

## Comparison: Tornadoes and Hurricanes by KI5LNM

Tonight as it is hurricane season, I thought it might be interesting to do some comparisons of tornadoes and hurricanes. I'm sure most of us can immediately think of some differences but you might find some of this rather interesting as I did.

Both tornadoes and hurricanes have strong horizontally blowing winds that circle around a center eye.

Also both tornadoes and hurricanes can leave a path of death and destruction behind them. The only reason that Hurricanes have more damage associated with them is because of their immense size.

Both rotate counterclockwise. This is because of the rotation of the earth on its axis. But as tornadoes like to change things up at times, they can break this habit if there are strong enough local winds that will counter this effect and then the tornado is called a "anticyclonic tornado" as it is spinning clockwise. This is rare but does happen.

But what about differences?

- Over a year, the earth averages 2,000 tornadoes globally.
- Over a year, the earth averages 100 hurricanes globally.
- Tornadoes usually happen in the spring and summer. Though have happened at all times of the year.
- Hurricanes usually happen in the summer and fall. Though have happened at other times of the year.
- Tornadoes form over land. But can travel over water.
- Hurricanes always form over the warm waters of the tropics and then can make landfall.
- Tornadoes can be warned 15-30 minutes before they happen.
- Hurricanes can be warned several days in advance of making landfall.
- Tornadoes generally are a few hundred feet or yards across but can be much larger, up to the largest recording of 2.6 miles wide with El Reno 2013.
- Hurricanes can be up to 1,000 miles across as was Sandy which hit New York and New Jersey in 2012.
- Tornado damage is all from their high wind speeds.
- Hurricane damage, on the other hand, can be from wind, rain, and storm surge.
- Tornadoes average traveling only 10 or 20 miles at the most and last only minutes or up to an hour at the most. Of course, there are those that are even more fleeting than this and some that travel much further such as the Tri-State Tornado in 1925 that ran from Missouri through Illinois into Indiana and lasted 3 1/2 hours that afternoon. This tornado still holds the highest number of deaths in a tornado at 695. If you remember how short the warning time above we have today on tornadoes, these people had no warning at that time until they saw or felt it.
- Hurricanes can travel thousands of miles and last for several days or weeks.
- Tornado genesis is in severe thunderstorms. These storms often occur in areas where warm air and dry cold air meet. This creates a high wind shear environment for them to develop. This happens in the spring and summer in the central US. Hence, Tornado Alley. Albeit, they can form in other areas if the factors are set up for their formation such as the growing numbers in Dixie Alley.
- Hurricanes form near the Equator but never on it. Generally around 5 and 20 degrees latitude. They are always over warm water and generally where sea-surface temperatures are over 76F.
- Tornadoes have high wind shear
- Hurricanes have low wind shear

One thing I find interesting in comparing the two is the difference in their wind speeds. Tornadoes far outreach hurricanes in this area.

<b>Category</b>	<b>Tornado</b>	<b>Hurricane</b>
<b>EF-0</b>	<b>65-85 mph</b>	
<b>EF-1, Cat 1</b>	<b>86-110 mph</b>	<b>74-95 mph</b>
<b>EF-2, Cat 2</b>	<b>111-135 mph</b>	<b>96-110 mph</b>
<b>EF-3, Cat 3</b>	<b>136-165 mph</b>	<b>111-129 mph</b>
<b>EF-4, Cat 4</b>	<b>166-200 mph</b>	<b>130-156 mph</b>
<b>EF-5, Cat 5</b>	<b>over 200 mph</b>	<b>over 157 mph</b>

Another difference in tornadoes and hurricanes is that despite each of these levels have a wind speed that marks that rating, for Tornadoes the actual rating it is given is based on damage, whereas the Hurricane rating will be based on that wind speed alone. There have been wind speeds over 200 for tornadoes that got lower ratings This happens when they run through open countryside with little damage happening. An example is El Reno 2013 which had wind speed at and probably over 300 mph but received a EF-3 rating.

So last question that is often asked. Is a Tornado or Hurricane worse?

This question is asked and it really depends on how you look at it. They are quite different phenomena, albeit both being cyclonic wind events. The widespread size of a hurricane causes one event to have vastly more damage than any one tornado will have. Yet, locally if in the path of a tornado it can destroy all and the only safety can be to get below ground. Tornadoes will always have the most immediate threat to life, and the destruction of all in its path. And yet have the least amount of warning of what is about to hit. The long warning time one has on a hurricane can vastly reduce the death numbers in a hurricane compared to a tornado.

For me personally, I think if you put the two phenomena on the same scale of size, the tornado would far outstrip the hurricane. We can be thankful they are small by comparison.