

# INTERMEDIATE ARTICLE: The Energy in Hurricanes

Hurricanes are huge rotating storms called **tropical cyclones**. Hurricanes form in the Atlantic or eastern Pacific Ocean. When similar storms form in the western Pacific, they are called **typhoons**. In the Indian Ocean, the storms are called cyclones.

Tropical cyclones have distinct characteristics. They are tropical because they form in the ocean near the equator. They are **cyclonic**, which means the storm winds spin around an eye located in the center of the storm. Tropical cyclones are low-pressure systems that have wind speeds of at least 74 miles per hour. The average hurricane contains energy equal to 200 times the world's electricity generating capacity.

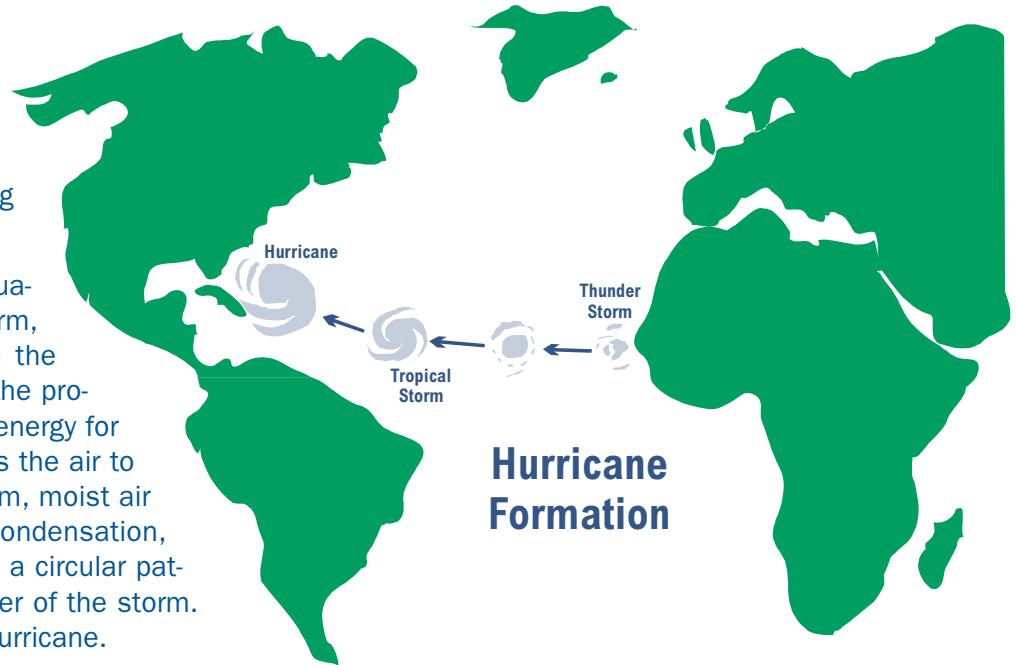
A tropical cyclone, or hurricane, begins as a thunderstorm. A hurricane in the Atlantic Ocean often forms as a storm off the west coast of Africa. It moves west toward the southern United States, picking up energy along the way.

As it crosses the ocean near the equator, the thunderstorm travels across warm, humid air. Water vapor condenses in the storm clouds and heat is released in the process. This heat provides much of the energy for the developing storm. The heat causes the air to rise, leaving a place for additional warm, moist air to fill. As the cycle of evaporation, condensation, heat release, and rising air continues, a circular pattern of wind develops around the center of the storm. This center becomes the eye of the hurricane.

Wind is all around the developing storm. When surface winds come together from different directions in the area where the storm is developing, they push up more warm, moist air. This push strengthens the storm's winds, giving the storm more energy. As the storm continues to build, high altitude winds push the rising air away from the top, resulting in a continuous flow of air through the storm.

Since a hurricane is a low-pressure storm, it is affected by high-pressure air in the area. As the storm continues to grow and rise, it reaches altitudes where the air pressure is higher. This higher-pressure air helps to remove heat from the rising air. It can be pulled toward the center of the storm, where the air pressure is lowest. When the high-pressure air moves into the center, it fuels the storm's growth and increases wind speeds.

A storm becomes a hurricane in three stages. First is a tropical depression, which has wind speeds up to 38 miles per hour. As the storm grows, it becomes a tropical storm, with wind speeds between 39 and 73 miles per hour. When wind speeds reach 74 miles per hour or more, the storm is called a hurricane.



Aerial photo of Hurricane Ivan over the Gulf of Mexico.

Once a tropical depression develops into a tropical storm, it is given a name to help track it. If the storm develops into a hurricane, the name stays the same. Each year, names are chosen by the World Meteorological Organization, with a different list of names for Atlantic and Pacific storms. The list alternates between male and female names. The first storm of the year has a name that begins with the letter A. The storms that recently hit the east coast of the United States and the Gulf of Mexico were Hurricane Charley, Hurricane Frances, Hurricane Ivan, and Hurricane Jeanne.

For more information about hurricanes and satellite imagery of hurricanes, visit the National Hurricane Center at [www.nhc.noaa.gov](http://www.nhc.noaa.gov). For information about the people that fly airplanes into hurricanes to record data and take photos of the storms, visit [www.hurricanehunters.com](http://www.hurricanehunters.com).