

TORNADO CHASING: AN INTRODUCTION TO RISK TOURISM OPPORTUNITIES

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Abstract: Tours devoted to tornado storm chasing have become popular in recent years, especially with the emergence of many profit and non-profit storm chasing organizations. While most literature in risk recreation has been directed toward rock climbing or other high-risk outdoor recreation activities, tours devoted to storm chasing are quite unlike these traditional activities. The purpose of this paper is to provide a review of these organizations from information collected in a mailed survey. Areas to be discussed are specific tour details for each company, basic demographics of tour attendees, and other areas of tour requirements. **Keywords:** Risk tourism, tornado chasing.

Introduction

Since the movie "Twister" premiered in 1995 there has been increased interest for storm chasing. The activity of storm chasing requires participants to locate and "chase" after a tornado-producing super-cell thunderstorm. Although this is an extremely risky activity, storm chasing is becoming a popular form of tourism. For example, storm chasing is a sport not unlike rock climbing, in that to participate in either activity you must first have an understanding of basic techniques and safety measures. Further there is some level of danger associated with the activity. Americans are more now than ever likely to engage in high risk outdoor activities (Ewert and Schreyer 1990; Greenfield, 1999, McGraw 1998). Although storm chasing is considered a new tourist activity, it has existed since the late 1940s; only now it is becoming a popular form of tourism.

Risk recreation traditionally has been applied to rock climbing, mountain biking etc. (Ewert 1995, Hollenhorst 1995). This paper explores a new form of risk tourism: tornado chasing. To get a better understanding of this new phenomenon, a short survey was sent to the six major operators that provide storm-chasing opportunities to the public. The survey was designed to solicit information about the clients served, basic tour information and some motivations of the clients. This paper highlights the findings.

History

Essentially storm chasing began after World War II. The reason it came about was because an abundance of

airplanes and pilots that had a working knowledge or radar technology were given an opportunity to study storms first hand by flying through them. This research project, which operated out of Ohio and Florida, became the baseline for understanding tornado-producing storms. Along with the beginning of storm study, highways were modified, helping to bring the chase from the air to the ground.

The Tornado Intercept Project, based out of Norman, Oklahoma was the first organized ground-based group of storm chasers. This project was sponsored by the National Severe Storms Laboratory (NSSL) to conduct research about storms that cause tornadoes and the effect they have on communities located in the region known as Tornado Alley. The project was declared a success on May 24, 1932 when the scientists and chasers met face-to-face with a tornado in Union City, Oklahoma. This is also where one can see storm chasing being born as a hobby rather than just for scientific reasons (Marshall 1993).

Tornado Formation

Many prospective tornado tourists need to have a rudimentary understanding of tornadoes and how they work. A brief description of what a storm chaser should know about tornadoes follows. Tornadoes are produced as a thunderstorm develops an organized internal structure of sufficient strength to extend the vortex from the cloud base to the ground. The severe thunderstorm that develops a tornado is normally the largest thunderstorm in a squall line or a very large isolated thunderstorm. These storms are able to produce tornadoes because they have the organized internal structure that can support a tornado.

Risk Recreation Defined

Unlike traditional risk recreation, storm chasing uses its own definition that is geared towards just the act of storm chasing. Traditionally, risk recreation is a self-initiated activity in a natural environment that people partake in due to the activity's uncertain and potentially harmful nature and it's cognitive and affective involvement (Robinson 1992). In terms of storm chasing, the following definition is utilized: the recreational pursuit of an uncontrollable meteorological event (Cantillon, et al 2000)

Storm chasing is an activity that is associated with many risks, and those that chase storms should be aware of these risks. There have not yet been any media frenzies concerning the death of a storm chaser, but many think that when this happens, regulations and sanctions will be put into effect that will alter one's ability to chase a storm effectively (Dowell 1998). For example, climbing Mount Everest is an activity that people participate in, and there are many recorded deaths of such attempts. This fact has not discouraged a lot of people from climbing the mountain, and similarly, any fatalities that may occur during a storm chase should not effect the way that chasers conduct themselves while hunting a storm.

Storm chasing can be considered a risk tourism activity. Although it was initiated for scientific purposes, there are many that chase simply for the joy of the chase. "The thrill for storm chasers is tracking nature out of control, finding themselves eye-to-eye with...the great grand-sucking twisters of Tornado Alley" (Paddy 1994:32). As with any recreational activity, there is a challenge to chasing, and it seems as though there is more challenge and frustration to chasing than a lot of other activities. Storms are not spawned on command. Nature acts in mysterious ways and there has yet to be a method of knowing exactly when and where are tornado will hit. Tornado chasing is basically a guessing game with some help from scientific information to make these educated guesses. Besides the thrill of the chase, "what compels storm chasers to drive tremendous distances across the plains?...You can see forever...the sky and the air are clear, and what you see is tremendous—it's simply awe-inspiring" (Wolkomir 1994:52).

Another way that storm chasing is a recreational activity is that there has been an increase in those interested in storm chasing, causing a noticeable influx in traffic on prime chase days. According to research by Wolkomir (1994), there are so many storm chasers out there that on prime chase days there are too many cars on the roads to drive. If storm chasing was not a popular activity, there would not be such a demand for space for these chasers.

Table 1. Storm Chasing Groups to Contact on the Web

Cloud 9 Tours	http://www.pair.com/storms/cld9.html
Silver Lining Tours	http://silverlining.pair.com/chase.html
Storm Chasing Adventure Tours	http://www.storm-chaser.com
Tornado Alley Safari Tours	http://www.pair.com/talley/tours.html
Tornado Research and Defense Development (TRADD)	http://www.abilene.com/tradd
Widespread Weather Services	http://www.widespread.com

These tour groups have different packages to offer, with a range of prices, tour lengths, and requirements. The following tables outline some of the major similarities and differences between the various tour groups. It must be mentioned that Widespread Weather Services, Cloud 9 Tours, and Tornado Alley Safari Tours responded to the mailed survey, while the information for the other tour

Table 2. Length of Average Tour

Cloud 9 Tours	14 days
Silver Lining Tours	10 days
Storm Chasing Adventure Tours	14 days
Tornado Alley Safari Tours	8 days
TRADD	5 days
Widespread Weather Services	7-14 days

At first glance, Tornado Alley Safari Tours may appear the least costly as the cost per day is only \$113 (see Table 3). This is misleading, as it needs to be remembered this is only an eight-day tour. In reality, the most cost-efficient tour (based solely on cost-per-day information) would appear to be either Cloud 9 Tours or Storm Chasing

Data Collection: Storm Chasing Tour Groups

This section of the paper gives some information about what exactly is entailed in a storm chasing package, and web sites are provided for those that wish to seek out additional information. Many people wish to try such a thing and joining one of these groups is the perfect way to enjoy an experience of a lifetime.

Storm chasing in the past has mainly been done for scientific reasons rather than for pleasure or recreation. Now that more people have become interested in storm chasing, it has opened a door leading to a new hobby. Since it is not a hobby that you can pick up very easily, there are experts that you can seek and join their storm chasing expedition. Often, they may consist of expert storm chasers that do not mind having a novice along for the ride. They operate in a territory throughout Tornado Alley.

A short survey was sent to the six companies that cater to storm chasers in the United States (Appendix A). Three or 50%, responded to the request. A summary of all six companies follows, with information from the survey as well as web based literature. Table 1 lists the six companies and their web site.

companies is based on information found on their web pages during the winter of 1999/2000.

Table 2 shows the length of tours offered by each of the companies. Most of the tour lengths are relatively the same with a few exceptions. TRADD offered the shortest of the six tour options, and Widespread is the only group to offer a choice of one or two week packages.

Adventure Tours, each with a cost-per-day of \$143. The most costly tour is TRADD at \$234 per day. This cost is lower in comparison to Silver Lining Tours, which has a cost-per-day of \$240, but TRADD only runs for five days while Silver Lining Tours provides a ten-day tour.

Table 3. Average Tour Cost

Cloud 9 Tours	\$2,000 - \$143 per day
Silver Lining Tours	\$2,400 - \$240 per day
Storm Chasing Adventure Tours	\$2,000 - \$143 per day
Tornado Alley Safari Tours	\$900 - \$113 per day
TRADD	\$1,170 - \$234 per day
Widespread Weather Services	7 days - \$1,750 - \$250 per day – 14 days \$2,750 - \$196 per day

From information from the survey or web sites, the tours offer similar amenities. No tour includes airfare to their base city in their tour price. Some of the companies cover snacks, drinks, and meals while others do not. Both Widespread and Cloud 9 include a video of the experience.

Tornado Alley Safari provides training in chasing as included in tour, but most of the other tours are assumed to provide this as well, given the nature of the tour. See Table 4 for a summary.

Table 4. Tour Package

Cloud 9 Tours	Lodging, T-shirt, Highlights video, Snacks
Silver Lining Tours	Daily snacks and drinks, Ground transportation during tour
Storm Chasing Adventure Tours	Does not cover meals
Tornado Alley Safari Tours	Ground transportation, Forecasting services, Instruction in chasing/watching
TRADD	No information available
Widespread Weather Services	Lodging, Pick-up/Drop-of at airport, Travel during tour, Highlight Video

The tornado season is in the late Spring and early Summer. Table 5 shows the frequency of tours per season for each company. Widespread offers the most chances for people

to take a tour, which would cater to many different schedules of the tourists. Tornado Alley Safari has the least amount of tours, with only two per season.

Table 5. Tours Per Chase Season

Cloud 9 Tours	3
Silver Lining Tours	No information available
Storm Chasing Adventure Tours	5
Tornado Alley Safari Tours	2
TRADD	9
Widespread Weather Services	10-12

As can be seen by looking at Table 6, these tours are for small groups. This is undoubtedly due to the fact that people are being carted around in vans with varying amounts of equipment and luggage. This is also probably due to the fact that each tour group does not have a large

staff, typically only 3, and can only carry as many people as available drivers of vehicles. This limits the number of tourists since they share space with scientific equipment in the vans.

Table 6. People Served Per Tour

Cloud 9 Tours	14, possible 20 people
Silver Lining Tours	No information available
Storm Chasing Adventure Tours	No information available
Tornado Alley Safari Tours	9 people
TRADD	No information available
Widespread Weather Services	1-8 people, more if necessary

The survey next queried information about the clients who participate in storm chasing. Table 7 identifies the general characteristics. All tourists are either out-of-state or out of the country. This is undoubtedly because those people that

live in the area of Tornado Alley are used to the sight of tornadoes, and are probably not thrilled at the prospect of chasing the beast that could knock down their house.

Table 7. Tourist Demographics

Cloud 9 Tours	85% out-of-state, 15% foreign
Silver Lining Tours	No information available
Storm Chasing Adventure Tours	No information available
Tornado Alley Safari Tours	100% out-of-state
TRADD	No information available
Widespread Weather Services	90% out-of-state, 10% foreign

Table 8 shows the universally accepted minimum age of participants to be 18 or older. This is not very surprising. There is always the issue of liability, and at least being eighteen a person is considered an adult. Storm chasing

has a high element of danger, even the chance of putting their life at risk. Solmonsson (1990) warns that companies involved in high-risk activities need to be aware of the different clients abilities, since risk is highly subjective.

Table 8. Age Restrictions to Take A Tour

Cloud 9 Tours	Must be 18 or older
Silver Lining Tours	No information available
Storm Chasing Adventure Tours	No information available
Tornado Alley Safari Tours	Must be 18 or older
TRADD	No information available
Widespread Weather Services	Waiver signed by a parent/guardian if under 18

Finally, the survey requested additional information about what a tourist should bring on the chase. Tourists are asked to pack as lightly as possible, as all items need to be mobile. People do not stay in the same hotel every night, but are being transported over miles of ground, and may

never make it back to where they originally started. Since waiting was often an element of the chase, participants were also asked to bring a book or music to help pass the time.

Table 9. Items to Bring on A Tour

Cloud 9 Tours	Clothes, Toiletries (1 Suitcase, 1 Carry-on), Money for Souvenirs/Food, Video camera (Optional), Laptop (Optional), Walkman
Silver Lining Tours	No information available
Storm Chasing Adventure Tours	No information available
Tornado Alley Safari Tours	Rain gear, Cameras
TRADD	No information available
Widespread Weather Services	Clothes (1 Suitcase, 1 Carry-On), Cameras, Video camera, Walkman, Video games, Books/Magazines

Discussion

With movies such as "Twister," interest has increased in the activity of storm chasing. This is apparent as seen by the increased traffic along the roads of Tornado Alley and with the institution of many storm-chasing groups. Although storm chasing in real life is nothing like the movies, there is still a real rush that come from seeing one of Mother Nature's most destructive forces. People will pay large amounts of money to have the opportunity to chase after something that most people would prefer to flee. True storm chasers are into this form of risk tourism for many reasons, to learn about tornadoes as much as possible, to help create warnings systems, but mainly to experience the thrill of the hunt.

Since the field of Risk Tourism is relatively new, there is little research in the topic. Future research should consider the risk chasers may place on the citizens who live in Tornado Alley. While most companies stress safety and the scientific gain of knowledge, many rogue and inexperienced operators may attempt to enter the market to

"jump on the bandwagon"! It would also be interesting to explore the psychological "rush" a chaser gets after long dull waits in the great plains, perhaps similar to the changing excitement a river rafter gets during and after rapids. Lastly, a comparison of tornado storm chasers to "hurricane partiers" may be an area to explore. What motivates people to expose themselves to severe weather?

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Appendix A.

I. Please Answer These Questions Based On Last Season's Tours

1. How long does your standard tour run? _____ days
 2. How much does your standard tour cost? \$ _____
 3. What does this cost encompass (i.e. food, lodging, etc.)? _____
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II. Please Answer These Questions Based On Your Tour Clientele

4. How many people can you serve per tour? _____
5. If you offer multiple tours per season, how many tours do you run _____ and how many total people are served? _____
6. On the average, where are your tour attendees from?
_____ in-state _____ out-of-state _____ foreign

III. Please Answer These General Questions

7. Do you have any AGE restrictions in order to participate in your tours?
_____ yes _____ no

If yes, what are these restrictions?
_____ must be 18 or older _____ must be 21 or older _____ must be under _____ (put age here)
8. Do your clients need to meet any specific educational criteria to participate in your tours?
_____ yes _____ no

If yes, what are these criteria (check all that apply)
_____ high school diploma _____ some college classes _____ college degree
_____ weather-related experience _____ pervious chasing experience
_____ other (please explain) _____
9. Are there any major expectations that attendees have to fulfill in order to attend your tours?
(i.e. physical fitness) If yes, please describe _____
10. What are some reasons that people give for attending your tours (i.e. gift, chase interest, etc.)

11. What specific items do your attendees need to bring with them on their tour? _____
