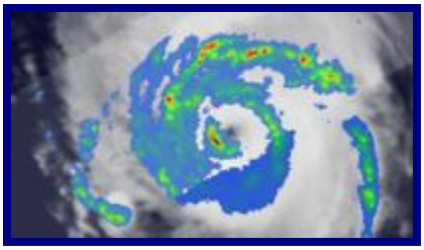
CURIOSITY ZONE
•Ever Wonder?•

WONDER WIRE

September 2004 Volume I

EVER WONDER . . . WHAT CAUSES HURRICANES?

WONDER. September is here, and the news is full of hurricanes. Scientifically speaking, a hurricane starts out over the ocean as an area of low pressure characterized by swirling winds and rising air, with wind speeds of at least 74 miles per hour. Hurricanes are like engines, taking in the warmth of the ocean and atmosphere and turning it into wind and waves. They are the most destructive storms on earth.



The next time a hurricane makes the news (which is sure to be soon!), take the opportunity to learn more about this amazing natural phenomenon. Take a closer look at the weather maps and satellite photos. Ask as many questions as you can about what is happening: Where did the storm start? Where is it headed? Why is the storm traveling so fast (or slow)? How powerful are the winds? Where is the eye of the storm? How big are the waves? Is the storm getting bigger or smaller?

EXPLORE.

Experiment 1: Evaporation. Hurricanes start in a part of the ocean where lots of really warm, deep water is evaporating (changing from a liquid into a vapor). Ocean water must be at least 82 degrees Fahrenheit before it begins to evaporate. Try this experiment to see how evaporation works:

Materials: Clear glass, water, clear plastic wrap or bag, rubber band.

Procedure: Fill your glass about 2/3 full with warm or hot tap water. Now cover the glass with the plastic wrap and seal the top with a rubber band. After a few minutes, look at the plastic wrap. What is happening? The drops you see on the plastic wrap are caused by evaporation – the warm water in the glass is slowly turning into a vapor, which then turns back into liquid drops when it hits the plastic wrap. Try repeating the experiment with much warmer or colder water. Do you notice any differences? If you want to be really scientific, use a thermometer to measure the different starting temperatures of three different glasses of water – one cold, one warm, and one hot – then cover them as you did before and record the results you observe over the next 20 minutes. What does this tell you about the importance of heat to evaporation?

Experiment 2: Hurricane Clouds. The clouds in a hurricane swirl around a calm center called the "eye." Ironically, the most destructive part of a hurricane is the area right around this calm center; it's called the "eyewall." This experiment shows how clouds swirl in a hurricane.

Materials: Large bowl, spoon, water, food coloring.

Procedure: Fill the bowl about 2/3 full with water. Stir the water in a circular motion until the water is going around and around in a fast swirl (count to at least 10 while you're stirring). When the water is moving fast, stop stirring and quickly add a few drops of food coloring to the center of the swirl. What happens to the color? This is how the clouds moving in a hurricane look.

WORD OF THE MONTH: EVAPORATE. USE IT IN A SENTENCE AT LEAST ONCE A DAY!

C-ZONE NEWS

Curiosity Zone construction in Broadlands Village Center (off Claiborne Parkway) going well; looks good for early December opening!

Toy store to open December 3

Classes and birthday parties to begin January 3

Registration to begin October 16

Join us October 16 for our registration kick-off and tons of fun at the Expo at Dulles Town Center! Demonstrations, hands-on experiments, and lots cool stuff to give away!

Hey Kids:
Become a Secret Science Agent now @ www.curiosityzone.com/SSA. Complete your mission each month and earn C-Zone bucks! (See back for this month's mission.)

Register to get the Wonder Wire™ by email @ www.curiosityzone.com/wonderwire

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LEARN. Hurricanes are rated in strength from 1 to 5. Category 1 storms are the weakest; they have winds of 74 - 95 miles per hour and create 4 to 5-foot-high waves. Category 5 storms are the strongest, with winds over 155 miles per hour and waves up to 40 feet (that's almost as tall as a four-story building!).

1900 Galveston hurricane: one of the worst

Hurricanes usually last for about 10 days. (Thank goodness they don't stay in one place!) Related ocean waves travel 1,000 - 2,000 miles ahead of the actual storm.

The worst hurricanes hit Florida or Texas 76 percent of the time. (Why do you think this is?) Virginia has been socked with more than 120 hurricanes since 1871, including one last September!

Hurricanes can start in the Atlantic Ocean, the Gulf of Mexico or the Caribbean Sea. Many of the most violent storms start way across the Atlantic in a spot near Africa called Cape Verde. (Can you find this spot on a map?) There are hurricanes in other parts of the world, too – but they are called something else. In the Pacific Ocean, they are called "typhoons." In the Indian Ocean, they are called "cyclones."

Scientists started naming hurricanes in 1953. Every six years, the names repeat. Will your name ever be used for a hurricane? Check it out at this Web site: http://kids.earth.nasa.gov/archive/hurricane/names.html.

Hurricane activity builds up over several decades, and we are just entering a new period of bad hurricanes. This past August was a perfect example -- we had the most named hurricanes and tropical storms since 1950.

Scientists still have a lot to learn about hurricanes. For example, scientists don't know what the strongest hurricane winds are because their instruments can't survive the most violent storms. (Some scientists think hurricane wind speeds can reach 600 miles per hour!) Scientists also don't fully understand when a hurricane will form, or how it will move.

SECRET SCIENCE AGENTS: YOUR MISSION FOR SEPTEMBER

When people have to evacuate their homes because of a hurricane, they often have trouble finding a safe place for their pets. Your mission this month is to design a hurricane-proof dog house. Submit your description to Mission@CuriosityZone.com and we'll be sure to post it on our Web site. Also, be sure to bring your design to the C-Zone (when we open!) to collect your "agent pay" in C-Zone bucks!

"Hurricane Hunters" actually fly airplanes into hurricanes to gather information! These brave pilots work for the United States Air Force Reserves. How do you become one? Check out it out at http://www.hurricanehunters.com/jobs.htm.

NASA scientists are also involved in studying hurricanes – from outer space! In the Tropical Rainfall Measuring Mission ("TRMM"), scientists are using a satellite to study which parts of a hurricane produce rainfall and why. This may help them more precisely predict the path and intensity of hurricanes, and understand how hurricanes affect the rest of the earth's weather. For more information, see http://trmm.gsfc.nasa.gov/.

While scientists can't predict exactly when or where a hurricane will hit, they can predict well enough to give people plenty of time to prepare, or to go to a safer place. What should you do if a hurricane is headed toward you? This Web site can help you get prepared: http://www.fema.gov/kids/hurr.htm.

COMING IN OCTOBER: EVER WONDER WHY LEAVES CHANGE COLOR?

Parents and Teachers: register to receive the Wonder Wire™ by email each month at www.curiosityzone.com/wonderwire.