

Chapter 15

ENRICHMENT

Use with Section 2

● Temperature and Thermal Energy

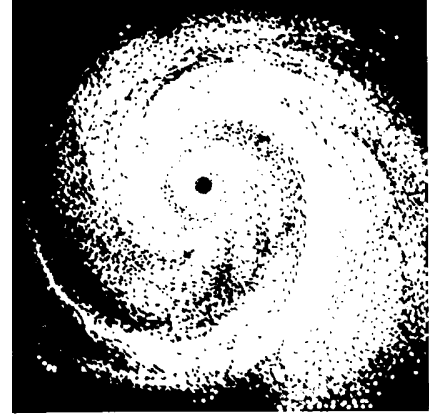
In the Eye of the Hurricane

Many people have seen or read news reports about hurricanes. To some people, they are fierce displays of how devastating nature can truly be. To others, they are beautiful reminders of the energy found in Earth's environment. Scientists also see hurricanes as intriguing events worthy of great attention and study.

Many forces combine to form a hurricane, including the temperature of ocean water and the collision of winds blowing from the east and west. Even Earth's rotation plays a role. But much of a hurricane's movement is caused by changes in density. Particles in warm air have more energy than particles in cool air, so warm air is less dense than cool air. As a result, warm air rises. Since cool air is denser than warm air, cool air sinks.

In a hurricane, warm air continually moves up from the ocean's surface, and cool air continually moves down from high in the atmosphere. That's because as warm air rises, it cools and becomes more dense. Finally, the cooled air sinks back down. As it does, it becomes warmer and less dense. When it reaches the ocean's surface, the whole cycle begins again. At the same time, Earth's rotation causes the hurricane to move in a whirlpool pattern. In the center, or "eye," of the storm is an area of low pressure. The eye of a hurricane is quite calm, but the area immediately outside it is the most destructive part of any hurricane.

Hurricanes generally originate near the equator and over water. The ones that form in the Atlantic Ocean usually occur just north of the equator. Hurricanes in the Pacific Ocean can form to the north or south of the equator. No matter where they form, these storms are ranked in categories between 1 and 5. Category 1 is the least aggressive, and category 5 is the worst storm possible.



Category	Winds	Storm surge (ocean water pushed ahead of the hurricane by strong winds)
1	74–95 mph	4–5 ft
2	96–110 mph	6–8 ft
3	111–130 mph	9–12 ft
4	131–155 mph	13–18 ft
5	155+ mph	18+ ft

Draw your own hurricane and label these parts:

1. Eye
2. Warm air
3. Cooler air
4. Area of most destruction
5. Area of least destruction (except the eye)

Briefly describe your hurricane. Include its category ranking, wind speeds, storm surge, and name. (There is a rule for naming hurricanes. Can you find out what it is?)
