



**The Complete Guide to**

# **Storm Chasing**

By Jeremy Den Hartog



**Forecasting Basics,  
Effective Storm Chasing,  
How to Read Radar & More!**

First of all, thank you for purchasing this guide. Hopefully you will find it useful as I have put a lot of time and effort into it...

## **About Me:**

I'm a storm chaser from just outside of Mankato, MN and have been chasing storms for 5 years on a regular basis but have chased for longer on a very local basis. I have seen around 30 tornadoes (though a fair amount happened at night on April 9, 2011). I have had a passion for weather and storms for many years. June 16, 1992 was the day my interest in storms really took off. This is the day that Chandler, MN was hit by an F5 tornado. I grew up in Worthington, MN which is around 30 miles from there but I can still remember the storms that came rolling through and the video from that tornado on the news that night. Anyhow you can check out our website at <http://www.majorleaguestorms.com>.

## **Who This Guide is For:**

I have written this guide in an attempt to help the people out there who are new (or newer) to storm chasing and would like to learn how to forecast and be more successful and respected as a storm chaser. It is assumed you have a basic understanding of weather (such as what a warm front, cold front and what dewpoints are and mean when it comes to weather). If you don't know these things you shouldn't be chasing storms. Please note, I may repeat myself at times in this guide. I apologize for this but I do this to try to stress the importance of what I'm trying to say.

Anyhow, sit back, relax and hopefully enjoy this guide. If you have any questions, feel free to add me as a friend on Facebook and I will do my best to try to answer them for you.

## **Copyright Info:**

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## **Disclaimer:**

Please be aware, I am not a meteorologist. I'm also not an expert and I'm not trying to pretend I am. However, I have several years of storm chasing and forecasting experience and would like to share my knowledge/experience with others (hence, the reason for this guide). Every attempt has been made to ensure the information in this guide is 100% accurate. That being said, I offer no guarantees. Also, storm chasing and even being outside near a storm can be extremely dangerous and life threatening. It is your choice if you would like to chase storms or stand outside near a storm. I take no responsibility for your actions or what may happen to you while chasing. This guide is solely for informational purposes only.

## **Acknowledgements:**

I'd like to take a moment to thank my Wife for her patience while I wrote this guide and also for putting up with my passion for storms and storm chasing. I would also like to thank [Skip Talbot](#) for his willingness to read through this guide in an attempt to help ensure the information within is accurate.

## **New Content & Updates:**

To try to ensure and preserve the accuracy of this guide I will be updating and adding new content to it from time to time. On this page I will list changes made to this guide. If you purchased this guide, you will receive free updates for life.

### September 1, 2011:

- Initial release of the guide.
- All content added checked over and believed to be accurate.

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Terms in this guide:

While reading this guide, you will likely come across a few terms or things that you will need to know. Some are listed below but others will also be in the section of this guide that they relate to:

- Mesocyclone: An area of rotation within a thunderstorm (typically less than 10 miles wide). Storms that contain mesocyclones are known as supercell thunderstorms. This is one of the things you should target when chasing tornadoes. However, if a storm has a meso it doesn't automatically mean it has a tornado.
- Supercell: A large, powerful and typically isolated thunderstorm that contains a mesocyclone and often contains large hail and sometimes tornadoes (sometimes strong tornadoes).
- Multi-cell Clusters: A group of thunderstorms that may or may not be severe. They typically do not produce tornadoes but can produce large hail and/or damaging winds.
- Bow Echo: A line of storms or a portion of a storm that arch's out and creates a shape on radar that resembles the arch of a bow. Along this arch there is typically strong damaging straightline winds—at the peak of the arch are typically the strongest winds.
- SPC: Stands for Storm prediction Center. They issue the severe weather watches in the United States.
- NWS: Stands for National Weather Service. There are many individual National Weather Service Offices across the United States. They are responsible for issuing the individual warnings with storms.
- Cap: Is a layer of warm air that prevents thunderstorms from developing. Having a cap is not necessarily a bad thing early in the day as it allows the energy to build up. However, if the cap does not break that is a bad thing (obviously) as storms will not form.
- Blue Sky Bust: Typically the worst case scenario as a storm chaser. Blue sky busts occur typically when the cap remains too strong so storms don't fire and you see nothing but blue skies.
- Surface Based Storms: Are storms that ingest air from the surface of the earth and some above it as well. They are more likely to be tornado producers.
- Elevated Storms: Are storms that do not ingest air from the surface.
- Updraft: An area of rising air, often associated with thunderstorms.
- Downdraft: An area of cool air usually associated with precipitation

in thunderstorms.

- Rain Wrapped Tornado: Exactly how it sounds, a tornado that you can't visually see because tornado has wrapped around it.
- Core: This is the main area of precipitation with a storm. It can have heavy rain, hail and sometimes rain wrapped tornadoes. This area should be avoided if you are new to storm chasing.

Of course there are many more terms that you should be familiar with. Instead of listing them all here, you can check out a site glossary that explains many different terms by [clicking here](#).

# Chapter 1:

## The Basics

So you want to be a storm chaser?

Over recent years, storm chasing seems to have been glorified by the media with TV shows such as 'Storm Chasers' on the Discovery Channel and 'Storm Riders' on the Weather Channel. In reality, storm chasing is much different than these shows portray. Similar to the movie 'Twister', these shows lead people into believing that storm chasing is easy and you regularly have success with intercepting a storm and seeing tornadoes. More often than not you will not see a huge tornado producing storm. In fact, while you may see storms fairly often, there is a very high chance you won't see a tornado, funnel cloud or even a wall cloud when you go out. Even with the knowledge I will provide you here, be prepared for fairly low success rates. Over time and as you gain experience the success rates will increase but even then odds aren't great. Storm chasing is not easy and is not for everybody.

Storm chasing can also be frustrating, boring (not to me but maybe some) and expensive. It isn't uncommon to drive hundreds, if not thousands of miles in a vehicle packed full of equipment, soda, things to munch on, etc and end up doing so without seeing much of anything (have to love those 'blue sky busts'). In addition to this, keep in mind its typically hot and humid where the storms will be. If you don't have a working AC, be prepared to sweat—a lot. At the end of a chase, there is a good chance your vehicle won't look or smell very nice (the same could probably be said about you also) and driving your vehicle in these conditions can be extremely hard on it.

Why do people chase?:

This tends to vary from person to person. Some people chase storms with the sole intentions of seeing a tornado, while others are happy intercepting or seeing a beautiful storm or seeing some amazing storm structure or lightning. Some people chase to make a living and run tour groups or sell footage to media outlets of the storms/tornadoes that they

see. Then there are the researchers who typically work for the Government (or possibly the private sector). Some people chase because they think its 'cool' and they are trying to impress people (something I strongly disagree with doing—and will typically make you look like a fool to most respected storm chasers). Whatever your particular reason, safety must be your priority at all times. Seeing that tornado up close, etc is not worth dying for. Personally I chase storms because its something I have a passion for (and have had this passion for many years). Storm chasing can become an addiction. If your not careful you will find yourself spending money you don't have, pushing people who you care for or care for you away. Be careful of this as again, seeing that storm probably is not worth it.

The unwritten rules of storm chasing:

I'm sure some of you who may be reading this are probably saying something along the lines of 'screw that' or some other variation of that phrase but believe it or not, storm chasing has some rules that must be followed or you will be ripped apart by your peers in the storm chasing community (not to mention you could be seriously hurt or even die from ignorance while chasing). Most of these rules are listed below (though I'm sure there are others that I'm missing):

- Don't pretend: Nothing will make you look like a fool quicker then pretending that you know more about storm chasing, forecasting, etc then you actually do. People who have a fair amount of knowledge when it comes to storm chasing can see right through this (even if your family or friends don't). Its ok to be new to storm chasing and to be learning, but don't go on Twitter/Facebook and post something trying mislead people into thinking you know what you are doing when you don't.
- Follow laws & authority: As a storm chaser you should follow all traffic laws and the authority—no excuses. You represent all of us as chasers and people who drive recklessly tend to make us chasers look bad (not to mention its extremely dangerous to drive recklessly by speeding and breaking laws). Also, if you are told you can't go down a road then you can't go down that road. Find an alternative route. Getting out of the way of rescue vehicles is

also very important.

- Be respectful: This should be common sense but in my experience it unfortunately is not. Some examples – if you see a tornado and see it damage a house or structure of some kind, keep your excitement in check. Don't holler or scream like idiots. If you come across a damage path, don't walk on somebody's property without permission to take damage photos, etc. (of course if you are first on scene and attempting to ensure the person is ok then this doesn't apply and by all means walk on the property).
- Be prepared: Maybe it's not a rule – but it should be. Sooner or later while chasing you will come across damage and there is a decent chance you will be first on scene. You may end up being someone's only hope for survival. Be as prepared as you can for these situations by bringing a first aid kit, being properly trained in first aid/CPR, etc. I will go more in depth on things I recommend a person bring later in this guide.
- Make accurate reports: Keep in mind your reputation as a chaser is extremely important (not to mention what's the point of making a report if its inaccurate). Always ensure you are making accurate reports. If you are not certain on something then simply continue monitoring that area. Many times I have seen something and had a strong urge to report it but then I'd take a step back and remind myself I have to be 100% sure. I'll talk more about making reports later in this guide.
- It didn't happen if no pictures or video: This isn't really a rule— more of an expectation I guess but you will need images or video of the things you say you saw or most people (especially in the storm chasing community) will say it simply didn't happen (even if it did). Unfortunately there are many 'fake' chasers out there so that's the reason why you have to have proof of things. Again, This doesn't mean you didn't see the tornado but to most respected chasers, it didn't happen unless you post something that verifies what you saw (image is good, video is even better). Also, you'd be surprised how many times people think they saw a funnel cloud, wall cloud, tornado, etc when it was really something different (like scud). Posting what you saw allows you to confirm

the things you saw and if you happened to misidentify something you can use the info as a learning experience.

- Following other chasers: Don't be one of those people who simply follow other storm chasers when storm chasing. Doing so isn't really even storm chasing and is very dangerous to do (i.e. chaser convergence). Again, actually put the effort into learning what you are doing. To clarify, this doesn't mean you shouldn't end up in the same area as other chasers as obviously you likely will but I know for a fact there are people out there who use the Spotter Network place file with GRLevel3 and simply follow all the other chasers and go where they go.
- Safety: I've mentioned this word several times already but I have to mention a couple things that I've seen people do over recent years who are relatively unknowns in the storm chasing community and consequently assumed to be inexperienced or new to chasing (more often than not it proves true that they are inexperienced). First thing that I've seen people do is 'punching the core' (driving through the main part of a storm to try to get into better position) and the second is getting dangerously close to a tornado. Both of these things are extremely dangerous and foolish and neither one of these things will earn you any respect within the chasing community and are extremely unsafe to do. In fact, you shouldn't be doing either one of these things if you are a newer chaser—period. I'm sure some may ask why punching the core is a big deal. The reason is it's not uncommon for tornadoes to be rain wrapped (exactly how it sounds, a tornado that you can't see because of rain surrounding it). If you don't have any idea what you're doing or what to look for, you could be headed right towards a tornado and not even know it. Why do other chasers care so much? Simple, your actions as a chaser reflects on all chasers if something bad were to happen. Last thing anyone needs is for a storm chaser to be hurt or killed. I'm not trying to be the storm chaser Police here but again, its not worth dying. Live to chase another day.
- Learning: For whatever reason some people take serious offense when someone questions something they reported or saw. This is simply not how you should react, especially if someone more experienced is asking you questions, etc. Instead use the info they are giving you to learn from. Everybody misidentifies things at

some point. Its important to learn and not try to do it again. Making accurate reports is extremely important and your fellow chasers will hold you accountable. Remember, we all were new at some point—every single one of us. Its nothing to be ashamed of but make sure you are being respectful when someone is trying to help you.

I could probably write an entire guide on the dos and don'ts of storm chasing. Really people its not rocket science. Pretty much the bottom line is use common sense, be real and open to learning and you should be fine. If you become a chaser and decide you don't care about safety or what anyone says or thinks that's fine – I'm not stopping you. Don't be surprised though if you are mocked and disrespected on a regular basis and maybe even eventually hurt or killed while chasing from your ignorance and poor decision making (and apparent arrogance and stupidity). Storm chasing is not a game, its serious business and can often be life or death depending on the choices you make (not only for you, for the people you are chasing with or the people you may come across who have been affected by the storms). I strongly urge those that read this guide to take my advice. There really is a reason why storm chasers enforce and follow these unwritten rules.

### Dangers of Chasing:

Maybe I'm stating the obvious here (ok I am) but storm chasing can be extremely dangerous if you aren't careful. Many new people to storm chasing automatically assume that a tornado is the most dangerous thing a storm chaser encounters. While of course a tornado is dangerous, it isn't the biggest threat in most cases.

In my opinion, by far the most dangerous thing is driving and being on the road. While chasing, people can easily be distracted (not only chasers but also 'locals') which can be extremely dangerous. There can also be a lot of traffic (chaser convergence) in an area where a tornado may be occurring or about to occur. Also, usually to get to a 'target area', a chaser often has to or chooses to drive several hundred miles (or more). Sometimes this is done with very little, if any sleep (again, very dangerous). Of

course the longer you are on a road, the chances of something bad happening also increases. Paying attention while driving, getting enough sleep and pulling off the road as far as you can when observing a storm (and also avoiding pulling on to shoulders on interstates or extremely busy roads) can help make things safer.

Lightning and hail can also be very dangerous. If lightning is occurring nearby, it is recommended you do not get out of your vehicle (or that you get back into your vehicle). Even if lightning isn't close, you can be struck without warning. Making sure your not the tallest object in the area (or that your not standing by the tallest object, like a light pole, power line, tree, etc) can go a long ways to making things safer. With large hail, it can seriously hurt you or even kill you—especially if you are hit in the head. Of course staying in your vehicle will keep you relatively safe but plan a head in case you are caught in large hail—you won't be able to hear anything when in a vehicle so communicating with others in your vehicle will be next to impossible. If you are about to lose a windshield (or window), make sure you cover your eyes to keep them safe. Obviously having 'full coverage' auto insurance is highly recommended also.

The tornadoes themselves are obviously very dangerous. When you happen to be around a tornado you must be prepared at all times. This is particularly true if you are near a night time tornado or a tornado that is wrapped in rain (if you are newer storm chaser, you shouldn't be around night time or rain wrapped tornadoes). Tornadoes can shift directions quickly and also change speeds quickly. You must plan ahead and have an escape route if the tornado were to move your direction. Your escape route should be a paved road and should allow you to move away from the tornado at a 90 degree angle from the tornado (you don't want to move towards the tornado for obvious reasons and you shouldn't move in the same direction as the tornado itself as it can 'catch' you quickly). Because of these sudden shifts in speed and direction it is extremely important to stay far enough away to actually get out of the way of the tornado (otherwise what's the point of having an escape route?).