Tornado Report

RiskMeter.com

The On-Line Service to Perform Automated Property Reports

Why use the RiskMeter Online?

Do you know the tornado risk for each of your new and existing policies? We do! Here are the metro cities with the highest tornado scores:

1. Denver, CO*
2. Houston, TX
3. Miami, FL
4. Hollywood, FL
5. Tampa, FL
6. Lincoln, IL
7. Lakeland, FL
8. Little Rock, AR
9. Cape Coral, FL
10. Oklahoma City, OK

**Not downtown, but a rural area to the northeast.*

For additional information, please call: 1.800.746.7797

DISASTER can strike at any moment!

In an average year, the U.S. experiences 1,200 tornadoes, which kills 55 Americans, injures 1,500 and causes more than $400 million in damage! The total number of tornadoes reported in 2004 reached a record high of 1,717 shattering the previous record of 1,424 reported in 1998. In addition, a recent study by Munich RE reported that two of the ten largest natural catastrophes in history were tornadoes.
— (Source NOAA)

It's a fact that losses are inevitable in the insurance industry. The only factor you can control is how much risk you really want to be exposed to. Did you know that there is an easy, cost-effective way to minimize your exposure to tornado risk? Using the RiskMeter Online's tornado report, you can take your new and existing policies and find out within a matter of seconds which policies pose the greatest risk. To learn more about this revolutionary report, please read below.

Features

Simple Answers
Using the RiskMeter Online to obtain tornado information is simple! Just enter an address and in a matter of seconds you will receive a detailed tornado report full of useful information including:
- Frequency of tornado events from 1990 - 2007
- Percentile score that compares your lookup to the rest of the U.S.
- Average number of tornadoes per year for the area
- Score based on the number of tornadoes per year

Find More Addresses
The RiskMeter Online utilizes three different sources to determine the coordinates of a location. By using several sources, we can ensure you get the highest address match rate possible. This will be especially helpful in rural and new construction areas.

Integration Available
Streamline your underwriting process by integrating your system with the RiskMeter Online. This will eliminate duplicate data entry, resulting in substantial time savings! Additionally, all of the RiskMeter Online's reports are available, like distance to coast, windpool eligibility, rating territories, flood zones and more! Further, through integration, the data values can be used in quoting and rules-based underwriting systems to quote and bind in real-time!

Batch Processing
Policies can also be run through in batch to give you a comprehensive picture of your tornado risk. Use this to evaluate your current exposure, as well as when considering new schedules.

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About the Tornado Report:

The RiskMeter's Tornado report is based on National Climatic Data Center figures for the last 18 years (1990 – 2007). This data contains the date and location for each of the 52,400 tornadoes that occurred during this time period. Although this is excellent data, there are far too many data points to easily discern a pattern (see Figure 1). What you need is a way to use the data to determine the relative risk of a location. This is why the CDS Tornado model was built.

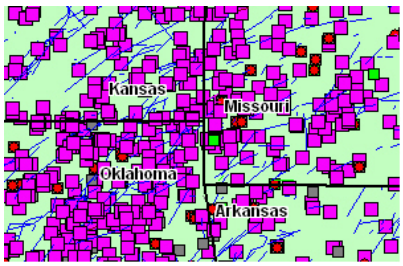

Figure 1: Raw Data

See Figure 2 down below right. Basically, the US was broken into rectangular grids that were 1/10 of 1 degree on each side. One degree is roughly 70 miles, so the grid squares were roughly 7 miles on each side. The reason why it's roughly is because the earth is a sphere and the size of each degree varies depending on the location of the degree on the earth.

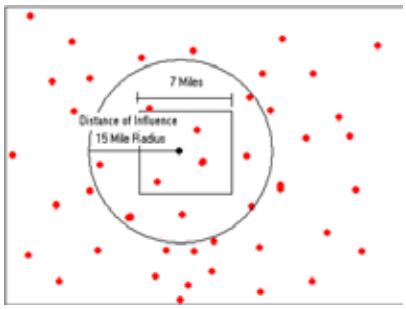

Figure 2: Processing Method

For smoothing purposes, circles were drawn with 15-mile radiuses from the centroid of the grid square. We call the 15 miles the "distance of influence," which is the area where we are counting the tornado events. Then the total number of tornadoes within the area (circle) was determined.

The data was then normalized so that the grid square with the highest score was given a score of 100, and all other scores were calibrated accordingly. This is known as the "**Tscale**."

The percentile was also calculated so that you could get a feel as to how the score compared with the country as a whole. This is known as the "**Tpercentile**." Figure 3 shows the finished model of the same area shown in Figure 1.

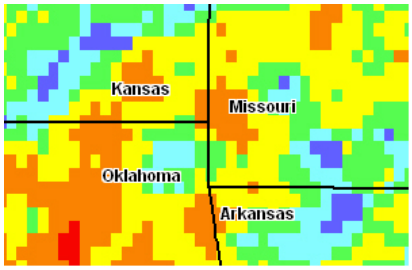

Figure 3: CDS Tornado Model

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About Tornado Scores:

Since most companies have never tried to quantify tornado risks in the past, CDS created the Tornado Score to make it easy for an insurer to quantify tornado risk. The idea was to give insurers a score which would help them understand not only the relative risk of a location, but also what it means in terms of risk. Was there an average of 1 tornado every year? One tornado every 5 years? Is 1 tornado a year above average? Below average? Our Tornado Score answers these questions. It helps an insurer to put the risk into context.

CDS first calculated the average tornado frequency for the U.S. This turned out to be one tornado in an area every 3 years. We then created a scale from 0-5 (no risk – extreme risk) which compared the frequency vs. the national average. The results can be seen below. Here are some key statistics to keep in mind.

- 83,934 cells (squares) in the U.S.
- The average Tscale: 8
- Highest number of tornadoes: 62
  more than 3.5 tornadoes per year

Tornado Score Breakdown for the U.S.

Tornado Score Breakdown for the U.S.

Score	Tscale	Description	% of Country
0 No Risk	0	No Storms	31%
1 Low Risk	1-4	Less than 1 tornado every 5 years on average	23%
2 Average Risk	5-12	Approximately 1 tornado every 2 to 5 years on average	20%
3 Elevated Risk	13-27	Approximately 1 tornado every 1 to 2 years on average	19%
4 High Risk	28-58	1 to 2 tornadoes per year on average	6%
5 Extreme Risk	59 – 100	More than 2 tornadoes per year on avg.	<1%

As you can see a very high percentage of the country has very low scores. In fact, 31% of the country has a score of 0, meaning there were no tornadoes in the area. Tornadoes occur mostly east of the Rocky Mountains due to weather patterns, and as a result the Western part of the country generally has low scores.

Is There a Correlation Between Size and Frequency of Tornadoes?

We also examined the correlation between the size of tornadoes (F-scale) and the frequency. Tornadoes are usually classified using the Fujita Tornado Scale, also referred to as the F-Scale. This scale was developed by Dr. T. Theodore Fujita (University of Chicago) in 1971. We wondered if the strongest tornadoes (F4 and F5) hit the areas with the highest frequency of events.

Fujita Tornado Scale

F-Scale	Windspeed(MPH)
F0	40-72
F1	73-112
F2	113-157
F3	158-206
F4	207-260
F5	261-318

Our conclusion was that there was not a strong correlation between strength and frequency. While most of the strong tornadoes occurred in the Midwest, which on average has higher scores than other parts of the country, the areas with the bigger (F4 and F5) storms didn't have the highest average Tscales. This is true of Florida, which experiences many small tornadoes and waterspouts. Although Florida is ranked fourth in terms of the number of tornadoes, there were no F-5 tornadoes reported during the study period.

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What does RiskMeter's Tornado Report Return?

Tscale: This is a number between 1-100 that represents the frequency of tornado events from 1990 – 2007. The national average is 8 so any Tscale number higher than this is more likely to have a tornado occur.

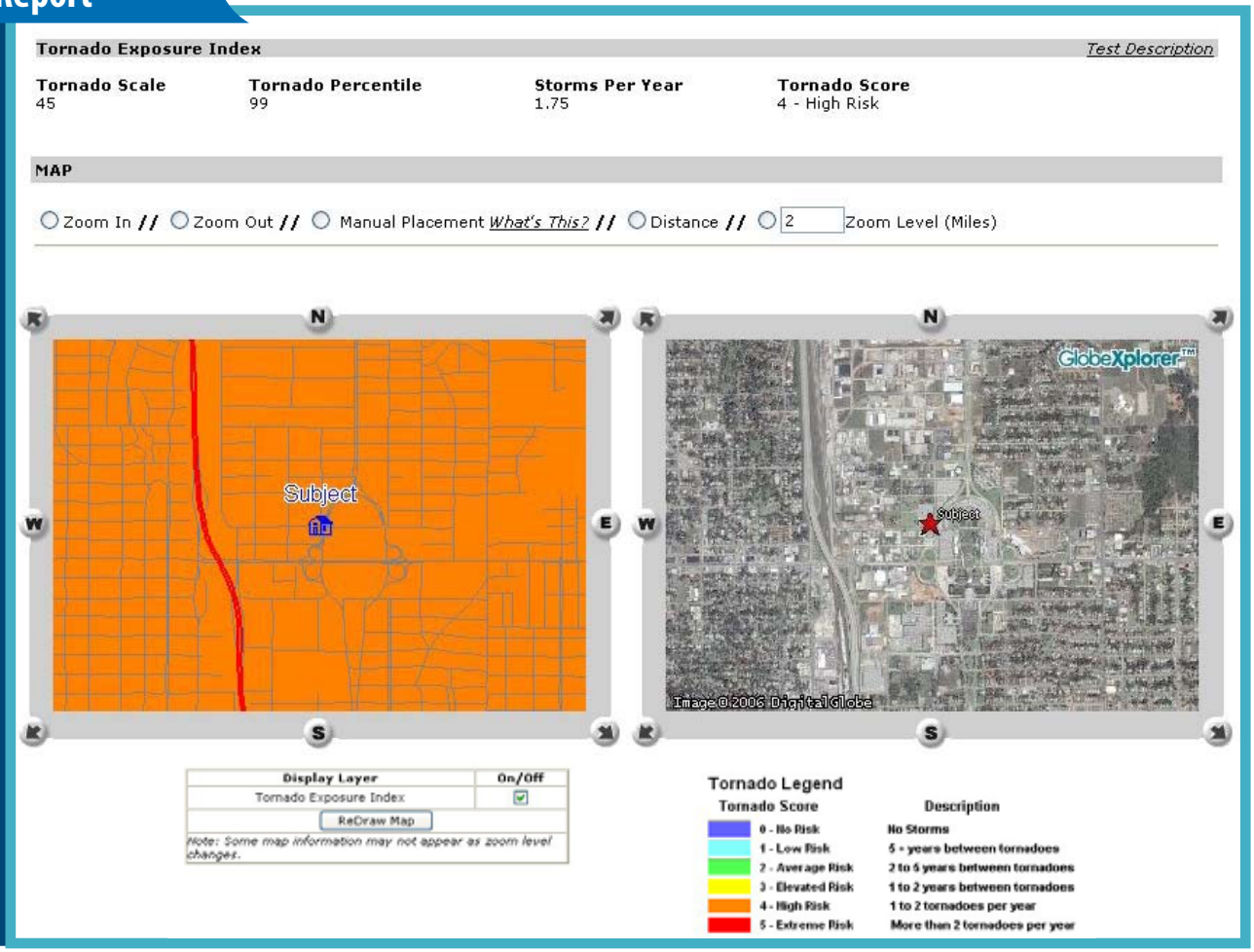
Tpercentile: This is a percentile score that compares the area you're looking at to the rest of the U.S. For example, a score of 10 means that it is in the lowest 10% of all areas in the U.S., or a score of 80 would mean that it is in the top 20% of all areas in the U.S.

Storms per Year: This is the average number of tornadoes per year for the area. The national average is a tornado every 3 years.

Tornado Score: This score is based upon the number of tornadoes per year. The RiskMeter Online will return one of the following scores:

0 - No Risk - No Storms
1 - Low Risk - Less than 1 tornado every 5 years on average
2 - Average Risk – Approximately 1 tornado every 2 to 5 years on average
3 - Elevated Risk – Approximately 1 tornado every 1 to 2 years on average
4 - High Risk – 1 to 2 tornadoes per year on average
5 - Extreme Risk – More than 2 tornadoes per year on average

Sample Report



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