."

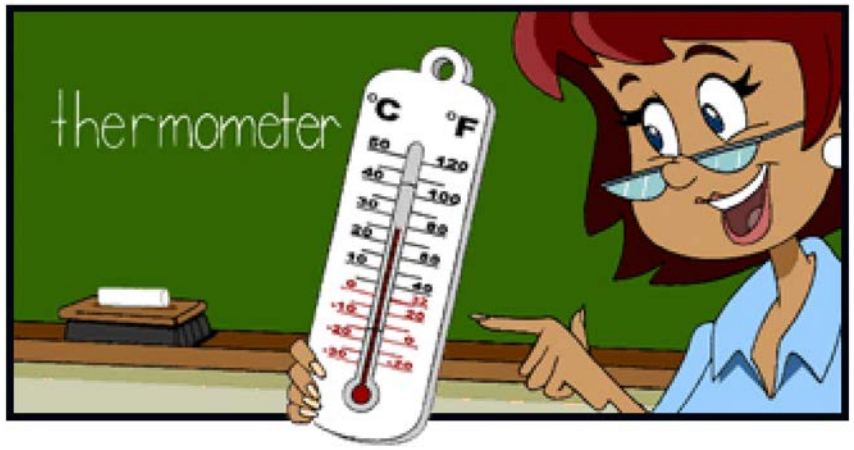
"My grandma can tell cooler weather's coming when her big toe hurts," offered Kai.

"There may be some truth to those things," said Mrs. Cabe. "But we can't go on TV and say our information is based on Cecilia's cows and Kai's grandmother's toe!"

The first thing Mrs. Cabe did was put us in groups. One group would measure temperatures. Another would measure moisture, or wetness, in the air. A third would measure air pressure. The fourth would measure wind speed and direction.

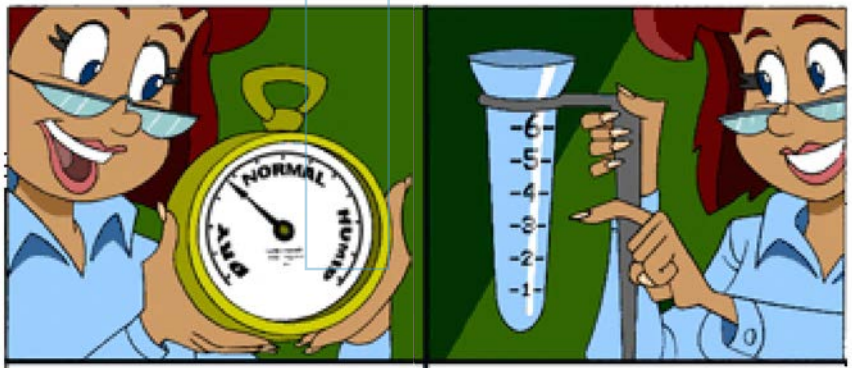
"The groups will use tools to gather information," Mrs. Cabe said. "Then we'll use the groups' information to make a forecast, or smart guess."





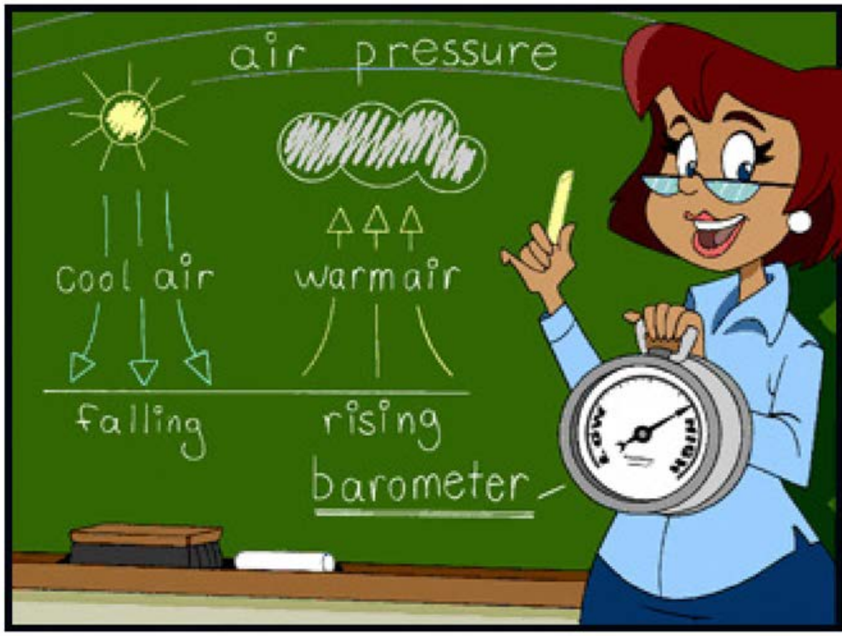
Next, Mrs. Cabe showed us the weather tools. She held up a thermometer. "This outdoor thermometer measures air temperature. It contains mercury, a metal that looks like a thick liquid. The level of mercury tells us how hot or cold the air is. You may have seen outdoor thermometers that are different from this one. Some look like clocks."

After that, Mrs. Cabe held up an object with a round dial. "This hygrometer measures the amount of water vapor in the air. Water vapor is water in its gas form. You can't see it." Then Mrs. Cabe showed us something that looked like a glass tube marked with lines and numbers. "This rain gauge measures how much rain falls during a period of time."

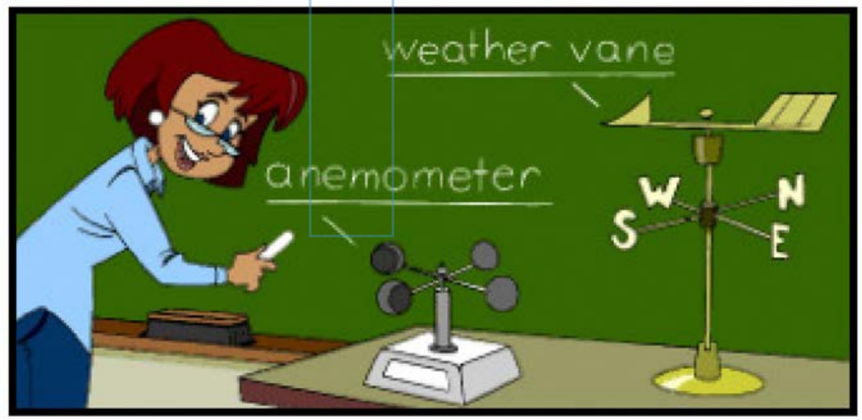


hygrometer | **rain gauge**

Next, Mrs. Cabe picked up another round dial with a needle. "This barometer measures air pressure," she explained. "It tells whether the air pressure is rising or falling."

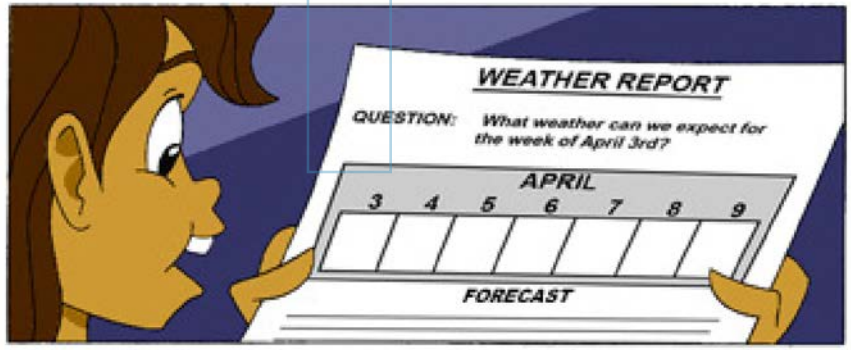


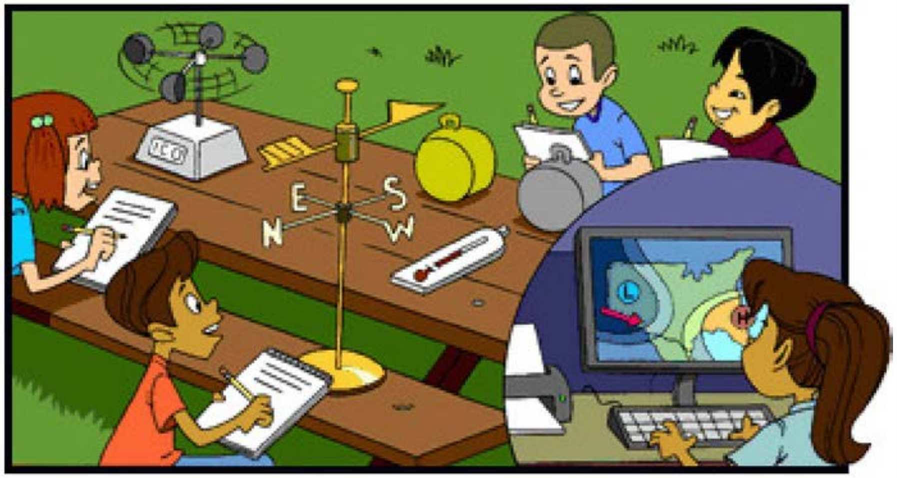
Finally, Mrs. Cabe explained the tools that the wind group would use. She held up a funny-looking stand with cups at the end of metal arms. "This is one type of anemometer. It measures wind speed." Then she showed us a weather vane that had an arrow and letters for the four directions. "You've probably seen these on top of houses and barns," she said. "They tell you the direction the wind is blowing."



Mrs. Cabe said she would show each group how to use the weather tools. But first we checked out some of the Web sites Dad had given us. Weather maps showed large pools of warm and cool air above Earth's surface. We could see where the pools of air were headed and whether two or more pools of air would meet. When they do meet, stormy weather usually follows. Some Web sites had information from weather satellites that track what's happening in Earth's atmosphere.

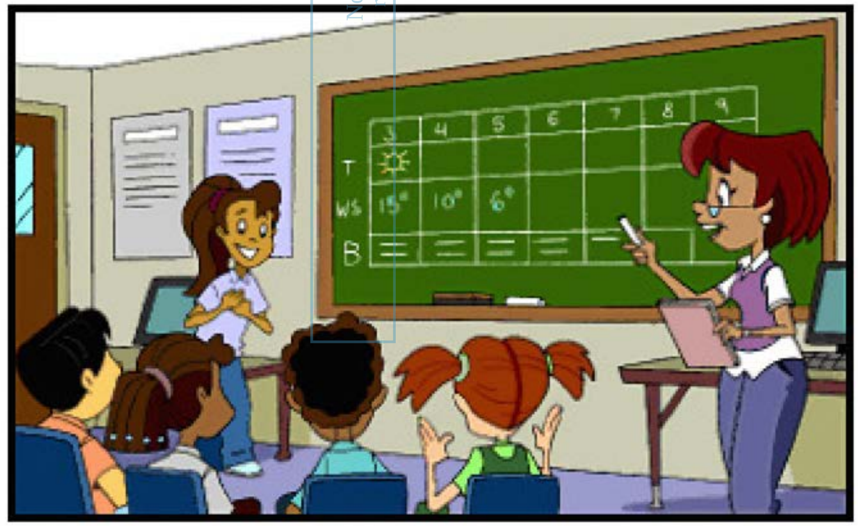
The next day, Mrs. Cabe gave each group an instruction sheet. It was like the ones we use for science experiments. The sheet had Dad's question on it. It had room for us to make notes on the information we gathered. There was also a space to write a forecast and another one in which to describe the weather for the week of April 3rd. That way, we could see if our forecast was the same or different from what actually happened.





Each day the groups used their tools. From Dad's Web sites we studied past weather patterns. We watched how winds around the world were moving now. We asked questions like *Are we having more rainy days this spring than we did last spring?* Information from the Web sites helped us make predictions about the upcoming weather.

The big day was approaching. Mrs. Cabe helped us use each group's information to decide on a forecast. Then something really great happened! The class picked me to present the forecast on TV! All my life I've wanted to be on TV like my dad, and this was my big chance.



The next afternoon, our class went to the TV station. A nice woman directed me to stand in front of the camera. I looked down at the forecast I had written on note cards. My hands were shaking so that I almost couldn't read it. Then I heard someone counting, "5 - 4 - 3 - 2 - 1." A green "On Air" sign flashed. "Why in the world did I ever think I could do this?" I wondered, as Dad introduced me.

I took a very deep breath and looked right into the camera. "Hello, everyone. This forecast is brought to you by Mrs. Cabe's class. Today we will have sunny skies, but the air pressure is falling. That means the weather is likely to change. We see that the wind is coming from the east. East wind often brings rain with it. So we predict that a rainstorm will roll into our area on Wednesday. Be sure to carry your umbrella that day. Now, back to you, Dad."

Dad smiled proudly as the camera turned back toward him. I let out a huge sigh and rushed back to join my class. We stayed and watched the rest of the news show. Everyone agreed that it was a lot of excitement for one day.

So what *did* happen the week of April 3rd? Well, it rained on Tuesday and Friday. And that was quite a change in the weather. So we were a little right and a little wrong. Maybe we should've checked with Kai's grandmother's toe after all!