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What is a Hurricane?

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WHAT IS A HURRICANE?

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1. What is a hurricane?

A hurricane is a tropical storm in which the winds reach speeds of over 74 miles per hour (120 Kph) and blow in a large spiral around a relatively calm center or eye. Every year these violent storms bring destruction to coastlines and islands which lie in their erratic paths. Stated simply, hurricanes are giant whirlwinds in which the air moves in a large, tightening spiral around a center of extreme low pressure, reaching maximum velocity in a circular band extending outward twenty or thirty miles (30-50 km) from the edge of the center (or the eye) of the hurricane. Near the center, winds may gust to more than 200 mph (320 kph), and the entire storm dominates the ocean surface and lower atmosphere over tens of thousands of square miles (square kilometers).

2. How are hurricanes formed?

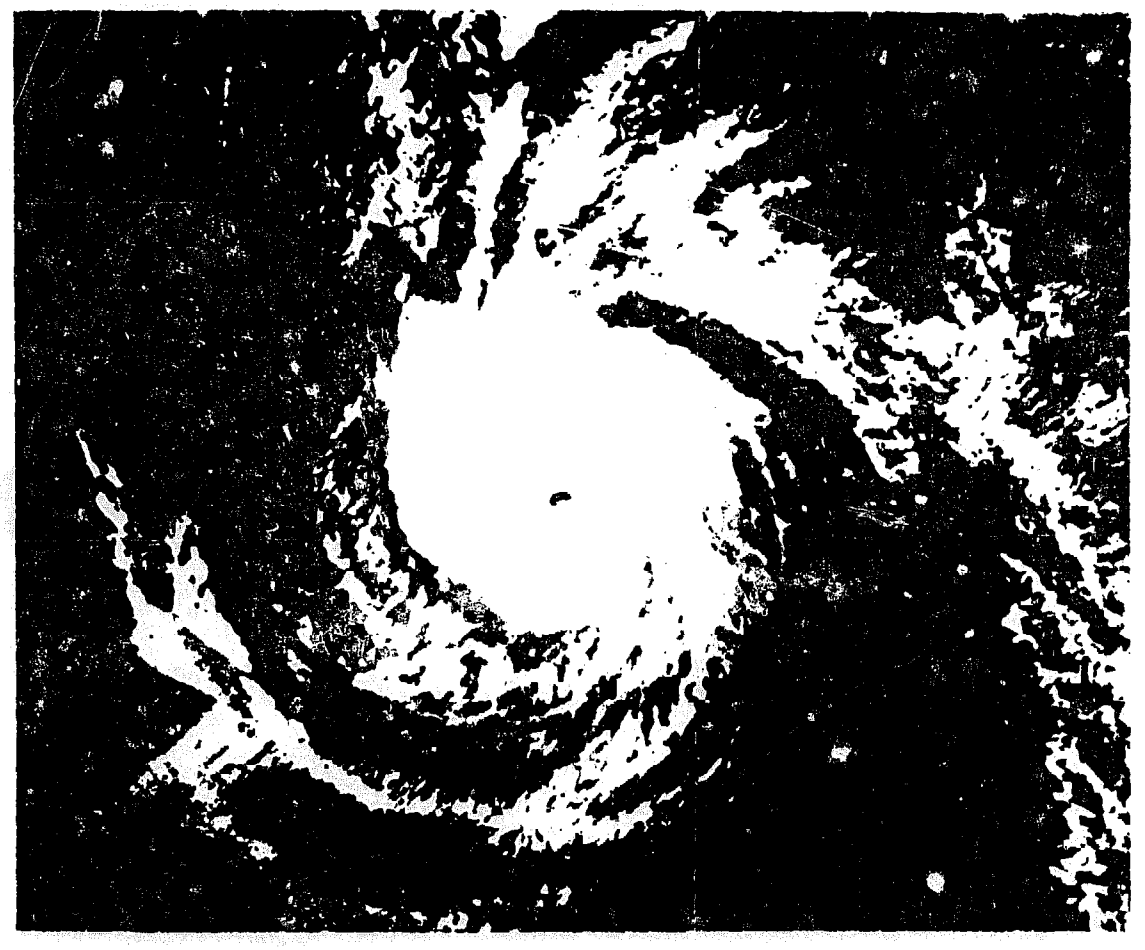
In order for a hurricane to form, it must have a warm sea and still air. In the Gulf of Mexico and the Caribbean, these conditions normally occur in the months of June through November. The warm air rises -- heavy, humid and full of water vapor. It's place is taken by air rushing in from the sides and, because of the earth's rotation, this moving air is given a twist so that the entire system begins to revolve. The warm rising air meets cooler air and releases its water vapor in the form of rain. It takes a lot of energy for the air to lift the water in the first place, and now this energy is released in the form of heat. This increases the rate of ascent of the air, and a continuous cycle begins to develop. More water is released, and thus more heat. The more water and heat released, the faster the cycle goes, and it soon becomes much bigger.

Because the wind system is revolving, centrifugal force tends to throw the air outwards so the pressure in the center becomes very low, thus forming the eye of the hurricane. The pressure on the outside is very high, so the wind moves faster and faster in an attempt to fill that low pressure area. However, the faster it moves, the more the centrifugal force throws it outwards. Soon there are very fast, circular winds; and once they reach 74 mph (120 kph), the system becomes a hurricane. Once this process is established, the storm begins to move forward, like a spinning top that moves along the ground. This brings it into contact with more warm sea and air, and the process becomes self-sustaining. Once a hurricane has formed, it will continue to move and expand until either it moves onto the land or it runs into an area where the sea is cooler.

3. What do hurricanes look like?

From the top, hurricanes appear like very large spirals. At the center they are very sharp and well-defined, but on the edges they tend to become quite ragged. In the Gulf of Mexico and the Caribbean, hurricanes rotate counter-clockwise. The following picture shows how a typical hurricane in the

Gulf of Mexico or the Caribbean looks to a satellite several hundred miles above:



4. In what direction do hurricanes move?

Hurricanes in the northern hemisphere generally move in a northwesterly direction; however, they often shift direction and become very erratic. Very little is known about what makes hurricanes move and change directions, but it is known that they are affected by the high altitude winds and the rotation of the earth. At present, scientists do not have the means of predicting in advance exactly where a hurricane will strike land. Therefore, they are always dangerous, as they can change direction without any warning.

5. How fast do hurricanes move?

Hurricanes usually begin moving forward at about 10-15 mph (15-25 kph), but they pick up speed as they continue to move northward. By the time they strike land, they may be moving forward as fast as 60 mph (95 kph).

6. How fast are the winds?

Wind speeds vary depending on the distance from the edge of the hurricane to the eye. The winds at the outer edge may be merely large gusts ranging from 74 to 100 mph (120-160 kph). Close to the eye, however, the winds may be moving as fast as 200 mph (320 kph). It is these winds near the center of the storm which do the most damage.

7. How large are hurricanes?

Hurricanes may be as small as thirty miles in diameter (50 km.) or as large as 200 miles in diameter (320 km.).

8. How far inland does a hurricane go?

Hurricanes begin to lose their strength as soon as they cross over land, because they are denied the warm water that is necessary to keep them moving. Usually the winds begin to slow down as soon as the eye of the storm has crossed the shoreline. However, the storm may continue to move inland with destructive force for as much as one hundred miles (160 km.) or more, depending upon the original size of the hurricane. Yet the farther inland they move, the less force they will have. Most of the damage will occur in an area usually no more than thirty or forty miles (50-60 km.) from the coastline. However, some hurricanes suddenly turn around and go back out to sea where they may rebuild their strength and come ashore again at another place.

9. What is the eye of a hurricane?

The eye of a hurricane is its center. In the eye, winds are light and skies may appear to be clear or partly clouded. The center is very calm usually, but this is very deceptive because, as soon as the eye has passed over, the hurricane-force winds will begin again. Many persons have been injured or killed when the calm eye lured them out of shelter and they were caught in the open in the high winds at the far side. When the eye of a hurricane has passed, wind blows from the direction opposite that from where the winds blew before the eye passed. The eye of a hurricane is normally 10 to 30 miles in diameter (15-50 km.).

10. What is the most dangerous part of a hurricane?

The winds of a hurricane do the most damage to structures, but most of the deaths caused by these storms come from the rain and flooding which accompany the hurricane. As the storm approaches and moves across the coastline, it brings huge waves and raises the tides sometimes 15 feet (4.5 meters) or more above normal. This rise may come rapidly and produce flash flooding in the coastal lowlands; or it may come in the form of giant waves which are mistakenly called "tidal waves". Waves and currents erode the beaches and the barrier islands, undermine buildings, and wash away roads and irrigation ditches. The torrential rains which accompany hurricanes can also produce flooding. As the storm moves inland and its winds diminish, floods constitute the greatest threat.

Hurricanes may also cause tornadoes at the outer edge of the storm system. These tornadoes may be the worst killers and do most of the damage at the edge of a hurricane. A tornado is a small funnel of air which spins very rapidly and moves along the ground destroying things in its path. Tornadoes also move in a northwesterly direction. They are generally small and only do damage in the

areas where they actually touch the ground. A tornado is usually no more than several hundred yards (meters) in diameter.

11. What can be done to protect yourself and your house from hurricanes?

A. Enter each season prepared. Every June through November, check all the major components of your house to make sure that they are still strong. Especially check the corners of the building to make sure that the wood is still strong. Check the base where termites or moisture may have eaten or rotted the wood. Check to make sure that the roof is securely tied to the walls, especially at the corners. If you are using bracing in the walls, check to see that the braces are still strong and securely fastened to the vertical posts.

B. When you first hear that a hurricane is approaching, be sure to listen to the radio for future messages.

C. When your area receives a hurricane warning, plan your time before the storm arrives so that you avoid last-minute hurry which might leave you marooned and unprepared. If your house is in a low-lying area that might be swept by high tides or storm waves, move to other areas which you know will be high above any possible flooding.

D. Board up any windows or doors to protect anyone inside from wind-driven debris. Be sure to close off transoms and to seal louvered windows and doors.

E. Tie down or move inside any objects which might be blown away or uprooted. Articles such as tools, furniture, loose wood, etc., can all become dangerous missles when hurled through the air by the hurricane winds.

F. Store drinking water in clean containers and cooking utensils, because the water supply may be contaminated by flooding.

G. If you have a radio or other battery-powered equipment, check to make sure that you have an adequate supply of batteries.

H. Store fuel for cooking and for boiling water in a place that can be kept dry.

I. When a hurricane comes, stay at home if it is a sturdy house on high ground. If it is not, move to another area of shelter on high ground and stay there until the storm is over. If your house is on high ground, remain indoors during the hurricane. It is extremely dangerous to be outside when high winds and tides are whipping through the area. If your house is on stilts, seek shelter in another building.

J. Beware of the eye of the hurricane. If the calm storm center passes directly overhead, there will be a lull in the wind lasting from a few minutes to half an hour or more. Stay in a safe place unless emergency repairs are absolutely necessary. Remember, at the other side of the eye the winds rise very rapidly to hurricane force again, and they come from the opposite direction.

K. After the hurricane has passed, stay in your village and help others unless you must seek emergency medical assistance in another area. Once the storm has passed, remember that hurricanes moving inland can produce severe flooding. Stay away from riverbanks and streams. And if you are still in a low-lying area, move to high ground until you are sure that the danger of flooding has passed.

L. Tornadoes spawned by hurricanes are among the storm's worst killers. When a hurricane approaches, tornadoes can be expected to develop. If you see a tornado, seek shelter inside immediately. If a tornado catches you outside, move away from its path at a right angle. If there is no time for escape, lie flat in the nearest depression such as a ditch, or against an embankment.

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