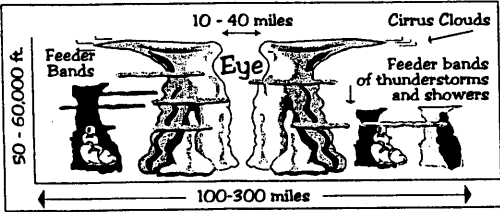


HURRICANES

The most destructive and extensive of all weather phenomena is the hurricane. Winds in a tornado can momentarily exceed those of a hurricane, but the life cycle of a tornado is primarily measured in min-



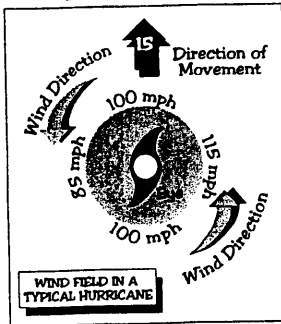
utes. The life cycle of a hurricane, however, is measured in weeks and its extraordinary size exceeds any other meteorological phenomenon.

Each part of the world has its own name for the fully mature tropical cyclone. They are hurricanes in the Atlantic, Caribbean, Gulf of Mexico, and Eastern and Central Pacific Ocean. In the Western Pacific they are known as typhoons, and simply as cyclones in the Indian Ocean. They are a Willy-Willy in Australia; a baguio in the Philippines, a traino in Haiti, and a cordonazo in Mexico.

A hurricane originates as a tropical cyclone over low latitude ocean areas. Several phases of development

by the lowest pressure, confused sea conditions, light and variable winds, and temperatures higher than outside the eye. They are not necessarily circular. Some eyes are elongated in shape, usually in the direction of movement. The average diameter is fifteen miles, but can range from two to forty miles although eyes of 70 to 90 miles in diameter have been reported. The eye is surrounded by cumulonimbus wall clouds that extend to altitudes of 50,000 to 60,000 feet.

Winds in a hurricane are not uniform, varying from quadrant to quadrant. For example, a hurricane with 100 mph winds, moving north at 15 mph, will have 115 mph winds in the right front sector, but only 85 mph winds in the left front. This is due to the forward speed either adding to, or taking from, the total wind force.



The greatest hurricane damage occurs just to the right of the storm track. The combination of sustained strong winds reinforced by the movement of the storm, high tides, run off from torrential rains, and reduced atmospheric pressure can result in a

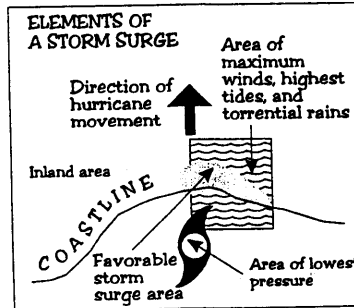
take place before a tropical cyclone develops into a hurricane. Growth is determined by the strength of the sustained wind: The tropical depression has winds less than 36 mph; winds of a tropical storm range from 36 and 74 mph. The hurricane has sustained winds greater than 74 mph.

TROPICAL CYCLONES

DEPRESSION	36 mph
TROPICAL STORM	36 to 74 mph
HURRICANE	more than 74 mph

North Atlantic tropical cyclones usually move initially in a westward direction with the prevailing easterly trade winds. They gradually drift northward as they move into higher latitudes with speeds from 10 to 15 mph. As the storms recurve toward a more northerly direction, the speed of movement increases significantly as the system comes under the influence of the westerly winds aloft.

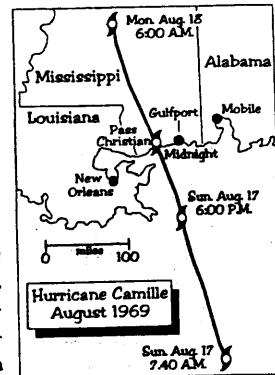
The near cloudless center of a tropical cyclone, called the eye, is peculiarly unique. It normally develops during the tropical storm stage and is usually well pronounced in the hurricane stage. It is characterized



"storm surge." The ensuing wall of water can reduce coastal areas to shambles.

On August 18, 1969, Hurricane Camille made landfall on the coast of Mississippi.

The storm was one of the most intense ever to strike the Gulf Coast. Camille was accompanied by winds gusting to 190 mph and a storm surge estimated to be 20 to 26 feet. The toll in Mississippi and Louisiana was 135 people killed and 42 missing. By the time the remains of Camille dissipated in southwestern Virginia, over 300 people were dead and approximately \$1.4 billion in damage was inflicted.



Compare the lifecycle of a tornado versus that of a hurricane.

1. Sketch the diagram of the hurricane in the space below. Label the eye, the cirrus clouds, thunderstorm bands, and also include the dimensions of the hurricane.
2. In the Atlantic Ocean, Gulf of Mexico, and Eastern Pacific these large storms are called hurricanes, but what are these storms called in the Western Pacific region and Indian Ocean region?
3. How is the growth of a hurricane primarily measured?

4 List the associated wind speeds for the following weather systems:

Weather system	Wind Speed (mph)
Depression	
Tropical Storm	
Hurricane	

- 5 What is the "eye" of a hurricane? Describe three characteristics of a hurricane's "eye".
- 6 Explain why the winds associated with a hurricane are not the same in terms of intensity all around.
- 7 In relation to the storm track, what area around the hurricane usually has the most intense wind and damage?
- 8 What is a "storm surge"? What factors contribute to a hurricane's "storm surge"?
- 9 Make a sketch of the "Elements of the Storm Surge" diagram. Label the storm's track, area of lowest pressure, the storm surge area, the coastline, and the ocean.

10 What were the winds and storm surge associated with hurricane Camille like?

