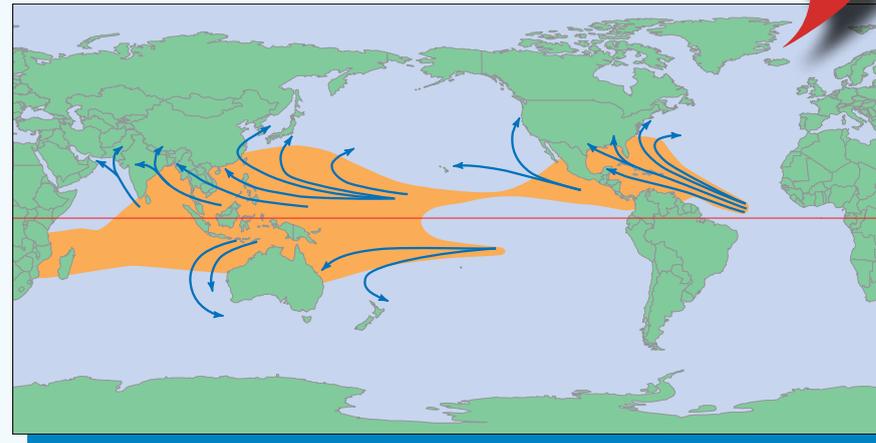


U. S. HURRICANE PROBLEM

Breeding Grounds

Hurricanes are products of a tropical ocean and a warm, moist atmosphere. Powered by heat from the sea (80-82 degree F water temperature is generally required), hurricanes start from areas of unsettled weather and thunderstorms in the tropics called disturbances. Tropical disturbances most commonly form in one of three ways. Occasionally, a cluster of thunderstorms will break away from the Intertropical Convergence Zone and become better organized or from a mid-latitude frontal boundary that has made its way into the Gulf of Mexico or off the East Coast. Approximately 60 percent of Atlantic tropical cyclones form from easterly waves moving westward from North Africa. Tropical disturbances reach tropical storm strength at 39 mph of sustained wind, and hurricanes at 74 mph and above.

The process by which a disturbance forms and strengthens into a hurricane depends on at least three conditions. First, a disturbance gathers heat and energy through contact with warm ocean waters. Next, added moisture evaporated from the sea surface powers the hurricane like a giant heat engine. Third, the hurricane forms a wind pattern near the ocean surface that spirals air inward. Bands of thunderstorms form, allowing the air to warm further and rise higher into the atmosphere. If the winds at these higher levels are relatively light, this structure can remain intact and further strengthen the hurricane. The center, or eye, of a hurricane is relatively calm with

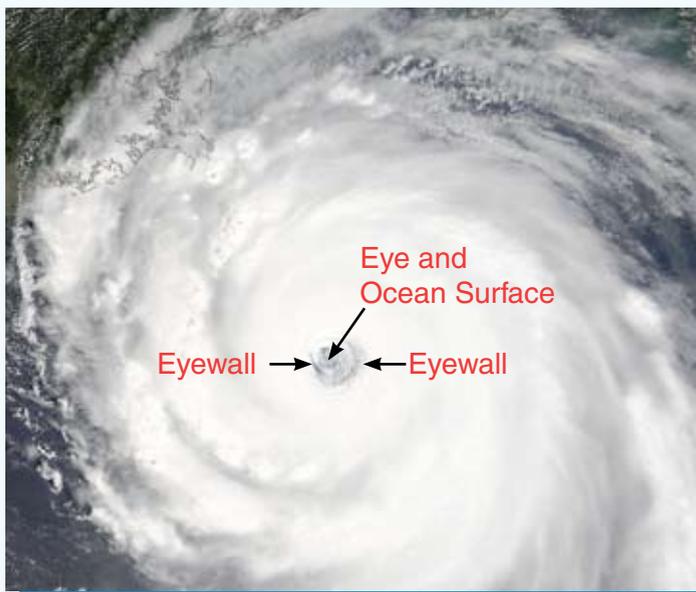


Tropical cyclone genesis areas

sinking air, light winds and few clouds. The most violent winds and rain take place in the eyewall, the ring of thunderstorms immediately surrounding the eye. At the top of the eyewall (about 50,000 feet), most of the air is propelled outward, increasing the air's upward motion. Some of the air, however, moves inward and sinks into the eye, creating a cloud-free area. The vertical wind shear in a tropical cyclone's environment is also important. Wind shear is defined as the amount of change in the wind's direction or speed with increasing altitude. When the wind shear is weak, the storms that are part of the cyclone grow vertically, and the latent heat from condensation is released into the air directly above the storm, aiding in development. When there is stronger wind shear, this means that the storms become more slanted and the latent heat release is dispersed over a much larger area.

U.S. Hurricane Problem

The United States has a significant hurricane problem and it is not that the hurricanes are getting more intense or more frequent, but the number of people moving into the path of the storms is exponentially increasing. More than one in six Americans now live in a county abutting the eastern Atlantic or Gulf of Mexico coast, and this does not include those living in Puerto Rico or Hawaii. In the more popular resort areas, numbers can swell 10- to perhaps 100-fold when holiday, weekend, and vacation visitors arrive. From Maine to Texas, our coastlines are filling with new homes, condominium towers and cities built on sand. These homes are waiting for the next storm to threaten its residents' dreams. In fact, the coastal population is expected to double between 1995 and 2010. The most significant danger to coastal citizens is from the hurricane's storm surge. Historically, storm surge has caused the greatest loss of life and extreme property damage.

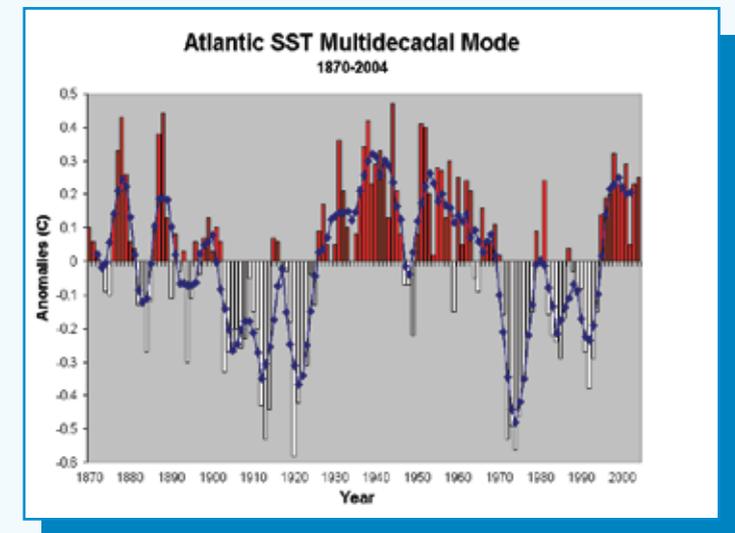


Perception of Risk

Over the past decade, the hurricane warning system has generally provided adequate time for people on the barrier islands and the immediate coastline to move inland when hurricanes threaten. However, as we saw first hand during 2005 it is becoming more difficult to evacuate people from densely populated coastal areas. The problem is further compounded because 80 to 90 percent of the population now living in hurricane-prone areas have never experienced the core of a "major" hurricane. Many of these people have been through weaker storms. The result is a false impression of a major hurricane's damage potential. This can lead to complacency and delayed actions resulting in injuries and loss of lives.

Frequency of Hurricanes

Based upon changes in oceanic and atmospheric conditions, many scientists believe recent increased hurricane activity fits into a natural cycle called the Atlantic Multidecadal Mode, a North Atlantic and Caribbean sea surface temperature shift between warm and cool phases that each last 20 to 40 years. Data suggest we are in a warm Atlantic phase, thus, an active Atlantic hurricane era may be underway, similar to that last seen from the late 1920s to the late 1960s. The active 2004 and record breaking 2005 hurricane seasons certainly supports this theory. The 2006 season, however, showed that despite being in an active multi decadal mode, there can be individual years when hurricane activity is suppressed.



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