TORNADOES / HURRICANES

TORNADO	HURRICANE
WHERE DO THEY FORM?	
Tornadoes form over land and form within storms that are often very close to the jet stream.	Hurricanes form over warm water in the tropical oceans and develop best when far from the jet stream.
HOW BIG ARE THEY?	
Tornadoes are usually no more than a 1/4 mile wide.	Hurricanes can be up to several hundred miles wide.
HOW LONG DO THEY LAST?	
Tornadoes usually don't last more than an hour.	Hurricanes can last up to 3 weeks.
HOW STRONG ARE THE WINDS?	
The most severe tornadoes can be up to 300 mph.	Hurricanes usually have winds that are less than 180 mph.
HOW OFTEN DO THEY OCCUR PER YEAR?	
There are around 800-1000 tornadoes in the US.	There are an average of 10 tropical storms in the Atlantic Ocean.
HOW EARLY CAN YOU GET WARNINGS FROM FORECASTERS?	
Usually no more than 15-30 minutes for tornadoes.	Forecasters can detect tropical storms / hurricanes several days before landfall.

What is the Difference Between a Tornado & a Hurricane?

Tornadoes and hurricanes appear to be similar in their general structure. Both are characterized by extremely strong horizontal winds swirling around the center, strong upward motion dominating the circulation with some downward motion in the center. The tangential winds far exceed the radial inflow or the vertical motion, and can cause much damage. Hurricanes always rotate counterclockwise in the northern hemisphere (clockwise in the southern), the direction of their rotation being determined by the Earth's rotation. This is almost always true of tornadoes too, although on rare occasions "anticyclonic" tornadoes spinning in the opposite direction do occur (tornadic circulation is determined by the local winds). This is where the similarities end. The most obvious difference between tornadoes and hurricanes is that they have drastically different scales. They form under different circumstances and have different impacts on the environment.

Tornadoes are "small-scale circulations", the largest observed horizontal dimensions in the most severe cases being on the order of 1 to 1.5 miles. They most often form in association with severe thunderstorms which develop in the high wind-shear environment of the Central Plains during spring and early summer, when the large-scale wind flow provides favorable conditions for the sometimes violent clash between the moist warm air from the Gulf of Mexico with the cold dry continental air coming from the northwest. However, tornadoes can form in many different circumstances and places around the globe. Hurricane landfalls are often accompanied by multiple tornadoes. While tornadoes can cause much havoc on the ground (tornadic wind speeds have been estimated at 100 to more than 300 mph), they have very short lifetimes (on the order of minutes), and travel short distances. They have very little impact on the evolution of the surrounding storm, and basically do not affect the large-scale environment at all.

Hurricanes, on the other hand, are large-scale circulations with horizontal dimensions from 60 to well over 1000 miles in diameter. They form at low latitudes, generally between 5 and 20 degrees, but never right at the equator. They always form over the warm waters of the tropical oceans (sea-surface temperatures must be above 26.5° C, or about 76° F) where they draw their energy. They travel thousands of miles, persist over several days, and, during their lifetime, transport significant amounts of heat from the surface to the high altitudes of the tropical atmosphere. While their sporadic occurrence prevents them from drastically impacting the large-scale circulation, they still affect it in ways which must be accounted for and need to be better understood.